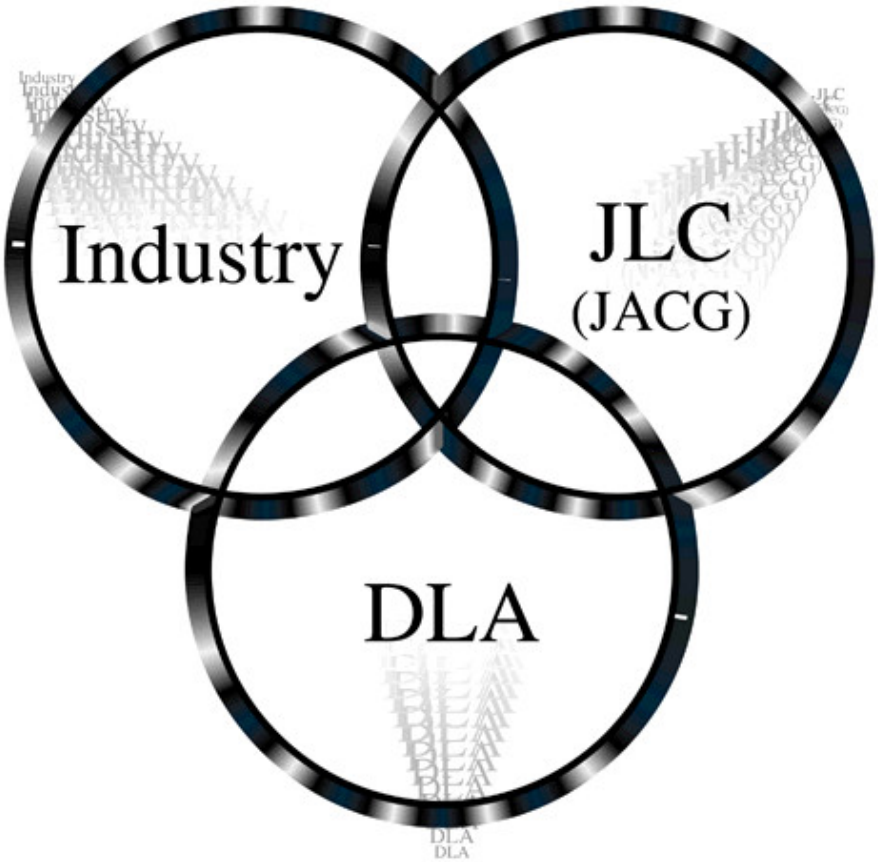
Joint Aeronautical Commanders Group

Non-Government Standards



Integrated Product Team

Final Report
29 February 1996

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A Message From the NGS-IPT Co-Chairs

1. On 1 Mar 95, the Commander of Air Force Materiel Command (AFMC/CC) and the Council of Defense and Space Industries Associations (CODSIA) designated us as the joint Co-Chairpersons to lead the Government and Industry Non Government Standards Integrated Product Team (NGS-IPT). We accepted the responsibility of developing concepts for operating in the new acquisition and support environment that minimizes the Government's use of existing Military Specifications and Standards and Non Government Documents. We had a robust discussion on a variety of topics. In some cases, we were not able to achieve a complete consensus. In those topic areas where a difference still exists, we have inserted a box denoting this circumstance. The Joint Aeronautical Commanders Group's (JACG) working panels will continue these discussions. The results of these discussions will be reflected in the JACG implementation actions.

2. We are pleased to provide you with the NGS-IPT Final Report. This report is our attempt to provide government leaders an integral set of options and system processes to implement the policy identified in the Perry Memorandum of 24 Jun 94. This report addresses:

a. A performance based acquisition system
b. Identification of key supplier processes
c. Concepts for maintaining a flexible approach to sustainment
d. A new concept for assessing suppliers' capabilities
e. A supplier rating system based upon Defense Logistics Agency's (DLA) current concepts
f. A tri-service past performance system used in support of source selection
g. An enhanced but streamlined source selection process
h. Concepts and incentives for making the changes on existing contracts
i. Development of appendices as a starting point in training the workforce
j. An application to the Training Devices Business Sector

As a result, source selections will place a much greater reliance on past contractor program and process performance. For the first time, Government Executives will have an objective system to determine which contractors are deserving of reduced level of government surveillance and possible self-governance, with a corresponding reduced estimate of their aggregate program cost.

3. Our report is structured to provide you with the integrated perceptions of the co-chairs in the Executive Summary and Observations and Findings, Report Sections 1 & 2. Appendices E through M, were prepared by the respective IPT subpanels.

4. We are very proud of the work that was performed by the team and wish to take this opportunity to thank each of the participating government agencies and industrial firms without whose commitment this study would not have been possible.

JOHN C. HALPIN
Government Co-Chair
Chief Engineer
Directorate of Engineering
Aeronautical Systems Center

JAMES M. SINNETT
Industry Co-Chair
Sr. Vice President, Advanced
Systems and Technology-Phantom Works
McDonnell Douglas Aerospace

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FOREWORD

This report documents the results of the joint government/industry Non-Government Standards Integrated Product Team (NGS IPT). The NGS IPT findings provide a comprehensive approach to address the acquisition reform initiative directed by the Secretary of Defense, Dr. William J. Perry. The NGS IPT's Acquisition Reform Observations and Findings were developed by the IPT to provide concepts and insight to decision makers to effect revolutionary change in to how the DoD selects, manages and provides surveillance over its major supplier base of contractors. The report specifically addresses the business sectors that represents 20 percent of the contracts but 80 percent of DoD's dollars.

This report focuses on the acquisition reform initiatives three basic objectives: (1) the reduction in the overall cost of DoD Programs, (2) the improvement of program performance, and (3) the increase in quality of delivered products. These objectives are to be achieved by the adoption of commercial processes, and the reduction of direct government oversight with the attendant increase in responsibility accepted by our contractors. The primary mechanism for achieving these objectives is the elimination of government defined and directed processes that prescribe detail requirements.

The report is organized to present to the reader a broad, integrated perspective from both government and industry viewpoints. The Executive Report Section extracts detailed findings from the separate appendices and presents them in an integrated big picture. The Observations and Findings Section represents the view of the corresponding government and industry IPT Co-chairs. The appendices to the report provide specific mechanisms that help facilitate implementation. In some cases, the reader may recognize some different approaches to implementation. In these instances these different approaches are tagged for the reader. This report is not a complete recipe to acquisition reform; however, it does fulfill the expectation by the Under Secretary of Defense for Acquisition and Technology for an 80 percent solution. The approaches described in this report were developed to help Program Offices and their Integrated Product Teams (IPTs) identify and manage the risk associated with their specific programs. Past performance procedures included in this report are an outgrowth of on-going real world experience of Contractor Performance Assessment Report (CPAR) initiatives, and commercial business practices.

Although the defense acquisition community will continue to improve and enhance the processes described in this report, the application tools and training will be provided by the Joint Aeronautical Commanders Group to facilitate implementation within the aeronautical sector. As we learn lessons, the guides contained in this report are expected to be revised. While these new processes, when fully implemented, will accommodate current downsizing decisions, the user should be cautioned that mis-application could result in exposing the government to much greater risk and possible loss of both financial and human resources. Once full implementation has been achieved, the team believes programmatic decisions can be made more timely with comprehensive information based on realistic metrics.

The team wishes to acknowledge active participation and support of our charter sponsors: HQ Air Force Materiel Command, General Ronald Yates, USAF Retired, Past Commander; and General Henry Viccellio, Commander; Aerospace Industries Association (AIA), the Honorable Don Fuqua, President; Electronic Industries Association (EIA), Mr. Dan C. Heinemeier, Vice President; and National Security Industrial Association (NSIA), Mr. James R. Hogg, President. Without their help, this concept for comprehensive change would not have progressed to the implementation phase.

The government IPT co-chair is Dr. John C. Halpin, the Directorate of Engineering, ASC/EN, Building 14, 1865 4th St. Suite 11, Wright-Patterson AFB OH 45433-7125; telephone 513-255-5874; HalpinJ@ASC-EN.WPAFB.AF.MIL. The industry co-chair is Mr James M. Sinnett, representing Aerospace Industries Association, 1250 Eye Street NW, Suite 1100, Washington D.C. 20005; telephone (314) 232-7800 or FAX (314) 232 0120.

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NON GOVERNMENT STANDARDS INTEGRATED PRODUCT TEAM (NGS-IPT)

INTRODUCTION:
During the AFMC/CEO Conference in September 1994, an industry executive pose the question: "How does AFMC intend to conduct source selections and implement Perry Initiative Reforms, Appendix A, without the use of military specifications, standards and processes?" That question resulted in an AFMC Commander's Action Item. The action item directed formation of a government/industry executive IPT to identify opportunities, alternatives, issues and concepts related to conducting source selections with out requiring prescriptive "how to" Mil Specs/Standards.

CHARTER:
The IPT was chartered jointly by HQ AFMC/CC and Council of Defense and Space Industry Associations (CODSIA). The charter was signed by:

General Ronald W. Yates: Commander, AF Materiel Command, AFMC/CC
Honorable Don Fuqua: President, Aerospace Industries Association (AIA)
Mr. Dan C. Heinemeier: Vice President, Electronic Industries Association (EIA)
Mr. James R. Hogg: President, National Security Industrial Association (NSIA).

The Non Government Standards Integrated Product Team was chartered to develop processes by which the Government's current solicitation and source selection procedures would shift to encourage innovation and allow contractors to compete on the basis of their own design excellence rather than DoD-dictated processes. It is recognized that this shift away from prescriptive specifications increases the risk associated with judging the value of alternative proposals. Procedures are needed which recognize this risk, allow proposals to be evaluated within the context of program requirements and opportunities, and establish a systems engineering approach capable of controlling the risk. The complete charter is contained in Appendix B.

VISION:
The IPT as a body developed the new acquisition vision. This vision defines a business environment which takes advantage of the efficiencies of commercial practices to improve our military acquisition environment. The environment allows suppliers to compete and be selected based upon their innovative designs and process excellence, and not upon government-dictated practices, within the limits of public law.

MEMBERSHIP:
A joint government/industry team composed of a mix of Aeronautical, Aerospace, and Command, Control, Communication and Computer (C^4I) viewpoints was directed by the charter. Cross-functional representation from both government and industry were also directed to include technical management, program management, business management, and commodity/ reprocurement management. Staffing of the IPT was accomplished through the auspices of the Council of Defense and Space Industries Associations for the industrial participants and through the Joint Aeronautical Commanders Group for the joint-service government team. Mr.

James M. Sinnett, Senior Vice President of New Aircraft and Missile Products, McDonnell Douglas Aerospace Company; and Dr. John C. Halpin, Chief Engineer, Aeronautical Systems Center, Directorate of Engineering, ASC/EN; were identified as co-chairs to lead the IPT. As the IPT progressed from investigation and concept definition phase into the implementation definition phase, the membership was expanded and the thrust of the subpanels was redefined. The IPT's subpanel co-chairpersons and their members are listed in Appendix N.

CONDUCT of the IPT:

The NGS-IPT was constituted on 1 March 1995, in conformance with the approved. The work of the group, and the work apportioned to several issues-oriented sub-groups, was performed by government members drawn from all Services and the DLA and by individuals drawn from the private sector and designated by the AIA, EIA, and NSIA under the auspices of CODSIA.

The charter provided that the group was to provide observations and options. Before the group began its work, the group was particularly cautioned that its role was to identify findings and potential options, but that conclusions and recommendations were reserved to government members with final determination reserved to the Services' Senior Acquisition Executives and their counterparts at OSD.

In doing its work, the IPT focused its efforts on identifying opportunities, alternatives, issues, and concepts for reducing the requirement to use government specifications and standards. The group particularly avoided attempting to form any conclusions based on achieving a group agreement or a group consensus. The individual industry participants were solicited for their individual opinions and for their individual advice concerning the issues and opportunities they perceived. However, the government members of the group were solely and exclusively responsible for rendering conclusions and recommendations which are suggested for the consideration of the Services' SAEs and, as appropriate, for the Secretary of Defense or his designee.

Accordingly, this report reflects the observations, advice, and opinions of individual members of the panel, and in some cases the recommendations and/or consensus of the government members of the panel. The report does not indicate, describe, or accept, and should not be interpreted as indicating, describing, or accepting, any group deliberations or discussions as a source of agreement, consensus, advice, or recommendations of the group as a whole.

SCHEDULE & PRODUCTS:

The IPT was initiated on 1 March 1995 and is scheduled to disband in February 1996. The key events during this time period were:

- Briefing/Endorsement by AFMC Commander, General Ronald Yates on IPT Concepts
- Endorsement of IPT Concepts by Joint Logistic Commanders JLC and JACG
- Briefing to the Defense Manufacturing Council and subsequent integration with the Defense Contract Management Command's Re-invention Laboratory activities
- An Implementation Briefing to the Air Force Chief of Staff and Industry CEO's
- Transfer of implementation responsibilities to the JACG
- JACG recommended implementation plans to the Defense Manufacturing Council

The detailed schedule of events is shown in Appendix C.

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SECTION 1: EXECUTIVE SUMMARY

1.0 THE CHARTER.

When Secretary of Defense, Dr. William Perry, initiated Military Specification and Standards Reform, he significantly impacted how we conduct acquisition. In his June 1994 memorandum (see Appendix A, *DoD Dr. Perry Memo*) he stated that "To meet future needs, the Department of Defense must increase access to commercial state-of-the-art technology and must facilitate the adoption by its suppliers of business processes characteristic of world class suppliers". A Non-Government Standards Integrated Product Team (NGS-IPT) of government and industry representatives was established. *The NGS-IPT was chartered to define a business environment which takes advantage of the efficiencies of commercial practices to improve our military acquisition environment. The environment allows suppliers to compete and be selected based upon their innovative designs and process excellence, and not government dictated practices, within the limits of public law* (see Appendix B, *IPT Charter*). Although the IPT members were predominantly from the aeronautical sector, the concepts, processes and procedures developed are considered independent of product type/sector.

2.0 OBJECTIVES.

The NGS-IPT task was to identify, develop, integrate, and document the mechanisms necessary to implement the reform. The focus on a business environment to allow suppliers to compete and be selected based upon their innovative designs and process excellence, and not government dictated practices, provided the overarching context governing NGS-IPT efforts. Within that context, the NGS-IPT was directed to (see Appendix B, *IPT Charter*):

- Identify opportunities, alternatives, issues, and concepts to provide greater flexibility in the solicitation and source selection processes.
- Investigate opportunities and risks associated with adoption of certified industry technical and other processes.
- Identify options for possible changes to guidance of the Military Specifications and Standards Reform Initiative.
- Identify those observations which could promote industry self-governance and corresponding reduction of the government audit functions.
- Provide a briefing and report outlining top-level observations/opportunities/ alternatives.

The IPT adopted an additional objective: define a transition plan exploiting the NGS-IPT findings, that maps the steps needed to move defense acquisition from its current state to the business environment that takes advantage of the efficiencies of commercial practice.

3.0 SCOPE.

Early on, the IPT examined the acquisition process to identify those areas most impacted by specification and standards reform. These investigations explored the following areas:

- commercial practices (vendor rating and management systems including past performance)
- source selection
- non-government standards
- disestablished standards (interface, material and manufacturing processes, technical and business management)
- program peculiar product specifications
- business options and technical data packages
- mechanisms to implement reform (past performance, rating systems, block changes)
- risk management (identification, evaluation)
- contract terms and conditions
- oversight issues and options (self-governance)
- sustainment/product support
- pilot projects: common process facilities vs. new development
- key supplier processes
- government/industry business relationships
- government/industry "trust" environment
- contract implementation mechanisms

The NGS-IPT team came from a complete cross section of the aeronautical industry, Figure 1-1.

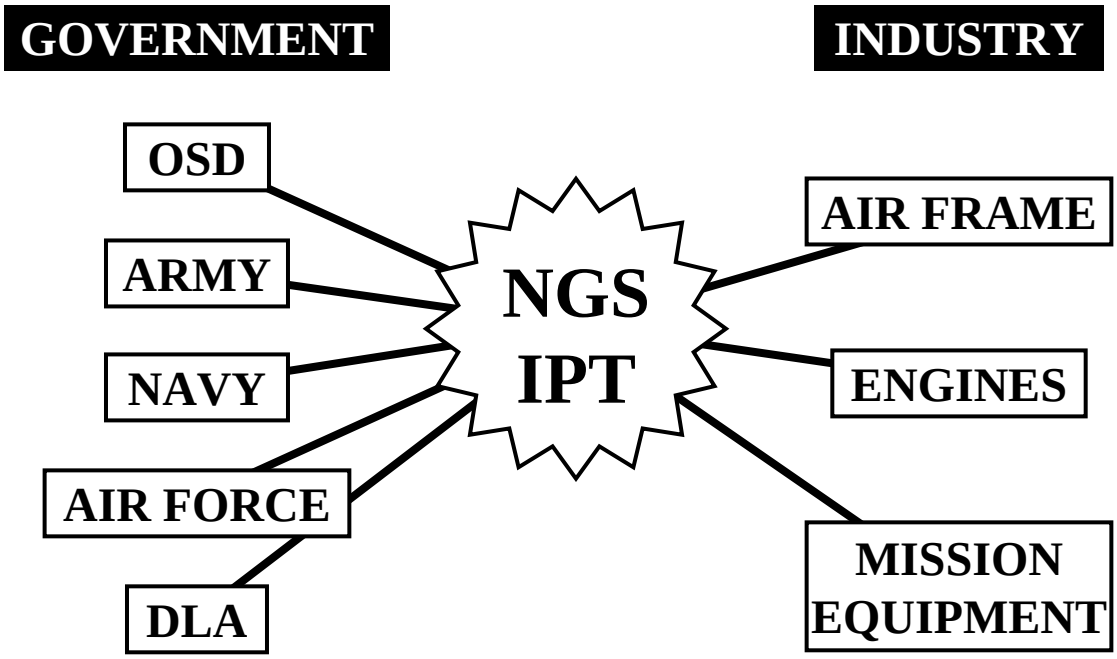

Figure 1-1. The NGS-IPT Team.

While the majority of the team was from the aeronautical sector, there was representation from the ships/vehicles, space, and electronics sectors as well, as illustrated in Figure 1-2. A list of the participants is located in Appendix N. Additionally, to ensure that pertinent viewpoints, experiences, and knowledge areas were brought to bear on the issues, team membership spanned a broad set of disciplines as illustrated in Figure 1-2.

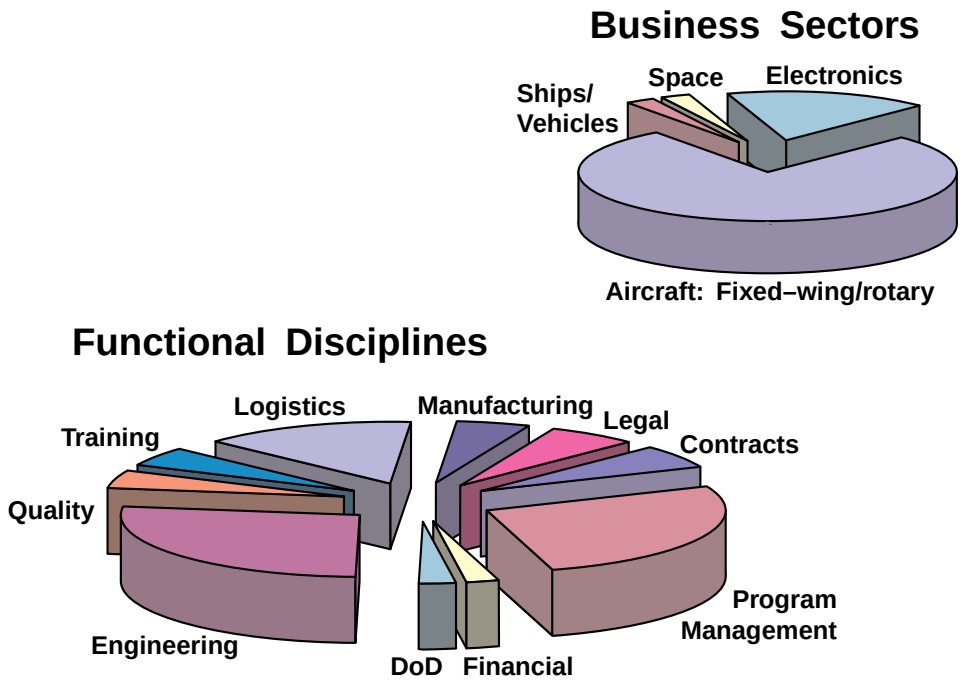

Figure 1-2. Team Composition.

All of the elements necessary to make acquisition reform happen within the aeronautical sector were involved. The focus was on an integrated and structured approach for the aeronautical business sector. About seventy percent of the Defense acquisition budget is consumed within the aeronautical business sector. The application concept was to create a business sector-wide model for defense acquisition and then propagate the results across the remaining defense base.

4.0 IMPLEMENTATION.

The NGS-IPT developed:

- A vision of a “To Be” state;
- Implementation options; and
- A training challenge.

The findings of the IPT were reviewed by the Joint Aeronautical Commanders Group, the JACG. The JACG, one of the groups responsible to the Joint Logistics Commanders (JLC), was chartered by the JLC “... to facilitate implementation and improvement of common processes across the services and Federal aeronautical agencies.” The JACG reviewed the IPT findings and has forwarded their recommendations with implementation plans, through the JLC, to the

Defense Manufacturing Council at the DoD (see Appendix O, *JACG Working Board NGS Implementation Activities*).

The relationship of the JLC and the JACG to the DoD staff functions is similar to that of a supplier to a buying office. In the performance based business environment, the "whats" are determined by the senior level policy offices and the "how to's" are proposed, and when coordinated, implemented by the field level buying offices. This performance based policy relationship is illustrated in Figure 1-3.

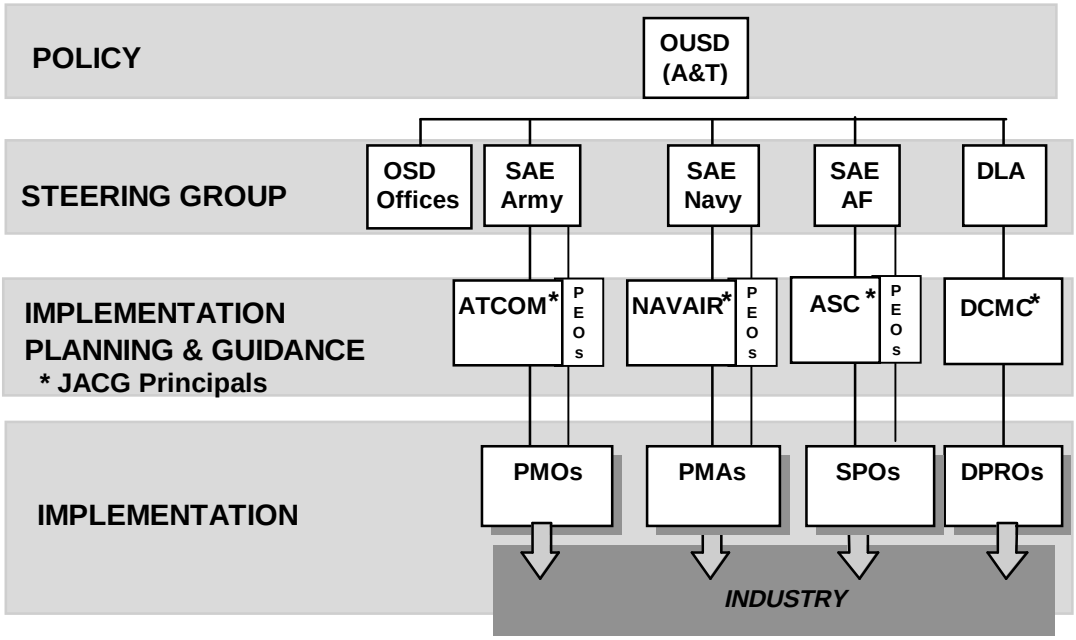

Figure 1-3. Multi-Service Implementation -- JACG Role.

5.0 THEMES FOR REFORM IMPLEMENTATION.

Excellent sources for DoD equipment and services are both the objective and a prerequisite to acquisition reform. This constitutes a need to motivate and/or reward efficiency and effectiveness in the DoD supplier base: the Primes, Subcontractors, and Vendors. How should this be accomplished? A variety of techniques, that exist within the current system, were examined and specific actions are proposed to enhance their effectiveness. These included instruments such as enhancing past performance and making it a key element in source selection, and/or creating the potential to change existing contracts into the envisioned performance based business environment. The section entitled "Observations and Findings" and Appendices D through M contain the specifics.

At the heart of a performance based business environment is a DoD relationship based on:

- DoD stating requirements in performance terms, and
- Industry being responsible and accountable for meeting the requirements.

To establish this new relationship requires changes in:

- Specifications; product requirements in “performance” format,
- Standards; suppliers’ own processes versus “how-to” military standards or third party standards,
- Selecting best sources; key processes and past performance,
- Shaping oversight; SPO and DPRO size driven by the degree of supplier excellence and risk management needs,
- Sustainment policy/strategy; flexible, but more dependent on the supplier, and
- Sharing the new environment; tiering down a performance based business environment from the primes, to the subcontractors and the supplier base.

The potential exists to change existing contracts through a variety of options. Retrofitting current contracts would be tailored to facility--subcontractor team---program combinations via:

- Retrofit of top-level requirements, a vertical change involving flow down;
- Agreements on discrete common (government or company) processes to be deployed horizontally across a specific facility;
- A combination of the above (i.e., top-down starting at a lower level item, and then a common process across the facility); or
- Some other suitable approach.

Facilitating the change requires various types of activities which include:

- Coordination among the services via the JACG;
- Contract retrofit actions triggered by contractor proposals through the DCMC; and
- Utilizing the “block change” mechanisms discussed in this report.

Training the combined industry and government workforce is the third key element in the deployment of the performance based business environment. At different levels of the work breakdown or product tree that makes up a system, a customer - supplier relationship exists. To realize the full benefits of reform, the primes will need to develop the same relationships with their subcontractors as the primes expect from the government. This means training for all in:

- Performance oriented requirements including;
  - Product development requirements;
  - Key process expectations; and
  - Key product expectations.
- Technical data packages for production, sustainment and reprocurement, etc. that permit common process facilities within the supplier communities and the economic factors that impact business decisions and control criteria on the technical data package.
- Supplier assessment and management processes including past performance:
  - Oversight and surveillance; and the
  - Sourcing of new work.
- Roles and relationships between the government program offices, the contractors, and the DCMC in the revised acquisition environment.

6.0 MOTIVATING ELEMENTS AND CHALLENGES.

The motivation for industry to implement the reforms are five fold:

- World-wide leadership recognition;
- Survival in a quasi-commercial world in which a manufacturer competes on
  - the excellence of company processes (development, production, and support), and
  - affordability;
- Contractors own their own processes, as opposed to the use of mandated government or third party processes, with responsibilities that include:
  - risk mitigation/management,
  - cost competitive posture, and
  - program and product performance.
- Expanded business and new business awards based on demonstrated past performance; and
- Cash flow and earnings based upon performance (progress payments, award and incentive fees, expanded weighted guidelines).

The motivating elements for the government are:

- Better, more capable suppliers;
- Better, more capable and affordable products and services;
- Better focus on what is important to the product or service;
- Facilitates product enhancements: innovation, new technology, and
- Reduced government cost and resources.

The opportunity exists for both industry and the government buying offices to obtain long-desired flexibility and efficiency. It is a survival issue. Our joint ability to provide superior military capability, affordably, with lean staff structures is a major element in the continued leadership of our nation in the international arena.

The acquisition community needs to:

- Embrace the “To Be” vision - “performance based business environment;
- Recognize that the changes go beyond technical requirements (see Figure 1-4), and impact the basic government-industry business relationships;
- Craft program success strategies using applicable acquisition reform elements;
- Examine and size opportunities to impact existing contracts;
- Support the movement to common process facilities at all levels of the product tree;
- Recognize DCMC as a key player; and
- Practice teamwork and compromise to achieve our joint objectives.

There are many acquisition reform initiatives. Achieving full benefit from those initiatives will require an integrated systems approach to implementation. We jointly need to:

- Insure the output of the processes proposed by the contractors;
- Insure the effectiveness of the processes; and

- Incentivize process improvements through source selection and supplier/vendor selection.

Industry needs to:

- Step-up to the end-state depicted in Figure 1-4 and assume the responsibilities associated with the revolutionary changes envisioned in the government-prime/OEM/integrator relationship across requirements, selection of sources, and oversight;
- Define processes and metrics (with customer agreement) for management and control;
- Define and extract requirements embedded in the current specifications and standards and express alternatives suitable for use in performance specifications - first priority, those eliminated to date (see section 2, paragraph 2.1);
- Respond to the military standards that are going away, and will not be maintained by the government, with an integrated set of their own processes, practices and procedures essential to achieve success.
- Understand that the material in the military standards that has gone away that was used to implement earned value and product acceptance must transition from audits of work tasks to incremental products that demonstrate progress and achievement.
- Establish (with the government/customer) performance based interface standards (and needs) sufficient for a performance based acquisition approach (see Appendix D, *Performance Based Acquisition*);
- Establish a configuration management and control system:
  - for processes that is internal to the supplier and shared with government via DCMC and other customers; and
  - for products based upon an open architecture mentality (customer agreement/ involvement also required).
- Provide training for developing and maintaining a performance based technical data package at the program engineering/product definition level;
- Provide the same <u>full</u> flow-down, relief from prescriptive requirements/direction and self-governance opportunities to their suppliers as being requested by the primes from the government. This is especially critical in achieving the full measure of success in acquisition reform by enabling lower tier contractors to initiate and consistently use common process facilities that may employ proprietary processes.
- Step-up to contract retrofit to implement the reform. On long term contracts (such as those dealing with sustainment), the impetus to implement reform lies with industry via proposing common process and other changes to existing contracts.

A prime government role is to take the enabling actions needed to assist industry in initiating and executing the actions identified above. The government needs to parallel the industry actions and facilitate a consistent approach across the services, DLA and DCAA.

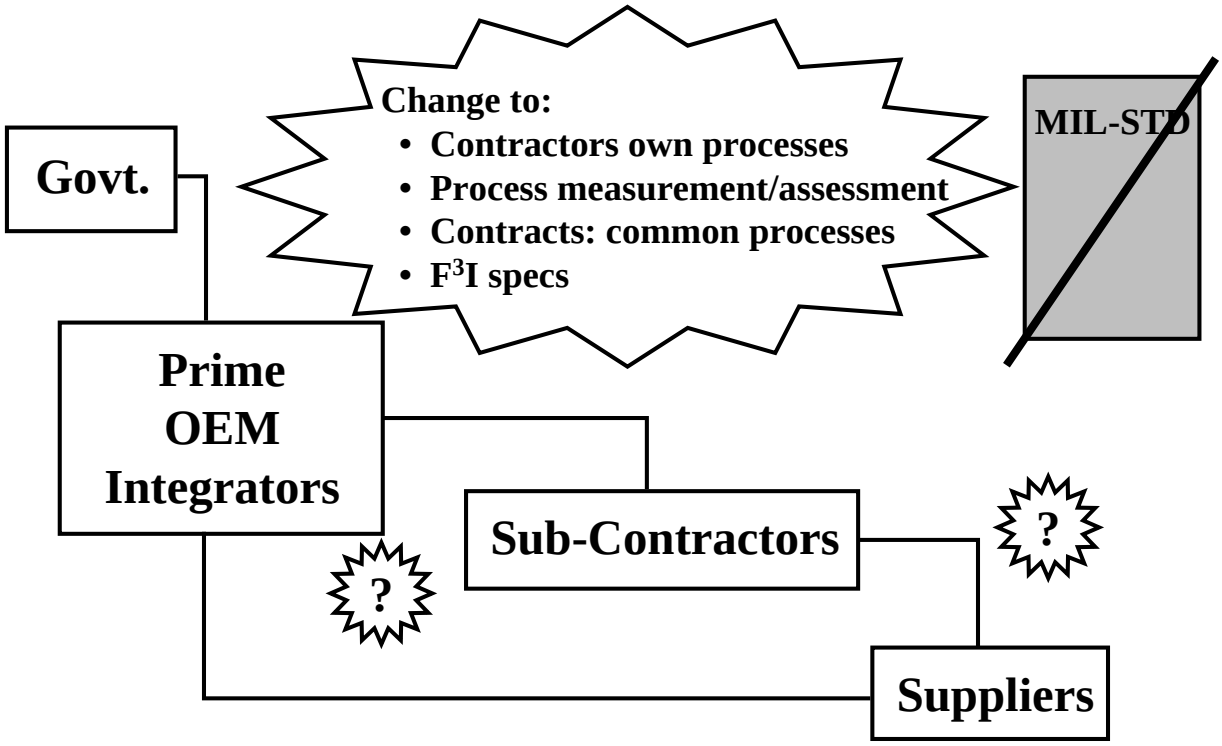

Figure 1-4. Effective and Efficient End-State.

7.0 POTENTIAL IMPACT ON GOVERNMENT ACQUISITION CENTERS AND INDUSTRIAL ORGANIZATIONS.

7.1 Potential Government Acquisition Center Impacts.

As acquisition reform takes effect, the government acquisition centers are reexamining their roles in the acquisition process. Figure 1-5 is an illustration of the thought process one of the government acquisition centers is working through to define, from a top-down perspective, what they do; why they do it; how they do it; and the necessary resources required to do their portion of the job. The "what an acquisition center does" is framed in the identification of an acquisition center's Key Processes, Key Subprocesses, and Enabling Processes. These discussions are taking place within the context of the "User's Life Cycle" and the inputs and outputs which link the user's needs in each phase of a product's life cycle and the acquisition center's products. Said in a different way, the user community generates products/decisions through their key processes (i.e. raw requirements, selection of options, etc.) which are inputs into the development community which in turn generates their incremental products (option sets, demonstrated product capability, etc.).

In a broad sense an acquisition center's key processes address four principal, time phased, integrated activities:

- Program Development;
- Product Development;
- Production Management; and
- Sustainment Management.

The key Subprocesses and their supporting enabling processes are illustrated in figures 1-6 through 1-9 for each of these key processes.

The symbolism of the input-output relationship is intended to communicate the theme of "why we do the specific tasks". This interaction extends downward through the Key Processes, Key Subprocesses and Enabling Processes. In effect, these tasks are viewed as the activities necessary to address the user's needs as the product evolves, to perform the appropriate risk management functions, and to allow the government to become a "world class" customer of industry's products.

"How these tasks are done" in light of the acquisition reform is what this report discusses within the phrase "Performance Based Business Environment". Some typical concepts that are evolving include an increasing interdependence between the acquisition centers and the DCMC. A virtual IPT concept may evolve in which the DCMC could play an increased role in "production management" with a corresponding reduction in the acquisition center engagement. "Sustainment management" may evolve along similar lines with a virtual IPT involving the logistics centers. In this perspective, the dominate presence of the acquisition center as a "doer" would be in Program Development and a shared role in Product Development with the weight of that activity taking place in industry. The industry role is discussed in the next section.

The necessary resources to accomplish these tasks are currently being evaluated for some typical product life cycles. At this point, the size of an acquisition center could then be determined by expected business volume and product mix (including risk) appropriate to that center. "Acquisition Center form and size follows function!"

A key element in the evolution from "pre-" to "post-" acquisition reform implementation is structuring the acquisition centers based on a top-down evaluation of needs, responsibilities, and resulting tasks. "Bottom-up" approaches are not sufficient to expose these relationships and lead to imbalances between center size/structure/skills and job volume/mix/risk. Such approaches can result in the government being unable to execute its essential responsibilities. A top-down approach enables an acquisition center to step up to the challenge of consistency in the implementation of the acquisition process (including requirements definition, process alignment to key attributes of product requirements; process metrics; and performance rating systems). Historically, acquisition centers have tended to sequester domain similar activities into program groupings which have then drifted off into domain specific acquisition practices.

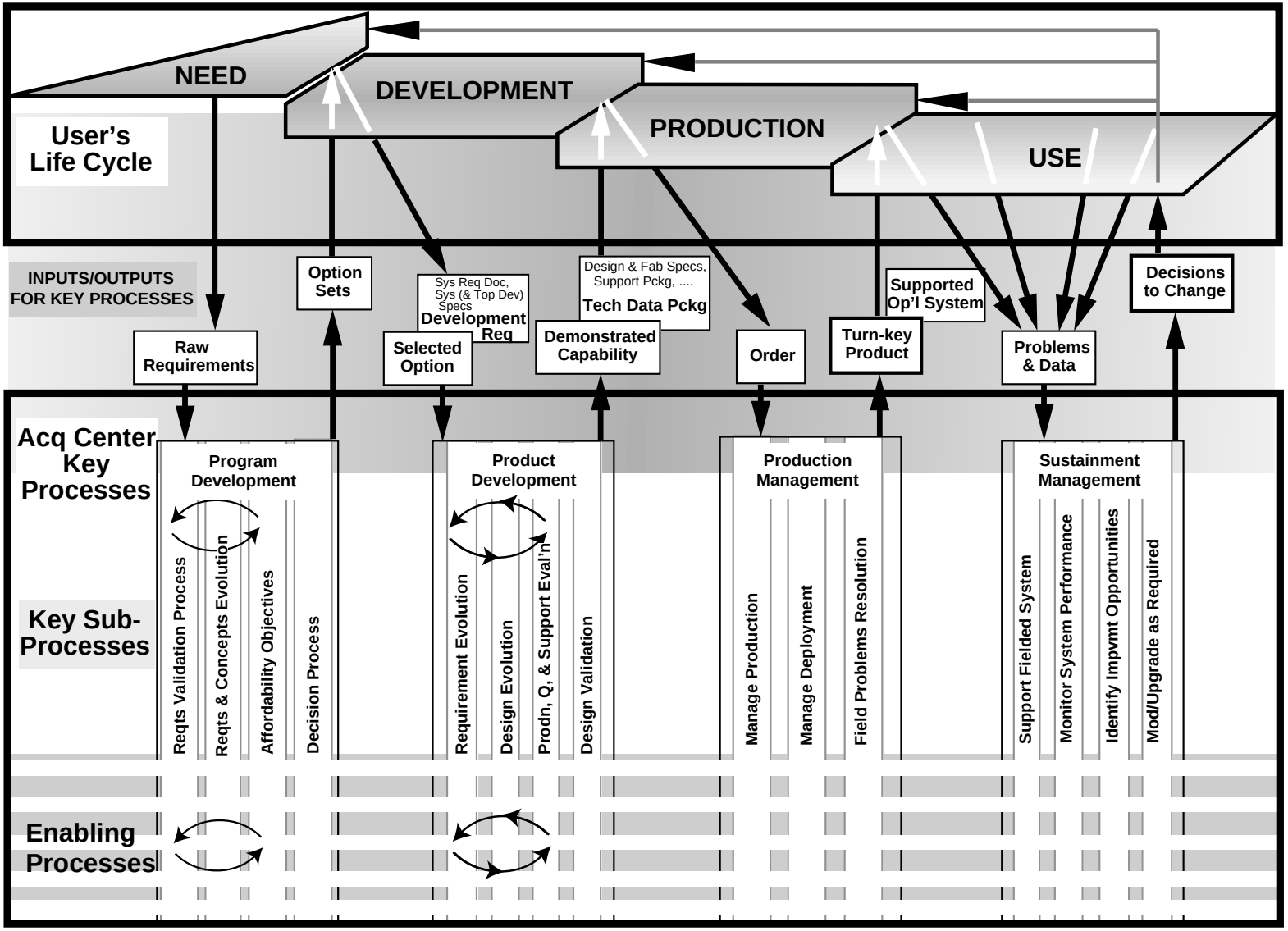

Figure 1-5. Acquisition Center Key Processes—Customer View.

7.2 Potential Industrial Organization Impacts.

Industry will be concerned about the ability of Government Acquisition Centers to be consistent in implementation of the acquisition process: requirements definition, process alignment to key attributes of product requirements; process metrics; and performance rating systems.

Generally, the domain from the industry side would appear to map into the acquisition center key process model noted in Figure 1-5, Acquisition Center Key Processes—Customer View, as a mirror image.

The organizational impact of the transition to a performance based specification environment, from an industry perspective, will be one of emphasis upon horizontal integration within and across programs at a given contractor (or supplier) facility. The specifics of the organizational structure will, in all likelihood, vary from contractor to contractor or from supplier to supplier. This will depend upon the contractor's or supplier's role, and the number of like programs within a given facility.

For each program, the horizontal integration is accomplished by product teams (IPTs) to cut across functional lines. This facilitates the requirements validation and evolution, concepts evaluation and product definition, and design evolution and validation elements of the overall development process. The IPTs continue to participate as the mechanism to implement the production, deployment, and support phases (including redefinition for product improvement throughout the life cycle). As the program, or product, transitions through these phases, the make-up of the IPTs may be rebalanced to reflect specific focus elements, or emphasis, but, the underlying principle is to have, for example, detailed participation of production and support process people for concept and requirements evolution, leading to product definition.

As noted previously, the transition to a performance based environment also demands an integrated team participation for process integration. At lease three elements become obvious:

- There is distinct interaction between product development, production, and support concepts and the processes by which these program phases are accomplished;
- The contractor's processes <u>must</u> satisfy the key attributes of the product requirements; and
- Facilities with multiple products need to draw upon common processes (within the facility) to meet product requirements.

This strongly suggests the need for iterative product definition, requirements evolution, process understanding (application criteria and metrics) and cost assessment in the formative stages of a program.

By evoking a <u>common</u> process approach to satisfy product requirements, particular emphasis needs to be placed on horizontal integration <u>for processes</u> across a facility, or more specifically, across programs within a given facility. One of the tasks for this horizontal integration team is to ascertain common process "fit" for specific programs (including any necessary adjudication on the basis of program "unique" requirements).

Depending upon the organization structure of a contractor (supplier) and the type and number of resident programs, the contractor may be able to accommodate this horizontal process integration within his core IPD, Engineering, Manufacturing and Quality organizations. This may be viewed as an extension of the core competencies for these functional elements or the introduction of new competencies. If no core structure exists to accomplish this effort, the contractor may need to create one. Alternatively, horizontal integration teams (for like processes) across all the contractor programs, composed of IPT members from the individual programs, may be another means to accomplish the same objective. It really depends upon the breadth of business base and the level of process maturity at each facility.

Independent of specific organizational structure, the goals are:

- Documentation and definition of the key processes for the facility;
- Configuration control and management system in place for these processes;
- Documentation and definition of the metrics used to determine process health;
- Demonstrated ability to extract definitive, explicit "requirements" which may be buried in currently applied Standards;
- Full understanding of the relationship of these metrics to process management and product quality;
- Attainment of demonstrated relationship between individual product requirement (key attributes) and the corresponding process to satisfy those requirements across the enterprise.

The most appropriate test of the organizational performance, certainly, will be a demonstrated ability to successfully lead a contractor (supplier) through the difficult transition period from today's acquisition system to a performance-based environment.

Success will require senior government and industry CEO buy-in and leadership, up front (trust), or we will never get there!

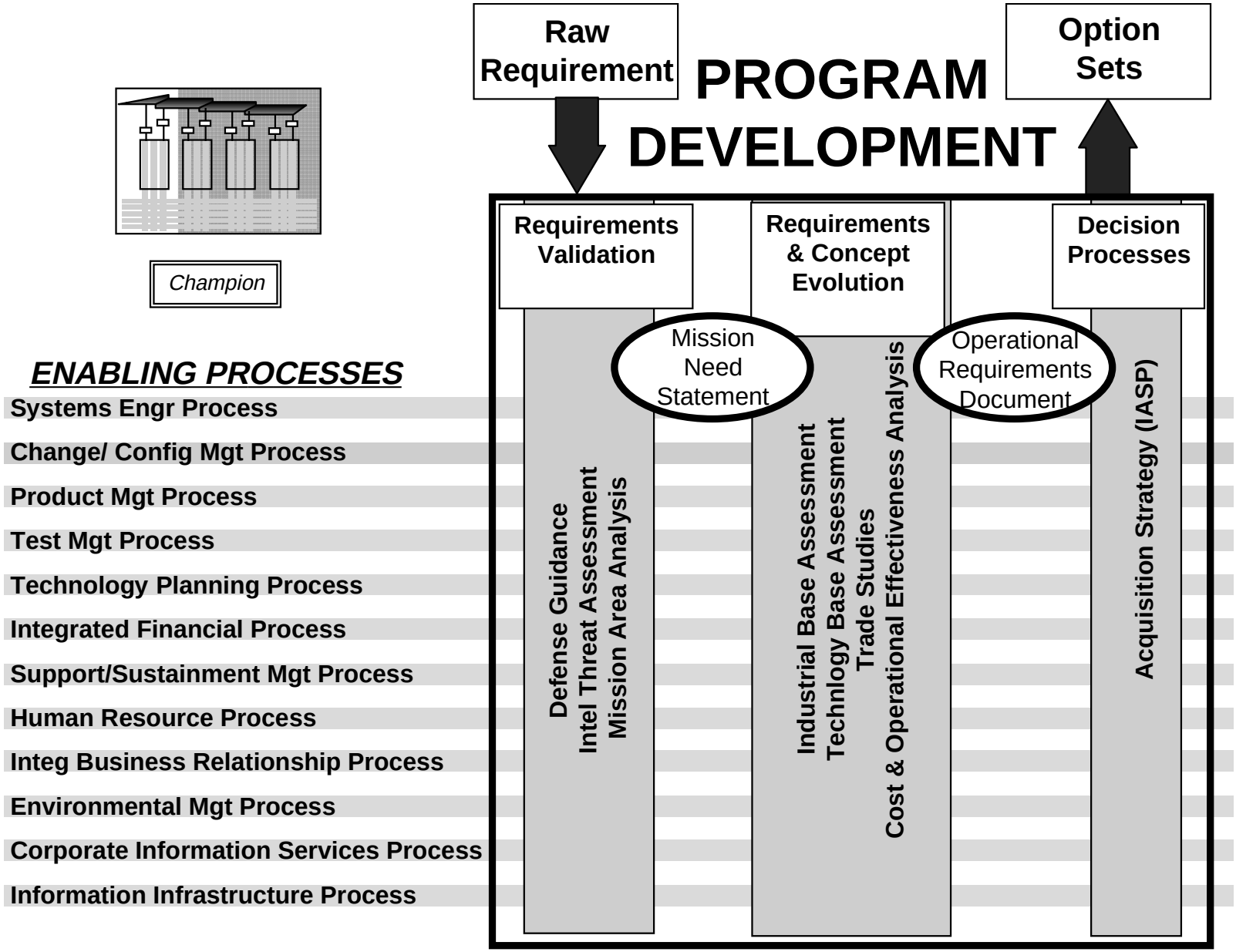

Figure 1-6. Program Development.

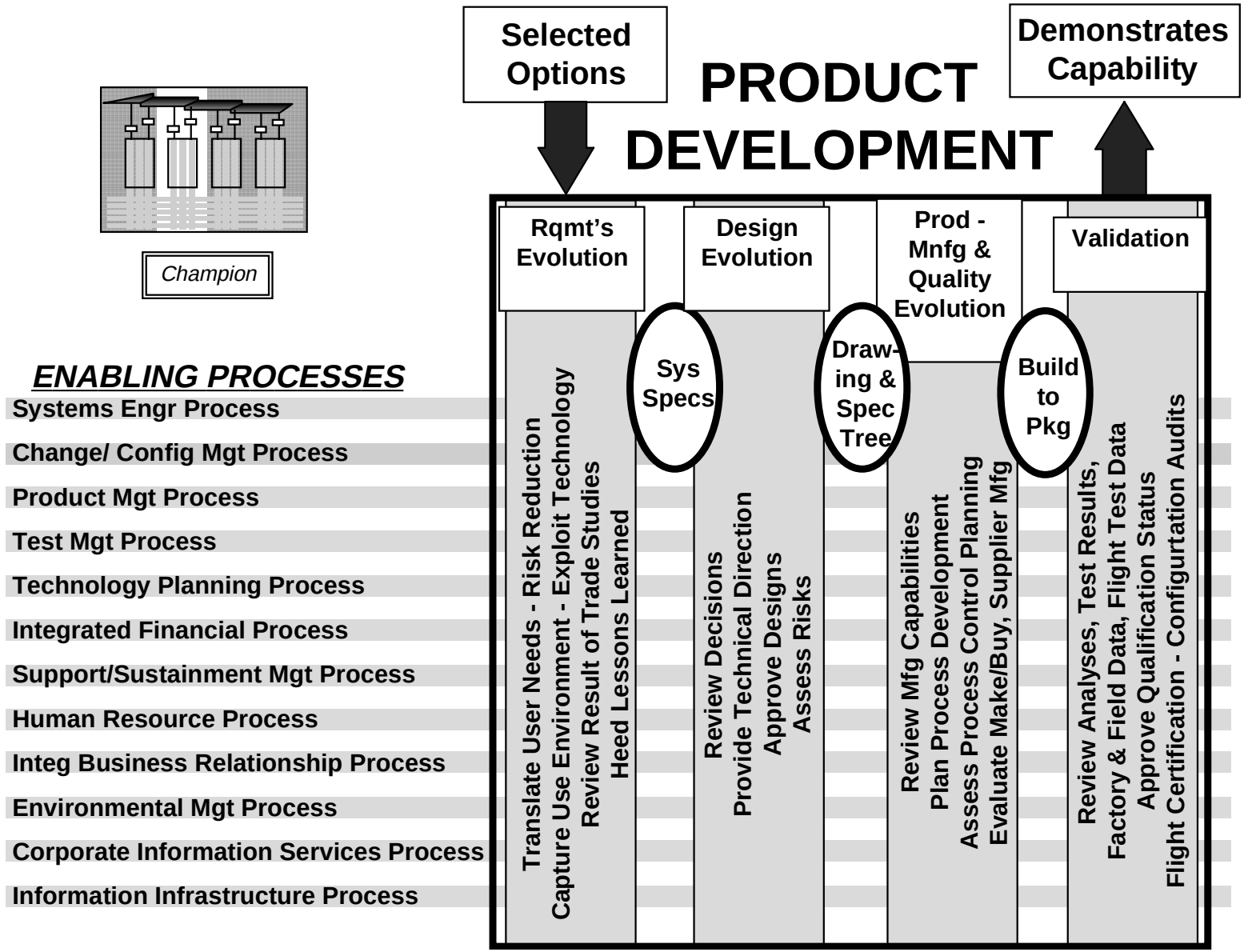

Figure 1-7. Product Development.

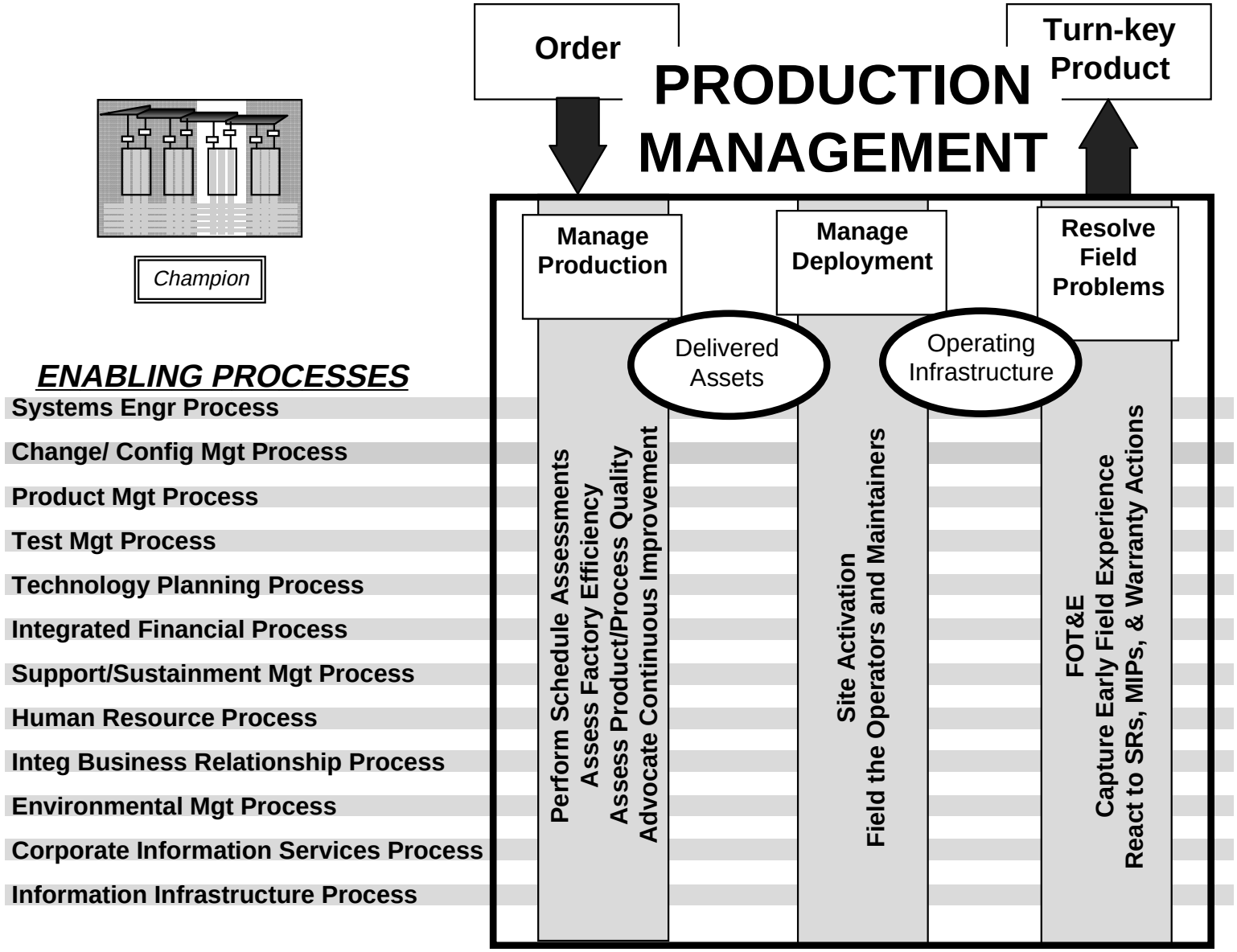

Figure 1-8. Production Management.

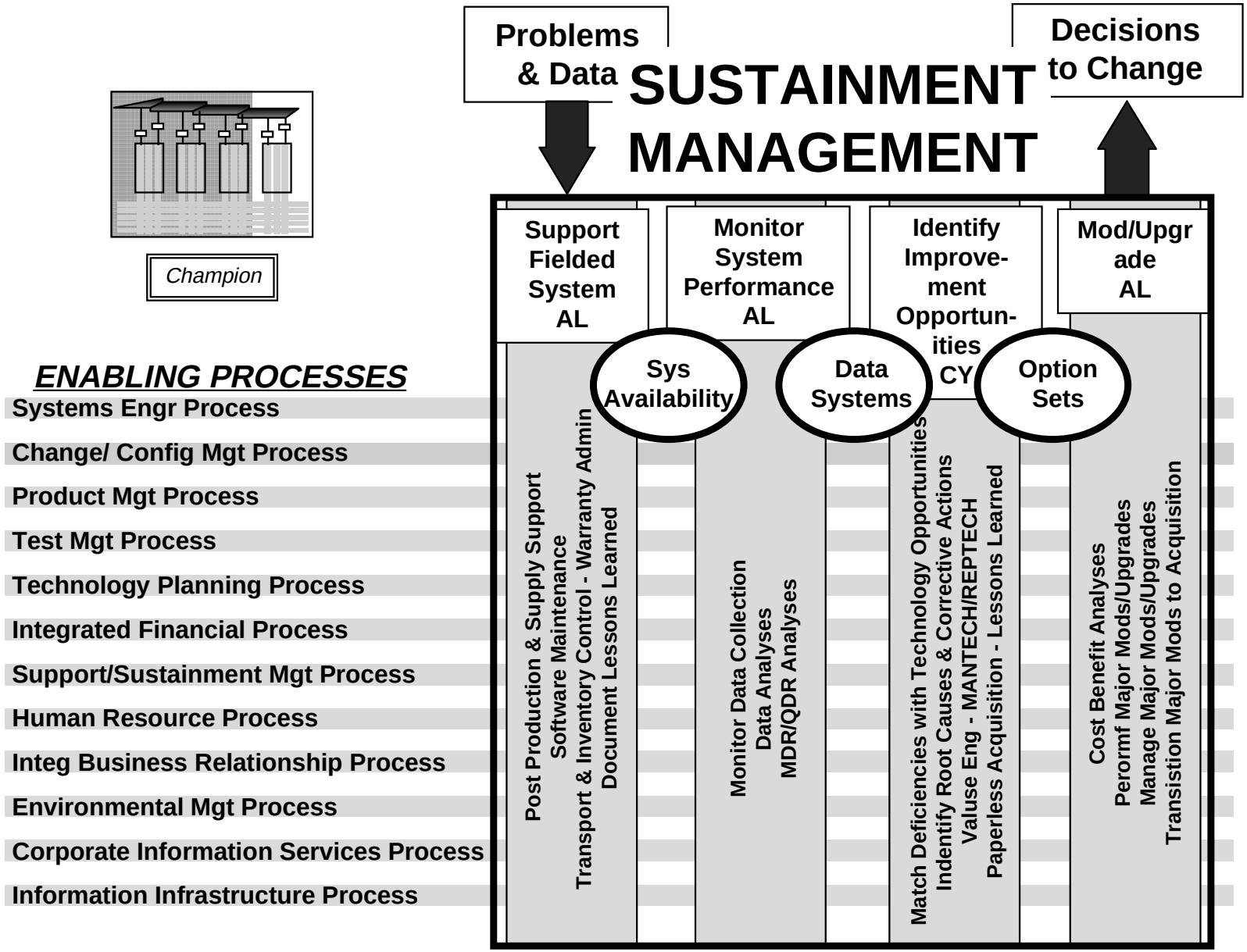

Figure 1-9. Sustainment Management.

SECTION 2: OBSERVATIONS & FINDINGS

THE PERSPECTIVE OF THE GOVERNMENT AND INDUSTRY CO-CHAIRS.

The co-chairs took the lead in preparing the integrated perspective and their task was to present the big picture. The details are found in the appendices. In this section, the co-chairs drew information from the appendices to provide a high level, broad view.

1.0 ORGANIZATION OF THE OBSERVATIONS AND FINDINGS.

The organization of the IPT findings was constructed around three themes or what was called the three *orders of business.* These three *orders of business* control the rate of evolution from the "As Is" condition into the "To Be" state. The "To Be" state is characterized by the phrase Performance based business environment as illustrated in Figure 2-1.

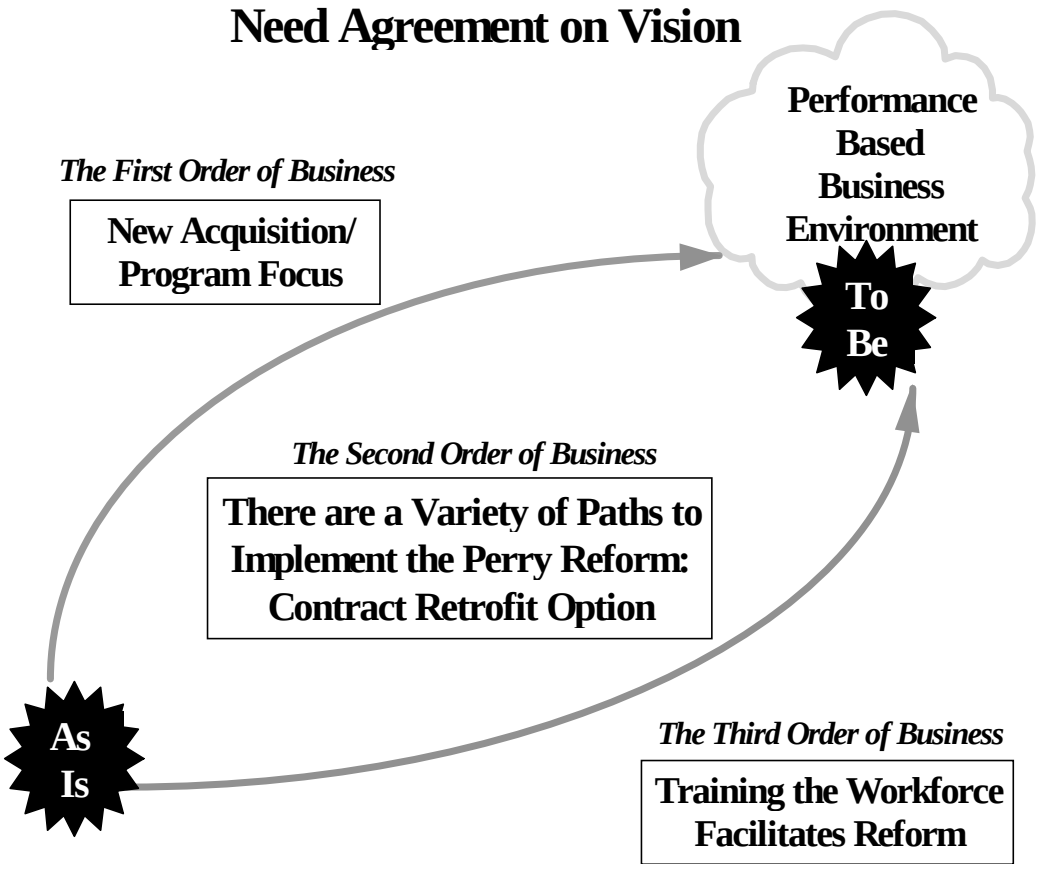

Figure 2-1. Orders of Business.

The *first order of business* addresses new programs with an operating concept envisioned as the "performance based business environment". This state is described in terms of four groups of actions:

- Performance requirements;
- Flexible sustainment;

- Risk based oversight management; and
- Source selection with more reliance on past performance.

The *second order of business* addresses legacy programs which are being conducted under the traditional methods of doing business. Transition only through new programs is inefficient and slow. Transition via existing programs should: enable earlier capture of benefits; minimize the risk of the conversion on selective basis; and allow prototyping of processes and end states. Among the benefits to the government are reduced acquisition manpower and dollar savings. However, instant dollar savings are probably limited due to the cost of conversion into the new system. There are a variety of paths to transition existing programs:

- Horizontal - process based "retrofit" of multiple contracts within a common facility, the single process initiative;
- Vertical - requirements based contractual "retrofit" for a portion or an entire weapon system across multiple facilities; and a
- Combined vertical and horizontal process to achieve <u>common process facilities</u> for the full team that participates in a weapon system.

Training the workforce is *the third order of business*. The basic way each of us will do our jobs will be affected by the reforms. Training the workforce is essential to facilitate the reforms.

2.0 OBSERVATIONS

2.1 Departure Point: A Historical Perspective — The "As Is" State

To better understand why the IPT "did what it did" it is useful to establish a departure point. This departure point is the "As Is" condition in Figure 2-1. The IPT found a lot of confusion on what is a specification and a standard; and how they are used during the life cycle of a product or service.

<u>Standards.</u>

There are three basic types of standards:

- Standards for Interface definition and control;
- Standards defining Materials and Manufacturing processes;
- Standards for Technical, Logistics, and Business management processes and practices. For example:
  - Government Property Management,
  - Configuration Management and Control,
  - Systems Engineering, Quality, Software Development
  - Logistics Support Analysis Process
  - C/SCSC, and other business processes.

Product/program peculiar Specifications.

Their are two basic types of specifications:

- Systems/design requirements (the development specifications)
- Product specifications (which describe the design solution, how to build/ assemble the product, and are also used to purchase the initial product and spares, or the reprocurement of spares at a later time).

The current DoD system uses technical and management standards to impact the product by defining, **"the HOW TO's"** including the work tasks, methods, and solutions rather than performance. The performance, **"the Whats"**, is the capability and product expectation(s). Many of these standards have documented the "best approaches/practices, from the government's perspective/experience, to conduct effective acquisition/development and fabrication efforts. In many circumstances, they have become the repository for lessons learned. Frequently, they were used as *the* mechanism to achieve desired product performance in lieu of constructing complete performance specifications that communicated the requirements in terms of the products rather than the work tasks. That is, they contained embedded requirements. They also were used as the basis for the "sell-off" or acceptance of a manufactured product. For example, soldering is discussed in at least six different military standards, with these standards being used to communicate reliability and producibility requirements, as well as quality assurance. Unfortunately some of these requirements are in conflict or are interpreted differently from each other; and are used differently by different service buying offices. This has resulted in duplication and multiple "specing". For example, the product specification almost always has a reliability requirement in addition to the soldering standards. These soldering standards were used because they were easier to administer and audit than to express the performance requirements of the soldered equipment. The traditional statement: "the product shall be in accordance with MIL-STD-XYZ for corrosion control" is another good example of using a standard in lieu of stating an explicit performance requirement.

Not only does the government impose these "How To's" on to the Prime contractors, but the Primes often amplify these "How To's" and in-turn impose them on to their internal design/fabrication teams and suppliers. **The suppliers have an order of magnitude greater problem than the Primes in managing the multiplicity of conflicting "How To's".** At the end of the second world war it was thought that government standards was the path to common process facilities. It has not worked out that way! Another frustration is that many suppliers that do business in the commercial world have developed better processes than described in these standards. **Some suppliers** could be more efficient if they could use their own processes rather than a process imposed on their facility. How to take advantage of this opportunity is one of the challenges addressed by this IPT.

Further complicating the situation is that the three services do business with contractors differently. Each service has employed different standards, specifications, and contracting procedures. Additionally, there are differences within each service. As a result, contractors must maintain multiple, different types of capabilities to satisfy their customers. Economy of

scale opportunities, through **single process facilities,** are rare. The JACG has initiated actions to establish a framework within the aeronautical sector for common specifications by defining a generic, common specification tree and through the development of performance-based Joint Service Guide Specifications.

Impact on source selection.

The above approaches have resulted in detailed and demanding RFPs and functional assessments of contractor proposals that focus on how the work will be accomplished rather than how product expectations will be realized. They necessitate that the contractor's work be audited to ensure the requisite tasks are conducted rather than demonstrating that required products have been generated or requisite performance realized. They require detailed observations and inspections of the products to ensure that required solutions have been implemented. These are manpower drivers for both the government and the contractor.

The contractors have been faced with a number of dilemmas. First, how do they bid their best approach to achieve the product when product requirements are communicated via work tasks. They need to do the prescribed work which, if successfully completed, would "in theory—in our government experience" result in the product performance the government desires. Second, since requirements are communicated via work tasks and detailed solution specifications rather than performance specifications, how does a contractor pose innovative solutions. Third, when requirements are controlled by the government beyond the need to manage risk, how does the contractor gain sufficient latitude to derive other equally valid lower-level product requirements that can be obtained more efficiently, with less risk, or to offset development problems with interfacing products. The contractor's opportunities to be innovative are fundamentally in two arenas, the work effort and the design. Both have been severely constrained and innovative solutions precluded.

From an industry perspective, a key factor is the fundamental nature of source selection, it is competitive. When the government identifies or sponsors a given process approach or description, what does the contractor do? All government encouragement not withstanding, to compete the contractors must get out of the starting gate and the risk of being non-responsive is frequently viewed as outweighing the advantages of being innovative. As a result, the contractors bid to the government identified or sponsored approach.

Another aspect is that detailed RFPs that prescribe solutions, procedures, and approaches can drive the need for data and back-up material that goes far beyond the final content of the proposal. Clearly, the need for back-up material will not go away. Proposals are expected to be succinct and to the point. As a smart buyer, the government needs to do business with contractors that have done their homework and provide solid, well thought out and justifiable solutions to requirements. At the same time, when the RFP contains unnecessary "nitty-gritty" details, contractors prepare to provide "nitty-gritty" answers.

Past performance has long been an element of source selection. When the solicitation contains the detailed work tasks and prescriptive solutions, what weight is given to past

performance when contractors commit to doing the work and providing the solution at an acceptable cost? We have been able to judge that historically better past performance is worth the higher proposal cost in a number of situations. However, our ability to do this consistently is a key issue that is compounded by transitioning to a performance-based business approach where every contractor may be using different, company owned processes rather than those contained in government mandated military standards.

Oversight, rigid configuration control, data demands.

Detailed solutions, approaches and procedures applied contractually have driven expenditures of considerable auditing resources and in change control in one form or another. Audits are conducted to ensure that the prescribed work tasks were done. Audits are conducted to ensure that all the detailed characteristics prescribed in specifications were evidenced in required processes and procedures as well as in the final products. Acquisition organizations within the DoD conduct extensive assessments and audits to implement changes needed because requirements are prematurely specified and controlled at levels of detail beyond the need to manage risk. This practice precludes viable contractor generated alternatives that would still provide needed capabilities. Information has been controlled that is not necessary to manage risk or execute business options. When that information needs to be changed, extensive change control procedures are applied. These and other actions have driven extensive, formal reporting requirements and data demands which in turn needed to be assessed. Not only are these responsibilities costly and time consuming, executing them results in extensive oversight requirements for the government, as well as significant resource expenditures by the contractor to generate and review the material and data provided.

Sustainment.

The problems with applying prescriptive approaches from specifications and standards during development compound sustainment efforts. Additionally, our approach to sustainment frequently assumes that sustainment will be accomplished in a fully organic fashion. The results of these practices include:

- A configuration management policy of transferring the contractor responsibility for the design back to the government when the government took control of the product configuration prematurely, sometimes as early as the Critical Design Review (CDR).
- Developing and controlling too much of the wrong kind of data. For example, buying design data for items that will not need to be replaced before the technology becomes obsolete or buying design data for items that will be scrapped and reprocured rather than repaired.
- Not having and maintaining a complete set of performance based specifications for developed items. For example, when a part becomes obsolete, the requirements need to be reverse engineered from the design to establish the basis for developing a new part. Reverse engineering is also necessary to achieve reprocurement and sustainment efficiencies when technology advances afford more economical options for replacement, when the only information available is design based.

- Options to select economical sustainment and reprocurement alternatives are precluded. The technical data package needed to provide viable alternatives has not been generated.

Major Characteristics.

The major characteristics of the "As Is" state can be summarized as follows:

- Prime, and subcontractor, contract specifications contain detailed, overly prescriptive requirements and solutions ("how to's")
- Excessive oversight (many management audits and reviews, inspections, etc.)
- Large quantities of deliverable data, ---approval often a prerequisite to other action without respect to the "value" of the data requested.
- Variation in process requirements ("how to's) from contract-to-contract causes contractor to evolve program unique processes
- Contract management plans and military or prime's imposed standards controlling processes and detail work activities impact all suppliers.
- Rigid configuration control
- Little importance given to past performance in source selection
- Source selections focused on compliance with prescribed work efforts rather than focused on performance and risk
- Government ownership of design accountability and prescriptive processes rather than performance requirements
- Risk avoidance on the part of the government by adding "just in case" requirements to the contract
- Little to no incentive for contractor to apply technology to reduce cost on existing programs (non-recurring expense)
- Few economical options in sustainment and parts reprocurement
- Data intensive sustainment with "reverse engineering" prevalent
- Largely, full organic support

2.2 Perspectives on the "As Is" State in Transition.

Now that the direction to move away from past practices towards a more performance oriented business approach has been issued, what needs to be done to get there and how will it be accomplished? Is the description of the end-state sufficient to frame an integrated, systematic approach and if not what else is needed? Are the initial assumptions about what needs to be done complete? Are they valid? Can they be effectively implemented? Around these questions, numerous issues were identified and debated. Some of the key elements are captured in the following paragraphs.

Prescriptive work tasks and "how to" specifications are being eliminated. Source selection will have a much stronger emphasis on the contractor's demonstrated performance on previous efforts. Is our capability to adjudicate past performance, so that it can become a

stronger basis for source selection, adequate? What needs to be done to make it adequate? Do our people know how to do it? Is the data we currently collect sufficient?

Economies of scale can be realized if a given contractor facility could use the same process on all the pertinent contracts for which the facility is responsible. What needs to be considered to implement these changes? What are the risks? What is the change mechanism? Do laws have to be changed to do this? Does existing policy require modification? What are the inhibitors and what needs to be done about them?

Performance Requirements.

The process standards are gone. Does the contractor still need to execute a robust systems engineering effort? What about configuration management? Do parts and materials still need to be corrosion tolerant and crack resistant? Do solder joints still need to be durable and withstand environmental stresses? The obvious answer to these example questions is YES. The real requirements still need to be defined and implemented. The contractor must still execute the needed efforts. Source selection still needs to select a credible source. How?

When the process standards were disestablished there was a rush to commercialize existing military standards, especially those labeled “management standards”. The intent was to get DoD to adopt them and, in some cases, require their use. What was gained? They have a more commercial flavor. Where is the innovation? A prescribed approach is a prescribed approach regardless of whether or not it carries a “MIL-STD” label. An alternative is to identify the document for guidance. Does the contractor still risk being non-responsive by ignoring the guidance and using his own approach? Who is accountable if the guidance is determined to be less than appropriate during contract execution? What if the guidance was DoD adopted, and in some cases sponsored?

If either MIL-STDs or commercial standards are not required or mandated but contractor processes are acceptable introduces another dilemma. Should those processes be placed explicitly in the contract? This still tends to be prescriptive once applied, it requires a contract change to enhance or change the process, and there is no decrease in oversight requirements since the tasks must still be audited to confirm they were executed. We’ve increased the government’s and contractor’s burden, especially in the program offices, since each contractor will likely have different processes so program office personnel will need to spend considerable time just learning unfamiliar processes to adjudicate progress. Additionally, by putting it on contract, we’ve bought the contractor’s process. Have we bought the results, even if we don’t like them? Who is really accountable? What savings have we achieved?

An alternative is certifying a contractor’s processes. Certification can be accomplished by either the government or a third party. In general, certification approaches limit competition. They are both intrusive and expensive. They have not proven to be accurate nor meaningful. Additionally, third party certification usurps accountability of both the buyer and the supplier and undermines supplier ownership of the processes.

Conducting a process capability assessment during source selection for every process the contractor intends to employ is manpower intensive. Such a practice is clearly obviated by government manpower drawdowns. There is a relationship between the contractor's ability to execute and the amount of government oversight necessary to effectively and efficiently realize the requisite products. Process capability must be judged in the context of actual, demonstrated performance as it applies to the products to be developed and procured. Additionally, there is the problem that these capability assessments must be conducted against a set of "standards" to assure that the integrity of the source selection process is maintained. At the same time, contractors must be provided clear mechanisms that encourage process improvements or use of processes that do not have a measured track record. This may include capability assessments: conducted by buying activities; supplemented by available metrics; and including establishing new or revised metrics. Exploiting existing mechanisms, PROCAS metrics for example, can become the basis for an annual review of the health of the processes.

Processes including process configuration management and change control must be owned by the contractor/suppliers if the contractors/suppliers are to compete on the efficiencies of their processes. Only the contractor/supplier is accountable. Only the contractor/ supplier executes the process. Third party process definition and/or process certification is in conflict with this performance objective.

Now that the process standards have been disestablished, what is the basis for an earned value system? Given that a basis is defined, where does it go in the contract? The approach must be performance based and related to definition of the work tasks (see paragraph 3.1.1.4). Definitive products of the work effort must be evident to adjudicate progress and adequacy of the contractor's processes.

We've now decided to use performance specifications. Clearly a necessary step. Is it a sufficient step? MIL-STDs were used to carry the development requirements. They included embedded performance requirements and verification criteria, conveyed as work tasks, for products and processes. Traditionally, a specification only dealt with end-item product requirements and did not address the process aspects. Development specifications were typically scoped as if they were used to buy products when their purpose was to acquire and qualify a design. In EMD we are fundamentally buying development. In fact, the purpose of the system and development specifications was to generate the paper that defined the end-item products. Coupled with the application of military standards, they contained the set of requirements used to develop the products. The military standards are being disestablished and their requirements are not being transcribed into other contractual items (e.g., the statement of work). Where do the development requirements go? They do not go away.

A related set of issues is the construct and control of the "Build To" and "Support" packages. Does a traditional "build to print" technical data package, that the government took control of and applied contractually to acquire products, make sense in a "single process facility" environment?

Flexible Sustainment.

Can sustainment always be conducted effectively and efficiently solely using performance specifications? What are the alternatives needed to provide the flexibility to execute the most economical and affordable support strategy? What is the content of the technical data package needed to provide that flexibility?

How much of the technical data package needs to be under government configuration control in order to conduct sustainment? Every element of the package that is controlled imposes a manpower burden on the government to manage the associated documentation and a similar burden on the contractor to respond to the government.

How can change be introduced to current contracts to enable the transition in this (support) community? What will be the criteria used to determine where change is appropriate and where it is not economically feasible, or just doesn't make sense (i.e., which specific systems, which parts)? Is a significant part of the criteria remaining life?

Risk based oversight management.

Even when performance based, controlling specifications too low in the system architecture precludes contractor and supplier innovation and flexibility. Control at too high a level can increase the government's risk unacceptably. Issues of specification control versus the basic content of the technical data package need to be separated.

As stated before, the current activities being pursued are generally steps in the right direction. They have not been integrated. To effect the integration, a more focused approach is needed and some additional steps need to be accomplished.

3.0 FINDINGS

3.1 The First Order of Business: Performance Based Business Environment

3.1.1 Performance Requirements.

Performance Based Acquisition is a strategy for the development, procurement, and support (e.g. maintenance, reprocurement of replenishment spares and depot level repair) of weapons systems. It incorporates the major features of acquisition reform and provides for the conduct of programs based on management and product requirements defined in performance terms which describe their essential characteristics. The four main features of this strategy for development are (1) performance based specifications that are incrementally verified throughout development, (2) contractor control of the development and detailed design to the maximum extent feasible, (3) contractor use of their own company/facility processes and (4) enhanced opportunities for incorporation of advanced technology. This section of the IPT report addresses performance specifications and technical data packages, Joint Service Guide Specifications, and key supplier processes.

Effective implementation of a performance based business environment requires that contractors be given maximum latitude in using the processes they know and can utilize best, *their own*. Actions leading to full implementation of the end-state performance based business environment include:

- Process ownership should be transferred from the government to industry.
- The Department of Defense should neither impose nor endorse government or third party process standards.
  - Third party process definition and associated certification frustrates the transfer of process ownership to the prime contractors and their suppliers.
- Do not replace military process standards “on-contract” with contractor owned processes “on-contract”, or non government/third party process standards “on-contract”.
- Most standards have a combination of embedded performance requirements and product acceptance procedures. These need to be extracted and the essential requirements incorporated into the appropriate specifications, including the flow to all supplier tiers, otherwise confused expectations will result and lead to a defective contract at some level in the product tree.
- As standards are eliminated, the vacuum needs to be filled by explicit requirements statements on contract, and controlled processes in place at the contractors/suppliers facilities to satisfy the intent of the performance specifications. State only the requirements for the product not how to fulfill them;
- Use form, fit, and function and interface (F^3I) specifications for product development purposes;

- Adopt an open architecture mentality with increased emphases on the quality of interface definition and documentation;
- During development efforts (modifications as well as new developments), require a more extensive definition of interface conditions for;
  - physical hardware-to-hardware,
  - software to hardware (operating package to accommodate peculiarities of host and hardware system), and
  - software-to-software modules leading to reusability of software, an open architecture, and a flexible sustainment option.
- Removal of a specification or standard should not remove the embedded performance requirements they contained in contract retrofit actions. Our goal is to eliminate specs/standards as a "how to" crutch in both new and legacy programs, and to better communications among government, the primes, and their subcontractors what is really the desired product; as opposed to "in accordance with MIL-STD-XYZ".
- The DoD should support and/or endorse those interface and material standards needed to meet the needs of the military.
- An integrated systems approach to development, manufacturing and sustainment is needed with integral configuration management practices. Such integration would effect a total system approach to achieve integrated requirements, designs, and verifications for the life cycle, from cradle to grave. Indicative of this would be an integrated Systems Engineering, Advanced Quality, and Configuration Management system. It would, for example, provide a contractor/supplier the opportunity to manage manufacturing processes within an integrated system instead of 2000 or more discrete processes.
- An Advanced Quality System is needed that goes beyond MIL-Q 9858A and ISO 9000,
- Each manufacturing process can be controlled through a process control document (e.g., a manufacturing process control document),
- Process control document should define the process; and the process control data/products and acceptance criteria,
- Buyer and seller agree that contractor(supplier) owns the process, it is not on contract, but that the process control data and product acceptance criteria are part of the contractual agreement (see paragraph 3.1.1.4)
- Contractors should *commit* to the processes they intend to use but should maintain internal control over those processes (see paragraph 3.1.1.4).
- Contractor commitment could take the form of citing the "products" of the contractor's development or business management processes as a part of the incremental verification. This would use the analogy of the manufacturing process control document in a development environment (see paragraph 3.1.1.4).
- The quality/capability of contractor processes should be a determining factor in source selection and in-contract risk assessments. The quality of a facility's processes impacts the efficiency and risks of generating products, and product quality. Therefore, they are subject to evaluation during source selection. The prime contractor should tier down this same philosophy.

3.1.1.1 Procurement and Reprocurement.

In executing Performance Based Acquisition for procurement, and support (e.g. maintenance, reprocurement of replenishment spares and depot level repair) of weapons systems, it is imperative that some basic principles be recognized and understood.

Both the industry, in the execution of their production and initial spares build contracts, and the DoD purchase or build a wide range of products in small to very large quantities. As such, they both require some flexibility in matching their acquisition approaches to their products in order to achieve the most cost effective build or procurement actions. For military aeronautical systems, this equates to three business options which drive alternative uses of the technical data packages:

1. Build-to-Print;
2. Modified Build-to-Print; and
3. Form-Fit-Function-Interface (F^3I).

"Build-to-print" is the approach that exhibits the least flexibility. It utilizes a fabrication agent who is provided a data package containing the key product performance characteristics, product acceptance criteria, product design detail and manufacturing processes. These items are all derived from requirements written in performance-based terms. There are no options available to the fabrication agent except to build the product exactly as specified (using the specified processes). Fabrication shops executing "build-to-print" jobs from different design agents may be frustrated in their pursuit of a common process facility. However, using a "build-to-print" approach can prove cost-effective for producing and supporting items. For example, by avoiding potential requalification of the resulting item. Such economies need to be judged on their life cycle benefits.

The second alternative is "modified build-to-print" which provides for procurement/reprocurement (both competitive and non-competitive) of items and parts using company specific production processes and thus is an enabler for single process facilities and producibility improvements. It is similar to build-to-print in that it also utilizes a fabrication agent who is provided a data package containing the key product performance characteristics, product acceptance criteria and product design detail again all specified. However, the fabrication agent now has been given the flexibility to change the manufacturing processes to produce the product so that cost and/or schedule benefits can be realized while maintaining key performance attributes and item interchangeability. Depending on the demonstrated capability of the builder, these process changes may or may not require the prior approval of the customer. Given the assumption that the producibility improvements do not violate the F^3I performance requirements no revisions to the "Support" data packages would normally be involved, however the changes should be reviewed for possible impacts.

The third acquisition alternative is F^3I (Form, Fit, Function and Interface) which provides design latitude in procuring parts and equipment including replacements for those that are obsolete, outdated, or inefficient. In addition to advantages offered by the modified build-to-print approach, improvements in reliability and other characteristics can be

achieved as well as fostering an open system architecture. It utilizes an agent with design as well as fabrication capability (which can reside in the same organization). In this case, key product performance characteristics and product acceptance criteria are specified; but there is flexibility to change the design while meeting performance requirements, as well as flexibility to change the manufacturing processes to produce the design. The end item performance must be verified to be unaffected by the design and/or process change. These changes must consider total life cycle cost impacts as part of the overall decision process. Again, prior customer approval of changes may or may not be required depending on the demonstrated capability of the supplier. This action may require revisions to the "Support" data packages.

It is important to understand that the requirement for controlled, complete, and up-to-date three part (product development, design and fabrication) specification technical data packages (see Appendix D, *Performance Based Acquisition*) at all levels of the specification tree is the same regardless of which acquisition alternative is selected and regardless of which organization (e.g., government, prime contractor, sub contractor or vendor) administers the build/buy actions and activities. The three part specification is the foundation for Performance Based Acquisition and is applicable for new builds, initial spares and reprocurement spares. The choice of implementation alternative (build-to-print, modified build to print or F^3I) is a business decision which must be based on consideration of overall program factors such as costs, expected benefits, schedule, technical complexity and risks, and support strategy. Use of different alternatives may be desirable for different portions of the same program; however, all are acceptable under the overall umbrella of the performance-based approach.

The JACG will refine this approach as part of its implementation efforts.

- A technical data package that describes the products to be procured is necessary at all levels from top system level requirements down to the lowest reparable level. The fundamental content of this technical data package is a product of product definition activities (development), and is the same regardless of who (the government or the contractor) controls it.
- The build-to and support packages will have a common technical basis because the support package is derived from the build-to package.
- Flowdown of the technical requirements down to the lowest level of the supplier chain is essential and must be accomplished if the benefits of acquisition reform are to be realized.
- Contracts must be written in a manner which will encourage the prime contractors to communicate with their suppliers in performance based terms.
- Implementation flexibility is critical. Business decisions based upon the potential for both increased contractor and government efficiency and cost benefits dictate the appropriate actions and are typically based on the programmatics of the action to be pursued. Some expected benefits include:
  - Minimization of ECPs involving producibility or reliability improvements;
  - Common process facilities for internal fabrication shops or vendors;
  - Flexible sustainment option;

  - Enhanced competition and continued support in the event that supplier(s) no longer wish to conduct business with the DoD.
- Decisions on who controls which portions of the technical data packages at each level of the specification tree will be driven by program/technical risk, contractor capability and business strategies. Contractors exhibiting the capability for self-governance will be given greater authority and responsibility than those who do not.
- The contractor(supplier) should retain control of their processes and be accountable for them. This implies that the modified build-to-print, and the F^3I technical data packages will be the preferred method of doing business in the future. For the reprocurement of legacy "items" it may not be practical or cost effective to redevelop the appropriate data packages. In these instances the traditional build- to-print concept will be used.
- The three part specification structure provides the mechanics to conduct procurements and reprocurements on the basis of the economic (life cycle) consequences of the alternative acquisition approaches (i.e., build-to-print, modified build-to-print, and F^3I) and enables use of common process facilities throughout the product tree. It provides an effective basis for establishing the military as a "smart buyer".
- Contractor format and configuration management is envisioned. The original contractor (supplier) needs the same data packages to execute their business decisions and to implement an open system architecture. It is not the intent of the IPT to suggest that the government acquire "box cars" of technical data. The intent is to organize the data base that is developed to implement a performance based product definition and encourage its use in a more efficient manner for new programs and when it makes economic sense for existing programs.

3.1.1.2 Joint Service Guide Specifications.

A common joint service approach to defining content and format of performance specifications embodied in Joint Service Guide Specifications in the aeronautical sector (ATCOM, NAVAIR, ASC) has been agreed to. It is the intent of the JACG to make it possible for their common contractors to use common facility wide processes (see Appendix D, *Performance Based Acquisition*).

3.1.1.3 Key Supplier Processes.

The objective is to identify and describe the generic key processes for program execution used by suppliers to support defense systems acquisitions. The processes and their associated performance attributes, as described in Appendix E are considered applicable to all program phases, though their relative importance to program objectives are expected to change through the life cycle of the product. The appendix also includes a suggested list of top level process metrics that can provide insight into the health of the processes at a given facility. These suggested metrics may be replaced by other metrics more suitable to the specific needs of the facility. The metrics contained in this report address development programs only. Current reinvention lab and DCMC activities (see Appendix H, *Supplier Rating*) have identified metrics which are applicable to production and sustainment programs. The content of Appendices E and H may be used for:

- Developing performance-based acquisition strategies through the identification of process performance attributes which are most critical to the successful execution of the program;
- Constructing solicitations which allow for the use of contractor-defined processes in place of processes defined and controlled by military standards; and
- Developing a facility rating methodology to establish the risk in executing processes critical to program success.

These appendices support the acquisition reform initiatives by identifying and defining the characteristics of potential supplier processes. The processes described in this document were selected to represent typical, generic functional processes commonly used within industry:

- Program/data management processes;
- Engineering processes;
- Advanced Quality System processes indicative of best commercial practices;
- Manufacturing processes;
- Procurement/subcontractor management processes; and
- Logistics support/sustainment processes.

It is recognized that there may be differences from one supplier to the next in defining the boundaries and interfaces of these processes. It is also recognized that there may be differences in the specific application of these generic processes from one program to the next within a given supplier's organization. The key will be to demonstrate the ability to implement a combined set of tailored processes to meet customer requirements.

A transfer of ownership of the processes from government to industry and from the primes to the suppliers has several implications. The industrial facility will have the responsibility to implement an "Integrated Process Management" (IPM) capability. Some of these implications are illustrated in Figure 2-2. Four points need to be made:

(1) The concept of a common process facility implies a facility with multiple programs implementing a number of common processes in a consistent manner across each program. A top of the line suppliers' facility would be practicing best practices such as Integrated Product Development (IPD) using Integrated Process Managers (IPMs) across the multiple programs.
(2) Each government Acquisition Center will have the responsibility to exercise a comparable policy so as to encourage the contractors(suppliers) to implement integrated process management using that facilities processes.
(3) Multiple Acquisition centers and the DCMC must also practice item (2). That is the purpose of having a coordinated JACG implementation.
(4) The "primes" need to adopt a similar attitude toward their suppliers.

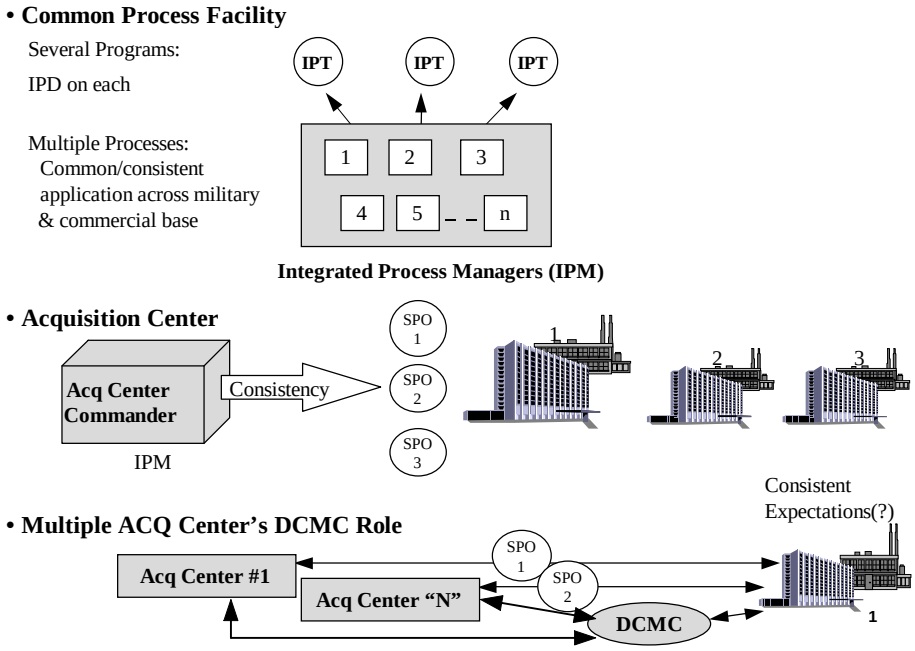

Figure 2-2. Implications of Integrated Product Development (IPD) and Integrated Process Management (IPM).

3.1.1.4 Contractor Commitment to Processes.

Military standards detailing technical and management processes were used to obtain a commitment, from the contractor, to execute a given set of processes. Even though those standards have been disestablished, it is still important to establish that the facility has a capable method of work (in general) and to obtain contractual commitments commensurate with the risk of the items to be developed and the criticality of the processes needed to achieve success. Additionally, a contractor's capability in a given critical process (i.e., risk of successful execution) can also impact the level of commitment necessary.

Figure 2-3 illustrates the flow from a facility process to implementation for a program. The starting point is for a facility to document its general methods of work in generic process descriptions. While generic, these reflect established approaches to the conduct of facility efforts. Such descriptions provide the basis for establishing metrics and training facility personnel. They can also be used in establishing the basic capability of a facility's processes (for example through a process capability assessment). For each program being executed within the facility, program specific implementation documentation would be developed. This amplifies on the generic document and reflects a tailored application of the generic process description to best meet the requirements of the program being conducted. Typically, commitments to a process stem from the content of the program specific document. Since it is tailored from the generic description, it is responsive to the requirements established by the government (or buyer) with the specifics needed to achieve those requirements.

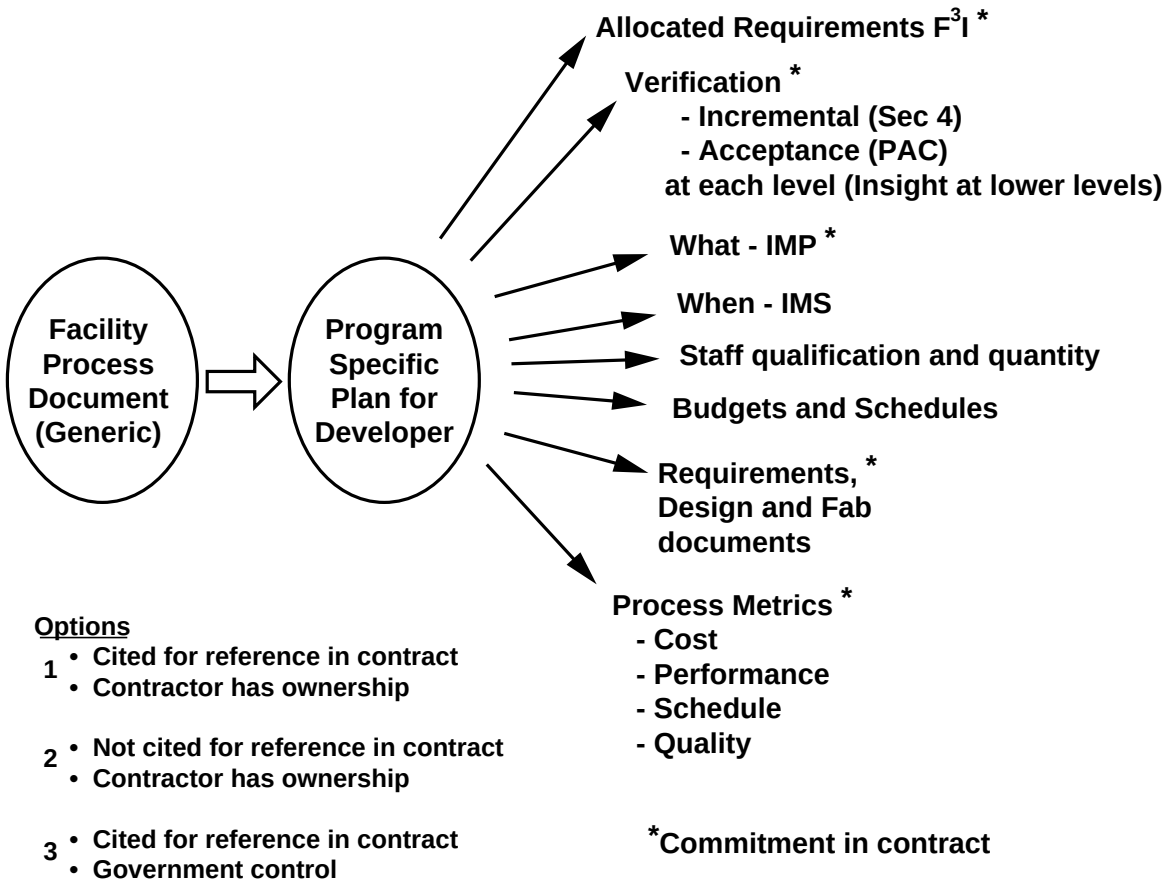

Figure 2-3. Facility Process to Program Process Flow.

Commitments to a process are in two basic forms. The first is via the planned outcomes of the process (i.e., process products) from its program specific implementation. Some of these outcomes will go on contract. These include process products essential to program success (e.g., specifications generated) as well as process products confirming that key characteristics of the product have been achieved (e.g., that requirements are traceable and verifications confirm achievement of requirements). Others will be used internal to the facility with varying degrees of government (buyer) insight necessary. For example, commitments in the contract based on the planned outcomes would be expected regardless of the contractor's process execution capability and would include:

- To develop and use, lower level specifications (development, product design and product fabrication documentation)
  - The allocated requirements in F^3I format for development and product design specifications, and the appropriate F^3I or design and construction details in the product fabrication specifications.
  - The verification criteria for those requirements including incremental demonstrations/confirmations and acceptance criteria. Incremental demonstrations/confirmations would include specific process products necessary to achieve product success.

- The "What's" that must be done by risk maturation events to achieve success (the Integrated Master Plan or IMP) and the criteria used to adjudicate successful achievement.
- Process metrics (cost, schedule, performance, and quality)

Process outcomes used internally that have varying degrees of oversight (and may be required by contract to generate, but may not require approval) include:

- The "how" tasks needed to satisfy the "what's" in the IMP (i.e., the Integrated Master Schedule or IMS)
- Definition of the numbers and qualifications of people needed to execute responsibilities.
- Budgets and schedules.

The second type of commitment deals with explicit commitment to the process implementation. There are three options in obtaining this commitment. The first is to cite the process implementation document in the contract but allow the contractor complete control over the document. The contractor retains process ownership but would typically be required to inform the government buying office of changes. The second option is to not cite the process implementation document in the contract. The contractor retains ownership and is not obliged to submit revisions to the government buying office even for the purposes of information. The third option is to cite the process implementation document in the contract and the government buying office has control. The type of commitment expected could depend on the criticality of the process to the program and the contractor's capability to execute the process. For example:

- Option 1 may be the approach for critical processes for higher risk programs and for lower risk programs when the contractor is not fully capable of self-governance.
- Option 2 (process not cited in the contract) may be the typical approach for non-critical processes for a given program. It may also be applicable to critical processes for contractors evidencing a high degree of self-governance and lower risk programs.
- Option 3 may be applicable at any risk for critical processes when a contractor has not demonstrated capability to satisfactorily execute the process.

Even though option 3 is not the most desirable from a performance based business environment perspective, it is important to achieve a minimally acceptable level of process excellence. Contractors that have not earned/demonstrated a sufficiently capable level of self-governance, may need the additional oversight to ensure that the program succeeds. From a "smart buyer" perspective, innovative/revolutionary solutions that cannot be implemented because of process execution weaknesses are worthless.

For new contracts, we would expect that the RFP contain sufficient information and guidelines to obtain the commitments necessary to capture the process product aspects of commitment as well as commitments appropriate to process implementation. In a block change environment, when the contractor is moving toward a single process facility

across a number of existing contracts, it may not always be feasible to retrofit contracts to carry sufficient commitment aspects via process products. For example, maybe the original specifications were not performance based or an event-based decision making structure that defined required accomplishments and success criteria was not in the contract. In such circumstances it may be more appropriate to put greater reliance on obtaining specific commitments to the process to be implemented.

The bottom line is: regardless of the specifics of the implementation, there are four basic factors that are balanced to arrive at the level of commitment to a process expected from the contractor. The insight the government needs to execute risk management responsibilities, the risk of the program, the criticality of the process to the program, and the demonstrated process excellence of the contractor.

3.1.1.5 Summary.

Historically military standards have been used to direct the processes to be used by contractors. Some have dictated organizational structures, prescribed detailed tasking and task flows, and been contractually binding. They have frequently been organizationally "stove pipe" oriented resulting in conflicts and overlaps. Implementing the Perry reforms to establish a performance based business environment has led to dis-establishment of most of the standards.

- Process definition, however, is still essential. In the performance based environment described herein, contractors are evaluated and held accountable for the quality of *their* processes as well as demonstrated capability to provide quality products.
- Contractors' process capability must be measurable to provide a basis for impacting source selection decisions. Only the "key" processes need be identified for each specific source selection (i.e., those that are candidates to be discriminators in source selection).
- A candidate set of key supplier processes have been identified and performance attributes defined. These are intended to capture the essential performance requirements of military standards. The JACG will finalize and publish documentation of the key processes and performance attributes.

> There was a discussion and differences of opinion in this area. The JACG will revisit and resolve the different perspectives as part of its implementation efforts.

- Contractor/supplier ability to execute their own processes and the quality of those processes need to be established and measured with respect to performance attributes for those processes.
- These mechanisms eliminate dependence on military and Non Government Standards.
- Some standards are performance based, contain effective content, and reflect the lessons learned over the course of military system acquisition. The key aspects of this information needs to be reformatted as performance attributes for rating

suppliers and as performance criteria for use in The Joint Service Guide Specifications.

3.1.2 Flexible Sustainment.

In the world of sustainment there are literally thousands of contracts and contractors, and finding a single solution to replacing government specifications and standards was considered impossible and unnecessary to do in a comprehensive "block change" manner. Therefore we attempted (see Appendix F, *Flexible Sustainment*) to determine a reasonable solution set that would identify the areas where changing our procurement philosophy is prudent. **A common sense approach was taken recognizing that an increasing portion of the Defense Operation and Maintenance budget is being expended to support old systems that incorporate old technology, and that the contracts that offer us the greatest opportunity to favorably impact a system's total life cycle cost, are the ones we should concentrate on. We sought to reverse the upward trend in support costs through the introduction of flexibility in our integrated logistics support process**. This was essential since the concept of Flexible Sustainment, Appendix F, embodies new techniques applied on our current logistics methods. It is imperative to reconcile the proposed new way of doing business and existing infrastructure that is in place to support our fielded systems. The proposals put forth in this report build on Secretary of Defense Perry's memo and address the impact on today's infrastructure. **Flexible Sustainment focuses on maintaining combat capability and the reduction of life cycle costs by introducing flexibility into our integrated logistics support**. Total life cycle costs are a result of interdependencies in design, operations, and support that effect the resources expended for a weapon system. The aggregated costs include the overhead of facilities, external base support, support personnel, warehouse space, supporting information systems, etc. A key point is that total cost accounts for the decisions made during design. It is well known that the decisions and trades made during the development of a weapon system significantly influence the cost of supporting the system throughout its life. This is especially true as we develop our support concepts and allocate those requirements to our maintenance planning. Maintenance plans are the requirements for life cycle investment in the support infrastructure.

A recent NAVAIR study revealed that approximately 12% of acquisition dollars was expended on Acquisition Logistics (development/production). Acquisition Logistics impacts 43-57% of life cycle cost, making the 12% expended on Acquisition Logistics a prime target to leverage life cycle cost reduction. For fielded systems, support system infrastructure requirements should be targeted as cost drivers to leverage for cost reductions.

Fielded system support cost is largely driven by the maintenance concept/plan. The maintenance concept establishes many of the variables in a mature logistics support system. The structure of that concept is highly dependent upon the system/component reliability. The maintenance concept pre-determines the downstream, life-cycle requirements for personnel, training, facilities, support equipment, supply support, and training devices; and it drives the level of government configuration control. Each of these areas can be a cost driver - most are - so careful analysis of the weapon system support needs is a requirement for cost reduction. The sensitivity of the support concept to reliability values and technology obsolescence

(obsolete parts) must be explored to evaluate cost drivers and, particularly in the conceptual phase, to identify means to lessen their impacts on life cycle cost.

The new and refined techniques presented in Appendix F can produce both short term and long term results by increasing the efficiency of the acquisition system and reducing life cycle support costs. Product reliability and an open system architecture is the foundation for flexible sustainment. They control the basic considerations for the system logistics concept. The logistics support system, as we know it today, must be upgraded in its totality to meet the challenges of today and future decreasing budgets. The following observations were made:

- The acquisition system needs to be re-focused on Life Cycle Management and total Life Cycle Cost (LCC).
- Maintenance concept decisions made early in the acquisition phases pre-determine LCC for sustainment once the system is fielded.
- The maintenance concept is very sensitive to:
  - system/component reliability; and
  - availability of an "open system architecture".
- High Reliability and an open architecture mentality are key's to flexibility; flexibility is the key to cost containment.
- High Reliability can be realized through:
  - IPT efforts to ensure reliability is designed into weapon systems
  - IPT interface of design solutions and potential support concepts
  - Use of performance specifications and F^3I
  - Technology insertion.

  A typical decision point represents a component/subsystem where the design reliability exceeds the expected life of the technology (chips, techniques, etc.) of the item. The technology cycle for state-of-the-art electronics may be as short as 18 months. We know this phenomena as "obsolete parts". If the design reliability exceeds the life of the technology, the item is planned as a remove and replace item, requiring an operational warranty and insurance spares. The benefits here include:
    - Opportunity for technology insertion, normally resulting in improved combat effectiveness,
    - Reduction of obsolescence problems with the technology insertion, and
    - Cost savings:

      No repair capability needed beyond remove and replace which negates the following requirements to support repair actions:
      - Training
      - Technical data
      - Support equipment, facilities, etc.

      Investment planning for follow-on technology replacements is essential. The Logistics Engineering Change Proposal (LECP) concept utilized by the Navy's Aviation Supply Office provides a means for investment to achieve technology insertion.

- An open system architecture is dependent on an ability to define and implement F^3I requirements for both hardware and software. If the open system architecture is to be practical in an environment of rapid part and component technology turnover it must permit compatibility, forward and backward over three to four technology cycles. Our aircraft have a design life of twenty years but are remaining in the inventory for up to fifty years. In addition, in digital technology, the roll over of the technology is so fast that parts obsolescence is becoming an issue in transitioning from development and production. This transition usually consumes seven to ten years.
- Two decision processes have been defined for implementation.
  - Reliability Based Logistics is a process for determining the appropriate repair level for items and thus is driven by (and in turn drives) sustainment strategies. It is particularly useful for new systems **and upgrades**.
  - Trigger Based Item Management is a process to "trigger" proactive item manager action before problems become serious. It is primarily useful with existing systems.
- Inclusion of operational availability/system reliability warranties and complementing incentives can be powerful tools.
  - Increases in reliability permit new approaches.
  - Near term savings can provide for re-investment.

Sustainment, especially repair and replenishment, is a major issue when the military specifications and standards are removed. Configuration control, procurement of spares, and reprocurement need to be addressed in a life cycle context. Additionally, the data to make appropriate business decisions is a necessary element of a cost-effective sustainment strategy as discussed in Appendix D, *Performance Based Acquisition*. As described in that appendix, the three part data package approach:

- Offers continuity of requirements based definition and control for the life cycle.
- Facilitates technology insertion throughout the product life cycle.
- Affords an the opportunity to implement cost-effective organic versus commercial support options.

Finally, there appears to be a confirmed need to review those systems which are planned for an additional 20-30 years of service. It would appear that reliability, maintainability, and availability upgrades, in the above context, may be a worthwhile investment in the near term -- as it is a natural course of events for new systems.

3.1.3 Risk Based Oversight Management.

In the acquisition environment contemplated by the NGS-IPT, contractors will be accountable for their own processes, the quality of those processes and demonstrated capability to execute those processes, and the level of oversight required to manage the contractor(supplier) will be major source selection factors. A supplier rating system has been modeled after best commercial practices for DoD use. **The IPT envisioned that a supplier rating system would be more effective than third party process certification in the implementation of the performance based business objectives**.

The desired end state, as discussed within this report, is defined as DoD programs conducted with minimal government oversight by best value contractors using self governance to apply and manage internally controlled, common, facility wide management processes. Best value contractors, in this context, are contractors with demonstrated performance to consistently provide high quality products which meet or exceed customer requirements at an affordable price. It is the intent to reward best value contractors through delegation of traditional risk management actions (such as configuration control, self inspection for quality assurance provisions, etc.), and preferential selection for new business by elevating past performance within source selections. To this end, it has been proposed that contractors' process performance be placed in one of three levels as described below:

Level 1 - Fully capable. Demonstrated capability for the full scope of a process with no significant weaknesses. Capabilities must include state-of-the-art applications.

Level 2 - Partially capable. Demonstrated capability for most of the scope of a process with some significant weaknesses identified.

Level 3 - Marginally capable. Significant weaknesses identified across the entire scope of a process.

Notes:

- Each process is assessed independently, with ratings assigned to each.
- There is an implied fourth level, "not capable processes", for suppliers unable to demonstrate even marginal capability. This condition exists today, though is not formally recognized, and these suppliers are not normally qualified for government contracts. No additional discussion of this level will be included.

Supplier ratings will depend on demonstrated capability using an overall "Supplier Data Base" as illustrated in Figure 2-4. This data base will be composed of:

- Program Assessment Data;
- Program Metrics (Earned Value and Technical Status);
- Process Assessment Results; and
- Process Metrics (PROCAS).

3.1.3.1 Implications of Contractor Capability.

This section provides an example of how contractor capability could impact relative government vs. contractor roles. The implementation will be developed by the JACG.

The degree of autonomy to be granted to contractors in implementing Performance Based Acquisition will depend on demonstrated capability. In the long term, contractor capability will be determined through the integrated "Supplier Data Base" with its emphases on past performance. Until a true history of performance for conducting programs using internal processes is established, a mechanism must be established to assess this overall demonstrated capability for our contractors and assign relative ratings. There are a number of assessment alternatives to achieve these ratings.

To determine the appropriate level of government involvement, there are three things which must be considered; the criticality of failure, liability, and contractor capability. Criticality of failure can be divided into four categories; safety critical, mission critical, major economic loss, and other. Liability addresses the issue of which party is responsible for the consequence of failure. Contractor capability refers to the three levels discussed previously. The following table for the level of government involvement in quality assurance measures is proposed.

Table 2-I. Example: Relationship Between Government Involvement in Quality Assurance Measures and Contractor Capability.

	Level 1 Contractor	Level 2 Contractor	Level 3 Contractor
Safety Critical	Business as Usual	Business as Usual	Business as Usual
Mission Critical	Case by Case *	Case by Case *	Business as Usual
Major Economic Loss Gov't Liability	Case by Case *	Business as Usual	Business as Usual
Contractor Liability	Audits Only **	End of Line and Audits	Business as Usual
Other	Audits Only	End of Line and Audits	Business as Usual

* The case by case evaluation should consider, among other things, whether or not the key product features are under process control. If the probability of failure is relatively low, and the contractor has demonstrated adequate process control, this should be a candidate for audits only. If end of process inspections or test are required, the reliability and ease of conducting the inspection or test should be considered.

** Audits Only means that the government would accept the contractor actions as adequate for acceptance, with periodic audits to review and ascertain use of their overall quality system.

There are a number of other considerations which must also be addressed for production programs. These include the level of government involvement for: conduct of requalification testing for product/process changes; approval of subcontractor quality plans; and approval of change authority for subcontractors. The following table identifies a proposed list identifying the level of government involvement based on government participation on the contractor change control board as the primary means of control.

Table 2-II. Example: Government Participation on Contractor Change Board.

	Level 1	Level 2	Level 3
Contract Spec	Development Spec	Development Spec	Development Spec
Contractor Board	Gov't Observer	Gov't Voting Member	Gov't Co-Chair
Government Approval	Changes to F^3I Spec **	Changes to F^3I Spec ** Change Classification * Requal Testing *	Changes to F^3I Spec ** Change Classification * Class 1 Changes Fab Spec * Detailed Drawings * Work Instructions * Quality Provisions *
Requal Test Plans	Non Approval Data Item	Non Approval Data Item	Gov't Approval Data Item
Requal Test Results	Non Approval Data Item	Non Approval Data Item	Gov't Approval Data Item
FCA	Gov't Observer	Gov't Voting Member	Gov't Co-Chair
PCA	Gov't Observer	Gov't Voting Member	Gov't Co-Chair
Gov't Inspections Safety Critical	Yes	Yes	Yes
Mission Items	Case by Case	Yes	Yes
Econ Loss			
Gov't Liable	Case by Case	Yes	Yes
Cont Liable	Audits Only	End of Line and Audits	Yes
Other	Audits Only	End of Line and Audits	Yes
Sub-Ktr Quality Plans	Contractor Approved	Gov't Approved *	Gov't Approved **
Sub-Ktr Chg Cont	Contractor Approved	Gov't Approved *	Gov't Approved **

* Government Approval Through Co-Chair/Voting Member of Contractor Control Board
** Government Approval Through Formal Government Change Control Board/PM Action

To reach an end state based on past (demonstrated) performance, it is necessary for contractors to have meaningful experience using internally controlled management processes. This is not representative of the current DoD contract environments which are based on heavy Government oversight that includes predetermined processes, specified data requirements and on-site Government representatives from the CAO and SPO. In the interim, some form of process assessment is necessary to rate contractors against the broad criteria identified in the levels above, and to provide a mechanism for our suppliers to identify and understand weaknesses in order to improve them, with the intent of elevating the overall capability of the industrial base for future programs. This also supports the concept of risk based management of programs, which allows government

acquisition agencies to properly size the oversight levels of the on-site and program office personnel by delegating responsibility to suppliers with demonstrated capability as illustrated in Appendix D, *Performance Based Acquisition*.

There are two "assessment" methodologies which were discussed within the IPT activities. The first methodology is a full capability assessment using well defined criteria for each performance attribute identified for key processes as described in the Key Supplier Processes Panel Report (Appendix E). The second methodology is a risk based assessment patterned after the DCMC Risk Assessment Model as discussed in Appendix H, Supplier Rating. The DCMC Risk Assessment Model is already being used to assess levels of DCMC oversight manpower. These methodologies will be termed the "process capability assessment" and "process risk assessment" as discussed herein.

The concept of vendor rating is used throughout industry with various approaches. The NGS Vendor Rating subpanel performed a benchmark study on the approaches and methodologies employed. As the Process Risk Assessment and Process Capability Assessment are developed and deployed with the Government prime contractors, these contractors will continue to use or develop similar systems to implement performance based acquisitions using internally controlled processes with their subcontractors and vendors

The primary objective of the assessment methodologies is to provide a top level assessment of process capabilities. This allows an evaluation of the overall risk of reducing government oversight, or allowing the contractor to expand the use of internal processes to additional programs.

A proposed process risk assessment methodology is described in Appendix H, *Supplier Rating*. The proposed methodology is adapted from the DCMC Risk Assessment Model which was formulated to provide a process that:

- Identifies those contractors where the risk to the Government associated with reducing or not performing oversight is low, and
- Identifies a methodology for adjusting level of oversight based upon contractor performance.

The proposed methodology is oriented to the overall objectives of the processes to meet program objectives, and does not provide a direct correlation of capability at the process performance attribute level. It is based on current performance of the processes as implemented within a facility. It is, therefore, very dependent upon the degree to which the supplier's internal processes have been applied to on-going programs. To achieve a level 1 rating, contractors will need to demonstrate consistent applications across all programs within the facility as well as state of the art technical complexity in one or more programs. The process risk assessment evaluates risk in end product performance, cost, and schedule, and is heavily oriented to the use of metrics. As such, it is more oriented to the results or products of the processes than to measures of effectiveness of the processes directly. The assessment will be supported by objective evidence of the performance of

each process provided by the contractor based on internal reviews, including metric information where indicated. While support for the ratings is intended to be objective, the ratings themselves are inherently subjective. That is, there is no algorithm intended to quantify, weight, and mathematically manipulate process measures to determine a process rating. In the final analysis, ratings will reflect the judgment of the assessment team, substantiated by objective evidence of process performance in each process area for each process level.

In general, the process risk assessment may be considered a coarse screen which can provide some discrimination between contractors at the process level. The process capability assessment is more of a fine screen which allows for discrimination at the more detailed performance attribute level. That is, it allows for discrimination between contractors at the same level as discussed in Appendix G, *Supplier Capability Assessment*.

The characteristics of a process risk assessment are as follows:

- Broad assessment criteria/metrics for overall processes keyed to end product performance, cost, and schedule. This allows for a top level assessment of process risk.
- Objective evidence of capability based on internal reviews, including metrics where applicable. This provides the basis for the government assessment, although it is dependent upon the contractor to define the form and content of the objective evidence based on their approach to satisfying overall process capabilities.
- Overall rating (level) for each process. This allows some level of discrimination at the process level.
- The ability to delegate authority for defining, maintaining, and controlling various configuration baselines to suppliers with demonstrated capabilities.
- The ability to appropriately size the level of on-site and program office oversight through risk based management concepts.

In considering the appropriate level of government oversight, there are two aspects which must be considered; on-site government representation and program office support. The process risk assessment described in Appendix H, *Supplier Rating*, is an adaptation of an overall risk assessment process specifically developed to assess on-site government representation, and satisfies this requirement. It may also satisfy program office requirements for identifying the level of oversight required for interfacing with the contractor to fulfill requirements imposed on the program office by the user and higher level acquisition agencies. Additionally, the level of support required to respond to outside inquiries and to prepare for formal program reviews and decision making boards must also be considered. In some cases, particularly for development or initial production of complex technical products, it may be advantageous to use the more in-depth information provided by a process capability assessment

Supplier process assessment and rating provides inputs for an overall supplier capability data base as illustrated below. As shown in Figure 2-4, this data base supports both the

on-site and program office risk based management approach. In addition, the data base will also support source selection activities for critical supplier processes identified as discriminators.

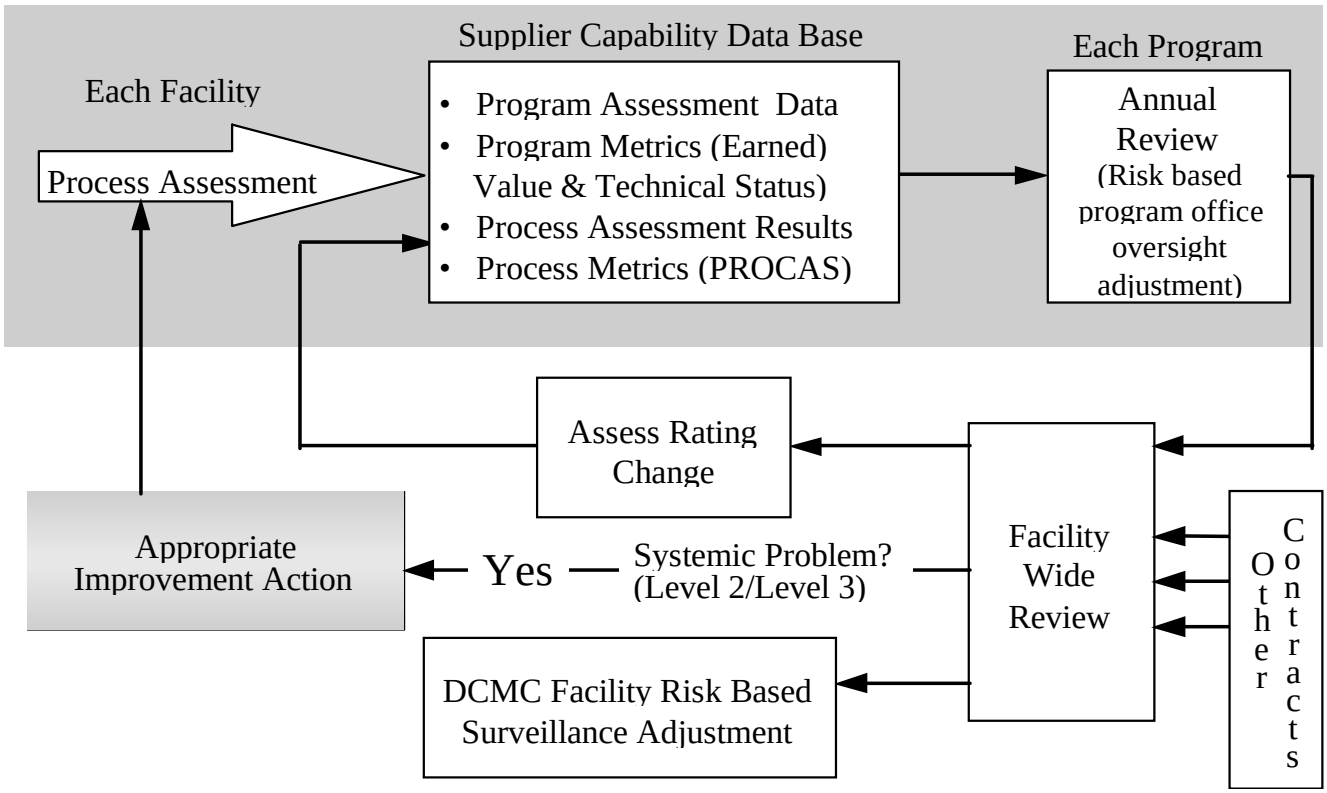

Figure 2-4. Risk Based Management Concept.

Two potential process assessment methodologies have been identified in Appendix H, *Supplier Rating*, and Appendix G, *Supplier Capability Assessment*. Their characteristics, utility, and the major differences are tabulated below.

Table 2-III. Characteristics of Capability and Risk Assessments.

	Capability Assessment	Risk Assessment
Assessment Criteria	Detailed Criteria	Broad Criteria and Metrics
Guidance to Contractors	Detailed Questions	Broad Guidance to Provide Subjective Evidence
Level of Discrimination	Performance Attribute	Process
Timing	Mid Term (6-12 Mo)	Near term (3 Mo)
Development Resource Requirement	Intensive	Moderate
Implementation Resource Requirements	Greater	Lesser
Applications	Process Improvements Source Selection	Contract Retrofit Government Oversight Source Selection

The use of assessment methodologies to support source selection for complex items is discussed in Appendix J, *Source Selection*, and Appendix G, *Supplier Capability Assessment*. For near term applications, the availability of the risk assessment can provide valuable augmentation to the source selection decision making process. Perhaps even more importantly, availability of the risk assessment can provide a means for initiating contract retrofit actions which will allow for the reduction of government oversight with the least additional risk. Either methodology should satisfy most requirements for this activity.

3.1.3.2 Reoccurring Supplier Management.

In Figure 2-4, a flow is illustrated to describe both the "start up" procedures and the reoccurring actions in a supplier rating and management system. The IPT envisioned that reductions in oversight and surveillance could be initiated through the process risk assessment process, as discussed above. A common data base would be generated for government system program office (SPO) and DPRO use. Each office would make their decisions to properly size the oversight levels and delegate "self governance" responsibilities to suppliers using the data that characterizes their capabilities. The industrial facility would then operate under these decisions until the next (typically annual) update.

Each program office would prepare program assessment data and use that plus their program metrics to review/reassess the contractors "capability." At the completion of each year the "Supplier Data Base", see Figure 2-4, would be updated with those results. Each SPO would then make their own "risk based program office oversight adjustments" judgments. At the same time the DPRO would be performing their review examining facility wide, process metrics (PROCAS) and prepare their own judgments for the "DCMC facility risk based surveillance adjustments". The facility DPRO commander would then host a meeting involving the government players, the SPOs; and the facility

manager for the purpose of sharing these oversight adjustment judgments with the facility management. Three potential actions will result:

- Retain existing surveillance levels;
- Change surveillance, reduce or increase; and
- Identification of a systemic problem at that facility.

The identification of either a systemic problem or an increase in the levels of surveillance should stimulate a desire, on the part of the contractor, to improve their processes. The facility could then go through a process reengineering activity and request a process capability assessment to validate the improvement and gain some relief in forthcoming source selections, as illustrated in Figure 2-5.

• Common Facility/Multiple Programs

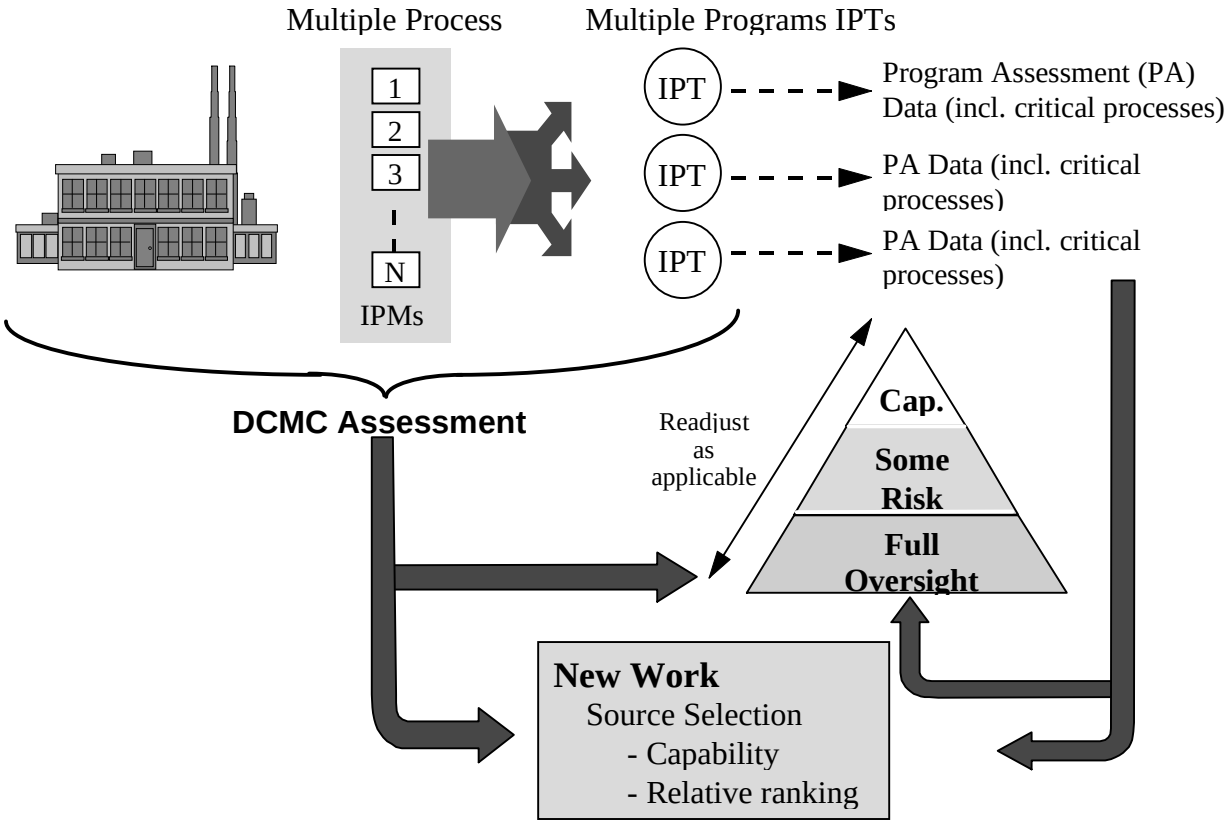

Figure 2-5. Recognition of Process Efficiency and Effectiveness.

3.1.3.3 Tri-Service Repository.

Supplier facilities are not typically single service oriented. Thus, common processes across the facility frequently impact all the services. In terms of process capability, performance-based evaluations can be applicable across all the services. A Tri-Service

Data Repository is needed to share process assessments across the services. The envisioned Tri-Service Repository has the following characteristics:

- It is maintained by DCMC.
- Contains facility assessment baseline ratings and data, and is periodically updated: the "Supplier Data Base" of Figure 2-4.
- Available to all DoD users.
- Provides information used in source selection and risk management.

3.1.4 Enhancements in Support of Source Selection.

Enhancements to the source selection process (see Appendix J, *Source Selection*), based on best commercial practices, are focused into four specific areas: performance requirements, risk management, basis for the selection decision, and past performance.

RFPs should focus on performance requirements. The government should be defining the "what to's" not the "how to's." Appropriate requirements documentation (e.g., draft system specification, system requirements document, etc.) should be included in the RFP defining the performance requirements (form, fit, function, and interface) for the product. This allows the government to take advantage of the industry capabilities in defining a solution to meet the need.

An integrated risk management approach needs to be implemented, one that changes the cultural thought process from one of risk avoidance to one of risk management. In many cases the risks associated with a program have not been understood by either government or industry. The risks on a program must be clearly recognized by both sides in putting a good RFP on the street. Risk management must be initiated early and continued throughout the program life cycle. The critical risks should become the focus for the source selection decision.

The RFP should focus only on what is essential for the source selection decision. Each RFP will have varied risks and requirements. The RFP should be tailored to reflect the individual need and risks of that specific program. This would eliminate the inclusion of elements which have no significant influence on the source selection decision, reduce proposal preparation effort on the part of the offerors, and reduce proposal evaluation effort on the part of the government.

Emphasis on past performance should be increased in assessing a contractor's proposal and performance risks. This approach is similar to what we do every day in our personal lives when we buy a car or any other product or service. This enables a methodology to evaluate a contractor's capability to perform without the burden (and cost) of military specs and standards. This assessment will assess all of the offeror's past performance across all elements that would be involved in the requested contract effort. This could also provide increased awareness of risks into areas not explicitly solicited for proposal preparation by the RFP.

3.1.4.1 Integrated Risk Management.

The clear focus of the source selection process should be around risk, choosing the offeror that provides the best opportunity of success, or the least risk. Integrated risk management must be implemented across the program life cycle. It should be a comprehensive process integrating performance (i.e., technical, cost, and schedule) iteratively throughout the program. By initiating an integrated risk assessment prior to RFP release, a sound program baseline can be developed, one that will positively support the RFP development and provide a clear sanity check for evaluation of the proposals. Risk management should be a key characteristic of the RFP and offeror's proposals. Understanding the inherent risks supports critical schedule development and resource loading to mitigate the high risk areas. The contractors must also identify any additional risks in their proposal resulting from their specific approach to satisfying the RFP. The risk mitigation plans included in the winning offeror's proposal should be the basis of the program execution focus.

The government should instruct the offerors to identify the critical processes they will use to meet the performance requirements and mitigate the inherent risks. The government should then assess each proposal for applicability, sufficiency, and risk inherent in the contractor's proposed approach and processes. Contractor's past performance in these areas should play an important role in assessing the overall risk of the program.

3.1.4.2 Potential Approach to Source Selection.

- **What is evaluated?**

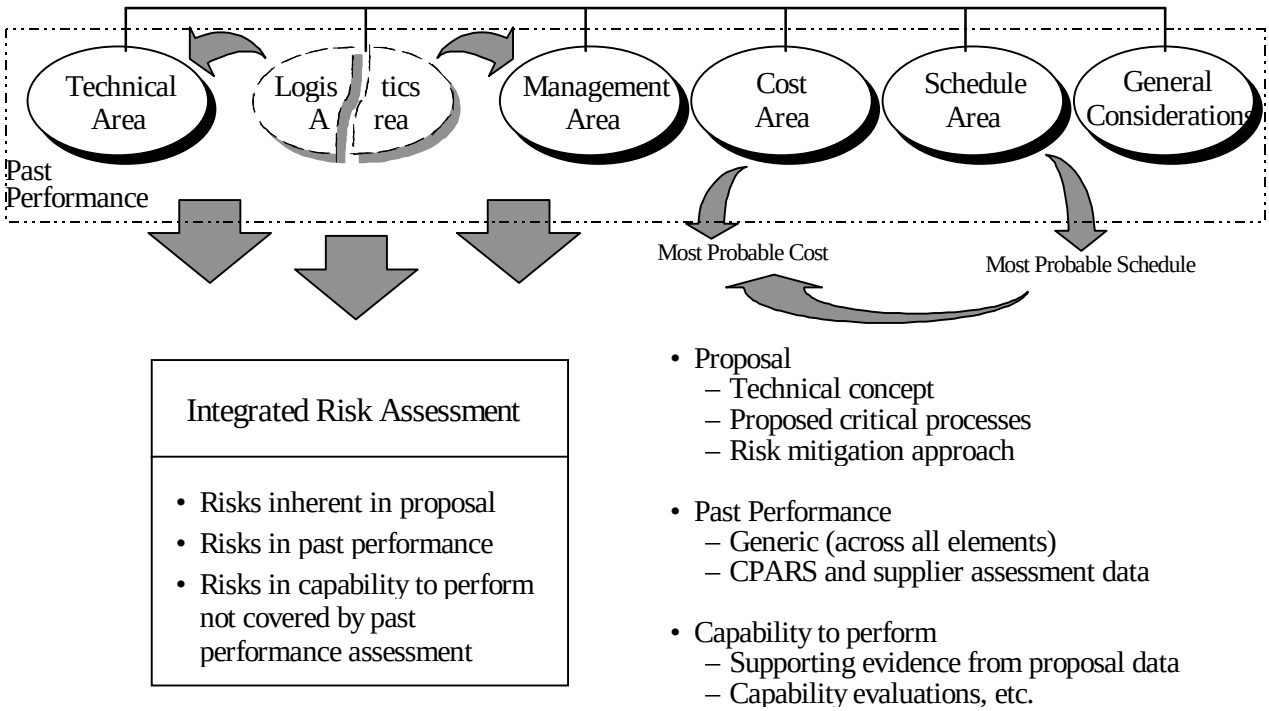

Figure 2-6. Potential Approach to Proposal Evaluation.

The resulting potential approach to evaluation of a proposal would be based heavily around risk and is illustrated in Figure 2-6. In evaluating a contractor's proposal, two basic questions should be addressed: 1) Is the contractor's approach feasible and 2) Can the contractor do what he proposed? The integrated risk assessment of the proposal must include the risks identified in answering these two questions. The basis of evaluation should address the risks inherent in the offeror's proposal, risks identified through assessment of past performance, and any performance capability risks not covered by the past performance data. The dashed box, in Figure 2-6, emphasizes that past performance must be considered in evaluating all areas. The split of the logistics area is symbolic to emphasize that an integrated focus must be taken, that all risks regardless of functional area, must be addressed within the areas of technical, management, cost, schedule and general considerations.

The proposal assessment should be centered around that risk inherent in the contractor's proposal, that is, inherent with the contractor's "how to." This should include the technical concept proposed, the critical processes proposed to complete the work, the controls and metrics identified, the risk management and mitigation approach; and any performance data concerning the specific proposed approach.

The evaluation of performance risk should be centered clearly on evidence of capability to perform in the specific areas necessary to meet the requirements of the RFP. Past performance should be assessed across all elements and evidence of past performance should play a key role in determining the overall performance risk. This evidence should include data derived from an improved CPAR (contract past performance) and a supplier rating system (process past performance). The past performance risk assessment is intended to assure that all elements of an offeror's capability are assessed. It can thus provide a "safety net" by identifying those risks that may exist in aspects or areas not explicitly requested to be proposed by the offeror's.

In areas where the PPRAG cannot provide a past performance data assessment, evidence provided via the proposal and capability evaluations should be used to augment the integrated risk assessment in supporting a judgment of capability to perform. As the supplier rating system (see Appendix H, *Supplier Rating*) database builds, the necessity for capability evaluations diminishes.

3.1.4.3 Increase Emphasis on Past Performance.

There are significant differences between commercial and government practices regarding the use of past performance. Commercial practices rely highly on past performance even going so far as developing preferred supplier arrangements. As a contrast, government use of past performance evaluations were primarily to support a determination (go/no-go) similar to competitive range determinations.

Industry reported that past performance reduced the need for detailed technical proposals. In many cases sources were selected on past performance and price alone. The

government practice almost always required full, detailed proposals. Past performance should be used as primary evidence to support determining a supplier's capability to perform. A satisfactory performance record has always been required before a contractor could be determined responsible. Comparisons among firms is not necessary when just determining responsibility. In the private sector, however, comparisons are made among competing firms to determine relative ratings. To be meaningful in the source selection process and to ensure that contractors are aware that actual contract performance will be a significant factor in future awards, past performance should ideally be rated at least equal to any other non-cost evaluation assessment. To achieve the goal of moving toward the commercial methodology, past performance must be elevated in importance and used as a significant non-cost evaluation factor.

A common past performance data system for use across the services is clearly required to promote high reliance on past performance. Existing systems, such as CPAR, should be expanded to all services and improved over time to provide the current contract information. This would be augmented by other elements (process data) in a supplier rating system providing heavier emphasis on past performance to assess the supplier's capability to perform.

There was a discussion and differences of opinion in this area. The JACG will revisit and resolve the different perspectives as part of its implementation efforts.

The Past Performance Enhancement Sub-Panel objective was to develop tools and an implementation plan to expand the use of past performance as a discriminator in source selections. The Sub-Panel recognized that both the Office of Federal Procurement Policy and OSD have mandated that the role of past performance in all source selections, particularly those over $100,000 in value, should increase significantly. However, since the NGS-IPT was not addressing all procurements, the implementation plans and tools developed by the Sub-Panel were focused only on formal source selections for major programs, considered to fall into the $5,000,000 and higher level. During a review of the draft products by the JACG in October 1995, the Sub-Panel was requested to review applicability of the Past Performance Enhancement results to Inventory Control Point (ICP) procurements. This will be addressed in follow-on JACG efforts.

3.1.4.4 Summary.

The government members of the past performance Sub-Panel developed a method for recording contractor past performance accepted by all the participating government members, recommending the use of a modified version of the existing USAF CPAR form (identified for the present as the JACG CPAR, to distinguish it from the existing form).

The government members of the Sub-Panel revised the USAF implementing instructions for the CPAR form to align them with the new form and to emphasize the importance of properly recorded past performance information to enhance the use of past performance in source selection.

The government members of the Sub-Panel prepared a Tri-Service Performance Risk Assessment Group (PRAG) Desk Guide, to ensure the proper use of past performance information during source selection evaluations. The Desk Guide describes a process encompassing the integration of recorded process past performance information (both baseline assessment of capability and metric trend data for these processes)collected by DCMC at the Contractor sites, contractor past performance information documented by System Program Management personnel concerning particular contract performance (using the JACG CPAR), and information collected by the PRAG itself through surveys, telephone inquiries or other means.

This package, as described in Appendices J (*Source Selection*), I (*Past Performance)*, E (*Key Supplier Processes*), and D (*Performance Based Acquisition*), describes enhancements supporting the source selection process. Integrated risk management and the use of the risk assessment filter with other supporting processes outlined herein capture the essential elements allowing the adaptation of best commercial practices by:

- Implementing performance based RFPs
- Focusing on risk management and not risk avoidance
- Including in the RFP only those aspects essential for the source selection decision
- Placing greater emphasis on the use of past performance in the source selection process.

3.2 The Second Order of Business: Retrofitting Current Contracts.

To achieve the intent of Dr. Perry's direction, any implementation must define requirements in "performance terms", reduce acquisition manpower, provide significant monetary savings to the Government, and facilitate industry conversion to common process facilities. The Government is enabling significant and flexible latitude for industry by not prescribing solutions and specific processes. This entails additional risk on the government's part. These risks will be offset by Industry rising to the challenge by providing products that satisfy requirements and by being accountable for product performance.

3.2.1 Overview

3.2.1.1 Background.

Government and industry recognize the necessity for moving away from the highly detailed "How-To" specification and oversight business relationship to a more commercial arrangement which uses product performance specifications as discussed in Appendix D (*Performance Based Acquisition*). This approach is being implemented for new Department of Defense (DoD) programs. Military standards and specifications and legacy business practices, in ongoing and reprocurement defense contracts, are a major impediment to a timely, efficient transition to a new way of doing business. To facilitate conversion to single plant processes, existing contracts across the plant must be modified in a synchronized fashion, or by a "block" of contracts. Figure 2-7 depicts the desired "end state" envisioned by the overarching Non-Governmental Standards-Integrated Product Team (NGS-IPT).

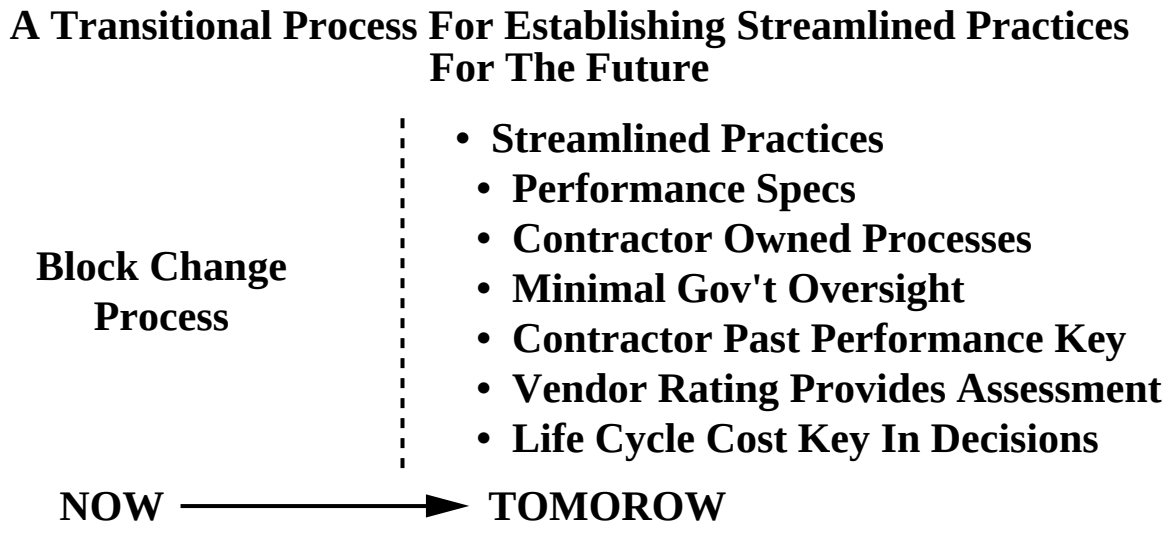

Figure 2-7. Block Change Goal.

3.2.1.2 Goal.

The goal of the "Block Change" process is to detail a flexible class action contracting process, with identified DoD authority, to produce a spectrum of business, management, and specifications and standards changes on existing contracts while balancing contractor/government risk.

3.2.1.3 Objective.

The need for the block change process exists because it will enable the conversion to single process facilities utilizing a streamlined flexible block change process which: maximizes savings on existing long term programs; facilitates the greatest return on investment through immediate conversion to single process facilities and ensures that conversion to performance specifications and conversion to plant-wide processes are complementary but may not necessarily occur simultaneously. The objective of this process is to develop a set of contracting and programmatic solutions to existing constraints which may be implemented to streamline conversion of existing contracts over the next 3-5 years. The solutions must address risk and consideration while maintaining product performance as depicted in Figure 2-8. Block Change is defined as *"A "class action" contractual process by which the government will authorize a contractor to implement changes from government directed, "How-To" processes (Military Specifications, Standards and Other Business Processes) across multiple contracts or a facility without preparing proposals at the individual contract level."* Block changes are normally contractor initiated and it is envisioned that contractor savings will be offset by contractor implementation cost and risk migration. There are two general approaches to block changes, the first classified as "Contractor Push"; a horizontal change, which primarily focuses on process change and streamlining improvements. This horizontal change is best suited for management and business

topics, or for the consolidation of multiple military specifications into a common specification applicable to a specific facility. The second, “Customer Pull” focuses on re-defining program requirements in terms of contract performance specifications and key process requirements. This change mechanism involves a vertical change process with a focus on the technical character of the contract (includes logistics), and the supplier - prime contractual relationships. While this description presents both concepts in the extreme, it is recognized that either approach may be used to begin the desired change. A combination of both approaches will have the optimum impact on accomplishing the desired change.

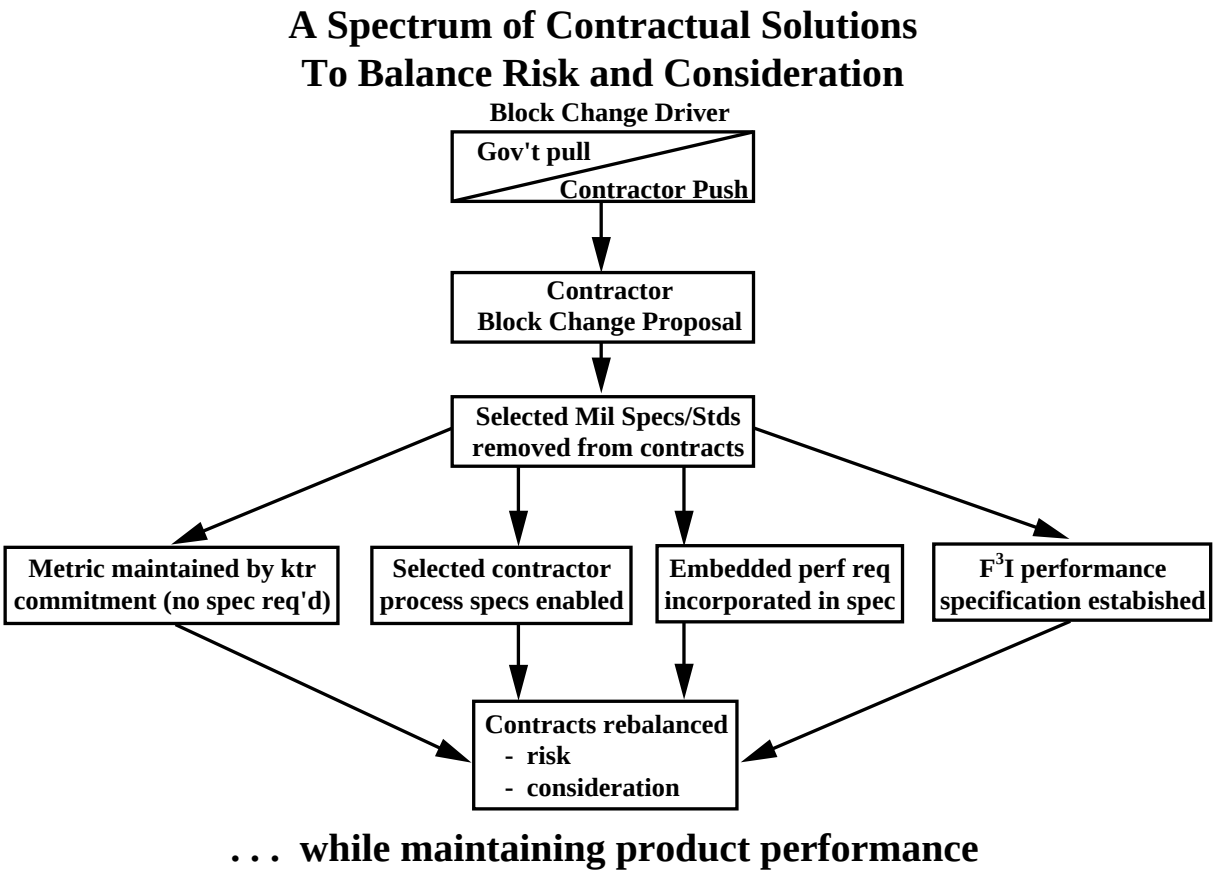

Figure 2-8. Block Change Contractual Solutions.

3.2.1.4 Common Process Facilities.

Current business practice is to impose business, management and technical processes on suppliers through a combination of contracts and source control drawings in build to print contracts. The IPT found that the flow down of "How To's" by the "Primes" on to the OEM's and fabricators was at least as intrusive as the initial tasking from the government on to the prime's. Many cases were found in which the prime's flowdown was more intrusive. This practice inhibits common process facilities. Capable and reliable facilities should be allowed to own and control their processes. Customers of capable and reliable facilities must allow the facility to use the facility processes in lieu of imposing a

process on the facility. Common process facilities are made possible by a top down business environment which includes the following characteristics.

- Facility owns its processes;
- Facility has approved operating procedures;
- Facility has configuration management/control over its processes;
- Facility decides on the use of common processes across a common group of development programs and/or part families in fabrication shops;
  - A common group of development activities refers to common technical or product domains, and
  - A part family is a collection of parts that:
    - ♦ Share common materials;
    - ♦ Undergo the same manufacturing process(es);
    - ♦ Share the same key characteristics; and are
    - ♦ Tolerant of comparable variation.

The IPT is suggesting a restructuring of product specifications to facilitate common processes fabrication facilities through the entire product tree that constitutes a weapon system. The restructured product specification is discussed in the performance requirements section of this report and Appendix D, *Performance Based Acquisition*. The judgment of what constitutes a capable and reliable facility (including approved operating procedures) is discussed in the risk based oversight portion of this report and Appendices G, *Supplier Capability Assessment*, and H, *Supplier Rating*. There are risks associated with the sourcing of work to a facility under these common process facility philosophical ground rules. This issue is addressed in the enhanced source selection portion of this report and Appendix J, *Source Selection.*

3.2.2 Basic Change Mechanisms.

The *second order of business* addresses legacy programs which are being conducted under the traditional methods of doing business. Transition only through new programs is inefficient and slow. Transition via existing programs should: enable earlier capture of benefits; minimize the risk of the conversion on selective basis; and allow prototyping of processes and end states. The potential exists to change existing contracts through a variety of options. There are a variety of paths to the transition of existing programs:

- Horizontal - process based “retrofit” of multiple contracts within a common facility - agreements on discrete common (government or company) processes to be deployed horizontally across a specific facility; or
- Vertical - requirements based contractual “retrofit” for an entire weapon system across multiple facilities - renegotiation of top-level requirements, and a vertical flow down; and/or
- Combined vertical and horizontal process to achieve <u>common process facilities</u> for the full supplier team participating in an weapon. system. Coordination among the services would be accomplished using the JACG; and
- Contract retrofit actions would be triggered by contractor proposals through the DCMC.

Retrofitting current contracts would be tailored to facility--subcontractor team---program combinations. In a manner similar to new programs, retrofitting contracts will entail an appropriate degree of commitment from the contractor on their processes (see paragraph 3.1.1.4). Differences in a contract retrofit action may occur since the intent is to achieve a risk and performance requirements neutral change. This may entail a somewhat greater degree of process commitment from the contractor. For example, in “horizontal” retrofit actions that remove government mandated processes with no allowance for changes in specifications, a greater contractor process commitment may be necessary to ensure the performance requirements embedded in the removed processes are handled. Among the benefits to the government of retrofitting current contracts are reduced acquisition manpower and dollar savings in the near term. Instant dollar savings are probably limited due to the cost of conversion into the new system. **Instant commitment is possible in the near term**.

Horizontal Plant-Wide Changes. The two mechanisms were devised to address specific objectives. The "Contractor Push" involved a **horizontal change** across a specific facility and is viewed as an effective means to address business processes, like management of government property resident in the facility or management of a quality system. Such a change might involve reducing the number of different standards employed across the facility’s contracts to govern a process from many to one. These horizontal change actions involve adjustments to oversight, surveillance, and auditing to achieve insight and programmatic efficiency. Technical changes were also envisioned as a possibility but were found to be cumbersome with the horizontal change mechanics in the Reinvention Laboratory experiences. It was not clear how to get from the conversion of plant wide processes to a performance based specification environment.

This change process is discussed in Appendix K, *Block Change*. This recommendation is being implemented through the Department of Defense announcement, No. 647-95, dated 8 December 95, entitled "Policy on Single Process Initiative."

Vertical System-Wide Contract Change. The full benefit of a performance based specification environment would be realized when this business and technical environment is flowed down the program contract(or) tree to the prime’s internal shops and the external OEMs and the fabricators. In a typical program sixty to eighty percent of the dollar value of the contract is outsourced to the prime’s suppliers. A vertical flow down of a contract retrofit would allow this environment to be used at all levels of the supplier tree:

- In ongoing work for existing weapon systems, for example in modifications and upgrades; and
- To enhance the support of existing systems as described in the "Flexible Sustainment" portion of the IPT report.

This objective can be achieved through contract retrofit actions in ongoing weapon system programs. The focus in this option is on the technical characteristics of the contractual relationships as well as the business and management aspects, and the vertical

flow of program requirements from the primes to the OEM's, etc. This change action also involves adjustments to oversight , surveillance, and auditing to achieve insight and programmatic efficiency.

Such a process requires a "Customer Pull" to effect a **vertical change**.

A concept of operations for implementing the vertical change also utilizes the “block change processes” referred to above supplemented by the following actions:

(1) Establish an objective to complete the transition into the performance based business environment within the next 36 months for the top DoD suppliers. Top suppliers should be those firms that consume 80% of the acquisition and support dollars and are involved in the development, manufacturing and delivery of systems, and their field support.

- All new work including modifications and retrofits;
- “Retrofit” existing contracts in both development and production; and begin
- Implementation of “Flexible Sustainment” assessment on new and current contracts in which the “Primes” are still engaged;

(2) Government actions:

- Government reformats “top level” (process) requirements to allow for a performance based business environment within existing contracts;
- Prioritizes plant sites and competitive product lines to retain competitive balance
- Identifies lead service product centers and initial integrated team members to work with DCMC in the management of the retrofit;
- Develops government implementation plan addressing program office oversight, DCMC surveillance, and other items for expected contract modifications.

Local DCMC commander offers an invitation to plant management to submit a preliminary proposal.

(3) Typical timeline for “retrofitting” existing programs:

000 days - DoD invitation.

- Industry indicates interest.
- Top level training initiated.

030 days - Industry submits a brief preliminary proposal, incremented by facility and processes within a facility. The proposal should include:

- Plan to develop and implement detailed contract changes
  - Top tier product peculiar performance specifications, and SOW
  - Lower tier flowdown; and
  - Key supplier processes.
- Include subcontractor flow down plan to share a performance based environment within existing contracts;
- Preliminary prioritization of:

  - Contracts at facility;
  - Subcontracts;
  - Key processes; and include an Integrated Master Plan/Schedule (IMP and IMS) for the retrofit activities which would describe the scope and schedule anticipated.
- The preliminary proposal should be submitted to the Defense Plant Representative Office (DPRO) or cognizant Contract Administration Service (CAS) activity.

045 days - Three actions:

- Government screens and prioritizes proposals, and then establishes government product center (buying activity) team leads for each contractor facility.
- Feedback to respondents on the initial decision regarding their responses.
- Additional training of specific team members.

105 days - Industry submits a detailed proposal,

- Site specific
- Includes technical, cost, programmatic and terms and conditions impacts.
- Incremented by group of processes within a specific site. The proposal should contain a detailed IMP and IMS for the proposed actions and not exceed 3 years.

165 days - Three actions:

(1) Bilateral agreement on the:

- IMP and IMS by site and Fiscal Year;
- Top tier product peculiar specifications and SOW
- Agreement on which and how to change lower tier documents:
  - Performance based
  - Retention of essential performance requirements and interface standards;
  - Transfer from MIL STD defined processes to plant specific processes (include embedded requirements in the “retrofitted” Section 3 of the specifications.);
  - Definitized Section 4 verification criteria in the “retrofitted” specifications, per the discussions under performance requirements.
- Proposed schedule for lower tier changes;
- Risk assessment results to guide government oversight adjustments.
- Role of the “Primes” versus the government in working with the subcontractors:
  - Support “primes” total management responsibilities;
  - Vendor/supplier forum with the government to encourage “primes” to share the new business environment;
- How to address “break out;”
- Flexible sustainment and reversing some of the break out decisions;

- Method(s) to track actuals($) for contract retrofit and savings per year;
- Basis for contract administration during transition;
  - Instant contract as written,
  - Change control authority, and transition plan.
- Plan to expand decisions from the vertical process to horizontal changes on remaining facility contracts. **This action would take advantage of the "Block Change" provisions, as discussed in this section, to achieve maximum efficiency and avoid double jeopardy for consideration inherent in any multiple step contract change operation**.
- Draft language of the "retrofitted contracts"

(2) Government refines the government implementation plan addressing program office surveillance, DCMC surveillance, and other items.

(3) Draft language of the "retrofitted contracts." The retrofitted portions of the contracts should be in the performance based business arrangement envisioned by the Perry Memo.

210 days - Buying office notification and comment.

240 days - Review and coordination of the retrofitted contracts at an appropriate higher level—the SAEs and or HQ DCMC.

270 days - Two actions:

(1) Implement top level changes and begin phasing in the government implementation plan; and

(2) Monitor supplier performance using;
- Enhanced past performance methodology;
- Contractors metrics on his processes; and
- "Retrofit" performance against the IMP and IMS
  - Progress within the prime, and
  - Flow down to subcontractors.

365 days - First past performance assessment, "retrofit" progress, and DCMC metric reports by facility.

XYZ days - Implement the next steps in the agreed to IMP and IMS as required for each site.

1000 days - Complete "Retrofit" and government oversight adjustments.

3.2.3 Summary.

Two basic mechanisms are defined to "retrofit"/transition contracts and move toward the performance based business environment.

- The "horizontal" process based approach provides a potential for a common process facility on a few processes at time. This approach is simpler up-front and provides potential for early payback. It delays the overall transition to performance based requirements (there are approximately 1500 to 2000 detailed processes). With

transitions based on a few at a time, government manpower (oversight) drawdown will be delayed and cost/consideration could be an issue with each contract change.

- The "vertical" requirements based approach would change all contracts to performance based requirements in one step. The contractor could control process consolidation details. This approach provides the potential for common process facilities prime's, subcontractors, and vendors/fabricators. It moves to facility-wide performance-based requirements soonest and accommodates the government manpower drawdown profile by reducing the need for specialized government oversight quicker. It is devised as a risk and performance neutral approach which allows more flexibility with regard to consolidation. For existing contracts, this is expected to be manpower intensive with more complex contract changes on its initial application to programs.

A key characteristic of the block change process is the creation of a management council consisting of the contractor, the affected program offices, the DCMC, and the DCAA. Among other actions they will address are the need for consistency among the services (i.e., the acquisition centers) and adjudication of differences (see Appendix K, *Block Change*).

3.3 The Third Order of Business: Training the Work Force.

The key to implementation is training. Acquisition reform is difficult at best. A concerted effort to facilitate that reform is both necessary and appropriate. The work force impacted in the aeronautical sector alone is approximately 350,000 people. Successful implementation of the "To Be" state within a few years requires that an aggressive training of the current work force begin immediately. There are also events during the transition period that will require training in order for them to be successful. The retrofit of existing contracts using the block change tools will require the participants to be trained to implement both the horizontal and vertical methods described earlier.

Training must precede full scale implementation if the work force is expected to "hit the ground running." A cultural shift is necessary to move the work force from its current practices to a new performance based acquisition environment that is not based on military standards and specifications. The training and education task does not have to be focused on teaching the work force a lot of new skills but must direct it to use their skills differently and to break many of the old paradigms. Earlier sections of this executive summary identified how responsibilities for implementation of the acquisition process will shift to the contractor. Both the government and contractor work force will have to learn how to successfully implement the performance based acquisition process described earlier with a newly defined sharing of responsibilities. This includes: dependence on the contractor's common facility processes; how to execute a contract with less oversight; how to effectively use essential tools such as Integrated Master Plan/Integrated Master Schedule, metrics and risk management; how to apply the flexible sustainment philosophy in order to effect reduced life cycle cost; how to flow down the performance based risk acquisition approach to lower tier subcontractors and vendors; and revised RFP/source selection activities.

Just as acquisition reform implementation on only new programs will take too long, leaving acquisition reform training to the existing acquisition school infrastructure will take tool. The

magnitude of the work force, 350,000 people, and the time goal to full scale implementation, about three years, requires that an extraordinary effort be undertaken. It takes a long time for a cultural shift to occur naturally, so special efforts are needed to prepare the work force and to support the transition events. All levels of the work force require some training, from senior executives to each program implementer, in order to achieve a consistently executed acquisition process.

An integrated training strategy is described in Appendix L. This strategy identifies the need for near term training to be jointly developed for both the government and industry work forces. This includes the need to support the immediate onset events such as those associated with block change activities, some new programs and some sustainment activities. The long term plan is to transition the training responsibility to the existing infrastructure once the surge training in the near term subsides. Successful completion of this training task will require the use and sharing of dedicated government and industry resources for both development of the courseware and delivery of the training and immediate action to establish an integrated training program. The JACG has established a structure to form the basis for this training program.

4.0 CHANGE AGENT.

The NGS-IPT has defined a comprehensive and integrated approach to achieve the objectives of acquisition reform. Implementing these findings will stimulate a Government-Industry partnership in achieving cost-effective solutions to national defense acquisition and sustainment challenges. Realization of the potential savings will involve recognition of the importance of buyer-supplier relationships in achieving the requisite degree of partnership necessary to achieve the rapid, comprehensive and long-term payoffs envisioned. Industry sector agents afford a ready mechanism to maintain and further stimulate the comprehensive buyer-supplier relationships necessary to foster true partnership. They would provide a mechanism to implement change on a business sector by business sector basis.

The JACG is proposed as the business change agent for the aeronautical sector. The potential payoffs are significant. The aeronautical sector includes approximately 70% of the defense industry prime contractor base and the service principals influence a large percentage of the DoD budget. The JACG has an established relationship among all the services, DCMC, FAA, and NASA. Additionally, while the business sector is aeronautical, the influence among other elements of the business base include electronics, munitions, structures, propulsion, training systems, and support equipment. Thus, the JACG not only provides an enabler to foster the partnership characteristics desired, but the business sector impacted permeates a significant portion of the overall DoD business base. Empowering the JACG as the change agent for the aeronautical sector can have the biggest effect in realizing acquisition reform initiatives and can realize the biggest benefits.

While NGS-IPT activities have been cast within the aeronautical sector, the nature of the changes proposed are readily applicable to other business sectors. The differences lie in the implementation of the methods, not the methods themselves. There are needs and opportunities

for change agents in other business sectors. Overall, to effect the end-state partnership needed, a business sector approach to implementation would seem appropriate.

5.0 SUMMARY.

Piecemeal approaches to acquisition reform will not get the job done quickly nor to the extent needed to effect a comprehensive basis for continuous improvement. The NGS-IPT has identified an approach defining a "To Be" state and transition mechanisms. This approach incorporates a comprehensive treatment of the changes needed ranging from content of the technical data packages to effect performance based acquisition with common sense flexibility for economic payoffs, to transfer of ownership and accountability of processes from the Government to Industry, to mechanisms to enable fair and effective assessment of those processes, to risk based source selections that incorporate enhanced treatment of past performance not only in a programmatic sense but also incorporating the demonstration of bidder's process excellence to serve as a source selection factor. This approach melds realizable sustainment enhancing decision mechanisms into the performance based acquisition environment enabling selection and employment of the most appropriate technical data package to use (from reprocurement on a performance basis or "build-to-print" or intermediate method based on economic factors). The NGS-IPT has also recognized that acquisition reform applied only to new acquisitions will not realize the savings needed and has proposed approaches, such as block change, to rapidly effect conversion to business practices. These changes will not be easy, but they are doable. A roadmap has been proposed leading to implementation of DoD reform policy objectives. This approach provides an opportunity for Industry sector change agents. The JACG will lead the aeronautical sector, but other champions are appropriate for the other Industry sectors to lead major facets of acquisition reform.

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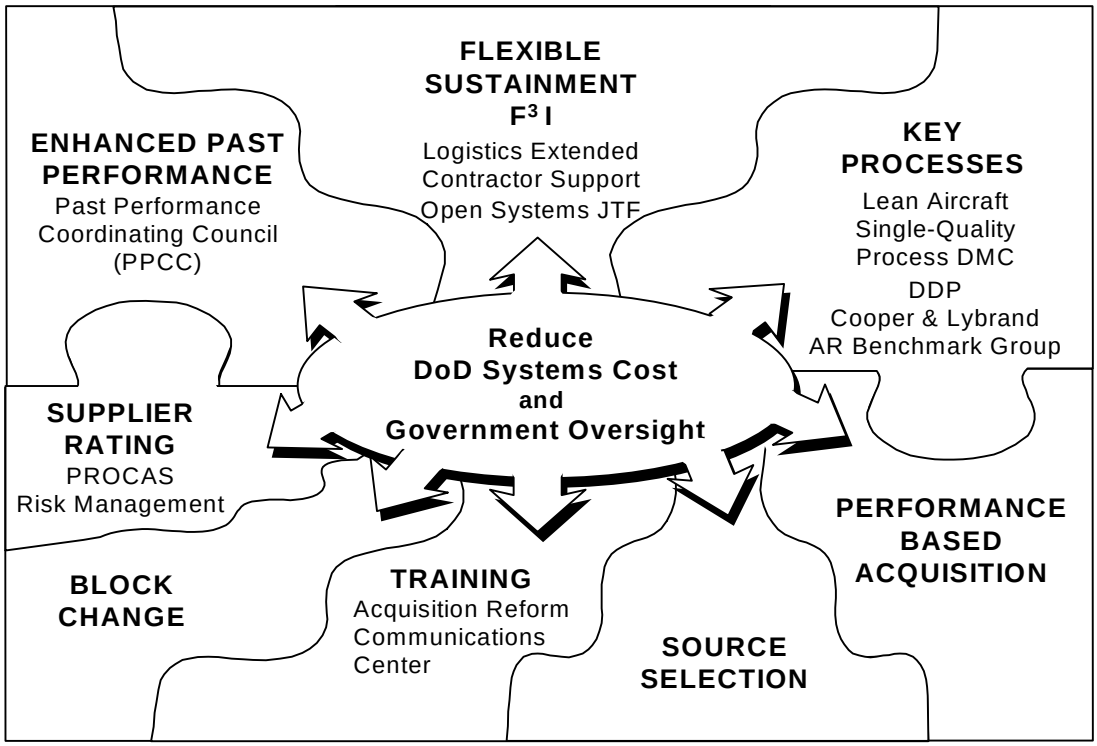
SECTION 3: APPENDICES



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APPENDIX A

OSD MEMORANDUMS ON SPECIFICATIONS AND STANDARDS

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1.0 8 DECEMBER 1995 OSD NEWS RELEASE.

NEWS RELEASE

Office of Assistant Secretary of Defense
(Public Affairs)
Washington D.C. 20301
PLEASE NOTE DATE

		No. 647-95
		(703)695-0192(media)
		(703)697-3189(copies)
IMMEDIATE RELEASE	December 8, 1995	(703)697-5737(public/industry)

Department of Defense announces policy on single process initiative

Secretary of Defense William Perry announced today a new policy designed to implement a single process initiative leading to the use of common processes and performance specifications on existing Department of Defense contracts. Using a "block change" modification approach, it will involve the consolidation or elimination of multiple processes, specifications and standards in all contracts on a facility-wide basis, rather than on a contract-by-contract basis.

"Our principal acquisition reform initiatives in this area thus far were focused on new contracts. This single process initiative is significant in that it impacts existing contracts," Perry said.

Currently in many contractor facilities several different processes or specifications may be used for similar manufacturing or management operations due to differing requirements in various contracts. This approach is inefficient, leading to increased cost and administrative workload for both the contractor and the government. Over the last year, several initiatives moved towards changing this situation. Participating in these efforts were the Non-Government Standards Integrated Process Team (NGS IPT) sponsored by the Joint Logistics Commanders and the Common Process Facility Working Group, co-chaired by OSD's director, Test, Systems Engineering and Evaluation and the commander, Defense Contract Management Command (DCMC). In August of this year, members of these agencies and the OSD staff began working together to draft the policy. Their efforts resulted in the policy being announced today.

The policy on the single process initiative recognizes the following facts:

- Since DoD will not realize the full benefits of it's specifications and standards policy until all contracts in a facility have been converted, the process to make the changes to those contracts must occur as quickly as possible. A streamlined approach is vital, avoiding unnecessary paperwork and costly contractor proposal preparation. However, adequate safeguards must be in place to ensure the receipt of consideration from the contractor, when appropriate.

-MORE-

INTERNET AVAILABILITY: This document is available on DefenseLINK, a World Wide Web Server on the Internet, at: http://www.dtic.dla.mil/defenselink/ *(Press Release Only)*

Since the focus of the change is plant-wide, rather than being isolated to one program or product, the DCMC in-plant personnel, particularly the administrative contracting officer, will play a key role in facilitating the process. However, since the changes will impact all the programs and products that facility produces, the "customer" community of program managers and buying commands must be consulted. A management council approach, similar to the current DCMC Reinvention Lab initiative, will be used.

Since the savings related to this effort can not be realized until the contracts are changed, time is of the essence. The Department recognizes that implementing this policy will cause contractors to incur some transition costs that will offset short term savings. Since this period of offset savings may exceed the life of most of the existing contracts, net savings can only be reasonably expected on longer term, fixed price contracts. Therefore, DCMC will conduct an analysis to determine the extent of the change and the remaining life of existing contracts in order to identify those contracts where there will be significant savings and where consideration may be due to the government. All other contracts may be modified based upon the initial analysis

without the requirement for contractors to prepare detailed cost proposals, an expensive and time consuming process.

The benefits of this action are many. The acceleration of bringing common processes to contractor facilities will result in more efficient, consistent and stable processes, with greater ease of contract administration for both contractor and government, and savings for the taxpayer.

2.0 8 DECEMBER 1995 OSD COMMON SYSTEMS/ISO-9000/EXPEDITED BLOCK CHANGE MEMORANDUM.

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARY OF DEFENSE (ACQUISITION AND TECHNOLOGY)
UNDER SECRETARY OF DEFENSE (COMPTROLLER)
ASSISTANT SECRETARY OF DEFENSE (COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE)
GENERAL COUNSEL
INSPECTOR GENERAL
DIRECTOR OF OPERATIONAL TEST AND EVALUATION
DIRECTORS OF DEFENSE AGENCIES

SUBJECT: Common Systems/ISO-9000/Expedited Block Changes

My June 29, 1994, memorandum on Specifications and Standards directed the use of performance specifications to the maximum extent practicable, and the development of a streamlined procurement process to modify existing contracts to encourage contractors to propose non-government specifications and industry-wide practices that meet the intent of military specifications and standards which impose government-unique management and manufacturing requirements. Although much progress is being made in applying these principles on new contracts, this progress has itself shown that government-unique requirements on existing contracts prevent us from realizing the full benefits of these changes by requiring, in a single facility, multiple management and manufacturing systems designed to accomplish the same purpose. Because it is generally not efficient to operate multiple, government-unique management and manufacturing systems within a given facility, there is an urgent need to shift to facility-wide common systems on existing contracts as well.

In order to meet our military, economic and policy objectives in the future, and to expedite the transition to this new way of doing business, the direction given in The Secretary's June 29, 1994, memorandum is hereby revised. In addition to the direction given there for government-unique specifications and standards, I now direct that block changes to the management and manufacturing requirements of existing contracts be made on a facility-wide basis, to unify management and manufacturing requirements within a facility, wherever such changes are technically acceptable to the government. The single point of contact for this effort will be the Administrative Contracting Officer (ACO) assigned to a facility.

The Under Secretary of Defense for Acquisition and Technology shall issue additional guidance necessary to facilitate the Department's streamlined review of contractor's proposals to replace government-unique management and manufacturing requirements in existing contracts with uniform requirements within the contractor's facilities.

We cannot afford to allow "business as usual" to delay this initiative. I therefore request that you and your leadership take an active role in expediting the transition of existing contracts and reprocurements to common systems.

Signed
William J. Perry

3.0 29 JUNE 1994 OSD MEMORANDUM ON SPECIFICATIONS & STANDARDS REFORM.

29 Jun 94

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
COMPTROLLER
ASSISTANT SECRETARY OF DEFENSE (COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE)
GENERAL COUNSEL
INSPECTOR GENERAL
DIRECTOR OF OPERATIONAL TEST AND EVALUATION
DIRECTORS OF THE DEFENSE AGENCIES
COMMANDER-IN-CHIEF, U.S. SPECIAL OPERATIONS COMMAND

SUBJECT: Specifications & Standards - A New Way of Doing Business

To meet future needs, the Department of Defense must increase access to commercial state-of-the-art technology and must facilitate the adoption by its suppliers of business processes characteristic of world class suppliers. In addition, integration of commercial and military development and manufacturing facilitates the development of dual-use processes and products and contributes to an expanded industrial base that is capable of meeting defense needs at lower costs.

I have repeatedly stated that moving to greater use of performance and commercial specifications and standards is one of the most important actions that DoD must take to ensure we are able to meet our military, economic, and policy objectives in the future. Moreover, the Vice President's National Performance Review recommends that agencies avoid government-unique requirements and rely more on the commercial marketplace.

To accomplish this objective, the Deputy Under Secretary of Defense (Acquisition Reform) chartered a Process Action Team to develop a strategy and a specific plan of action to decrease reliance, to the maximum extent practicable, on military specifications and standards. The Process Action Team report, "Blueprint for Change," identifies the tasks necessary to achieve this objective. I wholeheartedly accept the Team's report and approve the report's primary recommendation to use performance and commercial specifications and standards in lieu of military specifications and standards, unless no practical alternative exists to meet the user's needs. I also accept the report of the Industry Review Panel on Specifications and Standards and direct the Under Secretary of Defense (Acquisition and Technology) to appropriately implement the Panel's recommendations.

I direct the addressees to take immediate action to implement the Team's recommendations and assign the Under Secretary of Defense (Acquisition and Technology) overall implementation responsibility. I direct the Under Secretary of Defense (Acquisition and Technology) to immediately arrange for reprogramming the funds needed in FY94 and FY95 to efficiently implement the recommendations. I direct the Secretaries of the Military Departments and the Directors of the Defense Agencies to program funding for FY96 and beyond in accordance with the Defense Planning Guidance.

Policy Changes

Listed below are a number of the most critical changes to current policy that are needed to implement the Process Action Team's recommendations. These changes are effective immediately. However, it is not my intent to disrupt on-going solicitations or contract negotiations. Therefore, the Component Acquisition Executive (as defined in Part 15 of DoD Instruction 5000.2), or a designee, may waive the implementation of these changes for on-going solicitations or contracts during the next 180 days following the date of this memorandum. The Under Secretary of Defense (Acquisition and Technology) shall implement these policy changes in DoD Instruction 5000.2, the Defense Federal Acquisition Regulation Supplement (DFARS), and any other instructions, manuals, regulations, o policy documents, as appropriate.

Military Specifications and Standards: Performance specifications shall be used when purchasing new systems, major modifications, upgrades to current systems, and non-developmental and commercial items, for programs in any acquisition category. If it is not practicable to use a performance specification, a non-government standard shall be used. Since there will be cases when military specifications are needed to define an exact design solution because there is no acceptable non-governmental standard or because the use of a performance specification or non-government standard is not cost effective, the use of military specifications and standards is authorized as a last resort, with an appropriate waiver.

Waivers for the use of military specifications and standards must be approved by the Milestone Decision Authority (as defined in Part 2 of DoD Instruction 5000.2). In the case of acquisition category ID programs, waivers may be granted by the Component Acquisition Executive, or a designee. The Director, Naval Nuclear Propulsion shall determine the specifications and standards to be used for naval nuclear propulsion plants in accordance with Pub. L. 98-525 (42 U.S.C. §7158 note). Waivers for reprocurement of items already in the inventory are not required. Waivers may be made on a "class" or items basis for a period of time not to exceed 2 years.

Innovative Contract Management: The Under Secretary of Defense (Acquisition and Technology) shall develop, within 60 days of the date of this memorandum, Defense Federal Acquisition Regulation Supplement (SFARS) language to encourage contractors to propose non-government standards and industry-wide practices that meet the intent of the military specifications and standards. The Under Secretary will make this language effective 180 days

after the date of this memorandum. This language will be developed for inclusion in both requests for proposal and in on-going contracts. These standards and practices shall be considered as alternatives to those military specifications and standards cited in all new contracts expected to have a value of $100,000 or more, and in existing contracts of $500,000 or more having a substantial contract effort remaining to be performed.

Pending completion of the language, I encourage the Secretaries of the Military Departments and the Directors of the Defense Agencies to exercise their existing authority to use solicitation and contract clause language such as the language proposed in the Process Action Team's report. Government contracting officers shall expedite the processing of proposed alternatives to military specifications and standards and are encouraged to use the Value Engineering no-cost settlement method (permitted by FAR 48.104-3) in existing contracts.

Program Use of Specifications and Standards: Use of specifications and standards listed in DoD Instruction 5000.2 is not mandatory for Program Managers. These specifications and standards are tools available to the Program Manager, who shall view them as guidance, as stated in Section 6-Q of DoD Instruction 5000.2.

Tiering of Specification and Standards: During production, those system specifications, subsystem specifications and equipment/product specifications (through and including the first-tier reference in the equipment/product specifications) cited in the contract shall be mandatory for use. Lower tier references will be for guidance only, and will not be contractually binding unless they are directly cited in the contract. Specifications and standards listed on engineering drawings are to be considered as first-tier references. Approval of exceptions to this policy may only be made by the Head of the Departmental or Agency Standards Improvement Office and the Director, Naval Nuclear Propulsion for specifications and drawings used in nuclear propulsion plants in accordance with Pub. L. 98-525 (42 U.S.C. §7158 Note).

New Directions

Management and Manufacturing Specifications and Standards: Program Managers shall use management and manufacturing specifications and standards for guidance only. The Under Secretary of Defense (Acquisition and Technology) shall develop a plan for canceling these specifications and standards, inactivating them for new designs, transferring the specifications and standards to non-government standards, converting them to performance-based specifications, or justifying their retention as military specifications and standards. The plan shall begin with the ten management and manufacturing standards identified in the Report of the Industry Review Panel on Specifications and Standards and shall require completion of the appropriate action, to the maximum extent practicable, within 2 years.

Configuration Control: To the extent practicable, the Government should maintain configuration control of the functional and performance requirements only, giving-contractors responsibility for the detailed design.

Obsolete Specifications: The "Department of Defense Index of Specifications and Standards" and the "Acquisition Management System and Data Requirements Control List" contain outdated military specifications and standards and data requirements that should not be used for new development efforts. The Under Secretary of Defense (Acquisition and Technology) shall develop a procedure for identifying and removing these obsolete requirements.

Use of Non-Government Standards: I encourage the Under Secretary of Defense (Acquisition and Technology) to form partnerships with industry associations to develop non-government standards for replacement of military standards where practicable. The Under Secretary shall adopt and list in the "Department of Defense Index of Specifications and Standards" (DoDISS) non-government standards currently being used by DoD. The Under Secretary shall also establish teams to review the federal supply classes and standardization areas to identify candidates for conversion or replacement.

Reducing Oversight: I direct the Secretaries of the Military Departments and the Directors of the Defense Agencies to reduce direct Government oversight by substituting process controls and non-government standards in place of development and/or production testing and inspection and military-unique quality assurance systems.

Cultural Changes

Challenge Acquisition Requirements: Program Managers and acquisition decision makers at all levels shall challenge requirements because the problem of unique military systems does not begin with the standards. The problem is rooted in the requirements determination phase of the acquisition cycle.

Enhance Pollution Controls: The Secretaries of the Military Departments and the Directors of the Defense Agencies shall establish and execute an aggressive program to identify and reduce or eliminate toxic pollutants procured or generated through the use of specifications and standards.

Education and Training: The Under Secretary of Defense (Acquisition and Technology) shall ensure that training and education programs throughout the Department are revised to incorporate specifications and standards reform.

Program Reviews: Milestone Decision Authority (MDA) review of programs at all levels shall include consideration of the extent streamlining, both in the contract and in the oversight process, is being pursued. The MDA (i.e., the Component Acquisition Executive or his/her designee, for all but ACAT 1D programs) will be responsible for ensuring that progress is being made with respect to programs under his/her cognizance.

Standards Improvement Executives: The Under Secretary the Secretaries of the Military Departments, and the Director of the Defense Logistics Agency shall appoint Standards Improvement Executives within 30 days. The Standards Improvement Executives shall assume the responsibilities of the current Standardization Executives, support those carrying out acquisition reform, direct implementation of the military specifications and standards reform

program, and participate on the Defense Standards Improvement Council. The Defense Standards Improvement Council shall be the primary coordinating body for the specification and standards program within the Department of Defense and shall report directly to the Assistant Secretary of Defense (Economic Security). The Council shall coordinate with the Deputy Under Secretary of Defense (Acquisition Reform) regarding specification and standards reform matters, and shall provide periodic progress reports to the Acquisition Reform Senior Steering Group, who will monitor overall implementation progress.

Management Commitment

This Process Action Team tackled one of the most difficult issues we will face in reforming the acquisition process. I would like to commend the team, composed of representatives from all of the Military Departments and appropriate Defense Agencies, and its leader, Mr. Harold Griffin, for a job well done. In addition, I would like to thank the Army, and in particular, Army Materiel Command, for its administrative support of the team.

The Process Action Team's report and the policies contained in this memorandum are not a total solution to the problems inherent in the use of military specifications and standards; however, they are a solid beginning that will increase the use of performance and commercial specifications and standards. Your leadership and good judgment will be critical to successful implementation of this reform. I encourage you and your leadership teams to be active participants in establishing the environment essential for implementing this cultural change.

This memorandum is intended only to improve the internal management of the Department of Defense and does not create any right or benefit, substantive or procedural, enforceable at law or equity by a party against the Department of Defense or its officers and employees.

Signed
William J. Perry

APPENDIX B

Charter, Integrated Product Team

Acquisition Reform Alternatives (Source Selection) Using Non-Government Standards

1 March 1995

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1.0 SCOPE.

Air Force Materiel Command, Directorate of Engineering and Technical Management (AFMC/EN), is tasked to form a Joint Government/Industry Integrated Product Team (IPT) to identify opportunities, alternatives, issues, and concepts related to the solicitation and source selection process afforded by government adoption of Non Government Standards (NGS). Secondly, the IPT is to investigate ways and associated risks in migrating technical and other processes to industry. This effort extends to acquisition of new systems, major modifications, and milestone III production contracts at all AFMC Centers.

2.0 OBJECTIVES.

Focus your review to allow DoD to have contractors compete on the basis of their own design and process excellence rather than DoD dictated processes. Your effort will use the Military Specification/Standards Reform Initiative direction provided by Secretary of Defense, Dr. William Perry, as the impetus and opportunity to examine and improve the acquisition process. Your IPT is limited to the exchange of information regarding opportunities, alternatives, issues, and concepts to provide greater commercial flexibility in the solicitation and source selection processes as well as investigate opportunities and risks associated with adoption of certified industry technical and other processes. AFMC expects this government/industry team to provide AFMC/CC and the industry chief executive officers (CEO) counterparts via the Council of Defense & Space Industry Associations (CODSIA), a briefing and report outlining top-level observations/opportunities/alternatives. The team will also identify various options for possible changes to guidance of the Military Specifications and Standards

Reform Initiative. Specifically, identify those observations which could promote industry self-governance and corresponding reduction of the government audit functions.

3.0 MEMBERSHIP.

Your joint team shall be composed of a mix of aeronautical, aerospace, and command, control, communication and computer (C4I) viewpoints. In addition, cross-functional representation from both government and industry should cover technical management, program management, business management, commodity/reprocurement management disciplines. Army and Navy representatives should also be invited to participate. The co-chairs are: Dr. John C. Halpin, SES, Technical Director, Aeronautical Systems Center, Directorate of Engineering (ASC/EN), and Mr. James M. Sinnett, Senior Vice President, New Aircraft & Missile Products, McDonnell-Douglas Aerospace Company. The joint team is not permitted to develop a consensus of opinion on any issues regarding this effort.

4.0 FUNDING.

Funding to support the Government IPT members shall be furnished by AFMC/EN using Acquisition Reform Specifications and Standards funds. Sources, uses, and control of funding is the responsibility of the IPT.

5.0 SCHEDULE AND PRODUCT.

A preliminary report to the Commander of AFMC is required by mid May 1995. This report should present findings and potential options that could be presented to the executive acquisition members of Secretary of the Air Force (SAF) and Office of the Assistant Secretary of Defense (OASD). Any conclusions and recommendations of the IPT will be made solely and completely by the executive acquisition members of SAF and OASD and will be solely in the best interest of the Government. This briefing and report of findings shall be provided to the Joint Aeronautical Commanders Group and, if possible, to the Joint Logistic Commanders Group to seek their recommendations and endorsement for common application of Government Specification and Standards Reform.

_____ ***Signed*** _____
Ronald W. Yates, General USAF
Commander
Air Force Materiel Command

_____ ***Signed*** _____
Don Fuqua
President
Aerospace Industries Association

_____ ***Signed*** _____
Dan C. Heinemeier
Vice President
Electronic Industries Association

_____ ***Signed*** _____
James R. Hogg
President
National Security Industrial Association

APPENDIX C

NGS IPT SCHEDULE OF MEETINGS, BRIEFINGS, AND KEY EVENTS

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Figure C-10. NGS Current Activities Schedule Oct - Jan 96. (Waterfall) 7

The following charts are shown in three separate views: as bullet charts, Gantt charts, and waterfall (milestone type) charts.

1.0 CONCEPT DEVELOPMENT: NGS-IPT ACTIVITIES/BRIEFING SCHEDULE

- 1 Feb - 28 Feb 95, NGS-IPT Charter Development and Staffing, WPAFB, OH
- 1-3 Mar, NGS-IPT Kickoff Meeting and Brainstorming Meeting, Long Beach CA
- 30 Mar, NGS-IPT updates AFMC Engineering and Technical Management Mission Element Bd, HILL AFB UT
- 5-7 Apr, NGS-IPT Subpanel Concept Exploration and Development Meeting, Washington D.C.
- 6 Apr, NGS-IPT Co-chairs, Dr Halpin & Mr Sinnett, Brief AIA Technical Oversight Committee, Wash D.C.
- 24 Apr, NGS-IPT Subpanel Status Reports to Co-Chairs
- 27 Apr, NGS-IPT Co-chair, Dr Halpin, Status Report to Horizons IV, Hill AFB UT
- 1-3 May, NGS-IPT Meeting to Integrate and Develop Concept Briefing, WPAFB OH
- 4 May, Entire NGS-IPT Explores NGS Concepts during Workshop with Industry at ASC Chief Engineers Day, WPAFB OH
- 8 May, Govt CoChairs prebriefed ASC/CC (Lt Gen Scofield)
- 9 May, NGS-IPT Co-chairs, Dr Halpin and Mr Sinnett, brief AFMC/CC and seek endorsement, WPAFB OH
- 16 May, Govt CoChairs prebriefed SAF/AQC (BGen Drewes), NAVAIR/CC (VAdm Lockard)
- 23 May, Govt CoChairs prebriefed AFMC/PK (Ms Williams), DR invited
- 25 May, Industry Co-Chair Updates Industry CEOs on NGS-IPT Concepts
- 25 May, Govt CoChairs prebriefed OUSD (A&T, Dir/T/SE/Eval Mr John A Burt, DCMC/CC & Staff (VADM Vincent)
- 16 Jun, NGS-IPT Govt Co-Chair, Mr Les Bordelon for Dr Halpin, Presents NGS-IPT Concepts to JLC, Battle Creek, MI
- 16 Jun, IPT briefed OUSD (A&T) Mr Kaminski
- 22 Jun, Govt IPT briefed AFMC/Engr Functional Element Board
- 6 Jul, Govt CoChairs brief SAF/AQ (Mrs Druyun)
- 6 Jul, IPT prebriefed Mr Longuemare's OUSD (A&T) staff with E. Spector and , Mr Burt
- 7 Jul, SAF/AQ takes formal NGS-IPT recommendations to AF Acq Reform Senior Steering Group for approval
- 10 Jul, NGS-IPT Co-chairs, Dr Halpin and Mr Sinnett, brief Defense Manufacturing Council, Wash DC

Figure C-1. Concept Development Briefing Schedule Feb - Jul 95. (Bullet)

2.0 INTEGRATION DEVELOPMENT: NGS-IPT ACTIVITIES/BRIEFING SCHEDULE

- 11-12 Jul 95, NGS-IPT Mtg, WPAFB OH (Subpanel Chairpersons & Integration Panel Only)
- 12 Jul 95, CoChairs brief JACG Mtg, WPAFB, OH (0830-0930)
- 13 Jul 95, Govt IPT briefs DoN Acquisition Reform Senior Group(Adm. Bowes) (Dr Halpin & Les Bordelon - 60 minutes) Pentagon, @ 1230
- 26-28 Jul 95, NGS-IPT Mtg, St Louis, MO
- 28 Jul 95, 0800-1200, Reinvention Lab Review 25-27 NGS-IPT Mtg, St Louis, working with DLA
- 28 Jul 95, IPT CoChairs approve Final Report Outline
- 9-10 Aug 95, Integration & Flex Sustainment panel working meeting, WPAFB, Dayton OH
- 18 Aug 95, Draft Panel Reports due- Appendices & final boilerplate due to ASC/ENSI (Jim O'Connell)
- 21-22 Aug 95, Integration & cochair meeting at WPAFB, Dayton OH, Review draft report & interfaces
- 28 Aug 95 - 1 Sep 95, NGS-IPT Mtg, Seattle WA, (Entire team or as designated by sub panel cochair persons) Finalize subpanel reports; review interfaces
- 5 Sep 95, 0900-0930, NGS-IPT(Jim O'Connell) reviews CEO Draft Briefing with Gen Roellig, HQ AFMC/PK, WPAFB -- Not Accomplished
- 5 Sep 95, JACG Principals Video Telcon on NGS-IPT issues & position to JLC
- 5 Sep 95, 0900 Jim O'Connell meets with Gen Roellig, AFMC/PK to review CEO Charts for CEO Conf
- 6 Sep 95, AIA Review of NGS-IPT alternatives, Dr Halpin & Mr Jim Sinnett, Washington D.C.
- 6 Sep 95, Gen Roellig reviews CEO brf charts with AFMC/CC
- 8 Sep 95, Dr Halpin, Mr House, Mr Disler brief Army Acq Reform Exec, Mr Ken Oscar
- 11 Sep 95, JLC Video Teleconference on NGS-IPT Status, ASC/CC briefs via Video Telcon
- 2-11 Sep 95, Complete draft IPT Final Report & summary briefing
- 13 Sep 95, Tri-Service SAE Meeting to discuss NGS-IPT Implementation Alternatives, ASC/CC, Pentagon
- 12-13 Sep 95, Entire IPT meets to finalize Report & briefing to AFCS & CEOs., WPAFB OH
- 14-15 Sep 95, NGS-IPT Mtg to fine tune CEO Briefing, WPAFB OH (Subpanel Chairpersons & Integration Panel Only)
- 18 Sep 95, Furnish final CEO brief to AFMC/PK, Maj McKinney w/55 Copies
- 18 Sep 95, JACG Principals Review CEO Brief for consistent approach to implementation, NAVAIR Crystal City VA
- 21 Sep 95 1500, CoChairs brief AFMC-Industry CEO Briefing, Andrews AFB MD on Implementation Recommendations,
- 22 Sep 95, ASC/CC meets with OUSD, Ms Spector and DODIG, Mr Vander Shaft to discuss implement'n issues
- Sep 95, IPT begins draft of final report

Figure C-2. Integration Development Schedule Jul - Sep 95. (Bullet)

- 10 Oct 95, Dr Halpin briefs ASC 2-Ltrs on NGS-IPT, Heading Check for PEO SYS Com Conf, WPAFB OH
- 11 Oct 95 Dr Halpin briefs PEO SYSCOM Prgm Mgrs Conf on Implementation Plan Washington DC
- 12-13 Oct 95 Dr Halpin/Mr Sinnett brief AIA Tech Ops Panel, Atlanta GA
- 20 Oct 95, Lt Bolt #6 Review by Sr AF Steering Group, Pentagon, Wash D.C.
- 23-24 Oct 95, "Production Paper Review for F-15/F-18 for F3I Specs Refinement", NAVAIR or St Louis
- 25-26 Oct 95, Dr Halpin/Mr Sinnett brief EIA/NSIA/SOLE Mtg, Dulles Airport VA
- 1 Nov 95, Final Review Integration Report, N-G, Century City CA
- 2-3 Nov 95, IPT Co Chair Panel Mtg, Final Review, at Northrop Grumman, Los Angeles CA
- 2 Nov, ASC Engrs brief Revised F3I Concepts to AFMC Engr FEB, W-R AFB GA
- 6 Nov 95, 0830 JACG Engr Board Video Teleconf
- 9 Nov 95, Revised Final Subpanel Reports due to ASC/ENSI for final review distribution
- 22 Nov 95, JLC , Gen Viccellio discuss NGS-IPT with OUSD(A&T), Dr Kaminiski
- 28-29 Nov, JACG Working Board Mtg, Chaired by Mr Sutton, WPAFB OH
- 6-7 Dec 95, JACG Principals Meeting to decided NGS-IPT implementation resources, Elizabeth N.C.
- 12-13 Dec 95, OUSD(A&T) AIAA Acquisition Reform Conference, Washington DC
- 8 Feb 96, Out Briefing to Defense Manufacturing Council, Washington DC
- Feb 96, NGS-IPT Close out Meeting, Update Participants on Implementation Details, TBD
- Feb 96, Presidents Day, WPAFB OH , NGS-IPT Implementation Challenges

Figure C-3. Integration Development Briefing Schedule Oct 95 - Feb 96. (Bullet)

3.0 CONCEPT DEVELOPMENT IPT SCHEDULE

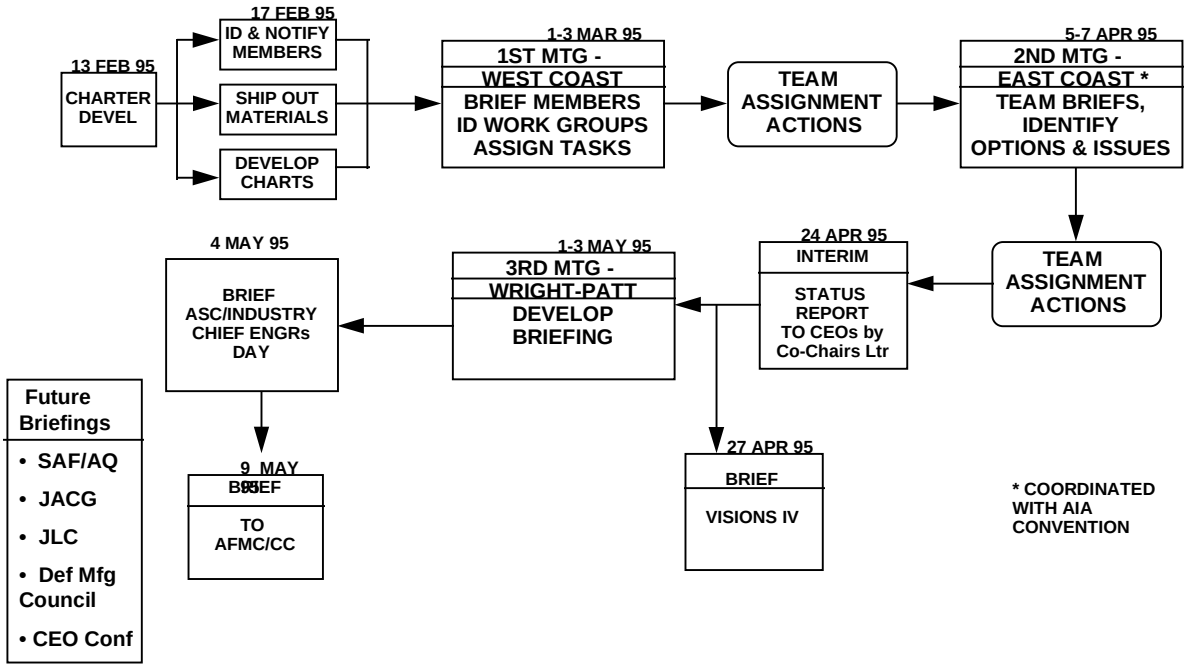

Figure C-4. Concept Development IPT Schedule Feb -Apr 95. (Gantt)

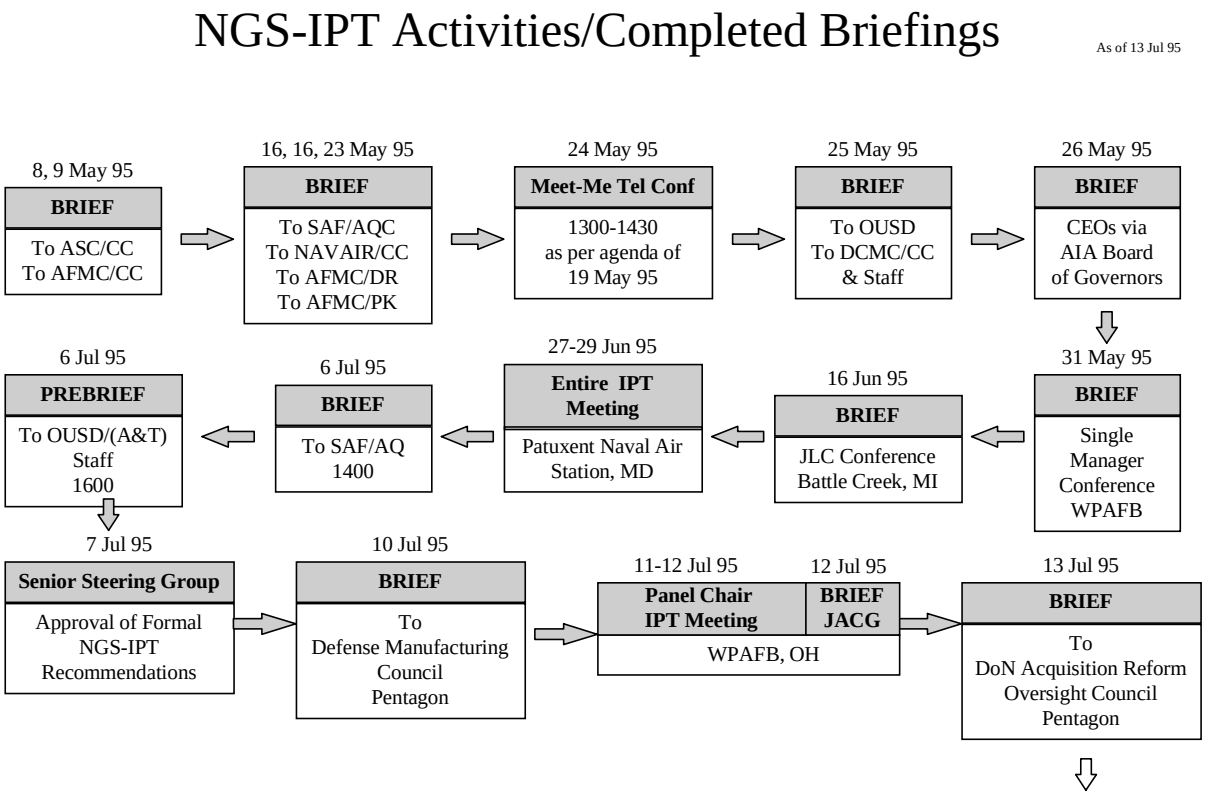

Figure C-5. Current Briefing Schedule May-Jul 95. (Gantt)

4.0 NGS-IPT CURRENT ACTIVITIES/BRIEFING SCHEDULE: JUL-DEC 95

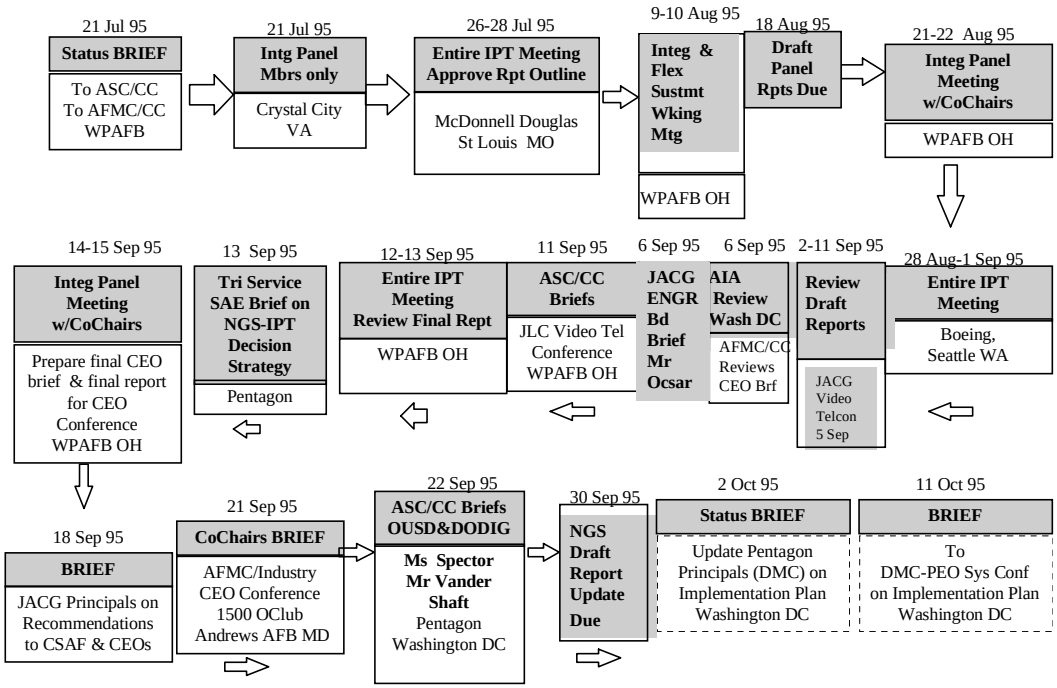

Figure C-6. NGS Current Activities Schedule Jul - Oct 95. (Gantt)

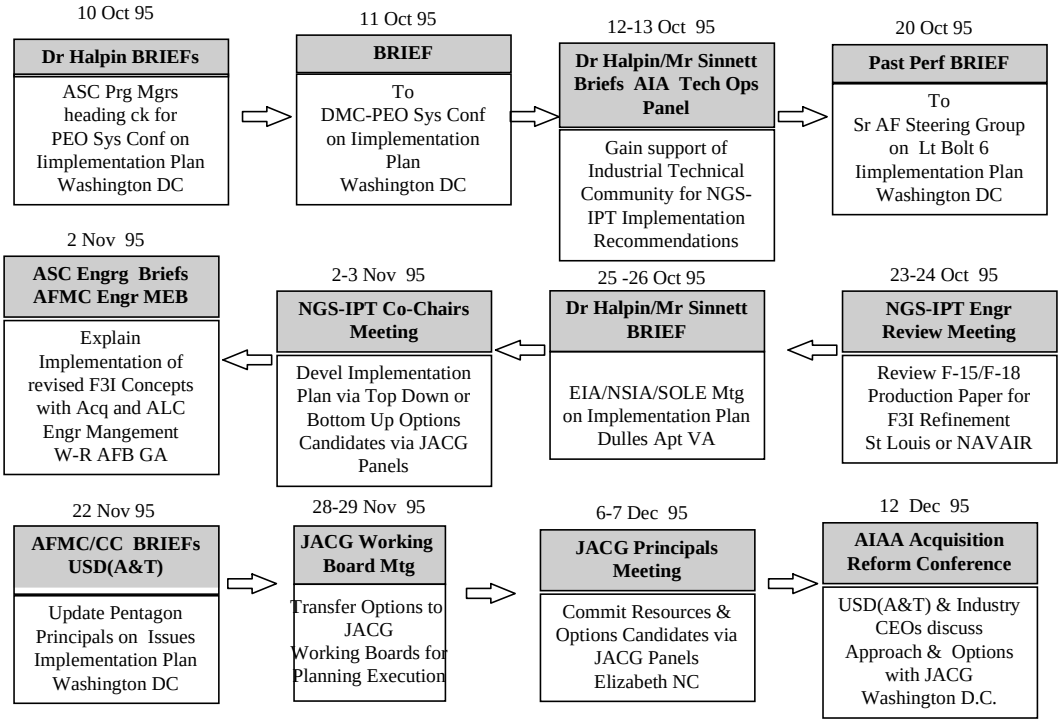

Figure C-7. NGS Current Activities Schedule Oct - Dec 95. (Gantt)

5.0 NGS-IPT CURRENT ACTIVITIES/BRIEFING SCHEDULE: JAN-FEB 96

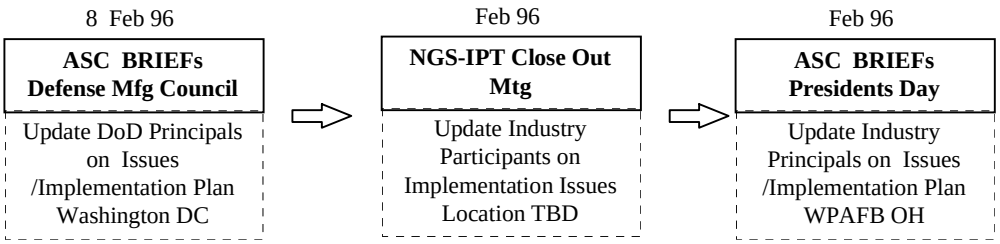

Figure C-8. NGS Current Activities Schedule Jan - Feb 96. (Gantt)

6.0 SIGNIFICANT EVENTS: NON GOVERNMENT STANDARDS IPT

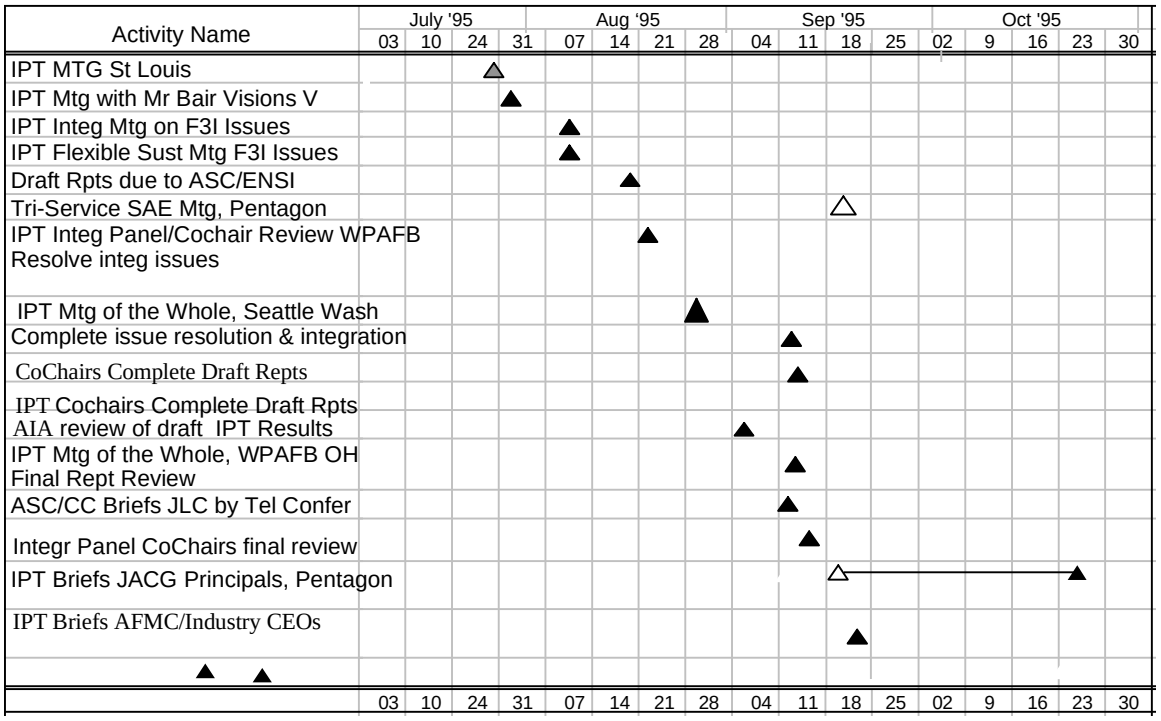

Figure C-9. NGS Current Activities Schedule Jul - Oct 95. (Waterfall)

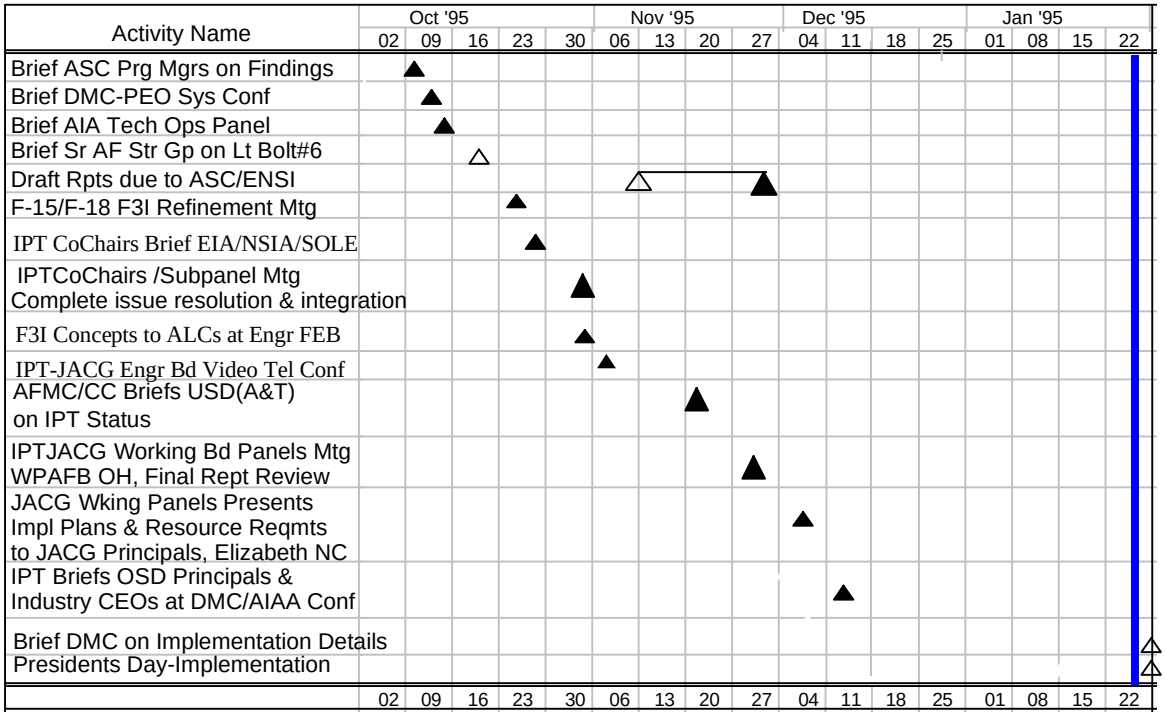

Figure C-10. NGS Current Activities Schedule Oct - Jan 96. (Waterfall)

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APPENDIX D

PERFORMANCE BASED ACQUISITION

(Specifications, Standards & Technical Data Packages)

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1.0 PREFACE.

This document describes the basic tenants of Performance Based Acquisition, a strategy that has been developed to move the DoD acquisition process toward the commercial models. The intent is to provide more flexibility to contractors in defining and implementing innovative and cost effective solutions to weapon system requirements. This strategy encompasses the entire life cycle of the weapon system, namely development, procurement of production articles and post production support and sustainment. This paper follows a stepping stone approach to convey an understanding of the basic principles underlying Performance Based Acquisition. The initial sections on current practice, transition, performance based approach and procurement alternatives are written primarily from a development perspective. The sections that follow covering the implications for spares reprocurement, maintenance and repair are focused primarily on sustainment and support. Finally, a section on contractor capability is included followed by an overview of the content and structure of performance based specifications as a concluding tutorial.

2.0 INTRODUCTION.

Performance Based Acquisition is a strategy for the development, procurement, and support (e.g. maintenance, reprocurement of replenishment spares and depot level repair) of weapons systems. It incorporates the major features of acquisition reform and provides for the conduct of programs based on management and product requirements defined in performance terms which describe their essential characteristics. The five main features of this strategy are (1) performance based specifications that are incrementally verified throughout development, (2) the discipline to organize the required development, design and fabrication information consistently at all levels of the requirements allocation hierarchy (specification tree) so that traceability is maintained throughout the weapon system cycle, (3) contractor control of the development and detailed design to the maximum extent feasible, (4) contractor use of their own company/facility processes and (5) enhanced opportunities for incorporation of advanced technology.

In executing Performance Based Acquisition, it is imperative that seven basic principles be recognized and understood:

• A complete technical data package that describes the products to be procured is necessary at all levels from top system level requirements down to the lowest reparable level. The fundamental content of this technical data package is the same regardless of who (the government or the contractor) controls it.

• Flowdown of the technical requirements down to the lowest level of the supplier chain is essential and must be accomplished if the benefits of acquisition reform are to be realized.

• Contracts must be written in a manner which will encourage the prime contractors to communicate with their suppliers in performance based terms.

• The build-to and support packages will have a common technical basis because the support package is derived from the build-to package.

• Implementation flexibility is critical. Business decisions based upon the potential for increased contractor and government efficiency, cost benefits gained from enhanced competition and continued support in the event that supplier(s) no longer conducted business with the DoD dictate the appropriate actions and are typically based on the programmatics of the action to be pursued.

• The ability of DoD to mandate the use of military specifications and standards on its contractors has been severely restricted by acquisition reform. These documents have been utilized in the past (either by reference in the Statement of Work or in specifications) to convey requirements for products and/or their verification. The essential performance attributes of these documents will need to be incorporated in the appropriate specifications.

• Discussions on who controls which portions of the technical data packages at each level of the specification tree will be driven by program/technical risk, contractor capability and business strategies. Contractors exhibiting the capability for self-governance will be given greater authority and responsibility than those who do not.

3.0 CURRENT PRACTICE.

The current DoD approach to acquisition and reprocurement involves liberal application of military standards and military specifications, often called out or referenced in documents at the top system level, all the way down to the lowest reparable part or component level. This practice will change with the elimination of many military specifications and standards and the transition to use of performance based specifications for procurement per the appropriate DoD reform initiatives.

Requirements allocation typically starts at the weapon system level with a document that communicates to prospective prime contractors the top level system performance requirements necessary to satisfy the integrated performance requirements of the operational user. This document may take the form of a system specification (sometimes referred to as an "A" spec.), a System Requirements Document (SRD) or a Technical Requirements Document (TRD). The system level requirements are further allocated down to progressively lower levels of the weapon system hierarchy through a series of development definitions ("B" specs.). At the level immediately below the system level, these requirements would consist of system segment specifications and prime item development specifications which describe the capabilities expected of separate elements of the weapon system. As performance requirements are further allocated down, the increasingly detailed descriptions represent the "design-to" requirements which form the basis for qualification of the detailed product design. Once the design has been qualified, product fabrication definitions (sometimes called "C" specs. or production data packages) are generated which reflect the exact configuration of the article and the manufacturing processes which are to be used to produce it on a recurring basis. The production articles are typically accepted for delivery by verifying that the delivered product is built in accordance with this product fabrication definition (commonly referred to as the "build-to" package). The development specification ("B" spec.) and the product fabrication specification ("C" spec.), taken together, are often referred to as a "2 part specification." The support package is, in turn, derived from the "design-to" and "build-to" packages and contains the information necessary to accomplish maintenance and repair of the system. It includes organizational and intermediate level Technical Orders (T.O.'s) for maintenance, as well as depot level T.O.'s containing detailed shop-specific work instructions for repair and "sell off" of reparable parts and components. The complete set of information contained in the "design-to," "build-to" and support packages are often referred to as the technical data package. This is the end product of the Engineering and Manufacturing Development (EMD) phase of any program.

When widely applied in contracts across the DoD, 2 part specifications with their associated dependency on military specifications and standards tend to generate contractual arrangements and factory process requirements unique to each program. Contractors engaged in executing multiple DoD contracts in the same facility often have to maintain unique and largely duplicative processes and documentation for each contract, adding to the total cost of doing business with the DoD. Likewise, the support package which is derived from the 2 part specification and which is used to provide post production support also tends to be highly prescriptive with associated cost impacts for the support agent.

The requirements allocation process is often incomplete. Often, derived requirements at the lower levels of the allocation (specification tree) are not fully developed or higher level requirements are simply "passed through" to the lower levels with no further detail or definition. This results in lack of understanding by the product designers of the true design requirements and cost impacts. It also creates problems during system support and spares reprocurement. The required data often has to be created through "reverse engineering."

The combination of prescriptive military specifications and incomplete technical data packages result in limited flexibility for the government and the contractor in achieving designs which are optimized in terms of performance, cost and development time. This results in the contractor maintaining separate processes for each contract. This limits his ability to incorporate rapidly developing technology during the life of the weapon system, either to improve performance or to enhance supportability as existing parts became obsolete and unobtainable (digital computers, for example). Lastly, highly qualified alternate sources are often precluded from using more efficient or cost effective production and/or repair methods.

4.0 TRANSITION.

The Non-Government Standards (NGS) IPT was formed as a joint government/industry team to develop an implementation strategy for acquisition reform. Its goal was to derive a best practice approach to defense system acquisition. The IPT's approach was to take the commercial methods and meld them with traditional DoD practices, arriving at a quasi-commercial approach to acquisition intended to reduce costs/resources, enhance cycle time and maintain or improve quality. The team took an integrated systems approach to define the processes to be utilized during weapon system acquisition, ensure the effectiveness of the processes and incentivize contractor process improvements.

The result will be a new way of doing business where the government controls the top level system performance requirements. The contractors will be responsible for the flow-down of performance based requirements as well as the product definition which details the product design and the manufacturing processes required in production. Contractors will have the responsibility to develop and qualify the design and build the product to meet the government's system level requirements, using contractor specified and controlled commercial practices and/or industry processes. Some selected requirements below the system level may be incorporated by the government in the contract to manage risk or execute business strategies. The contractors will have the responsibility to define, control and maintain the technical data package for the qualified design to allow for procurement, repair and/or reprocurement. The government will make decisions on a program-by-program basis concerning when to assume control of the product baseline and at what level. Likewise, reprocurement actions will require programmatic decisions based on cost, schedule and performance to determine the degree of autonomy to be given to the contractor in executing changes to the product design and/or production processes, and the level at which reprocurement will take place. The old way of doing business using the traditional, prescriptive fabrication processes and standards will no longer be levied on the contractors.

5.0 PERFORMANCE BASED APPROACH.

Performance Based Acquisition, in accordance with DoD policy, allows limited usage of mil specifications or standards. For new acquisition, only product specifications (such as those for jet aircraft fuels, MIL-T-5624R) and interface specifications (such as those for military armament, MIL-STD-1760), will be permitted to be called out by the government procuring authority. The contractor thus has increased responsibility and control over the design throughout EMD and production and will be responsible to generate and control the technical data package at each level of the specification tree. His objective will be to describe the design in sufficient detail such that any item may be replaced without the requirement for external adjustment to achieve interchangeability or interoperability. Figure D-1 illustrates this process and some of the supporting basic elements of the technical data package.

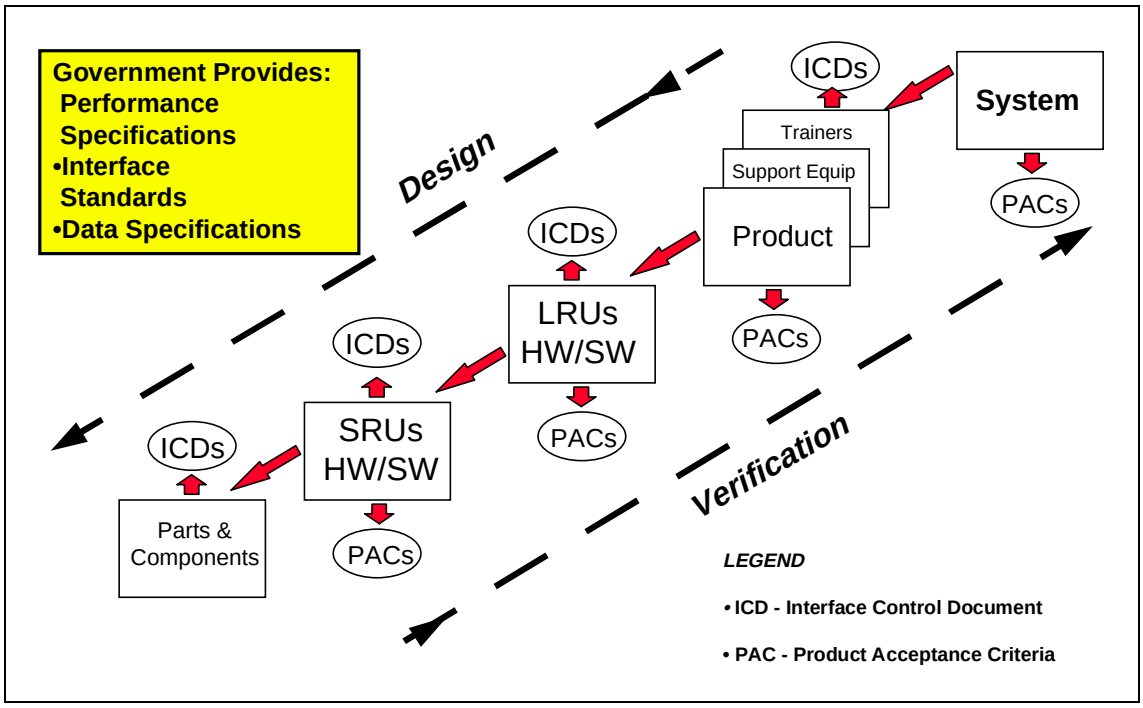

Figure D-1. Design and Verification Flow.

Performance Based Acquisition requires a disciplined systems engineering process throughout design, verification, fabrication, product acceptance and process verification. This results in a allocation (specification tree) that has complete definition from the system level down to the lowest reparable item level. The current 2 part description does not provide the efficiency or level of detail required. A 3 part description system is proposed for utilization at every level below the system level to ensure that the requirements, product and process definition are complete. The 3 part description which comprises the technical data package consists of the following:

Part 1 -- Development Definition

Part 2 -- Product Design Definition

Part 3 -- Product Fabrication Definition

Part 1, the Development Definition, defines the end item functional performance (as allocated). It links the operational requirements to the engineering environment in performance terms. This definition provides the performance requirements for the product. Performance requirements for the product provides the basis for system qualification. It addresses both hardware and/or software.

Part 2, the Product Design Definition, defines the end item design specifics. It links the engineering and factory environments. An example: The Part 1 development definition for a computer requires 10,000 hours reliability. The Part 2 product design definition requires the computer chip's leads be controlled to lengths of 2 mm's to assure that the stresses due to thermal expansion and vibration do not cause breakage of the leads. The requirements section of this definition defines performance requirements for the product. The verification section provides the basis for product acceptance. The Product Acceptance Criteria (PAC) define key design performance attributes to be measured to achieve interchangeability/interoperability. They have attributes that are specific to the actual design of the end item as well as attributes that are derived from the "as integrated/as installed" characteristics that the larger system imposes on the end item. As such, the PAC deal with both the functional and physical aspects of the product and define, in performance terms, the key metrology (measurement condition) requirements. This allows downstream procurement to be independent of facilities and specific factory test equipment that were used in the original design verification. This has potential benefits for downstream reprocurement in a rapidly advancing technology arena.

Another important element of the Part 2 definition is the delineation of interfaces. An Interface Control Document (ICD) is either included within the Product Design Definition or developed as a stand-alone document that is tied to the Product Design Definition by reference. It details the "as integrated/as installed" characteristics of the design, specifies interfaces within the design that are required to achieve the specified function ("horizontal" interface) and specifies interfaces that are required by external elements of the larger system that the function must support ("vertical" interface). An example of a horizontal interface would be the data path within a radar between the receiver and the digital processor needed to calculate terrain height. A vertical interface would be the data path between the radar and the flight control system needed to provide terrain following flight commands. Interface definition must capture: a) the hardware to hardware, b) the hardware to software, and c) the software to software characteristics of the design for both the horizontal and vertical perspectives in order to assure interchangeability/ interoperability without the requirement for external compensation. Otherwise, major cost and schedule impacts to requalify will result. For electronics and software this especially includes the physical, logical, electrical, timing and information integrity that may be demanded by the whole system to assure that safety and mission critical requirements are met. Refer to Figure D-1 to help in understanding these relationships.

Part 3, The Product Fabrication Definition, specifies the design solution of the qualified end item. It references detailed drawings, bill of materials, etc. and identifies key product characteristics, key production processes and provides the work instructions for fabrication and assembly. The requirements section of this definition defines the production process capability requirements. The verification section defines the basis for quality assurance. It applies to both hardware and software. Performance Based Acquisition will result in only minor changes to the actual drawings which are part of the technical data package. Drawings will be production level

and will represent the "as built" configuration. If drawings are anything less than the "as built" configuration, parts may not fit or function properly. Performance Based Acquisition allows drawings to be developed using contractor format. Commercial drawing requirements are well understood and the media of delivery remains a customer requirement and will be specified by the procuring activity. Another change to the drawing package will be the use of contractor process specifications rather than military specifications or standards. It will be important within the 3 part product definition system to capture the key design and process requirements in order to have traceability to the design requirements and enable downstream flexibility in procurement options for spares and sustainment. Finally, these key features captured in the 3 part descriptions must be presented on the face of the drawing using typical industry approaches which are currently in use (such as special tolerancing, notes, unique materials, etc.). This completes the flow down of performance and process requirements and interfaces. These are all linked and traceable by the 3 part description, from top to bottom of the requirements allocation (specification tree).

The Acquisition Model, Figure D-2, provides the framework for producing a technical data package for a new program with the government/contractor and contractor/sub-contractor relationships necessary to achieve the benefits of Performance Based Acquisition. The Government provides system performance requirements in the form of a System Requirements Document (SRD). The contractor prepares and proposes performance based development definitions (Part 1) which are used as the basis of the contract. The contractor allocates requirements for the whole of the system design through a systems engineering process and provides these allocated performance requirements to other suppliers. The Part 1 development definition with each lower level supplier (subcontractor or vendor) are used as the basis for the contracting at that level. The contractors in turn translate the development definition requirements into the Part 2 product design and Part 3 product fabrication definitions. (Note that logistics performance requirements such as reliability, fault detection and isolation, etc. are included in this process). It is critical that the specifications be maintained and kept current as the design evolves (this evolving design is being experienced on most of our weapon systems). Performance Based Acquisition demands this attention to detail. THE REQUIREMENTS FOR THE QUALITY AND DEPTH OF THE TECHNICAL DATA PACKAGE ARE INDEPENDENT OF WHO MAINTAINS IT.

The technical data package must completely define the key product characteristics that have been derived from the allocated requirements defined in the Part 1 definition as well as the product acceptance criteria and the complete interface requirements of Part 2 and the fabrication details of Part 3. While design specific, the Part 1 and Part 2 definitions are still written in performance based terms. The result is <u>flexibility</u> in the technology choices used in the design of the product, <u>flexibility</u> in the fabrication processes utilized to produce it, and <u>flexibility</u> in the selection of tools for accepting the product. A complete technical data package is a prerequisite to enable interchangeability/interoperability and to allow for the use and incorporation of commercial open systems and commercial technology when appropriate. Additionally, it would also form the basis for the design, verification, production and support of safety critical parts and components and would delineate the special requirements which must be satisfied for this class of parts. It also provides an ideal framework for the incorporation of advanced quality methods, including product acceptance via process control rather than acceptance test or inspection. This is

consistent with the Advanced Quality Practice in use by many companies in the commercial sector. World class suppliers will have a seamless systems engineering/advanced quality system.

This discussion pertains primarily to the development phase. A more complete treatment of the 3-part product description concept as it pertains to the sustainment phase will be presented in a later section on spares reprocurement, maintenance and repair.

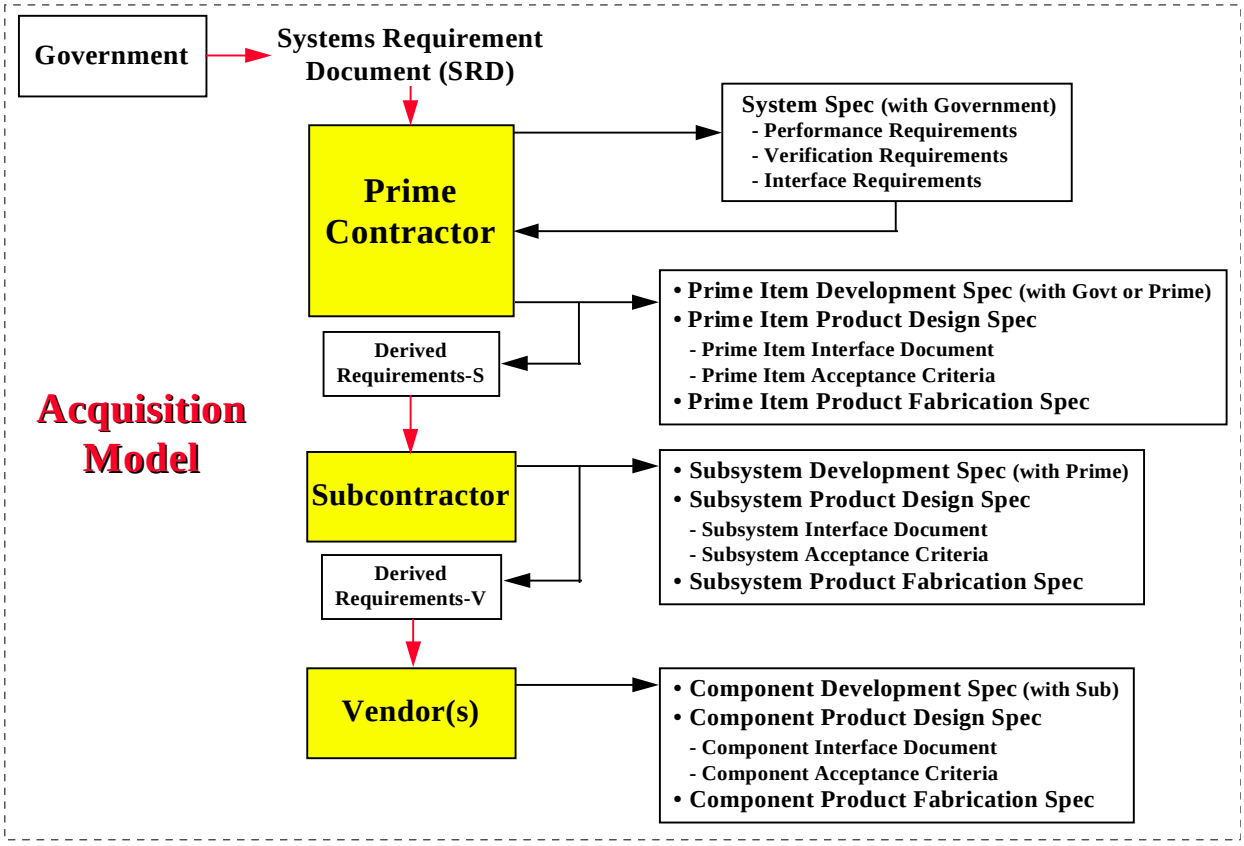

Figure D-2. Acquisition Model.

6.0 PROCUREMENT ALTERNATIVES.

The DoD purchases a wide range of products in small quantities to very large quantities. As such, it requires some flexibility in matching the acquisition approach to the product in order to achieve the most cost effective procurement action. For military aero-space systems, this equates to three procurement alternatives:

1. Build-to-Print
2. Modified Build-to-Print
3. Form-Fit-Function-Interface (F^3I).

"Build-to-print" is the approach that exhibits the least flexibility. It utilizes a fabrication agent who is provided a data package containing the key product performance characteristics, product acceptance criteria, product design detail and manufacturing processes. These items are all

derived from requirements written in performance-based terms. There are no options available to the fabrication agent except to build the product exactly as specified (using the specified processes).

The second alternative is "modified build-to-print". It is similar to build-to-print in that it also utilizes a fabrication agent who is provided a data package containing the key product performance characteristics, product acceptance criteria and product design detail again all specified. However, the fabrication agent now has been given the flexibility to change the manufacturing processes to produce the product so that cost and/or schedule benefits can be realized while maintaining key performance attributes. Depending on the demonstrated capability of the builder, these process changes may or may not require the prior approval of the customer.

The third acquisition alternative is F^3I (Form, Fit, Function and Interface). It utilizes an agent with design as well as fabrication capability (which can reside in the same organization). In this case, key product performance characteristics and product acceptance criteria are specified; but there is flexibility to change the design while meeting performance requirements, as well as flexibility to change the manufacturing processes to produce the design. The end item performance must be verified to be unaffected by the design and/or process change. These changes must consider total life cycle cost impacts as part of the overall decision process. Again, prior customer approval of changes may or may not be required depending on the demonstrated capability of the supplier.

It is extremely important to understand that the requirement for controlled, complete, and up-to-date 3 part product description technical data packages at all levels of the allocation (specification tree) is the same regardless of which acquisition alternative is selected and regardless of which organization (e.g., government, prime contractor, sub contractor or vendor) administers the build/buy actions and activities. The 3 part descriptions is the foundation for Performance Based Acquisition and is applicable for new builds, initial spares and reprocurement spares. The choice of implementation alternative (build-to-print, modified build to print or F^3I) is a business decision which must be based on consideration of overall program factors such as costs, expected benefits, schedule, technical complexity and risks, and support strategy. Use of different alternatives may be desirable for different portions of the same program; however, all are acceptable under the overall umbrella of the performance-based approach.

7.0 IMPLICATIONS FOR SPARES REPROCUREMENT, MAINTENANCE AND REPAIR.

Performance Based Acquisition offers considerable flexibility during new system development with the potential to realize significant increases in cost effectiveness and/or performance. It also provides for greatly enhanced opportunities for cost savings and/or technology insertion during the support phase of the weapon system life cycle while maintaining the quality and integrity of the product in essential areas (e.g., safety critical parts and components). However, to fully exploit these opportunities some additional factors must be considered.

The technical data package developed by the contractor(s) under the performance based acquisition approach must be complete, fully documented and maintained to reflect the latest product configuration. For new acquisitions the government customer must make conscious decisions regarding the level at which it wishes to take control of the process. Typically, the procuring activity would probably choose not to go beyond the configuration item or subsystem level (e.g., a radar or a landing gear subsystem) in taking configuration control of the 3 part product descriptions, thereby allowing the prime contractor the most flexibility in terms of identifying the best product design and manufacturing process to meet the requirements (even though the prime contractor would be required to develop and maintain the complete data package down to the lowest repairable part level.) The prime contractor is free to utilize the best choice of alternatives (i.e., F^3I, modified build-to-print, or build-to-print) for designing and producing the product, and would execute business relationships with his external and/or internal suppliers using one of more of these alternatives (in practice, some combination of all three would likely be employed for different elements of a complex system). The degree of freedom granted to each supplier to make unilateral changes to design and/or manufacturing processes would depend on the demonstrated capability and process maturity of the supplier. Likewise, the freedom of the prime contractor to make similar product and/or process changes would be described in the contractual arrangement with the government customer.

However, the fielded system ultimately must be supported down to the level of the lowest repairable components in the system, either by an organic or by a contractor support element. The typical approach used under current practice is to contract with the prime to develop a detailed support package which is derived primarily from the “build-to” package. The support package normally addresses field support in the form of maintenance T.O.’s for the organizational and intermediate level shops and also addresses depot support in the form of detailed facility-specific T.O.’s for performing repair and subsequent product acceptance actions. While this approach is still an option under Performance Based Acquisition, it presents something of a dilemma in that the procuring activity may or may not “own” the complete technical data package down to the detailed component level. There may still be proprietary designs or processes involved. Additionally, the specific design and production processes may continue to change and evolve, with the result that a delivered data package from the prime contractor would only represent an accurate depiction of the actual product at a “slice in time.” Changes would continue to occur; and, while these must be accurately documented in the data package, the government might not choose to expend the funds necessary to acquire all of the relevant data.

A special case is the category of safety critical parts and components. In the ideal case, the technical data package would form the basis for reprocurement of these components, and would delineate the special requirements which must be satisfied for this class of part. These requirements would include qualification criteria for alternate sources in the event that this approach appears viable. It is again emphasized that the quality and completeness of the technical data package is critical to enabling the support agency to procure acceptable spares; i.e., ones that exhibit integrity and quality comparable to the original product. In particular, definition of key product characteristics, interface requirements, product acceptance criteria and production process capability requirements are the essential elements which have, in the past, been identified explicitly by those sections of the integrity programs relating to safety critical

parts and components. Under Performance Based Acquisition there are specific requirements for these elements in the contractual language starting at the system level and flowing down through the allocation (specification tree). These would be minimum essential requirements; however, the most capable contractors would be expected to expand this concept into adoption of an advanced quality system approach which embodies the principles of process control and defect prevention.

The clear implication of the above is that under Performance Based Acquisition, the procuring activity must make early, strategic decisions as to the support concept to be employed and the documentation which must be purchased to enable the chosen support concept to be implemented. If the government wishes to employ organic support down to the lowest reparable part level for a given element of the weapon system, it must incorporate in its contract with the prime appropriate provisions to procure the complete technical data package (i.e., the 3 part product description), as well as provisions to update that package to reflect the latest current configuration. Conversely, for some elements of the system (particularly those in which rapid technology changes are anticipated) a better approach could be to buy spares to support the system at a higher level in the spec tree, allowing supplier(s) the flexibility to change the design and/or production processes associated with the lower-level assemblies or components of that system element while leaving the essential performance characteristics and the interface unchanged (hardware-to-hardware, hardware-to-software and software-to-software). This is particularly appropriate in a two-level maintenance environment which is anticipated to exist in the future.

A clear groundrule which the government must follow in defining the system support and sustainment approach is that it will assume control of the technical data package for each element of the system down to the level at which it will “contract” for support. For example, for an avionics subsystem, the government could elect (under a two level maintenance concept) to remove and replace LRU’s (“black boxes”) in the field, sending non-functional units back to the depot for repair. The black box supplier or repair agent could be given the flexibility to change the design and/or manufacturing process for individual circuit cards within the box, as long as all essential performance attributes and interface characteristics of the box remain unaffected. In this event there would be no need for government control of the technical data package below the black box level (the supplier would be required to maintain configuration control, however). If, on the other hand, the repair agent is an organic depot, the government would be required to take control of the technical data package at the circuit card level. In all cases, the support package must be updated subsequent to a design and/or process change.

The remaining question concerns the approach to be followed in reprocuring spares for existing systems which were not developed and purchased using the performance based acquisition approach, and for which a complete technical data package may not exist. In this case the potential benefits to be realized by allowing contractors furnishing replenishment spares the flexibility to make design and/or process changes must be weighed against the costs of acquiring the requisite data. Clearly, in many cases, continuing to employ a built-to-print approach at the component level will make the most economic and business sense since significant data generation and/or requalification costs would more than offset expected benefits. On the other hand, in some cases it may be advantageous to employ a “reverse breakout” strategy wherein spares reprocurement is accomplished at a higher level in the system hierarchy (e.g., subassembly

or LRU level) than was done previously, after first taking action to generate the required data, including complete product acceptance criteria and definition of all critical interface and performance requirements.

The choice of approach for buying replenishment spares is a business decision which must be made by each program office or support element. Options include those comparable to current practice (i.e., build-to-print) as well as those which grant considerable latitude in approach to the contractor (modified build-to-print and F^3I). All are contained within the overall framework defined by Performance Based Acquisition for new and existing systems.

8.0 IMPLICATIONS OF CONTRACTOR CAPABILITY.

Within the IPT there was a discussion and differences of opinion expressed by different organizations. This section is a departure point for further discussion (see appendix G, Supplier Capability Assessment). The JACG will revisit and resolve the different perspectives as part of its implementation efforts.

The degree of autonomy to be granted to contractors in implementing Performance Based Acquisition will depend on demonstrated capability. In the long term, contractor capability will be determined through past performance. Until a true history of performance for conducting programs using internal processes is established, a mechanism must be established to assess this overall demonstrated capability for our contractors and assign relative ratings. There are a number of alternatives to achieve these ratings. For design agents, the preferred alternative is to assess contractor capability based on criteria for the process performance attributes defined in the Key Supplier Processes report. It is envisioned that the contractor's process capabilities will be characterized by a three level vendor rating. Level 1 denotes contractors with fully capable processes, and are considered responsible and capable of conducting programs on a self governance basis with minimal government involvement. Level 3 denotes contractors with minimal processes, and are considered unqualified for self governance thus requiring a level of government involvement equivalent to past practice. Level 2 would be for contractors somewhere in between, and would require some government involvement, but at a lower level than past practice.

In terms of product acceptance, there are three general categories of quality assurance that must be addressed. The first is for individual production processes which are strictly under process control. That is, no post process tests or inspections are required. The second is for individual production processes which require specific post process inspections or tests. This could include some production processes for which process control has been implemented, but because of the criticality of potential defects, inspections or test have been deemed appropriate. The third is for potential "end of the line" tests or inspections which might include final functional testing, electronic stress screening (ESS), etc.

To determine the appropriate level of government involvement, there are three things which must be considered; the criticality of failure, liability, and contractor capability. Criticality of failure can be divided into four categories; safety critical, mission critical, major economic loss, and other. Liability addresses the issue of which party is responsible for the consequence of failure.

Contractor capability refers to the three levels discussed previously. Table D-I lists the proposed level of government oversight in quality assurance measures based on contractor level.

Table D-I. Level of Government Involvement.

	Level 1 Contractor	Level 2 Contractor	Level 3 Contractor
Safety Critical	Business as Usual	Business as Usual	Business as Usual
Mission Critical	Case by Case *	Case by Case *	Business as Usual
Major Economic Loss Gov't Liability	Case by Case *	Business as Usual	Business as Usual
Contractor Liability	Audits Only **	End of Line and Audits	Business as Usual
Other	Audits Only	End of Line and Audits	Business as Usual

* The case by case evaluation should consider, among other things, whether or not the key product features are under process control. If the probability of failure is relatively low, and the contractor has demonstrated adequate process control, this should be a candidate for audits only. If end of process inspections or test are required, the reliability and ease of conducting the inspection or test should be considered.

** Audits Only means that the government would accept the contractor actions as adequate for acceptance, with periodic audits to review their overall quality system.

There are a number of other considerations which must also be addressed for production programs. These include the level of government involvement for: conduct of requalification testing for product/process changes; approval of subcontractor quality plans; and approval of change authority for subcontractors. Table D-II identifies a proposed list identifying the level of government involvement based on government participation on the contractor change control board as the primary means of control.

Table D-II. Government Participation on Contractor Change Board.

	LEVEL 1	**LEVEL 2**	**LEVEL 3**
Contract Spec	Development Spec	Development Spec	Development Spec
Contractor Board	Gov't Observer	Gov't Voting Member	Gov't Co-Chair
Government Approval	Changes to F3I Spec **	Changes to F3I Spec ** Change Classification * Requal Testing *	Changes to F3I Spec ** Change Classification * Class 1 Changes Fab Spec * Detailed Drawings * Work Instructions * Quality Provisions *
Requal Test Plans	Non Approval Data Item	Non Approval Data Item	Gov't Approval Data Item
Requal Test Results	Non Approval Data Item	Non Approval Data Item	Gov't Approval Data Item
FCA	Gov't Observer	Gov't Voting Member	Gov't Co-Chair
PCA	Gov't Observer	Gov't Voting Member	Gov't Co-Chair
	LEVEL 1	**LEVEL 2**	**LEVEL 3**
Safety Critical	Yes	Yes	Yes
Mission Items	Case by Case	Yes	Yes
Econ Loss			
Gov't Liable	Case by Case	Yes	Yes
Cont Liable	Audits Only	End of Line and Audits	Yes
Other	Audits Only	End of Line and Audits	Yes
Sub Quality Plans	Contractor Approved	Gov't Approved *	Gov't Approved **
Sub Chg Cont	Contractor Approved	Gov't Approved *	Gov't Approved **

* Government Approval Through Co-Chair/Voting Member of Contractor Control Board

** Government Approval Through Formal Government Change Control Board/PM Action

In looking at post development programs for spares reprocurement and repair/overhaul activities, there are two basic alternatives that would differentiate between contractors through control of the detailed fabrication specification and associated documentation which forms the complete build-to and support packages. The first is the typical government control board which operates separately from and serially with the contractor control board. For level 1 contractors, control of the build-to and support documents would remain with the contractor, while for level 3 contractors, the government would control them, with all changes approved through a government change control board. Theoretically, level 2 contractors should have some increased

authority for control of these documents. But with this approach, there is no clean option for level 2 contractors; this would have to be negotiated on a contract by contract case. However, it should be recognized that even when the government controls these documents, the contractors still have control over production processes to some degree. This includes the ability to modify or substitute production processes under Class II change control, although the designation as a Class II change requires concurrence of the government. In many cases, this concurrence is little more than a formality. Depending on the specific strengths and weaknesses of a level 2 contractor, some could be given the authority to make the decision on change classification without government concurrence. This approach does fit well with the two level rating systems and is recommended for acquisition where there is little or no on site government representation.

Table D-III. Alternative 1: Government versus Contractor Control of Fabrication Specifications.

ADVANTAGES	DISADVANTAGES
Allows level 1 contractors to maintain full control of the detailed design.	No simple mechanism for handling level 2 contractors.
Ensures government control of the detailed design for level 3 contractors.	Full government change control board required with attendant delays in approval process.
Minimal government support for level 1 contractors.	Requires significant full time government support for level 3 contractors and some level 2 contractors.
Fits well with 2 level rating systems, and satisfies requirements when no on-site Gov't representation is available.	

The second alternative for post-development programs would be to employ a totally different approach to exerting the required level of government control. This alternative would leave control of the fabrication specification within the contractors' change control board, but would require different levels of government participation on that board. For level 1 contractors, no direct government participation would be required. For level 2 contractors, the government would participate as a member of the board which would provide insight into all change activity and allow for a government position to be stated. For level 3 contractors, the government would act as a co-chair of the board. This would then require defacto "government approval" of all change activity, but would not require a separate government change control board. This approach is recommended for contracts which have on site government representation.

Table D-IV. Alternative 2: Government Participation on Contractor Change Control Board.

ADVANTAGES	DISADVANTAGES
Provides simple, consistent approach with appropriate level of government control for all levels of contractor capabilities. (the elegant solution)	Requires significant full time government support for level 3 contractors.
All but eliminates need for separate government change control board, and minimizes delays due to government action.	
Provides for minimal government support for level 1 contractors, and part time, as needed support for level 2 contractors	

9.0 THE CONTENT AND STRUCTURE OF PERFORMANCE BASED SPECIFICATIONS.

A *specification* describes the essential technical requirements for the system, system function(s), items (hardware, software, firmware or their aggregation), materials, and services. Specifications include the verification criteria for determining whether these requirements are met. Specifications support the acquisition and life cycle management of the item, material, and service described. Generally, the use of specifications in development is readily grasped. Often over looked is the importance of specifications in sustainment. The purpose of repair, reprocurement, technology insertion are all to restore a product's capability to achieve (or exceed) required performance documented in a specification. When specifications are properly controlled and maintained, the government avoids the time, expense, and risk of having to reverse engineer performance requirements from drawings or parts for competitive reprocurements or technology insertion. Specifications are not just for acquisition, they serve the needs of life cycle management.

A performance specification states requirements in terms of the required results without stating the method for achieving those results. These required results are characterized by form, fit, function, and interface requirements. Performance requirements state not just "how far" and "how fast". They also include requirements characterizing "how supportable", "how trainable", "how safe" etc. Performance addresses all aspects of the total system.

Throughout acquisition, specifications are progressively defined and controlled commensurate with the degree of system maturity, risks, and business decisions. The relationship between specifications is depicted in Figure D-3. in the style of a *specification tree*. A specification tree depicts the structured decomposition of requirements to achieve verifiable end-item product requirements and to define the physical and functional relationship between items (i.e.,

interfaces) necessary to achieve the overall system requirements. Lack of definition of a comprehensive, well structured, top-to-bottom requirements flow down has adversely impacted definition and resulting development of lower level items such as software.

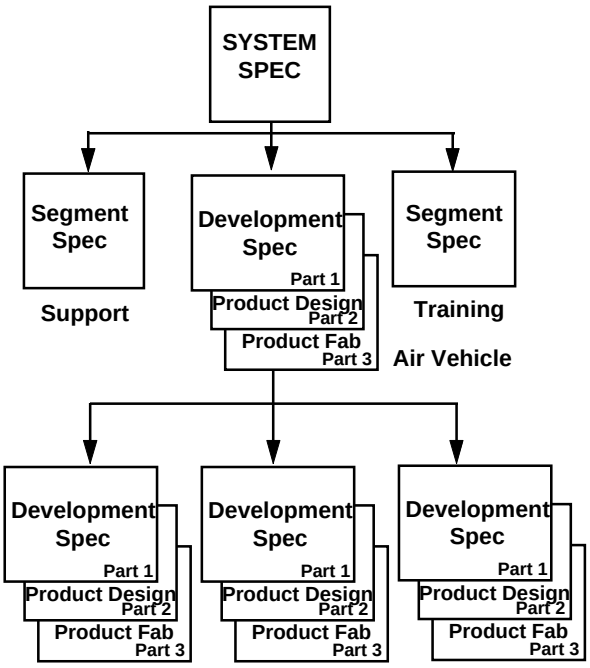

Figure D-3. Specification Relationships.

The top level specification defining the overall requirements for the system as a whole is the system specification. Beneath the system specification there are system segment specifications and/or development specifications. The training system specification and the support system specification are typical system segment specifications. System and system segment specifications are used to describe the integrated capabilities expected from separately functioning items that are not procured as a single unit or entity. They define overarching requirements that must be satisfied by the development of appropriate products. Items are not procured/accepted against system or segment specifications. Additional requirements definition and decomposition is necessary to describe the characteristics of individual items that, when integrated, provide the expected capabilities. If the system to be developed is simple enough, and the scope of training limited to flight simulation, a development specification would be employed for training (e.g., Flight Simulator Development Specification) rather than a system segment specification. Beneath a development specification (unless the specification is at the bottom of the specification tree) can be two or more development specifications. Each development specification typically describes the performance required from a product to be designed and developed. To procure that product after development is complete, product specifications are defined. Achieving a performance based acquisition environment necessitates the use of two product specifications. The product design specification defines the form, fit, function, and interface requirements of the design. It links the engineering and design environments and provides a basis for defining, and accepting, items that are interchangeable/interoperable. The

product fabrication specification specifies the design solution of the qualified end item. It provides the basis for defining and accepting identical items. An air vehicle provides an example of a development specification. Since air vehicles are bought as integrated items, in addition to a development specification, the air vehicle also has associated product design and fabrication specifications.

10.0 REQUIREMENTS FLOWDOWN.

A specification defines the installed performance requirements which encompass all of the lower level specifications derived from it. Requirements in specifications are decomposed (Figure D-4) and organized at increasing levels of detail until the requirements for specific, well defined products are attained. The integration of the "child" requirements must yield the "parent" installed performance requirement they were derived from. That is, every requirement in a specification has a "parent" requirement in the next higher level specification. When this does not happen, it is an indication of decomposition error or that when synthesizing a possible solution an additional requirement was uncovered (e.g., sufficient detail/understanding was reached at which a previously unexpected impact was determined or additional requirements were necessary to characterize a possible solution).

11.0 INTERFACES.

Every time a function is divided (decomposed), the boundary between the resulting lower-level functions forms a functional interface. As the lower-level functions are assigned to candidate solutions, the boundary between the lower-level functions assigned to one item and the lower-level functions assigned to another will result in a physical interface. Every time a set of functions, captured in a specification, is broken down into multiple lower level sets of functions (each set captured in a specification) the requirements at the interface are documented in interface control documents (ICDs) to ensure proper control. Typically, contractors would be expected to have the functional interfaces documented and controlled by the preliminary design review decision point and the physical interfaces documented and controlled by the critical design review decision point. It is essential that interface definition captures: a) the hardware-to-hardware, b)the hardware-to-software, and c) the software-to-software characteristics of the design to assure interchangeability/interoperability requirements are achieved during production and sustainment.

12.0 INCREMENTAL VERIFICATION.

The requirements to be achieved are documented in section 3 of a specification. Section 4 of a specification documents the criteria needed to assure that resulting items satisfy those requirements. In a specification, a one-to-one correlation between the section 3 requirements and section 4 verification criteria is expected.

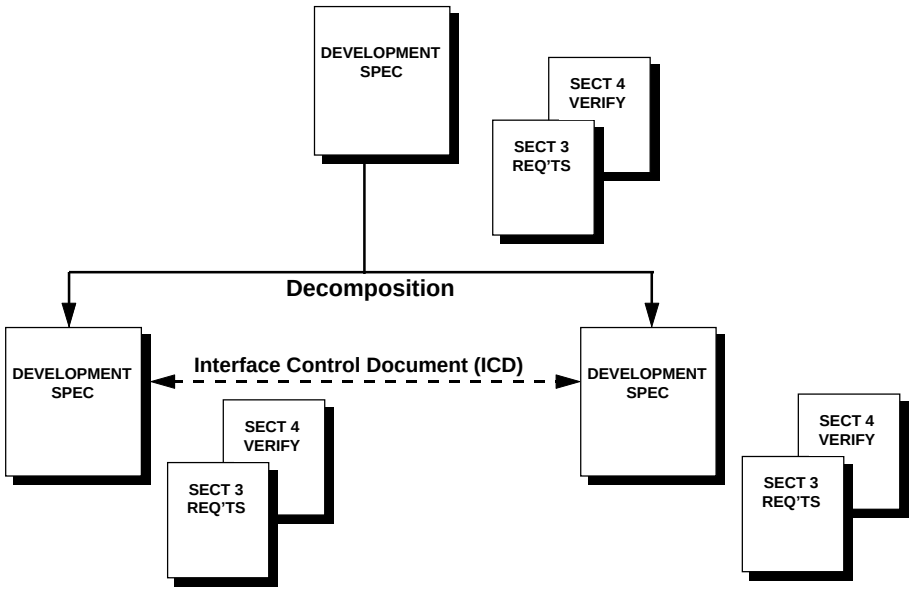

Figure D-4. Specification Tree Decomposition.

As previously stated, each requirement in a lower level specification has a parent in the next higher level specification. Thus, the basic source of the requirement is in section 3. However, to ensure that the section 3 requirements are achieved, it is necessary to ensure that the requirements in the lower level specifications will integrate to the section 3 requirement. That is, part of the verification of a section 3 requirement includes criteria for ensuring that requirements assigned to lower level items will sum back up to provide the integrated performance requirement of the higher level specification. Thus, the verification criteria in section 4 of a specification not only influences the content of section 3 of a lower level specification, it "forces" a performance flow down to lower tier(s) to achieve the required capability. The criteria can control the breakdown of a higher level requirement into a set of lower level, higher fidelity requirements. This is particularly useful for aggregate requirements that are difficult to assess physically. For example, section 4 verification criteria of air vehicle availability can include verification criteria to ensure that lower level reliability and mean-time-to-repair characteristics at the next lowest level will integrate to yield the requisite availability. Thus, availability, a parameter difficult to confirm other than by analysis, is broken down into performance requirements that can be verified by test and demonstration. The verifications that the reliability and maintainability of the lower level items has been achieved would be in section 4 of the lower level specifications. A comprehensive set of section 4 verification criteria ensure that the section 3 requirement is achieved, that the section 3 requirement is flowed down to lower tier specifications, and that the requirements in the lower tier specifications, as verified, "sum" back up to achieve the installed performance requirement in section 3. The section 4 verification criteria establish the relationship to lower level specification tiers.

Figure D-5 illustrates this relationship. At the top level, section 4 contains criteria for verification of a section 3 requirement. These include criteria that the requirement has been broken down and flowed to lower tier specifications (the flow from a higher level section 4 to a

lower level section 3). Additionally, criteria is included that the verified requirements of the lower level sum back up to satisfy the installed performance at the next higher level (the flow from lower level section 4s to a higher level section 4). This mechanism is applied analogously at each level in the specification tree.

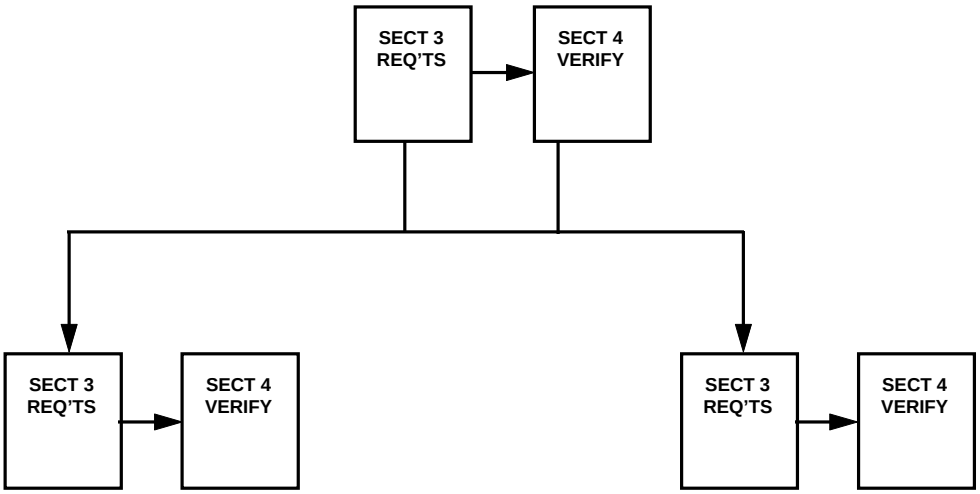

Figure D-5. Verification Flows.

The verifications in section 4 define incremental criteria to be demonstrated throughout the development effort to confirm progress in achieving requirements. These incremental criteria define expected outcomes of product development to progressively ensure that the contract performance is progressing towards achievement of requirements.

As the system definition and design matures, the fidelity at which progress in achieving requirements can be confirmed increases along with the validity of the information used (the system definition matures from a system design to item preliminary design to detailed design, test data is obtained, and verifications are conducted using items built from the detailed designs). This forms the basis for the incremental verification concept (Figure D-4).

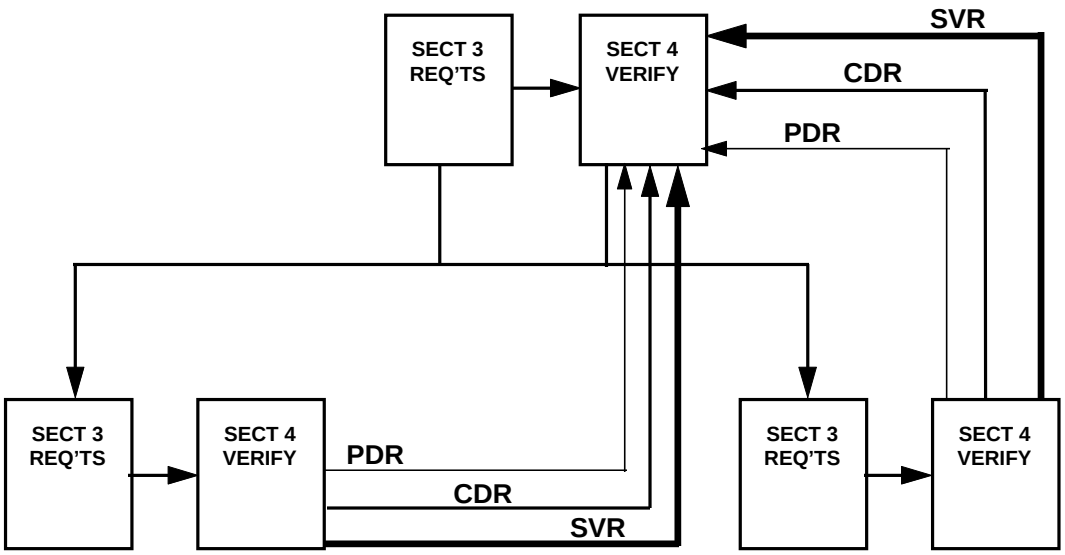

Figure D-6. Technical Review Feedback to Section 3 & 4 Specifications Requirements.

The section 3 performance requirements are decomposed into lower level requirements. This decomposition is confirmed in the section 4 verification criteria of the higher level specification. At any point in time, those lower-level requirements describe the performance expected from a solution. That solution is integrated (maybe just analytically early in development) and capabilities assessed. Those capabilities are confirmed (again in section 4 of the higher level specification) as meeting the performance requirements in the higher level specification.

As development progresses, further levels of specifications are defined that characterize solutions with greater fidelity at an increased confidence in the quality of the information. Verification criteria must confirm that the integrated performance across the lowest current level of specifications, satisfies the requirements in the next higher level. This continues at each level until a progressive verification has been achieved from the bottom of the architecture to the top (i.e., the system specification).

13.0 IMPLEMENTATION.

In new and retrofitted contracts, performance based interface standards, either commercial or military unique, are acceptable for use. It is also acceptable to use general consensus product specifications/standards, either military or commercial. These generally represent commodity items. Examples include fuel and fasteners. Ultimately, these types of standards drive interfaces in program unique specifications.

Other standards such as the manufacturing and process standards have been canceled. These included standards such as those for corrosion and soldering. Sometimes these standards were applied via call out in the statement of work and other times they were called out in contractual specifications. In either case, these types of standards contained section 3 requirements and/or

section 4 verification criteria. The essential performance requirements and criteria need to be included in program unique specifications. The structure and content of performance based specifications need to reflect this legacy.

In past practice, the system, segment, and development specifications applied to development contracts have concentrated solely on the performance of the intended production articles. It is essential to recognize that the end product of development is the documentation which defines the production article(s) and not the production article(s) itself. The purpose of the system, segment and development specifications is to ensure that a design is developed and qualified. Thus, the essential performance attributes governing development process aspects such as configuration and interface management also need to be incorporated into the structure and content of the performance based specifications.

The following paragraphs provide some illustrative examples and concepts describing how various types of requirements, historically implemented via application of military standards, might be incorporated in the performance based specification approach defined in this document.

13.1 System Description - Preliminary Example.

To illustrate capturing the essential performance attributes of development processes, consider the lower level specifications and interface documentation. The system specification normally contains a section 3 system description paragraph. This paragraph identifies, at the top level, the items comprising the system. This paragraph also provides an appropriate location to incorporate requirements for the products of the development effort; i.e., specifications and interface documentation.

3.2.x System Description

The complete systems description shall specify installed performance from top level through lower tier specifications to implement all system functions down to the repairable level and organized/controlled through a function/specification tree. The “design to” or “development baseline” shall be documented in a performance based format to satisfy the objectives herein.

4.2.x Verification of System Description.

The system description/integrated performance shall be verified through a combination of in process inspection, analysis, simulation, demonstration, and test. Performance shall be verified incrementally as defined herein.

a) Preliminary Design Review

1) Preliminary baseline performance based documents to include the development specification, interface document, and product acceptance criteria shall be complete with performance requirements, interfaces, and acceptance criteria allocated. Verification method shall be Inspection.

2) Allocated lower level performance based requirements shall be verified to regenerate the requirements in the next higher tier specification. Verification method shall be Analysis (contractor defined).

3) Configuration management of performance based development baseline shall be established. Verification method shall be Inspection (contractor defined).

4) Hardware/Software Technical Performance Parameters (TPPs) and Technical Performance Measures (TPMs) shall be established for in process verification. Verification method shall be Analysis (contractor defined).

b) Critical Design Review

1) The integrated performance of the item shall be shown to meet its performance based allocated performance, interface, and acceptance requirements. Verification method shall be Analysis, Simulation and Test (contractor defined).

2) Allocated lower level performance based requirements shall be verified to regenerate the requirements in the next higher tier specification. Verification method shall be Analysis, Simulation and Test (contractor defined).

3) All performance based documents shall be under configuration management, shall be complete and shall match the specified integrated/installed performance of higher level items and the system. Verification method shall be Inspection (contractor defined).

4) Hardware/Software Technical Performance Measures (TPMs) shall verify that development processes produce a design that meets integrated performance requirements. Verification method shall be Analysis (contractor defined).

c) First Flight Readiness Review

1) Prototype hardware and software shall be verified to be ready for flight testing in a production or production quality prototype air vehicle. Verification method shall be Analysis, Simulation and Test (contractor defined).

2) All TPPs shall be shown to be within margins that allow for safe operation. Verification method shall be Analysis, Simulation and Test (contractor defined).

d) Flight Test

1) Verification that the “as installed/as integrated” hardware and software meet allocated development specification performance requirements shall be accomplished through flight testing in a production or production quality prototype air vehicle. Verification method shall be Analysis (contractor defined).

e) Functional Configuration Audit/System Verification Review

1) The design(s) shall be verified to meet performance based development specification requirements. Verification shall be by Inspection and Analysis (contractor defined).

2) The performance based Interface Control Documents and Product Acceptance Criteria shall be verified to meet the interchangeability/ interoperability, and the integrated performance requirements of the development specification. Verification shall be by Inspection and Test using prototype hardware and software.

3) Performance based development specifications shall be under Class I configuration management. Verification method shall be Inspection (contractor defined).

f) Physical Configuration Audit

1) All hardware and software product fabrication specifications, interface control documents, and product acceptance criteria shall be verified to meet allocated performance and interface requirements. Verification method shall be Inspection, Analysis, and Demonstration through actual application of product acceptance criteria (contractor defined).

2) Allocated lower level performance based product fabrication, interface and acceptance criteria requirements shall be verified to regenerate top level system requirements. Verification method shall be Inspection and Analysis (contractor defined).

3) All product fabrication specifications, interface documents, and product acceptance criteria shall be under Class I configuration management. Verification method shall be Inspection (contractor defined).

13.2 Production Process Example.

A concern expressed with the cancellation of manufacturing process standards is the resulting impact on the government's ability to ensure the use of robust, well defined processes. However, ensuring that contractor manufacturing processes are characterized and robust is an important specification consideration. The following example illustrates how process control can be incorporated in the system specification. Incorporation in the system specification will result in a flow down to all pertinent specifications.

3.4 Production Processes:

The manufacturing system shall provide products of consistent quality that meet performance requirements. Key production processes shall have the stability, capability, and controls to maintain the key product characteristics within design tolerance.

4.4 Production Processes:

This requirement shall be incrementally verified by analysis, inspection, demonstration, and/or test as described in the subsequent paragraphs.

a. The following Incremental Verifications shall be accomplished prior to System Functional Review (SFR):

Inspect and analyze documentation to verify that the contractor has a process documented and in place that (1) establishes a process technology development strategy including pre-planned process improvement and evolutionary strategies, (2) identifies, as part of the overall program risk management process, high risk production processes and risk abatement activities, (3) provides for the early identification of key product characteristics, and key processes and their key characteristics,(4) assesses key process technology performance, availability and suitability, (5) establishes process capability requirements, (6) verifies actual process capabilities, (7) establishes and implements process controls with minimal inspections and (8) flows down requirements to all subtier levels.

b. The following Incremental Verifications shall be accomplished prior to the Preliminary Design Review (PDR):

Inspect and analyze documentation and design trade study reports to confirm the following have been accomplished at all subtier levels:

1) Initial manufacturing feasibility assessment.

2) Drawing system/standards and drawing release criteria defined prior to start of detailed design.

3) Initial identification of key product characteristics.

4) Initial identification of key processes.

5) Establishment of process capability requirements, which include both the design limits and process capabilities (Cpk, defects per million, etc.).

6) Initial evaluation of key process capabilities.

7) Flow down of key process requirements.

8) Assessment of risk abatement status on high risk production processes and appropriate action taken if needed.

c. The following Incremental Verifications shall be accomplished prior to Critical Design Review (CDR):

Inspect and analyze documentation and design trade study reports to confirm the following have been accomplished at all subtier levels:

1) Identification of all key product characteristics and the documentation of those characteristics on drawings including appropriate geometric tolerancing and datum control.

2) Identification of all key production processes.

3) Establishment of process capability requirements, which include both the design limits and process capabilities (Cpk, defects per million, etc.).

4) Verification of key process capabilities including the demonstration of process capability of high risk key processes.

5) Completion of manufacturing feasibility assessment, including key process capabilities.

6) Completion of preliminary specifications for key processes.

7) Completion of preliminary process control plans.

8) Documentation of rationale to support the detailed design (product/special tooling/special test equipment/support equipment) including key product characteristic's design limit sensitivity to off nominal production. Details to include the results of key suppliers' efforts.

9) Documentation of rationale to support selection of production processes, including comparison of required process capabilities to documented capabilities and selection of process. control criteria with the associated process control plan for achieving required product quality

10) Definition of verification requirements for key processes.

11) Completion of design for "new/improved" processes required and completion and integration of development plans into overall development plan.

12) Completion of proofing of high risk production processes.

d. The following Incremental Verifications shall be accomplished prior to System Verification Review (SVR):

Inspect and analyze documentation and design trade study reports to confirm the following have been accomplished at all subtier levels:

1) Identification of all key product characteristics and the documentation of those characteristics on drawings including appropriate geometric tolerancing and datum control.

2) Proof of all key processes and their key characteristics.

3) Establishment of process capability requirements, which include both the design limits and process capabilities.

4) Completion of verification of key process capabilities, including validated process control plans.

5) Completion of final process control plans.

6) Proof of final manufacturing feasibility.

7) Completion of final specifications for all key production processes.

8) Completion of contractor build-to documentation.

e. The following Incremental Verifications shall be accomplished prior to Physical Configuration Audit:

Inspect documentation to confirm that the adequacy and completeness of the build-to documentation was verified at the subtier level.

13.3 Corrosion Control Example.

Corrosion control provides an example of an essential performance requirements that have previously been implemented via the application of many military standards. This has frequently been at low levels of the system architecture and have at times involved "how to" design requirements. In order to achieve a performance based approach and to provide requirements traceability throughout the system architecture while ensuring that requirements are propagated not only to mission items, but to the support structure and to impact maintenance training it is necessary to incorporate appropriate requirements in the system specification with a flowdown in the Air Vehicle and other second and other lower tier specifications. A section 3 performance requirement in a top level specification could be:

> The airframe shall operate in the corrosion producing environments and conditions of *(cite reference)*. Corrosion which affects the operational readiness of the airframe through initiation of flaws which are unacceptable from a durability, damage tolerance and residual strength viewpoint shall not occur during *(appropriate numerical value)* years and *(appropriate numerical value)* duty cycles as defined in *(cite reference)* for the specified design usage and operational conditions specified in *(cite reference)* and logistics specified in *(cite reference)*.

The contractor would typically be expected to prepare an appropriate set of section 4 verification criteria describing the incremental verification of the requirement and the criteria to ensure the performance requirement is flowed down and verified results aggregated back up to satisfy the "installed performance" of the section 3 requirement.

14.0 JOINT SERVICE GUIDE SPECIFICATIONS.

The performance based specification concept described above is being implemented in a series of Joint Service Guide Specifications (JSGS) developed under the auspices of the Joint Aeronautical Commanders Group (JACG), Aviation Engineering Board (AEB). A guide specification is a generic specification developed by the government for a class of like end items which identifies, but does not assign values to, the complete set of performance parameters which must be achieved. Requirements are stated in terms of required capabilities and must be design independent. Each guide specification includes a handbook that documents, for each requirement and associated verification criteria, the rationale for the requirement and verification

criteria, guidance on using/developing values for the requirements and criteria, and lessons learned.

Currently, the AEB is in the process of defining a specification tree applicable to the aviation sector of the Services as the basis for establishing the Joint Service Guide Specifications to be developed and to provide a basis against which requirement flowdowns can be established. The current version (as of 6 Nov 95) of this specification tree is shown in Figure D-7. Note that this is still a draft. Agreement has been reached on the need for the guide specifications at levels one and two of the specification tree. While there is general agreement on the level three subtier under the air vehicle, there are on-going discussions of the "best" location of the engine guide specification (i.e., level 3 vs. level 4) in order to deal with the propulsion-air vehicle interface. The level 3 tiers under the training and support system specifications and the common use, military unique specifications and standards (shown at the bottom of Figure D-7) are still subject to further deliberation. Additionally, the Avionics, Airframe/Structures and Engine JSGS have been under joint service development.

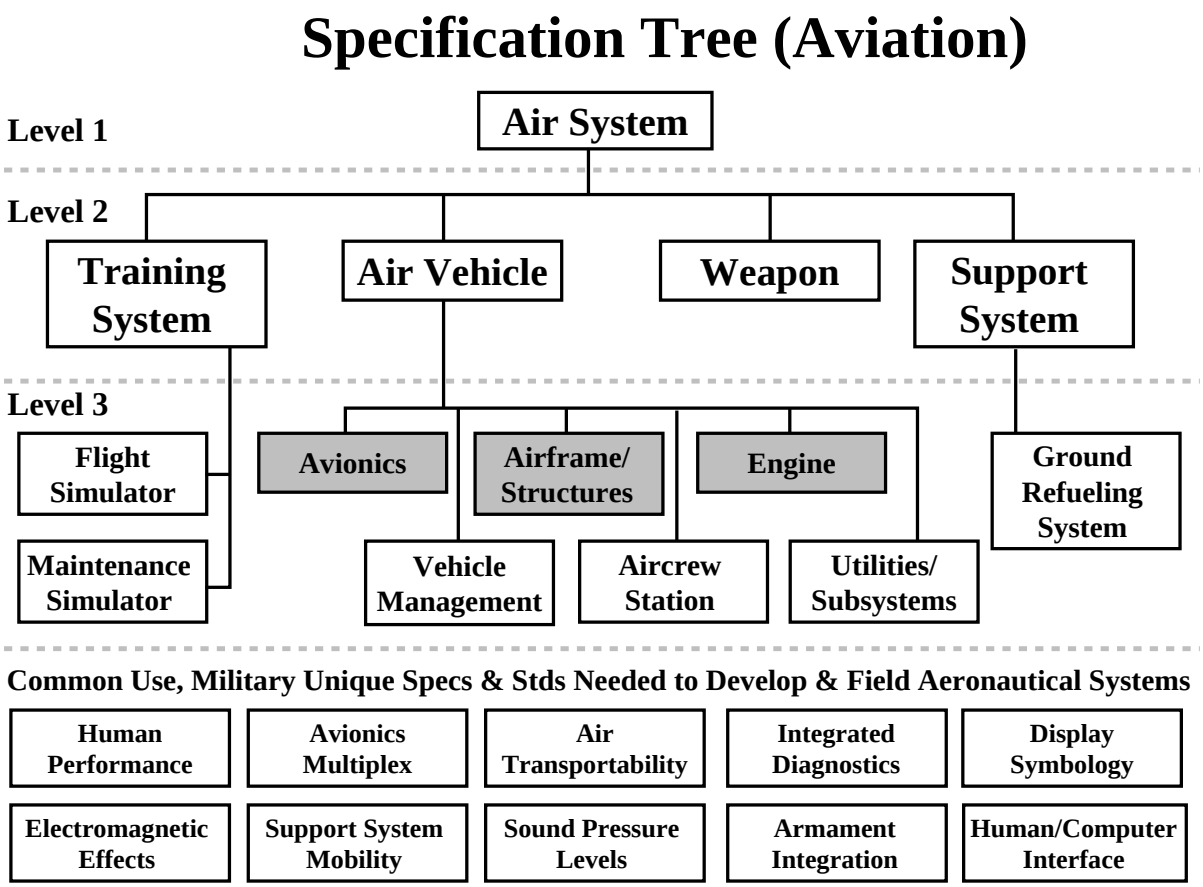

Figure D-7. JSGS Specification Tree (Working Draft).

The JACG has established an executive board (AEB Service Principles) that is chartered to manage the development and coordination of JSGS within the aeronautical sector. As part of that charter, the AEB is developing guidance documents for the development, review, coordination, and use of JSGS and related documents. The charter ("JACG/AEB Executive

Board for Guide Specifications and Related Documents", 12 July 1995) and comment evaluation guidance ("Standard Evaluation Process for Comments Submitted Against JACG Draft Documents", 12 July 1995) have been completed. Additional guidance documents covering: the development and use of Joint Service Guide Specifications; and performance oriented strategies for weapon system acquisition are expected to be released during the first quarter of CY96.

15.0 SUMMARY.

The Performance Based Acquisition approach provides the Government and it Contractors maximum flexibility, allowing the decisions for development, procurement of production articles and post production support and sustainment to be programmatic and based on the business factors making the most sense for each specific case (including reprocurement decisions at the lowest repairable component level).

APPENDIX E

KEY SUPPLIER PROCESSES FOR ACQUISITION PROGRAMS

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1.0 SCOPE/OBJECTIVE.

The objective of this report is to identify and describe the generic key processes for program execution used by suppliers to support defense systems acquisitions. The processes and their associated performance attributes identified in this report are considered applicable to all program phases, though their relative importance to program objectives are expected to change through the life cycle of the product. The report also includes a suggested list of top level process metrics that can provide insight into the health of the processes at a given facility. These suggested metrics may be replaced by other metrics more suitable to the specific needs of the facility. The metrics contained in this report address development programs only. Current reinvention lab and DCMC activities have identified metrics which are applicable to production and sustainment programs. The content of this report may be used for:

1. Developing performance-based acquisition strategies through the identification of process performance attributes which are most critical to the successful execution of the program;

2. Constructing solicitations which allow for the use of contractor-defined processes in place of processes defined and controlled by military standards; and

3. Developing a process capability evaluation methodology which provides detailed strengths and weaknesses for each performance attribute based on identified criteria.

Capability evaluations are expected to be used when the overall risk to the government warrants a detailed understanding of process maturity. It is intended to be a one-time event with updates as required. When overall risk to the government is considered low, a less stringent risk assessment methodology may be appropriate. The capability evaluation is expected to accomplish two objectives: establishment of a DoD repository of information which provides detailed strengths and weaknesses at the performance attribute level with a roll up of these characteristics in a manner which provides a relative scoring at both the “element” and “overall process” level; and the establishment of a set of top-level health metrics for each process. In addition to identifying these health metrics, the evaluation should also identify the baseline value for these metrics, expected control limits which recognize the normal data scatter, and level of demonstrated improvement in the metric before the overall capability evaluation would be upgraded. The relative score for each process would be the primary basis for the overall supplier rating. The detailed strengths and weaknesses would be provided as an input to the risk evaluations for proposals which could include block change proposals, responses to RFPs, or modifications to single contracts. Scoring and strength/weakness identification will be accomplished for each enerprise product line or facility.

Because of the timing of this report relative to the dynamic nature and number of other activities associated with acquisition reform, it may contain technical and business definitions and strategies which ultimately result in conflicts. In the event these conflicts are not resolved or go unrecognized by the time this report is issued, the user of this material should rely on the requirements management process prescribed by the Service Acquisition Executives as they are, or may be, issued.

1.1 Discussion.

This report supports the acquisition reform initiatives of Secretary of Defense, Dr. William Perry and the finding of the JACG (NGS) IPT by identifying and defining the characteristics of potential supplier processes. The processes described in this document were selected to represent typical, generic functional processes commonly used within industry. It is recognized that there may be differences from one supplier to the next in defining the boundaries and interfaces of these processes. It is also recognized that there may be differences in the specific application of these generic processes from one program to the next within a given supplier's organization. The key will be to demonstrate the ability to implement a combined set of tailored processes to meet the programmatic requirements of the customer.

1.2 Definitions.

The following definitions apply to terms as used within this document.

Process: A process is a set of procedures and methodologies which, when applied, provide a consistent set of outputs for a given set of inputs.

Element: A lower level indenture of a process which has all the characteristics of a process. Elements may function independently or in conjunction with other elements including those of other processes. Examples of elements for the Engineering Process include the following: Systems Integration, Requirements Analysis, Functional Analysis and Allocation, Synthesis, System Verification and Technical Control.

Performance Attribute: A critical characteristic associated with a process or element which describes the expectations for that process or element in terms of capabilities.

Process Implementation: The application of key processes for a given program. The overall implementation and associated dependencies will be described in an Integrated Master Plan (IMP). The detailed tasking schedule and dependencies associated with the implementation will be defined in an Integrated Master Schedule (IMS).

Requirements: Unless otherwise modified, this term will be used to denote engineering/technical requirements as defined below. Other related terms are also defined below.

Operational/User Requirements: End user generated requirements, normally defined in terms of a system capability or characteristic required to accomplish mission needs. User requirements are initially stated in a Mission Need Statement (MNS) and progressively evolve to system specific performance requirements in the Operational Requirements Document (ORD).

Engineering/Technical Requirements: Acquisition community generated performance, functional, and interface statements derived from user requirements and defined in terms which are verifiable. Technical requirements apply to both product and process capabilities. Government program technical requirements are initially stated in some form of requirements document, frequently a System Requirements Document (SRD), which progressively evolves to the System

Specification or appropriate program requirements document. Lower level technical requirements are stated in Configuration Item (CI) specifications.

Verification Requirements: Generated by the acquisition community to define the method(s) and criteria by which the achievement of technical requirement will be substantiated during incrementally development. Verification requirements apply to both product and process capabilities.

Design Criteria: Generated by the developer from technical requirements through the Engineering Process to define end item requirements in terms which allow for detailed design and verification activities.

Technical Performance Measurement: The continuing verification of the degree of anticipated and actual achievement for technical parameters. Confirms progress and identifies deficiencies that might jeopardize meeting a system requirement. Assessed values falling outside established tolerances indicate a need for evaluation and corrective action.

Measure of Effectiveness: A metric used to quantify the performance of integrated system solutions (people, product, and process) in terms that describe the utility or value when using those solutions to meet customer needs. MOEs can include cost effectiveness metrics.

1.3 Acronyms.

AQS	Advanced Quality System
CI	Configuration Item
CLIN	Contract Line Item Number
CLS	Contractor Logistics Support
CM	Configuration Management
COTS	Commercial Off The Shelf
CPI	Continuous Process Improvement or Cost Performance Index
Cpk	One specific Index for expressing Process Capability
DCMC	Defense Contract Management Command
DoD	Department of Defense
ILS	Integrated Logistics Support
IMP	Integrated Master Plan
IMS	Integrated Master Schedule
IPT	Integrated Product Team
JACG	Joint Aeronautical Commanders’ Group
LCC	Life Cycle Cost

LSA	Logistics Supportability Analysis
MNS	Mission Need Statement
MOE	Measure of Effectiveness
NDI	Non-Development Item
NGS	Non-Government Standards
ORD	Operational Requirements Document
PP/CSC	Program Planning/Cost and Schedule Control
SPC	Statistical Process Control
SPI	Schedule Performance Index
SRD	System Requirements Document
SVR	Systems Verification Review
TPM	Technical Performance Measurement
VR	Variability Reduction

PROCESS CHARACTERISTICS

2.0 PROGRAM/DATA MANAGEMENT PROCESS

2.1 Discussion/Rationale.

The program management process is intended to represent the top level supplier program office process for the overall conduct and control of the program. There are seven elements within the process. Of the seven, three key elements of this process are: (1) Integration and coordination of all other processes applied to the program; (2) Allocation of resources and assignment of responsibilities within the program; and (3) Primary communications interface with all involved in the program. This interface includes that with the parent corporation and the responsibilities for implementing corporate processes for the program. In addition, the following four elements contribute to the program management process: Risk Management, Program Planning/Cost and Schedule Control, Contract Compliance, and Data Management.

Risk management is an element which puts in place a structured decision making process specifically oriented to the identification, balancing, and management of cost, schedule, and technical risks bounded by the technical and non-technical considerations. This element consists of five sub-elements: risk identification; risk analysis in terms of probability of occurrence and potential impact; risk planning in terms of identification and assessment of alternative risk management options; decision making and implementation; and tracking or feedback to assess the effectiveness of the risk management effort implemented.

The Program Planning/Cost and Schedule Control (PP/CSC) element for program management interfaces directly with other key processes. It is the mechanism for planning, forecasting, tracking, assessing, and reporting activities and resource expenditures and requirements. It provides the establishment of both a schedule and cost performance baseline for the program. PP/CSC should also establish a "self governance" program to verify internal reviews/audits of processes and performance measures are in place and being used. It provides the means for assessing progress in terms of the technical performance and contract schedule and budget. It interfaces with the engineering process to evaluate technical progress in terms of technical performance measures and their influence on overall program cost and schedule, and collects actual expenditures against the program cost work breakdown structure. It interfaces with the program management process to provide information and data with respect to overall program performance. It is initially used for proposal preparation, and is subsequently updated based on actual events. An integral part of this process is the cost and schedule estimating methodologies required to accurately forecast remaining effort.

Contract Compliance is the mechanism for recording and tracking all active contract requirements and contract changes. These include those for customers and suppliers as well as associates and partners.

Data Management is an element of both program management and engineering. Data is a collection of recorded information (regardless of the form or method of recording) generated and used to manage the development, acquisition, sustainment, or operation of defense systems and equipment. It is necessary for program definition, control, monitoring, evaluation, and support. Data includes both management and technical information. Reports (financial, progress, logistics, test, etc.), analyses, studies, plans, schedules, records and other information constitute management data. Technical data is required to define and document an engineering design or component configuration. Technical data includes, but is not limited to, specifications, technical data packages (engineering drawings, associated lists, process descriptions), and technical manuals (operation and maintenance instructions, parts breakdown, and other instructions for installation, operation, maintenance, training and support). The Data Management element applies policies, systems, and procedures for identification and control of data requirements; acquires data in a timely and economical manner; and assures the adequacy and accuracy of the data relative to the data requirements.

2.2 Performance Attributes

2.2.1 Integration and coordination

2.2.1.1 The capability to provide the leadership and management required to meet program objectives by providing timely and effective decisions and direction based on a structured decision making process which provides traceability of program decisions including the supporting data and rationale.

2.2.1.2 The capability to provide timely cost and schedule status across the facility/program.

2.2.2 Resources and Responsibilities

2.2.2.1 The ability to staff, train, organize, and equip the teams necessary to implement the proposed effort and meet overall program objectives.

2.2.3 Communications

2.2.3.1 The ability to establish and maintain efficient and effective internal and external communications with all customers and suppliers with an emphasis on customer satisfaction.

2.2.4 Risk Management

2.2.4.1 The ability to identify program risks and define incremental accomplishment criteria to measure progress in the reduction of that risk.

2.2.4.2 The ability to define mitigating strategies and alternatives with defined decision points for implementation.

2.2.4.3 The capability to develop cost and schedule estimates which recognize and include the uncertainty of each task due to technical risks.

2.2.5 Program Planning/Cost and Schedule Control

2.2.5.1 The ability to accumulate all technical performance, cost, and schedule data relative to responsible and accountable IPTs and assess earned value of work in progress.

2.2.5.2 The ability to accurately predict near term schedules and resource requirements.

2.2.5.3 The ability to forecast time and cost to completion of program/project.

2.2.5.4 The capability to provide timely cost and schedule data tied to cost work breakdown and IPT structure.

2.2.5.5 The ability to support audits of actual costs relative to the cost work breakdown structure.

2.2.6 Contract Compliance

2.2.6.1 The ability to maintain contract documentation current for all active efforts.

2.2.6.2 The capability to maintain and distribute schedules for all contract deliverables and events and to provide notice of near term contract requirements on a timely basis to promote compliance.

2.2.7 Data Management

2.2.7.1 The ability to provide management, technical, and customer personnel quality information required to accomplish their respective tasks, in an efficient and cost effective manner.

2.2.7.2 The ability to continually refine data requirements.

2.3 Metrics/Indicators.

The following metrics are the consolidated performance for the top ten dollar value, active programs for a single site/enterprise.

2.3.1 Cost.

The consolidated Cost Performance Index (CPI) defined as:

2.3.1.1 Sum of Budgeted Cost of Work Performed divided by Sum of Actual Cost of Work Performed

2.3.2 Schedule.

The consolidated Schedule Performance Index (SPI) defined as:

2.3.2.1 Sum of Budgeted Cost of Work Performed divided by Sum of Budgeted Cost of Work Scheduled

2.3.3 Performance.

A measure of delivery performance in terms of quality and timeliness as defined below. Scheduled delivery must include the customer review and approval time.

2.3.3.1 Number of Accepted CLIN Deliveries on Time is divided by Number of CLIN Deliveries Scheduled.

2.3.4 Risk.

A measure of risk management in terms of action items as defined below. It includes all action items tracked at the program level, and closure indicates customer agreement that the action item is complete.

2.3.4.1 Total Action Items closed on or ahead of schedule divided by Action Items closed late

3.0 ENGINEERING PROCESS

3.1 Discussion/Rationale.

The Engineering process is the governing technical management process that manages and controls the product development addressing all aspects of total system performance, and provides the primary technical interface with the other key processes. It defines the technical processes and interfaces and provides the technical baseline for the Integrated Master Plan for development and production. Its primary function is to insure the product meets the customer's cost, schedule, and performance needs. The cost, schedule, and performance considerations include the total product life cycle. The engineering process, as defined herein, is generic to all technical acquisition programs and includes, but is not limited to, the disciplines of Systems Engineering, Engineering Management, Hardware/Software Design, Test and Evaluation, and Configuration Management.

This definition has been taken to allow industry to tailor and partition the overall engineering process in the manner which best fits their individual functional organizational elements and products. The key to a successful engineering process is the integration of these disciplines into an efficient and effective process for the overall technical management of programs and development of systems and equipment that meets user requirements In general, the systems engineering discipline is often associated with requirements definition and operational analysis, which represents a portion of the overall Engineering process. When hardware and software design, and test and evaluation are addressed as separate disciplines, it will be necessary to demonstrate that the defined roles of these disciplines assume the functional aspects of the Engineering process and become integrated over the entire development cycle. These individual disciplines are melded herein, and will be discussed in terms of six elements: Systems Integration; Requirements Analysis; Functional Analysis/Allocation; Synthesis (i.e., preliminary design and detail design); Systems Verification, and Technical Control.

Systems Integration provides the overall leadership and management of the engineering process. It is the coordination, communication, and integration of decisions across and among various teams. It includes managing the interfaces internal and external to the system including hardware to hardware, hardware to software, and software to software. The integration task leverages the individual activities to facilitate and enhance the individual products of the system. This element also provides for the application and tracks the progress of the numerous specialty technical disciplines commonly identified as the "-ilties". It also provides the interface with the manufacturing and logistics support processes to integrate production and support requirements into the product definition.

Requirements Analysis determines system technical requirements by studying and understanding the user requirements as stated in the Mission Needs Statement (MNS) and the Operational Requirements Document (ORD) which address the entire life cycle of the system. The ORD describes the missions or tasks the system must accomplish; the environment(s) in which the system will be used; any constraints placed upon the system; measures of effectiveness for test and evaluation; system life cycle factors; and interoperability with other systems and operational requirements. Requirements analysis provides verifiable, performance-based requirements in the

system utilization environments, and the top-level functional requirements that the system must perform. This set of requirements is commonly referred to as the functional baseline. Requirements analysis is flowed down to the lowest level of the system. As the system evolves in greater detail, the requirements analysis is iterated to address user needs.

Functional Analysis and Allocation defines and integrates a functional architecture to the depth needed to support synthesis of solutions for people, products, and processes and management of risk. Functional analysis/allocation is conducted iteratively to define successively lower-level functions required to satisfy higher level functional requirements and to define alternative sets of functional requirements Functional analysis turns big functions into an architecture of smaller, simpler functions to which a solution can be designed. The lowest level of this architecture yields a well defined set of actions that must be performed by the components of the system to meet the top level requirements, with a set of verifiable component requirements that are usable as criteria for design. This set of requirements is commonly referred to as the allocated baseline. This activity also includes initial or conceptual design of products to validate the ability of the selected technologies to achieve desired results.

Synthesis, or preliminary and detail design, translates the functional and performance requirements, including interfaces, into a description of the complete system that satisfies the requirements. It defines this solution in terms of a physical architecture of people, products, and processes. For the system products, solutions are iteratively defined through the preliminary and detailed design of the products and selection of production processes. This activity develops the design in accordance with the architecture selected. Results are defined and documented in the form of drawings and data sets that allow hardware and/or software fabrication (coding). This set of drawings is part of the overall package which is commonly referred to as the product baseline.

Systems Verification is the incremental, iterative determination of progress in satisfying technical requirements and program objectives. It provides a rigorous quantitative basis for validation and verification of specification requirements. The ultimate objective is to confirm that the design solution meets requirements. It addresses all elements of the final solution, including interfaces, as well as the integrated system solution. It is a combination of trade studies, inspections, analyses and assessments, demonstrations, and tests which authenticates the cost and performance of the system. It also includes the validation of analytical methodologies used as part of the verification processes. Test management is an integral part of this element. It plans for testing, and defines, acquires, and manages required resources. These resources include facilities, equipment, test articles, and test personnel. It also includes the methodologies required to accurately predict test requirements in terms of schedule based on broad test objectives, maturity of test articles, normal availability of facilities and equipment, and reliability of test methods. It further includes managing the conduct of tests in accordance with the detailed test instructions generated by the engineering process, and recording, analyzing, and reporting test results.

Technical Control is used to balance the requirements and constraints in the program. It includes, but is not limited to, configuration management, interface management, deficiency reporting, risk management, and performance-based progress measurement including the milestone exit criteria, technical performance measurement (TPM), and technical reviews/audits.

Configuration Management has four key elements: Technical Baseline Definition and Maintenance; Control; Status Accounting; and Audits. Technical Baseline Definition and Maintenance documents the requirements and the functional/physical characteristics of a system and includes such baseline definitions as hierarchy, nomenclature, and numbering. Control ensures changes to these requirements, the product configuration and its characteristics, and related documentation, are evaluated and authorized by the use of a systematic process. Status Accounting records and reports critical elements of information required to manage the configuration of the system. The audit function confirms the end item meets verification requirements and the as delivered product matches the technical documentation.

Interface Management controls the design compatibility of internal and external engineering interfaces and consists of performance/physical requirements/design constraints.

Deficiency Reporting is the systematic means to record, track, control, and provide feedback to technical and administrative actions on reported deficiencies or proposed enhancements to the system.

Technical risk management is a structured process specifically oriented to the identification, balancing, and management of technical risks and associated cost and schedule impacts. It is primarily intended to be a proactive process which understands the technical risks at the outset of the program and manages these risks to a predetermined plan, but also includes the early recognition and management of unexpected problems. It supports the overall program risk management process by identifying technical risks, providing analyses in terms of probability of occurrence and potential impact, and identifying and assessing alternative approaches. Then, based on the program decisions, implements and tracks the effectiveness of the alternative(s) selected.

Performance-based progress measurement is the identification of key technical performance parameters in a structured format in which lower level performance parameters support performance parameters at higher levels of integration, prediction of their time phased level of performance based on design maturity, and the tracking and reporting of actual versus projected performance. It provides for early recognition of unexpected problems.

3.2 Performance Attributes

3.2.1 Systems Integration

3.2.1.1 The ability to provide the leadership necessary to integrate all technical disciplines and functional processes (e.g., manufacturing and logistics), and to establish and maintain effective communications with and among participants throughout the development effort.

3.2.1.2 The ability to identify key product characteristics and control allowable design margins for the integrated/installed performance of system components.

3.2.1.3 The ability to establish and track internal and external software component margin allocation and budgeting.

3.2.1.4 The ability to identify and manage technical risks.

3.2.1.5 The ability to identify and manage critical interfaces, and prevent sub-optimal solutions by continually looking across all product teams.

3.2.1.6 The capability to provide quality interface control documents on a timely basis.

3.2.1.7 The capability to determine the appropriate application of specialty functions (-ilities).

3.2.1.8 The ability to staff, train, organize, and equip the technical teams necessary to implement the proposed technical effort required to meet overall program objectives.

3.2.1.9 The ability to provide tools, databases and development practices specific to end items.

3.2.2 Requirements Analysis

3.2.2.1 The ability to define comprehensive and quantitative system performance requirements based on demonstrated/projected end item performance capabilities.

3.2.2.2 The ability to integrate subsystem performance estimates into overall system performance.

3.2.2.3 The capability to establish and maintain a decision database that provides the traceable record of the system performance and verification requirements to customer/user needs, requirements, and objectives.

3.2.2.4 The ability to define, manage, track and verify hardware/software growth and spare requirements in the program specifications.

3.2.2.5 The ability to provide system level cost/performance trade studies which assess the potential use of COTS/NDI and provide the ability to adjust system level performance requirements when large cost savings are possible.

3.2.3 Functional Analysis and Allocation

3.2.3.1 The ability to define a complete set of verifiable performance requirements for the products necessary to achieve required system capabilities at a level which allows for reasonable development activities considering risks, resources, and constraints.

3.2.3.2 The ability to define comprehensive and quantitative installed and uninstalled performance requirements for how and where the end item products will be used.

3.2.3.3 The ability to include product life requirements in early design trade studies.

3.2.3.4 The ability to allocate performance requirements, including interface tolerances, to subsystems and components as the design progresses.

3.2.3.5 The capability to establish and maintain a decision database that provides the traceable record of performance and verification requirements from each end item to system level requirements.

3.2.3.6 The ability to identify potential COTS and NDI, and establish alternative subsystems/component requirements matrices based on estimated product performance capabilities for the intended usage.

3.2.4 Synthesis

3.2.4.1 The ability to define a physical architecture which satisfies overall system level requirements.

3.2.4.2 The capability to adequately model the performance of both end items and the integration of these end items.

3.2.4.3 The ability to identify key performance design and safety requirements and key design requirements at each level of system or product indenture and to translate them into design solutions.

3.2.4.4 The ability to identify key product characteristics and associated key production processes, and define and control allowable design margins and capabilities for key production processes.

3.2.4.5 The ability to identify control requirements for product integrity during operation and support phases to maintain the system or product operating within key performance capabilities required by the user.

3.2.4.6 The ability to perform sensitivity analyses to establish design margins and to examine the effects of design requirement shortfalls as well as the tolerance to variations in usage, producibility, supportability, and other determining factors.

3.2.4.7 The ability to perform appropriate trade studies, prototyping, simulations, analysis and design methodologies which are compatible with the identified system incremental development phasing.

3.2.4.8 The capability to establish and maintain a decision database that provides the traceable record of the results of analyses, trade studies, etc. supporting key technical decisions.

3.2.4.9 The ability to provide quantitative performance assessments of potential COTS and NDI for the intended usage based on demonstrated capabilities, environments, and performance.

3.2.5 System Verification

3.2.5.1 The ability to conduct incremental developmental analyses, simulations, and/or tests to develop required design data and verify design requirements and producibility.

3.2.5.2 The ability to perform final qualification/performance verification that represents usage and environments expected over the life of the system or product.

3.2.5.3 The ability to identify test objectives and other critical information required to plan for and execute testing.

3.2.5.4 The ability to predict test requirements in terms of schedule and resources.

3.2.5.5 The ability to acquire and manage test resources, and conduct the required testing in a timely and effective fashion; and to interface with the manufacturing processes to provide for the timely availability of test articles.

3.2.5.6 The ability to accurately report results and to establish and maintain a verification database that provides the traceable record of performance verification.

3.2.5.7 The ability to assess adequacy of verification of COTS and NDI, identify additional verification requirements if needed, and integrate existing verification data into the overall system verification database.

3.2.6 Technical Control

3.2.6.1 The ability to verify that changes and variances to the system are accurately evaluated, documented and approved, and that changes are accomplished using a systematic, measurable change process.

3.2.6.2 The ability to provide definitive, accurate and timely information on the current configuration of the system for use within management and technical process.

3.2.6.3 The ability to confirm that the end items meet verification requirements, and provide traceable results that the as-delivered product matches its technical documentation.

3.2.6.4 The ability to control interfaces between systems, subsystems, and commodities to provide for design compatibility.

3.2.6.5 The capability to identify problems, conduct root cause analyses, and define and implement corrective actions to both the products and the production processes which generated the problem to preclude recurrence.

3.2.6.6 The capability for early identification of technical risks and advanced planning to adequately manage these risks as part of the initial program development.

3.2.6.7 The ability to identify and apply measures of effectiveness and technical performance measures that capture the maturity, performance, and risks in the program and establish associated incremental milestone criteria and accomplishments.

3.3 Metrics/Indicators.

The following metrics are the consolidated performance for the top ten dollar value, active programs for a single site/enterprise.

3.3.1 Cost.

This is a measure of the ability to control production cost and is defined as:

3.3.1.1 Sum of Estimated Unit Production Cost/Price divided by Sum of Unit Production Cost/Price Goal/Requirement)

3.3.2 Schedule.

This is a measure of the ability to meet defined milestone requirements and is defined as:

3.3.2.1 Number of Contract Milestones Completed divided by Number of Contract Milestones Due

3.3.3 Risk.

This measures the ability to define and execute an Integrated Master Schedule (IMS) and is defined as:

3.3.3.1 Total Number of Events in Initial (Proposed) IMS divided by Total Number of Changes to the IMS

Changes are defined as any additions or deletions of events, and any change in the time to completion of an event which exceeds 10%.

3.3.4 Performance.

This is a measure of the change order activity. It is divided into two time spans because of the increased significance of changes which occur after first flight or an equivalent test activity. The metrics are identical for both time spans, but separate metrics are provided for hardware and software items.

3.3.4.1 Time span: From Formal Configuration Management to First Flight or equivalent event. Formal configuration management is intended to represent the supplier's CM process.

3.3.4.1.1 A Hardware: Number of Engineering Drawings divided by Number of Engineering Change Orders

3.3.4.1.1 B Software: Number of Lines of Code divided by Number of Lines Changed

3.3.4.2 Time span: From First Flight or equivalent event to SVR/Completion of Development

3.3.4.2.1 C Hardware: Number of Engineering Drawings divided by Number of Engineering Change Orders

3.3.4.2.1 D Software: Number of Lines of Code divided by Number of Lines Changed

4.0 ADVANCED QUALITY SYSTEM PROCESS

4.1 Discussion/Rationale.

The Advanced Quality System is unique in that it has two distinct parts. The first part is application of the quality process on a facility wide basis in a manner which provides insight across all programs. This will be termed the facility quality system. In the broadest sense, the facility quality system should be applied to all processes that are important to the overall capability of the facility. This can be accomplished by the application of the following steps to operations:

- Identify the product or service to be provided
- Identify the "customer" and determine what they consider important about the product/service
- Define the requirements the product/service must fulfill to satisfy the customer's needs
- Define the processes by which the product or service is created
- Configure the process to verify that it can satisfy the requirements defined for the product
- Ensure continuous improvement by measuring, analyzing, and controlling the process.

While conceptually simple, the application of this approach to a very complex process, such as engineering is difficult. It generally must be applied at a lower level and implemented through metrics that reflect the quality of the process output. This should be accompanied by methodologies that examine the root cause of "defects" and institute corrective measures. When fully implemented, a facility quality system will be evidenced by the existence, for each key management process, of facility-wide metrics and a corrective action approach that identifies and corrects problems early, and incorporates lessons learned into day to day processes.

The second part is the application of the quality process to the specific program objectives. This is termed the program quality system, and is the subject of the remainder of this discussion.

Advanced quality approaches differ from traditional quality approaches by emphasizing the prevention of defects, rather than the identification and correction of defects after the fact. As such, Advanced Quality underlies other processes used to develop, produce, deliver and support

products and services meeting customer needs. Although both approaches share the objective of ensuring that only material that meets customer expectations is delivered to the customer, traditional systems tend to focus on the production phase and rely upon inspection and test (i.e., defect detection) to sort out defective material. The principal drawback of the traditional approach is its cost. Inspection, test, segregation, and processing of nonconformances, and rework each incur costs yet add no value to the product. In contrast, advanced quality approaches (defect prevention) emphasize matching the design requirements to both the environment for the product's intended use and to manufacturing process capabilities and then controlling the processes such that only conforming product is produced.

4.1.1 Advanced Quality.

Advanced Quality Systems are intended to prevent defects and are aimed at both development and production. In this context, the Advanced Quality System (AQS) is applied during the development phase (normally within an integrated product and production process development framework) and focuses on achieving robust, producible designs and ensuring that manufacturing processes are controlled and capable. Potential benefits in this context include decreased cycle time, as well as reductions in rework, engineering changes, and inspections and tests. These benefits translate into improved affordability and reduced production transition risk.

The elements of an Advanced Quality System include the following:

Underlying Basic Quality System;

Advanced Quality approaches to design;

Advanced Quality approaches to manufacturing;

Advanced Quality approaches to product support and sustainment;

Advanced Quality approaches to subcontract management.

4.1.2 Basic Quality System.

We still need to rely on a basic quality system requirement as it remains the foundation for an advanced quality system. It is not the intent to put the quality system itself on contract, or inhibit continuous improvements in it. However, there needs to be a basic, performance-oriented commitment that covers the quality system. Either company or commercial standards could fit this bill. The advanced quality requirements described herein go beyond basic quality system requirements, and are what should be the discriminators in source selection.

4.1.3 Advanced Quality Approaches.

To achieve the goal of defect prevention, advanced quality systems emphasize the optimization of the interface between the engineering, manufacturing, and support processes. This optimization involves concurrent implementation of both the **product design activities** and the **development of production and support process and their related control mechanisms**. The most significant characteristics of this integration are discussed below:

4.1.3.1 Identification and control of key product characteristics. Key characteristics are the features of a material, part, or process whose variation has significant influence on product cost, safety, fit, performance, service life, or manufacturability. This concept asserts that among all the characteristics that define a part, material, etc., only a small subset is so critical to functionality or manufacturability that they must be closely controlled during fabrication, assembly and test. The continuous reduction in variation in these key characteristics is of primary importance.

4.1.3.2 Design policy requires designing to an existing manufacturing capability. Every product characteristic has a design intent that can be described as a nominal value with an allowable variation that defines the design limits. Engineering design limits should reflect the maximum deviation (in customers' hands) of the products' functional quality characteristics from their chosen targets. The ratio of the design limits to the process variation defines process capability. When this ratio is large there is a low probability that the process will result in products outside the design limits. With a small ratio there is a much higher probability that the process will result in products outside the design limits. To prevent defects, the most cost effective approach is to set the design limits so that predicted process variation falls well within them.

4.1.3.3 Dimensioning, tolerancing and datum control. The use of geometric dimensioning and tolerancing is an essential design practice for ensuring that variability in key characteristics is understood and controlled. This is especially critical during the assembly of complex structures where uncontrolled tolerance stack-ups and poorly defined reference datum points can create severe fit up and interference problems.

4.1.3.4 Verification that production processes and tooling controlling key product characteristics are stable and capable. The determination that variation in a production process can satisfy design limits is the complement of the above design policy**.** Every production process results in some variation in the product characteristics it generates. For a process in statistical control, the output variability can generally be characterized as a normal distribution about a mean value. This distribution must be determined for each key process to provide designers the ability to match design limits with manufacturing capability. Key processes must also be stable; i.e., their mean value should exhibit little change over time. In the broadest sense, the methods by which processes are controlled should constitute the quality assurance provisions for product acceptance (see

below). For stable, capable processes, this generally translates into assurance that input variables are controlled with some form of output variable feedback. One method to accomplish this is Statistical Process Control (SPC). This also implies that key manufacturing processes should be placed under some form of internal configuration control by the supplier to verify that any changes to the process in terms of equipment, methods, layout, etc., do not adversely affect the process capability and stability.

4.1.3.5 Use of stable, capable manufacturing processes as the basis for product acceptance. Once a process has demonstrated the required capability and stability, a discrete inspection or test is no longer necessary to determine product acceptability. Rather, the product can be accepted based upon the statistical evidence collected from the process. This eliminates the cost associated with non-value added verification activities. When a process is not capable, or is unstable, some form of inspection or test will be required to weed out nonconforming products. These defective products must then be repaired/reworked and re-inspected, or scrapped, all of which add cost to the final product without adding value. In most cases, a stable, capable process is the preferred condition since it generally leads to the lowest cost method of product acceptance.

4.1.3.6 Control of variation in the measurement system. Measurement processes exhibit variation just as manufacturing processes do. Consequently, it is important to conduct measurement equipment repeatability and reproducibility analyses when performing process capability studies. This will verify measurement device variation is not consuming an excessive amount of design tolerance.

4.1.3.7 Root cause, closed loop corrective action. Advanced quality systems emphasize prevention of the defect's recurrence. This normally involves the use of multi-functional teams and formal problem solving techniques combined with high-level management attention and tracking to evaluate and implement changes in designs, production processes, tooling, work instructions, training, etc., to ensure the problem does not recur.

4.1.3.8 Continuous Process Improvement (CPI) or Variability Reduction (VR). The basic objective is to reduce the cost to deliver a quality product. This is achieved by assessing the root causes of variability and instituting cost effective changes to reduce this variability by eliminating or reducing the impact of root causes. For a specific production process, this could entail additional operator training, more frequent equipment maintenance, refinement of control settings, or improvements to fixtures. Another aspect of CPI is the evaluation of the design to identify cost effective ways to make it more robust, or more tolerant to variation. In the more general sense, CPI would address the processes associated with the product, including factory infrastructure processes such as inventory control, parts and material handling, and technical, business, and administrative support functions (as they affect production).

4.1.3.9 Deployment of advanced quality system elements to suppliers. Since suppliers account for at least 60 percent of the work content of current acquisition programs, effective implementation of advanced quality systems requires that they be deployed to the suppliers as well. Defect-free supplier products also facilitate such cost saving processes as just-in-time delivery and direct ship to assembly/stock, and enable assembly plants to eliminate redundant receiving inspection operations. Implementation of this will be achieved through the subcontract management process.

4.2 Performance Attributes

4.2.1 Facility Quality System.

4.2.1.1 The ability to identify the products and services of the facility processes, including intermediate products and services;

4.2.1.2 The ability to identify the customer(s) of the products and services (internal and external), and to provide a customer satisfaction orientation which considers what is necessary to fulfill customer needs;

4.2.1.3 The ability to identify suppliers required by the facility processes and provide clear definitions of supplier requirements;

4.2.1.4 The ability to configure the facility process to provide for clear interfaces with internal and external customers and suppliers to facilitate the communications required to satisfy requirements and to allow facility processes to be tailored to specific program requirements; and

4.2.1.5 The ability to provide continuous improvement by measuring and analyzing the performance of facility processes as implemented on each program within the facility, and eliminating sources of errors/defects and non-value added activity.

4.2.1.6 The implementation of these attributes will be partially demonstrated within the definitions and integration of the processes addressed in this document, including the program quality system, and in the implementation of these processes to specific program needs.

4.2.2 Program Quality System

4.2.2.1 Basic Quality System. A supporting, basic quality system that conforms to generally-accepted commercial, international or military standards. As part of the basic quality system, documentation of the basic and advanced aspects of the system should be included in master plans and schedules. The documentation should consider and be directly related to the product being produced and unique customer requirements. As discussed above, the basic quality system forms the foundation for the AQS.

4.2.2.1.1 The ability to facilitate:

4.2.2.1.1.1 the rapid disposition of defects;

4.2.2.1.1.2 rapid and accurate identification of the root causes of defects; and

4.2.2.1.1.3 the implementation of effective corrective action.

4.2.2.2 Advanced Quality in Product Design. The ability of the engineering process to implement design practices that:

4.2.2.2.1 Result in the identification, documentation, and control of key product characteristics;

4.2.2.2.2 Include consideration of existing manufacturing process capabilities during product/process design;

4.2.2.2.3 Result in robust designs that are insensitive to variability in other processes and environments;

4.2.2.2.4 Minimize tolerance stack-up, interference, assembly alignment problems and part complexity;

4.2.2.2.5 Provide continuous improvement by measuring and analyzing design process performance, and eliminating sources of errors/defects and non-value added activity.

4.2.2.3 Advanced Quality in Product Manufacturing. The ability to:

4.2.2.3.1 Verify manufacturing processes and tooling which control key product characteristics are stable and capable of producing product meeting customer requirements;

4.2.2.3.2 Use stable, capable manufacturing processes as a basis for product acceptance in lieu of inspection and test;

4.2.2.3.3 Assess the contribution of variation associated with measurement and test equipment and ensure it is accounted for when determining process capability;

4.2.2.3.4 Facilitate process maturity through continuous variability reduction for key product characteristics;

4.2.2.3.5 Provide continuous improvement by measuring and analyzing manufacturing process performance, and eliminating sources of errors/defects and non-value added activity.

4.2.2.4 Advanced Quality in Product Support and Sustainment.

4.2.2.4.1 The ability to apply Advanced Quality concepts in the post-production support and sustainment phase of systems and products including modifications, upgrades, and product improvements.

4.2.2.5 Advanced Quality in Subcontract Management.

4.2.2.5.1 The ability of the subcontract management process to provide for the selection of key suppliers based on their ability to implement appropriate aspects of quality systems, including advanced quality.

4.3 Metrics/Indicators.

The following metrics are the consolidated performance for the top ten dollar value, active programs for a single site/enterprise.

4.3.1 Performance.

This metric addresses the corrective action process, and is defined as:

4.3.1.1 Number of Total Failures divided by Number of Repeat Failures After Corrective Action

4.3.2 Risk.

This metric addresses the overall product design in terms of failure modes, and is defined as:

4.3.2.1 Total Number of Failure Modes divided by Number of Critical Failure Modes

5.0 MANUFACTURING PROCESS

5.1 Discussion/Rationale.

The manufacturing process includes the total set of activities and interfaces necessary to convert the product definition into an affordable end item product. The objective of the manufacturing process is to provide: (1) a complete definition of the factory environment in which the product is to be produced for consideration by the product/production process design activity; (2) a capable, efficient factory design as a product of the development program; (3) development and production/reproduction articles produced in support of delivery requirements; and (4) adequate insight into how factories are performing during contract execution. Reproduction includes the repair and overhaul of service units. The manufacturing process assesses the product and factory design, production processes, and tooling. It mitigates production transition risk through evaluation of design and manufacturing alternatives regarding program affordability, manufacturing efficiency, and quality objectives. It identifies and resolves production and quality related problems experienced in the manufacturing facility.

The manufacturing process supports the program/data management process by providing the up-front planning for the factory management systems necessary to manage the factory. Within the factory there must be adequate control to verify a thorough understanding of how the product is being built and what actions may be taken to reduce risk. These factory control systems must consider the control of the material on the production floor, the planning and statusing of work in process, and a systematic approach to continuous improvement and waste elimination.

It also supports the engineering process by providing for the integration of the product and factory design. In order to control production costs, there must be a continual interchange between the product and factory design activities. That is, the capabilities of the planned or existing factory must be a consideration in the product design and vice versa in terms of unit production cost, the projected delivery schedule, and product quality requirements. The impact of the factory to production cost must consider items such as process capacity and capability, environmental concerns, standard work content, factory flow, and assembly methods. Factory modeling may be used to validate the compatibility of the product design and factory in terms of cost, schedule and quality requirements.

The overall manufacturing process will be discussed in terms of five elements: material control; shop floor planning, tracking and control; factory flow optimization; factory design; and factory performance.

The material control element is responsible for the identification, ordering, receipt, flow, and tracking of material for the system. This element should provide visibility and control of material as it is used within the factory.

The shop floor planning, tracking, and control element addresses the factory systems necessary to plan, status and accomplish production risk management.

The factory flow optimization element will seek to continually identify and eliminate waste or non-value added effort.

The factory design element addresses the concurrent technical development of the product and factory to verify aspects of the product/production processes are considered and the factory infrastructure is in place to support manufacturing activities necessary to accomplish the program. This includes activities such as tool design/fabrication and consideration of facilities necessary to produce the end products. This element should provide for the integration of the product and production processes with the factory design activities.

The factory performance element identifies and seeks to reduce the direct labor content of the product, optimize the man/machine interface, and establish control and feedback mechanisms within the factory. This element should provide management visibility of efficiency and productivity. It should also provide data for determining factory problem areas, thus driving corrective action and continuous improvement.

5.2 Performance Attributes

5.2.1 Material Control

5.2.1.1 The ability to store, move and manage the material requirements to optimize on-schedule support to production requirements.

5.2.2 Shop Floor Planning and Control

5.2.2.1 The ability to determine product flow and span time within the factory.

5.2.2.2 The capability of providing product status information.

5.2.2.3 The ability to effectively provide a production scheduling and control system that is utilized plant-wide.

5.2.2.4 The ability to manage factory operations and resources to deliver required articles including tooling, test and support equipment on schedule.

5.2.3 Factory Flow Optimization

5.3.2.1 The ability to continuously identify and eliminate non-value added effort within the product flow.

5.2.4 Factory Design

5.2.4.1 The ability to define factory performance requirements.

5.2.4.2 The ability to provide manufacturing data, factory capabilities, special tooling/test equipment requirements, and unique production process characteristics that affect or influences the design of the products and factories.

5.2.4.3 The ability to optimize product requirements with factory capabilities. The ability to define factory cost, schedule, and quality requirements.

5.2.4.4 The ability to develop the production planning necessary to build the product, and provide the manufacturing support systems (tooling, test equipment, etc.) on schedule.

5.2.5 Factory Performance

5.2.5.1 The ability to identify standard labor content.

5.2.5.2 The ability to optimize the use of resources.

5.2.5.3 The capability to measure first pass yields and implement continuous process improvement or variability reduction.

5.3 Metrics/Indicators.

The following metrics are the consolidated performance for the top ten dollar value, active programs for a single site/enterprise.

5.3.1 Cost.

This is the CPI for the dollars assigned to the manufacturing portion of the program, and is defined as:

5.3.1.1 Sum of Budgeted Cost of Work Performed divided by Sum of Actual Cost of Work Performed

5.3.2 Performance.

This is a measure of the overall process capability and is defined as:

5.3.2.1 Average Cpk for characterized key manufacturing processes

5.3.3 Schedule.

This is a measure of the ability to deliver articles required by the development program. It includes tooling, test equipment, and support equipment.

5.3.3.1 Number of Required Articles Delivered on Time divided by Number of Articles Delivered.

5.3.4 Risk.

This is a measure of the degree to which process capability has been identified, and is defined as:

5.3.4.1 Number of Production Processes Characterized divided by Number of Production Processes Required

6.0 PROCUREMENT/SUBCONTRACT MANAGEMENT PROCESS

6.1 Discussion/Rationale.

The subcontract management process establishes the total set of business and technical relationships between the customer and supplier. As such, it is a process for program management, manufacturing, and engineering processes. With the implementation of Integrated Product Teams (IPTs), the nature of the relationship between the prime and key suppliers, and between and among the lower tier suppliers has significantly changed. In place of an integrating prime with independent supplier activities, we now expect fully integrated IPTs along high level product lines. The prime is still responsible for overall integration, but this role now becomes one of the IPT leadership with active participation by the key suppliers. This approach builds long-term cooperative relationships with suppliers stressing extensive information sharing and joint problem solving, based on mutual trust and commitment. In this respect, subcontract

management must be expanded to allow for key suppliers to participate in the integration process. The traditional subcontract management process will still be applicable for non-critical suppliers.

The subcontract management process interfaces with the program management process by providing the contractual linkages between the prime and suppliers. It also defines the technical relationships of the key suppliers in support of the prime's IPTs. It describes the roles and responsibilities of parties and establishes the formal and informal communications channels. The technical relationship will also include the integration of the configuration management process in terms of: Configuration Identification, Control, Status Accounting, and Audits; and Interface Management.

An integral part of the sub-contract management process is an effective supplier rating system which provides for efficient proposal evaluation and award of contracts to best value suppliers.

6.2 Performance Attributes

6.2.1 The ability to differentiate between suppliers based on past performance and other indicators of risk.

6.2.2 The ability to provide timely sub-contract awards based on best value.

6.2.3 The ability to define mutually acceptable contracts which completely define technical and business relationships relative to the contract effort.

6.2.4 The capability of synchronizing production schedules.

6.2.5 The ability to assess make/buy alternatives based on core competencies.

6.2.6 The ability to provide information sharing among stakeholders.

6.2.7 The ability to establish mutually beneficial relationships.

6.2.8 The ability to integrate supplier processes as an integral part of the overall program performance measures and metrics.

6.3 Metrics/Indicators.

The following metrics are the consolidated performance for the top ten dollar value, active programs for a single site/enterprise.

6.3.1 Cost.

This is a measure of the ability to control supplier costs, and is defined as:

6.3.1.1 Sum of the variance (est price - neg price) divided by Sum of Estimated Price.

6.3.2 Schedule.

This is a measure of the schedule performance of suppliers, and is defined as:

6.3.2.1 Number of Purchase Order Deliverables Delivered on time divided by Number of Purchase Order Deliverables

6.3.3 Performance.

This is a measure of the overall material procurement and is defined as:

6.3.3.1 Direct Material Procured divided by Direct Material Budgeted

7.0 LOGISTICS SUPPORT/SUSTAINMENT PROCESS

7.1 Discussion/Rationale.

Logistics Support/Sustainment is the process which (1) identifies system support constraints and requirements and opportunities for support process improvements as well as (2) identifies, develops, acquires and fields the support subsystem. It is accomplished through integration with both the Engineering and Program Management processes. The process includes the ten sub-elements of the Integrated Logistics Support (ILS) element and the Logistics Support Analysis (LSA) element. The expected outcome is a system that is both supported and supportable. The optimization of Life Cycle Cost (LCC) is a primary objective. This life cycle cost includes not only system design and acquisition costs but also system operation, maintenance, management and disposal costs as well. Products derived from this process require the application of verification, control and configuration management processes required by major end item. This process interfaces with the engineering process to identify support requirements, including technical data requirements, and provide data and analyses for control of LCC.

Integrated Logistics Support: The purpose of the ILS element is to integrate the system being developed with an effective support concept for military maintenance and operations. All of the ILS sub-elements are a consideration in system design and generate both systems constraints and requirements as well as support subsystem requirements. The ILS element includes the following:

Maintenance Planning sub-element is concerned with the development and implementation of a system support structure. It includes or interfaces with the other ILS elements. Development and implementation of a maintenance concept which includes support of operations and maintenance at all echelons is a primary output. Organic or Contractor Logistics Support (CLS) or privatized support are important alternatives to be considered. Site activation, depot and field maintenance activation and well as material management activation are necessary components.

Supply Support sub-element includes identification, warranty strategy, cataloguing and acquisition of all components required throughout the system life.

Support Equipment sub-element includes the identification, specification, development and acquisition of all required support equipment including operational equipment, test equipment including automatic test equipment, tools and equipment required for training and subsequent management. Standardization and proliferation control are important aspects of this element.

Technical Data sub-element includes the identification, specification, development and acquisition of all required technical documentation required for sustainment of the system. Components of this sub-element include technical orders and manual required for the operation, maintenance and sustainment of the system as well as drawings, tapes and other data required for system and component reprocurement, maintenance and modification.

Training and Training Devices sub-element includes the identification, specification, development and acquisition of all required training and training equipment and material to operate and sustain the system.

Manpower and Personnel sub-element includes the identification of the number, type and skills level for operators, maintainers and support personnel required by the system.

Packaging, Handling, Storage and Transportation sub-element includes identification and specification of materials management for the system end item and all components and items of support.

Computer Resource Support sub-element includes the identification and acquisition of all software support requirements including the use of standard languages, requirements for software support facilities for life cycle management of support, modifications and product improvements required throughout the system life.

Facilities sub-element includes the identification and specification of all facilities required for systems operation, maintenance, management and disposal. It also includes requirements generated by other ILS elements. In some cases facilities required are a part of the support subsystem being acquired.

Design Interface is the sub-element which drives logistics and support requirements into the system design. Major areas for incorporation include reliability, maintainability, scheduled and nonscheduled maintenance, deployability, survivability, availability, energy management, hazardous waste and materials management, testability and safety.

Logistics Support Analysis: Logistics Support Analysis is the technical element by which support requirements are managed and support subsystem components are identified. In conjunction with the design process, each hardware and software solution identified is extensively and iteratively analyzed to identify support characteristics and requirements. This analysis includes considerations generated by all ILS elements. The results of this analysis are documented in a database which can be used as a basis for support decisions made throughout the system life.

7.2 Performance Attributes

7.2.1 Maintenance Planning

7.2.1.1 The ability to provide planning documents and maintenance concept definitions.

7.2.1.2 The ability to develop organic/contractor support strategies for the life of the defense system.

7.2.1.3 The ability to provide program planning and execution which addresses use of initiatives such as lean logistics and paperless acquisition/support.

7.2.2 Supply Support

7.2.2.1 The ability to establish and track a warranty strategy including planned product improvement.

7.2.2.2 The ability to implement a post production support program.

7.2.3 Support Equipment

7.2.3.1 The ability to timely identify and acquire support equipment consistent with that identified in technical publications.

7.2.4 Technical Data

7.2.4.1 The ability to author technical data and instructions which meet support requirements.

7.2.4.2 The capability to generate data required by the development process to reduce cost of ownership.

7.2.5 Training and Training Devices

7.2.5.1 The ability to adequately identify training requirements.

7.2.6 Manpower and Personnel

7.2.6.1 The ability to minimize the use of personnel.

7.2.7 Packaging, Handling, Storage and Transportation

7.2.7.1 The ability to optimally protect system components.

7.2.8 Computer Resource Support

7.2.8.1 The ability to implement a program which assures optimal system life computer support.

7.2.9 Facilities

7.2.9.1 The ability to identify all facility requirements.

7.2.10 Design Interface

7.2.10.1 The ability to demonstrate that program planning and product design includes applicable ILS elements.

7.2.10.2 The ability to demonstrate the maintainability, reliability, deployability and availability characteristics of the system and its component elements.

7.2.11 Logistics Support Analysis

7.2.11.1 The ability to define documented processes that produce repeatable results to meet the supportability requirements of the system.

7.2.11.2 The ability to implement a decision process which shows use of Life Cycle Cost and cost to the government concepts within the design decision process.

7.2.11.3 The ability to document system component characteristics and support requirements.

7.3 Metrics/Indicators.

The following metrics are the consolidated performance for the top ten dollar value, active programs for a single site/enterprise.

7.3.1 Schedule.

This is a measure of both the quality and timeliness of logistics articles, and is defined as:

7.3.1.1 Number of logistics deliverables delivered on time and accepted without change divided by Number of logistics deliverables scheduled

7.3.2 Performance.

This is a measure of the ability to adequately define logistics requirements and deliver articles to these requirements the first time. It is defined as:

7.3.2.1 Number of logistics deliverables accepted divided by Number of changes to logistics deliverables after acceptance

APPENDIX F

FLEXIBLE SUSTAINMENT

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1.0 EXECUTIVE SUMMARY.

The Flexible Sustainment Sub-Panel was formed as a direct result of the initial investigation by the Joint Government-Industry Integrated Product Team (IPT) on Acquisition Reform Alternatives Using Non-Government Standards. The Technical/ Management sub-panel of the original group identified that sustainment (support) issues were critical to the successful implementation of Secretary of Defense Perry's 29 June 1994 memo, "A New Way of Doing Business." Through meetings of both Government and Industry representatives the difficult issues of integrated logistics support were fully examined and documented. Though each individual opinion was offered and considered, this report to the JACG contains the agreed to findings of the Government members only on the Flexible Sustainment Sub-Panel.

In the world of sustainment there are literally thousands of contracts and contractors, and finding a single solution to replacing government specifications and standards was considered impossible and unnecessary to do in a comprehensive "block change" manner. Therefore we attempted to determine a reasonable solution set that would identify the areas where changing our procurement philosophy is prudent. The sub-panel took a common sense approach recognizing that an increasing portion of the Defense Operation and Maintenance budget is being expended to support old systems that incorporate old technology, and that the contracts that offer us the greatest opportunity to favorably impact a system's total life cycle cost, are the ones we should concentrate on. We sought to reverse the upward trend in support costs through the introduction of flexibility in our integrated logistics support process. The sub-panel's efforts exceeded the chartered scope as the full life cycle nature of integrated logistics support goes beyond performance based specifications and form, fit, function, and interface (F^3I). This was essential since the concept of Flexible Sustainment embodies new techniques applied on our current logistics methods. The sub-panel felt it imperative to reconcile the proposed new way of doing

business and existing infrastructure that is in place to support our fielded systems. The proposals put forth in this report build on Secretary of Defense Perry's memo and address the impact on today's infrastructure.

Flexible Sustainment focuses on maintaining combat capability and the reduction of life cycle costs by introducing flexibility into our integrated logistics support. Total life cycle costs are a result of interdependencies of changes in design, operations, or support that effect the resources expended for a weapon system. The aggregated costs include the overhead of facilities, external base support, support personnel, warehouse space, supporting information systems, etc. A key point is that total cost accounts for the decisions made during design. It is well known that the decisions and trades made during the development of a weapon system significantly influence the cost of supporting the system throughout its life. This is especially true as we develop our support concepts and allocate those requirements to our maintenance planning. Maintenance plans are the requirements for life cycle investment in the support infrastructure.

A key sensitivity in maintenance planning is the reliability of the system; the greater the reliability, the greater the flexibility in how a system can be supported. Flexible Sustainment options, such as Organizational to Commercial Depot, or the decision to spare out the requirement, are feasible when higher reliabilities are available. These flexible concepts require less investment in organic infrastructure; consequently, there is less to modify as systems evolve. Greater reliabilities help the support system provide the combat capability our systems need to meet mission requirements with significantly less infrastructure. The flexibility derived by higher reliabilities can be used to invest in even higher reliabilities or increased operational capabilities. In other words, the reduced costs that flexibility allows are key to being able to ensure that we can either achieve higher combat capability for a given resource, or reduce the resources expended to achieve a given capability.

It is recognized that not all systems will achieve reliabilities that will preclude the necessity for organic repair capability. It is necessary that we consider total life cycle cost when we determine what maintenance infrastructure to invest in. As we seek higher reliabilities to reduce infrastructure costs, we should also scan the commercial sector for maintenance capabilities that we need not duplicate. This decision must always remember the nature of our business, but the perceived need to invest in redundant repair capabilities decreases the opportunities for investment in recapitalization. The added flexibility of utilizing existing commercial sector repair capabilities for our equipment ensures that we only invest in the infrastructure that we need. Market forces ensure that commercial sector enterprises operate in the most cost effective manner. The dollar savings in reduced organic infrastructure can be reinvested to increase reliability or enhance weapon system performance. Flexible Sustainment seeks higher reliabilities or reduction of infrastructure facilitization costs through the use of commercial repair capabilities.

The way a weapon system is sustained during its life cycle impacts this equation as well. The system and its attendant support structure must be monitored to see if they are meeting the original predicated reliabilities. The current system analyzes predicted reliabilities and then establishes a support infrastructure. The mission of infrastructure is to ensure that the weapon system can meet mission requirements with the lowest investment of support resources. If reliability changes, the equation is thrown out of balance and modifying the support infrastructure increases cost. This is true for either higher or lower actual reliabilities. A lower

reliability requires increased resources to maintain the weapon system's readiness. A higher reliability results in under utilization of the support infrastructure. Through monitoring the weapon system and its components, managers can trim excess infrastructure where feasible thereby freeing resources for reinvestment. Managers can also identify those components experiencing problems and refer them back for root cause analysis. DoD is adopting these new approaches by integrating our program teams, emphasizing the systems engineering approach, increasing the use of commercial practices, and transitioning to the use of F^3I and performance specifications. This panel's effort was to develop processes that would effectively implement these thoughts throughout the logistics support system.

In order to reduce life cycle support costs and simultaneously maintain a given level of combat capability, potential support concepts and design solutions must be developed concurrently.

For new acquisitions, it is clear that the life cycle consumption of support resources can be minimized by up-front design for support and design for interface. The development of a detailed maintenance concept determines, to a large extent, the downstream requirements for personnel, training, facilities, support equipment, technical data, supply support, and training devices. The sub-panel found through the application of the tenets of "A New Way of Doing Business" that the scope of any one or more of these elements can be reduced. For example, targeting and achieving higher reliability levels can reduce life cycle costs dramatically. Level of Repair Analysis (LORA), the establishment of whether to spare or repair, and at what level, is very sensitive to reliability. Translated, this means the least expensive repair is the one you do not have to make. The maintenance decisions also drive the requirements for technical data. For components containing rapidly changing technologies, organic repair capabilities may be negated. The result of this decision is that the technical data requirements (detailed design drawings and technical publications) are minimized at a considerable cost saving. Interface Control Documents (ICDs) and Performance Acceptance Criteria (PACs) will be developed for all indenture levels to ensure the capability for re-procurement.

The Flexible Sustainment sub-panel report provides the building blocks necessary to understand and apply the concepts of F^3I and performance based acquisition to the integrated logistics support process for currently fielded systems as well as new development programs. The result is the potential to significantly reduce out year support costs and provide re-investment money to sustain force levels and capabilities. Applying these concepts to fielded systems has the greatest potential to yield near term savings and should be enthusiastically pursued regardless of the degree or state of acquisition reform.

To accomplish these ends the sub-panel developed two interrelated processes; first, the Reliability Based Logistics Process, which applies to new systems and upgrades to existing systems. The second is the Trigger Based Item Management Process which will help preserve the combat capability of existing systems through proactive management. The team supports adoption of an ISO product definition standard to minimize data costs and make technology insertions easier.

1.1 Recommendations.

The government members of the team recommend endorsement of this approach and refinement and expansion of the proposed sustainment processes. Transition to, and implementation of, our recommendations uses the basics of the current system and only refines them to comply with today's procurement environment; we did not re-invent the wheel. However, application of Performance Based and F^3I specifications to currently fielded weapon systems presents a set of unique challenges. Evaluation of the use of Performance Based and F^3I specifications for currently fielded systems needs to be based on reduction of total life cycle cost. The complete transition will be an evolutionary change and will not occur overnight. But, there are short term targets of opportunity and short term projects that must be accomplished to pave the road to the eventual goals. Continual effort and the required resources should be committed to ensure accomplishment.

The Flexible Sustainment Sub-Panel developed the following recommendations, the details of which are contained in the main body of the report (Methodology):

1. Ensure active, and iterative, IPT involvement throughout the life cycle.

2. Ensure that the support concept/maintenance plan is defined prior to the Engineering and Manufacturing Development (EMD) phase.

3. Adopt and utilize the new Reliability Based Logistics decision tree presented in this report.

4. Coordinate the design and support decisions through sensitivity analysis; e. g., determine reliability values required for an "O to D" decision. Then design the system to achieve these values and construct the corresponding support structure.

5. Increase consideration and use of the F^3I concept.

6. Define triggers and apply Trigger Based Item Management described in this report.

7. Focus on total Life Cycle Cost; eliminate the perceived advantage of sub-optimization.

8. Include in solicitations the combination of operational availability/system reliability warranties and complementing incentives. (Appropriate terminology needs to be developed.)

9. Adoption of ISO 10303 (PDES/STEP) should be given serious consideration.

10. Commit to an investment strategy for technology insertion.

11. Socio-economic policies/regulations/statutes which may negatively impact the full benefits realized by implementation of these alternatives need to be addressed, pursued and/or eliminated; e.g., definition of core, 60/40 depot workload split, Small Business Set Asides, Competition in Contracting Act (CICA), etc.

1.2 Observations.

The new and refined techniques presented in this report can produce both short term and long term results by increasing the efficiency of the acquisition system and reducing life cycle support costs. Product reliability is the foundation for flexible sustainment. It controls the basic considerations for the system logistics concept. The logistics support system, as we know it today, must be upgraded in its totality to meet the challenges of today and future decreasing budgets. The following observations were made:

1. The acquisition system needs to be re-focused on Life Cycle Management and total Life Cycle Cost (LCC).

2. Maintenance concept decisions made early in the acquisition phases pre-determine LCC for sustainment once the system is fielded.

3. The maintenance concept is very sensitive to system/component reliability.

4. High Reliability is the key to flexibility; flexibility is the key to cost containment.

5. High Reliability can be realized through:

- IPT efforts to ensure reliability is designed into weapon systems
- IPT interface of design solutions and potential support concepts
- Use of performance specifications and F^3I
- Technology insertion

6. Inclusion of operational availability/system reliability warranties and complimenting incentives can be powerful tools.

7. Adoption of ISO 10303 (PDES/STEP) would be a viable step to solving the data transportability/usefulness problem.

2.0 INTRODUCTION

2.1 General.

This report identifies processes within the current support infrastructure that must be modified and provides alternatives to satisfy the intent of "A New Way of Doing Business." Additionally, it introduces new approaches that are applicable in the near term. The content of this report is applicable to new development/production and to fielded systems as well. The application to fielded systems presents the greatest challenge, and the most rewards, especially in the near term.

2.2 Background.

The sub-panel concurred with the basic tenet that solutions to sustainment issues were critical to implementation of "A New Way of Doing Business." The concept of form, fit, function, and

interface (F^3I) was examined for applicability to new development/production and fielded systems alike. The criticality of the interface between logistics planners and engineering was examined in depth to derive the critical processes and the timing sensitivities. Each avenue we explored branched out to other areas of opportunity. We have focused on the critical processes and their interrelationships within the acquisition system and support infrastructure and methodologies to update them.

Secretary Perry has identified the need to stabilize the industrial base. The current Government depot infrastructure is being down-sized significantly. The government should evaluate increased use of commercial industry capabilities and capacity. The commercial sector will have to assume major responsibilities and will be challenged to assure retention of critical support elements and technology needed to sustain life cycle support. They will also have to maintain, in combination with the remaining organic capabilities, the ability to meet contingency requirements.

A recent NAVAIR study revealed that approximately 12% of acquisition dollars was expended on Acquisition Logistics (development/production). Acquisition Logistics impacts 43-57% of life cycle cost, making the 12% expended on Acquisition Logistics a prime target to leverage life cycle cost reduction. For fielded systems, support system infrastructure requirements should be targeted as cost drivers to leverage for cost reductions.

Fielded system support cost is largely driven by the maintenance concept/plan. The maintenance concept establishes many of the variables in a mature logistics support system. The structure of that concept is highly dependent upon the system/component reliability. The maintenance concept pre-determines the downstream, life-cycle requirements for personnel, training, facilities, support equipment, supply support, and training devices; and it drives the level of government configuration control. Each of these areas can be a cost driver—most are—so careful analysis of the weapon system support needs is a requirement for cost reduction. The sensitivity of the support concept to reliability values must be explored to evaluate cost drivers and, particularly in the conceptual phase, to identify means to lessen their impacts on life cycle cost.

Before a weapons system is defined (normally concept formulation), it is relatively easy to incorporate system improvements. The opportunity to minimize support requirements and improve a system (at minimal/no cost) degrades at a rate roughly equivalent to the solidification of the design concept. Consequently, the maintenance plan must be developed prior to the EMD phase.

Also addressed was the difficult problem of data transfer/conversion. A Non-Government Standard (NGS); e.g., ISO 10303; offers a potential solution to at least a portion of the present dichotomy in the product definition/information interchange arena relative to interface standards and data specifications.

To put this data transfer/interchange/etc. situation in perspective, after transfer/interchange, the whole idea is to be able to use whatever the data is regardless of data system architecture. A large multi-product manufacturer recently wanted to upgrade to a state-of-the-art technology CAD product. This is an area of great similarity between Industry and Government: data transfer (two-way) and full utility and flexibility at both ends. Millions of dollars were spent by the manufacturer to obtain the new capability. The root problem: interface, compatibility, etc., did not exist. Had ISO 10303 been in place, conversion would have been faster for significantly less cost.

ISO 10303 is being analyzed by both industry and government at this time. It promotes open architecture exchange of data. A few examples of the protocols, which cover land, sea, and air, are:

- 203 - Configuration-Controlled Design
- 210 - Electronic Printed Circuit Assembly
- 214 - Core Data for Automotive Mechanical Design Process
- 215 - Ship Arrangement

Use/adoption of this standard, when it matures, would be in keeping with the intent of Secretary Perry's "A New Way of Doing Business."

3.0 OBJECTIVE.

The objective of this sub-panel was to define the concept of Flexible Sustainment and devise the means to implement the resultant principles. Performance Based Specifications and F^3I are fundamental to the implementation of Flexible Sustainment. The goals of acquisition reform are to maintain the requisite combat capability and simultaneously reduce life cycle support cost. Flexible Sustainment is defined as a concept which provides a variety of options for logistical support of a weapons system, and its components, emphasizing life cycle management and cost. The concept is defined in this report and the tools for successful implementation are presented for approval.

4.0 SUB-PANEL ORGANIZATION.

The sub-panel consisted of a diverse group of Government and Industry representatives. All Services were represented with backgrounds in program management, engineering, and logistics. The industry representatives likewise possessed diverse backgrounds including engineering, logistics, software management, and program management and spanned project experience from aviation to sub-surface weapon systems.

5.0 METHODOLOGY.

The overarching goal of this sub-panel was to maintain or increase combat capability while reducing support costs throughout the life cycle without increasing front end acquisition costs. Significant effort was invested in examining life cycle cost. The panel determined that all support decisions need to consider total life cycle cost, not sub-optimal cost. Total LCC consists of all the costs incurred by a weapon system as it progresses through its life cycle, regardless of funding lines. There are no "free" resources; all resources consumed by a program must be accounted for. To accomplish this goal, the panel adopted a life cycle approach. Current procurement philosophy and procedures, ILS methodology, and post production problem areas for fielded weapon systems were also examined.

Two major processes for Flexible Sustainment implementation were identified. The first is labeled as "Reliability Based Logistics," which deals with both "acquisition" and post production support. The second process is "Trigger Based Item Management," which applies to fielded systems. The two processes are interrelated and complement each other. The combination of these two concepts will result in improvements in the efficiency of the acquisition process, with attendant long term rewards, and reduction of support costs, both near term and life cycle. Additionally, both processes take maximum advantage of commercial industry capabilities and practices, and encourage the increased use of Non-Government Standards (NGS).

5.1 Reliability Based Logistics.

Before the details of Reliability Based Logistics are presented, the intricacies of the basic decisions shown in Figure F-1 need to be clarified. A decision for the classic spare/repair choice, and the source of that support, must be made. The reference in the figure to "Reliability" is significant. This is a key element to the complex logistics picture. Evolving high reliability components/subsystems favor more spare decisions vice repair decisions. Rapidly changing technologies lend themselves to commercial support; stable technologies may favor organic repair capability. The term repair, as used in this report, deals with what happens to an item after it is removed and replaced on the platform. Organic removal and replacement at field level is not in the context of repair as discussed in this report.

DECISION	SOURCE: COMMERCIAL	SOURCE: ORGANIC
SPARE	***High Reliability***	***Obsolete Technology***
REPAIR*	***Changing Technology***	***Stable Technology***

* Activity subsequent to remove and replace

Figure F-1. Characteristics.

The genesis of the support process—the support concept—is contained in the early documentation for a program (Figure F-2). The Mission Need Statement and the Operational

Requirements Document provide the initial building blocks. From this beginning evolves the system level specification and performance requirements. Identification of the maintenance concept needs to be accomplished prior to EMD.

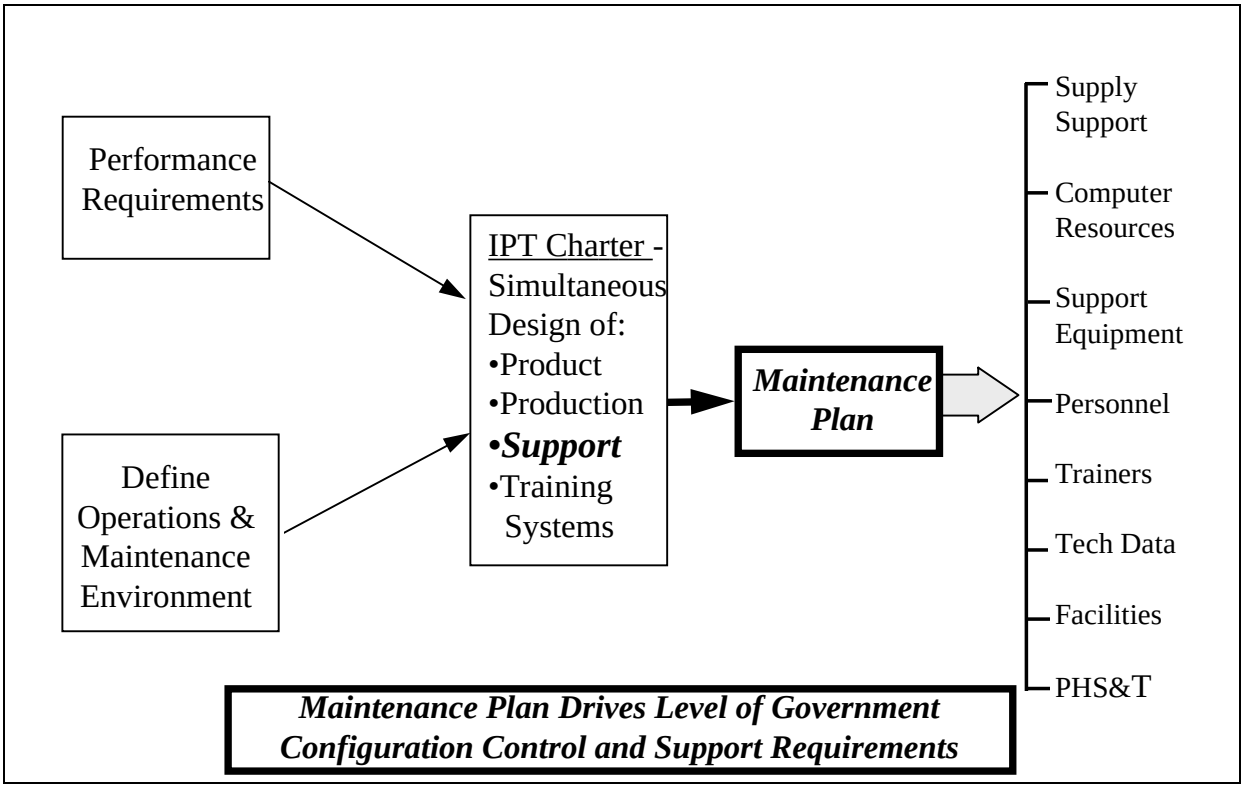

Figure F-2. Support Planning—Pre-EMD.

The principles of the new approach, called "Reliability Based Logistics," are represented in Figure F-3. This is a new decision tree to be utilized during Integrated Logistics Support. It is the expansion of the overall questions of spare versus repair, and the source for each. Reliability growth of new and future systems and the new way of doing business have decision points not previously identified. Additionally, elements of the support system, and design criteria as well, must be analyzed and their sensitivities established. Sensitivity analysis to determine the life cycle impacts on resource consumption and operational readiness will identify the cost - and readiness - drivers that must be dealt with during the conceptual phase.

The new decision tree consolidates the logical methodology for support concept formulation into a structured approach. It includes the following new, or seldom applied, criteria:

- Requirement for operational availability/system reliability warranties which provide both penalties and incentives
- Decisions based on reliability growth and technology life cycle
- Transition to fielded support (through Trigger Based Item Management)
- Consideration of commercial support postures when possible

The first criteria in this decision tree involves evaluation of any preempting Non-Economic Driver that may exist which overrides cost considerations to determine the maintenance concept. This evaluation is performed with cost being only a secondary consideration. However, in today's environment, an economic analysis should be performed which will assign an economic value to the non-economic decision. Such action, early in a program, may lead to an entirely different approach to solving the operational requirement because the projected life cycle cost is not bearable, even in light of the validated requirement.

Preempting factors are normally a restraint, stipulation, or a unique operational or mission requirement that dictates the repair or discard decision and the corresponding maintenance concept to meet that requirement. Some examples of non-economic factors (typically cited when Level of Repair Analysis (LORA) results are not adhered to) are as follows:

- Safety
- Battle Damage Repair
- Security Classification
- Policy/Regulation/Statutes
- Readiness/Mission Success
- Unique Personnel/Facilities Requirements

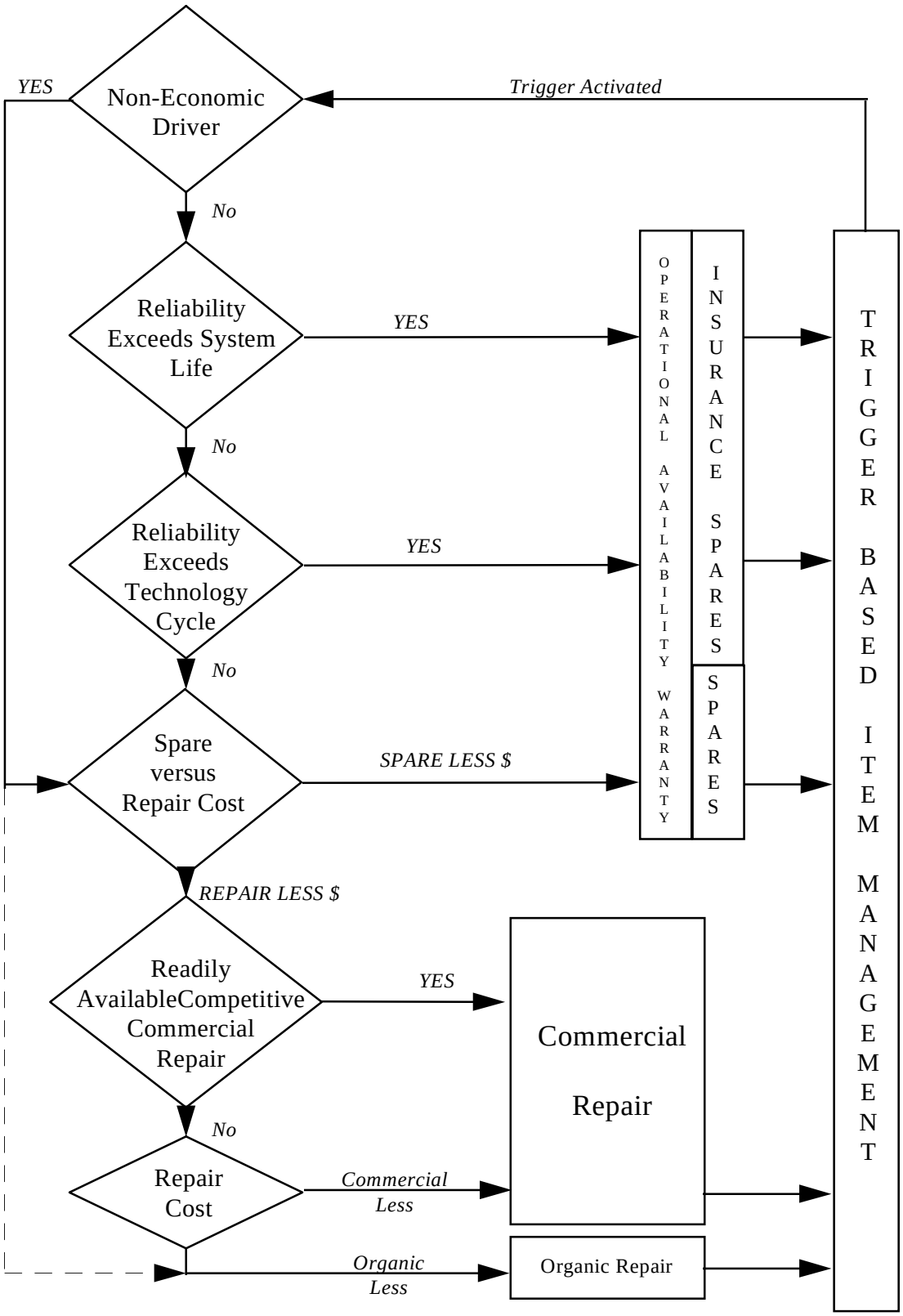

Figure F-3. Reliability Based Logistics Decision Tree.

If there is a legitimate reason, based on a valid non-economic driver, then the decision path goes directly to the spare/repair decision block. If repair is required for the unique situation, then the process moves to organic repair capability. The appropriate levels of organic repair capability must then be determined and economics can be more of a factor in the decision process.

The second decision "Reliability Exceeds System Life" represents a component/subsystem with demonstrated reliability exceeding the system design life. In this case, if the reliability exceeds the system design life, then the maintenance plan would reflect the following: remove and replace only, a requirement for an operational availability warranty, and because nothing is 100% foolproof, limited insurance spares. Another factor that relates in this decision is system effectiveness. System effectiveness is a measure of how well a system performs in the field. System effectiveness is measured by operational availability, operational capability, and operational dependability [1]. Operational availability is a combination of reliability, maintainability, and supportability. Reliability (a probability function) values are used to forecast that a system will perform its intended function adequately, without failure, for a specified period of time within a specified environment.

If the reliability exceeds the system design life, cost savings include the following:

- No repair capability needed beyond remove and replace which negates the following requirements to support repair actions:
- Training
- Technical data
- Support equipment, facilities, etc.

The third decision point represents a component/subsystem where the design reliability exceeds the expected life of the technology (chips, techniques, etc.) of the item. The technology cycle for state-of-the-art electronics may be as short as 18 months. If the design reliability exceeds the life of the technology, the item will be planned as a remove and replace item, requiring an operational warranty and insurance spares. The benefits here include:

- Opportunity for technology insertion, normally resulting in improved combat effectiveness
- Reduction of obsolescence problems with the technology insertion
- Cost savings - same as the previous example, which could represent a large amount of resources (personnel, dollars, etc.).

For example, investment planning for follow-on technology replacements is essential. The Logistics Engineering Change Proposal (LECP) concept utilized by the Navy's Aviation Supply Office provides a means for investment to achieve technology insertion.

The fourth decision is more of an economic decision (which in the case of a non-economic driver forcing the path directly to this block, this is the second decision point). This is the classic spare/repair decision, but the decision logic has followed a new path to this point. The process,

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[1] Blanchard, B. S., Logistics Engineering and Management, 4th Ed., Prentice Hall, 1992.

determining the most cost effective decision to spare or repair the system (its major assemblies) or individual parts (e.g., subassemblies, circuit cards, components), focuses on a Level of Repair Analysis (LORA). LORA must be capable of intensive sensitivity analysis in order to find break points for reliability to drive design goals for major sub-systems and components. Sensitivity analysis will identify life cycle cost drivers early so that life cycle cost can be minimized while not degrading system capabilities.

One option at this point in the decision process is to determine if discard and replace (no repair) is the appropriate choice. This results in the 'Spare" option. If sparing is the correct approach, costs are avoided in a manner similar to the last two examples. If sparing is not the correct choice, then source of repair is the next major decision.

If repair is the least cost option (life cycle cost), another new decision block has been added to the process. This decision block is Readily Available Competitive Commercial Repair Capability; this refers to IN-PLACE, competitive sources currently performing the repair. This does not mean the government will provide technical data packages, etc., for someone to establish a repair facility.

If a readily available competitive commercial repair capability exists, then commercial repair is the answer. If a commercial source is available, in an F^3I environment technology upgrades can be accomplished routinely, which mitigates the recurring problem of obsolescence. The competitive market will ensure economical operation. Additionally, the Government avoids the investment required to generate an organic repair capability.

The last decision block represents an economic decision: sole source (example, the prime contractor) versus establishment of organic capability; which is the most cost effective? However, there are socio-economic considerations (small business set asides, CICA, depot core workload, etc.) that may cause sub-optimization, but the root consideration needs to be based on cost/benefit considerations. If sole source is less costly, this commercial repair will permit technology insertion (if desired) to reduce the impacts of obsolescence and again avoid the investment of resources to establish organic repair capability.

The Government can pursue an arrangement, for example, with the Original Equipment Manufacturer (OEM) as a sole source for repair, to whatever depth the components require. An advantage of the OEM being a single source would be that the Government could avoid inventory management but still obtain parts on demand within a specified time frame. This should encourage the OEM to maintain/increase the reliability and service life of their products. Additionally, if a vendor is not performing adequately, the OEM can solve that type problem very quickly in the commercial marketplace, where it would be a complex problem for the Government.

The goal for the Government, in this situation of OEM support, is to create a commercial support structure that maintains the desired configuration (form, fit, function, and interface), performs material management, produces just-in time spares for its own internal repair process, meets contingency requirements, maintains the technical data, and provides upgrades and improvements to enhance system availability and lower life cycle cost.

All of the decision paths in the Reliability Based Logistics decision tree lead to "Trigger Based Item Management." This new approach will enhance the support provided by the current supply and maintenance infrastructures for fielded weapon systems. The Trigger Based Item Management Process will be described later in the report.

5.2 Form-Fit-Function-Interface (F^3I).

The logic presented in Figure F-3 must be comprehensively applied at each indenture level in Figure F-4; Line Replaceable Unit (LRU), Shop Replaceable Unit (SRU), etc. When the spare option is chosen, then at that level, and above, the government will need ICDs and PACs. Selection of the F^3I level establishes the level of configuration control for the Government, and coincides with the lowest level of organic repair. The contractor is responsible under the F^3I concept for full configuration control. The internal workings, piece-parts, printed circuit boards, etc., below this level are not of major concern to the government. Form-Fit-Function-Interface are the drivers now. The importance of the ICD and PAC documentation to the contractor and the government cannot be overstated. They must be comprehensive and accurate. How the manufacturer meets these requirements is their concern. What does this do for the government? What are the risks? These questions must be dealt with as F^3I moves from concept to implementation.

For those systems that process or manipulate software that is the responsibility of the government to organically produce, the benefits and risks must be carefully weighed before entering an F^3I procurement approach. In general, the software developer and the hardware configuration manager should be from the same organization.

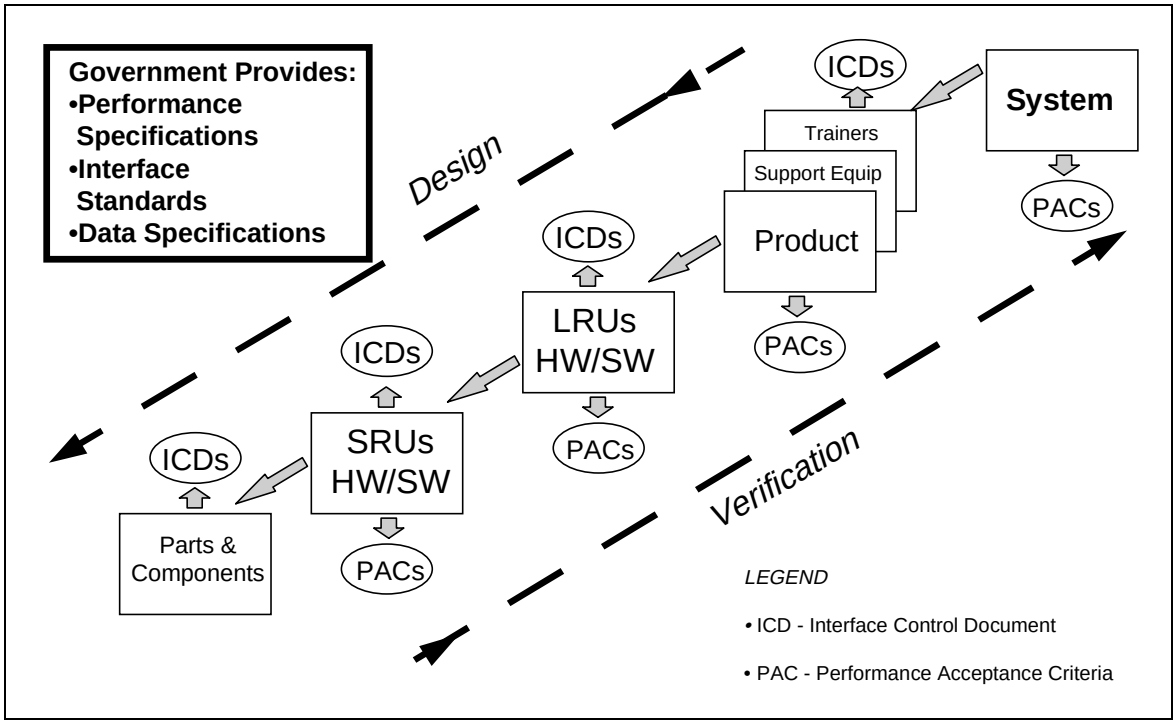

Figure F-4. F^3I Interactions.

Ideally, the benefits to the government are tremendous. Technical data (drawings, repair procedures, manuals, training, spare parts, repair facilities, etc.) are not desired or required, and results in a considerable life cycle cost reduction. Additionally, as new technology is inserted, it must still meet the ICD and PAC combination. An example is replacement of complex circuitry/multiple cards with one card/new chip. The customer (government) will reap the benefits, which should be increased reliability, reduced government and contractor processing time, etc., while reducing the impacts of obsolescence.

When properly utilized, F^3I has tremendous potential and interfaces easily with Reliability Based Logistics concepts. There are some current programs utilizing the F^3I approach now; e.g., F-15 Weapons Computer and Central Computer and Tactical Air Control System upgrades. Expansion of the use of this concept will decrease support costs for the future and simultaneously provide improvements/upgrades.

Although much of the discussion so far has its major benefits when applied to new initiatives, a good portion of the process can be applied to existing systems. “Trigger Based Item Management” applies to fielded systems.

Our intent is to provide a process to foster proactive management, shown in Figure F-5. Few, if any, serious degradations occur in an instantaneous fashion. The large majority move to the right on this chart at some recognizable pace prior to becoming a skyline item in the lower right corner. We will propose some tools and ideas to identify and solve “problems” before they take on major proportions.

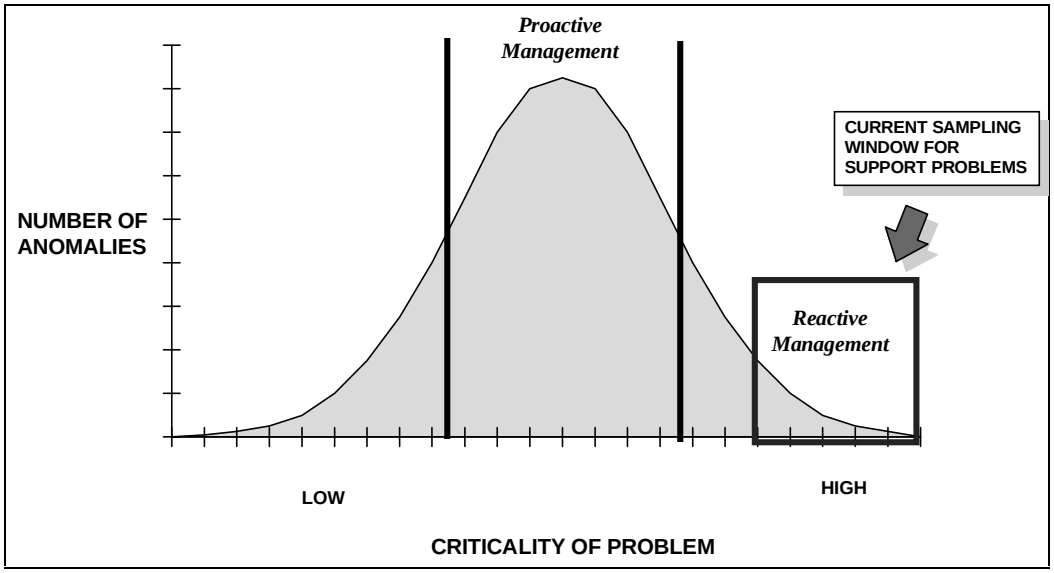

Figure F-5. Proactive Management.

5.3 Trigger Based Management.

Figure F-6 contains examples of "Triggers." For example, the upper left graph depicts a demand bell curve. There are two important concepts displayed. First, the solid vertical line on the left represents the lower end of "Normal" demand. If the actual demand is even less, this is a trigger. The experienced reliability of the item is considerably better than forecast. This better than expected performance "triggers" action.

Conversely, demands exceeding the solid line on the right indicate higher consumption, and on the surface, considerably less than expected reliability. Another trigger to initiate action.

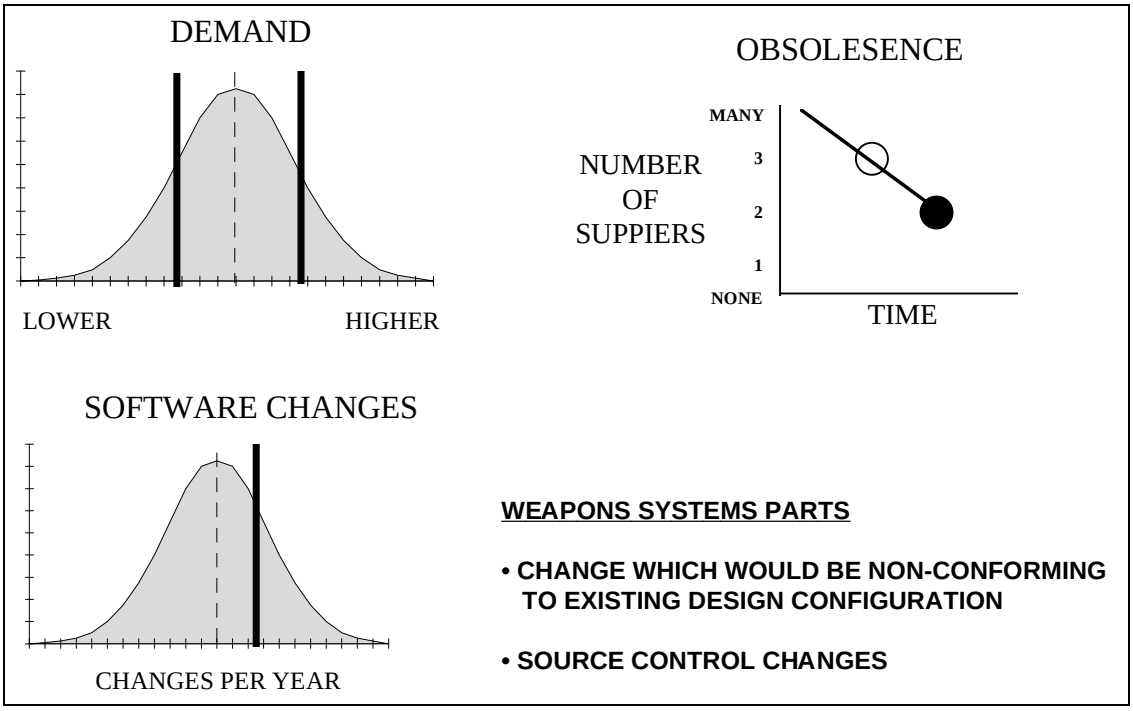

Figure F-6. Trigger Examples.

The graph on the upper right deals with obsolescence. As long as competitive sources are available, replacements should be obtainable. However, when the number of suppliers starts to diminish, the probability of obsolescence increases. These trends must be identified early on and solved while there is time available to devise a rational and economical solution. The open circle is an alert; the solid dot, a requirement to act.

In the lower left corner we show software changes. These changes are not those associated with modifications to adapt to other known changes within a weapon system. These are “unscheduled maintenance” actions to fix internal software problems. Here again, “hits” beyond the expected indicate a trend that must be investigated before it becomes a catastrophic problem.

Another trigger involves identification of any change which would be non-conforming to the existing design configuration. This may occur when new sources of replacement parts/assemblies are found. Other triggers need to be identified within commodity areas.

When a trigger is activated, the first action is notification of the responsible/appropriate Program Manager(s) as shown in Figure F-7. The program manager may already know the answer (e.g., part being replaced by ECP XX, etc.), or he may not have any idea that a potential problem is growing. With complex systems it often requires action on the part of both the Item Manager and Program Manager to solve the problem.

For a reliability related trigger, an outline of the appropriate logic flow is presented in Figure F-7. If reliability is higher (good news), the Reliability Based Logistics Process should be revisited to see if there are economical rewards to be had. This of course, assumes that, in fact, the reliability is better than predicted. It may be an anomaly caused by reduced system employment or some other external cause. Each time a trigger is activated, careful analysis of the causes must be completed. Jumping to conclusions here would only exacerbate the support complexities, not resolve them. In particular, decisions must be made using a statistically significant sample under normal operating conditions.

Non-configuration change solutions should always be considered first, if possible, because they are the most economical. The analysis of the "problem" must identify the cause. Let's assume that the root cause was traced to a maintenance procedure that was described inaccurately; for example, "add shims to ±0.003 inches" when it should be "add shims to +0.003, -0.000." Here, the cause has been identified and can be eliminated by training and changes to the assembly procedure tolerances. Re-examination of the Reliability Based Logistics Process should be accomplished if there is a significant change in reliability from the original analysis.

If no non-configuration change solution applies, engineering changes are examined for applicability. If an ECP will solve the root cause, then repeating the Reliability Based Logistics Process is a must to identify all of the variables.

If ECP(s) will not solve the problem, then subsystem replacement through the F^3I process is considered. F^3I at this point would also be an ECP, but its impact on the support system may be more significant. In this case, new technologies will often be used which improve the inherent reliability. Thus, the support structure may be able to be reduced saving future sustainment costs.

The last option is reverse engineering, which should be avoided for many reasons, especially cost. Another significant drawback here is that if no source is available, it is very likely that reverse engineering will lead to the manufacture of something that is obsolete and should be replaced with current technology.

A real world problem will be application of our Reliability Based Logistics Process to the Re-Procurement arena, displayed in Figure F-8.

Basically, there are two approaches to accomplish re-procurement: "Build-To" packages or F^3I. Re-procurement of build-to packages is probably the easiest, and on the surface, less expensive in the short run. But, consideration must be given to total life cycle cost.

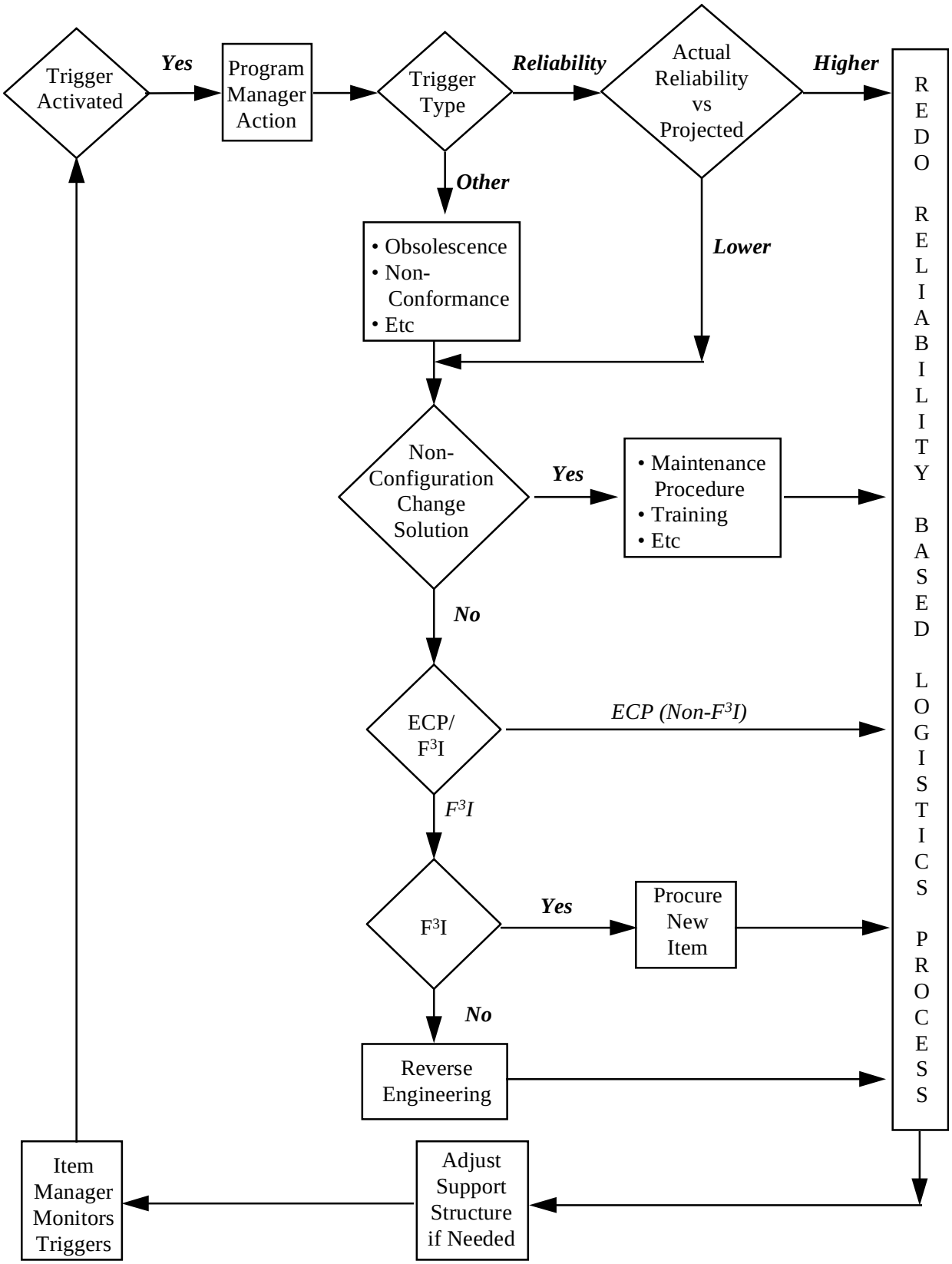

Figure F-7. Trigger Based Item Management Decision Tree.

5.4 Reprocurement Using F^3I.

After the decision is made to re-procure, the next step is determination of the availability of a build-to package. If a build-to package is available, cost analysis is next. If the package is not available, then the package must be obtained. If the package is obtainable, cost analysis is next; if not, this procurement becomes an F^3I procurement. When the package is available, life cycle cost is a primary consideration; is it cost effective to use the existing, or an improved, build-to package; or is there a cost benefit to move towards conversion to an F^3I procurement?

Several other imposing questions have been identified by "people in the pits;" such as, the availability of performance specifications for the old item, qualification of new vendors, resources to re-write the required specifications and solicitation, etc. This transition will be full of obstacles, but we feel that most are not stone walls. The bottom line is the lowest life cycle cost. The cost of a new path must include a careful evaluation of the probability of success.

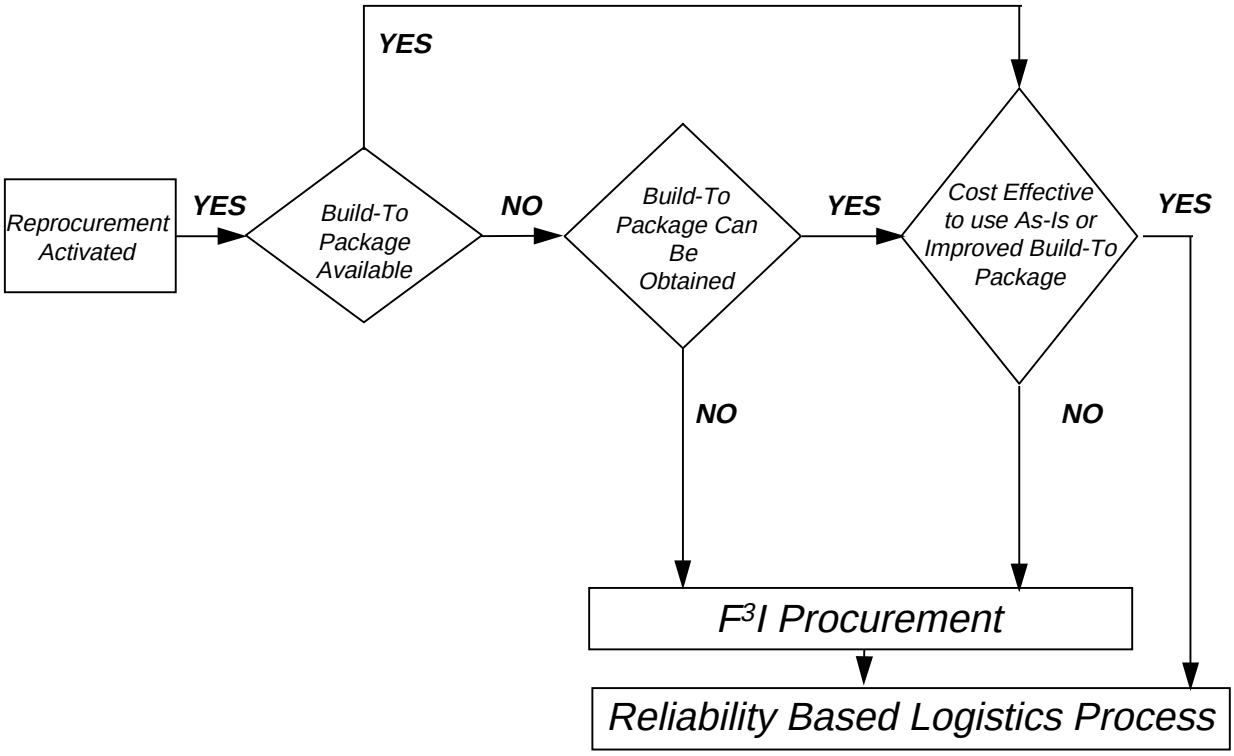

Figure F-8. Re-Procurement.

The transition to the F^3I concept is not without obstacles. Qualification is one and may be examined in two parts, qualified products and qualified producers. Qualification of the component can be mitigated by performance acceptance criteria (PAC). It will be imperative that complete PACs are established to ensure that all systems, especially flight critical components, meet safety and performance requirements. Included is the impact of the changed system or component on the next higher level assembly/system. The interfaces need to be fully documented and testable to preclude costly modifications to the next higher assembly/system. Human interfaces must also be considered as an element of the interface definition and specification. Mixed configurations are acceptable provided the interfaces are fully developed and transparent to the user. The transition to the F^3I concept mandates a cost analysis based upon the total life cycle costs. There may be cases where F^3I will offer better components but there is not sufficient return on the investment to justify a change.

6.0 SUMMARY.

The transition to Reliability Based Logistics, with IPT interaction, and introduction of Trigger Based Item Management, will result in an improved bottom line for life cycle support cost.

Investment of the same resources in Acquisition Logistics, while implementing the Reliability Based Logistics Process supported by the iterative involvement of the IPTs, will result in a decrease in support resource consumption. The use of these savings is presented in Figure F-9.

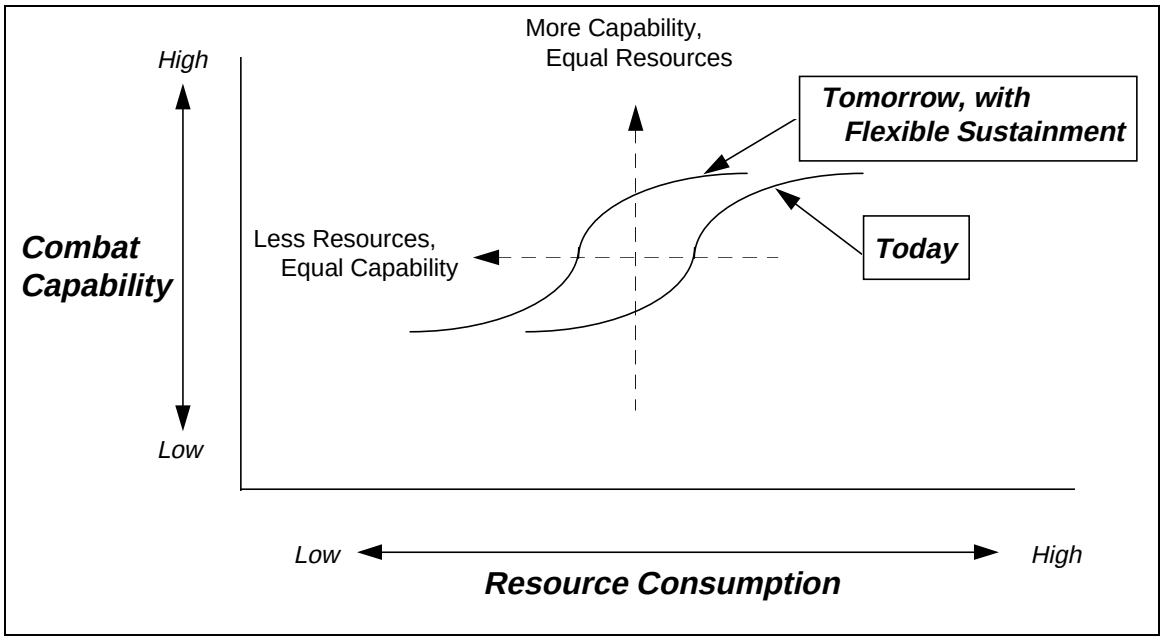

Figure F-9. Flexible Sustainment Results.

This is a depiction of Combat Capability versus Resource Consumption. Today, shown as the curve on the right, and tomorrow, the curve on the left, with implementation of the principles we have presented in this report.

For a given a level of resource consumption, combat capability will increase; or with a given combat capability, resource consumption will decrease. The resulting savings is available for re-investment in combat capability enhancements.

Some key processes and characteristics of our approach to implementing the Secretary of Defense memorandum of 29 June 1994 are as follows:

- Minimizes cost
- Increases/maintains combat capability
- Provides for technology insertion
- Requires, and encourages, cultural change
- Provides viable support alternatives
- Reliability Based Logistics Process most effective when applied up-front
- Trigger Based Item Management Process applies to fielded systems
- Must be a priority item on the IPTs throughout program life cycle
- Requires iterative application throughout a program life cycle
- Early identification of resource drivers provides the greatest opportunity for reduction of life cycle resource consumption

7.0 IMPLEMENTATION.

Implementation of the processes and methodologies presented in this report could begin almost immediately after approval of the concepts. Reliability Based Logistics and Trigger Based Item Management provide two powerful tools for reduction of weapon system life cycle cost, for both fielded systems and future acquisitions. The approach presented herein applies to needs of all the Services, but the details will need to be tailored to meet the exact requirements of the respective Service infrastructures. The actions and responsibilities outlined below are the basic building blocks for implementation throughout DoD. Success of this venture requires up-front commitment of the requisite resources to begin the evolutionary achievement of the goal; that is, reduce life cycle support costs and simultaneously maintain a given level of combat capability.

ACTION	RESPONSIBILITY
Assign action to panels	JACG
a. Develop plan to implement Reliability Based Logistics and Trigger Based Item Management Processes b. Develop definitions of triggers by commodity area c. Adopt ISO 10303 (PDES/STEP) to achieve a common production definition d. Develop contract language to incorporate, as applicable, the requirement for operational availability/system reliability warranties.	
Determine trigger values to support Trigger Based Item Management Process	PMs/Item Managers
Implement plans developed by JACG	Services/DLA
a. Develop tools and procedures b. Prepare implementing documentation	
Develop investment strategy to support technology insertion	Services/DLA
Update 5000.xx series documents to OSD the maintenance concept exit criteria for Phase I (Milestone II)	OSD
JACG develop and recommend changes to statutes/policy/regulations	OSD

8.0 SUB-PANEL MEMBERSHIP.

Captain Bruce Hawk (Co-Chair)	COMNAVAIRSYSCOM (AIR-3.0B)
Frank S. Goodell (Co-Chair)	Director, CQI, Boeing D&SG
Mike Amidan	OO-ALC/LA
Commander Pat Blair	USCG
Commander Chris Borer	NAVAIR (AIR -3.6.1.1)
Steven Bray	Raytheon
Colonel Lee Cox	ASC/SDL
Bill Halpen	Pratt&Whitney
Lieutenant Colonel John Hebert	WR-ALC/TIE
Dr. Tom House	AMSAT-R-Z
Steve Kaspar	Hughes Aircraft
Colonel Bob Leavitt	NAVAIR (AIR-3.2)
Lieutenant Colonel Glen T. Logan	OUSD(A&T)/OS-JFT
John Over	HQAFMC/ENPI
Charles F. Petersen	ATCOM
Jim Ray	AMSAT-R-E
Joe Riccomini	SM-ALC/PKP
Dr. V. Devon Smith	Lockheed-Martin
Lester Snellen	OC-ALC/LIIR
Maurice Stewart	ADUSD(L)/MPP&R
Colonel John Traugott	OC-ALC/LH
Terry Tucker	ASC/VFE
Joseph Warner	General Dynamics
Norm Way	NAVAIR (AIR-3.6.1.1)

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APPENDIX G

SUPPLIER CAPABILITY ASSESSMENTS

Table of Contents

Within the IPT there was a discussion and differences of opinion expressed by different organizations. This section is a departure point for further discussion. The JACG will revisit and resolve the different perspectives as part of its implementation efforts.

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1.0 FOREWORD.

The content of this appendix does not represent the work of any single panel. Rather, it is derived from the findings of several panels, and represents a set of findings developed after completion of the activities of the main body of the NGS IPT members. Its primary purpose is to identify and discuss alternative supplier assessment methodologies, with at least one

methodology which satisfies the requirement in the Key Supplier Processes Report (Appendix E) of identifying strengths and weaknesses against the process performance attributes identified in that report. It is also the intent of this report to leverage the ongoing work of the DCMC Reinvention Laboratory Process Reviews for: (1) establishment of a vendor rating and management system in which high quality suppliers to the government earn reduced oversight; (2) implementing contract retrofits; and (3) establishing an alternative to supplement the collection of Past Performance information for Source Selections.

Contract retrofits, as used herein, is meant to represent; (1) both block changes to all contracts within a given facility and contract modifications for a single program; and (2) implementation of block changes through either the "top down" (broad delegation for configuration control and production process changes) or "bottom up" (narrower changes to implement common production processes) approach.

2.0 BACKGROUND

2.1 The desired end state, as discussed within this report, is defined as DoD programs conducted with minimal government oversight by best value contractors using self governance to apply and manage internally controlled, common, facility wide management processes. Best value contractors, in this context, are contractors with demonstrated performance to consistently provide high quality products which meet or exceed customer requirements at an affordable price. It is the intent to reward best value contractors through delegation of traditional risk management actions (such as configuration control, self inspection for quality assurance provisions, etc.), and preferential selection for new business by elevating past performance within source selections. To this end, it has been proposed that contractors' process performance be placed in one of three levels as described below:

Level 1 - Fully capable. Demonstrated capability for the full scope of a process with no significant weaknesses. Capabilities must include State of the Art applications.

Level 2 - Partially capable. Demonstrated capability for most of the scope of a process with some significant weaknesses identified.

Level 3 - Marginally capable. Significant weaknesses identified across the entire scope of a process.

NOTE (1): Each process is assessed independently, with ratings assigned to each.

NOTE (2): There is an implied fourth level, not capable processes, for suppliers unable to demonstrate even marginal capability. This condition exists today, though is not formally recognized, and these suppliers are not normally qualified for government contracts. No additional discussion of this will level will be included.

2.2 To reach an end state based on past (demonstrated) performance, it is necessary for contractors to have meaningful experience using internally controlled management processes. This is not representative of the current DoD contract environments which are based on heavy Government oversight that includes predetermined processes, specified data requirements and on-site Government representatives from the CAO and SPO. In the interim, some form of process assessment is necessary to rate contractors against the broad criteria identified in the

levels above, and to provide a mechanism for our suppliers to identify and understand weaknesses in order to improve them, with the intent of elevating the overall capability of the industrial base for future programs. This also supports the concept of risk based management of programs, which allows government acquisition agencies to properly size the oversight levels of the on-site and program office personnel by delegating responsibility to suppliers with demonstrated capability as illustrated in Appendix D, Performance Based Acquisition.

2.3 There are two methodologies which were discussed within the IPT activities. The first methodology is a full capability assessment using well defined criteria for each performance attribute identified for key processes as described in the Key Supplier Processes Panel Report (Appendix E). The second methodology is a risk based assessment patterned after the DCMC Risk Assessment Model as discussed in Appendix H, Supplier Rating. The DCMC Risk Assessment Model is already being used to assess levels of DCMC oversight manpower. These methodologies will be termed the "process capability assessment" and "process risk assessment" as discussed herein. It is important to recognize that the process capability assessment can satisfy all requirements of the vendor rating process as discussed in Appendix E, but also represents a significant investment of resources to develop and implement. The process risk assessment is less robust in that it does not directly correlate the assessment to the process performance attributes of Appendix E, Key Supplier Processes, but can be more easily definitized since it is based on an existing methodology, is less resource intensive, and works at the overall process level. There are a number of other differences between the two methodologies. Both methodologies will provide some information to support assessments of "past performance" for sources selection, whereas the process capability assessment provides additional detail relative to specific high risk elements related to specific process performance attributes. The process risk assessment provides a baseline of existing work and facilities while the capability assessment provides more insight into future capability. Both methodologies have some capability for identifying and tracking areas for process improvements, but the capability assessment provides a greater level of detail.

2.4 The concept of vendor rating is used throughout industry with various approaches. The NGS Vendor Rating subpanel performed a benchmark study on the approaches and methodologies employed. As the Process Risk Assessment and Process Capability Assessment are developed and deployed with the Government prime contractors, these contractors will continue to use or develop similar systems to implement performance based acquisitions using internally controlled processes with their subcontractors and vendors.

3.0 DEFINITIONS.

The following definitions apply to terms as used within this document.

3.1 Process. A process is a set of procedures and methodologies which, when applied, provide a consistent set of outputs for a given set of inputs.

3.2 Element. A lower level indenture of a process which has all the characteristics of a process as described above. Elements may function independently or in conjunction with other elements.

3.3 Performance Attribute. A critical characteristic associated with a process or element which describes the expectations for that process or element in terms of capabilities.

4.0 PROCESS CAPABILITY ASSESSMENT

4.1 The primary objective of this methodology is to provide a quantitative assessment of the contractor's demonstrated capability that their processes will consistently deliver the desired attributes in performing Government programs.

4.2 A full process capability assessment looks at the "generic", facility wide process capabilities of the suppliers, and would be patterned to a degree after the Baldridge assessment methodology which looks at three elements; approach, deployment, and results. These elements represent: the adequacy of the processes, as documented, to achieve the desired results; the extent to which these processes have been deployed; and the demonstrated performance of the deployed processes. The capability assessment as defined herein is one based on the performance attributes identified in the Key Supplier Processes Panel Report (Appendix E), and which satisfies the following objectives:

4.2.1 The ability to provide detailed strengths and weaknesses at the performance attribute level. This allows for solicitations to identify those performance attributes which are judged to be most critical to the program, and which will be used as discriminators in source selection.

4.2.2 The ability to differentiate among and between contractors within the same level. This allows government contracting agencies to better select the best value contractor when broad process discriminators are otherwise essentially equal. It also allows contractors to understand their relative capabilities and potential areas to work on to improve their overall competitive rating.

4.2.3 The ability to allow contractors to team to take best advantage of their combined strengths. Where weaknesses are identified for the relatively narrow scope of specific performance attributes, contractors may propose teaming arrangements with specific responsibilities assigned to cover these weaknesses.

4.2.4 The ability to delegate authority for defining, maintaining, and controlling various configuration baselines to suppliers with demonstrated capabilities.

4.2.5 The ability to appropriately size the level of on-site and program office oversight through risk based management concepts. (See paragraph 6.3.)

4.3 To achieve these objectives, the capability assessment methodology will have the following characteristics:

4.3.1 Well defined criteria for each performance attribute. This allows for better self assessments, and ensures a level of equitable rating among and between competitors.

4.3.2 Assessment report which documents identified strengths and weaknesses at the performance attribute level. This allows for adequate capability assessment within source selection for those performance attributes identified as critical discriminators.

4.3.3 Scoring guidelines which allow quantitative assessments at the performance attribute level which can be rolled up to the element and process level. This provides for the ability to differentiate capabilities within the same management processes.

4.3.4 Resultant assessment (rating) is independent of the technical complexity of on-going programs, or future programs to which is will be applied. It will be influenced by the consistency of application to on-going programs.

5.0 PROCESS RISK ASSESSMENT

5.1 The primary objective of this methodology is to provide a top level assessment of process capabilities. This allows the overall risk of reducing government oversight, or allowing the contractor to expand the use of internal processes to additional programs to be evaluated.

5.2 A proposed process risk assessment methodology is described in Appendix H. The proposed methodology is adapted from the DCMC Risk Assessment Model which was formulated to provide a process that (1) identifies those contractors where the risk to the Government associated with reducing or not performing oversight is low, and (2) identifies a methodology for adjusting level of oversight based upon contractor performance. It is oriented to the overall objectives of the processes to meet program objectives, and does not provide a direct correlation of capability at the performance attribute level. In addition, it is based on current performance of the processes as implemented within a facility. It is, therefore, very dependent upon the degree to which the supplier's internal processes have been applied to on-going programs. Since it looks at performance on current programs, it may also be limited to assessing capability for the highest level of complexity (technical risk) within on-going programs. That is, the results may not directly translate to capabilities for more complex program. To achieve a category 1 rating, contractors will need to demonstrate consistent applications across all programs within the facility as well as state of the art technical complexity in one or more programs. The process risk assessment evaluates risk in three areas; end product performance, cost, and schedule, and is heavily oriented to the use of metrics. As such, it is more oriented to the results or products of the processes than to measures of effectiveness of the processes directly. The assessment will be supported by objective evidence of the performance of each process provided by the contractor based on internal reviews, including metric information where indicated. While support for the ratings is intended to be objective, the ratings themselves are inherently subjective. That is, there is no algorithm intended to quantify, weight, and mathematically manipulate process measures to determine a process rating. In the final analysis, ratings for either assessment methodology will reflect the judgment of the assessment team, substantiated by objective evidence of process performance in each process level.

5.3 The characteristics of a process risk assessment are as follows:

5.3.1 Broad assessment criteria/metrics for overall processes keyed to end product performance, cost, and schedule. This allows for a top level assessment of process risk.

5.3.2 Objective evidence of capability based on internal reviews, including metrics where applicable. This provides the basis for the government assessment, although it is

dependent upon the contractor to define the form and content of the objective evidence based on their approach to satisfying overall process capabilities.

5.3.3 Overall rating (level) for each process. This allows some level of discrimination at the process level.

5.2.4 The ability to delegate authority for defining, maintaining, and controlling various configuration baselines to suppliers with demonstrated capabilities.

5.2.5 The ability to appropriately size the level of on-site and program office oversight through risk based management concepts.

6.0 APPLICATION OF ASSESSMENTS

6.1 Because of the detailed level of the assessment and reporting, the process capability assessment will satisfy the needs for process assessment for all contract actions, including new efforts as well as contract retrofits to existing programs. Because the process risk assessment is less robust, it may not meet all the requirements for formal source selections on major programs. However, it can provide adequate information relative to contract changes, including contract retrofit proposals and to risk management efforts for sizing government oversight. In the absence of a full process capability assessment, source selection activities may use the best available information, or may elect to use site surveys, pre-solicitation reviews, or internal process assessments to evaluate offerors' capabilities for additional depth of understanding.

6.2 For either assessment methodology, there are a few critical aspects which will apply when conducting the assessment as described below:

6.2.1 The assessment team must include all effected DoD components under the joint leadership of DCMC and the predominant service agency of the facility being rated. When appropriate, other government agencies may be invited to participate.

6.2.1.1 All members should receive team training to provide consistency across multiple programs and processes at a facility.

6.2.2 The contractor and all affected programs must concur before the assessment begins on the objective of the assessment, the usage of the results and how future updates to these results will be accomplished.

6.2.3 The focus of the assessment is to assess the contractor's processes and the commitment to process improvement. Improving the process will result in an improved rating, and the benefits associated with that specific rating level. Process improvement requires an understanding of the desired attributes of the processes and sources that achieve the attribute performance at the facility. Although a process risk assessment does not drive to the attribute level, contractors are encouraged to identify with their responses, the performance attributes their processes are built upon and what the mechanisms for process improvement are.

6.2.4 In order to achieve the overall objective of assessing supplier capabilities to conduct programs using internal processes, the extent to which common processes are

deployed, and the degree of successful application must be considered in the final rating. The following guidelines are proposed for consideration:

6.2.4.1 To achieve a level 1 or 2 rating, the contractor must demonstrate a complete and consistent set of metrics which support achievement of top level process objectives. This would include top level metrics which report overall progress and a tiered set of lower level metrics which facilitate the day to day management of the processes.

6.2.4.2 To achieve a level 1 rating, the supplier must have deployed their common internal processes to most on-going programs, and demonstrated successful implementation relative to program objectives.

6.2.4.3 To achieve a level 2 rating, the supplier must have deployed their common internal processes to a significant number of on-going programs, and demonstrated some degree of successful implementation relative to program objectives.

6.2.4.4 The identified strengths and weaknesses may be caveated by the domain of application. That is, the rating will be specific to the facility and the products which are the dominant business within that facility. This may be of particular importance to the support phase for reprocurement and repair relative to the varying requirements for Build To Print; Modified Build To Print; and Form, Fit, Function, and Interface (F^3I) concepts as discussed in Appendix D, Performance Based Acquisition.

6.3 In considering which process assessment is most suitable, there are a number of factors to consider. First, the process assessment is only part of an overall risk assessment required for most decisions relative to a risk based management approach. A complete risk assessment must generally consider the overall risk to the government which has three basic elements; technical risk, process risk, and impact of failure. Technical risk is primarily concerned with the product technology and integration risks associated with the program. However, technical risk must also consider programmatic constraints such as schedule and resources. Process risk, in general, represents the ability of the supplier to manage the program to meet technical objectives within cost and schedule constraints. Technical and process risk combine to form the risk of program failure. Impact of failure, then, is an assessment of the potential detrimental impacts in the event the program does not meet objectives. This includes both the loss of resources and impacts to operational capabilities. In any decision making process, the required amount and fidelity of the supporting information must be weighed against the cost to acquire that information and the contribution to the quality of the decision being made.

6.4 Another consideration, which represents a limitation for both methodologies discussed herein, is the level of on-site government support available at potential offerors. The methodologies described herein, require a substantial on-site presence. Where there is little or no on-site representation, there are a number of other service unique, best value contract award processes that are applicable. These include the Air Force Blue Ribbon Program and the Army Contractor Performance Certification Program $(CP)^2$. These type programs are applicable to the bulk of contract actions in terms of numbers. The process assessment methodologies described herein are generally more applicable to the higher dollar value contracts. In some cases, it may

be advantageous to use a combination of the two methodologies described herein. That is, use the process risk assessment as a coarse screen, and use a partial process capability assessment to look at specific process elements or performance attributes that are tied to the program risks and objectives.

6.5 In general, the process risk assessment may be considered a coarse screen which can provide some discrimination between contractors at the process level. The process capability assessment is more of a fine screen which allows for discrimination at the more detailed performance attribute level. That is, it allows for discrimination between contractors at the same level.

6.6 There are a number of other potential factors which could also impact this decision, such as programmatic constraints, potential legal issue, or participation of foreign offerors. There is no cook book approach to any given decision making scenario, but the general guidance provided herein is intended to assist the decision maker in structuring their overall approach. Three primary uses for these methodologies will be with respect to determination of government oversight (i.e., level of government staffing required), contract retrofit for implementing acquisition reform initiatives, and source selection.

6.7 While the category rating is a primary consideration for Government oversight, which includes on site representatives, SPO activities, and data items submitted, the Government will retain the right to decrease or increase the level of delegated authority and associated oversight if there is a change in the longer term performance of the facility. This will require a contract clause to ensure such changes are within the scope of the contract. Where there is a short term change and conditions revert back to the performance levels the basic decisions were made at, no change will be made.

6.8 In all cases, a complete assessment of overall risk to the government should be accomplished; i.e., process and technical risk assessments and risk of failure assessment. The following discussions will address only the process assessment portion.

6.9 In considering the appropriate level of government oversight, there are two aspects which must be considered; on-site government representation and program office support. The process risk assessment described in Appendix H is an adaptation of an overall risk assessment process specifically developed to assess on-site government representation, and satisfies this requirement. It may also satisfy program office requirements for identifying the level of oversight required for interfacing with the contractor to fulfill requirements imposed on the program office by the user and higher level acquisition agencies. Additional consideration must also be considered such as the level of support required to respond to outside inquiries and to prepare for formal program reviews and decision making boards. In some cases, particularly for development or initial production of complex technical products, it may be advantageous to use the more in depth information provided by a process capability assessment.

6.10 For contract retrofit activities, there are a number of factors which must be considered. The major factors include the type and scope of the changes being proposed, and the program content to which the changes are being made. For relatively simple changes, such as the substitution of common, facility wide production processes for production processes previously dictated by military specifications or standards, the process risk assessment should satisfy all requirements. When broad scope changes are proposed, such as implementation of common, facility wide management processes, program content will probably dictate the most appropriate methodology.

6.11 Source selections present the greatest challenge with respect to this issue in that government oversight and contract retrofit decisions deal with a single contractor site, whereas source selection deals with multiple contractors. The successful use of supplier process assessment in source selection will be highly dependent on the up front planning for the acquisition strategy. Very basic decisions must be made on how the source selection decision will be made, and an overall strategy to share the selected approach with the potential bidders throughout the pre-award process is essential. Due to restrictions on interaction with offerors after proposals are received, it may be necessary to ensure that all offerors have completed process assessment prior to submitting their proposals. Otherwise, if a process assessment for any offeror is required, it may be necessary to re-evaluate all offerors. And since the "age" of existing process assessments will likely vary significantly, specific instructions should be provided to potential offerors on the extent and nature of any evidence they should supply relative to improvements to their internal processes which could impact their overall process ratings or specific weaknesses identified in those ratings. The impact of the assessment age can be mitigated to a large extent by the recurring review of process metrics established at the time of the assessment as described in the Supplier Facility Assessment Process Report (Appendix H), and by the information contained in the Contractor Performance Assessment Reports (CPARs) (see Appendix I). Where teaming arrangements are made, the assessments will be made across the team according to defined responsibilities.

6.12 There are a number of alternative approaches that may be employed during source selection with respect to contractor processes. The discussion contained in the following sections is an area which will need to be refined in coordination with the findings contained in the Enhancements in Support of the Source Selection Process section in Appendix J. In general, source selections consist of a two part assessment; performance risk, and program risk. Performance risk assesses past performance, and is accomplished separate from the proposal evaluation. Program risk is primarily based on the proposal itself, but may include past performance or supplier ratings as part of the most probable cost and schedule assessment. Two primary alternatives are described below:

6.12.1 Use of process ratings as a primary performance risk discriminator with price competition between offerors of equal rating. Either methodology might satisfy this requirement dependent upon other factors discussed below.

6.12.2 Use of process ratings as a coarse filter, with specific capability for specific performance attributes defined as discriminators as part of the performance risk assessment. In this case, a full process capability assessment will be required.

6.13 Selection between these alternatives or other variations, and the most appropriate process assessment methodology will primarily depend on program content and possibly other program constraints such as cost and schedule. Another factor may be the degree to which the results of either of these methodologies are available for potential bidders, especially in near term activities. In some instances, where adequate results are unavailable from either source, it may be necessary to rely on other past performance data and internal source selection processes to accomplish this objective. The use of the second alternative above, or use of the process capability assessment in conjunction with the first alternative is more applicable to development programs for complex items, or initial production of complex items. Production in this context is

intended to include reprocurement activities. For non-complex items and relatively mature production programs, the first alternative may be adequate using either methodology.

7.0 OTHER CONSIDERATIONS

There are two major considerations which also play a role in a decision making process, especially with respect to source selection, timing, and resources. As previously noted, for very near term activities, neither methodology will have a significant data base for use. In addition, one of **the primary objectives of the supplier assessment process is** not just to understand the capabilities of our suppliers, but **to set into motion their improvement by motivating suppliers to improve their processes through a series of self assessments augmented by formal government assessments, and meaningful feedback through improved CPARS.** A complete process capability assessment methodology will require a significant resource commitment to develop. As a minimum, a preliminary, uncoordinated methodology will take at least three months to develop. And even if this effort is acceptable for initial assessments, it will be necessary to develop and implement training for the assessment teams before the actual assessment can be accomplished. A modified process risk assessment, as described in Appendix H, could be available in a much shorter time frame. As an overall implementation strategy, it may be advantageous to use the process risk assessment as an initial coarse screening methodology to establish initial supplier ratings with the more detailed process capability assessment methodology brought on line to support specific high interest source selections on a case by case basis. This could then be expanded as time and resources permit to cover out major prime contractor business base. A second resource consideration is that within source selection or contract retrofit activities. Since the process capability assessment methodology will be more resource intensive, the process risk assessment methodology may be dictated by schedule restraints.

8.0 SUMMARY

8.1 Supplier process assessment and rating provides inputs for an overall supplier capability data base as illustrated below. As shown in Figure G-1, this data base supports both the on-site and program office risk based management approach. In addition, the data base will also support source selection activities for critical supplier processes identified as discriminators.

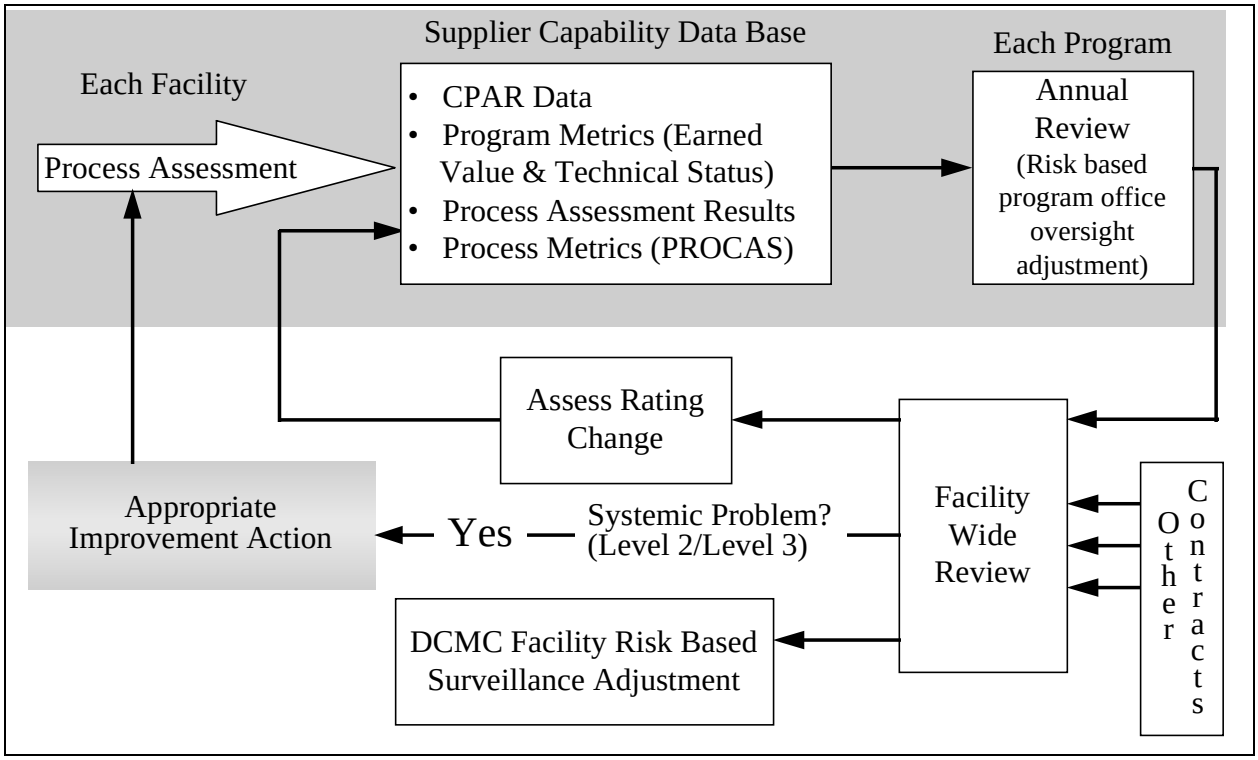

Figure G-1. Risk Based Management Concept.

8.2 Two potential process assessment methodologies have been identified herein, and the characteristics and utility have been discussed. The major differences are tabulated below.

Table G-I. Comparison of Two Different Assessment Methodologies.

	CAPABILITY ASSESSMENT	RISK ASSESSMENT
Assessment Criteria	Detailed Criteria	Broad Criteria and Metrics
Guidance to Contractors	Detailed Questions	Broad Guidance to Provide Subjective Evidence
Level of Discrimination	Performance Attribute	Process
Timing	Mid Term (6-12 Mo)	Near term (3 Mo)
Development Resource Requirement	Intensive	Moderate
Implementation Resource Requirements	Greater	Lesser
Applications	Process Improvements Source Selection	Contract Retrofit Government Oversight

8.3 The process capability assessment is the preferred methodology to support source selection for complex items, because it allows the government team to identify those performance attributes which are most critical to the success of the program and to use them as discriminators in the source selection decision. For near term applications, the availability of the risk assessment can provide valuable augmentation to the source selection decision making process, but perhaps even more important, provide a means for initiating contract retrofit actions which will allow for the reduction of government oversight with the least additional risk. Either methodology should satisfy most requirements for this activity.

8.4 Both methodologies will require additional development effort, including development of the on-site process for implementation, and the training required for the assessment teams. In addition, the Process Risk Assessment Methodology should be further coordinated with government and industry. One significant decision which must be made relative to the process risk assessment described in Appendix H is the level of additional guidance to be provided on the form and content of the subjective evidence necessary to justify the final rating. As a minimum, a template should be developed to provide guidance, perhaps in the form of examples, of the type of objective evidence required to satisfy the requirement. In addition, it should indicate whether the intent of the assessment is to look at approach and deployment or results (or both). This would provide some consistency between contractors, and assist the evaluators in the conduct of the assessment.

APPENDIX H

SUPPLIER RATING SYSTEM

SUPPLIER FACILITY ASSESSMENT PROCESS FINAL REPORT

with Enclosure 1

SUPPLIER CAPABILITY ASSESSMENT

RATING SYSTEM (SCARS)

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1.0 OBJECTIVES/SCOPE/SUMMARY.

The objective of the Supplier Facility Assessment Process is Tri-Service/DCMC implementation of a single system for evaluating and assigning assessment ratings to the key processes used by suppliers. Implementation of this system will minimize the need for frequent reviews.

In this system, validated process information gathered across the programs at a facility would be compared with standard criteria that define the assessment rating levels for that process. A Tri-Service/DCMC data repository would contain the baseline process assessment ratings for each participating supplier. On a quarterly basis, the supplier would provide data to DCMC for entry into the repository. These data would be based upon metrics mutually determined by the DCMC and supplier. This performance data, more limited than that used in the baseline assessment, would serve as trend indicators for both the contractor and DCMC and would suggest the need to reassess one or more processes. Either DCMC or the contractor could initiate a formal process reassessment. However, once the baseline assessment is complete, a supplier's processes would not be reassessed on a regularly scheduled basis.

A key element of the Supplier Facility Assessment Process, the Tri-service/DCMC repository would constitute a common process performance data base for the use of each service in evaluating past performance for source selections, in assessing risk to determine the level of program office and DPRO oversight required, and in enhancing program management visibility. Suppliers would be provided feedback on their relative competitive rating for each defined process in the repository. The Supplier CapabilityAssessment Rating System (SCARS) to be used by the DCMC to rate suppliers is described in Enclosure 1.

2.0 APPROACH.

The Supplier Facility Assessment Process described in this report is based in large part on a survey of the supplier rating practices employed by aerospace and non-aerospace contractors.

3.0 IMPLEMENTATION

3.1 Transition Criteria

3.1.1 The Process End State.

The End-State contemplated by the Supplier Facility Assessment Process is to have a fully populated data base with information on the important processes in use at all major suppliers by facility. The information in this data base would reflect the process health at each supplier's facility, as supported by Tri-Service/DCMC-determined assessment level ratings and detailed scoring for each Key Process element/attribute. The output of the Supplier Facility Assessment Process would populate the data base that would serve as a basis for source selection decisions, oversight decisions, feedback to suppliers and continuous program management decisions.

3.1.2 The Criteria.

Achieving the End-State will require the existence of several conditions which will occur over time at a different pace for all affected suppliers.

- Suppliers moving toward the End-State must be ready, willing and able to capture and supply data tied to the Key Processes as required by this jointly defined process capability evaluation and to capture and supply periodic performance data (elements, attributes, and metrics).
- This process will include: a) baselining supplier processes, revising those process assessments as required, and responding to changes in those processes; and b) establishing a Tri-Service/DCMC information repository, manual or automated, along with a rule structure depicting how data is entered, and is managed and used by authorized service users. Ownership must be clearly established and the repository must be universally recognized as a valid source of information for judging past performance of the supplier facilities to which it applies.

3.1.3 Transition Timing.

Transition to full deployment of Supplier Facility Assessment Process will be evolutionary, paced by the fulfillment of the Criteria outlined above, as driven by supplier readiness and resources. This means that the repository contemplated in the End-State will not be fully populated for on all processes for all suppliers at a discrete point in time; the population of the repository will grow to a robust state as suppliers and the Tri-Service/DCMC meet the Criteria of paragraph 3.1.2.

On-site baselining by the DCMC marks the next essential step. The supplier's capability to meet the Criteria will govern whether full baselining can be achieved. A "shotgun start" is not contemplated. In addition to this method of candidate selection, which is reactive to on-going supplier initiatives, proactive candidate supplier facility selection can be accomplished by the DCMC scheduling suppliers for on-site review based on

knowledge of the supplier's readiness, by a supplier's voluntary participation, or by a Service in support of a near-term source selection.

Initially, the data base is expected to be manual and paper based as an automated methodology is developed and connected to other DoD automated management system initiatives currently underway. Transition to End-State is likely to occur in three phases: folder/filing cabinet, to automation assisted stand alone products, to a fully automated, fully integrated, client server environment with remote access, EC/EDI, and data analysis capability.

3.1.4 Milestones.

The establishment of dated milestones for full transition to the End-State is dependent on the willingness of industry to participate in the use of measured processes in lieu of specifications and standards for past performance measurement and on the commitment of Tri-Service/DCMC resources in getting started on the baselining efforts and sustaining those efforts over time.

3.2 Flow Chart/Descriptions.

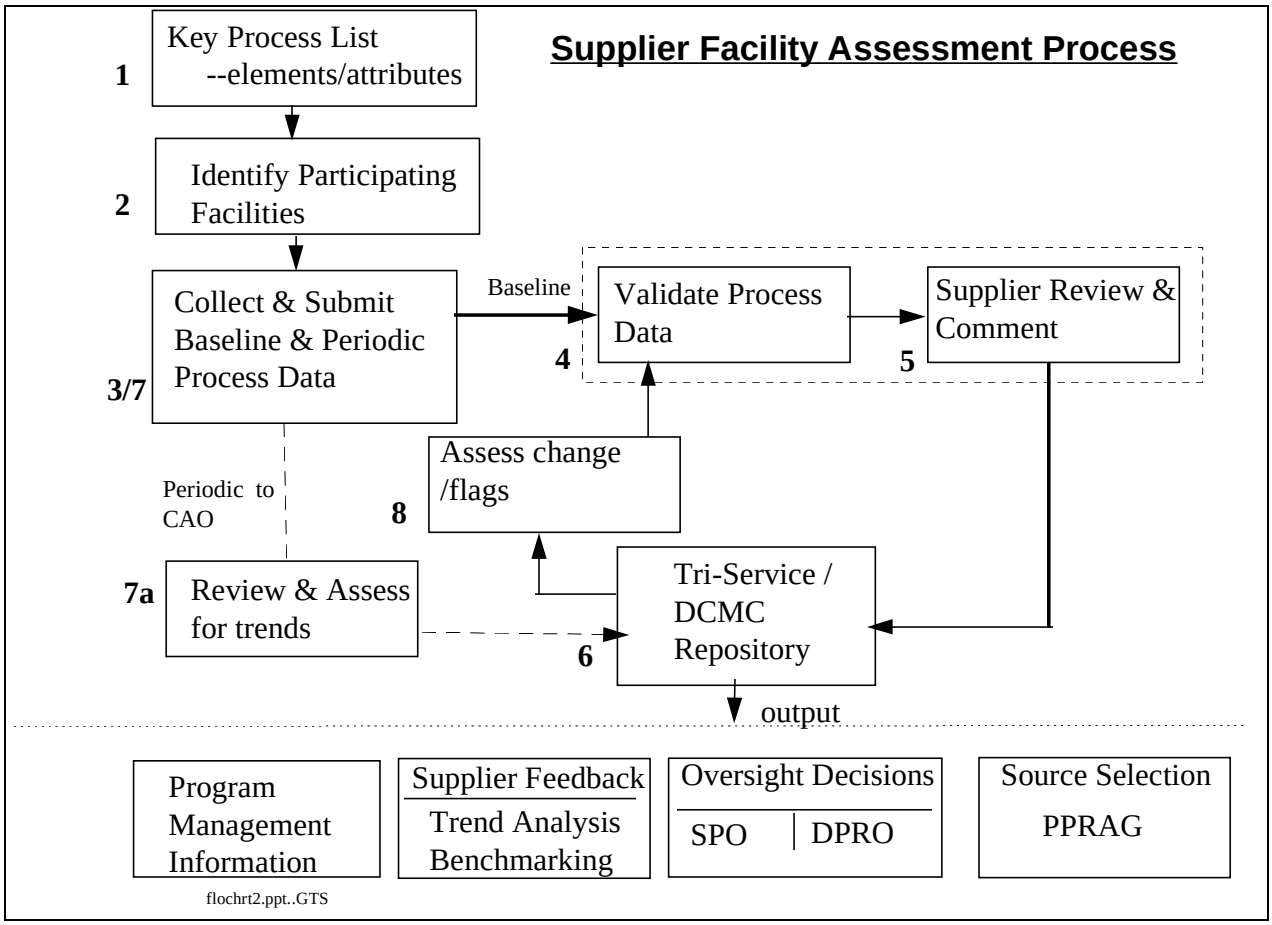

Figure H-1. Supplier Facility Assessment Process.

3.2.1 Process Step 1 - "Key Process List".

(Refer to Figure H-1.)

3.2.1.1 Connection to Previous Step.

Process Step 1 is the first in the Supplier Facility Assessment Process and assumes that a list of Key Processes, performance attributes and elements have been defined, along with the defined criteria for each assessment level. (The identification of these processes, performance attributes, etc., is contained in Appendix 1 as determined by the Key Supplier Processes for Acquisition Programs Subgroup.)

3.2.1.2 Objective of the Key Process Step.

This step identifies those key processes on which supplier data would be collected via the Supplier Facility Assessment Process.

3.2.1.3 Salient Features - Key Processes.

By establishing a single list of key processes, associated performance attributes and assessment definitions, this step is intended to ensure that the Supplier Facility Assessment Process would be applied consistently to all suppliers through the joint development of assessment criteria for the performance attributes and elements. The DCMC would baseline the same processes at each participating supplier facility and develop process assessment ratings using a common criteria for all suppliers, allowing each of the Services to understand and utilize the ratings in the repository in the same fashion. Thus, the DCMC would evaluate processes in a consistent manner across the supplier base, and in no way restrict each supplier's ability to develop and implement their processes in a fashion unique to their facility.

3.2.1.4 Industry Practices.

In their own supplier rating processes, industry also identifies the key processes to be assessed. Each supplier, however, employs a unique list of key processes. For the Supplier Facility Assessment Process to be used consistently throughout the DoD, it is vital that a single, universally recognized and accepted list of key processes be developed and utilized.

3.2.1.5 Ownership of Process Step 1.

Ownership of this step would be jointly between Tri-Service/DCMC and industry because both sides will have to agree on the important processes, performance attributes, elements, and assessment criteria.

3.2.1.6 Connection to Subsequent Process Step.

The next step in the process is to determine which industry facilities will participate in the entire process.

3.2.2 Process Step 2 - "Identify Participating Facilities".

(Refer to Figure H-1.)

3.2.2.1 Connection to Previous Process Steps.

Following the development of the important process list, elements and attributes (Step #1 of the Supplier Facility Assessment Process), the identification of the suppliers that will participate in the process is necessary.

3.2.2.2 Objective of the Identify Facilities Step.

The Supplier Facility Assessment Process is intended to facilitate Tri-Service/DCMC evaluation of supplier performance. This step would determine those suppliers to be evaluated and whose process ratings and supporting metric data will be stored in the repository.

3.2.2.3 Salient Features.

The suppliers to be included in the Supplier Facility Assessment Process will be those determined by the mutual consent of the government and supplier.

3.2.2.4 Industry Practices.

Each supplier that uses a supplier rating system employs some means for limiting the number of suppliers in that system. Dollar volume and supplier criticality are the key factors used in determining which of their suppliers get rated.

3.2.2.5 Ownership of Step 2.

The Tri-Service and DCMC will identify those suppliers to be initially approached about voluntary participation in the Supplier Facility Assessment Process. Other suppliers may request inclusion in this process.

3.2.2.6 Connection to Subsequent Process Step.

After the list of eligible suppliers has been developed, the next step would be to perform baseline process assessments of those suppliers (Step 3) that are ready for participation.

3.2.3 Process Steps 3/7 & 7a - "Collect and Submit Baseline and Periodic Process Data".

(Refer to Figure H-1.)

3.2.3.1 Connection to Previous Process Steps.

Prior to the initiation of Process Step 3/7, the supplier and the DoD buying activities with which it does business would have applied the DCMC/Industry Key Process List (Process Step 1) to the participating supplier's facility (Process Step 2) and thus identified the Key Processes for which data would be collected at the site for the purposes of developing a rating for each of the processes.

3.2.3.2 Objective of the Collection and Submittal of Process Data.

The objective of these Process Steps is to identify, collect and submit a set of data to the DCMC which provides the supplier and DoD with meaningful measures of rating assessment and control for each key process.

3.2.3.3 Salient Features - Data Collection and Submittal.

The data collected and submitted for the baseline assessment would be data used internally by the supplier to monitor the key processes and maintain process control. Ideally, no unique data would be generated for reporting. The data would be gathered on a plant-wide basis. The supplier would be solely responsible for collecting the data consistent with its own internal practices. In this step, the supplier and DCMC would mutually agree upon the metrics and data collection

procedures for the baseline assessment and upon the more limited set of data the supplier is to collect for entry into the repository on a periodic basis.

3.2.3.4 Industry Practice.

The collection of data on manufacturing processes, using techniques such as Statistical Process Control, is becoming a universally accepted norm in the aerospace industry. Collecting measures-of-effectiveness information relative to "soft", internal processes, such as management and engineering, is a far less common practice. The method of collecting process data and, more significantly, the level at which those data is collected varies significantly in the industry supplier rating systems we surveyed. The proposed system requires the periodic collection of process data to support the process rating requirements relative to source selection and past performance assessments.

3.2.3.5 Ownership of Process Steps 3/7.

The responsibility for data collection would rest solely with the participating supplier.

3.2.3.6 Connection to Subsequent Process Step.

The baseline data submittal would be reviewed by a DCMC-led team in Process Step 4. All subsequent data would be submitted by the supplier directly to the DCMC for review and subsequent input to the repository (Process Step 6) .

3.2.4 Process Step 4 - "Facility Process Validation and Assessment".

(Refer to Figure H-1.)

3.2.4.1 Connection to Previous Process Steps.

This Step in the process flow assumes that, to this point in the process, the DCMC/Industry Key Process List has been applied to the supplier's facility, and that the supplier has done a self-assessment against the performance attributes associated with those processes and has gathered data to support a joint on-site review of the results. This Process Step also assumes that the management system at the supplier's site is capable of producing periodic data to demonstrate performance for each agreed-upon process metric, and that there are adequate policies, practices and lower tier data to provide clearly demonstrable evidence of process performance. When such conditions exist, Process Step 4 would be triggered and the supplier would be scheduled for an on-site visit to accomplish the baseline validation and process rating assessment step.

This Process Step would also be triggered by Process Step #8, Assess Change/Process Flags, on a reactive basis as explained below.

3.2.4.2 Objective of the Facility Process Validation and Assessment Step.

The expected outcome of this Process Step is to jointly assess the supplier's Key Processes as they have been represented by the data assembled by the Supplier. This would provide the basis for the DCMC to make a decision on the "health" of the supplier's processes, and to develop commensurate assessment level ratings for each process in a baselining assessment. Process Step 4 is also triggered in response to significant changes in the supplier's processes (see Process Step 8).

3.2.4.3 Validation and Assessment Step - Salient Features.

At the Baselining level, this Process Step contemplates an on-site review by a team led by DCMC and complemented by buying activity personnel of the appropriate Services. This review could take a variety of forms and formats and vary in duration, personnel make-up, and intensity, depending on the processes to be validated, the complexity of the supplier's management system which supports the measurement of the Key Processes, the supplier's previous participation in PROCAS activity and other factors.

The Concept of Operations for the Team contemplates a demonstration by the supplier to the team members of how the supplier fulfills the attributes of each process, measures performance against agreed-upon process metrics, and uses the resulting data to manage both the processes and the programs affected by the processes. This may require a "step-through" and demonstration by the supplier of the data collection policies, practices and systems used in day-to-day management.

The outcome of the review would be a decision by the DCMC on the baseline data which represent the processes and the assignment of assessment level ratings for each of the supplier's key processes. This decision would eventually be entered into a Tri-Services/DCMC Facility Process Assessment Repository.

It is contemplated that the Repository would continue to be "fed" data supporting the measurement of the Key Processes on a periodic basis. This data would be assessed by both the DCMC and supplier for significant trends over a period of six months or longer that could trigger the need to formally reassess one or more processes. Process Step #4 would be employed as necessary to do the Validation and Assessment of processes that showed significant changes as a result of the recurring data fed into the repository. Whether or not a full validation / assessment team would be deployed would depend on the analysis of the change by DCMC in concert with the supplier and Service representatives (see Process Step 8).

3.2.4.4 Current Industry Practices.

The concept of validation and assessment of supplier data is not foreign to industry on the execution of its supplier rating systems. In the survey done by the NGS-IPT Sub Panel, and in interviews with industry supplier rating experts, the panel found that at most of the companies surveyed there is a validation -

assessment -decision step used in ranking a supplier, although the application of the process step varies in intensity and methodology. Typically, this Process Step requires an on-site visit by the prime in an effort to see first-hand how the pre-defined important processes are operating, and is often driven by reaction to product deficiencies or defects of the items procured for incorporation into the prime's product. Baselining often takes the form of either "qualifying" the supplier to do business with the prime at all, or designating the supplier as "preferred". The latter approach influences factors such as the intensity of source or receiving inspection, field oversight or preferences in source selection.

The "full-up" team approach ,as described above, is not typical, and duration is limited. Visits are usually limited to several prime representatives from product engineering, sourcing and / or a business function and are less formal. Continuous collection of process data varied widely between companies, from "continuous feed" as described above, to reliance on trigger events at product acceptance before data was updated or rank designation was revisited.

In spite of the differences in application, the objectives were the same: do a first-hand assessment, validate the representations of the supplier, make a decision as to the performance of the supplier, monitor change and minimize oversight. The differences in the scope of industry practices and the one contemplated herein can be rationalized by the very nature of the business relationship between DoD and prime. The business base is broader in scope with expectations of the prime performing an integration function on a major program of long duration -- not parts or components but major systems. The expected use of the data in source selection has far-reaching implications and goes to the essential fairness issues present in DoD acquisition, on which industry has more latitude. The expected reduction in oversight as a result of favorable data is a commitment by the DoD which cannot be easily reversed given the permanence of downsizing reductions and the lack of agility present in the DoD structure to respond to negative performance trends. All these factors combine to drive a step in the system which would ensure the management of risk based on rigorously validated process information.

3.2.4.5 Ownership of Process Step 4.

The leadership of the Validation and Assessment Step would be the responsibility of the DCMC because a facility wide validation is best led by the organization which has the cognizance of the facility. Essential facets of this ownership include scheduling and organization of on-site reviews, follow-up and reaction to process changes and responsibility for the assessment decision and resulting assessment level designation. Process Step 4, however, would be executed with the complementary support and involvement of the supplier and the Services representing on-site programs.

3.2.4.6 Connection to Subsequent Process Step.

The outcome of Process Step 4 would connect to the Supplier Review and Comment Step, wherein the supplier would be given due process to provide formal input to the assessment, validation and DCMC decision on past performance information as contemplated by the Federal Acquisition Regulation.

3.2.5 Process Step 5 - "Supplier Review and Comment".

(Refer to Figure H-1.)

3.2.5.1 Connection to Previous Process Steps.

Process Step 5 in the process flow assumes that the DCMC has conducted an onsite review of the supplier's process data (Process Step 4). Following such an on-site review, Process Step 5 (Supplier Review and Comment) would be initiated, wherein the DCMC provides the supplier with its assessment level ratings for each important process and invites supplier review and comment.

Section 3.2.4 also explained that the on-site DCMC review, Process Step 4, could also be performed in response to a significant trend in the performance of one or more processes as indicated in the review of the data compiled on a periodic basis by the supplier. In such a case, the Supplier Review and Comment Step would also be subsequently initiated and the DCMC would provide the supplier with a revised rating for the process(es) at issue for the supplier's review and comment.

3.2.5.2 Objective of the Supplier Review and Comment Step.

The expected outcome of the Supplier Review and Comment Step would be the supplier's concurrence with the DCMC's assessment of the "health" of its processes, or a statement of disagreement and accompanying rationale.

3.2.5.3 Supplier Review and Comment Step - Salient Features.

When the on-site review (Process Step 4) has been completed, the assessment team leader would provide the supplier with a report identifying the team's assessment level rating for each process the team evaluated, along with supporting data. The supplier would have 30 calendar days from receipt of the assessment report in which to provide a comment to the team leader; the supplier's concurrence with each rating would be assumed if the 30 days have elapsed without receipt of a response from the supplier.

The Supplier Review and Comment Step would afford the supplier with an opportunity to comment on the report or to dispute and seek a change to the team's assessment. If the supplier disagreed with one or more process ratings, the supplier would provide the assessment team leader with a written dispute proposing a revision for each contended rating along with specific supporting rationale. Upon receipt of the supplier's dispute, the assessment team leader would evaluate the need to reconsider the assessment on the weight of the supplier's arguments. Upon taking any actions deemed necessary in response to

the supplier's dispute, the team leader would issue final ratings for the repository for each supplier process. The team leader's decision would at that time be final.

3.2.5.4 Current Industry Practices.

The survey and interviews performed by the NGS-IPT Sub Panel on Supplier Rating Systems showed that it is common industry practice to allow a supplier to comment on the rating it is issued by a prime supplier. This process step is also an integral element of the USAF's Contractor Performance Assessment Reporting System (CPARS) program.

3.2.5.5 Ownership of Process Step 5.

The assessment team leader, a DCMC representative, would own the Supplier Review and Comment step. This individual would ultimately be responsible for the assessment team's final assessment report, and provides the report to the supplier for comment. Utilizing assessment team personnel as needed, the team leader would also be responsible for evaluating the supplier's comments or dispute and taking any necessary actions.

3.2.5.6 Connection to Subsequent Process Step.

The outcome of this Process Step would connect to the Tri-service/DCMC repository Step (Process step 6). In Process Step 6 the ratings, supplier review comments (if any), and supporting metrics would be stored for access by DCMC personnel to help manage the supplier, to make decisions on oversight, and for use as past performance information in source selections.

3.2.6 Process Step 6 - "Tri-service/DCMC repository".

(Refer to Figure H-1.)

3.2.6.1 Connection to Previous Process Steps.

This Process Step would receive inputs from two other Process Steps. Process Step 5, Supplier Review and Comment, would supply the Tri-Service/DCMC-developed, supplier-reviewed, baseline ratings for each Key Process and all changes to thoseratings. Once the ratings have been established, Process Steps 3/7 and 7a would supply the process data being collected and submitted on a regular, recurring basis by the supplier through the cognizant DCMC office.

3.2.6.2 Objective of the Tri-service/DCMC repository.

The Repository would collect the products of the Supplier Facility Assessment Process, storing the ratings themselves and the supporting data. The repository's data would be used to meet the needs of the Service customers and considered source selection sensitive. The Services would use the repository as a source of data needed to evaluate a supplier's past performance in selection of sources. Insight into supplier capability, made visible through the Repository, would provide credible information to the buying activities and DCMC on which to base

oversight decisions. Program management offices could obtain current trend data directly from the Repository, allowing timely identification and resolution of impending problems.

3.2.6.3 Tri-service/DCMC Repository Step -- Salient Features.

The Repository would store the baseline rating and supporting data for each key process and act as the collection point for the data furnished by the supplier on a periodic basis. Both DCMC and the supplier would assess this new process data to project the impact on each process rating. If a trend of six months or more duration were to indicate that the existing rating for one or more processes were no longer valid, DCMC would alert the Supplier and affected program offices to provide them the opportunity to analyze the process metric trend (see Process step 8) and perhaps perform a new, formal process rating if necessary. The supplier could also independently request that DCMC initiate a formal reassessment of one or more processes based upon their own interpretation of the process indicator trends.

3.2.6.4 Current Industry Practices.

Each of the contractors with whom benchmarking discussions were held employed some sort of a repository for storing and updating supplier assessment data. The data is typically kept at a operating/division level and is not centralized at a group or corporate level.

3.2.6.5 Ownership of Process Step 6.

Ownership of the Repository would reside with the DCMC.

3.2.6.6 Connection to Subsequent Process Step.

The repository would provide data to facilitate program management, source selections, and oversight decisions. However, should the data that is periodically submitted by the supplier to DCMC, and then entered into the repository by DCMC, indicate the need to change the current rating, Process Step 8 (Assess Change/Flags) would be triggered, causing DCMC to investigate the indication and possibly convene a team to reassess the affected process(es).

3.2.7 Process Step 8 - “Assess Change/Flags”.

(Refer to Figure H-1.)

3.2.7.1 Connection to Previous Process Steps.

The Repository (Process Step 6) would store the formal baseline rating for each process along with process data entered on a periodic basis. Both DCMC and the supplier would analyze any data trends to determine the need to re-evaluate the assessment for one or more processes. In this case, whether the rating is affected negatively or favorably, Process Step 8 would be triggered.

3.2.7.2 Objective of the Assess Change/Flags Step.

The objective of Process Step 8 is to convene a meeting of supplier, program office(s), and DCMC representatives to determine the need to perform a formal reassessment of one or more processes. Such a meeting would be called when triggered by a significant data trend of six months or more duration, whether that trend is identified by DCMC or the supplier.

3.2.7.3 Assess Change/Flags Step -- Salient Features.

If a data trend of six months or more duration were to suggest a significant change in one or more processes, DCMC would alert the supplier and affected program offices. These individuals would initiate Process Step 8 by convening a meeting to evaluate the process data. One outcome of this meeting could be a decision to formally reassess one or more processes by initiating Process Steps 4 and 5, the "Validate Process Data" and "Supplier Review and Comment" process steps. In cases where process data showed a particularly compelling decline, the meeting attendees would also discuss measures needed to assure acceptable supplier performance. In other cases the attendees could decide that mitigating circumstances obviate the need for a formal reassessment or for other immediate action, or conclude that more process data must be collected before a reassessment is performed. In any event, the DCMC representative at this meeting would have the final decision authority.

3.2.7.4 Current Industry Practices.

Eight out of eight companies surveyed for benchmarking data had some provision in their supplier rating systems that served to notify supplier management personnel that a change had occurred in the rating and request responses or corrective action.

3.2.7.5 Ownership of Process Step 8.

DCMC would own Process Step 8 and its decisions would be considered final. All supplier, program office, and DCMC personnel involved in Process Step 8 would need training to evaluate the significance of data trends suggesting the need for a rating change, and to perform an investigation to determine whether in fact a formal reassessment is required.

3.2.7.6 Connection to Subsequent Process Step.

Process Steps 4 and 5 ("Validate Process Data" and "Supplier Review and Comment") would be initiated following Process Step 8 when Supplier, program office and DCMC representatives determine a need to formally reevaluate the assessment level rating for one or more processes. After weighing the circumstances at issue, these individuals could alternatively decide to defer a formal reassessment.

4.0 INTERFACES.

The Supplier Facility Assessment Process has interfaces with the Key Supplier Processes and Past Performances Sub-Groups.

ENCLOSURE 1
SUPPLIER CAPABILITY ASSESSMENT RATING SYSTEM (SCARS)

1.0 INTRODUCTION.

SCARS is focused on seven basic processes, used at a supplier site, which, in the view of the Tri-Services, DCMC and industry, are the most important indicators for performing a capability assessment. These processes are based on the output of the NGS-IPT Key Process Sub-Panel and the work done by DCMC in its Risk Assessment model. Both products were melded together to develop SCARS, capturing both a comprehensive process vision and the experience of DCMC with a deployed assessment tool. The seven processes are listed below:

- Program/Data Management
- Engineering
- Advanced Quality System
- Manufacturing
- Procurement/Subcontract Management
- Logistics/Sustainment
- Business Practices.

2.0 RECOMMENDATION.

The NGS-IPT Supplier Assessment Sub-Panel recommends that this Appendix be reviewed and refined as needed, by DCMC and other related parties, to ensure suitability for use as a process for assessing supplier process past performance and for developing ratings for use in source selection decisions.

3.0 APPROACH.

A system approach was taken to describe the processes and their elements, attributes, and performance standards. SCARS is intended for use by a DCMC Assessment Team to do an on-site process assessment and to develop process performance ratings at specific supplier sites. The rating categories of supplier Processes will be as shown in the following table.

3.1 Process Rating Categories.

Category I -Low Risk

Category II - Medium Risk

Category III - High Risk

Each of the seven processes identified above will have its own rating; there will not be an "overall" Process rating for the supplier. The ratings will be supported by objective evidence, including metric information where indicated. While support for the ratings is intended to be objective, the ratings themselves are inherently subjective. That is, there is no algorithm intended to quantify and weight and mathematically manipulate process measures to determine a process rating. In the final analysis, ratings will reflect the judgment of the assessment team, substantiated by objective evidence of process performance in each process category.

Once a supplier site assessment has been accomplished and process ratings (Category I, II, and III) are assigned to each process, the baseline for process source selection information is established. The supplier's process metrics and other objective evidence used to support the ratings will be monitored for changes by the supplier and the DCMC CAO to identify trend changes. On-site reassessments, at the discretion of the Government, or at the request of the supplier, will be the methodology used to change the ratings, if appropriate. These process ratings will be reviewed by the supplier (and supplier exceptions to the ratings will be recorded and included in the file) and maintained by DCMC in a repository for future use in source selections. They will also be used to inform suppliers of their performance relative to the performance of other suppliers using anonymous, "scatter-distribution" methods.

Metrics or quantitative measures are not specified for every attribute or element of the seven processes. In some processes it was not possible to agree on standard metrics which would be widely acceptable to industry without "dictating" to industry "how to" specifically measure its processes. Also, there was a desire to avoid a proliferation of metrics which would make the system overly complex. It was considered preferable, rather, to recognize each supplier's unique metrics and objective evidence and expect the assessment team to relate their measures to the standard. Metrics, as used here, are for comparing the supplier being assessed to the standard and to determine process performance trends between assessments. Ratings, on the other hand, are intended to be used for supplier-to-supplier process past performance risk comparisons during the source selection process.

The standard for each process was patterned after the DCMC Risk Assessment model, already used in their risk assessments performed to reassess levels of DPRO oversight manpower.

(Note, however, that the product “inherent risk” and Òfuture riskÓ assessment features of the DCMC Risk Assessment model are not carried forward to SCARS which concerns itself only with process risk, not product or future risk.) The standards selected reflect both the experience observed in practice among the suppliers as well as the best judgment of the members of the NGS-IPT Sub-Panel. The underpinning of these standards is a performance-based philosophy, rather than a “how to” approach, and the standards were crafted accordingly.

The objective of the key supplier sub-group is to identify and describe the generic key processes for program execution used by suppliers to support defense systems acquisitions. The processes and their associated performance attributes identified in the report are considered applicable to all program phases, though their relative importance to program objectives are expected to change through the life cycle of the product. The report also includes a suggested list of top level process metrics for example only that can provide insight into the health of the processes at a given facility. These suggested metrics may be replaced by other metrics more suitable to the specific needs of the facility. The metrics contained in this report address development programs only.

Because of the timing of this report relative to the dynamic nature and number of other activities associated with acquisition reform, it may contain technical and business definitions and strategies which ultimately result in conflicts. In the event these conflicts are not resolved or go unrecognized by the time this report is issued, the user of this material should rely on the requirements management process prescribed by the Service Acquisition Executives as they are, or may be, issued.

3.1.1 Definitions.

The following definitions apply to terms as used within this document.

Process: A process is a set of procedures and methodologies which, when applied, provide a consistent set of outputs for a given set of inputs.

Element: A lower level indenture of a process which has all the characteristics of a process as described above. Elements may function independently or in conjunction with other elements.

Performance Attribute: A critical characteristic associated with a process or element which describes the expectations for that process or element in terms of capabilities.

Process Implementation: The application of key processes for a given program. The overall implementation and associated dependencies will be described in an Integrated Master Plan (IMP). The detailed tasking schedule and dependencies associated with the implementation will be defined in an Integrated Master Schedule (IMS).

Requirements: Unless otherwise modified, this term will be used to denote engineering/technical requirements as defined below. Other related terms are also defined below:

Operational/User Requirements: End user generated requirements, normally defined in terms of a system capability or characteristic required to accomplish mission needs. User requirements are initially stated in a Mission Need Statement (MNS) and progressively evolve to system specific performance requirements in the Operational Requirements Document (ORD).

Engineering/Technical Requirements: Acquisition community generated performance, functional, and interface statements derived from user requirements and defined in terms which are verifiable. Technical requirements apply to both product and process capabilities. Government program technical requirements are initially stated in a System Requirements Document (SRD) which progressively evolves to the System Specification. Lower level technical requirements are stated in Configuration Item (CI) specifications.

Verification Requirements: Generated by the acquisition community to define the method(s) and criteria by which the achievement of technical requirement will be substantiated during incrementally development. Verification requirements apply to both product and process capabilities.

Design Criteria: Generated by the developer from technical requirements to define end item requirements in terms which allow for detailed design activities.

Technical Performance Measurement: The continuing verification of the degree of anticipated and actual achievement for technical parameters. Confirms progress and identifies deficiencies that might jeopardize meeting a system requirement. Assessed values falling outside established tolerances indicate a need for evaluation and corrective action.

Measure of Effectiveness: A metric used to quantify the performance of integrated system solutions (people, product, and process) in terms that describe the utility or value when using those solutions to meet customer needs. MOEs can include cost effectiveness metrics.

3.1.2 Acronyms.

AQS	Advanced Quality System
CI	Configuration Item
CLIN	Contract Line Item Number
CLS	Contractor Logistics Support
CM	Configuration Management
COTS	Commercial Off The Shelf
CPI	Continuous Process Improvement or Cost Performance Index
Cpk	One specific Index for expressing Process Capability
DCMC	Defense Contract Management Command
DoD	Department of Defense
ILS	Integrated Logistics Support
IMP	Integrated Master Plan
IMS	Integrated Master Schedule

IPT	Integrated Product Team
JACG	Joint Aeronautical Commanders' Group
LCC	Life Cycle Cost
LSA	Logistics Supportability Analysis
MNS	Mission Need Statement
MOE	Measure of Effectiveness
NDI	Non-Development Item
NGS	Non-Government Standards
ORD	Operational Requirements Document
PP/CSC	Program Planning/Cost and Schedule Control
SPC	Statistical Process Control
SPI	Schedule Performance Index
SRD	System Requirements Document
SVR	Systems Verification Review
TPM	Technical Performance Measurement
VR	Variability Reduction

3.2 Process Characteristics

3.2.1 Program/Data Management Process

3.2.1.1 Discussion/Rationale.

The program management process is intended to represent the top level supplier program office process for the overall conduct and control of the program. There are seven elements within the process. Of the seven, three key elements of this process are: (1) Integration and coordination of all other processes applied to the program; (2) Allocation of resources and assignment of responsibilities within the program; and (3) Primary communications interface with all involved in the program. This interface includes that with the parent corporation and the responsibilities for implementing corporate processes for the program. In addition, the following four elements contribute to the program management process: Risk Management, Program Planning/Cost and Schedule Control, Contract Compliance, and Data Management.

Risk management is an element which puts in place a structured decision making process specifically oriented to the identification, balancing, and management of cost, schedule, and technical risks bounded by the technical and non-technical considerations. This element consists of five sub-elements: risk identification; risk analysis in terms of probability of occurrence and potential impact; risk planning in terms of identification and assessment of alternative risk management options; decision making and implementation; and tracking or feedback to assess the effectiveness of the risk management effort implemented.

The Program Planning/Cost and Schedule Control (PP/CSC) element for program management interfaces directly with other key processes. It is the mechanism for planning, forecasting, tracking, assessing, and reporting activities and resource

expenditures and requirements. It provides the establishment of both a schedule and cost performance baseline for the program. PP/CSC should also establish a "self governance" program to verify internal reviews/audits of processes and performance measures are in place and being used. It provides the means for assessing progress in terms of the technical performance and contract schedule and budget. It interfaces with the engineering process to evaluate technical progress in terms of technical performance measures and their influence on overall program cost and schedule, and collects actual expenditures against the program cost work breakdown structure. It interfaces with the program management process to provide information and data with respect to overall program performance. It is initially used for proposal preparation, and is subsequently updated based on actual events. An integral part of this process is the cost and schedule estimating methodologies required to accurately forecast remaining effort.

Contract Compliance is the mechanism for recording and tracking all active contract requirements and contract changes. These include those for customers and suppliers as well as associates and partners.

Data Management is an element of both program management and engineering. Data is a collection of recorded information (regardless of the form or method of recording) generated and used to manage the development, acquisition, sustainment, or operation of defense systems and equipment. It is necessary for program definition, control, monitoring, evaluation, and support. Data includes both management and technical information. Reports (financial, progress, logistics, test, etc.), analyses, studies, plans, schedules, records and other information constitute management data. Technical data is required to define and document an engineering design or component configuration. Technical data includes, but is not limited to, specifications, technical data packages (engineering drawings, associated lists, process descriptions), and technical manuals (operation and maintenance instructions, parts breakdown, and other instructions for installation, operation, maintenance, training and support). The Data Management element applies policies, systems, and procedures for identification and control of data requirements; acquires data in a timely and economical manner; and assures the adequacy and accuracy of the data relative to the data requirements.

3.2.1.2 Performance Attributes

3.2.1.2.1 Integration and Coordination. The capability to provide the leadership and management required to meet program objectives by providing timely and effective decisions and direction based on a structured decision making process which provides traceability of program decisions including the supporting data and rationale.

The capability to provide timely cost and schedule status across the facility/program.

3.2.1.2.2 Resources and Responsibilities. The ability to staff, train, organize, and equip the teams necessary to implement the proposed effort and meet overall program objectives.

3.2.1.2.3 Communications. The ability to establish and maintain efficient and effective internal and external communications with all customers and suppliers with an emphasis on customer satisfaction.

3.2.1.2.4 Risk Management. The ability to identify program risks and define incremental accomplishment criteria to measure progress in the reduction of that risk.

The ability to define mitigating strategies and alternatives with defined decision points for implementation.

The capability to develop cost and schedule estimates which recognize and include the uncertainty of each task due to technical risks.

3.2.1.2.5 Program Planning/Cost and Schedule Control. The ability to accumulate all technical performance, cost, and schedule data relative to responsible and accountable IPTs and assess earned value of work in progress.

The ability to accurately predict near term schedules and resource requirements.

The ability to forecast time and cost to completion of program/project.

The capability to provide timely cost and schedule data tied to cost work breakdown and IPT structure.

The ability to support audits of actual costs relative to the cost work breakdown structure.

3.2.1.2.6 Contract Compliance. The ability to maintain contract documentation current for all active efforts.

The capability to maintain and distribute schedules for all contract deliverables and events and to provide notice of near term contract requirements on a timely basis to promote compliance.

3.2.1.2.7 Data Management. The ability to provide management, technical, and customer personnel quality information required to accomplish their respective tasks, in an efficient and cost effective manner.

The ability to refine continually data requirements.

3.2.1.3 Metrics/Indicators.

The following metrics are the consolidated performance for the facility or location:

3.2.1.3.1 Cost. The consolidated Cost Performance Index (CPI) defined as:

Sum of Budgeted Cost of Work Performed divided by Sum of Actual Cost of Work Performed

3.2.1.3.2 Schedule. The consolidated Schedule Performance Index (SPI) defined as:

Sum of Budgeted Cost of Work Performed divided by Sum of Budgeted Cost of Work Scheduled

3.2.1.3.3 Performance. A measure of delivery performance in terms of quality and timeliness as defined below. Scheduled delivery must include the customer review and approval time.

Number of Accepted CLIN Deliveries on Time is divided by Number of CLIN Deliveries Scheduled.

3.2.1.3.1 Risk. A measure of risk management in terms of action items as defined below. It includes all action items tracked at the program level, and closure indicates customer agreement that the action item is complete.

Total Action Items closed on or ahead of schedule divided by Total Action Items

3.3 DLA and NGS-IPT Program Management Risk Factors.

The following tables contain risk factors used by HQ Defense Logistics Agency for evaluating program management risk. The table below the main table is the recommended additional risk factors suggested by the NGS-IPT to specifically address risk during the Engineering Manufacturing and Development (EMD) acquisition program phase.

3.3.1 End Product Performance Risk Factors.

Element: Program Management **References: DLAD 5000.4, IV-8,. VI-10, 12, VII-1**

Subelement: N/A

PLAS Code: 038, 070, 072, 091

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Poor performance against risk reduction plan. • Many program scheduling deficiencies noted. • Significant difficulty maintaining an integrated management/master plan. • Lack of integrated product teams. • Little program management visibility at GM/VP level. • Little program manager input in program acquisition strategy/ plans. • Many subcontractors.	• Some program scheduling deficiencies noted. • Integrated management/master plan revised frequently. • Deficiencies in risk reduction plan/not tied to SOW. • Some program management involvement in integrated product teams. • Limited access of program management to GM/VP level. • Limited number of subcontractors.	• Functioning integrated product teams. • Integrated management/master plan maintained and effectively used. • Clearly defined, attainable, internal scheduling procedures. • Working, flexible, risk reduction plans. • Program manager participates in program acquisition strategy decisions. • Few subcontractors. • Program schedule on time and within budget.

NGS-IPT Suggested Supplement to DLA Risk Model's Risk Factors
· Ineffective at rigorously defining, tracking and reporting software within the Cost/Schedule Control Systems Criteria system · Ineffective at establishing software within the WBS at appropriate levels · Ineffective/poorly defined organizational lines of authorities and responsibilities · IPTs representation does not include all stakeholders (customers, functionals, partners/subs/vendors) · Risk Management Process not adequately documented or ineffective (timeliness and quality of decisions)

3.3.2 Schedule Risk Factors (Program Management).

Element: Program Management **References:**

Sub-element: Program Management (General)

PLAS Code:038

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Ineffective use of metrics.	• Effective use of metrics.	• Agreed upon metrics in use.
• Non-responsive.	• Generally responsive.	• Proactive management.
• Ineffective use of earned value.	• Use of earned value	• Effective use of earned value.
• Ineffective program management team.	• Effective program management teams being established.	• Effective program management teams.

3.3.3 Schedule Risk Factors (Master Program Planning).

Element: Program Management **References: DLAD 5000.4, IV-8, VI-10, 16, 20, VII-1**

Sub-element: Master Program Planning

PLAS Code: 038

HIGH RISK	**MEDIUM RISK**	**LOW RISK**
PAST	**PAST**	**PAST**
• Repetitive unsatisfactory integrated master program plans. • Consistently missing event schedules. • Failure to manage to the critical path. • Management fails to use appropriate metrics.	• Generally consistent with occasional defects in master program plan. • Manages to plan with occasional misses to events • Occasionally fails to react to management indicators	• Consistently satisfactory master program plans. • Consistently meets schedules. • Totally integrated master program planning.
NGS-IPT Suggested Supplement to DLA Risk Model Risk Factors		
· Effective at rigorously defining, tracking and reporting software within the Cost/Schedule Control Systems Criteria system · Effective at establishing software within the WBS at appropriate levels · Well defined organizational lines of authorities and responsibilities · IPT representation includes all stakeholders (customers, functionals, partners/subs/vendors) · Risk Management Process well documented and effective (timeliness and quality of decisions)		

3.3.4 Program Management Risk Factors (Manpower).

Element: Program Management **References: DLAD 5000.4, VI-7, 18, 21**

Sub-element: Manpower **VII-1**

PLAS Code: 021,038,078

HIGH RISK	**MEDIUM RISK**	**LOW RISK**
PAST	**PAST**	**PAST**
• High turnover rate (> 8%). • Gap employment. • Inexperienced workforce. • No organized training/ certification program.	• Moderate turnover rate (5-8%). • Just-in-time employment. • OJT with some classroom training.	• Low turnover rate (< 5%). • Overlap employment. • Effective training program used.
NGS-IPT Suggested Supplement to DLA Risk Model Risk Factors		
· Ineffective at establishing and managing software manpower definition, allocation, availability and retention · Ineffective at providing necessary software training		

3.3.5 Program Management Risk Factors (Facilities & Equipment).

Element: Program Management **References: DLAD 5000.4, III-1, XII-10**

Sub-element: Facilities and Equipment

PLAS Code: 021,160

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Environmental non-compliance. • Poor or reactive maintenance program. • Over extending capacity. • Delivery impacted by poor planning .	• No significant environmental issues. • Some missed maintenance schedules. • Operates at full capacity.	• No environmental issues. • Good preventive maintenance program. • No capacity issues.

3.3.6 Cost: Budget/Planning Risk Factors.

Element: Budget/Planning
Subelement: N/A
PLAS Code: 070

References: FAR 42.302(a)(15), (40),(41), (67)
DFARS 242.302(a)(41)
DLAD 5000.4 VI-10
DCAAM 7640.1, 5-500

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Frequent and significant cost overruns and cost variances (excluding technical issues)	• Periodic cost overruns and cost variances not identified/ reported in timely fashion.	• Few cost overruns. Cost variances identified timely and reported to customer. • Effective corrective actions taken.
• Cost overruns not identified and/or reported.	• Corrective actions identified, but some delays in execution.	• Accurate/Timely ETCs.
• Significant variances between proposed and recommended cost values in forward pricing actions	• Moderate variances between proposed and recommended cost values in forward pricing actions	• Normal variances between proposed and recommended cost values in forward pricing actions
• Lack of effective corrective actions.	• System adequate but some corrective action required.	• System adequate with only minor corrective actions required.
• System inadequate.		

NGS-IPT Suggested Supplement to DLA Risk Model Risk Factors
· Cost estimating tools adequate · Adequate Cost Data Base · Some dependence on parametrics for critical cost estimates

3.3.7 Cost: Management/Technical Cost Drivers.

Element: Management/Technical Cost Drivers **References: DLAD 5000.4, VI-10 & IX-1**

Subelement: N/A

PLAS Code: 070 & 111

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Frequent cost variance (C/SCSC) with negative trend. • Significant cost growth due to business considerations. • Ineffective containment of cost growth conditions	• Few or minor incidences of cost growth. • Cost variance below objectives. • Moderate cost impact due to changes in business considerations • Successful containment of cost growth conditions	• Consistently at or below cost objectives. • Proven success of management team.

3.4 Engineering Process

3.4.1 Discussion/Rationale.

The Engineering process is the governing technical management process that manages and controls the product development addressing all aspects of total system performance, and provides the primary technical interface with the other key processes. It defines the technical processes and interfaces and provides the technical baseline for the Integrated Master Plan for development and production. Its primary function is to insure the product meets the customer's cost, schedule, and performance needs. The cost, schedule, and performance considerations include the total product life cycle. The engineering process, as defined herein, is generic to all technical acquisition programs and includes, but is not limited to, the disciplines of Systems Engineering, Engineering Management, Hardware/ Software Design, Test and Evaluation, and Configuration Management.

This definition has been taken to allow industry to tailor and partition the overall engineering process in the manner which best fits their individual functional organizational elements and products. The key to a successful engineering process is the integration of these disciplines into an efficient and effective process for the overall technical management of programs and development of systems and equipment that meets user requirements In general, the systems engineering discipline is often associated with requirements definition and operational analysis, which represents a portion of the overall Engineering process. When hardware and software design, and test and evaluation are addressed as separate disciplines, it will be necessary to demonstrate that the defined roles of these disciplines assume the functional aspects of the Engineering process and become integrated over the entire development cycle. These individual disciplines are melded herein, and will be discussed in terms of six elements: Systems Integration, Requirements Analysis, Functional Analysis/Allocation, Synthesis (i.e., preliminary design and detail design), Systems Verification, and Technical Control.

Systems Integration provides the overall leadership and management of the engineering process. It is the coordination, communication, and integration of decisions across and among various teams. It includes managing the interfaces internal and external to the system including hardware to hardware, hardware to software, and software to software. The integration task leverages the individual activities to facilitate and enhance the individual products of the system. This element also provides for the application and tracks the progress of the numerous specialty technical disciplines commonly identified as the "-ilities". It also provides the interface with the manufacturing and logistics support processes to integrate production and support requirements into the product definition.

Requirements Analysis determines system technical requirements by studying and understanding the user requirements as stated in the Mission Needs Statement (MNS) and the Operational Requirements Document (ORD) which address the entire life cycle of the system. The ORD describes the missions or tasks the system must accomplish; the environment(s) in which the system will be used; any constraints placed upon the system; measures of effectiveness for test and evaluation; system life cycle factors; and

interoperability with other systems and operational requirements. Requirements analysis provides verifiable, performance-based requirements in the system utilization environments, and the top-level functional requirements that the system must perform. This set of requirements is commonly referred to as the functional baseline. Requirements analysis is flowed down to the lowest level of the system. As the system evolves in greater detail, the requirements analysis is iterated to address user needs.

Functional Analysis and Allocation defines and integrates a functional architecture to the depth needed to support synthesis of solutions for people, products, and processes and management of risk. Functional analysis/allocation is conducted iteratively to define successively lower-level functions required to satisfy higher level functional requirements and to define alternative sets of functional requirements Functional analysis turns big functions into an architecture of smaller, simpler functions to which a solution can be designed. The lowest level of this architecture yields a well defined set of actions that must be performed by the components of the system to meet the top level requirements, with a set of verifiable component requirements that are usable as criteria for design. This set of requirements is commonly referred to as the allocated baseline. This activity also includes initial or conceptual design of products to validate the ability of the selected technologies to achieve desired results.

Synthesis, or preliminary and detail design, translates the functional and performance requirements, including interfaces, into a description of the complete system that satisfies the requirements. It defines this solution in terms of a physical architecture of people, products, and processes. For the system products, solutions are iteratively defined through the preliminary and detailed design of the products and selection of production processes. This activity develops the design in accordance with the architecture selected. Results are defined and documented in the form of drawings and data sets that allow hardware and/or software fabrication (coding). This set of drawings is part of the overall package which is commonly referred to as the product baseline.

Systems Verification is the incremental, iterative determination of progress in satisfying technical requirements and program objectives. It provides a rigorous quantitative basis for validation and verification of specification requirements. The ultimate objective is to confirm that the design solution meets requirements. It addresses all elements of the final solution, including interfaces, as well as the integrated system solution. It is a combination of trade studies, inspections, analyses and assessments, demonstrations, and tests which authenticates the cost and performance of the system. It also includes the validation of analytical methodologies used as part of the verification processes. Test management is an integral part of this element. It plans for testing, and defines, acquires, and manages required resources. These resources include facilities, equipment, test articles, and test personnel. It also includes the methodologies required to accurately predict test requirements in terms of schedule based on broad test objectives, maturity of test articles, normal availability of facilities and equipment, and reliability of test methods. It further includes managing the conduct of tests in accordance with the detailed test instructions generated by the engineering process, and recording, analyzing, and reporting test results.

Technical Control is used to balance the requirements and constraints in the program. It includes, but is not limited to, configuration management, interface management, deficiency reporting, risk management, and performance-based progress measurement including the milestone exit criteria, technical performance measurement (TPM), and technical reviews/audits.

Configuration Management has four key elements: Technical Baseline Definition and Maintenance, Control, Status Accounting, and Audits. Technical Baseline Definition and Maintenance documents the requirements and the functional/physical characteristics of a system and includes such baseline definitions as hierarchy, nomenclature, and numbering. Control ensures changes to these requirements, the product configuration and its characteristics, and related documentation, are evaluated and authorized by the use of a systematic process. Status Accounting records and reports critical elements of information required to manage the configuration of the system. The audit function confirms the end item meets verification requirements and the as delivered product matches the technical documentation.

Interface Management controls the design compatibility of internal and external engineering interfaces and consists of performance/physical requirements/design constraints.

Deficiency Reporting is the systematic means to record, track, control, and provide feedback to technical and administrative actions on reported deficiencies or proposed enhancements to the system.

Technical risk management is a structured process specifically oriented to the identification, balancing, and management of technical risks and associated cost and schedule impacts. It is primarily intended to be a proactive process which understands the technical risks at the outset of the program and manages these risks to a predetermined plan, but also includes the early recognition and management of unexpected problems. It supports the overall program risk management process by identifying technical risks, providing analyses in terms of probability of occurrence and potential impact, and identifying and assessing alternative approaches. Then, based on the program decisions, implements and tracks the effectiveness of the alternative(s) selected.

Performance-based progress measurement is the identification of key technical performance parameters in a structured format in which lower level performance parameters support performance parameters at higher levels of integration, prediction of their time phased level of performance based on design maturity, and the tracking and reporting of actual versus projected performance. It provides for early recognition of unexpected problems.

3.4.2 Performance Attributes

3.4.2.1 Systems Integration.

- the ability to provide the leadership necessary to integrate all technical disciplines and functional processes (e.g., manufacturing and logistics), and to establish and maintain effective communications with and among participants throughout the development effort
- the ability to identify key product characteristics and control allowable design margins for the integrated/installed performance of system components
- the ability to establish and track internal and external software component margin allocation and budgeting
- the ability to identify and manage technical risks
- the ability to identify and manage critical interfaces, and prevent sub-optimal solutions by continually looking across all product teams
- the capability to provide quality interface control documents on a timely basis
- the capability to determine the appropriate application of specialty functions (-ilities)
- the ability to staff, train, organize, and equip the technical teams necessary to implement the proposed technical effort required to meet overall program objectives
- the ability to provide tools, databases and development practices specific to end items

3.4.2.2 Requirements Analysis.

- the ability to define comprehensive and quantitative system performance requirements based on demonstrated/projected end item performance capabilities
- the ability to integrate subsystem performance estimates into overall system performance
- the capability to establish and maintain a decision database that provides the traceable record of the system performance and verification requirements to customer/user needs, requirements, and objectives
- the ability to define, manage, track and verify hardware/software growth and spare requirements in the program specifications
- the ability to provide system level cost/performance trade studies which assess the potential use of COTS/NDI and provide the ability to adjust system level performance requirements when large cost savings are possible

3.4.2.3 Functional Analysis and Allocation.

- the ability to define a complete set of verifiable performance requirements for the products necessary to achieve required system capabilities at a level which allows for reasonable development activities considering risks, resources, and constraints
- the ability to define comprehensive and quantitative installed and uninstalled performance requirements for how and where the end item products will be used
- the ability to include product life requirements in early design trade studies
- the ability to allocate performance requirements, including interface tolerances, to subsystems and components as the design progresses
- the capability to establish and maintain a decision database that provides the traceable record of performance and verification requirements from each end item to system level requirements
- the ability to identify potential COTS and NDI, and establish alternative subsystems/component requirements matrices based on estimated product performance capabilities for the intended usage

3.4.2.4 Synthesis.

- the ability to define a physical architecture which satisfies overall system level requirements
- the capability to model adequately the performance of both end items and the integration of these end items
- the ability to identify key performance design and safety requirements and key design requirements at each level of system or product indenture and to translate them into design solutions
- the ability to identify key product characteristics and associated key production processes, and define and control allowable design margins and capabilities for key production processes
- the ability to identify control requirements for product integrity during operation and support phases to maintain the system or product operating within key performance capabilities required by the user
- the ability to perform sensitivity analyses to establish design margins and to examine the effects of design requirement shortfalls as well as the tolerance to variations in usage, producibility, supportability, and other determining factors
- the ability to perform appropriate trade studies, prototyping, simulations, analysis and design methodologies which are compatible with the identified system incremental development phasing

- the capability to establish and maintain a decision database that provides the traceable record of the results of analyses, trade studies, etc. supporting key technical decisions
- the ability to provide quantitative performance assessments of potential COTS and NDI for the intended usage based on demonstrated capabilities, environments, and performance

3.4.2.5 System Verification.

- the ability to conduct incremental developmental analyses, simulations, and/or tests to develop required design data and verify design requirements and producibility
- the ability to perform final qualification/performance verification that represents usage and environments expected over the life of the system or product
- the ability to identify test objectives and other critical information required to plan for and execute testing
- the ability to predict test requirements in terms of schedule and resources
- the ability to acquire and manage test resources, and conduct the required testing in a timely and effective fashion; and to interface with the manufacturing processes to provide for the timely availability of test articles
- the ability to report results accurately and to establish and maintain a verification database that provides the traceable record of performance verification
- the ability to assess adequacy of verification of COTS and NDI, identify additional verification requirements if needed, and integrate existing verification data into the overall system verification database

3.4.2.6 Technical Control.

- the ability to verify that changes and variances to the system are accurately evaluated, documented and approved, and that changes are accomplished using a systematic, measurable change process
- the ability to provide definitive, accurate and timely information on the current configuration of the system for use within management and technical process
- the ability to confirm that the end items meet verification requirements, and provide traceable results that the as-delivered product matches its technical documentation
- the ability to control interfaces between systems, subsystems, and commodities to provide for design compatibility

- the capability to identify problems, conduct root cause analyses, and define and implement corrective actions to both the products and the production processes which generated the problem to preclude recurrence
- the capability for early identification of technical risks and advanced planning to adequately manage these risks as part of the initial program development
- the ability to identify and apply measures of effectiveness and technical performance measures that capture the maturity, performance, and risks in the program and establish associated incremental milestone criteria and accomplishments

3.4.3 Metrics/Indicators.

The following metrics are the consolidated performance forthe active programs for a single site/enterprise.

3.4.3.1 Cost.

This is a measure of the ability to control production cost and is defined as:

> Sum of Estimated Unit Production Cost/Price divided by Sum of Unit Production Cost/Price Goal/Requirement.

3.4.3.2 Schedule.

This is a measure of the ability to meet defined milestone requirements and is defined as:

> Number of Contract Milestones Completed divided by Number of Contract Milestones Due.

3.4.3.3 Risk.

This measures the ability to define and execute an Integrated Master Schedule (IMS) and is defined as:

> Total Total Number of Changes to the IMS divided by Number of Events in the Initial (Proposed) IMS.

Changes are defined as any additions or deletions of events, and any change in the time to completion of an event which exceeds 10%.

3.4.3.4 Performance.

This is a measure of the change order activity. It is divided into two time spans because of the increased significance of changes which occur after first flight or an equivalent test activity. The metrics are identical for both time spans, but separate metrics are provided for hardware and software items.

> Time span: From Formal Configuration Management to First Flight or equivalent event. Formal configuration management is intended to represent the supplier's CM process.

A Hardware: Number of Engineering Change Orders divided by Number of Engineering Drawings

B Software: Number of Lines Changed divided by Number of Lines of Code

Time span: From First Flight or equivalent event to SVR/Completion of Development

C Hardware: Number of Engineering Change Orders divided by Number of Engineering Drawings

D Software: Number of Lines Changed divided by Number of Lines of Code

3.5 DLA and NGS-IPT Engineering Risk Factors.

The following tables contain risk factors developed for evaluating engineering risk and used by HQ Defense Logistics Agency. The table below the main table is the recommended additional risk factors suggested by the NGS-IPT to specifically address risk during the Engineering Manufacturing and Development (EMD) acquisition program phase.

3.5.1 End Product Performance Risk Factors (Engineering).

Element: Engineering **References: DLAD 5000.4, VI-2, 9, VII-1**

Sub-element: N/A

PLAS Code:062, 069, 091

HIGH RISK **PAST**	MEDIUM RISK **PAST**	LOW RISK **PAST**
• Minimal availability or use of simulation, rapid prototyping tools (e.g., stereolithography, design and modeling tools). • Fails to model engineering solutions. • Numerous changes to hardware/ software. • High rate of engineering changes to released drawings or test plans. • Minimal documented engineering process. • Limited awareness or use of design for manufacturing or design for assembly approaches. • Minimal engineering/peer reviews. • Minimal quantitative process management. • Minimal technical interface with subcontractors. • Minimal cross functional coordination - lack of fully integrated product design and process development team approach. • Minimal technical training planned and implemented.	• Limited availability or use of simulation, rapid prototyping tools. • Limited modeling. • Some awareness and use of design for manufacturing and design for assembly approaches. • Limited cross functional teaming; e.g., design and process development. • Limited quantitative process management. • Some changes to production designs. • Good subcontractor technical interface. • Adequate documentation of engineering process. • Most programs utilize engineering/peer reviews. • Adequate technical training (plans and implementation).	• Uses validated/verified simulation, rapid prototyping tools. • Extensive use of engineering models. • Extensive subcontract technical management interface process. • Extensive use of lessons learned. • Few changes to hardware/ software or engineering changes to released drawings or test plans. • Thoroughly documented engineering process. • Extensive use of engineering/ peer reviews. • Utilizes quantitative process management tools. • Utilizes cross-functional coordination in design process. • Extensive, effective training program.

END PRODUCT PERFORMANCE (PLAS Code 069,071)

NGS-IPT Suggested Supplement to DLA Model Past Risk Factors
• High rate of change to released software implementation code and test plans • Extensive system development, integration and systems testing problems • Minimal requirements definition and allocation (specification) process · Poorly defined system architecture · Marginal control measures for safety/mission critical areas · Lack of traceability throughout spec tree · Minimal capability to effect trades/changes to allocated baseline · Installed and Uninstalled Performance Incompletely/Poorly defined • Fails to model engineering solutions. · System Level · Subsystem Level · End Item Level · Interfaces • Minimal/No key product characteristics identified • Minimal efforts to control datums and estimate dimensional tolerances • Minimal efforts to budget and track allocations of software and hardware across interfaces. • Minimal interface management • Limited Interface Control Documentation • Limited specialty functions involved • Limited/no or inaccurate decision databases to track technical requirements, verification results, qual/test results and decisions · End Item Level · Subsystem Level · System Level · Cost/Performance/Schedule trades · Producibility/Maintainability/Supportability • Limited management of HW/SW growth and spare requirements • Limited experience with COTS/NDI • Minimal innovative means for verifying performance requirements · Incremental Verification and Build Up of end items to system requirements • Marginal Test Execution · Incomplete or last minute test objectives/detailed test instructions · Test requirements fall short in resources and schedule · Test articles late to need • Change process incomplete · Minimal documentation · Minimal evaluations · Few functions represented · Timeliness of – Recommendations – Resulting Actions • Limited use of consensus industry standards/best practices • Current configuration not defined or inaccurate

3.5.2 End Product Performance Risk Factor (Software).

Element: Software **References: DLAD 5000.4, VI-9, 11**

Sub-element: N/A

PLAS Code: 069, 071

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Extensive reports of software problems (customer or factory). • Lengthy problem closeout cycle time. • Minimal re-use experience. • Software process not sufficiently documented and/or not normally followed. • Minimal risk mitigation techniques applied. • Extensive development, integration, or system testing problems. • Minimal CASE tools (or equivalent). • Minimal process improvement demonstrated. • Ineffective software estimating and/or planning methodology. • Not able to keep software functions staffed as needed. • Minimal software training planned and implemented.	• Limited number of reports of software problems (customer or factory). • Normally reasonable problem closeout cycle time. • Limited re-use experience. • Software process sufficiently documented and normally followed. • Moderate software development, integration and system testing problems, redesign, and re-testing. • Some use of risk mitigation techniques. • Some use of CASE tools (or equivalent). • Limited process improvement demonstrated. • Limited/partially effective software estimating and/or planning methodology. • Usually able to keep software functions staffed as needed. • Limited software training planned and implemented.	• Few reported software problems (customer or factory). • Short software problem closeout cycle time. • Significant re-use experience. • Software process well documented and followed. • Few or efficiently addressed software development, integration and testing problems. • Proactive use of risk mitigation techniques. • Extensive use of CASE tools (or equivalent). • Demonstrated effective process improvement. • Well planned and implemented software estimating and planning methodology. • Consistently able to keep software functions fully staffed. • Comprehensive and timely software training planned and implemented in all affected areas.

END PRODUCT PERFORMANCE

NGS-IPT Suggested Supplement to DLA Model PAST Risk Factors
· Ineffective at re-use of appropriate and proven software.
· Ineffective at establishing, analyzing and reviewing Computer Systems and Software architectures
· Ineffective at estimating and tracking and managing software size and growth
· Ineffective at defining events and criteria to manage the technical performance characteristics and associated margins and tolerances of the hardware and software
· Ineffective at defining and managing the development and testing of multiple builds of software
· Ineffective at incorporating complete software coverage in the specification baselines
· Ineffective at performing programming language trade studies
· Ineffective at developing safety critical software that will function safely
· Ineffective at identifying and managing software risk
· Ineffective at developing, managing and controlling software requirements including those in system level specifications
· Ineffective at planning, establishing and conducting system and software integration and test
· Ineffective at planning and establishing software development practices and procedures including Requirements management, Design, code, and unit test
· Ineffective at establishing and applying system and software development facilities and other specialized development and test facilities
· Ineffective at defining the System/Software Engineering Environment including components, architecture, maintenance and support
· Ineffective at maintaining traceability between requirements and implementation software
· Ineffective at developing, integrating and verifying software which satisfies the specified performance and supportability requirements
· Ineffective at integrating software from multiple sources including Commercial-Off-the-Shelf (COTS) and other sources of reuse, as well as integrating software across a multiple-contractor teamed development effort
· Ineffective at establishing Software Configuration Management including planning, baseline/configuration identification and management, audits, control and status accounting, libraries and CM support tools
· Ineffective at managing subcontractor software capability evaluations, planning, and development efforts

3.5.3 Schedule Risk Factor (Engineering Management).

Element: Engineering **References: DLAD 5000.4, IV-8, VI-29, 12, XII-8**

Sub-element: Engineering Management

PLAS Code: 062A,079,153,158

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Lack of integrated management schedule. • Frequently missing engineering milestones. • Lack of Systems Engineering Master Plan (SEMP). • Numerous engineering changes caused by contractor. • Numerous manufacturing calls for engineering assistance. • Engineering metrics not used.	• Integrated management schedule with some missed milestones, none on the critical path. • Some engineering changes caused by contractor. • Metrics used. • Timely engineering response to manufacturing.	• Effective use of integration (IMP, IMS, SEMP, etc.). • Rarely missed milestones, none critical. • Few engineering changes caused by contractor. • Agreed to metrics effectively used. • Proactive engineering involvement in manufacturing
NGS-IPT Suggested Supplement to DLA Model PAST Risk Factors		
· Minimal formal recognition of technical risk management and mitigation · Minimal internal design reviews incrementally through the development process		

3.5.4 Schedule: Engineering Risk Factor (Software).

Element: Engineering **References: DLAD 5000.4, VI-11, IX-8**

Sub-element: Software

PLAS Code: 071

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Excessive Software Trouble Reports (STRs) /1,000 lines of code. • No metrics in place or ineffective use of metrics. • Lack of a standard software process. • Constantly impacts delivery schedules.	• Moderate Software Trouble Reports(STRs)/ 1000 lines codes. • Standard software process used. • Metrics in place. • Occasionally misses internal milestones, but meets end item delivery. • SEI Level 2 or 3.	• Low STRs/1,000 lines of code. • Metrics effectively used. • Consistently meets internal schedules. • Standard software process used. • SEI level 4 or 5.
NGS-IPT Suggested Supplement to DLA Model PAST Risk Factors		
· Software not effectively incorporated into the IMP/IMS. · Software development constantly late to need impacting end item delivery schedules. · Ineffective at defining, tracking and managing development efforts using software development metrics · Ineffective at establishing, tracking and achieving software schedules · Ineffective at managing internal development baselines		

3.5.5 Schedule: Engineering Risk Factor (Drawing Release).

Element: Engineering **References: DLAD 5000.4, VI-2, 9, 19, XII-3**

Sub-element: Engineering Drawing Release

PLAS Code: 062A,079

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Lack of integrated engineering release system (IERS).	• 3-5 percent minor errors only.	• ≤ 2 percent minor error rate.
• > 5 percent error rate.	• 90-98 percent on time with no critical items late.	• > 98 percent on time with no critical items late.
• < 90 percent on time release.	• IERS in place with some deficiency.	• Effective use of IERS and metrics.

3.6 Quality System Process.

3.6.1 Discussion/Rationale.

The Quality System is unique in that it has two distinct parts. The first part is application of the quality process on a facility wide basis in a manner which provides insight across all programs. This will be termed the facility quality system. In the broadest sense, the facility quality system should be applied to all processes that are important to the overall capability of the facility. This can be accomplished by the application of the following steps to operations:

- Identify the product or service to be provided.
- Identify the "customer" and determine what they consider important about the product/service.
- Define the requirements the product/service must fulfill to satisfy the customer's needs.
- Define the processes by which the product or service is created.
- Configure the process to verify that it can satisfy the requirements defined for the product.
- Ensure continuous improvement by measuring, analyzing, and controlling the process.

While conceptually simple, the application of this approach to a very complex process, such as engineering is difficult. It generally must be applied at a lower level and implemented through metrics that reflect the quality of the process output. This should be accompanied by methodologies that examine the root cause of "defects" and institute corrective measures. When fully implemented, a facility quality system will be evidenced by the existence, for each key management process, of facility-wide metrics and a corrective action approach that identifies and corrects problems early, and incorporates lessons learned into day to day processes.

The second part is the application of the quality process to the specific program objectives. This is termed the program quality system, and is the subject of the remainder of this discussion.

A low risk qualtiy approaches differ from traditional quality approaches by emphasizing the prevention of defects, rather than the identification and correction of defects after the fact. As such, Quality underlies other processes used to develop, produce, deliver and support products and services meeting customer needs. Although both approaches share the objective of ensuring that only material that meets customer expectations is delivered to the customer, traditional systems tend to focus on the production phase and rely upon inspection and test (i.e., defect detection) to sort out defective material. The principal drawback of the traditional approach is its cost. Inspection, test, segregation, and processing of nonconformances, and rework each incur costs yet add no value to the product. In contrast, low risk quality approaches (defect prevention) emphasize

matching the design requirements to both the environment for the product's intended use and to manufacturing process capabilities and then controlling the processes such that only conforming product is produced.

3.6.1.1 Low risk Quality.

Low risk Quality Systems are intended to prevent defects and are aimed at both development and production. In this context, the Quality System is applied during the development phase (normally within an integrated product and production process development framework) and focuses on achieving robust, producible designs and ensuring that manufacturing processes are controlled and capable. Potential benefits in this context include decreased cycle time, as well as reductions in rework, engineering changes, and inspections and tests. These benefits translate into improved affordability and reduced production transition risk.

The elements of low risk Quality System include the following:

- Underlying Basic Quality System,
- Quality approaches to design,
- Quality approaches to manufacturing,
- Quality approaches to product support and sustainment,
- Quality approaches to subcontract management.

3.6.1.2 Basic Quality System.

We still need to rely on a basic quality system requirement as it remains the foundation for an advanced quality system. It is not the intent to put the quality system itself on contract, or inhibit continuous improvements in it. However, there needs to be a basic, performance-oriented commitment that covers the quality system. Either company or commercial standards could fit this bill. The advanced quality requirements described herein go beyond basic quality system requirements, and are what should be the discriminators in source selection.

3.6.1.3 Low risk Quality Approaches.

To achieve the goal of defect prevention, advanced quality systems emphasize the optimization of the interface between the engineering, manufacturing, and support processes. This optimization involves concurrent implementation of both the **product design activities** and the **development of production and support process and their related control mechanisms**. The most significant characteristics of this integration are discussed below:

<u>Identification and control of key product characteristics</u>. Key characteristics are the features of a material, part, or process whose variation has significant influence on product cost, safety, fit, performance, service life, or manufacturability. This concept asserts that among all the

characteristics that define a part, material, etc., only a small subset is so critical to functionality or manufacturability that they must be closely controlled during fabrication, assembly and test. The continuous reduction in variation in these key characteristics is of primary importance.

Design policy requires designing to an existing manufacturing capability. Every product characteristic has a design intent that can be described as a nominal value with an allowable variation that defines the design limits. Engineering design limits should reflect the maximum deviation (in customers' hands) of the products' functional quality characteristics from their chosen targets. The ratio of the design limits to the process variation defines process capability. When this ratio is large there is a low probability that the process will result in products outside the design limits. With a small ratio there is a much higher probability that the process will result in products outside the design limits. To prevent defects, the most cost effective approach is to set the design limits so that predicted process variation falls well within them.

Dimensioning, tolerancing and datum control. The use of geometric dimensioning and tolerancing is an essential design practice for ensuring that variability in key characteristics is understood and controlled. This is especially critical during the assembly of complex structures where uncontrolled tolerance stack-ups and poorly defined reference datum points can create severe fit up and interference problems.

Verification that production processes and tooling controlling key product characteristics are stable and capable. The determination that variation in a production process can satisfy design limits is the complement of the above design policy**.** Every production process results in some variation in the product characteristics it generates. For a process in statistical control, the output variability can generally be characterized as a normal distribution about a mean value. This distribution must be determined for each key process to provide designers the ability to match design limits with manufacturing capability. Key processes must also be stable; i.e., their mean value should exhibit little change over time. In the broadest sense, the methods by which processes are controlled should constitute the quality assurance provisions for product acceptance (see below). For stable, capable processes, this generally translates into assurance that input variables are controlled with some form of output variable feedback. One method to accomplish this is Statistical Process Control (SPC). This also implies that key manufacturing processes should be placed under some form of internal configuration control by the supplier to verify that any changes to the process in terms of equipment, methods, layout, etc., do not adversely affect the process capability and stability.

Use of stable, capable manufacturing processes as the basis for product acceptance. Once a process has demonstrated the required capability and stability, a discrete inspection or test is no longer necessary to determine

product acceptability. Rather, the product can be accepted based upon the statistical evidence collected from the process. This eliminates the cost associated with non-value added verification activities. When a process is not capable, or is unstable, some form of inspection or test will be required to weed out nonconforming products. These defective products must then be repaired/reworked and re-inspected, or scrapped, all of which add cost to the final product without adding value. In most cases, a stable, capable process is the preferred condition since it generally leads to the lowest cost method of product acceptance.

Control of variation in the measurement system. Measurement processes exhibit variation just as manufacturing processes do. Consequently, it is important to conduct measurement equipment repeatability and reproducibility analyses when performing process capability studies. This will verify measurement device variation is not consuming an excessive amount of design tolerance.

Root cause, closed loop corrective action. Advanced quality systems emphasize prevention of the defect's recurrence. This normally involves the use of multi-functional teams and formal problem solving techniques combined with high-level management attention and tracking to evaluate and implement changes in designs, production processes, tooling, work instructions, training, etc., to ensure the problem does not recur.

Continuous Process Improvement (CPI) or Variability Reduction (VR). The basic objective is to reduce the cost to deliver a quality product. This is achieved by assessing the root causes of variability and instituting cost effective changes to reduce this variability by eliminating or reducing the impact of root causes. For a specific production process, this could entail additional operator training, more frequent equipment maintenance, refinement of control settings, or improvements to fixtures. Another aspect of CPI is the evaluation of the design to identify cost effective ways to make it more robust, or more tolerant to variation. In the more general sense, CPI would address the processes associated with the product, including factory infrastructure processes such as inventory control, parts and material handling, and technical, business, and administrative support functions (as they affect production).

Deployment of advanced quality system elements to suppliers. Since suppliers account for at least 60 percent of the work content of current acquisition programs, effective implementation of advanced quality systems requires that they be deployed to the suppliers as well. Defect-free supplier products also facilitate such cost saving processes as just-in-time delivery and direct ship to assembly/stock, and enable assembly plants to eliminate redundant receiving inspection operations. Implementation of this will be achieved through the subcontract management process.

3.6.2 Performance Attributes

3.6.2.1 Facility Quality System.

The ability to identify the products and services of the facility processes, including intermediate products and services;

The ability to identify the customer(s) of the products and services (internal and external), and to provide a customer satisfaction orientation which considers what is necessary to fulfill customer needs;

The ability to identify suppliers required by the facility processes and provide clear definitions of supplier requirements;

The ability to configure the facility process to provide for clear interfaces with internal and external customers and suppliers to facilitate the communications required to satisfy requirements and to allow facility processes to be tailored to specific program requirements; and

The ability to provide continuous improvement by measuring and analyzing the performance of facility processes as implemented on each program within the facility, and eliminating sources of errors/defects and non-value added activity.

The implementation of these attributes will be partially demonstrated within the definitions and integration of the processes addressed in this document, including the program quality system, and in the implementation of these processes to specific program needs.

3.6.2.2 Program Quality System.

Basic Quality System:

A supporting, basic quality system that conforms to generally-accepted commercial, international or military standards. As part of the basic quality system, documentation of the basic and advanced aspects of the system should be included in master plans and schedules. The documentation should consider and be directly related to the product being produced and unique customer requirements. As discussed above, the basic quality system forms the foundation for the AQS.

The ability to facilitate:

(1) the rapid disposition of defects;

(2) rapid and accurate identification of the root causes of defects; and

(3) the implementation of effective corrective action.

Quality in Product Design:

The ability of the engineering process to implement design practices which:

Result in the identification, documentation, and control of key product characteristics;

Include consideration of existing manufacturing process capabilities during product/process design;

Result in robust designs that are insensitive to variability in other processes and environments;

Minimize tolerance stack-up, interference, assembly alignment problems and part complexity;

Provide continuous improvement by measuring and analyzing design process performance, and eliminating sources of errors/defects and non-value added activity.

Quality in Product Manufacturing:

The ability to:

Verify manufacturing processes and tooling which control key product characteristics are stable and capable of producing product meeting customer requirements;

Use stable, capable manufacturing processes as a basis for product acceptance in lieu of inspection and test;

Assess the contribution of variation associated with measurement and test equipment and ensure it is accounted for when determining process capability;

Facilitate process maturity through continuous variability reduction for key product characteristics;

Provide continuous improvement by measuring and analyzing manufacturing process performance, and eliminating sources of errors/defects and non-value added activity.

Quality in Product Support and Sustainment:

The ability to apply Advanced Quality concepts in the post-production support and sustainment phase of systems and products including modifications, upgrades, and product improvements.

Quality in Subcontract Management:

The ability of the subcontract management process to provide for the selection of key suppliers based on their ability to implement appropriate aspects of quality systems, including advanced quality.

3.6.3 Metrics/Indicators.

The following metrics are the consolidated performance for the top ten dollar value, active programs for a single site/enterprise.

3.6.3.1 Performance.

This metric addresses the corrective action process, and is defined as:

> Number of Repeat Failures After Corrective Action divided by Number of Total Failures.

3.6.3.2 Risk.

This metric addresses the overall product design in terms of failure modes, and is defined as:

> Number of Critical Failure Modes divided by Total Number of Failure Modes.

3.7 DLA and NGS-IPT Quality Risk Factors.

The following tables contain risk factors used by HQ Defense Logistics Agency for evaluating quality management risk. The table below the main table is the recommended additional risk factors suggested by the NGS-IPT to specifically address risk during the Engineering Manufacturing and Development (EMD) acquisition program phase:

3.7.1 End Product Performance: Quality Risk Factors (Product Integrity).

Element: Quality Assurance **References: DLAD 5000.4, VI-1, 6, 5, 7, 21**

Subelement: Product Integrity

PLAS Code:061, 066, 065, 067, 081

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• High defect variability rates and low throughput yields. • End item performance frequently does not meet contract requirements. • Nonconforming material control system poorly defined and/or poorly implemented. • Reliance on inspection to detect nonconforming product. • Quality engineering methods not being deployed (Kaisen, DoE, QFD, etc.). • No root cause analysis or corrective action follow-up employed.	• Steady defect history rates and throughput yields. • Beginning to plan/implement quality engineering/process improvement concepts. • Forming integrated process teams to deal with quality/ process problems. • Using metrics to quantify process outputs. • Root causes of problems being identified through process analysis.	• Low defect rate history with high throughput yields. • End item performance meets or exceeds all contract requirements. • Integrated process teams have developed six sigma or equivalent plan. • Has well defined/effective NCM control systems. • Manufacturing focus is on continual process improvements.

3.7.2 End Product Performance: Quality Risk Factors (Quality Management).

Element: Quality Assurance **References: DLAD 5000.4, III-2, VI-1, 2, 3, 9, 14, 21**

Subelement: Quality Management

PLAS Code: 022, 061, 062, 065, 069, 074, 081

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Reliance on inspection and test to detect problems. • Very little teamwork evidenced. • Designs produced independently of manufacturing and quality engineering. • No focus on variability reduction.	• Early stages of TQM culture change. • Moving toward reliance on metrics and process focus. • Variability reduction team deployed. • Beginning of process focused culture.	• Pervasive quality attitude, driven from the top, inherent in culture of organization. • Internal process customer involved. • Designing for six sigma manufacturability. • Decisions based on facts and data. • Emphasis is on defect prevention and process improvement. • Integrated product design approach

3.7.3 End Product Performance: Quality Risk Factors (Quality Assessment).

Element: Quality Assurance **References: DLAD 5000.4, III-2, VI-1, 6, 14, 15, 21**

Subelement: Quality Assessment

PLAS Code: 022, 061, 066, 074, 075, 081

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Inadequate/nonexistent quality assessment/audit function. • No self-assessment. • Ineffective NCM system. • External audit results are sporadic/poor. • Occasional nonconforming product in delivered end item	• Quality audit function exists. • Little importance placed on internal Quality audit results. • Sporadic self-assessment deployment • C/A system effective for problems discovered. • Nonconforming material adequately controlled.	• Documented/internal quality audit plans provide management of an independent assessment of adequacy/effectiveness of Q system. • Full deployment of self assessment. • Audit results used to improve system effectiveness. • C/A process prevents NC product before it occurs by detection and prevention of potential causes.

3.7.4 End Product Performance: Quality Risk Factors (Quality/Manufacturing).

Element: Quality Assurance **References:**

Subelement: Workforce Development (Quality/Manufacturing)

PLAS Code:

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Workforce not adequately trained to job requirements. • High employee turnover. • Very little internal training. • Work stoppage, high defect rates, and schedule delays experienced.	• Training being provided, but undocumented training plan. • Focus on individual training/ development. • Training limited to immediate needs. • Occasional work stoppages, increased defect rates and some schedule delays experienced. • Most certified operator positions filled. • Personnel adequately trained.	• Documented and implemented training process based on organization's job needs and level of workforce knowledge. • Low employee turnover. • Management development program documented and implemented. • Team oriented philosophy and training plan based on that end. • No work stoppages, no impact defect rates, and cause no schedule delays.

3.8 Manufacturing Process

3.8.1 Discussion/Rationale.

The manufacturing process includes the total set of activities and interfaces necessary to convert the product definition into an affordable end item product. The objective of the manufacturing process is to provide: (1) a complete definition of the factory environment in which the product is to be produced for consideration by the product/production process design activity; (2) a capable, efficient factory design as a product of the development program; (3) development and production/reproduction articles produced in support of delivery requirements; and (4) adequate insight into how factories are performing during contract execution. Reproduction includes the repair and overhaul of service units. The manufacturing process assesses the product and factory design, production processes, and tooling. It mitigates production transition risk through

evaluation of design and manufacturing alternatives regarding program affordability, manufacturing efficiency, and quality objectives. It identifies and resolves production and quality related problems experienced in the manufacturing facility.

The manufacturing process supports the program/data management process by providing the up-front planning for the factory management systems necessary to manage the factory. Within the factory there must be adequate control to verify a thorough understanding of how the product is being built and what actions may be taken to reduce risk. These factory control systems must consider the control of the material on the production floor, the planning and statusing of work in process, and a systematic approach to continuous improvement and waste elimination.

It also supports the engineering process by providing for the integration of the product and factory design. In order to control production costs, there must be a continual interchange between the product and factory design activities. That is, the capabilities of the planned or existing factory must be a consideration in the product design and vice versa in terms of unit production cost, the projected delivery schedule, and product quality requirements. The impact of the factory to production cost must consider items such as process capacity and capability, environmental concerns, standard work content, factory flow, and assembly methods. Factory modeling may be used to validate the compatibility of the product design and factory in terms of cost, schedule and quality requirements.

The overall manufacturing process will be discussed in terms of five elements: material control; shop floor planning, tracking and control; factory flow optimization; factory design; and factory performance.

The material control element is responsible for the identification, ordering, receipt, flow, and tracking of material for the system. This element should provide visibility and control of material as it is used within the factory.

The shop floor planning, tracking, and control element addresses the factory systems necessary to plan, status and accomplish production risk management.

The factory flow optimization element will seek to continually identify and eliminate waste or non-value added effort.

The factory design element addresses the concurrent technical development of the product and factory to verify aspects of the product/production processes are considered and the factory infrastructure is in place to support manufacturing activities necessary to accomplish the program. This includes activities such as tool design/fabrication and consideration of facilities necessary to produce the end products. This element should provide for the integration of the product and production processes with the factory design activities.

The factory performance element identifies and seeks to reduce the direct labor content of the product, optimize the man/machine interface, and establish control and feedback mechanisms within the factory. This element should provide management visibility of efficiency and productivity. It should also provide data for determining factory problem areas, thus driving corrective action and continuous improvement.

3.8.2 Performance Attributes

3.8.2.1 Material Control.

- the ability to store, move and manage the material requirements to optimize on-schedule support to production requirements

3.8.2.2 Shop Floor Planning and Control.

- the ability to determine product flow and span time within the factory
- the capability to provide product status information
- the ability to provide an effective production scheduling and control system that is utilized plant-wide
- the ability to manage factory operations and resources to deliver required articles including tooling, test and support equipment on schedule

3.8.2.3 Factory Flow Optimization.

- the ability to identify and eliminate non-value added effort continuously within the product flow

3.8.2.4 Factory Design.

- the ability to define factory performance requirements
- the ability to provide manufacturing data, factory capabilities, special tooling/test equipment requirements, and unique production process characteristics that affect or influences the design of the products and factories
- the ability to optimize product requirements with factory capabilities
- the ability to define factory cost, schedule, and quality requirements
- the ability to develop the production planning necessary to build the product, and provide the manufacturing support systems (tooling, test equipment, etc.) on schedule

3.8.2.5 Factory Performance.

- the ability to identify standard labor content
- the ability to optimize the use of resources
- the capability to measure first pass yields and implement continuous process improvement or variability reduction

3.8.3 Metrics/Indicators.

The following metrics are the consolidated performance for the active programs for a single site/enterprise.

3.8.3.1 Cost.

This is the CPI for the dollars assigned to the manufacturing portion of the program, and is defined as:

> Sum of Budgeted Cost of Work Performed divided by Sum of Actual Cost of Work Performed.

3.8.3.2 Performance.

This is a measure of the overall process capability and is defined as:

> Average Cpk for characterized key manufacturing processes.

3.8.3.3 Schedule.

This is a measure of the ability to deliver articles required by the development program. It includes tooling, test equipment, and support equipment.

> Number of Required Articles Delivered on Time divided by Number of Articles Delivered.

3.8.3.4 Risk.

This is a measure of the degree to which process capability has been identified, and is defined as:

> Number of Production Processes Characterized divided by Number of Production Processes Required.

3.9 DLA and NGS-IPT Manufacturing Management Risk Factors.

The following tables contain risk factors used by HQ Defense Logistics Agency for evaluating manufacturing management risk. The table below the main table is the recommended additional risk factors suggested by the NGS-IPT to specifically address risk during the Engineering Manufacturing and Development (EMD) acquisition program phase.

3.9.1 End Product Performance: Manufacturing Risk Factors (Process Improvement).

Element: Manufacturing **References: DLAD 5000.4, VI-2, 9, 17, 21**

Subelement: Process Improvement

PLAS Code: 062, 069, 077, 081

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Relies heavily on inspection and test to detect and control nonconformities. • High MRB/waivers to accept/ use nonconforming hardware. • Poor corrective action system. • Has no variability reduction program, no ongoing process improvement effort. • Experiencing high final test failure and line stoppage. • Process output unpredictable.	• Occasional use of MRB/waiver process. • Increasing use of metrics and process improvement teams. • Effective correction action system. • Delays due to rework/repairs and occasional line stoppages. • Use of SPC tools.	• Extensive statistical techniques implemented to improve process capability, product and/or service. • A plan has been developed to achieve 6 sigma quality. • Pervasive process focus. • Breakthrough product and process improvements achieved.

3.9.2 End Product Performance: Manufacturing Risk Factors (Work Instructions Development).

Element: Manufacturing **References: DLAD 5000.4, VI-2, 9, 16, 17, 21**

Subelement: Work Instructions Development

PLAS Code: 062, 069, 076, 077, 081

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Work instructions complicated and lengthy. • Undocumented work instruction generation/change process. • Poor change control system. • Poor translation of contract requirements. • High defect rate for work instructions or no work instruction assessment for continuous improvement process. • Work instructions inappropriate to circumstances. • No use of automation.	• Reviewing work instruction system for improvements - established goals. • Work instructions clear, but complicated. • Moderate defect rate due to work instructions. • Most work instructions appropriate to circumstances. • Limited implementation of automated work instructions.	• Consistent, repeatable processes and compliant product. • Work instruction changes quickly implemented. • Work instruction system provides for operator input and continuous measurable improvement. • All work instructions appropriate to circumstances. • Extensive use of automated work instructions.

3.9.3 Schedule: Manufacturing Risk Factors (Manufacturing Management).

Element: Manufacturing **References: DLAD 5000.4, VI-10, 16, 17, 21, V-6**

Sub-element: Manufacturing Management

PLAS Code: 046A,076

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Ineffective or no SPC. • Frequently misses internal milestones (fab, subassembly, assembly). • Frequently requests extensions due to poor performance.	• Occasionally misses milestones/ internal schedules. • No critical milestones missed. • Metrics effectively used. • Some indicators indicating poor performance. • SPC tools introduced • On time end item delivery.	• Rarely misses milestones, none critical. • On time delivery. • Meet internal schedules. • Agreed to metrics effectively used. • SPC program/tools in place.

3.9.4 Schedule: Manufacturing Risk Factors (Production Planning and Control).

Element: Manufacturing **References: DLAD 5000.4, VI-16, 21, 20, IX-3**

Sub-element:

PLAS Code: 081B

HIGH RISK	**MEDIUM RISK**	**LOW RISK**
PAST	**PAST**	**PAST**
• Consistently last shop order releases. • Lack of/or ineffective use of realization standards. • Consistently last purchase order releases. • Lack of clear and concise, controlled work order instructions. • Numerous expedite actions. • Excessive rework/scrap due to handling. • Lack of shop aid control. • Unauthorized repair and rework. • Ineffective use of metrics.	• Minimal late shop order work instructions P.O. releases. • Moderate number of expedite actions. • Positive shop aid control. • Limited rework due to handling. • Effective use of metrics.	• Consistent record of overtime. • Releases. • Work instructions. • Shop orders. • P.O.s. • Very few expedite actions. • Positive control of shop aids. • Agreed upon metrics in use.

3.9.5 Schedule: Manufacturing Risk Factors (Fabrication, Subassembly, Component).

Element: Manufacturing **References: DLAD 5000.4, IV-8, VI-10, 21**

Sub-element: Fabrication, Subassembly, Component

PLAS Code: 81B

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Failure to use management tools; i.e., scheduling techniques, with critical path (PERT, GANT, LOB, etc.) Metrics, SPC, processes, procedures; to diagnose schedule problems. • Missed schedules which impact final delivery. • Some critical path milestones missed. • Constantly adjusting internal schedules due to poor performance.	• Failure to consistently apply management tools to predict, detect and correct. • Missed schedules with impact on internal schedules with no critical path milestones missed.	• Management tools used to predict, detect and correct events prior to schedule impact. • Consistently meets internal schedules.

3.9.6 Schedule: Manufacturing Risk Factors (Tooling and S.T.E.).

Element: Manufacturing **References: DLAD 5000.4, IV-8, VI-21**

Sub-element: Tooling and S.T.E.

PLAS Code:

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Fails to perform proofing. • Failure to comply with periodic calibration & maintenance plans. • < 90 percent on time delivery of tooling/STE with critical items late. • Lack of rate tooling. • Lack of schedule/status system.	• Tool maintenance plan in use. • 90-98 percent on time delivery of tooling/STE with no critical items late. • Tools proofed prior to rate production. • Established schedule system to control/status tooling.	• Highly flexible. • Fully integrated tooling plan. • Compliance with periodic calibration & maintenance plan. • > 98 percent on time delivery with no critical path items late. • Tools proofed prior to release or on pilot production article.

3.9.7 Schedule: Manufacturing Risk Factors (MMAS).

Element: Manufacturing **References: DLAD 5000.4, IX-3**

Sub-element: MMAS

PLAS Code:

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Deficient systems. • Disapproved or no system. • Out of stock conditions which effect delivery. • Inventory accuracy < 95%. • B.O.M. accuracy < 98%. • Master Schedule accuracy < 95%.	• Acceptable system with minor deficiencies. • Inventory accuracy 95 - 98%. • B.O.M. 98-99%. • Master schedule accuracy 95-98%.	• Acceptable system. • Inventory accuracy > 98%. • B.O.M. accuracy > 99%. • Master scheduling accuracy > 98%. • Effective self-governance program.

3.9.8 Schedule: Manufacturing Risk Factors (Property).

Element: Manufacturing **References: DLAD 5000.4, VIII-1, 2, 3, 4, 5**

Sub-element: Property

PLAS Code: 101, 102, 103, 104, 105

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Disapproved system. • Consistent failure to meet inventory schedules for contract closeout. • Delivery impact if lost or not maintained. • Inaccurate records. • Ineffective metrics.	• Approved system with minor deficiencies. • Occasional closeout delays due to failure to inventory and submit schedules. • Effective metrics in use.	• Approved property system. • Consistent accomplishment of inventories for disposition. • Agreed upon metrics in use. • Effective Self-governance program.

3.10 Procurement/Subcontract Management Process

3.10.1 Discussion/Rationale.

The subcontract management process establishes the total set of business and technical relationships between the customer and supplier. As such, it is a process for program management, manufacturing, and engineering processes. With the implementation of Integrated Product Teams (IPTs), the nature of the relationship between the prime and key suppliers, and between and among the lower tier suppliers has significantly changed. In place of an integrating prime with independent supplier activities, we now expect fully integrated IPTs along high level product lines. The prime is still responsible for overall integration, but this role now becomes one of the IPT leadership with active participation by the key suppliers. This approach builds long-term cooperative relationships with suppliers stressing extensive information sharing and joint problem solving, based on mutual trust and commitment. In this respect, subcontract management must be expanded to allow for key suppliers to participate in the integration process. The traditional subcontract management process will still be applicable for non-critical suppliers.

The subcontract management process interfaces with the program management process by providing the contractual linkages between the prime and suppliers. It also defines the technical relationships of the key suppliers in support of the prime's IPTs. It describes the roles and responsibilities of parties and establishes the formal and informal communications channels. The technical relationship will also include the integration of the configuration management process in terms of: Configuration Identification, Control, Status Accounting, and Audits; and Interface Management.

An integral part of the sub-contract management process is an effective supplier rating system which provides for efficient proposal evaluation and award of contracts to best value suppliers.

3.10.2 Performance Attributes.

The ability to differentiate between suppliers based on past performance and other indicators of risk.

The ability to provide timely sub-contract awards based on best value.

The ability to define mutually acceptable contracts which completely define technical and business relationships relative to the contract effort.

The capability of synchronizing production schedules.

The ability to assess make/buy alternatives based on core competencies.

The ability to provide information sharing among stakeholders.

The ability to establish mutually beneficial relationships.

The ability to integrate supplier processes as an integral part of the overall program performance measures and metrics.

3.10.3 Metrics/Indicators.

The following metrics are the consolidated performance for the active programs for a single site/enterprise.

3.10.3.1 Cost.

This is a measure of the ability to control supplier costs, and is defined as:

Sum of the variance (est price - neg price) divided by Sum of Estimated Price.

3.10.3.2 Schedule.

This is a measure of the schedule performance of suppliers, and is defined as:

Number of Purchase Order Deliverables Delivered on time divided by Number of Purchase Order Deliverables.

3.10.3.3 Performance.

This is a measure of the overall material procurement and is defined as:

Direct Material Procured divided by Direct Material Budgeted.

3.11 DLA and NGS-IPT Procurement/Subcontracting Risk Factors.

The following tables contain risk factors used by HQ Defense Logistics Agency for evaluating procurement/subcontracting management risk. The table below the main table is the recommended additional risk factors suggested by the NGS-IPT to specifically address risk during the Engineering Manufacturing and Development (EMD) acquisition program phase.

3.11.1 End Product Performance: Subcontract Management Risk Factors.

Element: Subcontract Management **References: DLAD 5000.4, VII-1, 2, 3, 4, IV-8 II-2, VI-2,3,7,12,20,21 VII-l,IX-3**

Sub-element: N/A

PLAS Code:091, 092, 093, 094, 038,022,062,066,067,073,080,081,133

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Minimal subcontract management control plan documentation. • Minimal program management involvement. • Failure to meet socioeconomic goals. • Minimal subcontractor contact. • No mentoring activities for subcontractors major/critical. • Many subcontractors major/critical. • High supplier delinquency. • High rate of defective material. • Inspection dependent acceptance. • Excessively large supplier base. • Low number of qualified vendors.	• Some program management involvement. • Occasional failure to meet socioeconomic goals. • Periodic subcontractor contact. • Minimal mentoring activities for subcontractors. • Some deficiencies in subcontractor plan. • Some subcontract performance metrics established. • Limited number of subcontractors. • Moderate vendor delinquency rate. • Partially implemented process for inspection free deliveries from vendors. • Minimal qualified supplier base.	• High degree of subcontractor ownership. • Meets or exceeds socioeconomic goals. • Active mentoring program in place. • Integrated teaming efforts. • Approved program/corporate subcontractor plan. • Performance metrics established. • Few subcontractors.
NGS-IPT Suggested Supplement to DLA Model PAST Risk Factors		
· No Formal Vendor Rating System		

3.11.2 Schedule: Subcontract Management Risk Factors (Purchasing).

Element: Purchasing **References: DLAD 5000.4, VI-20, VII-4, 1, III-2**

Sub-element: N/A

PLAS Code:080

HIGH RISK	**MEDIUM RISK**	**LOW RISK**
PAST	**PAST**	**PAST**
• On time supplier delivery (O.T.S.D.) rate of < 90% • Critical items late > 10% of items nonconforming. • Failure to utilize DPAS. • Disapproved purchasing system. • High turnover of suppliers. • Metrics not used.	• O.T.S.D. rate 90-98%. • 2-10% nonconforming items, no critical items late. • Approved system with corrective actions required. • Moderate turnover of suppliers. • Metrics used.	• O.T.S.D. rate > 98%. • No critical items late. • Approved purchasing system. • < 2% nonconforming items. • Stable suppliers; long-term relationships. • Agreed upon metrics in use.

3.11.3 Cost: Subcontract Management Risk Factors (Purchasing).

Element: Purchasing **References: FAR 44.3**

Subelement: N/A **DFARS 242.301**

PLAS Code: 094 **DLAD 5000.4, VII-4**

DCAAM 7640.1, 5-600

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Public Law violations (TINA). • Frequent significant increased material costs. • Frequent late supplier delivery problems. • Frequent poor supplier quality. • Disapproved purchasing system.	• Periodic Public Law violations (TINA). • Occasional moderate increased material costs. • Periodic late supplier delivery problems. • Periodic supplier quality problems. • Approved system but some corrective action required.	• Approved system with only minor corrective action. • Active supplier optimization program. • Effective supplier selection. • Effective supplier rating system (price, quality, delivery).

3.12 Logistics Support/Sustainment Process

3.12.1 Discussion/Rationale.

Logistics Support/Sustainment is the process which (1) identifies system support constraints and requirements and opportunities for support process improvements as well as (2) identifies, develops, acquires and fields the support subsystem. It is accomplished through integration with both the Engineering and Program Management processes. The process includes the ten sub-elements of the Integrated Logistics Support (ILS) element and the Logistics Support Analysis (LSA) element. The expected outcome is a system that is both supported and supportable. The optimization of Life Cycle Cost (LCC) is a primary objective. This life cycle cost includes not only system design and acquisition costs but also system operation, maintenance, management and disposal costs as well. Products derived from this process require the application of verification, control and configuration management processes required by major end item. This process interfaces with the engineering process to identify support requirements, including technical data requirements, and provide data and analyses for control of LCC.

Integrated Logistics Support: The purpose of the ILS element is to integrate the system being developed with an effective support concept for military maintenance and operations. All of the ILS sub-elements are a consideration in system design and generate both systems constraints and requirements as well as support subsystem requirements. The ILS element includes the following:

Maintenance Planning sub-element is concerned with the development and implementation of a system support structure. It includes or interfaces with the other ILS elements. Development and implementation of a maintenance concept which includes support of operations and maintenance at all echelons is a primary output. Organic or Contractor Logistics Support (CLS) or privatized support are important alternatives to be considered. Site activation, depot and field maintenance activation and well as material management activation are necessary components.

Supply Support sub-element includes identification, warranty strategy, cataloguing and acquisition of all components required throughout the system life.

Support Equipment sub-element includes the identification, specification, development and acquisition of all required support equipment including operational equipment, test equipment including automatic test equipment, tools and equipment required for training and subsequent management. Standardization and proliferation control are important aspects of this element.

Technical Data sub-element includes the identification, specification, development and acquisition of all required technical documentation required for sustainment of the system. Components of this sub-element include technical orders and manual required for the operation, maintenance and sustainment of the system as well as drawings, tapes and other data required for system and component reprocurement, maintenance and modification.

Training and Training Devices sub-element includes the identification, specification, development and acquisition of all required training and training equipment and material to operate and sustain the system.

Manpower and Personnel sub-element includes the identification of the number, type and skills level for operators, maintainers and support personnel required by the system.

Packaging, Handling, Storage and Transportation sub-element includes identification and specification of materials management for the system end item and all components and items of support.

Computer Resource Support sub-element includes the identification and acquisition of all software support requirements including the use of standard languages, requirements for software support facilities for life cycle management of support, modifications and product improvements required throughout the system life.

Facilities sub-element includes the identification and specification of all facilities required for systems operation, maintenance, management and disposal. It also includes requirements generated by other ILS elements. In some cases facilities required are a part of the support subsystem being acquired.

Design Interface is the sub-element which drives logistics and support requirements into the system design. Major areas for incorporation include reliability, maintainability, scheduled and nonscheduled maintenance, deployability, survivability, availability, energy management, hazardous waste and materials management, testability and safety.

Logistics Support Analysis: Logistics Support Analysis is the technical element by which support requirements are managed and support subsystem components are identified. In conjunction with the design process, each hardware and software solution identified is extensively and iteratively analyzed to identify support characteristics and requirements. This analysis includes considerations generated by all ILS elements. The results of this analysis are documented in a database which can be used as a basis for support decisions made throughout the system life.

3.12.2 Performance Attributes

3.12.2.1 Maintenance Planning.

- the ability to provide planning documents and maintenance concept definitions
- the ability to develop organic/contractor support strategies for the life of the defense system
- the ability to provide program planning and execution which addresses use of initiatives such as lean logistics and paperless acquisition/support

3.12.2.2 Supply Support.

- the ability to establish and track a warranty strategy including planned product improvement
- the ability to implement a post production support program

3.12.2.3 Support Equipment.

- the ability to identify timely and acquire support equipment consistent with that identified in technical publications

3.12.2.4 Technical Data.

- the ability to author technical data and instructions which meet support requirements
- the capability to generate data required by the development process to reduce cost of ownership

3.12.2.5 Training and Training Devices.

- the ability to identify training requirements adequately

3.12.2.6 Manpower and Personnel.

– the ability to minimize the use of personnel

3.12.2.7 Packaging, Handling, Storage and Transportation.

– the ability to protect system components optimally

3.12.2.8 Computer Resource Support.

– the ability to implement a program which assures optimal system life computer support

3.12.2.9 Facilities.

– the ability to identify all facility requirements

3.12.2.10 Design Interface.

– the ability to demonstrate that program planning and product design includes applicable ILS elements

– the ability to demonstrate the maintainability, reliability, deployability and availability characteristics of the system and its component elements

3.12.2.11 Logistics Support Analysis.

– the ability to define documented processes that produce repeatable results to meet the supportability requirements of the system

– the ability to implement a decision process which shows use of Life Cycle Cost and cost to the government concepts within the design decision process

– the ability to document system component characteristics and support requirements

3.12.3 Metrics/Indicators.

The following metrics are the consolidated performance for the active programs for a single site/enterprise.

3.12.3.1 Schedule.

This is a measure of both the quality and timeliness of logistics articles, and is defined as:

> Number of logistics deliverables delivered on time and accepted without change divided by Number of logistics deliverables scheduled.

3.12.3.2 Performance.

This is a measure of the ability to adequately define logistics requirements and deliver articles to these requirements the first time. It is defined as:

Number of changes to logistics deliverables after acceptance divided by Number of logistics deliverables accepted.

3.13 DLA and NGS-IPT Logistics Management Risk Factors.

The following tables contain risk factors used by HQ Defense Logistics Agency for evaluating logistics management risk. The table below the main table is the recommended additional risk factors suggested by the NGS-IPT to specifically address risk during the Engineering Manufacturing and Development (EMD) acquisition program phase.

3.13.1 End Product Performance: Product Support Risk Factors.

Element: Product Support **References: DLAD 5000.4, VI-5, 6, 7, 12, 20, 21, VII-1**

Sub-element: N/A

PLAS Code:065, 066, 067, 072, 080, 081, 091

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• High rates of excessive returns - defective product. • Long service delays. • Continual conflicts between production spares and production (original) (< 80 percent OTD and availability). • Many subcontractors.	• Experience some defective product return. • Some service delays. • > 80 percent OTD spares and availability. • Limited number of subcontractors.	• Few product returns. • Defective product. • Meets/exceeds contract requirements. • Spares > 95 percent OTD and availability.

3.14 Business Practice Process.

3.14.1 Discussion/Rationale.

The Business Practice Process is the Contractor's defined approach to leadership, governance and company accountability. The business Practice process of the Company must include a declaration that discloses the organization structure and officer and management responsiblities, general policy articulation, decision making methodology, and strategies and operating business plans and principles.

The Business Practice Process will also contain Legal, Financial, Human Resources, Engineering, Quality, Marketing and Security practice statements that are flowed to all

operating sites and Divisions, audited regularly for compliance to applicalbe laws and regulations, maintained current, and abided by at the prescribed levels of responsibility.

The Business Practice Process elements described are the minimum necessary to conduct a predictable and lawful enterprise applicable to the national and international business being carried out by the Company.

3.14.2 Performance Attributes

3.14.2.1 Leadership, Governance, and Company Accountability.

The evidence that the Company has a recognized order to its business endeavor, is organized in a prescribed and orderly fashion, and holds specific functional and management positions accountable for its conduct of daily and longer tern actions and decisions is adequately shown.

3.14.2.2 Organization Structure.

The organization of the Company is specified and current to define the levels and roles of all performing elements.

3.14.2.3 Officer and Management Responsibilities.

The Officer and Management responsibilities are documented and current with the business plan and strategy.

3.14.2.4 General Policy Articulation.

The Company provides Major Organization and Management Policy documented and communicated to all organizations. Exceptions are documented.

3.14.2.5 Decision Making Methodology.

The decision making methodology including approval levels and individual positions reponsible for decisions in published and current at each operating level.

3.14.2.6 Strategic and Operating Business Plans.

The Company publishes and regularly updates strategies and operating business plans and performance expectations.

3.14.2.7 Legal Policy.

The Company maintains a clear and concise statement of its intent to abide by all laws and regulations of the United States and any other country in which it operates.

3.14.2.8 Financial Policy.

The Company has a documented process of generally accepted accounting principles and shows evidence thru internal and external audits of complying with them.

3.14.2.9 Human Resources.

The Company has a stated role of dealing fairly and equitably with all of its employees.

3.14.2.10 Technical Leadership.

A published statement regarding the technical excellence and makeup of the technical staff is available and flowed down to all operating divisions and organizations.

3.14.2.11 Quality.

The Company has a published quality of products statement that is organizationally recognized and enforced.

3.14.2.12 Marketing.

The Company follows a published policy of attaining customer complete satisfaction and market leadership.

3.14.2.13 Security.

A published policy of security practice and responsibility is evident.

3.14.3 Metrics/Indicators.

The following metrics are for the consolidated performance regarding the Business Practice Process for a single site/enterprise.

3.14.3.1 Performance.

TBA.

3.14.3.2 Cost.

TBA.

3.14.2.3 Risk.

TBA.

3.15 DLA and NGS-IPT Business Management Risk Factors.

The following tables contain risk factors used by HQ Defense Logistics Agency for evaluating business mangement management risk. The table below the main table is the recommended additional risk factors suggested by the NGS-IPT to specifically address risk during the Engineering Manufacturing and Development (EMD) acquisition program phase.

3.15.1 Business Practices Risk Factors (Leadership Values).

Element: Leadership Values **References:**

Sub-element: N/A

PLAS Code:

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Continuous contract litigation. • Weak ethics program • Ethics violations. • Leadership values not deployed.	• Moderate litigation level (litigious predisposition). • Limited visibility of ethics program. • Leadership values partially deployed in organization (1-2 levels below front office).	• Well designed ethics program. • Minimal litigation level. • Leadership values consistently deployed throughout all organization levels.

3.15.2 Business Practices Risk Factors (Leadership Approach).

Element: Leadership Approach **References:**

Sub-element: N/A

PLAS Code:

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Resistance to process change/improvement. • Decision making retained at front office level. • Employee surveys not used. • No PROCAS agreement.	• Reactive, detection based process control. • Empowerment of mid-management only. • Limited use of employee surveys. • PROCAS agreement and teams.	• Evidence of active continuous, proactive problem prevention improvement activity. • Decision making at lowest possible level. • Extensive use of employee surveys. • PROCAS leader with metrics/ results.

3.15.3 Business Practices Risk Factors (Information/Analysis).

Element: Information/Analysis

Sub-element: N/A

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Accurate data available to management but not always acted upon. • Metrics not linked to corporate/program goals. • Selected Metrics routinely reviewed by upper management.	• Accurate data available to management but no actions taken at lowest level. • Metrics partially linked to corporate program goals. • Performance metrics reviewed at program level.	• Data available, accurate, acted upon at lowest level. • Metrics linked to corporate/ program goals. • Process metrics evident.

3.15.4 Business Practices Risk Factors (Human Resources).

Element: Human Resources **References:**

Sub-element: N/A

PLAS Code:

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• No systemic approach to workforce rightsizing. • No systematic training/ retraining program. • Employee attitudes and opinions are not considered. • Adversarial labor relations. • No Integrated Process Teams.	• Minimal coordination to workforce rightsizing. • Limited training opportunities available to employees. • Employees attitudes and opinions are sought out but no evidence of follow through. • Limited Labor Relations Problems. • Sporadic Ingetrated Process Teams.	• Controlled and balanced workforce rightsizing. • Systematic training/retraining program. • Employees attitudes and opinions are sought out, considered and acted upon. • Active mgmt/union participation on decision making process. • Extensive use of Integrated Product Teams.

3.15.5 Business Practices Risk Factors (Process Management).

Element: Process Management **References:**

Sub-element: N/A

PLAS Code:

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Process documentation poorly defined and not used.	• Process documentation defined but not fully used.	• Process documentation fully defined, deployed and used.
• No definition of lines of authority and responsibility.	• Responsibility and authority not clearly defined.	• Clearly defined responsibility and authority.
• Process improvement not considered.	• Moderate process improvement considerations.	• Invests in continuous process improvement and innovation.

3.15.6 Business Practices Risk Factors (Self Governance).

Element: Self Governance

Sub-element: N/A

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Fully relies on external audits for management information. • No voluntary disclosure program. • No SPC. • No audits of internal operations.	• Internal audit plan. • Voluntary disclosure program exists. • SPC used but not fully deployed. • Reliance upon external audits of internal operations.	• Active internal audit program. • Fully deployed SPC. • Effective voluntary disclosure program. • Effective Internal Audit Program.

3.15.7 Business Practices Risk Factors (Results).

Element: Results

Sub-element: N/A

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Poor contract performance. • Inadequate system for providing program control.	• Inconsistent contract performance. • Inconsistent management of cost, schedule, and quality.	• Good contract performance. • Systems in place to proactively control cost/schedule and product quality.

3.15.8 Cost: Business Practices Risk Factors (Estimating).

Element: Estimating
Subelement: N/A
PLAS Code: 112

References: FAR 15.811
DFARS 215.811
DLAD 5000.4, IX-2
DCAAM 7640.1, 5-1200

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Significant variances between proposed and recommended cost values in forward pricing actions. • Frequent defective pricing findings. • Frequent and significant proposal inadequacies. • Proposals rarely on time. • System inadequate.	• Moderate variances between proposed and recommended cost values in forward pricing actions. • Occasional significant defective pricing findings. • Periodic late proposals. • System adequate but some corrective action required.	• Nominal variances between proposed and recommended cost values in forward pricing actions. • No significant defective pricing findings. • Proposals generally on time. • System adequate or only minor corrective actions required.

3.15.9 Cost: Business Practices Risk Factors (Billing System).

Element: Billing System
Subelement: N/A
PLAS Code: 145

References: FAR 42.302(a)(9)
DFARS 242.704
DLAD 5000.4, IX-5
DCAAM 7640.1, 5-1100

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Unallowable costs frequently included.	• Periodic and moderate billing request errors.	• Proper segregation of unallowable costs.
• Loss ratios frequently not applied.	• Some unallowable cost inclusions undetected.	• Proper/Timely loss ratio factors.
• Overpayments not identified.	• System adequate but some corrective action required.	• Timely notification of overpayment.
• Frequent and significant billing request errors (progress payments and public vouchers).	• Loss ratios occasionally not applied.	• System adequate or only minor corrective actions required.
• Repeated overbillings.	• Occasional interim financing request errors.	
• System inadequate/disapproved.		

3.15.10 Cost: Business Practices Risk Factors (Indirect/ODC).

Element: Indirect/ODC
Subelement: N/A
PLAS Code: 043 & 044

References: FAR 15.809, 15.812, 31.109,42.302(a)(9), 42.7
DFARS 215.809, 217.75, 242.70
DLAD 5000.4, V-3, V-4
DCAAM 7640.1, 5-1000

HIGH RISK **PAST**	MEDIUM RISK **PAST**	LOW RISK **PAST**
• Significant changes in allocation methods. • Significant, repeated unallowable costs claimed. • Frequent improper cost allocations (e.g., CAS noncompliance). • Significant unexplained cost increases. • Minimal emphasis on cost control/reduction initiatives. • Inadequate CAS Disclosure Statement. • Frequent defective pricing findings related to overhead/ODC issues. • Excessive number of open final overhead claims.	• Moderate changes in allocation methods. • Occasional, moderate instances of unallowable costs claimed. • Periodic CAS noncompliances. • Some emphasis on cost control/ cost reductions. • Adequate CAS Disclosure Statement but some corrective action required. • Occasional defective pricing findings related to overhead/ODC issues. • Moderate number of open final overhead claims.	• Final overhead claims settled promptly. • Proper cost allocations. • No unallowable cost claims. • Active cost control/cost reduction initiatives. • Adequate Disclosure Statement with only minor corrective actions required.

3.15.11 Cost: Business Practices Risk Factors (MMAS).

Element: MMAS **References: DFARS 242.72**

Subelement: N/A **DLAD 5000.4, IX-3**

PLAS Code: 113 **DCAAM 7640.1, 5-700**

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Frequent and significant material overcharges. • Excess inventory levels (standard #3 exception reporting). • Inaccurate Bills of Material. • Inaccurate master production scheduling. • System not compliant.	• Occasional moderate material overcharges. • Periodic Bill of Material errors and master production scheduling problems. • System compliant but some corrective action required.	• Accurate cost transfers. • Accurate master production scheduling. • Complete and accurate Bills of Material. • Timely notification of overpayment. • System compliant or only minor corrective actions required.

3.15.12 Cost: Business Practices Risk Factors (Accounting/Financial Capability).

Element: Accounting/Financial Capability

Subelement: N/A

PLAS Code: 094 & 117

References: FAR16.104(h), 32.108, 32.503.3, 43.302(a)16)

DFARS 232.172

DLAD 5000.4, IX-7, XI-4

DCAAM 7640.1, 5-300

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Inadequate financial resources and cash flow.	• Occasional financial resources and cash flow problems.	• No material CAS noncompliances.
• Inconsistent assignment and allocation of cost.	• Occasional, moderate errors in assignment and allocation of cost.	• Consistent assignment and allocation of cost.
• Unreliable accounting data.	• Periodic significant CAS noncompliances.	• Financially capable.
• Frequent and significant CAS noncompliances.	• Accounting system acceptable but some corrective actions required.	• Reliable accounting data.
• Accounting system not acceptable.	• Occasional accounting changes.	• Accounting System acceptable with only minor corrective actions required.
• Frequent accounting changes.		• No significant accounting changes.

3.15.13 Cost: Business Practices Risk Factors (Labor Charging).

Element: Labor Charging **References: FAR 32.502-3**

Subelement: N/A **DLAD 5000.4, XI-5**

PLAS Code: 117 **DCAAM 7640.1, 5-900**

HIGH RISK	MEDIUM RISK	LOW RISK
PAST	**PAST**	**PAST**
• Significant and frequent mischarged labor costs.	• Periodic and moderate mischarged labor costs.	• Effective Internal Controls.
• Ineffective internal controls.	• Internal controls in place with occasional problems.	• Proper allocation of labor charges.
• System not acceptable.	• System acceptable but some corrective action required.	• System acceptable with only minor corrective actions required.

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APPENDIX I

ENHANCED PAST PERFORMANCE

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1.0 EXECUTIVE SUMMARY

1.1 Overview

1.1.1 This report of the Enhanced Past Performance Sub-Panel of the JACG (Joint Aeronautical Commanders) NGS (Non Government Standards) IPT reflects the observations, advice, and opinions of individual members of the panel, and in some cases the recommendations and/or consensus of the Government members of the panel. The report does not indicate, describe, or accept, and should not be interpreted as indicating, describing or accepting, any group deliberations or discussions as a source of agreement, consensus, advice or recommendations of the group as a whole.

1.1.2 The JACC NGS IPT initially included three sub-panels covering Business Practices, Technical/Management Requirements and RFP/ Source Selection. The RFP/Source Selection sub-panel reviewed current DOD RFP and source selection processes and compared them with commercial procurement practices. Three areas studied by that panel appeared to offer significant opportunities for improvement under Dr. Perry's initiative: focusing the RFP and source selection process on risk areas, the source selection discriminators; building an RFP and proposal evaluation criteria without the use of Military Specification/Standards; and increasing the effectiveness and utility of past performance information in the source selection process. The first two of these opportunities are covered elsewhere in the IPT report. The Past Performance Enhancement Sub Panel was formed to address the last of these opportunities.

1.1.3 The Past Performance Enhancement Sub-Panel objective was to develop tools and an implementation plan to expand the use of past performance as a discriminator in source selections. The Sub-Panel recognized that both the Office of Federal Procurement Policy and OSD have mandated that the role of past performance in all source selections, particularly those over $100,000 in value, should increase significantly. However, since the NGS IPT was not addressing all procurements, the implementation plans and tools developed by the Sub-Panel were focused only on formal source selections for major programs, considered to fall into the $5,000,000 and higher level. During a review of the draft products by the JACG in October 1995, the Sub-Panel was requested to review applicability of the Past Performance Enhancement results to ICP procurements.

1.1.4 The Sub-Panel products include the following:

1.1.4.1 The government members of the Sub-Panel developed a method for recording contractor past performance accepted by all the participating government members, recommending the use of a modified version of the existing USAF CPAR form (identified for the present as the JACG CPAR, to distinguish it from the existing form);

1.1.4.2 The government members of the Sub-Panel revised the USAF implementing instructions for the CPARS form to align them with the new form and to emphasize the importance of properly recorded past performance information to enhance the use of past performance in source selection;

1.1.4.3 The government members of the Sub-Panel prepared a Tri-Service Performance Risk Assessment Group (PRAG) Desk Guide, to ensure the proper use of past performance information during source selection evaluations. The Desk Guide describes a process encompassing the integration of recorded process past performance information (both baseline assessment of capability and metric trend data for these processes)collected by DCMC at the Contractor sites, contractor past performance information documented by System Program Management personnel concerning particular contract performance (using the JACG CPAR), and information collected by the PRAG itself through surveys, telephone inquiries or other means.

1.1.5 If the JACG implements the recommendations of the government members in this Sub-Panel report a common method for recording meaningful information concerning contract past performance, and for its use during source selection activities, will be established for all of the JACG activities. The recorded past performance information will be available throughout the JACG community for use during source selection evaluations, and the people supporting current programs and source selection processes will be trained and qualified to support and use the system. In addition, the recommendations could provide a "springboard" for DoD-wide implementation.

1.1.6 The Enhanced Past Performance process, when supplemented by the products and processes developed by the other sub-panels of the JACG NGS IPT, combine to establish an implementation method which captures those aspects of the commercial approach to source selection that can improve the process while retaining the features of the government process which are proven to satisfy public trust and legal requirements.

1.2 Recommendations of the Government Members

1.2.1 The government members of the Enhanced Past Performance Sub-Panel developed the following recommendations for the JACG:

1.2.1.1 Adopt the JACG Contractor Performance Assessment Report System (CPARS) and the JACG CPARS Instruction governing the use of the CPARS form; and

1.2.1.2 Adopt the JACG Performance Risk Assessment Group Desk Guide.

1.3 Conclusions

1.3.1 Implementation of the Sub-Panel's recommendations of the government participants will facilitate one of the principal objectives of the NGS IPT: streamlining of the acquisition and source selection process through increasing emphasis on contractor past performance. The new process willincrease the use of evidence of contractor capability, with high reliance placed on past performance; and permit the use of a flexible and open evaluation approach to fit the unique circumstances of the particular procurement decision. A risk assessment of the contractor's capability to accomplish program requirements which are not "decision discriminators" will be accomplished through a review of recorded Past Performance information.

FINAL REPORT

2.0 INTRODUCTION

2.1 This report identifies measures to enhance the use of past performance information, to include the process to collect, retain and use the information in formal source selections. The recommendations of the government members of Enhanced Past Performance Sub-Panel of the JACG (Joint Aeronautical Commanders Group) NGS (Non Government Standards) IPT are capable of being implemented, and can be implemented irrespective of whether or not the other overall recommendations of the NGS IPT are adopted and approved for implementation. However, the recommendations for the Enhanced Past Performance process were actually prepared to be part of the overall NGS IPT implementation strategy for enhancing the entire source selection process to take maximum advantage of the Military Specifications/Standards Reform Initiative. The recommendations of the government members included in this report fulfill the intent of current statutory and regulatory requirements governing Non Developmental Item acquisitions as well as the acquisition of new or existing military products. Additionally, the proposed new process complements Total Quality concepts and DoD acquisition streamlining initiatives.

3.0 BACKGROUND

3.1 In the first quarter of 1995 AFMC chartered the AFMC Integrated Product Team on Acquisition Reform Alternatives (Source Selection) Using Non-Government Standards. The primary purpose of the Team was to identify opportunities, alternatives, issues, and concepts related to the solicitation and source selection process afforded by government adoption of Non-Government Standards. The Team investigation was prompted by the Military Specification/Standards Reform Initiative instituted by Dr. William Perry, Secretary of Defense, in the last half of 1994. Under the Reform Initiative, the government approach to specifying requirements in contracts for supplies and services was radically reformed. The government is now to specify “what” a product is to do (a performance specification); the contractor is no longer to be told exactly “how” the contracted work is to be accomplished. This radical acquisition reform initiative provided the impetus for the formation of the NGS IPT.

3.2 Full implementation of the Perry initiative will require thorough review of the present practices for preparation of RFP’s, the development of criteria for proposal review and evaluation, the activities of source selection officials, the administrative oversight of contractor performance, and, more fundamentally, required a reexamination of the business and technical practices used by the Department of Defense to manage risk. In fact, the existing Military Specification and Standards environment is an elaborate pattern of risk avoidance accomplished through the exact specification of practices and processes. But the Perry initiative offered the opportunity to set a new baseline for the preparation and execution of acquisition contracts based

on the use of the best commercial practices, combined with only minimal use of military specifications and standards.

3.3 This report identifies specific revisions to traditional DOD acquisition processes to better accommodate the procurement of products and services which are designed, tested, produced and supported through the use of best commercial practices. It further offers the opportunity for the traditional government oversight activity to be adapted to more of a surveillance, rather than an audit/confirm activity. Where contractor performance justifies, the surveillance can even be further reduced to offsite observation using previously screened and accepted measurements, or metrics, to determine the health of the contractor's processes and the quality of the products or services being delivered.

3.4 This portion of the IPT Final Report covers the work of the Enhanced Past Performance Sub-Panel.

4.0 SUB-PANEL OBJECTIVE

4.1 The objective of the Enhanced Past Performance Sub-Panel was to develop tools and an implementation plan to expand the use of Past Performance as a discriminator in formal source selections. This will enable future contracts to increase their reliance solely on performance, interface and test specifications and decrease reliance upon all other type specifications and standards.

4.2 The basis for this objective was the discovery, early in the IPT process, that industry acquisition practices relied heavily on some form of past performance risk assessment as a critical element of the purchasing (subcontracting) process. Commercial practices place high reliance on past practice, even going so far as to develop preferred supplier relationships that will extend ten years or more for some industry areas. By contrast, government past performance evaluations were most often used as a "responsibility" determination. Benefits that result from increasing reliance on the use of past performance include:

more focused technical proposals;

streamlined source selection procedures considering key discriminators; and

selection of the offeror that represents the true best value to the government

4.3 In developing the tools and implementation plans, the Sub-Panel established a goal to develop a consistent approach to past performance. While the eventual goal is to have all services adopt and use the tools developed by the Sub-Panel, a primary goal was to reach agreement at least within the Joint Aeronautical Commander's Group (the Air Force Aeronautical Systems Command, the Naval Air Systems Command, the Army Aviation and Troop Command, and the Defense Logistics Agency). The Sub-Panel anticipates that the developed tools can become the framework upon which all the services can agree. This will lead, eventually, to a consistent approach to past performance with the advantages of:

Collection of the same kind of past performance information by all the JACG activities

A common method for using past performance information during source selection evaluations among the JACG activities

The potential for a common form of an electronic data base will be possible in the future.

4.4 The result of the work of the Sub-Panel was to develop processes and tools that are closer to the way in which commercial source selections and conducted while working within the framework of government procurement policy.

5.0 SUB-PANEL ORGANIZATION

5.1 The Sub-Panel consisted of a diverse group of government participants from all the major aviation buying commands representing a wide variety of functional disciplines. Significantly, all three uniformed services were represented on the Sub-Panel, as was Defense Contract Management Command (DCMC). The Sub-Panel included industry participants with experience in both government and commercial procurement. The participants were initially from the aeronautical (aviation) industry, both from the government and industry perspective. Later, as the work of the Sub-Panel progressed, participants from the electronics industry also joined the team. See Enclosure 1 for a list of team members.

6.0 APPROACH

6.1 The NGS IPT sub-panels used widely accepted Total Quality (TQ) techniques during the five working sessions between March 1995 and October 1995. The first workshop was devoted to orientation and organization, and developed the preliminary information used to set the plan for the future Team activity. During this first meeting the Team considered starting with a "clean sheet" approach, assessing the best practices and processes which could be used to improve the JACG source selection activities. Specifically, the Sub-Panel focused on defining government and industry practices and processes which could be developed to enhance the use of contractor past performance information as a discriminator in source selections.

6.2 The Sub-Panel then considered several alternatives for the collection and use of past performance information. For collection of past performance information they included the following:

6.2.1 <u>Create data at the time of source selection</u>. Under this approach, there would be no specific process for the continuous collection of past performance data; source selection teams would use data submitted by the offerors and obtain current assessments from current program managers/PEOs and use existing data (AFMC CPAR).

PRO -- low system investment

-- uses minimal resources

CON -- only collects "current" PM/PEO view

-- no trend information

-- no contractor comment

-- no senior level review for consistency and quality

6.2.2 Use OFPP approach (numerical data only). The OFPP guidebook approach to past performance information limits consideration to numerical data.

PRO -- utilizes a proposed "standard" across the federal government

-- numerical data is amenable to automation

CON -- numerical data not suited for characterizing complex systems development and production contracts (no supporting narrative)

-- numerical approach can lead to bad decisions if algorithms replace good business judgment

6.2.3 Adapt the existing Air Force CPARS approach. The existing Air Force CPARS process involves the collection of past performance data from program managers, including narrative assessments, on an annual basis. The process includes opportunity for contractor review and comment on the PM assessment and a higher level review, prior to report finalization, to ensure quality and consistency. The government participants of the Sub-Panel concluded that adaptation of the Air Force CPARS was the best alternative.

PRO -- narrative provides backup rationale and context

-- contractor comment opportunity

-- senior review for quality and consistency

-- resources for maintaining data reasonable

-- six years of experience

CON -- not suited for high volume/low cost contract actions that comprise 80%+ of all contract actions

-- supporting narratives not easily manipulated in automated data base

6.3 For use of past performance information the alternatives were:

6.3.1 Use existing Air Force and Army Materiel Command Past Performance Guides. Two of the three services have existing Guides regarding the use of past performance information during source selection activities. It was suggested that the use of this existing guidance was the most convenient solution to the use of past performance information. The government participants of the Sub-Panel concluded that adapting the best aspects of the AFMC and AMC guides was the best alternative.

PRO -- existing; no staffing/training required

CON -- not entirelyconsistent with IPT approach

-- no Naval Aviation guide exists

-- no single face to industry

6.3.2 Develop a new guide for use of Past Performance information during source selection from existing Air Force and Army material Command Guides. This concept envisions the use of a common Guide for the consideration of past performance information during source selection by all the services. The government participants of the Sub-Panel concluded that adapting the best aspects of the AFMC and AMC guides was the best alternative.

PRO -- reflects the IPT approach, including the Supplier Assessment System and the focused RFP

-- provides common framework for aviation commands (wit potential for wide application)

-- single face to aviation industry

CON -- approval process may be difficult

-- long term coordination/cooperation required to maintain single face consistent approach

6.4 The initial work of the Sub-Panel was focused on defining the current government and industry practices regarding the development and use of past performance information. One of the services, the USAF, had an existing process for recording past performance of major contractors. This was the Contractor Performance Assessment Report (CPAR), a periodic report that is prepared at least annually for contractors having programs exceeding $5,000,000. To achieve the goal of enhancing the use of past performance in source selections, the existing CPAR form should be modified and its use embraced by the other services. In addition, the use of past performance information during source selection activity had to be elevated in importance and used as a significant, evaluation factor. And finally, the method for collecting the past performance information, protecting it from unintended disclosure, and making it available to a wide variety of users had to be considered.

6.5 At the second major meeting of the Sub-Panel, the government participants agreed to use a derivative of the USAF CPAR form as the program manager's tool for documenting an annual assessment of contractor performance. The existing forms presently in use by the Air Force were reviewed by the panel, suggested improvements were agreed upon by the government participants, and government volunteers agreed to finalize a "JACG CPAR" form and distribute it to the members of the Sub-Panel. The USAF Instruction for the use of the CPAR Form was identified and adjusted for the revised form. (See Enclosure 2). Two different guides regarding the use of past performance information in source selection situations were reviewed by the Sub-Panel members. Both contained information that was necessary for a "JACG Past Performance Guide" but neither was sufficient for the broader intended purpose. After agreement that the Army Materiel Command Guide (*Past Performance in Source Selection, An Evaluator's Guide*) was the desired style for the proposed Guide, the Sub-Panel developed a detailed outline of the contents of the JACG Guide based on the existing AMC AFMC and OFPP PRAG/Past

Performance Guides. The JACG Performance Risk Assessment Group (PRAG) Desk Guide was developed using the outline and the recommended information for the Guide identified by the Sub-Panel (see Enclosure 3). The final product from the second meeting of the Sub-Panel was the identification of preliminary training requirements. The basic training for the collection and use of past performance information will be handled by each of the services. Methods for training PEO/PM, DCMC, and industry were developed by the Training Sub-Panel.

7.0 INTERFACES WITH OTHER IPT SUB-PANELS

7.1 Tools.

The tools and implementation plans developed by the Enhanced Past Performance Sub-Panel interfaces with the products and outputs of the following IPT Sub-Panels:

7.1.1 Source Selection.

During source selection evaluations, the Source Selection Evaluation Team is focused on evaluating the cost, schedule and technical risk of each offeror's proposal. The PRAG, using the various sources of past performance information, will accomplish a risk assessment of each offeror's capability to perform the anticipated contract. CPARs will be expanded from the traditional USAF form and content to provide a common data base for all aviation services to share past performance information. The reliance upon this type on information will allow the use of more focused technical proposals.

7.1.2 Supplier Capability Assessment Reporting System (SCARS).

The DCMC and the acquisition services, using the assessment areas identified by the Sub-Panel, will assess each contractor's capability to successfully execute its processes and satisfy government contract requirements on an ongoing basis and assign a "rating level" (e.g., gold, silver, bronze) for each contractor. This assigned rating level, and the underlying contractor metric data considered in the assignment of the rating, will be retained in a government data repository. This information will provide a common basis for the PRAG to use in their evaluation of each offeror's capability to perform at particular sites. The PRAG Desk Guide, prepared by the government members of the Past Performance Sub-Panel, provides the required guidance for the use of the retained past performance information.

7.1.3 Key Supplier Processes.

The Key Supplier Processes Sub-Panel has provided a basis for assessing the capability of a company to execute the processes required to accomplish the requirements of their government contracts. Specific processes, elements, attributes and criteria have been identified to encompass all the requirements that could be applicable to future acquisitions. The six different process areas defined by the Key Supplier Processes Sub-Panel have been incorporated into the CPAR form so that, on a program by program basis, the results of the contractor's specific implementation of processes on particular

contracts will be recorded. This will provide the PRAG with a common basis for differentiating among offerors, based upon their recorded CPARS and SCARS (Supplier Capability Assessment Reporting System) past performance information.

8.0 IMPLEMENTATION

8.1 Tools Developed by The Government Members of The Sub-Panel

8.1.1 CPARS Form.

The government members of the Sub-Panel agreed upon a CPARS form to capture salient contractor performance information. (Contained in the CPARS Instruction, Enclosure 2). This CPARS form is based heavily upon the existing Air Force CPARS form for major contracts. The form is used to annually collect basic information about the contract and the contractor's performance in such areas a management responsiveness, the technical performance of the product, the contractor's record in cost and schedule control and an assessment of how well the contractor is applying key processes (when applicable) such as quality, manufacturing, management, etc. The information is recorded as ratings against each of these areas as well as being supported by a narrative from the program manager or other appropriate manager. Air Force experience has shown that this narrative information is of critical importance to a source selection PRAG in assessing subtle differences in performance risk for an offeror.

8.1.2 CPARS Instruction.

The CPAR Instruction (see Enclosure 2) provides detailed guidance on the establishment of a disciplined process for the preparation, control and retention of contract performance information. The Instruction defines applicability and scope (programs exceeding $5,000,000), defines Command responsibilities, establishes CPAR procedures for coordination with the contractor (review and comment), review by a higher level official before the CPAR is considered final and provides detailed instructions for completing the CPAR form. The Instruction also provides guidance for how the final CPAR is to be retained, including who has access, and how the information is to be released to programs for use in source selection evaluations. This guidance is particularly important to maintain the pre-decisional aspect of this information.

8.1.3 PRAG Desk Guide.

The Desk Guide (See Enclosure 3) includes best practice guidance covering all aspects of the PRAG. The Overview Section discusses how past performance information is used in the source selection process, how the PRAG fits into the overall acquisition cycle, what the PRAG is supposed to do, and what the qualifications of PRAG members should be. The Sources of Past Performance Data section discusses all types of data available to the PRAG, and the relative merits of each source. The Risk Assessment Process section of the Guide steps through the process of determining performance risk and integrating that

risk assessment with other information to form an integrated assessment of each offeror's proposal. The Guide discusses the products produced by the PRAG to support the SSA briefings, debriefings, and the lessons learned records. Sample proposal preparation instructions, telephone interview formats, sample questionnaires and sample PRAG assessment plans are included in appendices to the Guide.

8.2 Use of the Past Performance Tools

8.2.1 Use of Past Performance Information.

The future state of contract performance is presumed to be in a "performance based operating environment." Specifically, contractors will prepare proposals, and perform contracts, applying their own processes (instead of MIL SPECS or MIL STDS) to contract performance. As shown in Figure I-1, the Sub-Panel envisions that there will be two government data sources that complement past performance information provided in the offeror's proposal and that will be used to evaluate contractor proposals. These two data sources are the CPARS (Contract Performance Assessment Reporting System) and the data from the SCARS (Supplier Capability Assessment Reporting System).

8.2.1.1 CPAR System Data. The CPAR System will provide program specific assessments of Contractor performance of specific contracts. The assessments are prepared by government program managers. To ensure the fidelity and equity of the assessments, the contractor is provided an opportunity to review and comment on each assessment report. Once this review has been completed, a "final" CPAR is retained in a government data repository. During source selection, the PRAG requests pertinent CPARS for use in assessing past program performance.

8.2.1.2 Supplier Capability Assessment Reporting System Data. The SCARS provides assessments of a contractor's processes specific to a site or business segment using common processes. The DCMC is the lead agency responsible for conducting this assessment. As with the CPAR system, the contractor (industry) is provided an opportunity to review the DCMC assessment. The assessment is then retained in a repository by the cognizant DCMC office (typically the local DPRO). The PRAG will use the latest SCARS information for the applicable offeror sites. The CPAR system defined by the Sub-Panel will collect and maintain contractor past performance information. This information will be collected in a CPARS data base which will, initially, be similar to the existing Air Force data base for storing CPARS data. In addition, process past performance information, related to specific contractor sites using common processes for the performance of their contracts, will be collected and maintained by DCMC using the SCARS being defined by the Vendor Rating Sub-Panel of the NGS IPT. The processes for which information and data will be collected are being defined by the Key Supplier Processes Sub-Panel of the NGS IPT. DCMC is expected to define a rating, e.g., Gold, Silver, Bronze, for each of these processes and then will obtain, from each site, metric trend information that will be maintained in the SCARS to provide trend information for each of the related processes. A

Performance Risk Assessment Group will use both contractor program past performance information and process past performance information. These interrelationships are discussed below.

8.2.2 Risk Assessment Filter Increases Importance of Past Performance Information.

The Sub-Panel assumed that the Risk Assessment Filter process developed by the Risk Management and Source Selection Sub-Panel of the NGS IPT would be adopted and in place in the future "performance based operating environment." The Risk Assessment Filter process significantly reduces the amount of effort in preparation of proposals and in the source selection evaluation by the government. By subjecting the planned procurement to the Risk Assessment Filter, many aspects of the traditional RFP are no longer needed. The "new form" RFP only includes those aspects that are (i.) legally required, (ii) mandated by policy, and (iii) those aspects of the procurement that are determined will be critical "discriminators" in the source selection evaluation. The other elements of the contract that do not rise to this level are excluded from the RFP and will be determined during source selection solely on the basis of past performance information.

8.2.2.1 As a result of the use of this process, contractors no longer expend resources to prepare proposals and plans, and the government does not expend resources, to evaluate those portions of the proposal that will not have a bearing on the outcome of the source selection process. The Source Selection Authority will receive a performance risk assessment of the capability of each of the offerors to perform the intended effort of the procurement. Because of the use of the innovative "risk assessment filter" the significant contribution of past performance assessments can be seen. The only information concerning the contractor's capability to meet "non-discriminator" contract requirements will be the collected evidence of his past performance. This Risk Assessment Filter process is depicted in Figure I-1, below.

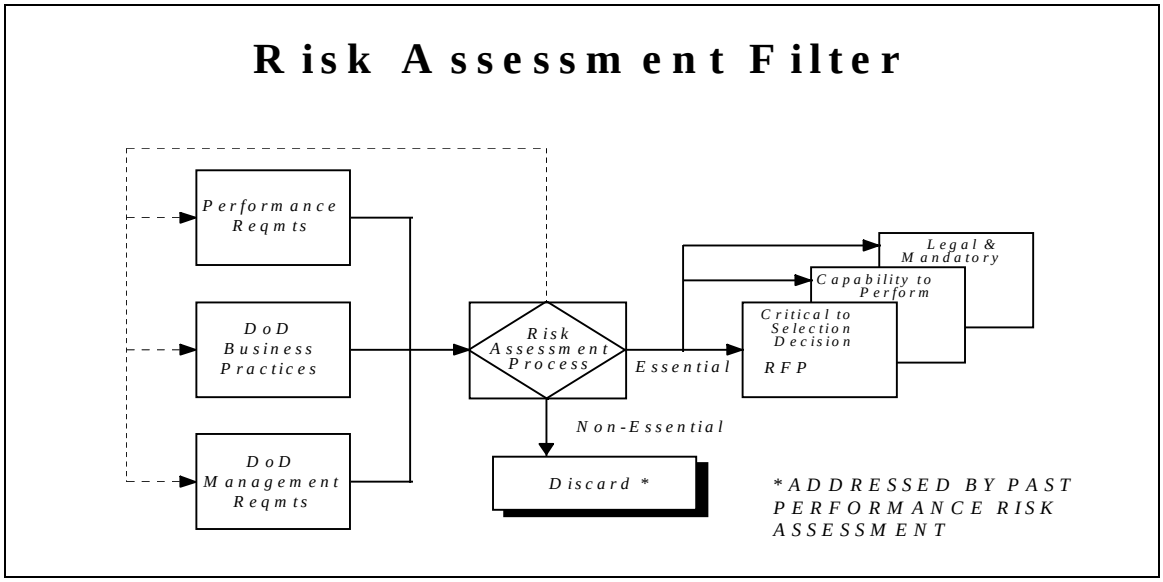

Figure I-1. Risk Assessment Filter.

8.3 Source Selection Process Using New Past Performance Information

8.3.1 Choosing Items for Inclusion in the RFP.

Items which will be "discriminators" "pass through" the risk filter and are included in the RFP. Discarded items are not ignored in the source selection process. The enhanced past performance assessment is intended to address these from a top level perspective. The offeror provides a proposal which contains information for the "traditional" evaluation areas; e.g., technical, management and cost (though tailored and reduced in scope). The proposal also contains expanded past performance information. This information addresses contracts which are relevant to the instant contract, and include descriptions of process improvements (developed to mitigate previous problems, if any) which have already been demonstrated.

8.3.2 The Performance Risk Assessment Group Evaluations.

The Performance Risk Assessment Group develops a past performance assessment using the past performance, and other government developed data, such as the Supplier Assessment System data on processes, and CPAR data. If necessary, the results of survey questionnaires can be included to provide information on past performance not available from the proposal or the data bases. The PRAG determines the relevancy of the past performance data and develops its assessment of past performance risk for each offeror.

8.3.3 Source Selection Evaluation Team/Source Selection Evaluation Board Evaluations.

Concurrent with the PRAG past performance assessment process, the Source Selection Evaluation Team/Source Selection Evaluation Board evaluates the technical, management

and cost elements of the proposals, providing ratings and proposal risk assessments. The SSAC and SSA then utilize the PRAG past performance risk assessment and the SSEB proposal risk evaluation to develop an integrated source selection decision. This process is depicted in Figure I-2, below.

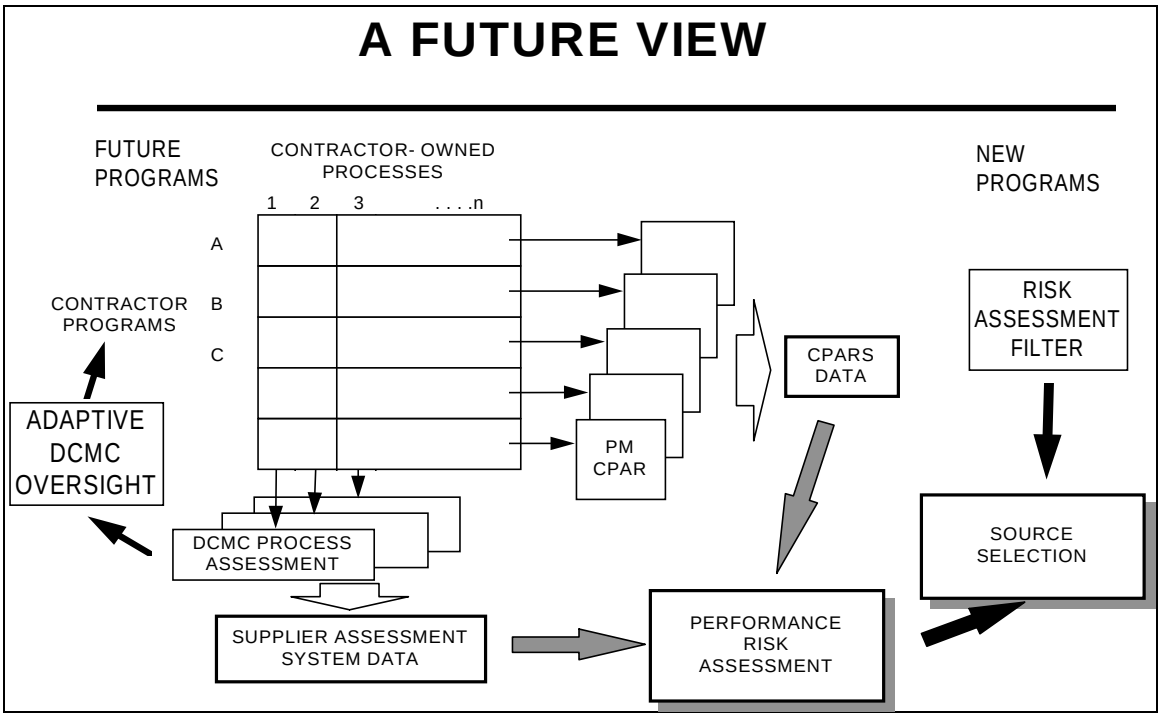

Figure I-2. Past Performance in Source Selection.

8.4 Interrelationships with Other Acquisition Reform Initiatives.

The Sub-Panel recommendations of the government participants regarding the tools and implementation plans have considered the following acquisition reform initiatives. The results of the Sub-Panel work are consistent with the intent of each of the initiatives.

OFPP Policy Letter 92-5.

OFPP Interim Best Practices Guide for Past Performance; May 95.

FAR Change (FAC 90-26) on Past Performance; 31 Mar 95.

FASA Section 1091; Policy Regarding Consideration of Contractor Past Performance.

Air Force Interim Guidance for Implementing FAR 90-26; 26 May 95.

AFMC Interim Guidance for Implementing FAC 90-26; 22 Jun 95.

Air Force Lightning Bolt Initiative #6, Enhanced Past Performance

USD(A&T) Policy Letter on Good Judgment in the Competitive Procurement Process; 28 Jun 95

8.5 Training Approach

8.5.1 Institutionalizing New Concepts And Processes.

A critical aspect of assuring successful implementation of the NGS IPT recommendations, including the recommendations of the government participants of this Sub-Panel, is to institutionalize the new concepts and processes through formalized training. For Enhanced Past Performance, it is expected that the PRAG Desk Guide will be the basis for training new Performance Risk Assessment Groups as they are formed. This “just-in-time” training will be provided by the appropriate offices in each respective service.

8.5.2 Service Training Responsibilities.

Each of the services is expected to train their respective program managers in industry counterparts in the use of the CPAR form. This should not be a significant burden for many in industry, due to the close parallel with the existing Air Force CPAR form and process.

8.6 Implementing Actions

8.6.1 JACG Actions.

The JACG will need to staff the joint NAVAIR, AFMC, ATCOM Contractor Past Performance Assessment Reporting System and joint Performance Risk Assessment Group (PRAG) Desk Guide with an objective of signing and begining implementation within 60 days of acceptance of the NGS IPT recommendations.

8.6.2 Service Acquisition Executives and OSD Policy Requirements.

Service Acquisition Executives and OSD will review JACG past performance experience and consider the joint processes for application across the services.

9.0 RECOMMENDATIONS

The government members of the Enhanced Past Performance Sub-Panel arrived at the following recommendations:

9.1 General Recommendations of The Government Participants

9.1.1 The JACG should adopt the JACG Contractor Performance Assessment Report System (CPARS) form for use throughout the services' aeronautical product organizations;

9.1.2 The JACG should adopt the use of the JACG CPARS Instruction governing the use of the CPARS form; and

9.1.3 The JACG should adopt the JACG Performance Risk Assessment Group Desk Guide for use in aeronautical source selections.

9.2 Specific Recommendations of the Government Participants

9.2.1 Use of Past Performance Information.

Past performance information should not be used as the sole basis to eliminate offerors from source selection competitive ranges.

9.2.2 Past Performance Assessments.

Past performance assessments will categorize the performance for each offeror on the basis of three levels of risk (high, medium, low; or blue, green, red; etc.).

9.2.3 Recorded Past Performance Must Relate to Performance Site.

Past performance assessments must be related to the site of the proposed performance, not to the "company" or "corporate" level. Other information regarding contractor performance (the Supplier Capability Assessment Reporting System data), collected by DCMC, rather than the SPO might properly be described as site specific information and should also be considered by the PRAG as a part of their risk assessment process.

9.2.4 Evaluation Teams.

Performance Risk Assessments conducted during source selection evaluations are to be prepared by senior level individuals or teams.

9.2.5 Government Oversight/Surveillance Levels.

During source selection evaluations, the level of government oversight and surveillance at particular contractor locations must be assessed and considered in evaluating the overall, comparative cost of the program. An assessment of appropriately reduced levels of surveillance is appropriate where justified by excellent past performance. The actual

decision to adjust the level of contractor surveillance is not part of the source selection process.

9.2.6 Contractor Oversight/Surveillance Must be Coordinated.

A program manager's decisions and plans concerning mandatory surveillance must be consistent with and coordinated between DCMC and the Program Office.

9.2.7 JACG Past Performance Data Repository.

There will be a significant advantage to the buying commands if contractor past performance information is available from a central location or database. With agreement on the format of the report and on the information to be recorded, the business case for automation should be explored, and, if justified by the projected economies of cost and support requirements, be recommended by the JACG for DoD-wide use.

9.2.8 Contractor Review of Past Performance Information.

Contractor's must be provided the opportunity to review and provide rebuttals to all past performance assessments concerning their performance before the information is placed into the repository. The JACG CPAR form provides the contractor an opportunity to provide their response to the government's assessment of performance.

9.2.9 Training.

Training for use implementation and use of the Enhanced Past Performance process is to be accomplished by each of the services. PRAG training should be provided by the buying commands on an as needed basis (just-in-time). Training for PEO/PM, DCMC, and Industry will also be required.

9.2.10 Application to ICPs.

The JACG CPARS was adapted from the Air Force Systems CPARS form and instruction and not intended for all procurements at the ICP level. Some of the information to be contained in the JACG CPARS is applicable to some sub-set of ICP procurements and should be used by the ICPs. However, DLA is encouraged to benchmark industry for applicable approaches and to review other Air Force CPARS forms for potential adaptation to the remaining ICP past performance needs.

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ENCLOSURE 2: DRAFT JACG CPAR INSTRUCTIONS

JACG INSTRUCTION XXXX

Contractor Performance Assessment Reporting System (CPARS)

This instruction sets policy, assigns responsibilities, and provides procedures for systematically assessing contractor performance on all contracts written by JACG activities above $5M, except contracts awarded under FAR 8.6 (Federal Prison Industries, Inc.), FAR 8.7 (nonprofit agencies employing blind or severely handicapped persons), construction contracts, and architect-engineering contracts. General information applicable to these contract efforts is referred to as the Contractor Performance Assessment Report (CPAR or CPARs) or the CPAR System (CPARS).

SECTION A—POLICY

1. Purpose

1.1 The primary purpose of the CPARS is to ensure a data base of contract performance information is current and available for use in responsibility determinations and in source selections, both formal and informal. Performance assessments will be used as an aid in awarding contracts to contractors that consistently produce quality products, services and research that conform to contractual requirements. The CPAR can be used to effectively communicate contractor strengths and weaknesses to source selection officials. The CPAR will not be used for any purpose other than as stated in this paragraph; however, summary data may be used as outlined in paragraph 1.4.

1.2 The CPARS assesses a contractor's performance on a given contract during a specific period of time. Each assessment must be based on objective facts and be supportable by program and contract management data, such as cost performance reports, customer complaints, quality reviews, technical interchange meetings, financial solvency assessments, production management reviews, contractor operations reviews, functional performance evaluations, Quality Assurance Evaluator(QAE)/Functional Area Evaluator (FAE) records, and earned contract incentives. Subjective assessments concerning the cause or ramifications of the contractor's performance should be provided; however, speculation or conjecture should not be included.

1.3 The CPAR assessment process is designed with a series of checks and balances to facilitate the objective and consistent evaluation of contractor performance. Both government and contractor program management perspectives are captured on the form. The assessment is reviewed by a level of management above the evaluator to ensure consistency with other evaluations throughout the activity as well as other program assessments. CPARs are not contracts and therefore are not subject to the "Disputes" clause, nor are they subject to appeal beyond the procedures described in this instruction.

1.4 While the CPAR will not be used for any other purpose than that stated in paragraph 1.1., summary data from the automated CPARS data base or from the reports themselves may be used

to measure the status of industry performance, and support continuous process improvement, provided that the data used does not reveal individual contract or contractor performance in any form, and subject to the limitations of paragraph 3.4.

2. Applicability and Scope

2.1 CPAR must be completed on every contractual effort for concept demonstration and validation, Engineering and Manufacturing Development (EMD), production, deployment, modifications, and programmed depot maintenance over $5M (face value in current year dollars).

2.1.1 When a single contract instrument requires segregation of costs for combining EMD and production efforts or containing multiple productions lots, an individual CPAR may be completed for each segment of work. (See paragraph 7.2 for instructions on reporting on provisioning activity which is embedded within a production contract.) In the case of time and material contracts and basic ordering agreements, a CPAR will be accomplished on the individual orders that meet the thresholds described above. In the case of indefinite delivery contracts as defined in FAR Subpart 16.5, a CPAR will be accomplished on the individual orders that meet the thresholds described above, unless the type of effort and the contractor's performance on each order are so similar as to reflect identical results. In this event, the program manager may elect to prepare a single CPAR for the entire contract; block 13 should state that CPARs are not being prepared on individual orders.

2.1.2 Use the instructions at Attachment 1 to complete the CPAR.

2.2 CPARs will be prepared on any contract meeting the above requirements when the overall program or effort is managed by a JACG component.

2.3 CPARs will be prepared on contracts for joint ventures that meet the thresholds above. Joint con-tractors will be rated on the same report and duplicate copies will be maintained in each contractor's file in the CPAR library.

2.4 CPARs on classified contracts will be processed in accordance with program security requirements.

2.5 CPARS will be accomplished on the applicable first tier subcontractor on contracts awarded to the Small Business Administration under the 8(a) program.

SECTION B—RESPONSIBILITIES ASSIGNED

3. JACG Responsibilities.

The Chairman, JACG is responsible for overseeing the implementation of this instruction and the overall implementation of the CPAR process.

4. Field Activity Responsibilities.

The commander or vice commander of each JACG field buying activity will establish procedures to implement this instruction. These procedures will include training requirements for focal points in the program office and reviewing officials; tracking system procedures for monitoring the timely completion of reports; and procedures for ensuring report integrity (i.e., quality of reports).

4.1 Establish a CPAR Focal Point. The activity focal point is responsible for the collection, distribution, and control of CPARs. The CPAR focal point will assist the evaluator (who may be the program manager (PM); e.g., the program director/manager, systems support manager, development systems manager, product director, project engineer, commodity manager, item manager, equipment specialist, etc., who has overall responsibility for acquisition of a system or project; or the contract monitor (CM); e.g., that individual designated by the requiring activity responsible for overall cognizance and surveillance of performance of a system, quality assurance evaluator (QAE), or functional area evaluator (FAE)) in implementing this instruction by providing training and other administrative assistance to ensure that reports are timely and in compliance with this instruction. The CPAR focal point will establish an installation library for CPARs for contracts written by the Operational Contracting Office.

4.2 Ensure timely completion of CPARs. The evaluator is responsible for assessing contractor performance in accordance with this instruction.

4.3 Ensuring timely review of CPARs by reviewing officials. The reviewing official provides the check-and-balance needed to ensure report integrity, especially when there are significant disconnects between the evaluator and the contractor.

SECTION C—CPAR PROCEDURES

5. Frequency of Reporting

5.1 Initial Report. An initial CPAR is required for new contracts meeting the criteria of paragraph 2. The initial CPAR must reflect evaluation of at least the first 180 days of performance under the contract, and may include up to the first 365 days of performance.

5.2 Intermediate Reports. Intermediate CPARs are required every 12 months throughout the entire period of performance of the contract. An intermediate CPAR is limited to contractor performance occurring after the preceding CPAR. To improve efficiency in preparing the CPAR, it is recommended that the CPAR be completed together with other reviews (e.g., award fee determinations, major program events, or program milestones). Activities may, through local policy, establish a specific submittal date for all intermediate CPARs, provided they are completed for every 12 month evaluation period.

5.3 Out-of-Cycle Reports

5.3.1 An out-of-cycle report may be required when there is a significant change in performance that alters the assessment in one or more evaluation area. When a significant change in performance has occurred, the contractor may request an updated

report or the evaluator may unilaterally change the assessment and process a revised report. The determination as to whether or not to update a CPAR will be made solely by the evaluator. An updated report will only address the changed elements.

5.3.2 When the evaluator leaves the requiring or technical office or program office, the departing individual will complete a CPAR form prior to departure, if at least four months have elapsed since the last CPAR was completed. This updated form need not be processed through the contractor and CPAR reviewing official; rather, it should be passed to the succeeding evaluator for background information for completing the next CPAR.

5.3.3 Generally, no more than two CPARs per year should be completed on a contract. Out-of-cycle reports do not alter the annual reporting requirement; for example, if the normal CPAR period of performance ends on 1 November and an out-of-cycle report is accomplished which covers a performance period that ends 6 months earlier (1 May), a second CPAR report is still required to cover the period of performance from 1 May-1 November of that same year and each 1 November throughout the life of the contract.

5.4. Final Report. A final CPAR will be completed upon contract termination, transfer of program man-agement responsibility outside the original buying activity, or the delivery of the final major end item on contract or completion of the period of performance. The final CPAR does not include cumulative information, but is limited to the period of contractor performance occurring after the preceding CPAR.

6. Preparing and Processing Reports

6.1 The evaluator responsible for the overall program is also responsible for preparing, reviewing, signing, and processing the CPAR in accordance with the instructions provided at Attachment 1. The goal for processing a CPAR is 90 days. CPARs should be completed and signed by the reviewing official not later than 90 days after the end of the evaluation period.

6.2 The evaluator responsible for the contract being reviewed prepares the documentation and assessment in coordination with the project team. This assessment should be based on multifunctional input from specialists familiar with the contractor's performance (Attachment 1, paragraph A1.15.1). For those contracts at product centers where a provisioning line is established, the evaluator should include an assessment of that effort in the "Other" evaluation area (Block 14(j)).

6.3 Support contractors, such as Systems Engineering and Technical Assistance (SETA) or FFRDC con-tractors, may provide factual input as project team members, however, under no circumstances should they be allowed to write CPARs or have access to completed CPARs. To prevent possible conflict of interest issues, use of SETA and other support contractors should be very rare or limited in scope.

6.4 Evaluators shall limit their remarks to the space provided on the CPAR form plus one additional $8^1/_2$ x 11 typewritten page. In rare circumstances, such as an assessment containing several blue or red ratings, a second typewritten page may be added. Under no circumstances will more than two additional pages be permitted. The CPAR activity reviewing official must approve each request to expand block 16 remarks beyond the form and one additional page. Also, the contractor is allowed the same amount of additional space for comments. All additional pages are considered part of the CPAR itself.

6.5 Contractors will be given an opportunity to review and comment on the assessment. Since communication and feedback regarding contractor performance are always encouraged, the evaluator may consider allowing a pre-assessment briefing by the contractor to discuss the contractor's performance during the evaluation period. These pre-assessment discussions must be structured around firm contract requirements and events which are deemed to be critical during the upcoming reporting period. Evaluators are strongly encouraged to conduct face-to-face meetings with the contractor during the assessment process.

6.6 The CPAR review and approval process is as follows:

6.6.1 For all contracts the evaluators will sign and retain a copy of the CPAR and transmit the original to their counterpart within the contractor's organization. The preferred method of transmitting a report is by hand delivery (with receipt), in conjunction with face-to-face discussions. Certified mail or other methods of ensuring receipt are also acceptable. Meetings with contractor management to discuss CPAR ratings are strongly recommended and, if requested in writing by the contractor, will be held unless otherwise approved by the reviewing official. Regardless of the method of transmittal, a transmittal letter must accompany the CPAR.

6.6.2 The transmittal letter will provide the following guidance to the contractor:

6.6.2.1 Protect the CPAR as "source selection information." After review, transmit the CPAR back to the originating office marked and handled as "source selection information." Request return of the CPAR by certified mail or some other controlled method.

6.6.2.2 Strictly control access to the CPAR while in the contractor's organization.

6.6.2.3 Ensure the CPAR is never released to persons or entities outside the contractor's control.

6.6.2.4 Prohibit the use of or reference to CPAR data for advertising, promotional material, preaward surveys, proposal submittals, production readiness reviews, or other similar purposes.

6.6.2.5 Advise the contractor that comments are optional but are due to the originating office within 30 calendar days after receipt. The contractor may provide comments in response to the assessment, or sign and return the assessment without comment. If the contractor elects not to provide comments, he or she should acknowledge receipt of the CPAR by signing and dating the form in the appropriate block and return it to the originating office. Comments should be focused on the objective portion of the evaluator narrative and provide views on causes and ramifications of the assessed performance. Contractor comments are subject to the same limitations in paragraph 7.4. This page limit will be strictly enforced and extra pages will not be reviewed or included with the CPAR. Label all additional pages with the contractor’s name, contract number, and period covered by report.

6.6.2.6 Advise that if the contractor desires a meeting to discuss the CPAR, it must be requested, in writing, no later than seven (7) calendar days from the receipt of the CPAR. This meeting will be held during the contractor's 30 day review period.

6.6.3 If the contractor does not return the CPAR within the allotted 30 days, the contractor comment block of a copy of the CPAR will be annotated as follows: "The report was delivered to/received by the contractor on (date). The contractor neither signed nor offered comment in response to this assessment." The program office will continue processing the CPAR.

6.6.4 After receiving and reviewing the contractor's comments on the CPAR, the evaluator may revise the assessment, including the narrative. Revised assessments must be recorded on a new CPAR form. The original CPAR form will be attached to the new CPAR form. The evaluator will notify the contractor of changes made to a report. Contractors have the option to review their CPARs after they enter the CPAR library.

6.6.5 Complete blocks 1 through 5 and block 12. Begin block 12 with "Revision to CPAR for period (insert period covered by report)," followed by the program title and phase of acquisition. Indicate revised or affected ratings in block 14 or 15 and explain the changes in block 16. The evaluator will then sign block 17 of the revised CPAR and annotate block 20 of the original CPAR with "See revised CPAR". The reviewing official will sign block 21 of the revised CPAR in accordance with paragraph 6.7, below.

6.7 After receiving contractor comments or 30 days from the date of contractor receipt of the CPAR, whichever occurs first, the CPAR will be sent to the reviewing official for review and signature according to local procedures.

6.7.1 If the evaluator does not choose to revise the assessment as a result of contractor comments received, he/she will provide the reviewing official an explanation of that decision.

6.7.2 To facilitate future CPAR preparation, the program office may retain CPAR copies which do not yet contain the reviewing official signature. In addition, working papers associated with CPAR evaluations may be retained. However, all retained CPAR copies and working papers must be marked "For Official Use Only/Source Selection Information - See FAR 3.104" and handled accordingly.

6.8 The activity reviewing official must be at least one level above the program manager. This individual will be designated by local procedures. However, for major programs, the program executive officer (PEO) or the Designated Acquisition Commander (DAC) will be given the option of acting as the reviewing official. The reviewing official's comments in the CPAR will acknowledge consideration and reconciliation, if possible, of any significant discrepancies between the evaluator’s assessment and the contractor's comments. When the reviewing official signs the CPAR, it will be considered complete and returned to the program office for forwarding to the CPAR library. No copies of this official, completed CPAR will be retained in the program office.

6.9 After the CPAR has been signed by the reviewing official, the CPAR will be entered into all master CPAR libraries. Duplicate master libraries can be maintained by each service as required. Attachment 2 contains a listing of JACG Master Libraries. The CPAR focal point at activities maintaining a master library will enter reports in accordance with local procedures and will distribute copies to the other master libraries. The focal points at all other activities will submit their CPARs to the Service focal point (or designee) as well as copies to the other JACG focal points. Focal points will follow the requirements of 6.7.2, above. Classified CPARs for Special Access Programs will distributed in accordance with Service procedures.

6.10 All records created under this instruction will be retained and disposed of according to agency procedures. CPAR data will be mailed in accordance with the requirements for transmitting "source selection information" (see FAR 3.104).

7. CPAR Focal Points

7.1 Each CPAR focal point with a master library will keep CPARs and all attachments in separate files for each contractor. CPARs will be retained for 3 years after the end of the period covered by (the) report or completion of contract performance.

7.2 Distribution of CPARs within DoD will only be made from one activity CPAR focal point to another. For a particular source selection or responsibility determination, the performance risk analysis group (PRAG) or contracting officer must contact their local CPAR focal point to obtain CPAR data. The CPAR focal point of activities that do not have a master library will request relevant CPARs from the Service CPAR focal point (or designee).

7.3 CPAR focal points at each activity will be responsible for tracking and suspensing CPARs as they become due. The focal points will notify the program office at least 90 days prior to the CPAR due date, in accordance with local procedures. Notice will be provided that this does not relieve the evaluator of the responsibility for processing reports in a timely manner. Focal points will not be responsible for the contents of the CPARs.

7.4 CPAR focal points at each activity are responsible for monitoring the status of late reports. Focal points must advise the activity commander or designee of reports more than 30 days overdue and notify the Service CPAR focal point (or designee) of all CPARs 60 or more days overdue.

7.5 A list of all JACG CPAR Focal Points is located at Attachment 3.

8. CPAR Markings and Protection

8.1 The evaluator is responsible for ensuring that CPARs are appropriately marked and handled. All CPAR forms, attachments and working papers must be marked "SOURCE SELECTION INFORMATION-SEE FAR 3.104" according to FAR 3.104. CPARs have the unique characteristic of always being predecisional in nature. They will always be source selection information because they will be in constant use to support ongoing source selections. This predecisional nature of CPARS is a basis for requiring that all CPAR data be protected from disclosure to unauthorized personnel.

8.2 CPARs may also contain information that is proprietary to the contractor. Information contained on the CPAR such as trade secrets, and confidential commercial or financial data, obtained from the contractor in confidence, must also be protected from unauthorized disclosure. Additionally, CPARs may contain valuable government-generated commercial information that will be used in the award of government contracts. Such commercially valuable information must be protected from unauthorized disclosure. Based on the confidential nature of the CPARS, the following guidance applies to protection both internal and external to the government.

8.2.1 Internal Government Protection

8.2.1.1 CPARs must be treated as source selection information at all times. The flow of CPARs throughout DoD in support of source selections will be controlled by the CPAR focal points and transmitted only from one CPAR focal point to another. Information contained in the CPAR must be protected in the same manner as information contained in completed source selection files (in accordance with Service procedures).

8.2.1.2 CPAR data will not be used to support pre-award surveys, debarment proceedings or other internal government reviews.

8.2.2 External Government Protection

8.2.2.1 Due to the sensitive and confidential nature of CPARs, disclosure of CPAR data to contractors or other entities outside the government is not authorized. An exception to this rule is for the contractor that is the subject of the CPAR. In this situation, access to review the completed CPAR will be granted by the CPAR focal point. Individuals requesting access must have a letter granting disclosure to them, signed by the individual in charge of the operating unit for which the CPAR was executed (i.e., the division or subsidiary identified in block 1 of the CPAR). The chief executive officer (CEO) or designee may grant disclosure to corporate personnel to view CPARs. One situation where this may be applicable is when the CEO tasks an individual to review CPARs prepared for several divisions of a corporation. The CPAR access letter, signed by either the CEO or the individual in charge of the operating unit, must be presented to the CPAR focal point. Copies of CPARs are not allowed to be made or retained by the contractor's representative. Such limited and controlled access by the contractor's representative will not inhibit candid agency decision making. This access is needed to ensure the accuracy of changes made to the CPAR after the contractor's initial review.

8.2.2.2 On those rare occasions when a FOIA request is received for CPAR records, the unit FOIA office must refer the request to the CPAR focal point.

9. Form Prescribed. CPAR Form XXX.

SIGNATURE BLOCK

3. Attachments

1. CPAR Form and Instructions for Completing CPAR
2. JACG Master Libraries
3. CPAR Focal Points

CONTRACTOR PERFORMANCE ASSESSMENT REPORT (CPAR)

(Source Selection Sensitive Information) (See FAR 3.104)

1. NAME/ADDRESS OF CONTRACTOR *(Division)*	2.		INIITIAL		INTER-MEDIATE		FINAL REPORT
	3. PERIOD COVERED BY REPORT						
	4. CONTRACT NUMBER						
CAGE CODE	5. CONTRACTING OFFICE						
6. LOCATION OF CONTRACT PERFORMANCE *(If not in item 1)*	7. CONTRACT PERIOD OF PERFORMANCE						
	8. CONTRACT PERCENT COMPLETE/DELIVERY ORDER STATUS						
	9. CURRENT CONTRACT DOLLAR VALUE *(As of report date)*						
	10.		COMPETITIVE		NON-COMPETITIVE		OTHER

11. CONTRACT TYPE															
	FFP		FPI		FPR		~~CPFF~~		CPIF		CPAF		MIXED		OTHER

12. PROGRAM TITLE AND PHASE OF ACQUISITION *(If applicable)*

13. CONTRACT EFFORT DESCRIPTION *(Highlight key components, technologies and requirements; key milestones events and major modifications to contract during this period.)*

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14. EVALUATE THE FOLLOWING AREAS	PAST COLOR	RED	YELLOW	GREEN	BLUE	N/A
a. MANAGEMENT RESPONSIVENESS						
b. SCHEDULE CONTROL						
c. COST CONTROL						
d. TECHNICAL PERFORMANCE OF PRODUCT						
e. PRODUCT ASSURANCE						
(1) QUALITY SYSTEM						
(2) MANUFACTURING MANAGEMENT						
f. PROGRAM/DATA MANAGEMENT						
g. PROCUREMENT/SUBCONTRACT MANAGEMENT						
h. LOGISTIC SUPPORT/SUSTAINMENT						
i. ENGINEERING						
(1) SYSTEM ENGINEERING						
(2) SOFTWARE ENGINEERING						
j. UNIQUE TECHNICAL PERFORMANCE OTHER AREAS						
(1)						
(2)						

15. VARIANCE (*Contract to date)*	CURRENT	COMPLETION
COST VARIANCE (%)		
SCHEDULE VARIANCE (%)		

16. PROGRAM DIRECTOR/MANAGER NARRATIVE

16. PROGRAM DIRECTOR/MANAGER NARRATIVE *(continued)*		
17. TYPE NAME AND TITLE OF PROGRAM MANAGER	OFFICE SYMBOL	PHONE
SIGNATURE	DATE	

18. CONTRACTOR COMMENTS *(Contractor's Option)*

18. CONTRACTOR COMMENTS *(continued)*

19. TYPE NAME AND TITLE OF CONTRACTOR REPRESENTATIVE	OFFICE SYMBOL	PHONE
SIGNATURE	DATE	
20. REVIEW BY REVIEWING OFFICIAL *(Comments Optional)*		
21. TYPE NAME AND TITLE OF REVIEWING OFFICIAL	OFFICE SYMBOL	PHONE
SIGNATURE	DATE	

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INSTRUCTIONS FOR COMPLETING CPAR

A1.1 All information on the form will be typewritten; no handwritten CPARs will be accepted by the CPAR focal points for inclusion into CPAR libraries. Reduced or condensed print is not acceptable; standard 10 or 12 pitch only. All authorized additional pages must be annotated at the top with the contractor's name, contract number, and period of evaluation covered by the CPAR.

A1.2 Block 1 - Name/Address of Contractor. State the name and address of the division or subsidiary of the contractor performing the contract. Identify the parent corporation (no address required). Identify the contractor's commercial and government entity (CAGE) code.

A1.3 Block 2 - Type Report. Indicate whether, in accordance with paragraph 5., the CPAR is an initial, intermediate, or final report. If this is an out-of-cycle report, check “intermediate”.

A1.4 Block 3 - Period Covered by Report. State the period of performance covered by the report (dates must be in DDMMYY format). In no instance should a period of evaluation include previously reported effort (i.e., CPARs are not cumulative or overlapping). CPAR assessments for "intermediate" reports should only cover a 12 month period of performance; therefore, the report should not reflect a period of performance greater than 12 months. Exceptions to this rule for special circumstances, such as a period of performance that ends one month before contract completion, must be approved by the CPAR focal point.

A1.5 Block 4 - Contract Number. Self-explanatory.

A1.6 Block 5 - Contracting Office. Self-explanatory.

A1.7 Block 6 - Location of Contract Performance. Self-explanatory.

A1.8 Block 7 - Contract Period of Performance. State current contract period of performance including any authorized extensions, such as options that have been exercised (dates must be in DDMMYY format).

A1.9 Block 8 - Contract Percent Complete/Delivery Order Status. State the current percent of the contract that is complete. If cost performance reports (CPR) or cost/schedule status reports (C/SSR) data is available, calculate percent complete by dividing cumulative budgeted cost of work performed (BCWP) by contract budget base (CBB) (less management reserve) and multiplying by 100. CBB is the sum or negotiated cost plus estimated cost of authorized undefinitized work. If not indicated elsewhere, include the cutoff date for the CPR or C/SSR used. If CPR or C/SSR data is not available, estimate percent complete by dividing the number of months elapsed by total number of months in contract period of performance and multiplying by 100. For indefinite delivery (ID) contracts, divide the dollars obligated through the end of the reporting period by the dollar value listed in block 9 and multiply by 100.

A1.10 Block 9 - Current Contract Dollar Value (as of report date). State the current face value of contract. For incentive contracts, state the target price or total estimated amount.

A1.11 Block 10 - Basis of Award. Identify the basis of award by placing an "X" in the appropriate box. For “other”, explain in Block 13 the nature of the effort (e.g. set-aside)

A1.12 Block 11 - Contract Type. Identify the contract type. For mixed contract types, check the predominate contract type and identify the other contract type in the "mixed" block.

A1.13 Block 12 - Program Title and Phase of Acquisition. Provide a short descriptive narrative of the program. Spell out all abbreviations. Identify overall program phase and production lot (for example, concept development, engineering and manufacturing development, low-rate initial production, or full-rate production (Lot 1)). Identify milestone phases, if applicable.

A1.14 Block 13 - Contract Effort Description. Provide a short description of the contract effort that identifies key technologies, components, subsystems, and requirements. This section is of critical importance to future performance risk analysis groups (PRAG) and the description should be detailed enough to assist the PRAG in determining efforts that are relevant to their source selection. Also, keep in mind that users of this information may not understand program jargon. It is important to address the complexity of the contract effort and the overall technical risk associated with accomplishing the effort. For intermediate CPARs, a brief description of key milestone events that occurred in the review period may be beneficial (e.g., critical design review (CDR), functional configuration audit (FCA)) as well as major contract modifications during the period. For task/delivery order contracts, state the number of tasks issued during the period, tasks completed during the period, and tasks which remain active. For service contracts, it is particularly important to describe the functional specialty expertise or discrete activities being acquired on the contract. Examples for an O&M contract might be test associated services and civil engineering support. For contracts which include multiple functional disciplines or activities, categories should be designated to: (1) reflect the full scope of the contract, (2) allow grouping similar work efforts within the categories to avoid unnecessary segregation of essentially similar specialties or activities, and (3) avoid combining essentially dissimilar work

efforts within the categories. Each category or area should be separately numbered, titled and described within block 13 to facilitate cross-referencing with the evaluation of the contractor's performance within each category in blocks 14 and 15. If necessary, the description within this block may be extended to one additional typewritten page.

A1.15 Block 14 - Evaluation Areas. Evaluate each area based on the following criteria:

A1.15.1 Each area assessment must be based on objective data that will be provided in block 16. Facts to support specific areas of evaluation must be requested from the contracting officer and other government specialists familiar with the contractor's performance on the contract under review. Such specialists may, for example, be from engineering, manufacturing, quality, logistics (including provisioning), contract administration services and maintenance.

A1.15.2 The amount of risk inherent in the effort should be recognized as a significant factor and taken into account when assessing the contractor's performance. For example, if a contractor meets an extremely tight schedule, a blue (exceptional) may be appropriate, or meeting a tight schedule with few delinquencies, a green (satisfactory) with an upward arrow assessment may be given in recognition of the inherent schedule risk. When a contractor identifies significant technical risk and takes action to abate those risks, the effectiveness of these actions should be included in the narrative supporting the block 14 ratings.

A1.15.3 The CPAR is designed to assess prime contractor performance. However, in those evaluation areas where subcontractor actions have significantly influenced the prime contractor's performance in a negative or positive way, record the subcontractor actions in block 16.

A1.15.4 Many of the evaluation areas in block 14 represent groupings of diverse elements. The program manager should consider each element and use the area rating to highlight significant issues.

A1.15.5 Evaluate all areas which pertain to the contract under evaluation, unless N/A (not applicable).

A1.15.6 When performance has changed from one period to another such that a change in color results, the narrative in block 16 must address the change.

A1.15.7 Scoring will be in accordance with the definitions described below in Table I, "Evaluation Colors."

Management Responsiveness. Evaluate the adequacy of the contractor's responsiveness to the Government's needs. Address issues such as: the timeliness, completeness and quality of problem identification, corrective action plans, and proposal submittals (especially responses to change orders or other undefinitized contractual actions).

Table I-I. Evaluation of Colors.

Blue (Exceptional). Indicates performance clearly exceeds contractual requirements. The area of evaluation contains few minor problems for which corrective actions appear highly effective. Green (Satisfactory). Indicates performance clearly meets contractual requirements. The area of evaluation contains some minor problems for which the corrective actions appear satisfactory. Yellow (Marginal). Indicates performance meets contractual requirements. The area of evaluation contains a serious problem for which corrective actions have not yet been identified, appear only marginally effective, or have not been fully implemented. Red (Unsatisfactory). Indicates the contractor is in danger of not being able to satisfy contractual requirements and recovery is not likely in a timely manner. The area of evaluation contains serious problems for which the corrective actions appear ineffective.
NOTE 1: Upward or downward arrows may be used to indicate an improving or worsening trend insufficient to change the assessment status. NOTE 2: "N/A" means "not applicable."

A1.16 Block 14a - Management Responsiveness. Evaluate the adequacy of the contractor's responsiveness to the program needs. Address issues such as: the timeliness, completeness and quality of problem identification, corrective action plans, and proposal submittals (especially responses to change orders or other undefinitized contractual actions).

A1.17 Block 14b - Schedule Control. Evaluate the contractor's adherence to the contract or task order schedule by evaluating the contractor's efforts during the evaluation period that contribute to or effect that variance. Note that cumulative schedule variance is reflected in block 15. The associated narrative explanation in block 16 should address significance of scheduled events, discuss causes, and evaluate effectiveness of contractor corrective actions. Identify in block 16 the major milestones, deliverable items, or significant data items applicable to the evaluation period which contribute to the schedule assessment. For ID or task order contracts, quantify in block 16, to the extent possible, the percentage of tasks being completed on time, ahead of schedule or behind schedule.

A1.18 Block 14c - Cost Control. Evaluate current cost performance if the contract is greater than 10 percent complete (see block 8 to calculate percent complete). Cumulative percent variance and government estimate at completion are reflected in block 15. Block 14c is the evaluation of the contractor's cost management efforts "during the evaluation period" that contribute to or effect those figures. The associated narrative in block 16 should explain the causes and contractor-proposed solutions. If CPR or C/SSR data are not available, evaluate

contractor cost management. Is the contractor experiencing cost growth or underrun? Provide a short narrative explanation in block 16 of causes and the contractor's proposed solutions. If cost performance cannot be determined, mark this block N/A. For contracts where task or contract sizing is based upon contractor provided person-hour estimates, the relationship of these estimates to ultimate task cost should be assessed. In addition, the extent to which the contractor demonstrates a sense of cost responsibility, through the efficient use of resources in each work effort, should be evaluated.

A1.19 Block 14d - Technical Performance of Product. Evaluate the extent to which the contractor is meeting overall product or system performance in terms of the contract requirements, including but not limited to the statement of work, specifications, contract data requirement lists, and significant special contract clauses. Does the product perform as required?

A1.20 Block 14e - Product Assurance. The primary areas of consideration focus on satisfying the requirements of the functional "ilities": producibility, reliability, maintainability, inspectability, testability, etc. The program manager must be flexible in how contractor success is measured. Examples of possible measures: data from design test/operational testing successes, field reliability and maintainability reports, user complaints and acceptance rates, improved subcontractor and vendor quality, and scrap and rework rates. These quantitative indicators may be useful later, for example, in source selection evaluations, in demonstrating continuous improvement, quality and reliability leadership that reflects progress in total quality management.

A1.20.1 Block 14e(1) - Quality. Evaluate the overall quality of the deliverables (including reports) in terms of compliance with the requirements of the contract.

A1.20.2 Block 14e(2) - Manufacturing Management. Identify the contractor’s ability to control the overall manufacturing process to include material control, shop floor planning and control, statusing and control, factory floor optimization, factory design, and factory performance.

A1.21 Block 14f - Program/Data Management. Evaluate the extent to which the contractor discharges its responsibility for integration and coordination for all activity needed to execute the contract as documented in the Integrated Master Plan/Schedule; identifies and applies resources required to maintain schedule; assigns responsibility for tasks/actions required by contract; communicates appropriate information to affected program elements in a timely manner. Assess the adequacy of the contractor’s mechanism for tracking contract compliance, recording changes to planning documentation and management of cost and schedule control system. Evaluate the contractor’s risk management practices, especially the ability to identify risks and formulate and implement risk mitigation plans. Finally, evaluate the contractor’s management of data collection, recording, and distribution as required by the contract.

A1.22 Block 14g - Procurement/Subcontract Management. Identify the percentage of subcontracting effort and evaluate the prime contractor's effort devoted to managing subcontracts. Consider efforts taken to ensure early identification of subcontract problems and the timely application of corporate resources to preclude subcontract problems from impacting overall prime contractor performance. Identify contractor’s ability to provide timely subcontract awards based on best value.

A1.23 Block 14h - Logistic Support/Sustainment. Evaluate the adequacy of the contractor's performance in accomplishing integrated logistics support (ILS) program tasks (the nine ILS element groupings of maintenance planning, manpower and personnel, supply support, support equipment, technical data, training and support, computer resources support, facilities

(packaging, handling, storage, and transportation), and design interface), and the contractor's performance of logistics support analysis activities. When the contract requires technical/engineering data deliverables, the Cataloging and Standardization Center (CASC) comments should be solicited.

A1.24 Block 14i - Engineering. [Note: Engineering is comprised of this element, systems engineering and software engineering. If system and/or software engineering performance is critical to successfully satisfying the requirement, they should be separately evaluated in block 14i(1) and 14i(2).] Evaluate the contractor’s overall engineering performance on activity planned for this period. The evaluation should cover these disciplines: design, manufacturing integration and support, configuration control, documentation, test and evaluation. The evaluation for this block should focus on effort exclusive of blocks 14i(1) and (2).

A1.24.1 Block 14i(1) - Systems Engineering. Evaluate the contractor's effort to define the system performance parameters and system configuration to satisfy: the requirements, the planning and control of technical program tasks, the quality and adequacy of the engineering support provided throughout all phases of contract execution, the integration of the engineering specialties, management of interfaces, and the management of a totally integrated effort of all engineering concerns to meet cost, technical performance, and schedule objectives. System engineering activities ensure that integration of these engineering concerns is addressed up-front and early in the design/development process. These activities include: producibility engineering, logistics support analysis, survivability, human factors and the "ilities"--reliability, quality, maintainability, availability, inspectability, etc. Although some of these activities will be specifically addressed in other categories below (such as product assurance, and test and evaluation), the focus of the evaluation of systems engineering is on the integration of these specific areas. The scoring of systems engineering needs to remain flexible to allow a program manager to account for program unique technical concerns and to allow for the changing systems engineering environment as a program moves through the program phases (i.e., Dem/Val, EMD, Production).

A1.24.2 Block 14i(2) - Software Engineering. Evaluate the extent to which the contractor is meeting the software development, modification, or maintenance contract requirements or a government-approved software development plan. Consider the amount and quality of software development resources devoted to support the contract effort.

A1.25 Block 14j - Unique Technical Performance/Other Areas. Specify additional evaluation areas that are unique to the contract, or that cannot be captured elsewhere on the form. More than one type of entry may be included, but should be separately labeled. If extra space is needed, use block 16.

A1.25.1 If the contract contains an award fee provision, enter "award fee" in the "Other" block (14j). Use the columns, beginning with the "Past Color" column, to record the award fee percentages earned. Subsequent columns should be used if there was more than one award fee earned during the period covered by the CPAR (as reflected in block 3). For example, if two award fees were earned during the CPAR period and the contractor earned 80% on both, the block 14j entry under "Past Color" would read: "1--80%" and under "Red" the entry would read: "2--80%." In addition, the program manager may translate the award fee earned to color ratings, which could prove more useful for using past performance to assess future performance risk in upcoming source selections. In this instance, the block 14j entry could read: "1--Green" or "1--

80%--Green." If award fee information is included in the CPAR, use block 16 to provide a description for each award fee listed in block 14j. Include the scope of the award fee by describing the extent to which it covers the total range of contract performance activities, or is restricted to certain elements of the contract. Also include the dollars awarded at each award point in the block 16 narrative in the same format as that described for block 14j.

A1.25.2 any other type of contract incentive is included in the contract (excluding contract shareline incentives on fixed price or cost-type contracts), it should be reported in a manner similar to the procedures described above for award fee. Enter "Incentive" in block 14j.

A1.25.3 Use block 14j in those instances where the program manager believes strongly, either positively or negatively, regarding an aspect of the contractor's performance, but cannot fit that aspect into any of the other blocks on the form.

A1.26 Block 15 - Variances (Contract to Date). If CPR or C/SSR data are available, identify: the current percent cost variance to date, the government's estimated completion cost variance (percent), and the cumulative schedule variance (percent). Indicate the cutoff date for the CPR or C/SSR used.

A1.26.1 Compute current cost variance percentage by dividing cumulative cost variance to date (column 11 of the CPR, column 6 of the C/SSR) by BCWP and multiplying by 100.

A1.26.2 Compute completion cost variance percentage by dividing CBB less the government's estimate at completion (EAC) by CBB and multiplying by 100. The calculation is [(CBB - EAC)/CBB] X 100. The CBB must be the current budget base against which the contractor is performing (including formally established over target baselines (OTB)). If an OTB has been established since the last CPAR, a brief description in block 16 of the nature and magnitude of the baseline adjustment must be provided. Subsequent CPARs must evaluate cost performance in terms of the revised baseline and reference the CPAR which described the baseline adjustment. For example, "The contract baseline was formally adjusted on (date); see CPAR for (period covered by CPAR) for an explanation."

A1.26.3 Compute cumulative schedule variance percentage by dividing BCWP less budgeted cost of work scheduled (BCWS) by BCWS and multiplying by 100. The calculation is [(BCWP - BCWS)/BCWS] X 100. If the schedule variance exceeds 15 percent (positive or negative), briefly discuss in block 16 the significance of this variance for the contract effort.

A1.27 Block 16 - Program Manager Narrative. A short, factual narrative statement is required for all assessments regardless of color rating (e.g., even "green" ratings require narrative support). Cross-reference the comments in block 16 to their corresponding evaluation area in block 14 or 15. Each narrative statement in support of the area assessment must contain objective data. An exceptional cost performance assessment could, for example, cite the current underrun dollar value and estimate at completion. A marginal engineering design/support assessment could, for example, be supported by information concerning personnel changes. Key engineers familiar with the effort may have been replaced by less experienced engineers. Sources of data include operational test and evaluation results; technical interchange meetings; production readiness reviews; earned contract incentives; or award fee evaluations. The final entry in this block will be a statement by the evaluator in the following form: “Given what I know today about the contractor’s ability to execute what he promised in his proposal I (definitely would not, probably would not, might or might not, probably would or definitely would) award to him today given that I had a choice”. Block 16 comments may be extended to

one additional typewritten page (also, see paragraph 6.4). All additional pages added to the report to continue block 16, 18, or 21 will contain the following at the top of each page: marked "SOURCE SELECTION INFORMATION-SEE FAR 3.104" according to FAR 3.104.

A1.28 Block 17 - Program Manager Signature. The program manager "signs and dates" the form prior to forwarding it to the contractor for review. (See paragraph 6.6. in the instruction for guidance on sending the CPAR to the contractor for review and comment.)

A1.29 Block 18 - Contractor Comments. Optional.

A1.30 Block 19 - Contractor Representative Signature. Self-explanatory.

A1.31 Block 20 - Reviewing Official Comments. The reviewing official must acknowledge consideration of any significant discrepancies between the PM/CM assessment and the contractor's comments.

A1.32 Block 21 - Reviewing Official Signature. Self-explanatory. (See paragraph 6.8. for guidance as to who may act as the reviewing official.)

JACG MASTER CPAR LIBRARIES

HQ AFMC:

HQ AFMC/PKM
4375 Chidlaw Road, Suite 6
Wright-Patterson AFB OH 45433-5006
DSN 787-2717, Commercial (513) 257-2717

AERONAUTICAL SYSTEMS CENTER:

ASC/CYX
2335 Seventh Street, Suite 2
Wright-Patterson AFB OH 45433-7805
DSN 785-5912, Commercial (513) 255-5912

AIR FORCE DEVELOPMENT TEST CENTER:

AFDTC/PKCA
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Eglin AFB FL 32542-6864
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ELECTRONIC SYSTEMS CENTER:

ESC/PKA
3 Kirtland Street
Hanscom AFB MA 01731-2309
DSN 478-5852, Commercial (617) 377-5852

SPACE AND MISSILE SYSTEMS CENTER:

SMC/PKOM
155 Discoverer Boulevard, Suite 1542
Los Angeles AFB CA 90245-4692
DSN 833-6819, Commercial (310) 363-6819

ARMY AVIATION AND TROOP COMMAND:

NAVAL AIR SYSTEMS COMMAND:

AIR-4.10C
1421 Jefferson Davis Highway, Room 1014 JP2
Arlington VA 22243
DSN 664-3600 x7203, Commercial (703) 604-3600 x7203

JACG CPAR FOCAL POINTS

HQ AFMC:

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4375 Chidlaw Road, Suite 6
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PRODUCT CENTERS:

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DSN 478-5852, Commercial (617) 377-5852

HUMAN SYSTEMS CENTER
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OGDEN AIR LOGISTICS CENTER
OO-ALC/PKXD
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Hill AFB UT 84056-5320
DSN 458-8710, Commercial (801) 777-8710

SAN ANTONIO AIR LOGISTICS CENTER
SA-ALC/PKCB
143 Billy Mitchell Boulevard, Suite 1
Kelly AFB TX 78241-6014
DSN 945-7761, Commercial (210) 925-7761

SACRAMENTO AIR LOGISTICS CENTER
SM-ALC/PKP
3237 Peacekeeper Way, Suite 17
McClellan AFB CA 95652-1060
DSN 633-3726, Commercial (916) 643-3726

WARNER ROBINS AIR LOGISTICS CENTER

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235 Byron Street

Robins AFB GA 31098-1611

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205 West "D" Avenue, Suite 433

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AIR FORCE FLIGHT TEST CENTER

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Edwards AFB CA 93524-1185

DSN 527-5398, Commercial (805) 277-5398

ARNOLD ENGINEERING DEVELOPMENT CENTER

AEDC/PKM

100 Kindel Drive, Suite A335

Arnold AFB TN 37389-1335

DSN 340-5408, Commercial (615) 454-5408

LABORATORIES:

PHILLIPS LABORATORY

PL/PKM

3651 Lowry Avenue SE, Room 222

Kirtland AFB NM 87117-5777

DSN 246-4695, Commercial (505) 846-4695

ROME LABORATORY

RL/PKPX

26 Electronics Parkway

Griffiss AFB NY 13441-4514

DSN 587-3530, Commercial (315) 330-3530

WRIGHT LABORATORY

See ASC focal point.

ARMY AVIATION AND TROOP COMMAND:

NAVAL AIR SYSTEMS COMMAND:

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ENCLOSURE 3: JOINT AERONAUTICAL COMMANDER'S GROUP (JACG) PERFORMANCE RISK ASSESSMENT GROUP (PRAG) DESK GUIDE

1.0 FOREWORD.

For many years, the tri-service acquisition community has recognized that the quality of a contractor's performance on previous contracts is a good indicator of how they will perform in the future. Therefore, past performance should be an evaluation criteria on most competitively negotiated contracts. To maximize the benefits associated with using past performance information, we should not be constrained by the references contractors provide in their proposals-we should use other sources of past performance data and develop disciplined methods of collecting and sharing data among DoD services and agencies.

The first step in this process is the Joint Aeronautical Commander's Group (JACG) Performance Risk Assessment Group (PRAG) Desk Guide, which was developed under the Non-Governmental Standards Integrated Process Team by the Past Performance Subpanel. This guide incorporates the expertise reflected in existing Army and Air Force PRAG guides and in the Air Force CPARS system. The information contained in this guide is based on the "lessons learned" from years of source selections. We do not intend for the guide to be "written in stone." Acquisition practices evolve over time in response to changes in the contracting environment. Therefore, we will review the guide periodically and update it as necessary.

Policy and procedures, no matter how well intentioned and carefully crafted are not substitutes for the exercise of good business judgment within the source selection process. Therefore, this desk guide is provided as a roadmap to help you obtain products and services that represent the best value to your customers and the American taxpayer--to select contractors who will deliver quality products and services on time at reasonable prices.

2.0 OVERVIEW

2.1 Introduction.

An offeror's relevant current (as of the date of the proposal) and prior experience and performance record are considered as a part of every award decision in the Department of Defense. They are part of the criteria used to determine a contractor's responsibility. Specifically, FAR 9.103 states that a contractor must have adequate financial resources, the ability to meet the required performance schedule, a satisfactory record of performance on other contracts, and similar, related attributes demonstrating its ability to perform the contract.

However, this is a rather limited use of the contractor's past performance record. In our private lives, we make source selections every day. This can be as mundane as selecting the brand of

toothpaste we use or a selection that represents a much greater portion of our private resources, such as purchasing a new car. If we can consider how a product worked (or didn't work) for us in the past, get advice from our friends, read Consumer Reports to see how a product was rated, and check the contractor out with the Better Business Bureau, wouldn't it make sense to give the same credence to past performance when spending taxpayer dollars?

Using the contractor's past performance as a significant evaluation factor that will be traded off with price and other non-price factors will benefit the Government in at least two ways. First, it is impossible to convey completely within the four corners of a proposal how the contractor will actually perform the requirement and what the Government's actual costs will be (not just the instant contract costs, but the total cost of obtaining the system, supply, or service). A better tool for predicting how a contractor will perform in the future is to examine their past track record on contracts for similar requirements of the same size and complexity.

Second, it permits us to reward the good performer. In the commercial market, poor performers are weeded out as consumers select vendors that live up to the consumer's expectations. Those contractors that provide what is perceived as the best value in supplies or services are the ones that survive. A contractor that delivers what the contract requires without extensive follow-up effort on the part of Government personnel is clearly delivering better value than a contractor that charges the same price, yet needs Government surveillance to ensure performance. At the very least, the salary of those Government personnel performing the additional follow-up should be added to the contract price in the latter case to develop the "real" cost to the Government (not to mention the opportunity cost associated with this effort). Using past performance as an evaluation factor allows us to recognize these "hidden" costs and consider them when making best value awards.

Thirdly, it better captures the value to the Government embodied in an offeror’s proposal. Traditional source selection techniques have focused on objective, quantifiable, “hard” data. However, this approach does not capture the total value to the customer. this is best defined by the concept of economic utility, “...the satisfaction, pleasure, need fulfillment, etc., derived from consuming some quantity of a good. It is thus necessarily a psychological thing which is incapable of measurement in absolute units.” (The Penguin Dictionary of Economics) Therefore, subjective criteria must be used to fully define the ability of a proposal to satisfy the Government’s requirement.

Finally, using subjective criteria such as past performance also supports the current reinventing government initiatives because it emulates commercial practice. Although the Government will never be able to completely adopt commercial practices, we should use those that do not conflict with our concurrent goals of emphasizing competition and complying with Congressionally mandated socio-economic programs. Considering past performance during source selection enhances the ability of the government to form a new kind of relationship with industry- that of a partner instead of a litigious adversary.

What does this new relationship add to our ability to get the best value for the taxpayer? It shifts the emphasis from writing the best proposal to performing the best work-- coming through as promised. It helps eliminate the need for longer, complex clauses that define to excruciating detail what the contractor must do and how he must do it. It substantially reduces the need for inspection and oversight- after all, what greater leverage can the Government have than selecting

another supplier for future business if current performance is inadequate? Most importantly, it enhances the ability of the contractor and the government to work together as a team-- with the common goal of a successful program.

2.2 Role of Past Performance in Source Selection

2.2.1 Use of Subjective Criteria.

The first hurdle to get over is using subjective criteria. Past performance information is based on personal observations in most cases. It usually can't be confined to "yes or no" answers on a questionnaire or to information recorded on a checklist.

Because past performance information is based on personal observation, the perceptions of that individual are reflected in the information. Therefore, anyone using the information must understand the context of the contractor's performance. This includes the relationship between the Government and the contractor during contract performance, what the person recording the information believed the contractor was supposed to perform and what the contractor was actually on contract to perform. The only way to process this type of information is to rely on the judgment of the source selection authority to determine how the integrated assessment of the contractor's past performance affects the probability of the contractor successfully performing the requirements of the instant acquisition:

> "In evaluating contractor's proposals, contracting personnel are required to exercise judgment in determining how and to what extent an offeror's past contract efforts and experience relate to the requirements and evaluation factors stated in the solicitation. Generally, this is not something that can be reduced to a formula or a mechanical process that yields a numerical rating or grade. In some instances, previous contracts as a whole may be compared. In other cases only portions or elements of the contract are relevant. Performance risk assessments, except for fairly simplistic systems such as the DLA system, use narrative or adjectival descriptors rather than numerical ratings. Some factors that should be considered other than size, complexity, subject mater, and proximity in time include: the contractor's record of conforming to specifications and standards of good workmanship; the contractor's record of containing and forecasting cost on previously performed cost reimbursable contracts; the administrative aspects of the contractor's performance; the contractor's history for reasonable and cooperative behavior and commitment to customer satisfaction, and generally, the contractor's business-like concern for the interest of its customers." (Charles Clark and Matthew Blum, "Past Performance Questions and Answers, December 7, 1993.)

The best way of dealing with subjectivity is to acknowledge that it exists early in the source selection planning process. Embrace it--tell prospective offerors in the Request for Proposal that you intend to use subjective criteria. Tell them how those criteria will be considered within the decision process.

2.2.2 Use of RFP Filter Process.

Current acquisition reform efforts support implementation of a new approach in source selection, one that focuses on risk management rather than risk avoidance. In the past, risks associated with a given program have often not been understood by either the government or industry. Now, part of the RFP development process includes focusing in on what the risks are and using those risks to develop source selection criteria that capture the true discriminators of contractor performance.

Secretary of Defense Perry has espoused this approach in his "performance based contracting." Under that approach, the government defines the "what to," leaving the contractors free to define the "how to." The government defines top-level performance requirements, focusing on form, fit, function, and interface. Industry defines the critical risks associated with meeting those requirements, defining what critical processes will be used, what products will result from the processes, how the processes will be controlled and measured, and what management actions will be taken to ensure success.

Thus, the risks inherent in a contractor's proposal now become a paramount concern during source selection. This can be embodied in the technical concept proposed, the critical processes proposed to complete the work, the controls and metrics identified, the risk management and mitigation approach and last, but not least, past performance. One of the best indicators of a contractor's ability to mitigate risk is their past performance under contracts of similar size and scope. This is one way of "filtering" out the risks in a program. Other methods in this iterative filtering process include feedback from market surveys, industry comments during pre-proposal conferences, draft RFPs, and other interchanges with industry that provide avenues to identify and define critical programmatic risks that must be addressed in the source selection, with the goal of selecting the most executable proposal.

Since we are now going to rely on a contractor's internal processes, rather than "inspecting in" quality, we expect contractors to have robust internal control systems in place that are capable of identifying problems and instituting prompt corrective action. This new attitude is reflected in the proposal evaluation process. The PRAG will assess a contractor's past performance by reviewing only actions that occurred before the proposal due date. Proposed actions that will take place after the proposal due date, including proposed corrective actions will not be considered by the PRAG. However, the SSEB may addressed the planned improvements <u>if</u> such information is provided outside the past performance volume of the proposal and is within the constraints of the RFP.

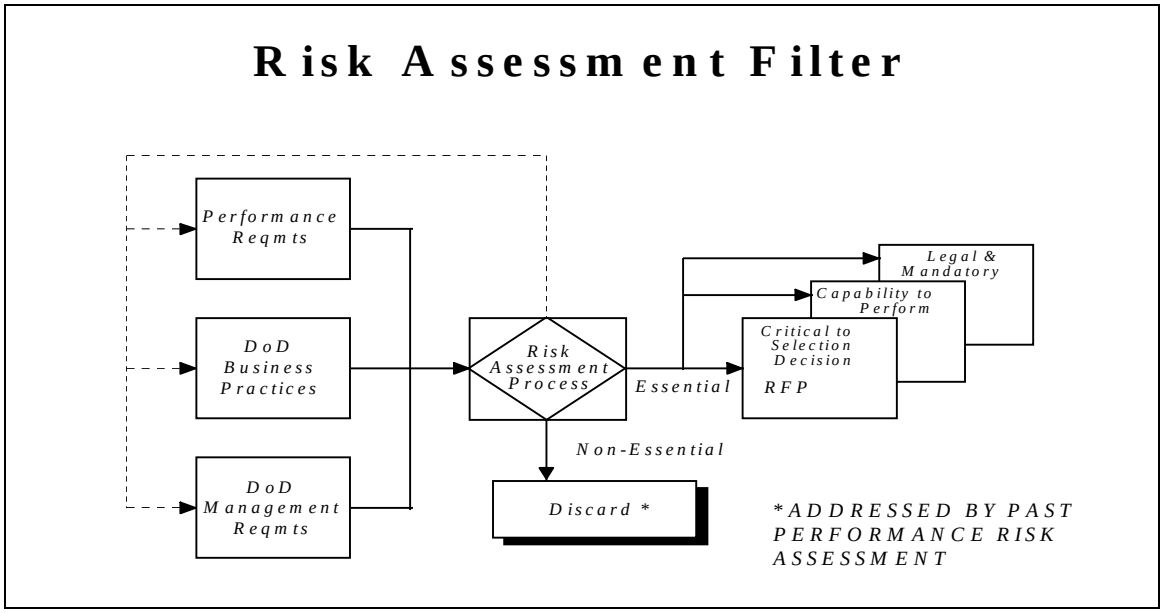

Figure I-3. Risk Assessment Filter.

2.2.3 Past Performance vs. Experience.

Another important issue is the difference between a contractor's experience and his past performance. Experience reflects the contractor's capability of doing something. It reflects whether he has the plant, equipment, and trained labor force available to perform the job. Past performance, on the other hand, describes how well he performed the work. In other words, how well did he execute what was promised in the RFP/contract. Both of these areas are considered when making a responsibility determination. Either area can be considered as a source selection criteria, where they can either stand alone or be considered under "performance risk."

It is also important to distinguish past performance assessments from pre-award surveys. The Defense Contract Management Command conducts pre-award surveys to determine whether a contractor is responsible. Responsibility is a broad concept that addresses whether a contractor has the *capability* to perform a particular contract based upon an analysis of many areas including financial resources, operational controls, technical skills, quality assurance and past performance. These surveys provide a "yes/no," "pass/fail," or "go/no-go" answer to the question, *can* this offeror do the work?

(Note that the responsibility determination described here is not the same as the capability evaluation performed under the SAS.)

Unlike a pre-award survey, a past performance assessment during the source selection process is a very specific endeavor that seeks to identify the *degree of risk* associated with each competing offeror, thereby permitting a comparative assessment of offers. Rather than asking whether an offeror can do the work, a past performance assessment asks, *will* it do that work successfully? In short, it describes the degree of confidence the

government has in the offeror's likelihood of success. If properly conducted, the past performance assessment and the pre-award survey will complement each other and provide a more complete picture of an offeror then either one could by itself.

2.3 Objectives of the PRAG.

The Performance Risk Assessment Group (PRAG) is a group of experienced government personnel that are appointed by the SSAC Chairperson to assess performance risk. They conduct a structured risk assessment of present and past performance in an attempt to predict the offeror's likelihood of performing the proposed effort. The PRAG may be a stand-alone group of experienced functional personnel, or it may be area/team chiefs from the SSEB/SSET who conduct performance assessments as an additional duty during the source selection.

The PRAG uses information that is outside of the offerors' proposals to assess past performance. No longer must contracting activities rely solely upon information submitted by the very contractors being assessed for past performance information. Now PRAG members can use independent sources of information to determine how well those contractors performed in the past. A thorough assessment of past performance identifies the relative performance risks associated with competing proposals and thereby serves to ensure that awards are made to good performers rather than to just good proposal writers.

The PRAG conducts the past performance assessment to determine the degree of risk involved in accepting a contractor's promises of performance. This determination is called performance risk. The PRAG prepares a report that describes these risk assessments and identifies strong and weak points in each offeror's past performance.

The PRAG structure should enhance its ability to independently assess performance risk. The PRAG may operate separately from the Source Selection Evaluation Board (SSEB) and report directly to the Source Selection Advisory Council (SSAC), or it may operate as a separate SSEB subgroup that reports to the SSEB chairperson. A PRAG assessment plan, like the sample attached, should be developed early in the process and made a part of the source selection plan.

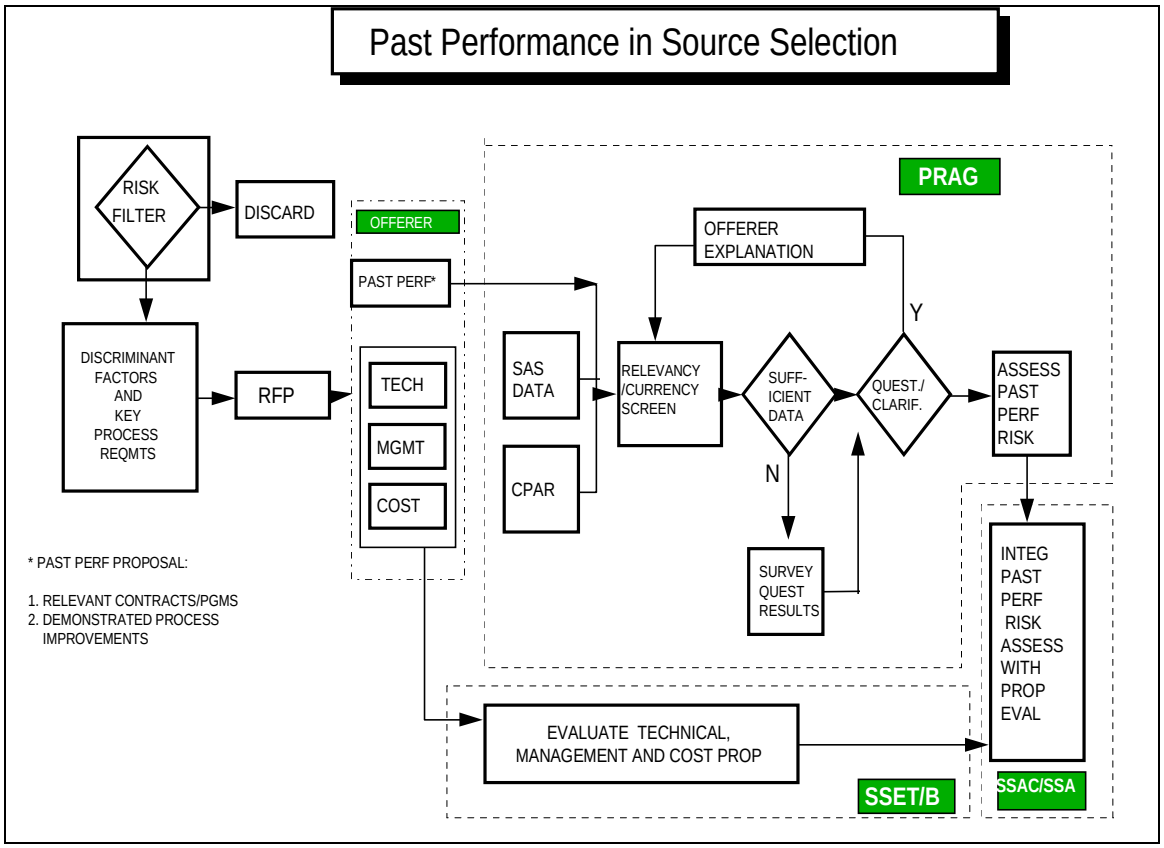

Figure I-4. Flow Diagram.

2.4 PRAG Membership and Training.

Each contracting activity determines the appropriate membership and structure of its PRAGs. Ideally, the membership should include individuals who have procurement, cost, and technical/program management expertise, as well as some with PRAG experience. The individuals selected should also be capable of making sound and impartial judgments.

The heart of the PRAG assessment is the information gathering process. Through questionnaires and telephone interviews and by tapping existing data sources, the PRAG can obtain a detailed and useful picture of an offeror's past performance. Because of the importance of the information gathering process, it is absolutely critical that PRAG members have the ability to conduct meaningful telephone interviews. They should also be able to assimilate voluminous data, exercise sound judgment, arrive at conclusions that make common sense, and communicate those conclusions effectively both orally and in writing.

The size of the PRAG should reflect the anticipated workload during the source selection- the number of contractors and subcontractors expected to respond to the solicitation as well as the nature and complexity of the solicitation requirements. Army experience indicates that a four-person team, including one administrative assistant, is a reasonable size for a solicitation with

three to six offerors. The best practice is to have at least two members, one with procurement expertise and one with technical expertise, on each PRAG to allow for dialogue, brainstorming, and in-depth fact finding.

3.0 SOURCES OF PAST PERFORMANCE DATA

3.1 JACG CPARS.

The Contractor Performance Assessment Reporting System (CPARS) is a manual database system that provides detailed information and an assessment of the on-going performance of contractors. Each report in the CPARS consists of a narrative assessment by the project manager, the contractor's comments, if any, relative to the assessment, and the overall performance assessment (exceptional, satisfactory, marginal or unsatisfactory) assigned by the CPAR approving official. The primary purpose of the CPARS is to provide a data base of contractor performance information that is current and available for use in source selections. The CPARS can be used to effectively communicate the strengths and weaknesses of contractor performance on past programs to source selection officials.

The program manager assesses a contractor's performance on a given contract during a specific period of time. It is a "snapshot." Each assessment, therefore, must be based on objective facts and be supportable by program and contract management data, such as cost performance reports, customer complaints, quality reviews, technical interchange meetings, reviews of contractor internal operations, and earned contract incentives. However, subjective assessments concerning the causes and ramifications of the contractor's performance are also provided.

3.2 JACG Supplier Capability Assessment Report System (SCARS).

This is a third party assessment of a contractor's internal processes, done by Defense Contract Management Command. Taken together with past performance, it will provide a good estimate of the probability of a contractor mitigating risks associated with a given program. The goal is to award to contractors that have an integrated set of capable and efficient processes in place for a given program. The DCMC review will focus on the robustness of each contractor's processes. This new approach relies on risk management versus risk avoidance.

3.3 Questionnaires.

Sometimes the only way to find out past performance information is to generate a list of potentially similar contracts, using the DD Form 350 data base, which is normally used to report contract information. The cognizant contracting office is identified by a code on the form. The list of contracting offices addresses and their codes is located in Appendix G of the DFARS.

A standardized questionnaire, such as the one attached, should be used to obtain information on relevancy and performance from contracting officers and program managers associated with such contracts. It provides the most through method of collecting information for use on the instant

acquisition. Typically, the questionnaires are mailed to the attention of the contracting officer for each contract, and a response is requested within ten days.

3.4 Interviews.

If you do not receive completed questionnaires back from the contracting officer or program manager, it is time to follow-up with a telephone interview. You should also use telephone interviews to fill in any missing or questionable information from CPARS, or the questionnaires.

3.5 Commercial Data.

The best practice is to rely on government sources of information. However, the PRAG may use non-governmental sources such as contractor provided references or Dun and Bradstreet, when necessary.

4.0 RISK ASSESSMENT PROCESS

4.1 Definition of Risk Categories.

No acquisition program is risk-free. The PRAG must assess the probability of an offeror executing the requested performance, given their demonstrated past performance. In doing so, the following definitions are used to define performance risk:

(A) HIGH (H) - Significant doubt exists, based on the offeror's performance record, that the offeror can satisfactorily perform the requested effort;

(B) MODERATE (M) - Some doubt exists, based on the offeror's performance record, that the offeror can satisfactorily perform the requested effort;

(C) LOW (L) - Little doubt exists, based on the offeror's performance record, that the offeror can satisfactorily perform the requested effort; and

(D) NOT APPLICABLE - No significant performance record is identifiable. This is a neutral rating.

4.2 Assessing Performance.

Each proposal risk assessment will consider the number and severity of problems, the effectiveness of corrective actions taken, and the overall work record. Consider also the offeror's demonstrated ability to effectively identify and take actions to abate requirement risks. The assessment of performance risk is not intended to be a simple arithmetic function of an offeror's performance on a list of contracts. The assessment team should place the greatest consideration on the information deemed most relevant and significant.

Use only clearly described criteria that were contained in the solicitation to assess contractors and maintain detailed documentation supporting adverse past performance findings in the source selection files, to avoid the common pitfalls of source selection evaluation. The contractor's most recent performance is often a better indicator of his ability to perform your requirement than older information. Prompt corrective actions by contractor management can be a positive indication of their commitment to customer satisfaction, rather than an indication of potential performance problems. No contract ever runs perfectly smoothly--each one can experience problems of one kind or another.

Be careful when defining what a "contractor" is when requesting or collecting past performance information. For weapon systems, it may be a separate cost center in a large corporation, or, for R&D projects, it may be the chief investigator. The best way to describe the concept to DoD acquisition personnel is as an operating location with its own Commercial and Government Entity (CAGE) code. Others may choose to use the Data Universal Numbering System (DUNS) or taxpayer identifier codes to determine when an offeror is a separate profit center from sister organizations within a given corporation. Groups that have completely separate management teams but happen to belong to the same corporation are not adequate predictors of each other's behavior, as they are independent of each other, and corporate offices generally have little impact on the day-to-day performance of contracts.

Be particularly careful when assessing an incumbent's past performance. They shall be held to the same standards as other offerors. Assess only efforts actually completed (not planned) on the current contract. If the work effort was in the Statement of Work, but they didn't actually complete it, their ability to perform that type of work has not been demonstrated.

The PRAG team should assemble the data gathered concerning each contract for each offeror and for each offeror’s critical subcontractor (s) and perform an analysis of the data. The objective of the analysis should be to identify those key pieces of data concerning the offeror’s (and subcontractor’s) present and past performance that should be highlighted in the PRAG briefings and in the final written PRAG report. The analysis should include a comprehensive interpretation of the information gleaned from the questionnaire responses, from any staff interviews, CPARs, SCARS, and from the other sources of offeror past and present performance data. The objective is the assignment of a risk assessment of high, moderate, low or not applicable (N/A) at the highest level at which proposal assessments and proposal risk assessments are assigned; performance risk assessments may also be assigned at lower assessed levels. A performance risk assessment shall always be assigned for the cost area. These assessments should be arrived at independently after consideration of all relevant past performance data received and of the complexities and unique features of the instant program. This consideration must include an assessment of the efforts accomplished by the contractor to resolve problems encountered on prior contracts. While assessments are arrived at independently, the PRAG Chairperson should review the assessments from one offeror to the next to ensure consistency overall. Merely having problems should not automatically equate to a moderate or high risk assessment, since an offeror may have subsequently demonstrated the ability to overcome the problems encountered, thereby making him a low risk candidate. The assessment of an offeror's performance risk is not intended to be a simple arithmetic function calculated against an offeror's performance on a list of contracts. Rather, the information deemed most relevant and significant by the PRAG should receive the greatest consideration.

4.3 Use of Outside Data/Commercial Data.

The best practice is to rely on government sources of information. However, it is permissible to use nongovernment references when necessary. The PRAG should verify information received from commercial and foreign government sources to ensure accuracy. The use of such references for one offeror does not require the same for all offerors so long as sufficient information is available for them.

The following quote highlights one of the more controversial aspects of past performance-- using information from outside the proposal to verify contractor performance. Mr. Carl Peckinpaugh addressed this issue in his 23 November 1993 article in the Federal Contracts Report:

> "A contracting agency may consider evidence obtained from outside of the proposals, if this is consistent with established procedures. Therefore information obtained within the Government and from other sources such as consumer protection groups and better business bureaus may be considered, even if the offeror did not furnish these references as part of their proposal. An agency's failure to consider its own negative experience with a contractor has been found to be irrational by the GAO *(G. Marine Diesel).*"

4.3.1 Questionnaires.

This is a questionnaire that will be sent to government and/or non-government sources to: (1) verify present and past performance information contained in the offeror's proposal; and (2) obtain information about other contracts not mentioned in the offeror's proposal, but which are believed to be similar to the on-going source selection effort. The questionnaire should be structured to avoid yes/no answers and obtain both historical and current contract status information as well as elicit detailed information about the offeror's performance as it relates to the specific assessment areas and factors for award (Section M) of the solicitation.

A single page cover letter that is complete except for the date and addressee information should be prepared. It should accompany the verification/fact-finding questionnaire. This letter should clearly explain why and when the requested information is needed as well as to whom and how the information should be returned as the completed questionnaire contains source selection information. This letter should be sent to the appropriate points of contact. Signature on the cover letter shall normally be the PRAG Chairperson

Using the information furnished by the offerors, the PRAG should confirm by telephone at least one point of contact (POC) for each referenced contract, preferably the Program Manager. The POCs should, wherever possible, be Government employees with personal knowledge of the past performance of the contractor in question. In addition to Program Managers, POCs could include equipment specialists, systems engineers, ACOs, or pre-award survey monitors. POCs may also include private contractor personnel only when reference contracts are commercial/non-Governmental. Use the initial telephone contact to determine a fax number for questionnaire transmission. Include the name of the referenced contract and contract number so that the respondent can identify the related

past performance activity. In addition, be sure that the questionnaire includes instructions about protecting the completed form as source selection information.

A few days after faxing the questionnaire, the PRAG should make a follow-up telephone call to confirm that the POC received the questionnaire and will be able to meet the requested suspense date. If a questionnaire has not been returned by the suspense date indicated in the transmittal letter, a follow-up telephone call should be made to the POC to ensure that a response is forthcoming and confirm the new suspense date. Such follow-up calls should be made promptly to encourage timely completion and delivery of the questionnaires.

For those POCs in the local area, the PRAG may choose to conduct personal interviews to complete the questionnaire for each of the referenced contracts. Such interviews may elicit additional information concerning the past performance of the offeror or subcontractor not readily apparent through the use of the questionnaire alone, particularly since information can be easily obtained from more than just the single POC. Personal interviews may also be desirable outside the local area (resources permitting), especially when the referenced POC is located at a DCMAO/DPRO. In such cases it may be advisable to in-brief and interview the organizational commander. The commander can then ensure that the most knowledgeable personnel are available for interview. Such visits often provide the PRAG with information concerning other contracts not referenced in the offeror's proposal.

4.3.2 Telephone Interviews.

Following the screening of previous contracts for further in-depth review, each PRAG member should send questionnaires and/or initiate telephone calls to the identified references for those efforts. The interviewing and reporting of results are usually individual efforts conducted by each PRAG member. However, it is sometimes helpful for the PRAG to collect information as a group through the use of conference calls. In any event, the environment in which this work is done significantly impacts both the time required to complete this portion of the process and the quality of the results. These activities are hampered severely if each PRAG member attempts to conduct telephone interviews at their normal work site with all of its attendant interruptions, distractions, and security risks.

If, on the other hand, the PRAG members are able to assemble as a group for telephone interviews, they will be able to provide considerable reinforcement and instant feedback for one another. Each PRAG member should be able to devote their undivided attention to this initial assessment process. Although this approach requires a secure area that is large enough to accommodate all of the PRAG members, the resulting benefits are significant.

The telephone interview process is an art form. Until a smooth conversation pattern is developed, it is an inherently uncomfortable situation for many people. There will be some difficulty learning how to start a telephone interview, keep it moving, and cover all important areas. As the interviewing process continues, the PRAG member usually

uncovers special items of interest that he or she will want to pursue through follow-up calls.

At least two references should be contacted on each previous contract effort selected for in-depth review. Additional references are often identified during the interviews. Maximum effectiveness occurs when the expertise of the PRAG interviewer matches that of the person being interviewed.

Before initiating a telephone interview, a PRAG member should gather all available information on a specific effort and draft a list of questions. There may be a common group of questions for all offerors and/or tailored questions for each offeror, depending upon the circumstances. These questions can either be sent as questionnaires to each reference or be used by the PRAG member during the telephone interview.

At the start of each telephone interview, the PRAG member should explain the purpose of the call and request voluntary assistance from the person being interviewed. The PRAG member should explain that he or she will document the results of the conversation and send a copy of the memorandum to the reference for verification. There is usually no need to divulge the solicitation number, program description, or other identifying information to the reference. If you do so, you need to obtain a nondisclosure statement.

In most instances the person being interviewed will willingly provide the information requested. In those rare cases when the person refuses to participate, the PRAG member should request assistance from the contracting officer. Alternatively, the PRAG member may attempt to continue the interview off-the-record to obtain data that may be validated on-the-record during interviews with other references. However, off-the-record data that is not validated may not be considered in the PRAG report or the source selection decision.

It is important to pursue the underlying facts supporting any conclusionary statements received on a contractor, particularly if they are unusually positive or negative. The PRAG member can determine neither the magnitude of a reported problem nor its possible impact on the current risk assessment without first understanding the details surrounding the problem. It is helpful for the PRAG members to meet periodically to share information and ideas.

In some cases, the facts may be in dispute. The contractor may have submitted a claim or request for equitable adjustment alleging that the government is partially or wholly at fault for the performance problems on the program in question. The PRAG members should review the substance of the claim and attempt to determine if it is relevant and material. The environment that the contractor performed in is an important aspect of past performance. Raw performance data should not be divorced from the context of the performance. For example, if the contractor has significantly overrun his schedule but has submitted a claim alleging that the customer’s actions caused significant delay and disruption, it may be unfair to judge the contractor’s performance against the contract schedule without considering the actions of the customer, as well.

Immediately following a telephone interview, the PRAG member must prepare a narrative summary of the conversation and send it to the reference for verification

preferably by certified mail return receipt requested. Fax transmissions are also acceptable. The following step is *extremely* important. Extra care must be taken to ensure accuracy, clarity, and legibility because these summaries often represent the only written back-up supporting the opinions and conclusions of the final PRAG assessment report.

In order to maintain accurate records and facilitate verification, the telephone record form should include the reference's name, full mailing address and telephone number, the date and time of the call, and the description of the contract effort discussed. A sample telephone record form is attached.

The PRAG should send the telephone memorandum to the reference, stating explicitly that if the reference does not object to its content within the time specified, it will be accepted as correct. The amount of time allowed for a response depends on the circumstances of each procurement. A sample cover letter is attached. Note that the reference need not sign a nondisclosure form if the PRAG member withholds the identity of the program and solicitation number.

If a reference indicates that the narrative is incorrect, then a corrected narrative must be sent for verification. Experience indicates that in most instances, changes are minor. If, however, a reference expresses opposition to a record and satisfactory corrections cannot be agreed upon, the PRAG should not rely on the record. Another source may provide the same information, however.

Once the telephone interviews are completed, the entire PRAG needs to assess all offerors and assign performance risk assessments. The PRAG should note instances of singularly good or poor performance and relate it to the solicitation requirements. Once again, it is helpful for the PRAG to review the statement of objectives or statement of work and specifications. If the PRAG identifies performance problems on a prior contract, it should consider the role government fault played in that result.

The PRAG should not limit its inquiry solely to the proposing entity if other corporate divisions, contractors or subcontractors will perform a critical element of the proposed effort. The performance record of those organizations should be assessed in accordance with the solicitation. Performance risk assessments should consider the number and severity of problems, the *demonstrated* effectiveness of corrective actions taken (not just planned or promised), and the overall work record.

The PRAG's assessment is usually based upon subjective judgment. It is not a precise or mechanical process. The assessment should include a description of the underlying rationale for the conclusions reached. As long as that rationale is reasonable, it will withstand scrutiny even if other reasonable conclusions exist.

4.4 Data Relevancy.

The PRAG should screen the information provided for each of the referenced contracts to make an initial determination of its relevance to the current requirement. Such aspects of relevance include the type of effort (development, production, repair, etc.), and the type of requirement (weapon systems, information systems, engineering services, programmed depot maintenance, etc.). The objective of the screening is to remove from consideration those contract references

that are clearly unrelated to any assessment criteria. It should be noted that valuable information can be obtained from seemingly unrelated prior contracts regarding technical capability, management responsiveness, proactive process improvements, ability to handle complex technical or management requirements, etc. Other members of the source selection team may be consulted as necessary for assistance in determining relevancy.

Relevancy should not be described as a subfactor. Relevancy is a threshold question when considering past performance, not a separate element of past performance. Irrelevant past performance should not form the basis of a performance risk assessment.

Although the PRAG may consider data available from many sources, its main sources of information are often the references cited by offerors in their proposals. Upon receipt of proposals, the PRAG will determine which of the offeror's past contract efforts relate to the solicitation requirements. Although these determinations of relevancy are judgment calls, it is helpful to consider the offeror's explanation of relevancy contained in its proposal.

In some cases, previous contracts as a whole may be similar to the current contract while in others only portions of previous contracts may be relevant. For example, the government uses ADA software language in many different systems. If a solicitation calls for the development of ADA software for an aircraft system, the contractor might identify a previous effort where it developed ADA software for a satellite terminal. The government may consider that previous effort to be relevant for purposes of assessing the contractor's ability to develop ADA software even though the underlying system is different from the current requirement. Another example is the assessment of the contractor's management, planning, and scheduling of subcontractors on a past service contract for a current production requirement calling for integration skills.

The PRAG should consider the most recent data available. The best practice is to select efforts that are either still in progress or just completed, and that have at least 1 year of performance history. The actual cut-off time is left blank in the attached sample Section L provisions because it should be determined by the contracting officer on a case-by-case basis.

4.5 Discussion of Past Performance Data.

Past performance should be treated just like any other technical or managerial criteria during discussions. If a deficiency has been noted, the contractor should be given the opportunity to present his side of the story. This is done in the interest of fairness. However, if award is made without discussions, past performance is not discussed with the offerors (just as all other criteria are not addressed, since discussions are not held in this situation). In the event that the Government mistakenly omits discussions of past performance weaknesses with the contractor during discussions, there are GAO cases that support the Government's right not to discuss past performance problems, based on past performance being a matter of record, and, as such, uncorrectable. However, as with any other source selection criteria, trade-offs can be made between technical, costs, and performance risk factors in accordance with the ranking structure provided in the solicitation.

Should questions come up about how to handle past performance as a source selection criteria, consider what you would have done if it were a technical criteria. Treat it as such, including whether you discuss perceived performance weaknesses with a contractor during discussions.

Since you normally discuss technical weaknesses, discuss performance weaknesses at that time. If you intend to award without discussions, then discussing past performance is not necessary, provided the risk assessment is backed up by factually-based information.

During discussions with offerors in competitively negotiated procurements, the contracting officer must disclose deficiencies in the offerors' proposals. Arguably, negative past performance information provided by a reference is generally not a "proposal deficiency" because it is based upon information outside of that proposal. Nonetheless, a past performance problem can be a significant shortcoming that must, in fairness, be brought to the attention of the offeror during discussions if the offeror has not previously been apprised of the problem and provided an opportunity to respond.

This practice validates any negative information relied upon during the risk assessment process, and ensures fairness for the competing offerors. The validation process is particularly important when the negative information is provided by only one reference, or when there is any doubt concerning the accuracy of the information. It is noted, however, that while the government must disclose past performance problems to offerors' it need not disclose the identity of its sources.

A special problem arises with respect to subcontractors. Past performance information pertaining to a subcontractor cannot be disclosed to a non-government entity without the subcontractor's consent (OFPP Policy Letter 92-5, Dec. 30, 1992). Because a prime contractor is a non-government entity, the government needs to obtain the subcontractor's consent before disclosing its past performance information to the prime during negotiations. There are a variety of ways to obtain subcontractor consent. For example, the solicitation could require the prime to submit its subcontractor's consent along with the prime's proposal to the government.

4.6 Evaluating Contractors with No Past Performance Record.

In most cases the PRAG will find some related past performance information for each contractor and subcontractor, especially if the PRAG applies a broad interpretation of relevancy. Occasionally, however, a PRAG cannot find any relevant information. In those cases, contracting activities should treat an offeror's lack of past performance as an unknown performance risk that is neutral, having no positive or negative evaluative significance. This approach allows the government to assess past performance in a manner that is fair to newcomers.

An alternative approach may be used on rare occasions when the government must have a contractor with a *proven* performance record. In this situation, an offeror with no related past performance may represent a high or moderate performance risk to the contracting activity. This alternative approach should only be used if experience is assessed by the PRAG, not the SSEB. In this case, the solicitation should clearly state that the PRAG will assess experience as well as past performance and that a lack of experience may result in a high or moderate risk assessment. Even here the government can ease the impact on newcomers by including language in the solicitation that encourages them to team with proven performers.

4.7 Evaluating Incumbent Contractors.

Finally, how do you treat the past performance of an incumbent contractor? First, it is proper to consider an incumbent's performance when you are considering the past performance of other offerors. To simply ignore it is not sensible, as it provides the best predictor of future performance, since it is obviously current and relevant to the instant acquisition. However, when considering an incumbent's performance, address only the work that was actually performed. Do not give credit for work that was on contract, but not performed or extrapolate their ability to perform other work. Remember that considering past performance of an incumbent contractor is not necessarily beneficial to the contractor. He may be performing poorly and need to be replaced by another contractor that can deliver better value.

4.8 Integrating CPARS/SCARS within Past Performance Assessment.

The past performance assessment can be enhanced with data from Contractor Performance Assessment Report System (CPARS) and the Supplier Capability Assessment Reporting System (SCARS) (expected to be available through DCMC). It is incumbent upon the PRAG to incorporate “lesson-learned” from relevant, recent experience with suppliers that have tendered offers in response a government solicitation. As recommended by OFPP, the PRAG should evaluate <u>all</u> contract performance relative to the supplies or services being procured. Rather than relying on the programs cited in the contractor’s proposal as the basis for the assessment, a comprehensive search of the CPARS library may reveal performance that the contractor overlooked during proposal preparation that is relevant to the PRAG risk assessment.

CPARS [/CIM] contains a library of systematic performance assessments on all aeronautical sector programs having contract value in excess of $5 million. These performance assessments are systematically prepared in accordance with Instruction XXXX. PRAG members can find a narrative description of the contract effort, adjectival ratings in a number of critical performance area including program management, system engineering, schedule, cost, test and evaluation, etc. The data is available to all Department of Defense agencies for use in source selection from the libraries at locations designated in Attachment XX of the Instruction.

When utilizing Contractor Performance Assessment Reports (CPARs), care must be taken that insures that information is relevant to the procurement. This will require a systematic search of library files. Since CPARs are written annually for all qualifying contracts, select current information that complies with OFPP guidelines and FAR requirements.

After obtaining selected reports from the CPARS library, compare the reported performance assessments with proposal data provided in the supplier proposal and other data collect by the PRAG. If disparities exist, notify the contracting officer. When the data has a material effect on the source selection, such disparities must be reconciled before award. The offeror should be given a chance to respond to questions prepared to resolve the disparity.

In addition to the CPARS, the PRAG should have SCARS (Supplier Capability Assessment Reporting System) process ratings and metric trend data, expected to be available via the Defense Contract Management Command (DCMC) representatives at the contractor plant-site. You will be able to obtain both supplier processes ratings and key process metrics that are regularly reported for the processes being performed at a given site. The Supplier's processes ratings are an indication of process maturity.

The key process metrics may be utilized to evaluate the stability of the process ratings. Contact DCMC for a summary of processes being rated by DCMC as well as the list of attributes and measurements maintained for trend purposes. The following steps outline an approach for incorporating this data:

1. Identify the processes that are critical to the project's success.
2. Request process rating and historic trend metric data on these processes from DCMC.
3. Analyze the data for indications of performance risk as indicated by consistentency in process ratings or trends in the metrics that characterize the processes.

NOTE: These process metrics are site unique and should <u>not</u> be compared site to site, but only used for general trending information. The PRAG may not make direct comparisons between offerors based on the raw value of the measurements. The processes are defined to provide indicators of performance but do not adhere to any auditable basis common to all contractors. Furthermore, you should not be influenced by the relative magnitude of the measurement. Many factors may influence the plant-wide data including the mix of contracts in work, stage of contract work in a product's life cycle, plant utilization, availability of skills, stability of work force, level of investment in plant, equipment and technology.

At this point your assessment contains data from many sources: the proposal document, questionaires, interviews, CPARS, SCARS, and commercial data. Various analytical techniques, when properly applied to the situation, aid the development of your final contractor performance risk assessment which must be briefed to the SSA. As you consolidate your data, it maybe helpful to distinguish between process and results type of performance measurements. CPARs assess results on each contract while SCARS data is processes assessments. If your other inputs can be similarly classified, your performance risk assessment can be approached from two distinct perspectives: process and results.

Regardless of the method used to finalize your performance risk assessment, it is imperative that your result is supported by clearly documented facts, a logical development leading to your conclusion, and this information reflects the evaluation criteria that the contracting officer set forth in the solicitation.

4.9 Administrative Issues.

The first action of the PRAG chairperson should be to meet with the local source selection focal point. This individual will provide the latest guidance with respect to conducting performance risk assessments, local briefing formats, and lessons learned. The focal point can also identify sources of performance data that are available locally and explain how this information can be obtained.

The PRAG will require a secure work area with access to telephones, a fax machine and locking file cabinets. If dedicated source selection facilities are not available, the PRAG chairperson must ensure that the necessary resources are obtained. When the PRAG is located away from a dedicated source selection facility, members should be reminded of their responsibility to protect all source selection information received or generated throughout the process. The PRAG Chairperson must also ensure adequate clerical support is available to the PRAG team. This may require coordination with the SSAC or SSET Chairperson.

A review of all current source selection regulations, supplements and instructions should be conducted before the PRAG effort begins as specific PRAG guidance and RFP language are included in these documents. A review of the key RFP documents and provisions such as specifications, statements of work/ statements of objectives, and Sections L and M is essential to get a working knowledge of the primary objectives of the acquisition.

5.0 DEVELOPING SOURCE SELECTION CRITERIA

5.1 Focus on Key Discriminators.

After you have generated a list of potential candidates for source selection criteria, the number of criteria used to assess past performance in a source selection should be limited to a few key discriminators. Too many or inappropriate assessment criteria may not provide the basis for determining significant distinctions among proposals because it results in too much “granularity”. Assessments against such criteria typically level the proposals and obscures how the offerors past performance was in areas that are the best predictors of performance under the instant acquisition. It may hinder assessments of the significant strengths and weaknesses of the proposals. When selecting which of the possible quality discriminators will be used as a selection criteria, consider how the team will obtain information about the contractor. What types of questions will you ask references about the contractor's past performance that will give you information that can then be used to rate the contractor's past performance regarding that criteria? If you can't come up with a good, practical way to assess a potential discriminator, eliminate it from the list.

The following are some things to keep in mind when developing source selection criteria. Don't just use past experience and performance as a general criteria. Think about how it impacts the instant acquisition--Does it affect the public heath and safety, specialized equipment, mission critical tasks, or downtime aspects of the statement of work/ statement of objectives? Were there questions that you wish you had asked the incumbent contractor that would have prevented

performance problems? Think about the types of questions you will ask references-- "Has the contractor produced and delivered the product before? Does the contractor have a proven ability to meet schedules and a satisfactory record of performance? Does the contractor have a favorable reputation, a customer orientation, and a proven history of meeting long-term commitments? Is the contractor's record free from instances of overpricing, post-award cancellations, unauthorized substitutions of materials, and requests for price increases or waivers?" The answers to these questions should generate a list of criteria that describe the overall quality of work completed by the contractor on past projects of similar size and scope.

5.2 Past Performance Inputs for Section L/Section M of the RFP.

Section L of the solicitation should instruct offerors to submit information concerning contracts and subcontracts which are in any way similar to the work required by the solicitation, or which offerors consider relevant in demonstrating their ability to perform the proposed effort. Also, it is important that the offeror specifically describe the work that its subcontractors will perform so that the PRAG can conduct a meaningful performance risk assessment on each significant subcontractor (as defined in Sample Section L # 2.) Presolicitation or preproposal conferences should explain the performance risk methodology to ensure that offerors understand the process and its overall significance.

Section M should clearly state that: (1) the government will conduct a performance risk assessment based upon the past performance of the offerors and their proposed subcontractors as it relates to the probability of successful accomplishment of the work required by the solicitation; (2) in conducting the performance risk assessment, the government may use data provided by the offeror and data obtained from other sources; (3) while the government may elect to consider data obtained from other sources, the burden of providing thorough and complete past performance information rests with the offeror. Section M should also explain how the performance risk assessments will be considered in the integrated evaluation of proposals.

5.3 What is Needed in Contractor Past Performance Volume.

The past performance volume of the proposal should contain enough information on the offerors' present and past performance to enable the PRAG to determine how closely the work performed relates to the assessment areas and factors. Offerors should submit information they consider relevant in demonstrating their ability to perform the proposed effort. This information may include data on efforts performed by other divisions, corporate management, critical subcontractors or teaming contractors. The offerors should explain how such resources will be brought to bear or significantly influence performance of the proposed effort. The offerors should also identify knowledgeable points of contact for each listed contract. Relevancy criteria that limit the offerors' performance data submission, such as dollar value, product line, business division, and time should generally not be stated in the solicitation. Instead, offerors should focus their input on the source selection areas and factors identified in Section M, Evaluation Factors for Award.

Note that the RFP may request that this volume be submitted earlier than the rest of the proposal. This gives the PRAG an opportunity to get the “long lead “ items (preaward surveys and questionnaires) completed on time. If an offeror does not get the past performance volume in early, but turns in the entire proposal before the closing date, they can not be deemed non-responsive on the basis of the late delivery of the past performance volume

The required content and format for the past performance data submission is included in the Section L instructions. Offerors can enhance the quality of the past performance portion of their proposal by clearly identifying which past contracts are relevant indicators of performance against specific source selection factors (or areas if factors are not used). As a minimum, the original schedule and cost/price, the current schedule and cost/price, and the reason for any differences should be discussed. Offerors must ensure that points of contact listed as references are current. The page limitation on this volume should be clearly stated.

6.0 PRAG OUTPUT

6.1 SSA Briefing.

The PRAG must accomplish its efforts in a timely manner in order to meet source selection schedule objectives. Communication with the PCO and SSET chairperson is critical to that end. If discussions with offerors are conducted, the PRAG must have all clarification requests (CRs) prepared in time for the competitive range briefing. In the context of past performance, CRs are formal requests to the offeror for clarification on any performance data gathered that is contradictory, unclear or could lead to a moderate or high risk assessment. Subsequent CRs may be necessary as additional data is uncovered or becomes available. However, all communication between the Government and offerors must be completed with the issuance of the request for Best and Final Offers (BAFOs).

In the event award without discussions is contemplated, the PRAG must be able to demonstrate at time of business clearance that discussions regarding past performance are not necessary in order to make award. Questionnaire data which cannot be independently verified cannot be used in the PRAG's analysis if award without discussions is being made.

It may be advantageous to provide an “in-process” presentation of PRAG findings at the competitive range briefing(s) (if held). This presentation should show what the PRAG has done to date and any preliminary analysis of data collected. If there is a problem with the PRAG’s approach, this presentation allows the PRAG to correct its approach and provide the analysis needed in the PRAG’s final report. This may also provide insight into either additional contracts or points of contact for the PRAG to check concerning an individual offeror’s past and present performance.

Following the analysis and assessment of the performance data, the PRAG should prepare a draft briefing presenting its summary of the data gathered and the performance risk assessments assigned. The PRAG chairperson should conduct a “dry run” of the briefing prior to the presentation to the SSA.

A draft of the final written PRAG report should be prepared after the completion of the draft briefing. The final report should summarize the PRAG effort and the assessment of performance risk and address, as a minimum, sources and type of performance data gathered, relevance and significance of the data, and risk assessments and supporting rationale for each.

The PRAG briefing should be presented to the SSET or SSAC at the decision briefing "dry-run". Any suggested additions, changes or other modifications to the briefing should be incorporated into the final briefing and report as necessary.

6.2 Input to Post-Award Debriefing.

The PRAG Chairperson should be prepared to support debriefings to offerors as requested by the Contracting Officer. The content of the debriefing will be substantially the same as that presented to the SSA at the decision briefing.

6.3 Lessons Learned/Feedback.

At the conclusion of each source selection, the contracting officer will collect “lessons learned” from those participating in the source selection process. PRAG members should contribute their honest impressions of the process and suggestions for improvement to the contracting officer, who will forward them to the appropriate service office. This information will help ensure the continuous improvement of the source selection process.

7.0 ATTACHMENTS

7.1 Sample Key Milestones and Events.

EVENT	OPR
Acquisition Strategy Panel Completed	PCO/PO/PK
Draft RFP to Industry	PCO/PO
AP Approved	PCO/PO
SSP Approved	PO/Rec
SSEG Approved	PO/Rec
RFP Released	PCO
Receive Performance Volumes	PCO/Rec
Release Performance Questionnaires	Rec
Proposals Received & Checked	PCO/Rec
Request Audits/Preaward Surveys	PCO
Receive Performance Information/Questionnaires	Rec/PRAG
Performance Risk Assessment Completed	PRAG/Rec

ENHANCED PAST PERFORMANCE

Prepare PRAG Performance Charts	PRAG/Rec
Start Writing PAR	PO/Rec
Start Writing Lessons Learned Report	Rec/PO/Chair
Complete Competitive Range Briefings Charts	Rec/PO
Competitive Range Briefing Dry Run	TT/Chair/CT/PRAG
Correct Competitive Range Charts	Rec
Competitive Range Briefing To SSA	TT/Chair/CT/PRAG
Prepare Questions for Discussions	PCO/TT/PO
Receive Audits/Preaward Surveys	PCO
Discussions With Offeror A	TT/CT/Rec
Discussions With Offeror B	TT/CT/Rec
Discussions With Offeror C	TT/CT/Rec
Request BAFO	PCO
Receive BAFO	PCO
Evaluate BAFO	PCO/TT
Prepare Decision Briefing Charts	Rec/PO
Complete PAR	Rec/PO
Prepare Decision Document	Rec/PO
Decision Briefing Dry Run	TT/Chair/CT
Decision Briefing To SSA/Contract Award	TT/Chair/CT
Decision Doc Signed By SSA	TT/Chair
Complete Lessons Learned Report	Rec/PO/Chair
Debriefings (Upon Request By Offeror)	PCO/TT

Chair = SSET Chairperson

CT = Contract Team

JA = JAG

PCO = Procuring Contracting Officer

PK = ASP Chairperson

PKC = Procurement Committee

PKXB = Operations

PKXC = Competition Advocacy Representative

PRAG = Performance Risk Analysis Group

PO = Project Officer

REC = Recorder

SS0 = Source Selection Officer

TT = Technical Team

7.2 Sample Sections L.

The following two examples of RFP language are offered as points of departure--**DO NOT BLINDLY COPY THEM**. Any RFP language should be tailored to reflect the requirements in the Statement of Work/ Statement of Objectives and the key performance characteristics that the agency will use to assess offerors.

7.2.1 Section L # 1.

Offerors shall submit the following information in Vol. XXX of their proposal:

A. A list of the last five relevant contracts completed by the offeror, including the following information about each contract:

1. Name of the contracting activity
2. Contract Number
3. Contract Title
4. Face value at award, including all options
5. PCO name and telephone number
6. Program Manager name and telephone number
7. ACO name and telephone number
8. Contract type
9. Basic contract award amount
10. Current contract award amount
11. Final project contract amount (including all unexercised options that may still be exercised)
12. Original delivery schedule
13. Current delivery schedule
14. Short description of the requirement
15. Description of your performance to date, including corrective actions taken, in the following areas: cost, delivery, technical
16. Description of major subcontracts

B. The information as set forth in A., above, for any current contract that has been underway for 6 months or longer.

C. The information as set forth in A., above, for any other contract completed in the last two years or current contract that demonstrates your commitment to customer satisfaction.

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7.2.2 Section L # 2.

(Caution: Proposals which fail to contain the information requested in this paragraph may be rejected by the government.)

Performance Risk:

The offeror shall submit a description of its previous government contracts (all prime and major subcontracts received, or in performance, during the past ____ years) which are in any way relevant to the effort required by this solicitation. Commercial or state and local contracts may be included if necessary. The description shall include the following information in the following format:

Identify in specific detail for each previous contract listed, why or how you consider that effort relevant or similar to the effort required by this solicitation

Your (and/or your subcontractor's) CAGE and DUNS numbers

Government or commercial contracting activity, address, and telephone number

Procuring Contracting Officer's (PCO's) name and telephone number

Government or commercial contracting activity technical representative, or COR, and telephone number

Government or commercial contract administration activity, and the name and telephone number of the Administrative Contracting Officer (ACO)

Contract number

Contract award date

Contract type

Awarded price/cost

Final, or projected final, price/cost

Original delivery schedule

Final or projected final, delivery schedule

A narrative explanation on each previous contract listed describing the objectives achieved and any cost growth or schedule delays encountered. For any government contracts which did not/do not meet original requirements with regard to either cost, schedule, or technical performance, a brief explanation of the reason(s) for such shortcomings and any demonstrated corrective actions taken to avoid recurrence. The offeror shall also provide a copy of any cure notices or show cause letters received on each previous contract listed and a description of any corrective action by the offeror or proposed subcontractor.

The offeror shall also provide the above required information for any and all contracts it has had terminated in whole or in part, for default during the past years, to include those currently in the process of such termination as well as those which are not similar to the

proposed effort. The contractor shall list each time the delivery schedule was revised and provide an explanation of why the revision was necessary.

New corporate entities may submit data on prior contracts involving its officers and employees. However, in addition to the other requirements in this section, the offeror shall discuss in detail the role performed by such persons in the prior contracts cited.

Offerors shall provide an outline of how the effort required by the solicitation will be assigned for performance within the contractor's corporate entity and among proposed subcontractors. Information required in the above paragraphs shall be provided for each proposed subcontractor who will perform a significant portion of the effort. "Significant" is defined for these purposes in terms of estimated dollar amount of the subcontract (e.g., $1,000,000 or more) and/or in terms of criticality of the subcontracted work to the whole. With regard to prime contract assignments that will be performed by you and not a proposed subcontractor, you shall indicate:

1) what internal corporate bodies/divisions will accomplish which portions of the effort,
2) whether or not those divisions were responsible for performance under the previous contracts cited for the instant proposal, and
3) if those divisions have relocated since the accomplishment of previous cited contract efforts, a description of any changes arising from that relocation in terms of key personnel, facilities and equipment.

Offerors shall include in their proposal the written consent of their proposed significant subcontractors to allow the government to discuss the subcontractor's past performance assessment with the offeror during negotiations.

Note: Offerors are reminded that both independent data and data provided by offerors in their proposals may be used to assess offeror past performance. Since the government may not necessarily interview all of the sources provided by the offerors, it is incumbent upon the offeror to explain the relevance of the data provided. The government does not assume the duty to search for data to cure problems it finds in proposals. The burden of providing thorough and complete past performance information remains with the offerors. Proposals that do not contain the information requested by this paragraph risk rejection or high risk assessment by the government.

7.3 Sample Sections M.

The following examples are offered as points of departure--**DO NOT BLINDLY COPY THEM**. Any RFP language should be tailored to reflect the requirements in the Statement of Work/ Statement of Objectives and the key performance characteristics that the agency will use to assess offerors.

7.3.1 Section M #1.

A. Offers will be assessed on the basis of price, quality of the technical proposal, and the offeror's past performance and experience, in descending order of importance. All

other evaluation factors other than cost or price, when combined are significantly more important than price. Price is slightly more important than the technical proposal, and the technical proposal is slightly more important than past performance and experience.

B. Past experience will be assessed as follows:

1. Recency - Recent experience doing the same type work as called for in the solicitation will be assessed higher than non-recent experience; (the more recent the experience, the higher the assessment).

2. Relevancy - Work that matches the work required under the solicitation will be given more weight than work that does not match the required work. Offerors who have performed the same or similar work as that required under the solicitation will be assessed higher than offerors who have not performed the same or similar work. Work performed for the Government may be assessed higher than work performed for a private entity, as it is typically more relevant to Government acquisitions, such as this one.

a. Work that corresponds closely or exceeds the complexity of the required work is generally more relevant than past experience is limited to less complex tasks.

b. Size of Prior Contracts - Past contracts that are of the same approximate size or larger than the proposed contract are generally more relevant than contracts smaller than the proposed contract.

C. Past performance will be assessed as follows:

1. The Government will consider the offeror's record of conforming to specifications/commercial product descriptions and to standards of good workmanship; the offeror's adherence to contract schedules, including the administrative aspects of performance; the offeror's record of managing subcontractor delivery and performance; the offeror's record of controlling costs under cost-type contracts; the offeror's record of number and type of change orders under similar contracts; the offeror's reputation for reasonable and cooperative behavior and commitment to customer satisfaction; and, generally, the offeror's business-like concern for the interests of the customer.

2. The assessment of the offeror's performance will be used as one means of evaluating the credibility of the offeror's proposal. A record of marginal or unacceptable past performance may be considered an indication that the ability of the contractor to perform the contract as proposed may be questionable. This increased performance risk may be reflected in the overall assessment of the offeror's proposal.

3. The assessment of the offeror's past performance will be used as one means of evaluating the relative capability of the offeror and other competitors to meet the performance requirements of the proposed contract. Thus, an offeror with an exceptional record of past performance may receive a more favorable

assessment than another whose record is acceptable, even though both may have otherwise equally acceptable proposals.

4. In investigating an offeror's past performance, information in the offeror's proposal will be considered along with information obtained from other sources, such as past and present customers, other Government agencies (including state and local governments), consumer protection organizations, better business bureaus, and others who may have useful information.

5. Assessment of past performance will be a subjective assessment based on consideration of all relevant facts and circumstances. It will not be based on absolute standards of acceptable performance. The Government is seeking to determine whether the offeror has consistently demonstrated a commitment to customer satisfaction and timely delivery of quality goods and services at fair and reasonable prices. This is a matter of judgment.

6. Offerors will be given an opportunity to address especially unfavorable reports of past performance and the offeror's response, or lack thereof, will be taken into consideration. In particular, recent contracts will be examined to ensure that corrective measures have been put in place to prevent the reoccurrence of past performance problems. Prompt actions taken to correct performance problems will be a reflection of management concern for customer satisfaction; however, such action may not mitigate all negative performance trends.

****

7.3.2 Section M #2.

M.1 Evaluation Factors for Award

(a) Selection of an offeror for award will be based on an evaluation of proposals in three factors: Technical, Cost, and Performance Risk. Each factor is separately described below in greater detail. The technical, cost, and performance risk factors will not be numerically scored but rather will be rated in an adjectival and narrative manner. The ultimate objective of the evaluation is to determine which proposal offers the best prospect for optimum attainment of the objectives of this program. Negotiations may be conducted with those offerors determined to be in a competitive range by the contracting officer.

(b) All other evaluation factors other than cost or price, when combined are significantly more important than price. The technical factor is slightly more important than the cost factor which is slightly more important than the performance risk factor. However, to be considered for award an offeror must be determined to be acceptable in the technical factor. A deficiency could constitute a basis for rejection of a proposal. Award will be made to that offeror whose proposal represents the best overall buy for the government. The government reserves the right to award to other than the low offeror.

(c) Offerors are urged to ensure that their proposals are submitted on the most favorable terms in order to reflect their best possible potential, since less than the best potential could result in exclusion of the proposal from further consideration.

Offerors are reminded that unsupported promises to comply with the contractual requirements will not be sufficient. Proposals must not merely parrot back the contractual requirements but rather must provide convincing documentary evidence in support of any conclusionary statements relating to promised performance.

(d) The offeror's proposal is presumed to represent its best efforts to respond to the solicitation. Any inconsistency, whether real or apparent, between promised performance and price should be explained in the proposal. Unexplained inconsistencies resulting from the offeror's lack of understanding of the nature and scope of the work required may be grounds for rejection of the proposal.

M.2 Technical Factor

M.3 Cost Factor

M.4 Performance Risk Factor

(a) During the source selection process, the government will assess the relative risks associated with each offeror and proposal. It is important to note the distinction between proposal risk and performance risk.

(1) Proposal risks *are those associated with an offeror's proposed approach in meeting the government's requirements. Proposal risk is assessed by the proposal evaluators and is integrated into the analysis of each specific evaluation subfactor under the technical and cost factors.*

(2) Performance risks *are those associated with an offeror's likelihood of success in performing the solicitation's requirements as indicated by that offeror's record of past performance. Performance risk is assessed by the PRAG and is assigned a narrative assessment in the performance risk factor of the evaluation.*

(b) The government will conduct a performance risk assessment based upon the quality of the offeror's past performance as well as that of its proposed subcontractors, as it relates to the probability of successful accomplishment of the required effort. When assessing performance risk, the government will focus its inquiry on the past performance of the offeror and its proposed subcontractors as it relates to all solicitation requirements, such as cost, schedule, and performance, including the contractor's record of conforming to specifications and to standards of good workmanship; the contractor's record of containing and forecasting

costs on any previously performed cost reimbursable contracts; the contractor's adherence to contract schedules, including the administrative aspects of performance; the contractor's history for reasonable and cooperative behavior and commitment to customer satisfaction; and generally, the contractor's business-like concern for the interests of its customers.

(c) A significant achievement, problem, or lack of relevant data in any element of the work can become an important consideration in the source selection process. A negative finding under any element may result in an overall high performance risk assessment. Therefore, offerors are reminded to include all relevant past efforts, including demonstrated corrective actions, in their proposal. The lack of a performance record may result in an unknown performance risk assessment.

(d) Offerors are cautioned that in conducting the performance risk assessment, the government may use data provided by the offeror in its proposal and data obtained from other sources. Since the government may not necessarily interview all of the sources provided by the offerors, it is incumbent upon the offeror to explain the relevance of the data provided.

Offerors are reminded that while the government may elect to consider data obtained from other sources, the burden of providing thorough and complete past performance information rests with the offerors.

7.4 Sample Telephone Interview Format.

PRAG I.D. NUMBER:

CONTRACTOR: (*Name & Address*)

PERSON CONTACTED: (*Name, Address, Phone*)

DATE & TIME OF CONTACT:

I am (*name*). My telephone number is (#). I am calling in reference to contractor (*name*). My questions will concern that contractor's record of past and current performance. The information that you provide will be used in the award of a federal contract. Therefore, it is important that your information be as factual and accurate as possible. A summary of this discussion will be sent to you for your records. If that summary is inaccurate or incomplete in any way, please contact me immediately.

SUMMARY OF DISCUSSION:

(*To be filled in by Government personnel.*)

Signature of PRAG Member

Telephone #

Reminders for PRAG Member:

- Discuss recency and relevance of information.
- Read summary to person contacted.
- Send copy to person contacted.

7.5 Sample Format for Telephone Interview Cover Letter.

[on letterhead]

Address

1. Attached is a summary of your telephone conversation with a member of the Performance Risk Assessment Group on *(date).*

2. If this office does not hear from you by *(date)* we will assume that the summary of the discussion is correct. If you have any questions or comments you may address them to *(address).* You may also call me directly at *(phone #).*

3. We thank you for your time and assistance regarding this effort.

Chairman, PRAG

Attachment:

Telephone Interview Format

7.6 Other Ideas for Telephone Interviews.

Because the word "PRAG" is new, it may not be recognized by the references. To avoid confusion, simply state that the contractor's past performance is being assessed for a source selection. There is usually no need to divulge the solicitation number, program description, or other identifying information to the reference. If you do so, you need to obtain a nondisclosure statement.

Confirm the following data received from the contractor:

- Contract number and type
- Award amount and final or projected final amount
- Award delivery schedule and final or projected final delivery schedule
- Nature of the effort (i.e., the scope of the effort, the types of tasks involved and the product to be delivered)

If the award amount or delivery schedule has changed, find out what caused the change. Discover what role the reference played (e.g., COR (Contracting Officer’s Representative), contract specialist, ACO, etc.) and for how long.

If a problem is uncovered, discuss what the government and contractor did to resolve it.

Ask for a description of the types of personnel (skills and expertise) the contractor used and the overall quality of the contractor's team. Did the company appear to use personnel with the appropriate skills and expertise?

Ask how the contractor performed considering quality of performance, responsiveness, schedule, overall management, technical performance, and financial/cost management.

Ask whether the contractor was cooperative in negotiations and in resolving issues.

Inquire whether there were any particularly significant risks involved in performance of the effort.

Ask if the company appeared to apply sufficient resources (personnel and facilities) to the effort.

Ask if the company used subcontractors. If so, what was the relationship between the prime and the subcontractors? What was the management role of the prime and how well did it manage the subcontractors? Did the subcontractors perform the bulk of the effort or 'just add breadth or depth on particular technical areas? If the subcontractors worked on specific technical areas, what were those areas and why were they accomplished by the subcontractors rather than the prime?

If a problem is uncovered that the reference is unfamiliar with, ask for another individual who might have the information.

Inquire whether there are other past efforts by this firm with the reference's agency.

Inquire what the company's strong points are or what the reference liked the most about them.

Inquire what the company's weak points are or what the reference liked least about them.

Inquire whether the reference has any reservations about recommending a future contract award to this company.

Inquire whether the reference knows of anyone else who might have past performance information on the offeror.

7.7 Sample Questionnaire.

Program Name:

Contract No.:

1. Please specify the contract requirements, purpose, and technology.

2. Did the contractor meet the original equipment performance requirements? Please explain:

3. Did the contractor request specification relief. If so, was there an impact on system performance, cost or delivery?

4. Did the contractor use ADA language? If yes, did the contractor meet the ADA language and software requirements? Please explain:

5. Did the contractor meet test schedule requirements? Please explain:

6. Were any Quality Deficiency Reports (QDR) or corrective action requests submitted to the contractor due to quality deficiencies? Please explain:

7. Opinion: Quality, reliability and maintainability of equipment delivered. Very Good ( ) Good ( ) Acceptable ( ) Marginally Acceptable ( ) Please explain:

8. Was the contractor's engineering management effective in controlling costs, schedule and performance requirements? Please explain:

9. Did the contractor successfully manage its subcontractors? Please explain:

10. Was human engineering/manprint a requirement? If so, was it satisfactory? Please explain:

11. Was logistics support satisfactory in meeting contract requirements? Please explain:

12. At completion of the contract, was the contractor committed to customer satisfaction? Please explain:

13. Rate the contractor s overall technical performance: Good ( ) Fair ( ) Poor ( ) Would you recommend this contractor for other contracts? Please explain:

14. Were there any problems with Engineering Change Proposal, Requests for Waivers, or Requests for Deviations? Please explain:

15. Were there any problems with Logistics Support Documentation? Please explain:

16. During technical meetings, was the contractor cooperative and receptive to government concerns affecting production and/or performance requirements? Please explain:

17. With respect to design, engineering capability, and overall technical performance, would you recommend this contractor for similar government contracts? Please explain:

18. How would you rate the contractor's technical performance on this contract? Outstanding ( ) Good ( ) Poor ( ) Please explain:

19. Do you know of anyone else who might have relevant information concerning this contractor's past performance? Please explain:

20. Please make any additional comments you wish here:

7.8 Sample PRAG Assessment Plan.

7.8.1 Definitions.

Performance Risks. Performance risks are those associated with an offeror's likelihood of success in performing the solicitation's requirements as indicated by that offeror's record of past performance. Performance risk is assessed by the Performance Risk Assessment Group (PRAG) and is assigned a narrative analysis in the Performance Risk Factor of the evaluation.

Performance Risk Assessment Group. A PRAG is the source selection entity that assesses performance risk. The PRAG may either be separate from the SSEB and report directly to the SSAC, or operate as a separate group within the SSEB and report through the SSEB chairperson to the SSAC. Each contracting activity determines the appropriate composition and structure of its PRAGs, depending upon the size, nature, and complexity of a particular procurement.

Proposal Risks. Proposal risks are those associated with an offeror's proposed approach in meeting the government's requirements. Proposal risk is assessed by the proposal evaluators and is integrated into the assessment of each specific evaluation subfactor under the technical and cost factors.

7.8.2 The Performance Risk Assessment Group.

Responsibilities

The PRAG shall perform an in-depth review and assessment of the performance data provided by offerors and obtained from other sources to:

Assess each offeror’s past and current performance as it relates to the solicitation requirements. The PRAG should consider the relevancy, recency and accuracy of the data in arriving at its overall assessment.

Identify strong and weak points for use during negotiations and/or contract administration.

Performance Risk Assessment

The performance risk assessment conducted by the PRAG assesses each offeror's record of performance to determine the offeror's likelihood of success in performing the required effort. The PRAG must focus its inquiry on the offeror's record of performance as it relates to the performance of the solicitation requirements. Therefore, the PRAG must become thoroughly familiar with the statement of work and specifications. Since the PRAG does not perform the proposal risk assessment (the SSEB's proposal evaluators do that), it does not normally review the offerors proposals.

The PRAG's performance risk assessment is not solely limited to the prime contractor division submitting the proposal when other divisions, corporate entities, critical subcontractors, or teaming contractors perform a critical element of the required effort. In such cases, the PRAG should assess the other organization's performance record.

Each performance risk assessment will consider the number and severity of problems, the effectiveness of corrective actions taken, and the overall work record. The assessment of performance risk is not intended to be the product of a mechanical or mathematical analysis of an offeror's performance on a list of contracts, but rather the product of subjective judgment of the PRAG after it considers all available, relevant and recent information. The following definitions of performance risk should be used:

(A) HIGH (H) - Significant doubt exists, based on the offeror's performance record, that the offeror can satisfactorily perform the proposed effort;

(B) MODERATE (M) - Some doubt exists, based on the offeror's performance record, that the offeror can satisfactorily perform the proposed effort;

(C) LOW (L) - Little doubt exists, based on the offeror's performance record, that the offeror can satisfactorily perform the proposed effort; and

(D) NOT APPLICABLE - No significant performance record is identifiable. This is a neutral assessment. You must rely on the rest of the proposal to evaluate this offeror.

Note: Each of the high, moderate, and low risk categories may be further subdivided to enhance the comparative analysis of offerors.

[*Insert Section M of the Solicitation here.*]

Documentation:

The PRAG's performance risk assessment report will be provided directly to the SSAC or SSET Chairperson. The results of the PRAG assessment will also be briefed to the contracting officer by the PRAG chairperson.

The PRAG's documentation and presentations should address the following:

- The sources of the performance data
- The relevancy of the data to the program requirements
- The currency of the data
- The performance risk assessment of each offeror
- The supporting rationale for each performance risk assessment
- The strong and weak areas of each offeror for use during negotiations and/or contract administration
- Any other matters deemed relevant.

Gathering Performance Data:

The two primary sources of performance data are the contractor references contained in the performance risk volume of the offeror's proposal and formal data gathering systems such as the CPARS and the AMC CIS.

The CPARS is a manual database system that provides detailed information and an assessment of the on-going performance of contractors. Each report in the CPARS consists of a narrative assessment by the project manager, the contractor's comments, if any, relative to the assessment, and the overall performance assessment (exceptional, satisfactory, marginal or unsatisfactory) assigned by the CPAR approving official. AFMCI 64-107 contains specific instructions for obtaining CPAR data and for proper handling of the data. It should be noted that if current CPAR data is available for a particular contract, use of a questionnaire is normally unnecessary as the CPAR provides all needed data relevant to the contract in question.

The CIS does not contain a subjective analysis of past performance. Instead, it was designed to provide the PRAG with the key factual information needed to commence an investigation into the contractor's performance history. The actual assessment has been reserved for the PRAG members who can best determine which information is most relevant to the acquisition.

Upon request, the CIS will provide the PRAG with a Contractor Information Report (CIR) on an offeror's contract history within AMC. In reviewing that data report, the PRAG should exercise its own judgment to determine which of the offeror's past efforts are most relevant to the solicitation's requirements. Key points of contact will be identified on the data report for direct telephonic contact.

The PRAG will obtain whatever information it deems most relevant to the required effort by telephonic and/or written inquiry with the points of contact identified on the CIR. It is important that each discussion be accurately summarized on a PRAG Telephone Interview Report Form for it is this material which will later serve as back-up for the PRAG's performance risk assessment. A *copy of the Telephone Interview Report Form must be promptly sent by certified mail (return receipt requested) or by data fax to the point of contact for verification.*

There is usually no need to divulge the solicitation number, or other identifying information to the reference. If you do so, however, you need to obtain a nondisclosure statement.

The PRAG should also exercise its judgment in determining which, if any, of the contractor supplied references should be called for additional information or verification. Both negative and positive information should be corroborated before it is relied upon to any significant degree to ensure accuracy in the final PRAG report and fairness in the overall process. PRAG Telephone Interview Report Forms should be completed for these contacts as well.

The key to the success of each performance risk assessment is the PRAG's willingness and ability to seek out the most relevant, recent, and accurate information available. Should a PRAG member be unable to obtain information for a reference, he or she may contact the PRAG chairperson who should seek assistance through the source selection hierarchy.

8.0 REFERENCES

1. AFFARS Appendix AA, Formal Source Selection for Major Acquisitions, and AFMCFARS Appendix AA.
2. AFFARS Appendix BB, Source Selection Procedures for Other than Major Acquisitions, and AFMCFARS Appendix BB.
3. AFMCI 64-107, Contractor Performance Assessment Reporting System (CPARS).
4. AFMC Pamphlet 715-3, Vol 4; Past Performance in Source Selection, An Evaluation Guide.

APPENDIX J

INTEGRATED RISK ASSESSMENT/MANAGEMENT AND SOURCE SELECTION

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1.0 RISK MANAGEMENT AND ENHANCEMENTS IN SUPPORT OF THE SOURCE SELECTION PROCESS.

Enhancements to the source selection process, based on best commercial practices, are focused into four specific areas: performance requirements, risk management, basis for the selection decision, and past performance.

RFP's should focus on performance requirements. The government should be defining the "what to's" not the "how to's." Appropriate requirements documentation (e.g., draft system specification, system requirements document, etc.) should be included in the RFP defining the performance requirements (form, fit, function, and interface) for the product. This allows the government to take advantage of the industry capabilities in defining a solution to meet the need.

An integrated risk management approach needs to be implemented, one that changes the cultural thought process from one of risk avoidance to one of risk management. In many cases the risks associated with a program have not been understood by either government or industry. The risks on a program must be clearly recognized by both sides in putting a good RFP on the street. Risk management must be initiated early and continued throughout the program life cycle. The critical risks should become the focus for the source selection decision.

The RFP should focus only on what is essential for the source selection decision. Each RFP will have varied risks and requirements. The RFP should be tailored to reflect the individual need

and risks of that specific program. This would eliminate the inclusion of elements which have no significant influence on the source selection decision, reduce proposal preparation effort on the part of the offerors, and reduce proposal evaluation effort on the part of the government.

Emphasis on past performance should be increased in assessing a contractor's proposal and performance risks. This approach is similar to what we do every day in our personal lives when we buy a car or any other product or service. This enables a methodology to evaluate a contractor's capability to perform without the burden (and cost) of military specs and standards. This assessment will assess all of the offeror's past performance across all elements that would be involved in the requested contract effort. This could also provide increased awareness of risks into areas not explicitly solicited for proposal preparation by the RFP.

2.0 PERFORMANCE BASED RFPS.

The clear intent of the Perry policy was to move the government to "performance" based contracting. The government should be defining the performance requirements, the "what to," with the contractor developing and producing the solution to the requirements, the "how to." The government should define the top-level performance requirements focusing on form, fit, function, and interface; and with industry define the critical risks associated with meeting those requirements. These should be reflected in an RFP, one that is developed with industry to ensure that all of the critical risks are identified. The government should build the evaluation criteria for the solicitation based upon the work done in building the RFP. The contractor is then responsible to define how the performance requirements are going to be met. The contractor should show how these requirements will be flowed down to the levels necessary to design a solution and how the critical risks will be mitigated. The contractor should define the critical processes to be used, what the products of the processes will be, how they will be controlled and measured, and what management actions will be taken to ensure success.

3.0 PERFORMANCE REQUIREMENTS.

In performance based contracting, the government must focus on defining the top-level requirements that must be met to satisfy the mission need. These requirements should be at a system perspective addressing an integrated composite of people, products, and processes that satisfy this mission need.

These requirements should be kept at a fairly high level in order to allow flexibility and innovation in a solution, but must identify the performance parameters (form, fit, function, and interface). Performance requirements (or attributes) include quantity (how many or how much), quality (how well), coverage (how much area, how far), timeliness (how responsive, how frequent), and readiness (availability, mission readiness). Performance requirements should address all system people, products, and processes including those for development, production, verification, deployment, operations, support (including sustainment), training, and disposal. Thus, supportability parameters, manufacturing process variability, reliability, and so forth, are all performance measures.

These performance requirements should, however, be detailed enough to support identifying where the risks are involved and those critical to meeting the need. The government should also identify in the RFP where trade-offs will be acceptable and provide bounds for these trades. The trades should allow for a balanced solution set from the offeror considering performance, cost, schedule and risk. In addition, the contract should identify the bounds for continuing these trades during execution.

4.0 INTEGRATED RISK MANAGEMENT.

The clear focus of the source selection process should be around risk, choosing the offeror that provides the best opportunity of success, or the least risk. Integrated risk management must be implemented across the program life cycle. It should be a comprehensive process integrating performance (i.e., technical, cost, and schedule) iteratively throughout the program. By initiating an integrated risk assessment prior to RFP release, a sound program baseline can be developed, one that will positively support the RFP development and provide a clear sanity check for evaluation of the proposals. Risk management should be a key characteristic of the RFP and offeror's proposals. Understanding the inherent risks supports critical schedule development and resource loading to mitigate the high risk areas. The contractors must also identify any additional risks in their proposal resulting from their specific approach to satisfying the RFP. The risk mitigation plans included in the winning offeror's proposal should be the basis of the program execution focus.

The government should instruct the offerors to identify the critical processes they will use to meet the performance requirements and mitigate the inherent risks. The government should then assess each proposal for applicability, sufficiency, and risk inherent in the contractor's proposed approach and processes. Contractor's past performance in these areas should play an important role in assessing the overall risk of the program.

5.0 INTEGRATED RISK ASSESSMENT (IRA).

Managing a successful program includes effectively identifying, assessing and managing risk. Each program should implement integrated risk management as an extension of the acquisition risk management process from pre-award through proposal evaluation and continuing during program execution. These activities include all new acquisitions as well as major ECPs and preplanned product improvement efforts.

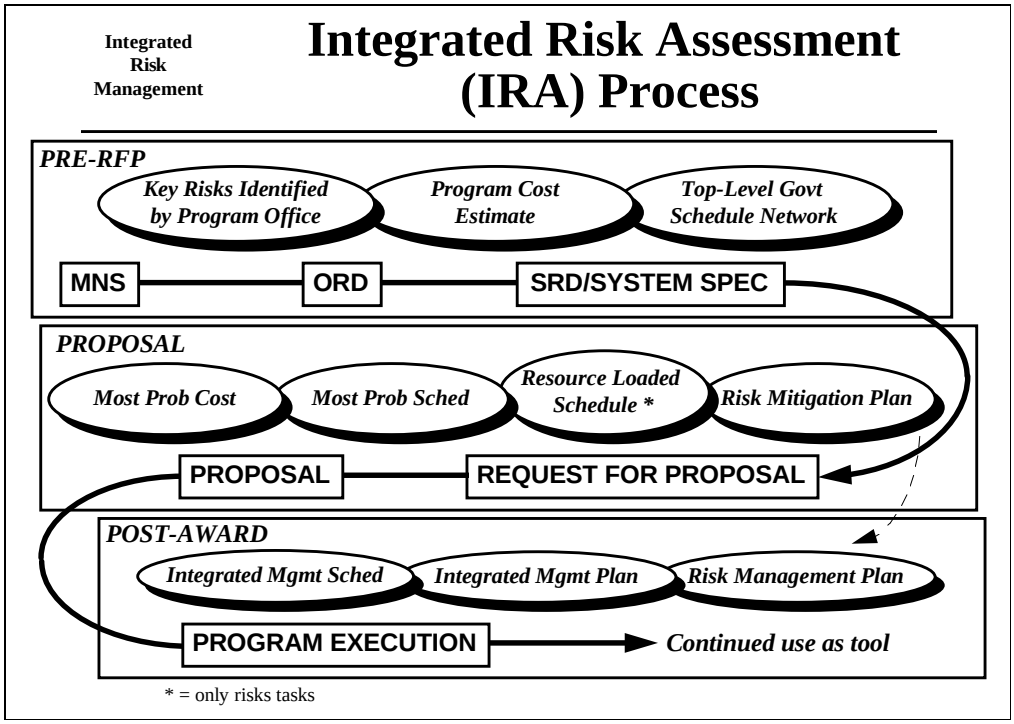

Figure J-1. Integrated Risk Assessment Process.

The level of detail and the tools used will depend on the acquisition phase, category, criticality of program, as well as type and dollar value. The program must be planned at an adequate level to identify risk and risk management activities to be employed throughout the program. The plan should provide a Work Breakdown Structure (WBS), a top-down list of activities and critical tasks, schedules, an estimate of resources required to execute the program with particular focus on resources for the high risk items, and a Life Cycle Cost (LCC) estimate. The detail must be at the level necessary to determine possible conflicts in the schedule, to perform risk assessments and to support program decisions. ACAT I/II programs will necessarily demand more detail in their integrated risk assessment than smaller programs.

An IRA can be used as a management tool to help plan a total program or program phase, as a review and decision tool to ensure the program was adequately planned, or as a monitoring tool to update the assessment for current status and risk projections. For new programs, an IRA should be used during program planning to provide supporting rationale for the initial budget and early program decision milestones, e.g., acquisition strategy panels. It should be updated during the source selection assessment and again periodically during program execution. These IRA estimates become a part of the program's ongoing communication of program executability to decision makers. An IRA should also be required at major milestones or in support of program restructure to evaluate the likelihood of completing the program on time and within budget or to document any additional schedule or cost required. Initial IRA estimates early in a program will most likely indicate wider bounds on the uncertainty in cost and schedule estimates; however, as the program evolves, risk abatement and greater knowledge of actual progress should be reflected in narrower bounds on the uncertainty ranges surrounding cost and schedule point estimates.

6.0 IRA PRE-AWARD.

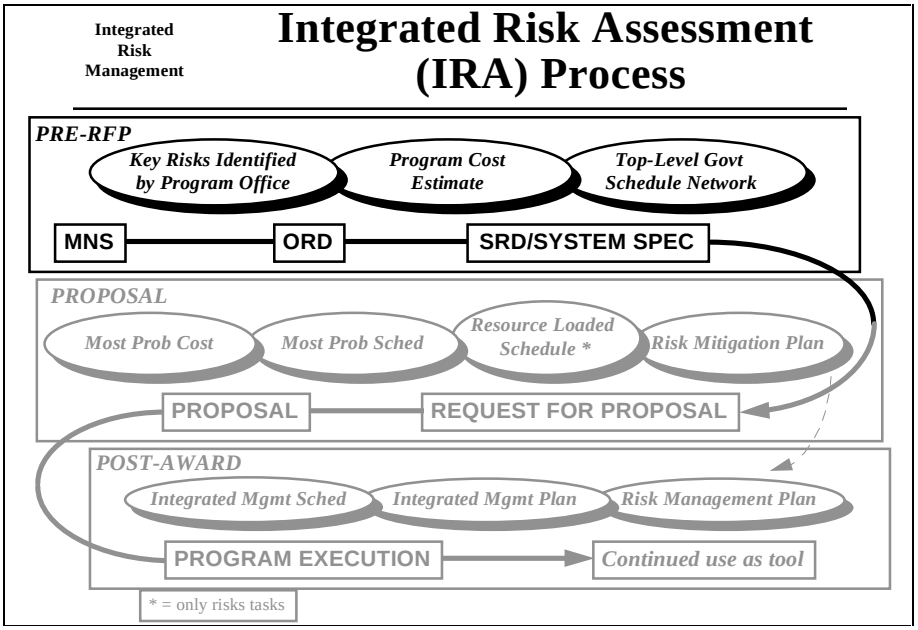

Figure J-2. IRA Pre-Award.

After a Mission Need Statement is translated into a set of top level requirements for a new system or for a modification to an existing system, the program office team defines the technical requirements, interfacing with both industry and the customer. Once this is done, a program for fulfilling those requirements can be developed. Once a conceptual program has been developed, the initial work breakdown structure (WBS) can be defined with all follow-on program documents tied to the WBS. A planning program Implementation Management Plan (IMP) should be developed, using as much industry input as practical, to define the program critical events with the appropriate success or exit criteria to satisfy those events. Once a planning IMP is determined, an Integrated Master Schedule (IMS) can be developed to provide the schedule details. This IMS begins with the IMP events and expands them to the activity level for the entire program. The IMS includes all programmatic activities included in the IMP. The program office team identifies required activities and tasks, estimates their duration and interdependencies, and builds a networked schedule for the program. These activities must be detailed sufficiently by knowledgeable and experienced people, so that critical and high-risk efforts are identified as realistically as possible even though it is very early in the program's life cycle. Once a schedule has been developed, a Life Cycle Cost (LCC) estimate can be developed to support the initial budget submission. Both the schedule and cost estimates developed by the team should address the uncertainty caused by the risk identified and show their estimate of the best and worst cases as well as the most likely. The budget submission should represent the program office's definition of an executable program.

7.0 IRA PROPOSAL.

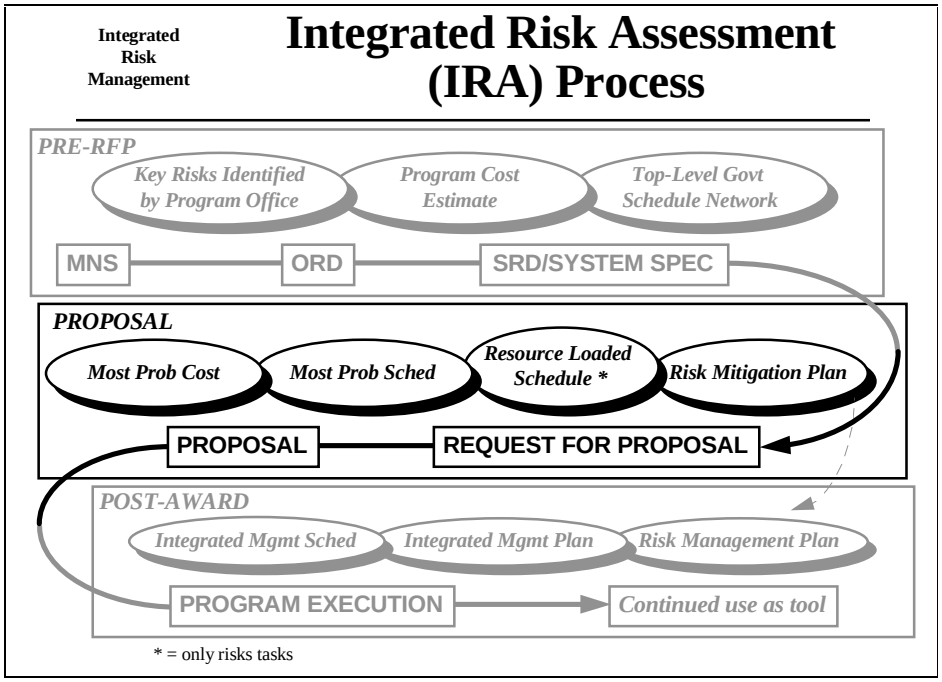

Figure J-3. IRA Proposal.

Before a final Request for Proposal is sent to industry, another IRA must be accomplished by the program office team with a detailed discussion of the risk identified, a revised IMP and IMS, an updated LCC estimate, and a detailed track from the initial IRA to the updated IRA must be prepared. The quality of these later risk assessments will be improved by interaction with industry where feasible. In addition, technical, schedule and cost uncertainty should be discussed in the bidders conference(s) before the draft RFP is released. In this way, the critical risks inherent in this program are identified and a risk focus for the RFP is defined. In the solicitation, offerors will be asked to develop an IMP and the networked IMS for inclusion in their proposals to reflect how they propose to do the work. The RFP will also require the offerors to resource load the inherent high-risk activities. This would allow for the building of a most probable schedule (90% confident schedule based on the government's source selection estimate of the program risk) and most probable cost (government's source selection estimate of the program's cost for each proposed solution from concept exploration to disposal, including oversight) for the effort as proposed by the offeror. The proposal evaluation team will perform a risk assessment of offerors' proposals and track the results to the previous IRA. The evaluation team will also determine what lessons are learned and this information, along with tracks from the previous IRA to the source selection IRA will be documented for use during program execution.

In sole source situations, the IRA can be developed with close contractor participation although the level of participation will depend on the situation. However, the program office team should update the IRA before the RFP is released to the contractor and perform another IRA after the contractor proposal is received. Before RFP release, a systematic risk assessment is accomplished; the IMP and IMS are updated; the LCC is revised; and a track to the initial IRA is prepared. Once this has been completed, the formal RFP should be prepared with this updated

information and sent to the contractor. The RFP should ask the contractor to propose an IMP/IMS with resource loading for the inherent high-risk activities identified in the proposal to show the government that risk mitigation activities have been planned and priced and also to help the government understand the scope of the effort required. After the contractor proposal is received, an IRA is again performed, and lessons learned from this become part of the fact-finding process and serve as an input to developing the negotiation objective. After the contract has been negotiated, the program IMP, IMS and LCC estimate should be updated and a documented track from previous IRA to final IRA prepared. This careful documentation will serve as an invaluable record for program managers and decision makers during program execution. The updated LCC will serve as the basis for the next budget submission.

8.0 IRA POST AWARD.

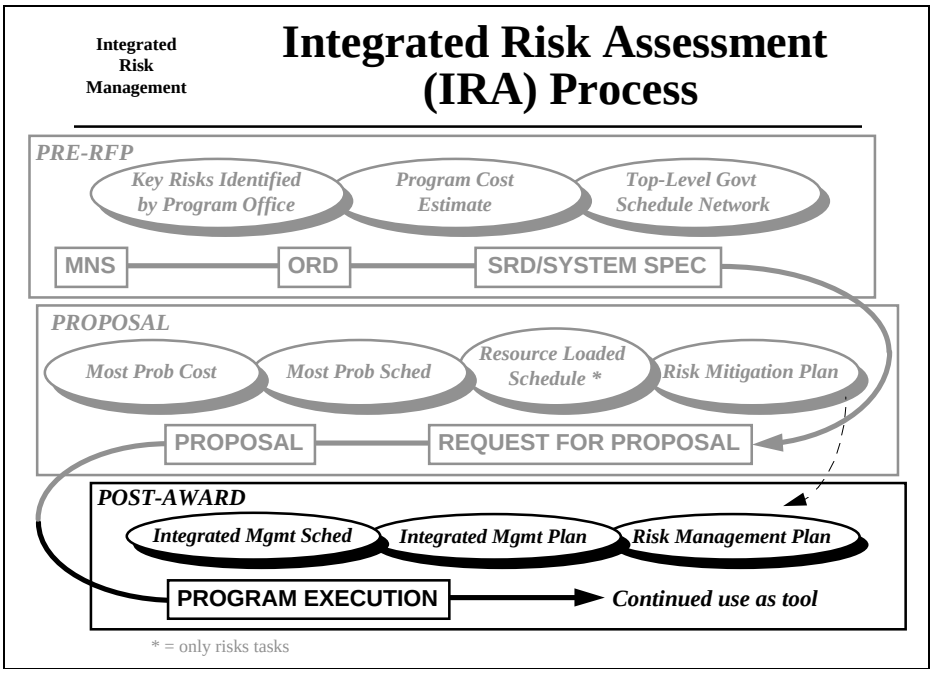

Figure J-4. IRA Post-Award.

After a contract has been awarded, the IMP and IMS become invaluable baseline data and risk management documents. The structure for cost reporting should be based on the IMS schedule baseline. Because the same or a traceable numbering system was used in the WBS, the Statement of Objectives (SOO) and the IMP, a consistent thread links all the items in various program documents. Also, manpower loading can be referenced to the IMS, reporting formats derived from it, and the program office team staffing based on it. When dynamic changes occur in the program, this link will enable the impact of the change to be captured in all program documentation much more easily than it has in the past.

An integrated risk assessment should be used for all major contractual commitments and milestone decisions. For programs in initial planning and budgeting, identification of the technical risk and the resultant uncertainty reflected in summary charts for the program, together

with a program IMP may suffice. Programs in source selection should perform an IRA as part of the source selection process for each offeror and briefed to the SSA. Because detailed historical data is not currently available, program office teams must be resourceful in gathering data to support their integrated risk assessment. Since reporting of cost data and schedule data with explanations of programmatic impacts to the actual schedule has not been rigorously practiced, the program office team should be prepared to use historical data as applicable on their program.

9.0 RISK ASSESSMENT FILTER.

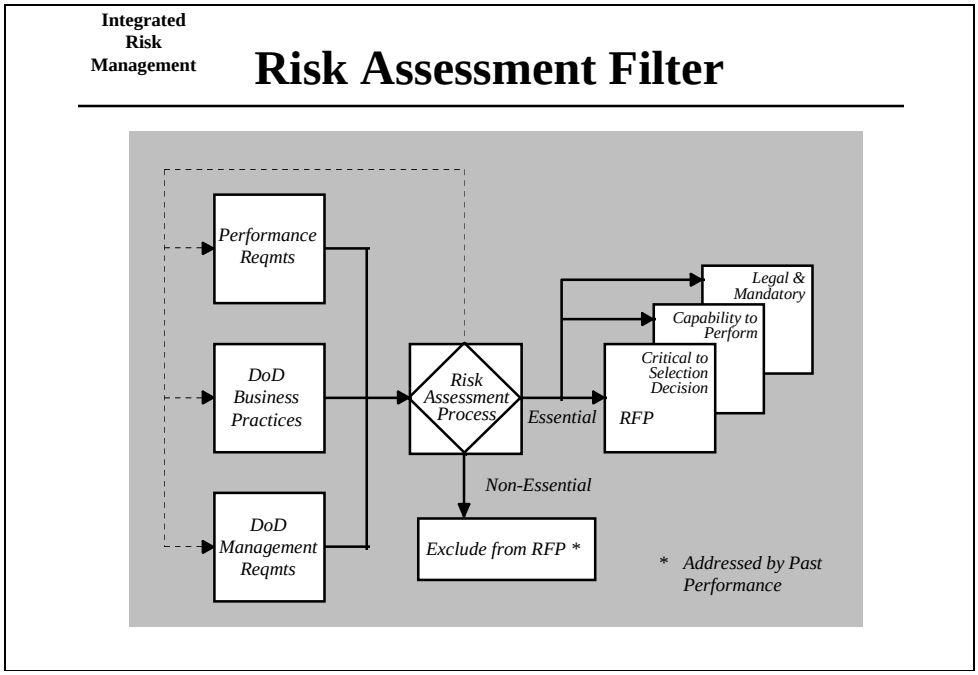

Figure J-5. Risk Assessment Filter.

Over the past, military specs and standards have documented our lesson's learned. By applying them to a contract, the risk area associated with that spec or standard, whether actually inherent to the effort at hand, was covered. Thus our risk mitigation only focused on that which remained. This approach could be described as risk avoidance. The Risk Assessment Filter is a way in which to implement risk management and focus the RFP/Source Selection process primarily on addressing and mitigating the risks inherent in a program.

RFP requirements come from three sources: performance requirements (form, fit, function, and interface), DoD business practices, and DoD management practices. The last two are generally defined in statutory and regulatory requirements with some political considerations included. The filter should address these three requirement sources from the perspective of the risk critical/inherent in meeting the performance requirements and essential to support the selection decision to be made. The key item is to be able to discriminate between offerors. These discriminators should be based upon mitigating risk, the risk identified through the IRA.

Therefore, that which is included in the RFP can be considered in one of three groups: 1) That which is critical to making a source selection decision; 2) Supporting evidence of an offeror's

capability to perform focused on the critical risk elements inherent in the effort (provided by an assessment of past performance with interim augmentation as necessary); and 3) Any legal and mandatory items. All other items that do not support the above should be "excluded" and thus not be included in the RFP. In this way, offeror's are spared the expense of preparing proposals (plans, etc.) for aspects that will not be significant discriminators in the source selection decision and the government is spared the expense of conducting an evaluation of these aspects. An assessment of past performance will continue to cover all elements including those excluded. Thus identifying a significant number of items in the "Exclude" category will allow RFP's to more clearly focus on the genuine discriminators; discriminators based upon the critical risks inherent in a program.

10.0 FILTER IN THE SS PROCESS.

The risk assessment filter provides a method to focus on risk as the key determinant in the source selection process.

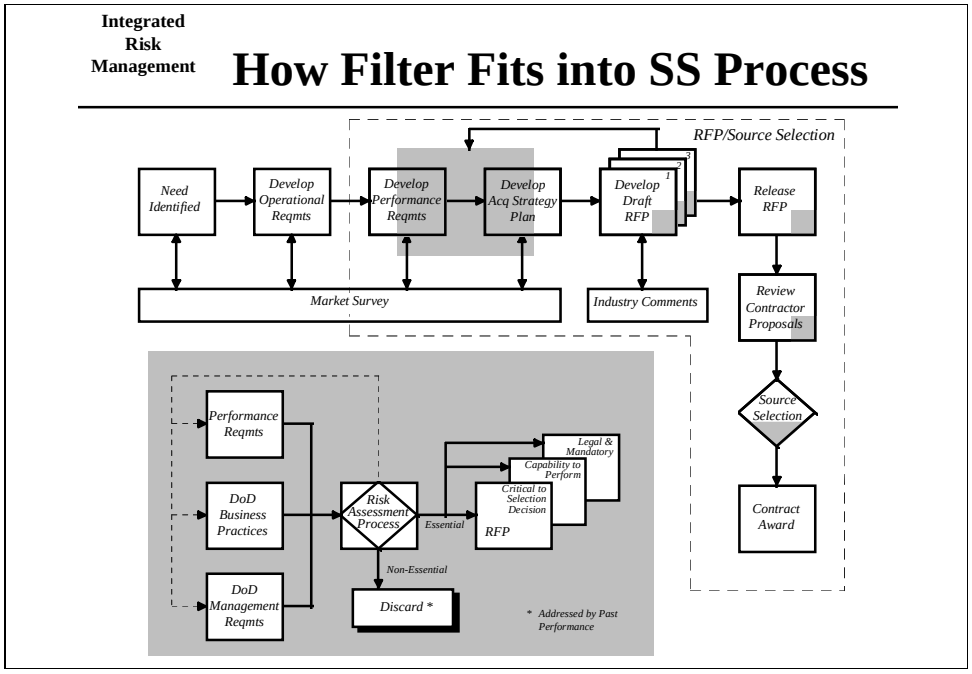

Figure J-6. Filter in SS Process.

The filter applies fairly early-on in the acquisition, from the time performance requirements are developed through the time of determining the final content of, and awarding, the contract. The early identification of critical risk allows for the formulation of mitigation approaches and the focusing of the RFP process around those critical risks.

While the source selection evaluation process itself appears as a single, diamond-shaped block on this chart, the determination the RFP requirements drives how the source selection will be conducted. This would mean that the filter mechanism is used much sooner than receipt of proposals and commencement of evaluations. The filter needs to be an critical and active part of the acquisition strategy process and source selection plan development.

The filtering process is iterative. Feedback from market surveys, industry comments during pre-proposal conferences, draft RFP issuance, all provide avenues to identify and define those critical risks to be address through the RFP/source selection process.

Basically, the filtering process is an overlay of the RFP and source selection processes.

11.0 IRA IMPACTS ON THE RFP.

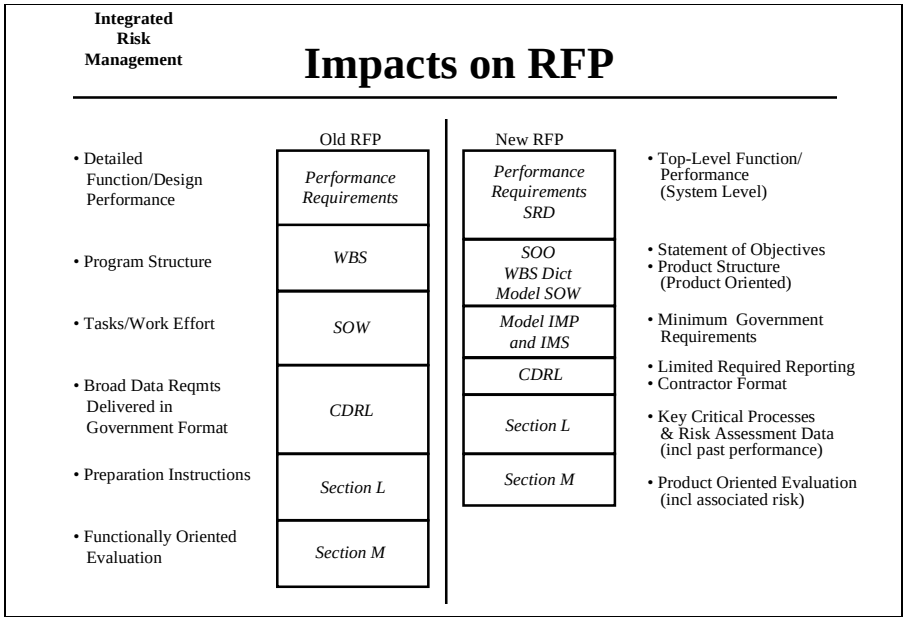

Figure J-7. Impact on RFP.

Implementing an integrated risk management approach will impact a RFP released by the government. Differences will be throughout the package. The performance requirements will be focused at the system level and provided via a draft system spec or system requirements document instead of providing detailed functional/design performance data. The WBS will be a product oriented model structure with dictionary. A model SOW will replace the task/work effort SOW that has been provided in the past. The model SOW will basically be a statement of objectives and an outline allowing the contractor to submit the proposed contractual SOW with the proposal. A model Integrated Master Plan (IMP) and Integrated Master Schedule (IMS) will also be included for the contractor to use in defining the critical milestones and success criteria necessary to measure program progress. The CDRLs will be limited to the minimum data necessary for government insight into the critical risk areas and will be contractor formatted. Sections' L and M of the RFP will be focused on the key critical products and processes, including associated risk assessment data, necessary to execute the effort. Past performance will play a key discrimination role in the evaluation. The intent is to do a product and process oriented evaluation versus a traditional functionally oriented evaluation.

The RFP will provide the "what to" and allow maximum flexibility for the offeror's to define the "how to." The RFP will allow for risk identification and management to be highlighted in proposal and also allow for the source selection to be based upon contractor

capability to meet the performance requirements by providing an integrated risk management approach to handling the program risks and those inherent in his proposal.

12.0 IRA IMPACTS ON THE PROPOSAL.

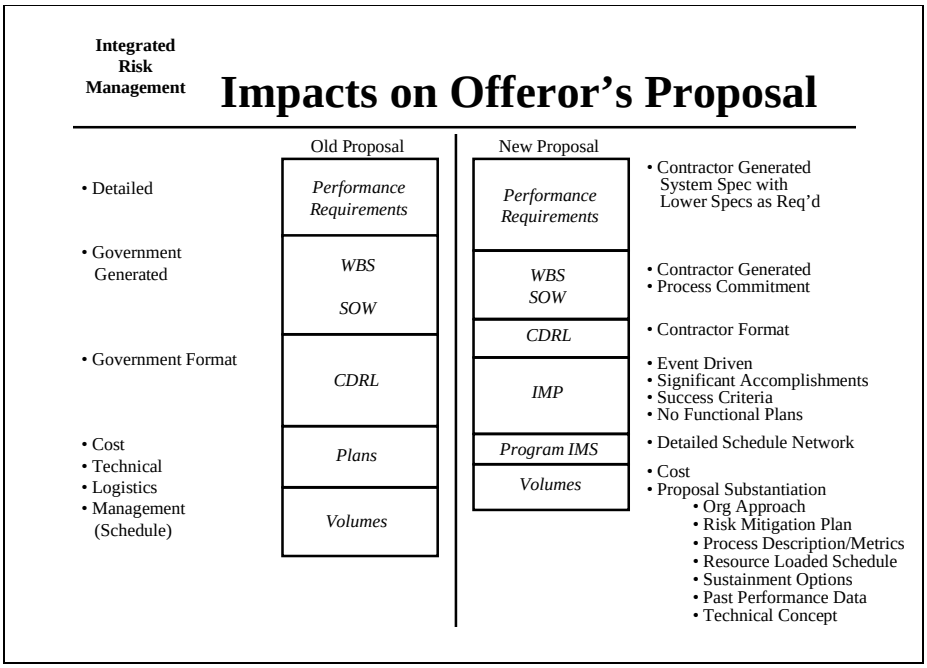

Figure J-8. Impact on Offerer's Proposal.

Integrated risk management will also impact the offeror's proposal. The contractor will generate the system specification with its lower specifications as required based upon the performance requirements provided by the government. The contractor will generate the complete WBS and SOW to submit with the proposal. This will describe the tasks necessary to meet the performance requirements. The contractor will provide an Integrated Master Plan (IMP) identifying the critical events or milestones (with success criteria) that must be met to successfully satisfy the performance requirements and mitigate the inherent risk. The contractor will also provide a program Integrated Master Schedule providing the detailed schedule information for the program. CDRLs will be provided in contractor format. Cost data will also be included with the intent to focus more on price analysis where appropriate. The proposal substantiation will also be considerably different. This substantiation will include a description of the contractor's technical concept, his organizational approach to meeting the performance requirements and mitigating the risk, descriptions of the critical processes to be used with supporting process control and metrics information, his past performance history in implementing similar or like processes, sustainment options, and a resource loaded schedule.

This proposal will be the contractor's "how to" meet the governments' "what to" performance requirements, focusing on an integrated risk management approach across the contract/program life cycle.

13.0 POTENTIAL APPROACH TO SOURCE SELECTION.

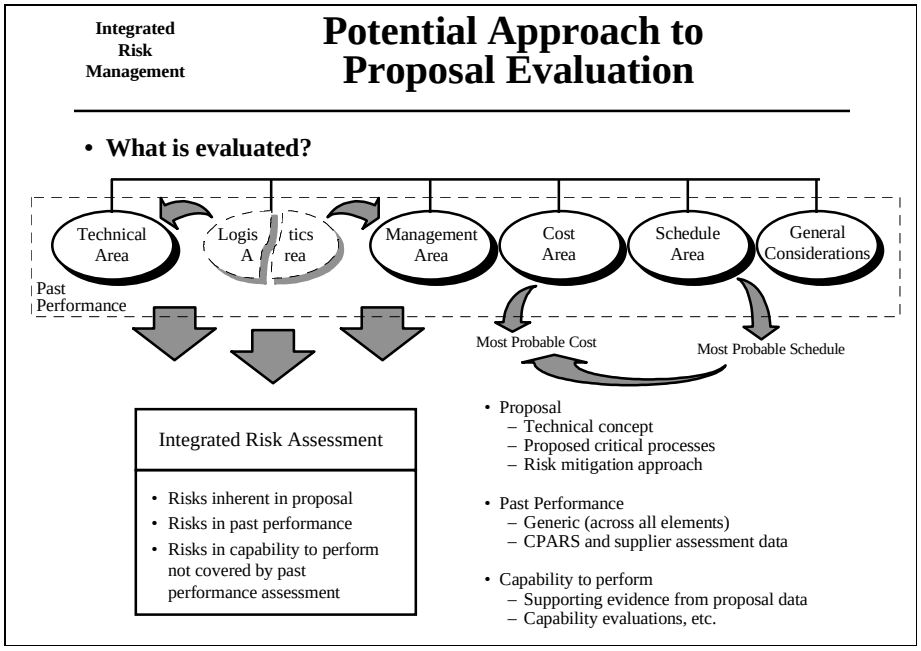

Figure J-9. Potential Approach to Proposal Evaluation.

The resulting potential approach to evaluation of a proposal would be based heavily around risk. In evaluating a contractor's proposal, two basic questions should be addressed: 1) Is the contractor's approach feasible and 2) Can the contractor do what he proposed? The integrated risk assessment of the proposal must include the risks identified in answering these two questions. The basis of evaluation should address the risks inherent in the offeror's proposal, risks identified through assessment of past performance, and any performance capability risks not covered by the past performance data. The dashed box emphasizes that past performance must be considered in evaluating all areas. The split of the logistics area is symbolic to emphasize that an integrated focus must be taken, that all risks regardless of functional area, must be addressed within the areas of technical, management, cost, schedule and general considerations.

The proposal assessment should be centered around that risk inherent in the contractor's proposal, that is, inherent with the contractor's "how to." This should include the technical concept proposed, the critical processes proposed to complete the work, the controls and metrics identified, the risk management and mitigation approach; and any performance data concerning the specific proposed approach.

The evaluation of performance risk should be centered clearly on evidence of capability to perform in the specific areas necessary to meet the requirements of the RFP. Past performance should be assessed across all elements and evidence of past performance should play a key role in determining the overall performance risk. This evidence should be provided by the Past Performance Risk Assessment Group (PPRAG) and should include data derived from an improved CPARS (contract past performance) and a supplier rating system (process past performance). The past performance risk assessment is intended to assure that all elements of an offeror's capability are assessed. It can thus provide a "safety net" by identifying

those risks that may exist in aspects or areas not explicitly requested to be proposed by the offeror's.

In areas where the PPRAG cannot provide a past performance data assessment, support evidence provided via the proposal and capability evaluations should be used to augment the integrated risk assessment in supporting a judgment of capability to perform. As the supplier rating system database builds, the necessity for capability evaluations diminishes.

14.0 SOURCE SELECTION DISCRIMINATORS.

Discriminators are best viewed as those essential characteristics of the acquisition at hand that provide the source selection authority with information which allows meaningful comparative analysis among the proposals. The program office team must determine the absolute minimum number of genuine discriminators that they believe will truly distinguish one offeror from another. The team must also determine the relative importance of each criteria to each other and cost. Discriminators can be of the cost/price and non-cost/price categories. Relative to cost/price factors, such things as affordability of the system may prove to be a significant discriminator among offerors.

In addition, a critical review of the performance requirements must be undertaken by those most knowledgeable of this or similar efforts, taking a hard look at what really needs to be provided by offerors. For this, they rely upon their expertise on such things as end item complexity, state-of-the-art systems or requirements maturity, and similar effort procurement history.

The bottom line however is to continue to focus on the critical risks inherent in the program at hand and to build discriminators that support selection of the offeror that provides the lowest risk or best opportunity to succeed for the government.

15.0 SOME GUIDELINES.

Do not take a "one size fits all" approach. What may be suitable for one acquisition may be inappropriate for another.

In addition to focusing only on those essential elements that allow the source selection authority to discriminate among proposals, it is important to recognize that there may be some information contained in military specifications and standards which was included to mitigate specific risks. For this reason, a critical review of existing specs and standards, ordinarily applied on past similar acquisitions, must be undertaken to understand these risks. The review should result in deriving from the specs and standards only those essential performance characteristics and risk elements which are necessary to perform the effort. The lessons learned from previous experiences in mitigating risk should not be forgotten or discarded.

Finally, two last guidelines: 1) avoid "how to's" to allow for flexibility in approach and 2) focus on program success.

16.0 INCREASE EMPHASIS ON PAST PERFORMANCE.

There are significant differences between commercial and government practices regarding the use of past performance. Commercial practices rely highly on past performance even going so far as developing preferred supplier arrangements. As a contrast, government use of past performance evaluations were primarily to support a determination (go/no-go) similar to competitive range determinations.

Industry reported that past performance reduced the need for detailed technical proposals. In many cases sources were selected on past performance and price alone. The government practice almost always required full, detailed proposals. Past performance should be used as primary evidence to support determining a supplier's capability to perform. A satisfactory performance record has always been required before a contractor could be determined responsible. Comparisons among firms is not necessary when just determining responsibility. In the private sector, however, comparisons are made among competing firms to determine relative ratings. To be meaningful in the source selection process and to ensure that contractors are aware that actual contract performance will be a significant factor in future awards, past performance should be rated at least equal to any other non-cost evaluation score. To achieve the goal of moving toward the commercial methodology, past performance must be elevated in importance and used as a significant non-cost evaluation factor.

A common past performance data system for use across the services is clearly required to promote high reliance on past performance. Existing systems, such as CPAR, should be improved over time to provide the current contract information augmented by a supplier rating system to providing the process data needed to support heavier emphasis on past performance in assessing capability to perform.

17.0 NEXT ACTIONS.

The foregoing discussion implies several actions. A separate Sub-panel of the JACG IPT, the Past Performance Enhancement Sub-panel, has addressed recommended actions for past performance. With respect to including risk assessment in the program planning and RFP preparation, the JACG should prepare a joint Integrated Risk Management Planning Guide and Risk Management Guide, based in part upon the Air Force Materiel Command Risk Management Guide and the principles discussed in this report.

18.0 SUMMARY.

This package describes enhancements supporting the source selection process. Integrated risk management and the use of the risk assessment filter with other supporting processes outlined herein capture the essential elements allowing the adaptation of best commercial practices by:

- Implementing performance based RFPs
- Focusing on risk management and not risk avoidance
- Including in the RFP only those aspects essential for the source selection decision
- Placing greater emphasis on the use of past performance in the source selection process.

APPENDIX K

BLOCK CHANGE PROCESS

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1.0 OVERVIEW

1.1 Background.

Government and industry recognize the necessity for moving away from the highly detailed "How-To" specification and oversight business relationship to a more commercial arrangement which uses product performance specifications. This approach is being implemented for new Department of Defense (DoD) programs. Military standards and specifications in ongoing and reprocurement defense contracts are a major impediment to a timely, efficient transition to a new way of doing business. To facilitate conversion of the DoD industrial base to single plant processes, existing contracts must be modified in a synchronized fashion, or by a "block" of contracts. Figure K-1 depicts the desired "end state" envisioned by the overarching Non-Governmental Standards-Integrated Product Team (NGS-IPT).

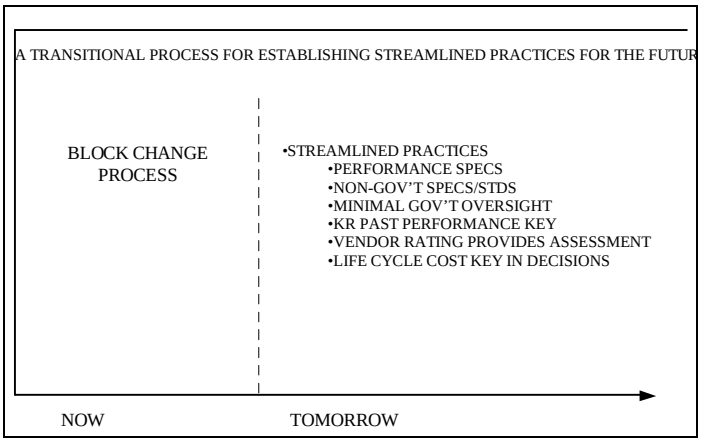

Figure K-1. Block Change Goal.

The content of this block change report reflects the observations, advice and opinions of the individual members of the sub-group. In some cases, the recommendations and/or consensus of the Government members are noted in the report. The report does not indicate, describe, or accept, any group deliberations or discussions as a source of agreement, consensus, advice, or recommendations of the group as a whole.

1.2 Goal.

To detail a flexible class action contracting process, with identified DoD authority, to produce a spectrum of specifications and standard changes on existing contracts while balancing contractor/government risk.

1.3 Objective.

The need for the block change process exists because it will enable the conversion to single process facilities utilizing a streamlined flexible block change process which: maximizes savings on existing long term programs; facilitates the greatest return on investment through immediate conversion to single process facilities and ensures that conversion to performance specifications and conversion to plant-wide processes are complementary, but may not necessarily occur simultaneously. The objective of this process is to develop a set of contracting and programmatic solutions to existing constraints which may be implemented to streamline conversion of existing contracts over the next 3-5 years. The solutions must address risk and consideration while maintaining product performance as depicted in Figure K-2 below. Block Change is defined as *"A "class action" contractual process by which the government will authorize a contractor to implement changes from government directed, "How-To" processes (Military Specifications, Standards and Other Business Processes) across multiple contracts or a facility without preparing proposals at the individual contract level."* Block changes are normally contractor initiated and it is envisioned that contractor savings will be offset by contractor implementation cost and risk migration. There are two general approaches to block changes, the first classified as "Contractor Push" which primarily focuses on process change and streamlining improvements. The second, "Customer Pull" focuses is on re-defining program requirements in terms of contract performance specifications and key process requirements. While this description presents both concepts in the extreme, it is recognized that either approach may be used to accomplish the desired change, or a combination of both approaches.

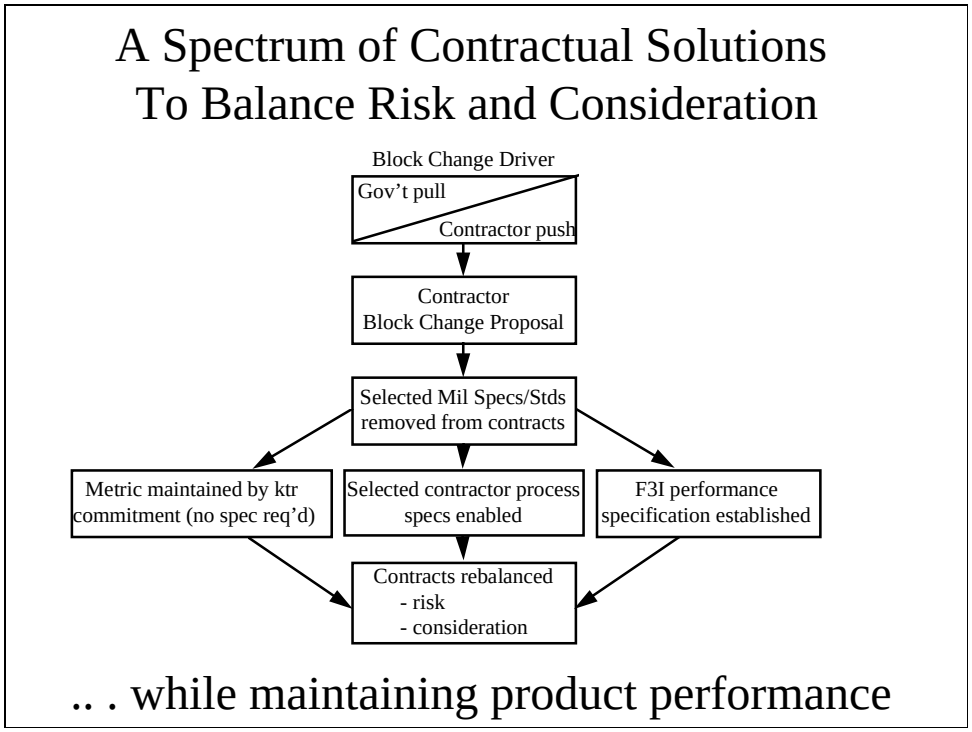

Figure K-2. A Spectrum of Contractual Solutions.

1.4 Environment.

A streamlined process for block changes does not currently exist within DoD. Blanket modifications, executing block changes for process reform, were not contemplated at the time most existing contracts were executed. Additionally, a number of environmental factors effect the design of a block change process. Cultural perceptions represent potential key limitations/barriers to implementing significant change across multiple contracts and programs in the same company/plant. Currently, DoD and notably Defense Contract Management Center (DCMC), is concentrating on individual programs and existing contracts while exploring reinvention initiatives. Figure K-3 below depicts today's process to implementing block changes. Each streamlining solution is being explored and solved on a case by case basis.

TODAY'S PROCESS · Consideration determined on a case by case basis · Certified cost and pricing data required for $500K change to an individual contract	
PROS	CONS
· Uses existing organization and contracting structure	· Cumbersome and piecemeal delegation authority · Quantification of cost changes difficult · Proposal preparation costs · Time consuming · Very limited resulting changes

Figure K-3. Today's Process.

Authority and responsibility for product performance clearly rests with Program Managers (PMs) and Procuring Contracting Officers (PCOs). While this responsibility must be seriously considered, the individual services must find a way to streamline allocation of subject matter expert resources within the key customer community to analyze and approve common block changes. Trust and risk sharing among all of the DoD partners (government program offices, contractor, user, DCMC, Defense Contract Audit Agency (DCAA)) is an evolving issue. Public and congressional interests expect individual contract and program accountability which creates a challenge to the block change objective. In addition, this focus on individual program and service requirements does not facilitate a streamlined process for programmatic approval within and across the services. There are three other impediments, other than service approval which constrain this process, those being the requirement for certified cost and pricing data, consideration and ACO authority to execute block changes.

1.5 Definitions

1.5.1 Performance Specification.

Defining requirements in terms of "what," not "how to." It can be a process performance specification (e.g., quality) or an end product performance specification (i.e., missile or subassembly).

1.5.2 Government Push/Contract Retrofit.

The transition to single plant processes as part of an overall plan to retrofit existing contracts to product performance specifications. This could be one "Great Leap" change or an evolutionary process.

1.5.3 Contractor Pull/Contract Retrofit.

The transition to single plant processes including eliminating Mil-Specs, STDs, with or without replacement. It could be evolutionary.

1.5.4 Block Change.

A "class action" contractual process by which the government will authorize a contractor to implement changes from government directed, "How-To" processes (Military Specifications, Standards and Other Business Processes) across multiple contracts or a facility without preparing proposals at the individual contract level.

1.5.5 Management Council.

A government block change decision forum organized to evaluate plant-wide proposals submitted by the contractor. The Council is comprised of key members of the customer base, the contractor and in-plant representatives of DLA.

1.5.6 Service Team Leader.

A leader of the service specific team representing the customer(s) base affected by a block change proposal. This leader shares responsibility with other service team leaders in building consensus within and between the services for common block changes in addition to helping to organize the management council forum.

2.0 BLOCK CHANGE PROCESS

2.1 Overview.

The block change process flow is shown in Figure K-4. The block change process depicted here designates DCMC as the lead facilitator to implement plant-wide changes. The process is built on existing structures within the services and OSD and is designed to create a sense of urgency in the approval process for streamlining of specifications, standards or other processes.

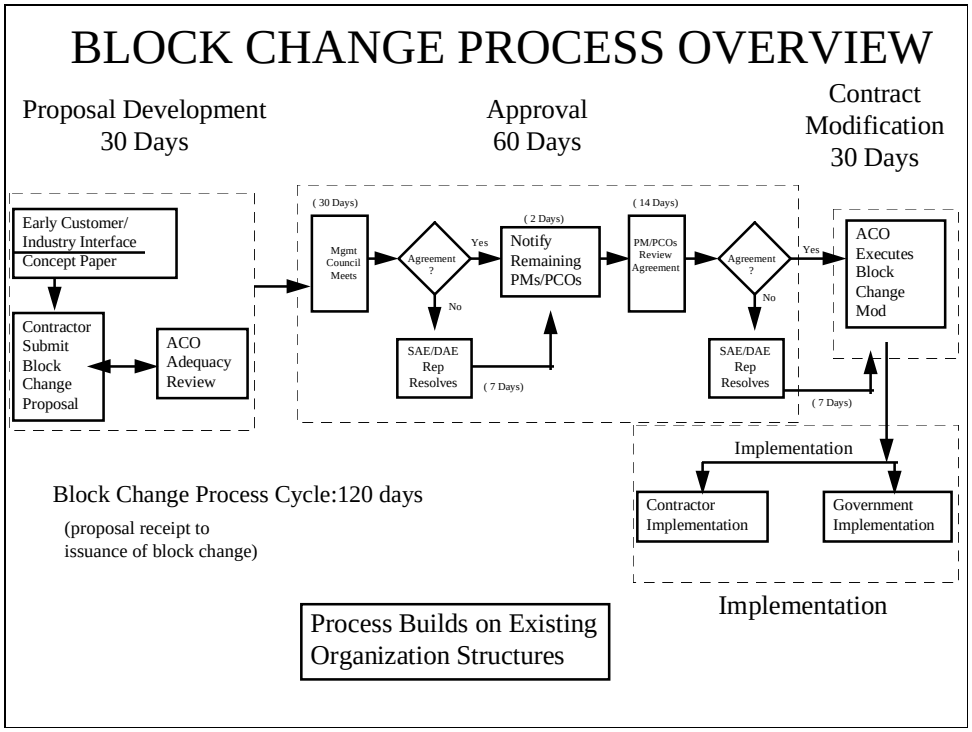

Figure K-4. Block Change Process Overview.

2.1.1 Process Types.

It is recognized that within any contract there are several types of processes. Ideally, the Block Change would transition all of the following types in one change. However, it is recognized for many reasons this may not be possible. We must make provisions for accomplishing all types, one type, or a combination of the types at the same time.

2.1.1.1 *Technical/Business Practices* such as CSCSC, Government property and work measurement (i.e. Mil-STD-100 Drawing Requirements);

2.1.1.2 *Material and Process Standards* (product) which could be design, development, or manufacturing such as welding or soldering;

2.1.1.3 *Quality Processes* such as Mil-STD-1552 or Mil-STD-1760.

2.1.2 Team Approach.

A team approach to acquisition reform on the part of the customer community, comprised of the technical and programmatic authorities, as well as contractor and DCMC personnel is critical. In development of class action proposals, the contractor should coordinate with its primary customer(s) and the DPRO in advance of formal proposal submittal.

2.2 Proposal Development.

Industry is encouraged to prepare and submit concept papers for streamlining specifications, standards and other processes with emphasis on early customer involvement and interface. Once the cost benefit of the change has been determined and any impact on program/contract relationships have been explored, industry shall submit block change proposals. This proposal could take several forms depending on the contractor's preference, but it is anticipated that it will be streamlined and initially take the form of a detailed briefing. This will help insure both the contractor and Government are in agreement and in general consensus, before significant resources are expended on the formal block change proposal.

2.2.1 Minimum Content Requirements.

As a minimum, the proposals should detail the proposed processes and associated metrics, cost benefit analysis, the consequent changes in government's involvement in the process and required regulatory/contractual changes. The proposal should detail what programs/contracts are affected, technical issues, specs/ standards and key processes affected, contractor's risk assessment, transition plan, areas of oversight impacted and contract terms and conditions. The contractor should describe how it is going to manage risk, what metrics they will track, etc. In developing the cost benefit analysis, aggregate cost realism data only should be required, sufficient for the government to determine the reasonableness of the proposal. Upon initial definition of the proposal, the contractor should involve the local DPRO in the development of the proposal.

2.2.2 Block Change Proposal.

The contractor's Block Change proposal will be submitted to the cognizant DPRO Administrative Contracting Officer (ACO). The ACO will review the contractor's proposal for adequacy which includes, but is not limited to the following elements: description of each of the proposed alternatives; and an analysis of the proposed alternatives to the military or federal specifications, standards, or contractual requirements to include a discussion of the technical feasibility, risk, and cost-effectiveness of the proposed alternatives, and any restriction that may be imposed on the Government's use of the proposed alternatives.

2.3 Proposal Evaluation.

The primary basis for the evaluation of the contractor's block change proposal by the management council is envisioned to be the following:

2.3.1 Definition and Documentation.

Are the plant-wide processes defined and documented? If the contractor is proposing only the elimination of MIL-Specs and/or Standards, has a gap in contract coverage been created?

2.3.2 Demonstration & Certification.

Has the plant-wide process(es) been demonstrated in the plant? Has the contractor been assessed or certified by some organization(s)? What are the results?

2.3.3 Risk Assessment Evaluation.

Evaluation of the contractor's risk assessment and other inputs (metrics, third party assessments).

2.3.4 Impact Assessment.

What is the impact on the contractor if the change is approved? What is the impact if it is not approved?

2.3.5 Implementation Plan.

Implementation Plan - Evaluation of the contractor's proposed change as it relates to Government oversight and contractor compliance.

2.3.6 Validation & Verification.

If the contractor has proposed the retrofit of existing contracts so that the contracts' end products are based on performance oriented specifications, do the specifications translate into the product(s) for which we contracted? Will we be able to verify that the delivered product meets these performance specifications? The primary source(s) of this evaluation is/are the affected program offices.

2.4 Approval.

Following submittal of the proposal, the CAO will determine the contractual/regulatory scope of the change, confirm the component customer base impacted and organize the management council based on the nature of the proposal. The management council will be comprised of senior level representatives from the Contract Administration Office (CAO), the contractor and subject matter experts representing the key customers within the affected services. The key customer base should be comprised of customers who represent 80 percent of the total dollar value of affected contracts. It is highly desireable that these customer representatives be empowered to coordinate, develop consensus and approve the block change for the service they represent. Expedited, streamlined consensus from the customer community is key to the success of block changes. Once service approval has been obtained and the CAO has negotiated the implementation details, DCMC should be the central authority to implement the block change.

2.5 Roles and Responsibilities.

The role of the management council should be to analyze the merits and cost benefits of the change. Empowerment of subject matter experts from the key customer base is critical. To achieve the timelines, a service team leader should be designated and granted decision authority by the SAE to represent the key customer base within each service. Service team leaders should

be responsible for achieving consensus with other service team leaders, the key customer PCOs and PMs, the service team members and the SAE. The CAO should be responsible for facilitating and leading the management council. The ACO should be designated with the contractual authority to negotiate the contractual details, coordinate with the service team leaders and execute all block changes.

2.5.1 Specific Tasking.

Specific roles and responsibilities are envisioned to be the following:

2.5.1.1 *Management Council Lead* should be designated by DPRO Commander based on block change subject area; lead team evaluation; work with Service Team Leaders and DCMC to assemble the team; work with ACO to support negotiation and implementation of block change; and coordinate with Service Team Leaders or their designee for block change approval. This is consistent with current management council organizations at DCMC reinvention laboratory sites.

2.5.1.2 *Service Team Leader* should be designated by the SAE (or SAE focal point) to be lead for that service on the Management Council; evaluating and negotiating the block change proposal and providing for service technical approval/disapproval of the proposal.

2.5.1.3 *Team Members* should be designated by the Service Team Leaders; evaluate contractors block change proposal and should be empowered to approve, disapprove, or approve with comment; and support ACO, as necessary, in negotiating block change.

2.5.1.4 *Service SAE's (Focal point)* should obtain service membership for Management Council Team; assure service is properly represented in block change process at specific facility; and empower the service team members with technical approval/disapproval of block change.

2.5.1.5 *ACO* should make an adequacy review of the contractor's block change proposal and make a recommendation to proceed.

2.5.1.6 *PEO/PM/DRPM* should, as requested, support Management Council by designating team members; review decision on block change proposal; and as appropriate, initiate internal resolution process.

2.5.1.7 *Service SAE* should designate an official to evaluate appeals, and deny or approve service authorization to DCMC to approve the change.

2.6 Internal Government and Resolution Process.

The objective of this process is to resolve disagreements, facilitate consensus, elevate decision authority and re-emphasize the overall goal and objective both within and across the services. If there is disagreement between the PM or other customers within a component, the issue must be raised to a level within the service as designated by the SAE. If there is disagreement among the components the issue must be raised to a level within the Department as designated by the DAE. Once resolved, the ACO executes the change. This process was not designed to encourage disagreement, but rather to ensure that there was a process for recourse if the service representatives overlooked a potential performance related impact resulting from this process change.

2.7 Implementation.

After approval of the block change proposal by the management council, and execution of the block change modification, the contractor implements the plan. The government then commences an effort to generate a final plan of action and milestones for the government's implementation plan, if changes in government oversight are a component of the overall agreement in executing this process change.

3.0 CONTRACTUAL ISSUES AND SOLUTIONS

3.1 General.

Contractual authority for implementation of block changes on a plant-wide or facility-wide basis is not clear in the existing regulations, or in the statutes from which the regulations are derived. Several contractual issues must be addressed in determining how authority could be granted. These are summarized below:

3.2 ACO Roles and Authority.

The authority of Administrative and Procuring Contracting Officers are derived from various sections of the regulations as summarized in Enclosure 1 of this report. To facilitate and streamline plant-wide specifications and standards Administrative Contracting Officers should be authorized the responsibility to contractually implement plant-wide changes. This could be accomplished by a directive from OSD, reinvention laboratory waiver, delegation by the service or at the local command level. This could also be included in a change to the pending DFAR Final Rule Case 94-D003 or a change to DFAR 210.002 and DFAR 242.302(a). Recommended changes to DFARs 210.002 and 242.302(a) would provide the ACO with the authority to execute block changes utilizing many approaches. The details of this implementation are contained in Enclosure 1.

3.3 Consideration and Pricing.

In support of the NGS-IPT, several legal and contractual authorities, both government and industry, have endeavored to research and consider the legal issues surrounding implementation of plant-wide contractual changes. The applicability of requirements for certified cost and pricing data, as summarized in Enclosure 2 of this report, will discourage industry from submitting proposals unless the requirements are minimized. The underlying value to the government and to industry, in sustaining the application of certified data, is to ensure that defective pricing actions can be pursued. Typically contractors accounting and estimating systems are product and not process oriented. Since today's accounting systems generally do not track and estimate contract costs at the process level, obtaining cost and pricing data does not appear to be either cost effective or value added. Therefore, it is the recommendation of the government members of this subgroup that, the definition of when certified cost and pricing data is required, should be liberally interpreted. Absent any DOD directives to the contrary, the following formula may be used as a litmus test to judge whether certified cost or pricing data should be requested:

Total Change Value divided by # Affected Contracts = Value which exceeds $500K.

This interpretation of the applicability of certified data should not lead to an untenable vulnerability for the government and may incentivize contractors to submit block change proposals. However, a DOD Class Determination and Finding which clearly states the intent of DOD to move forward utilizing block changes without requiring cost or pricing data will most effectively reinforce the ACO in this effort. It is the considered intent of this committee to reserve for the ACO the greatest flexibility in determining the most expeditious means for implementing these changes.

3.3.1 Categories of Block Changes.

Block changes which convert military specifications to performance specifications and/or to commercial or contractor standards are likely to fall into two general categories. The majority are expected to be changes for which the cost of implementation on the affected contracts effectively offsets the savings achieved on those same contracts as a result of the change. The remainder may have disproportionate implementation costs and savings. If costs and savings are disproportionate, the contracting officer must exercise good business judgment in determining the adequacy of consideration.

3.3.2 Consideration.

Because the circumstances surrounding a block change may range from very simple to very complex, different implementation approaches may be required. The goal of this subgroup was to recommend a solution to the consideration and pricing dilemma that was robust yet permanent enough to account for a variety of solutions. A summary of the research and opinion from case law, concerning the issue of consideration, is contained in Enclosure 3 to this report. Enclosure 4 provides a set of alternative solutions which address the three areas: ACO authority, consideration and pricing and cost and pricing data. Of these three challenges, the greatest lies in the statutory and regulatory definition of what constitutes consideration. Consideration is typically confined to an instant contract, with the exception of Value Engineering Change Proposals (VECPs), which

allow a statutory and regulatory exception to that rule. VECPs allow for both a horizontal and vertical definition of allowable consideration, which includes both collateral effort and future savings. Since a block change will address all or many open contracts at a given contractor facility, a contract-by-contract assessment is impractical, significantly increasing the time and effort to implement a plantwide change. Contractors may opt for the eventual transition that will occur as new business replaces existing work, rather than expend substantial effort orchestrating concurrent amendment of multiple contracts. To meet the objective, the solution to the issue of consideration must be efficient and timely. There are two distinct ways to address the requirement for consideration that avoid a multitude of proposals, or other consideration assessments, on a contract-by-contract basis. The two near-term solutions are: an exercise of authority under P.L. 85-804 or design of a class action proposal process either by VECP or tied to DFARs Case 94-D003. Either approach can be efficient and timely, to varying degrees. A synopsis on consideration, tied to the alternatives presented in Enclosure 4 is contained in Enclosure 5. The conclusion reached, that granting authority under Public Law 85-804 is the most expeditious and resourceful approach, may not achieve the sub-group's goal of recommending a permanent solution due to future changes in political priorities.

3.3.3 Value Engineering.

Absent issuance of the recommended OSD directive stipulating authority under PL 85-804 and to achieve a permanent solution, it may be necessary to implement the change using a no cost VECP approach. The subgroup's analysis is that the current regulatory guidance on VECPs is cumbersome and that the process could be facilitated using a new Class Action Value Engineering Change Proposal (VECP), proposed as a change to DFAR 248.0 and 252.248.2701 Class Action VECP (provided as Enclosure 6 of this report). Value engineering is, as stated in the FAR, the formal technique by which contractors may voluntarily suggest methods for performing more economically and share in any resulting savings. Value engineering attempts to eliminate, without impairing essential functions or characteristics, anything that increases acquisition, operation, or support costs. Under FAR 48.104-3 Sharing alternative - no cost settlement method, consideration may be given to the settlement of a VECP submitted at no cost to either party. Under this method of settlement, the contractor would keep the savings on the instant contract, and any savings on concurrent contracts. Unlike most VECPs, in the case of block changes, all concurrent and instant contracts are simultaneously effected, therefore the term "extant" is used in the clause to refer to both. The government would keep all savings resulting from concurrent contracts placed on other sources, savings from all future contracts and all collateral savings. This method, as stated in DFAR Case 94-D003/ Final Rule stipulates:

> "(4) Provided there is a reasonable expectation of future benefit to the Government, consider negotiating a no-cost settlement for contract changes involving contractor - proposed alternatives to military or federal specifications or standards. (For example, see the value engineering no-cost settlement method at FAR 48.104-3.)"

New DFARS VECP language would augment the existing language in the FAR. No changes to the existing language in the FAR will be required. The value of this approach would be the ability of the government to unilaterally apply the clause, which has no value until invoked by the contractor, to all contracts on a plant-wide basis, subject to the provisions of FAR 48.201 and 48.202.

3.3.4 Class Contract Action.

Another approach would be to create a class contract action clause tied to DFAR Case 94-D003. A synopsis of the changes required to the DFAR Case is also summarized in Enclosure 6. An comparison of the merits of the Class Contract Action approach and the VECP approach is articulated in Enclosure 7. Both the VECP and CCP approaches are designed to recognize that it is in the best interests of the government to implement plant-wide change from military specifications and standards to performance based specifications and non-government standards as quickly and efficiently as possible. The overall savings to the government, which will result from these changes, will most likely exceed the cost of implementation, but savings are be eroded by delays in implementation.

4.0 RISK/LIABILITY

4.1 Risk Balance.

Transfer of the risk of in-process inspection from the government to industry may result in changes to acceptance test procedures and warranties. This is an area relatively unexplored by this sub-group. Enclosure 8 addresses risk and liability concerns relative to the conversion from “how-to” specifications to performance specifications.

5.0 CONCLUSIONS AND GOVERNMENT RECOMMENDATIONS

5.1 Conclusions.

Upon contractual implementation of the Block Change action, a contractor is in a better position to pursue new contract opportunities based on government performance specifications using more commercial practices, while the government is in a better position to use past performances, vendor rating, and life-cycle cost metrics in selecting and monitoring the contractor. While the Block Change Process offers the opportunity for both government and contractors to make progress in reducing cost and establishing a more commercial business approach, it is not without risk. Industry and government must move out as rapidly as possible in changing their current business relationships to gain in this competitive environment. The major concern for both parties will be balancing the identifiable and unidentifiable risks. Factors which

will influence contractors to be more aggressive in pursuing Block Change and in dealing with the risk inherent in the process are as follow.

5.1.1 Pursuit of New Contracts.

Given the *opportunity to pursue a new government contract* which is based on performance specification, the contractor will realize that he is not prepared to compete for and perform new business without having streamlined practices in place. Furthermore, industry and government already realize that a contractor cannot efficiently operate two systems in managing their business.

5.1.2 Competitive Pressures.

The *competitive pressures* resulting from one company, in that market moving ahead with Block Changes, will force other companies in that market to pursue similar changes to remain competitive.

5.1.3 Fiscal Pressures.

Budget pressures which may threaten reduction or cancellation of current business base will motivate both industry and government to pursue Block Changes in order to reduce program cost in hopes of saving the program from the budget ax.

5.1.4 Assumptions.

Inherent in these conclusions are the following assumptions:

5.1.4.1 The Contractor is conscious that changing certain processes may impact the Government/Contractor Defense.

5.1.4.2 The Government does not intend to provide additional indemnification.

5.1.4.3 Existing warranties are not necessarily dependent on existing processes; contractors will reaffirm all existing warranties impacted by process changes.

5.1.4.4 Industry and government can define performance specifications (product or process) and an associated validation process.

5.1.4.5 Resources are available to create performance specifications, validate processes/products and sit on evaluation teams.

5.1.4.6 Contractors will work closely with their Primary Customers (Program Offices) in developing their Block Change proposal before it is formally submitted.

5.1.4.7 Service Acquisition Executives will empower their staffs to facilitate evaluation teams in support of Management Council efforts to streamline the evaluation and service approval of block change proposals; and ensure that the appropriate program offices are actively involved in the decision process, ensuring a through assessment of the change and program office consensus.

5.2 Government Recommendations.

By OSD letter, within 60 days of this report, establish clear authority in DOD to expedite plant-wide reform on existing contracts. A sample letter is provided as Enclosure 9, which chooses Alternative 1 as the most expedient solution. This letter should also include the process described in Figure K-4, Block Change Process. Granting authority to execute block changes under the authority of Public Law 85-804 (Alt 1) is clearly the most expeditious solution to consideration and pricing constraints. Alternatives 2 & 3 are viable solutions requiring less extraordinary actions, which could be used to expedite other corporate DOD contractual solutions. Therefore, this subgroup recommends:

5.2.1 Issuance of DFARS Case 94-D003/Final Rule (with amendments);

5.2.2 Development of a class action VECP, authorized in DFAR 248.001, which will designate contracting authority within OSD to facilitate plant-wide changes on existing contracts;

5.2.3 Designation of Administrative Contracting Officers as the authority to implement Block Changes via changes to DFAR 210.002 and 242.302(a);

5.2.4 Implementing guidance from OSD on the block change process; and

5.2.5 Issuance of direction regarding applicability of cost and pricing data to block changes.

ENCLOSURE 1

ACO Roles and Authority.

Under FAR 43.102, only contracting officers are empowered to execute contract modifications, changing the terms and conditions of individual contracts, on behalf of the government. Per FAR 42.302(a), the Procurement Contracting Officer, and not the Administrative Contracting Officer (ACO), currently has the authority to issue contract modifications eliminating or reducing non-government standards and/or specifications. Further, FAR 1.602-1 provides that contracting officers shall not enter into a contract unless all requirements of law, executive orders, regulations, and other applicable procedures, including clearances and approvals, are met. However, under FAR 1.602-2, contracting officers are allowed wide latitude, when exercising their business judgment, to ensure contractor compliance with the terms of the contract and safeguarding the government's interest in its contractual relationships.

Because the elimination or reduction of specific non-government standards or specifications will effect numerous contracts, it will be extremely difficult, time consuming, and costly to require individual PCO approval of each proposed change for every contract involved. Accordingly, and if the Government is to act in a timely fashion at the lowest possible cost and without placing undue administrative burdens on the Government and contractors, it is imperative that the authority to approve and implement proposed "reinvention" changes be transferred from the PCO to the ACO. Further, and as importantly, the administrative format and contractual vehicle for proposing and implementing these changes must be clarified.

Possible alternatives to establishing this authority would be:

1. Office of the Secretary of Defense: Under this method, OSD would issue a directive adding language to FAR 42.302 authorizing the appropriate ACO at the cognizant Contract Administrative Office (CAO) to evaluate, negotiate terms and conditions, obtain monetary or in-kind consideration, approve and implement contractor reinvention initiatives. The advantage to this method would be clarity of the specific delegation.

2. Reinvention Laboratory Waiver: The reinvention laboratory would seek a waiver to FAR 42.302 and provide the appropriate ACO at the cognizant CAO with all the necessary authority to effect "reinvention" changes.

3. Extra Duties: This concept envisions each service secretary delegating the authority to negotiate terms and conditions for "reinvention" changes from the specific PCOs to the appropriate ACOs but at the service level.

4. DFAR Change: To propose specific language to add to FAR 42.302 to authorize ACOs the contractual authority to implement class action changes.

Necessary Changes to DFARS.

DFARS Part 210.

1. Suggested change is to propose language to be added to the "Policy" section of 210.002 (DFARS Case 94-D003).

2. Purposes of change:

   -- delineate ACO's authority

   -- corroborate change in DFARS Part 242.

3. DFARS 210.002-72 presently reads at paragraph (e):

   "Contracting officers will, where appropriate -- ...

4. Change to insert "(e) Administrative Contracting officers will...".

   Note: Adding the word "Administrative" does not necessarily exclude the "Procuring Contracting Officer," since the PCO may perform all ACO functions, but the reverse is not true.

DFARS Part 242.

1. Add new ACO responsibility at DFARS 242.302(a)(68) as follows:

   "Also negotiate plant-wide process changes that may impact multiple contracts in accordance with the policy set forth in DFARS 210.002-72."

ENCLOSURE 2

Certified Cost and Pricing Data.

Existing TINA policy requiring certified cost and pricing data is outlined in FAR 15.804-2 which:

- establishes a $500K threshold, subject to adjustment beginning 1 Oct 95, and every five years thereafter; price/cost adjustments shall consider both increases and decreases, and requires certified cost and pricing data for the following actions:
    - award of any negotiated contract;
    - award of a subcontract at any tier, if contractor and each higher-tier subcontractor have been required to furnish cost and pricing data; and
    - modification of any contract (whether or not cost or pricing data was initially required) or subcontract.

In evaluating applicability of TINA to the block changes process, both the statute and regulatory guidance express the applicability in the singular. That is for *each* contract. As the block change process will impact multiple contracts across a plant, it may not be likely that the threshold requirements for submitting certified cost or pricing data would be exceeded on a *single* contract, if non-monetary consideration is given preference in block changes.

ENCLOSURE 3

Consideration in Block Change Modifications.

ISSUE:

- Must the Government obtain consideration from the contractor in executing a Block Change modification modify all the contracts at a plant to require a single, plant-wide process and thereby relieve the contractor of the requirement to comply with several different variations of MILSPEC or MILSTANDARD processes?

- If such consideration is required, must the government receive equal, monetary consideration or may intangible benefits provide such adequate consideration?

ANALYSIS:

I. Common Law requirement for consideration.

- *The law is well settled that a contracting officer can change the terms of a contract to the benefit of the Government but is not given authority to make a change which would adversely affect the Government.* Fansteel Metallurgical Corp. v. U.S., 172 F Supp 268 (Ct. Cl. 1959). *The authority of contracting* officers to enter into modifications or amendments to contracts *is limited to agreements based on new consideration or benefit to the Government.* ***There is no authority to enter into modifications unsupported by the framework of the contract or by new consideration***. Edward Hines Lumber Co., AGBCA No. 75-125, 76-1 BCA para 11,854. Such a modification or amendment of the contract must be in the Government's interest, *based on some new consideration or benefit to the Government.* American Sales Co. v. U.S., 32 F2d 141 (5th Circ., 1929), *cert denied* 280 US 574.

- A contracting officer has no authority to bind the U.S. Government to pay more for obtaining nothing more. H.Z. and Company, Ltd., ASBCA No. 29572, 85-2 BCA para 17979. A modification "unsupported by the framework of the contract or by any new consideration" is invalid because it would have required the Government to grant additional purchaser credits without having received any quantity of crushed rock in addition to that which Appellant was already obligated to furnish under the Drawings. Flippin Materials Co. v. U.S., 312 F2d 408 (Ct.Cl. 1963)

- *In Government contracts* ,[lack of consideration] *most often occurs when the Government modifies a contract to benefit the contractor but receives no additional or different promise or performance in return. Under Restatement, Second, Contracts Section 73 (1981), such modifications are without consideration since they involve performance of a pre-existing duty which is neither doubtful nor the subject of honest dispute.* Nash & Cibinic, Formation of Government Contracts 189 (2nd ed. 1986), quoted in Aviation Contractor Employees, Inc., No. 91-1012 (CAFC October 4, 1991), 10 FPD para.114. Performance of a preexisting duty is not sufficient consideration for a supplemental agreement. Russell and Assoc.-Fresno, Ltd., GSBCA No.3976, 76-2 BCA para. 12,066. Beavers Construction Co., AGBCA No. 83-125-1, 84-1 BCA para. 17,067.

Continued performance of a preexisting obligation does not constitute legal consideration to alter the terms of a contract *where the sole bargain is to accord only one party a benefit*; e.g., additional money. G. Issaias & Company (Kenya (Ltd.) ASBCA Nos. 30359, 31261, July 22, 1987, 88-1 BCA para. 220,441.

- It is generally held that there is insufficient consideration in the absence of reciprocity of consideration. Each party must gain or lose something by change. If the benefit or detriment is unilateral, a consideration is lacking, for it a well-established legal principle that doing or undertaking to do only that which one is already under a legal obligation to do by his contract is no consideration for another's agreement to do what he is not under a legal obligation to do. 17A Am Jur 2nd *Contracts*, Section 515.

- The most often-quoted rule is that:

> *Agents and officers of the Government have no authority to give away the money or property of the United States either directly or under the guise of a contract that obligates the Government to pay a claim not otherwise enforceable against it.* Bausch & Lomb Optical Co. v. United States, 78 Ct. Cl. 584(1934). See also Union National Bank of Chicago v. Weaver, 604 F2d 543 (7th Cir. 1979).

II. Comptroller General Decisions on the requirement to obtain consideration.

- The GAO has been frequently requested to rule on whether the Government may be legally permitted to modify or issue payment for performance which varies from that which was originally included in the contract. The GAO generally states the rule as:

> ... *No officer or agent of the Government of the United States has the authority to waive contractual rights which have accrued to the United States or to modify existing contracts to the detriment of the Government without adequate legal consideration or a compensating benefit flowing to the Government.* See 46 Comp. Gen. 874 (1967); 45 ID. 224 (1965); 44 ID. 746 (1965); 41 ID. 169 (1961)... Also see Bausch & Lomb, [supra]. Matter of Bank of El Paso, Comp.Gen.Dec.B-81432, April 5, 1979 (Unpub.).
>
> *The restriction against giving away the rights of the Government without corresponding consideration is intended to prevent improvidence in the procurement of goods and services. Such a limitation must be administered as to fairly and reasonably accomplish its important purpose. Such an extremely valuable safeguard to the public treasury should be enforced so as to uphold the policy behind the restriction.* Matter of Ohio Pipe, Valves & Fittings, Inc., Comp. Gen. Dec. B-184827, Dec. 9,1975 (Unpub.).

- *Consideration* has been defined by the GAO to be:

> *... some right, interest benefit or advantage conferred on the promisor to which he is not otherwise lawfully entitled, or any detriment, prejudice, loss, or disadvantage suffered or undertaken by the promisee other than such as he is at the time of consent lawfully bound to suffer*. Matter of the Secretary of the Interior, 40 Comp. Gen. 309, Nov. 21, 1960.

POSITION:

- The Government must obtain consideration in exchange for surrendering its right to have the contractually-required performance. However, such consideration may take the form of promises to undertake different, additional performance such as data collection, monitoring, reporting, and (possibly) providing for liquidated damages (to offset increased government oversight and program management costs) in the event of substandard process performance.

- A possible description of the ***consideration*** exchanged by the parties which would be sufficient to support a Block Change modification:

> "**In consideration of the Government's agreement to release the Contractor from his obligation to comply (and, where applicable, to report on his compliance) with the requirements of the MILSPEC, and to negotiate mutually agreeable levels of process performance, the Contractor agrees to implement a process which is commensurate with the performance requirements of the MILSTANDARD/MILSPEC, to establish mutually agreeable levels of performance of the material elements of such process, and to routinely monitor, accumulate, and report to the Government on the levels of performance of the material process elements so established."**

III. Sufficiency of consideration to support contract modification.

> - *While the general rule is that a valuable consideration however small or nominal, if given in good faith, is sufficient to support a contract, it is well established that no officer or agent of the Government has authority to release rights vested in the United States.* Matter of the Secretary of the Army, Comp. Gen. Dec. B-141157, Dec. 5, 1960 (Unpub.) (emphasis added)

- According to Nash & Cibinic, supra at p.192-193, the courts and boards will not inquire into the *adequacy* of the consideration exchanged by the parties; the only requirement is that there be a bargained-for exchange of some consideration between them. Mills v. U.S., 187 Ct. Cl. 696, 410 F2d 1255 (1969).

> *The Claims Court has stated that a contract does not lack mutuality merely because a particular promise is not offset by a similar promise or obligation Rather the Court said that the pertinent question is whether the agreement as a whole is*

> *supported by mutual consideration, Florida Keys Aqueduct Authority v. U.S., 7 Cl. Ct. 297 (1985). However, if the consideration furnished by a party is so inadequate as to cause a tribunal to determine that the agreement would not be conscionable, it will not be enforced, Hue v. U. S., 132 U.S. 406 (1889).*

- The Comptroller General has similarly held that he will not question the *adequacy* or the relative benefit conferred by the bargain when considering whether consideration itself exists. Citing to 17 Am Jur 2d, *Contracts*, Sections 85, 92, and 102, the Comptroller General concluded that it is well settled that the legal *sufficiency* of a promise or benefit is not dependent upon the *adequacy* of the bargain. See 47 Comp. Gen. 170 (1967). The GAO's view is that such matters as the adequacy of consideration are matters of contract administration and more properly the subject of agency judgment, Stancil-Hoffman Corp., Comp. Gen. Dec. B-193001.2, 80-2 CPD para. 226 (1980).

- The closest case for our purposes may be that of the Matter of Mr. Cowden, Comp. Gen. Dec. B-173551, Aug. 4, 1971 (Unpub.). The GAO's advance opinion was sought whether a timber sales contract could be modified to reduce the stumpage rates (a benefit to the purchaser) in exchange for the addition of environmental safeguards. The GAO had formerly held to the rule that there must be a *tangible* benefit; here, it was recognized that a modification which carried a benefit for the Government, was for sufficient consideration, even if the benefit was intangible. In this case the government "believe[d] the monetary loss to be more than offset by reductions in resource and environmental requirements, even though such reductions cannot be quantified." Timbering practices, and environmental awareness, had changed during the life of the instant contract and the government wanted to modify the contract to reduce unacceptable aesthetic damage, as well as stream siltation and erosion, to the affected national forests. The Government as conservator of the forest (in its contracting position) was benefited in this instance and the GAO recognized the benefit in approving the modification. GAO's guidance on the issue should apply with equal force here:

> *Any such modification should be completely documented to show that concession by the Government are reasonably related to, and justified by, increased cost of operation to the purchaser.*

POSITION:

The Government is not required as a matter of law to extract monetarily equivalent consideration in order to perfect a mutually binding modification of the contracts in place at a contractor facility. So long as each contract bears some portion of the consideration proffered for the whole block of affected contracts, and the consideration to each party, when taken as a whole, is reasonably equivalent, then the consideration may be sufficient to authorize the ACO to effect a binding change to the contract. The modification decision should document the fact that the costs avoided by the contractor, in the Government's deletion of the MILSPECS/STANDARDS, "are reasonably related to ... the increased cost of operation" by the contractors.

If OSD should also choose to recognize, through either a DFAR Case or a policy letter, that oversight costs avoided by the Government in the future may also provide appropriate consideration, this will make the implementation of Block Changes even more widely available.

ENCLOSURE 4

Alternative Solutions.

ALT 1

SECDEF exercises PL 85-804 authority

- Monetary consideration not required
- Certified cost and pricing data not applicable

Pros	Cons
· Most expeditious · Least administrative costs · Minimize cultural bias · Provides greatest incentive to industry · Biggest potential Govt payoff · OSD leadership position	· Political perceptions · Mandatory periodic report to Congress · Time limited · Not available if other legal authority exists

ALT 2

Class VECP language added to DFAR

· Defines consideration as cutting across all contracts, and addresses collateral and future savings.

· Certified cost and pricing data waived per OSD Class D&F

PROS	CONS
· Expeditious · Utilizes available framework · Reduces cultural bias · Provides framework for consideration · Minimizes training · Permanent solution	· DFARS changes required · Perceived untimeliness of VECP's

ALT 2A

Class VECP language added to DFARs

- Defines consideration as cutting across all contracts, and addresses collateral and future savings.
- Adds average $500K per contract threshold

PROS	CONS
· Expeditious · Utilizes available framework · Reduces cultural bias · Provides framework for consideration · Minimizes training · Permanent solution	· DFARS changes required · Perceived untimeliness of VECP's · Added quantification effort for TINA compliance

ALT 3

Class Contract Change proposal with OSD D&F and implementation of DFAR Case 94-D003

- Consideration assessment expanded to cut across all contracts, and address collateral and future savings.
- Certified cost and pricing data waived per OSD Class D&F

PROS	CONS
· Expeditious · Utilizes available framework · Reduces cultural bias · Provides framework for consideration · Minimizes training · Provides permanent solution	· DFARS changes required · Requires change to DFARs case 94-D003

ALT 4

Statutory solution (e.g. FASA 3)

- Consideration concerns resolved
- Removes requirement for cert. cost and pricing data for block changes

Pros	Cons
· One time solution · National buy-in · Eliminate cultural bias and political perceptions	· Too much time · Uncertainty of outcome due to delay in obtaining approval

ENCLOSURE 5

Consideration: The Dilemma and Solution.

The success of the proposed block change process depends on resolution of the consideration dilemma. The complexity of the issue demands that case law, regulatory guidance, federal appropriation law and business judgment all must be addressed by the proposed solution.

Case Law: The business relationship between the government and industry, on existing contracts, is rooted in case law which is summarized as follows:

Consideration must exist to grant legal authority to enter into subsequent contract modifications; government agents may not grant or authorize work which obligates the government to pay a claim not otherwise enforceable against it; and no government agent may waive contractual rights without adequate legal consideration. However, while consideration must be mutually agreed to by the parties, the adequacy of the consideration obtained is a matter of contractual judgment. Any agreement involving consideration must document an assessment that government concessions are reasonably related to or justified by the expected benefit. *Consideration, as defined by Black's Law Dictionary,, is some right, interest, profit or benefit accruing to one party, or some forbearance, detriment, loss, or responsibility, given, suffered, or undertaken by the other.*

Business Judgment: The process of proposing block changes really starts with a "white paper" and an assessment by industry that the process change proposed (either to specifications or standards) is a good business decision. Once industry has assessed the merits of the change, working the initial concept with key customers, the basis of the proposal to the government is outlined. The assessment by government, both technical and programmatic, regardless of the solution proposed regarding the adequacy of consideration, must still assess the merits of the change.

Statutory/Regulatory Guidance: The FAR limits the applicability of consideration to benefit to the instant contract except for Value Engineering Change Proposals. Specifically FAR 15.8 - Price Negotiation, establishes cost and price negotiation policies and procedures such that contracting officers shall - "(2) Price each contract separately and independently and not (i)use proposed price reductions under other contracts as an evaluation factor or (ii) consider losses or profits realized or anticipated under other contracts".

Federal Appropriation Law: Federal appropriation law addresses the augmentation of appropriations which states that as a general proposition, an agency may not augment its appropriations from outside sources without specific statutory authority. There is no statute which, in those precise terms, prohibits the augmentation of appropriated funds. The concept does nevertheless have an adequate statutory basis, although it must be derived from several separate enactments. Specifically, the miscellaneous receipts statute, addresses violation of purpose, or when money appropriated is used for a purpose for which it was not originally intended. Assessing consideration in the aggregate (across multiple contracts) is constrained because of the potential to augment appropriations, or improperly benefit.

Solution: If the definition of what constitutes adequate consideration is expanded to include future savings or the requirement eliminated through P.L. 85-804, then the problem of augmentation of accounts is significantly reduced. The remaining challenge is to define consideration as still being within the bounds of the "instant" contract as offset against future savings to the instant program. Either the VECP or the P.L. 85-804 solution contribute significantly to resolving both the definition and augmentation of accounts issues. The CCP approach is also a viable solution, contingent on retention of the draft DFARS case 94-D003 language defining future benefit to the Government as a basis for a "no-cost settlement (like the VECP). The legislative solution is the purest, though perhaps the most protracted, since both the requirement to assess consideration and any augmentation issues could be statutorily eliminated for block changes.

ENCLOSURE 6

Class CCP and VECP Clause Language.

Class CCP Clause.

The following is a suggested amendment of DFARS Case 94-DO03 to facilitate "Block Change" of existing contracts.

1. Add the following sentence to the policy language in draft DFARS 210.002-72, "Use of specifications and standards in DOD acquisitions" at the end of subparagraph (b)(4):

> When a contractor proposes such alternatives on a plantwide or multiple contract basis, and does not request a change in contract prices (or estimated cost and fee values) or in the schedules or other material requirements of the contracts, a single class modification negotiated and executed by the Administrative Contracting Officer is the preferred method of contractual authorization.

2. In the prescriptive language of draft DFARS 210.011-70 "Solicitation provisions and contract clauses," change the word "and" to "or" in subparagraphs (e)(I)(i) and (e)(2)(iii). Since a transition to common commercial processes or practices may hinge upon elimination of ALL unique requirements, the contract provision for alternatives should be inserted in essentially all contracts that may likely impose a military or federal unique requirement.

3. In the draft DFARS contract clause 252.210-7006 "Alternatives and Updates to Military and Federal Specifications and Standards," make the following changes:

- *Delete the word* "and" *at the end of subparagraph (b)1);*
- *Add the phrase* "For proposed alternatives affecting only this contract," *at the beginning of subparagraph (b)(2);*
- *Replace the period at the end of subparagraph (b)(2)(ii) with a semicolon, and add the word "'and";*
- *Add the following new subparagraph (b)(3):*

> (3) For proposed alternatives affecting multiple contracts, may submit via the Administrative Contracting Officer a proposal consisting of the following:
>
> (i) a description of the difference between the existing contract requirement(s) and the proposed requirement(s);

(ii) an identification of the class of contracts (e.g., by contract numbers, by CAGE code, or by other description of the class) to which the proposal applies;

(iii) a draft class modification to effect the proposed change(s); and

(iv) a statement that the contractor is not seeking to change the prices, schedules, or other material requirements of the contracts. [*optional addition if PL85-804 is not invoked:* and an informal aggregate (e.g., on a plantwide basis) estimate of the contractor's implementation costs and projected annual recurring savings that will result from the change.]

New Class VECP Clause.

252.248-7007

Value Engineering Change Proposals--Class Modifications (xxx 1996)

(a) General. The contractor is encouraged to develop, prepare, and submit class value engineering change proposals (class VECPs) for the purpose of implementing specification, standards or process reform initiatives. The contractor shall share in net acquisition savings realized from such class VECPs that are accepted in accordance with the provisions set forth in this clause.

(b) Definitions. "Acquisition savings," as used in this clause means savings resulting from the application of a class VECP to a class of contracts affected by a specification, standards or process reform initiative. Acquisition savings include:

(1) Extant contract savings, which are net reductions in the costs of all contracts that are definitized and on-going at the time the class VECP is accepted.

(2) Future contract savings, which are savings resulting from reduced pricing offuture contracts.

"Collateral savings" as used in the clause, means those measurable net reductions resulting from a class VECP in the agency's overall projected collateral costs, exclusive of acquisition savings, whether or not the acquisition cost changes. When implementing reform initiatives, collateral savings include government oversight savings resulting from those reform initiatives.

"Contractor's development and implementation costs," as used in this clause, means those costs the Contractor incurs on a class VECP specifically in developing, testing, preparing, and submitting the class VECP as well as those costs the Contractor incurs to make the contractual changes required by Government acceptance of a class VECP.

"Government costs," as used in this clause, means those agency costs that result directly from developing and implementing the class VECP, such as any net increases in the cost of testing, operations, maintenance, and logistics support. The term does not include the

normal administrative costs of processing the class VECP or any increase in the cost or price of any extant contracts.

"Extant contracts," as used in this clause, means those contracts that exist at the time the class VECP is submitted, and to which the VECP is intended to apply.

"Class value engineering change proposal (class VECP)" means a proposal that:

(1) requires a change to more than one extant contract to implement; and

(2) results in reducing the overall projected cost to the agency without impairing essential functions or characteristics; provided that it does not involve a change in (i) deliverable end item quantities only; (ii) in research and development (R&D) end items or R&D test quantities that is due solely to results of previous testing under this contract; or (iii) to the contract type only.

(c) Class VECP preparation.

As a minimum, the contractor shall include in each class VECP the information described in subparagraphs (1) through (6) below. The class VECP shall include the following:

(1) A description of the difference between the existing contract requirement and the proposed requirement, the comparative advantages and disadvantages of each, a statement that an item's function or characteristics is not being altered, the effect of the change on the end item's performance, any pertinent objective test data, risk assessment and transition plan.

(2) A list of the contract requirements (terms and conditions) that must be changed if the class VECP is accepted, including any suggested specification deletions and replacements.

(3) Identification of the class of contracts (e.g., by contract numbers, by CAGE Code, or by description of the class) to which the VECP will apply.

(4) Separate, aggregate cost realism data sufficient for the government to conduct a cost benefit analysis and determine the reasonableness of the proposal for (1) the existing requirement in all extant contracts, and (ii) the VECP.

(5) A description of costs the Government may incur in implementing the class VECP.

(6) A prediction of any effects the proposed change would have on collateral costs to the agency.

(d) Submission. The Contractor shall submit class VECPs to the Administrative Contracting Officer, unless this contract states otherwise.

(e) Government Action.

(1) The Contracting Officer shall notify the Contractor, within 60 calendar days after the contracting office receives it, regarding how the proposed change will be dispositioned. The Government will process class VECPs expeditiously; however, it shall not be liable for any delay in acting upon a class VECP.

(2) If the VECP is not accepted, the Contracting Officer shall notify the Contractor in writing, explaining the reasons for rejection. The Contractor may withdraw any class VECP, in whole or in part, at any time before it is accepted by the Government. If the Contractor undertakes significant expenditures for VECP effort before receiving written notification of approval from the Contracting Officer, such expenditures will not be subject to the Disputes clauses of extant contracts, or otherwise subject to litigation under the Contract Disputes Act of 1978 (41 USC 601-613).

(f) Sharing rates. If a class VECP is accepted, the Contractor and the Government shall share in the net acquisition and collateral savings as follows:

(1) The Contractor shall retain the net acquisition savings for all extant contracts in the class,

(2) The Government will receive all acquisition savings from future contracts, and all collateral savings.

(g) Calculating net acquisition savings. Because the Contractor shall retain all such savings, there is no need to calculate net acquisition savings, other than for purposes of evaluating the class VECP and assessing consideration.

(h) Contract adjustment. The class modification accepting the class VECP shall:

(1) authorize the deletion of supersedure of existing specifications and standards normally via a special provision to prevent order of precedence questions;

(2) state that the class modification does not alter the prices or estimated cost and fee values of the class of contracts being modified as appropriate.

(I) Subcontracts. The contractor may flowdown the specification or standard deletion or supersedure authorization to its suppliers or subcontractors at any tier, and may propose equivalency modifications to maximize the flexibility of subtier contractors to migrate efficiently to performance oriented requirements.

ENCLOSURE 7

Class VECP versus Class CCP.

As a proposal mechanism to effect a Block Change. either a Class Value Engineering Change Proposal (VECP) or a Class Contract Change Proposal (CCP) is capable of producing the desired result. Both proposals can be structured essentially alike, provided that the prescriptive language and implementing contract clauses are drafted to the same effect. Unlike the Alternative 1 Public Law 85-804 approach, both clauses may have to be subsequently incorporated into all existing contracts as the authority for Block Changes. Both also would permanently amend DFARS for a transitional need, unless implemented by directive only. However, each type has some unique aspects. The comparative advantages and disadvantages of each alternative may be summarized as follows.

Class VECPs.

VECPs have the advantage of an existing recognition of the value of future savings, and an existing so-called "no cost" settlement method. The term Value Engineering also seems directly applicable to the substitution of performance specifications or commercial standards for less efficient "how to" military specs and standards, in order to reduce acquisition and oversight cost.

However, VECPs also have several disadvantages. There is a general perception, in many cases deserved, of VECPs as a cumbersome, time-consuming and typically low priority type of proposal. In fact, the VE community is considering a significant redraft of the FAR prescriptive language and clauses to address these issues. Thus, the very term VECP may stigmatize block change as a nonstarter unless some negative cultural bias can be overcome. Also, VECPs are most often associated with design changes, as evidenced by DFARS 252.248-7000 "Preparation of Value Engineering Change Proposals" (May 94), which invokes MIL-STD-973 (Configuration Management). Since this MlL-STD-invoking clause probably exists in the majority of contracts that contain VE provisions, a special disclaimer in the new Class VECP clause would be required to override the preexisting requirement. In any case, Block Change is intended to address processes, not products, and diminished use of military standards.

Also, though it would seem that the existence of many predefined terms of FAR Part 48 regarding types of costs and savings are a head start for the addition of a new type of VECP, many of the terms don't apply to a Block Change. VECPs are primarily structured such that one contract is modified to authorize the payment of implementation costs as well as the contractor's share of savings. In the case of Block Change, all contracts are being simultaneously modified, and there is no funding of implementation cost and no need for a formula or tables for sharing savings. Distinctions between "concurrent contracts" and "instant contract,” and terms like "Sharing Base" or"Sharing Period,” are not useful in developing a Class VECP clause.

Consequently, even though reference to the “no cost" settlement method of VECPs is a very accurate analogy for Block Change, creating a Class VECP clause is somewhat of a forced exercise, as a comparison of the Enclsoure 5 draft clause to the standard VECP clause will attest. Nevertheless, the clause and prescriptive language can overcome all but perhaps the VECP stigma problem, which should not be ignored. It remains arguable, however, whether the resulting proposal is a VECP in anything but name.

Class CCPs.

Class CCPs have no presently existing language recognizing the value of future savings or a defined "no-cost" settlement methodology. However, the pending DFARS Case 94-D003 (DFARS 210.002-72 "Use of Specifications and Standards In DoD Acquisitions,” and its related additional prescriptive language and clauses) does provide such references, as well as a natural framework for Block Change proposals. In fact, the existing draft DFARS contract clause 252.210-7006 Alternatives and Updates to Military and Federal Specifications and Standards" is perhaps suitable as is, or may be minimally modified to more clearly articulate the desired content (informal plantwide or aggregate level cost information suitable for consideration assessment purposes only) and result (no change in prices, schedules, or other requirements) of Block Change.

The primary disadvantage to Class CCP approach is that the draft DFARS language rnay not be implemented, though this would be equally true of a new Class VECP clause. While nothing prevents the submittal of proposed changes to multiple contracts now, lack of unique contract clauses that actively promote Block Change proposals could have a chilling effect.

Recommendation.

Provided the draft DFARS Case appears promising, we advocate the Class CCP approach utilizing the DFARS 210 language, modified as necessary to clarify the desired content and results of Class CCPs. However, if the draft DFARS language is not implemented, the Class VECP approach should be considered as a viable fallback. In either case, interim direction to use the desired clause prior to regulatory implementation should be issued, including strong endorsement of the concepts of aggregate level assessment of nonmonetary consideration and expeditious processing of proposed Block Changes.

ENCLOSURE 8

Risk and Liability

Product Liability.

The primary risk area which is impacted by the Block Change Process is that involving the Government Contractor Defense. In this regard, the Defense is asserted where the Government has retained approval of system design and ownership of the manufacturing and interface standards and processes. With the movement away from Government control of critical processes comes a risk that the contractor will no longer be able to avail himself of the Government's sovereign immunity from strict product liability to injured third parties or their heirs.

It is noted that a guiding principle of this initiative is that the Government does not intend to increase its exposure to liability by indemnifying contractors in the ordinary case nor does the contractor intend to accept 3rd party liability. Therefore it is absolutely critical that the contractor be conscious of the potential for increased exposure to liability.

It is believed that the contractor must scrutinize the processes proposed, to control and determine whether the change from Government standards and specifications will be likely to affect the present apportionment of design liability among the government, the contractor, and injured third parties. In those instances where the contractor's legal review identifies such a potential risk, the contractor must provide detailed process documentation to enable the Government to explicitly approve the contractor's process specification or standard as being a functional equivalent of the former MILSPEC or standard.

Product Performance.

It is also a fundamental premise of this initiative that the change from Government specifications and standards will not introduce an unacceptable risk of degradation of product performance. The Block Change Process intends to minimize this risk essentially through the use of the technical review process; this review should reveal any proposed process changes which are likely to carry a significant risk of such degradation. For those identified critical processes, any enhanced risk may then be mitigated, for example, by either an extraordinary level of Government process reviews or by the negotiation of an appropriate warranty designed to counterbalance such increased risk.

ENCLOSURE 9

THE SECRETARY OF DEFENSE
WASHINGTON, DC 20301

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
COMPTROLLER
ASSISTANT SECRETARY OF DEFENSE (COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE)
GENERAL COUNSEL
INSPECTOR GENERAL
DIRECTOR OF OPERATIONAL TEST AND EVALUATION
DIRECTORS OF THE DEFENSE AGENCIES
COMMANDER IN CHIEF, U.S. SPECIAL OPERATIONS COMMAND

SUBJECT: Specifications and Standards-Accelerating A New Way of Doing Business

As I have stated before, greater use of performance and commercial specifications and standards is one of the most important actions DoD must take to ensure we are able to meet our military, economic, and policy objectives in the future. My 29 June 1994 memorandum directed the implementation of recommendations of the Process Action Team on military specifications and standards, and the development of a streamlined procurement process on existing contracts, to encourage contractors to propose non-government standards and industry-wide practices that meet the intent of the military specifications and standards.

Furthermore, I reversed a long-standing Defense acquisition policy by requiring use of performance specifications when purchasing new systems, major modifications, upgrades to current systems, and on nondevelopmental and commercial items. The use of military specifications and standards for such new programs was authorized only as a last resort, and requiring an appropriate senior level waiver. However, this directive did not require waivers for reprocurements of items already in inventory.

Since then, many positive steps toward the new way of doing business have been taken. The Defense Standards Improvement Council (DSIC) has reviewed and canceled many military specifications and standards. A number of new initiatives, including Reinvention Labs, the Common Processes Contractor Facilities pilot, the USAF's Lightning Bolts, and notably the JACG's Non-Government Standards (NGS) IPT, have been launched. Many of these initiatives have identified the military specifications and standards in ongoing and reprocurement Defense contracts as a major impediment to a timely, efficient transition to performance and commercial specifications and standards. Generally, these continuing requirements become the common denominator for plantwide processes, ensuring compliance with the most stringent contractual specifications and standards. In effect, this existing business base limits the pace of transition to new processes characteristic of world-class producers.

The NGS IPT undertook a life-cycle driven study of the issues associated with the transition from detailed "how to" specifications and standards to performance-based or commercial best practices. For example, the IPT's report addresses improvements in past performance rating for source selections, the implementation of flexible sustainment policies, and the importance of Form, Fit, Function And Interface (F3I) integrity as necessary adjuncts to the substitution of contractor-owned processes for contractually mandated specifications and standards.

The NGS IPT 's recommendations, which I support, include a "block change" process for contractually authorizing the replacement of existing military specifications and standards in all (or a significant subset of all) extant contracts at a contractor's facility, based upon business arrangements. The contractual mechanism for such changes is a single class modification, executed by the Administrative Contracting Officer, which supersedes the existing contract requirements.

A sizable portion of the NGS IPT's report addresses options and guidance to streamline the assessment of the contractual consideration. Nonetheless, accelerating the new way of doing business is inextricably tied to the process for authorizing such changes, which in turn affects the rate at which subtier suppliers can make the transition. I believe it is patently evident that either a substitution of more efficient processes, or deletion of non-value-added requirements, which reduce Government oversight costs and will result in future acquisition savings, are sufficient consideration when a contractor does not request funding of its implementation costs. I further believe it is incumbent on DoD to streamline, to the fullest extent we are empowered to do so, the class modification process that is integral to this transition.

Accordingly, pursuant to the authority granted the Secretary of Defense by Public Law 85-804 and Executive Order 10789, I hereby determine that the national defense will be facilitated by class modifications that delete canceled military specifications and

standards, or replace military specifications or standards with performance-base or commercial requirements, when those modifications do not affect contract prices (or estimated cost and fee values) or existing contract deliverables, schedules, or other material requirements. If the ACO expects that there will be a substantial windfall on any particular firm fixed price contract once non-recurring implementation costs and future program savings are considered, the ACO may decide to negotiate consideration for that specific contract change.

You are directed to evaluate contractor proposals for specifications and standards changes solely on their technical merit when such proposals do not request a change in contract prices or estimated cost and fee values, and to expeditiously process requested class modifications. DCMC shall continue to be the focal point for re-engineering efforts within DoD , building on the reinvention lab initiatives. DCMC will facilitate and train the Contract Administrative Office staffs to coordinate the block change process. To further expedite this transition, I direct that effective immediately, all Administrative Contracting Officers have the contractual authority to execute block change modifications, subject to receipt of necessary programmatic authorization from the affected services. Tab A depicts the block change process designed by joint efforts of the NGS-IPT, industry, DCMC and OSD. The process diagram is supported by a narrative detailing underlying assumptions and roles and responbilities. I further direct the Service Acquisition Executives to delegate authority to a central point within each service, in accordance with the process outlined above, to facilitate and expedite reform on existing contracts. I also encourage the program managers and procuring contracting officers to support and facilitate this process to the maximum extent possible. Please refer to the "Block Change" portion of the NGS IPT report for guidance, except in respect of its recommendations regarding contractual consideration, which are further streamlined and superseded by this directive.

We can not afford to allow "business as usual" to delay this initiative. I encourage you and your leadership teams to take an active role in advocating the transition of existing contracts and reprocurements to performance-base or commercial practices, and in supporting the DCMC and DPROs/DCMAOs contractual authorization of the class modifications necessary to accelerate this vital transition.

Block Change Process

The block change process depicted here designates DCMC as the lead facilitator to implement plant-wide changes. The process is built on existing structures within the services and OSD and is designed to create a sense of urgency in the approval process for streamlining of specifications, standards or other processes.

Proposal Development

Industry is encouraged to prepare and submit concept papers for streamlining specifications and standards with emphasis on early customer involvement and interface. Once the cost and benefit of the change has been determined through this early involvement, industry shall submit block change proposals. As a minimum, the proposals should detail the proposed processes and associated metrics, cost benefit analysis, the consequent changes in government's involvement in the process and required regulatory/contractual changes.

Approval

Following submittal of the proposal, the CAO shall determine the contractual/regulatory scope of change, confirm the component customer base impacted and organize the management council composition based on the nature of the proposal. The management council will be comprised of senior level representatives from the Contract Administration Office (CAO), the contractor and subject matter experts representing the key customers within the affected services. Notionally, the key customer base shall be comprised of customers who represent 80 percent of the total dollar value of affected contracts.

Roles and Responsibilities

The role of the management council is to analyze the merits and cost benefits of the change. Empowerment of subject matter experts from the key customer base is critical. To achieve the timelines, a service team leader should be designated and granted decision authority by the SAE to present the key customer base. Service team leaders are responsible for achieving consensus with other service team leaders, the key customer PCOs and PMs, the service team members and the SAE. The CAO should be responsible for facilitating and leading the management council. The ACO will have the contractual authority to execute all block changes.

Internal Government Resolution Process

The objective of this process is to resolve disagreements, facilitate consensus, elevate decision authority and re-emphasize the overall goal and objective. If there is disagreement between PM or other customers within a component, the issue must be raised to a level within the service as designated by the SAE. If there is disagreement among the components the issue must be raised to a level within the Department as designated by the DAE. Once resolved, the ACO executes the change.

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APPENDIX L

TRAINING: GOVERNMENT & INDUSTRY

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1.0 INTRODUCTION.

The Training Working Group (TWG), as part of the Integration and Training Panel under the Non-Government Standards (NGS)-Integrated Product Team (IPT), was tasked to develop a training strategy for the implementation of the NGS-IPT to include:

1. Identification of key training elements
2. Correlation of training needs with other NGS-IPT implementation events
3. Interfaces with other acquisition reform training
4. Recommendations for courseware development
5. Recommendations for media/delivery.

In addition, a package of materials to support subsequent courseware development was to be consolidated to include:

1. NGS-IPT Final Report
2. Supplementary materials

   Identification of courseware development Subject Matter Expert (SME)s/ implementation owners

This working group report reflects the observations, advice, and opinions of individual members of the group, ;and in some cases the consensus of the Government members of the group. The report does not indicate, describe, or accept, and should not be interpreted as indicating describing, or accepting, any group deliberations or discussions as a source of agreement, consensus, advice, or recommendations of the group as a whole.

1.1 Scope.

This TWG report addresses the acquisition reform training requirements of all aerospace sector Department of Defense (DoD) and industry acquisition personnel and covers the key training points, concepts, and rationale associated with the integrated processes and specific topics embodied in the NGS-IPT initiatives. The basic tenets upon which the NGS-IPT was founded, and the primary topics addressed by each of its panels, are included in the recommended training program. DoD acquisition reform is broader than the objectives of the NGS-IPT, however many related acquisition reforms are addressed within the broad integrating functions of the NGS-IPT initiatives. Interfaces with other acquisition reform training efforts were to be identified. Training on specific aspects of acquisition reform not central to NGS-IPT changes were not addressed.

1.2 Summary.

The training task necessary to support the implementation of the NGS-IPT initiatives can be broken into two parts, near term and long term (see Figure L-1). The near term task is more difficult because the work force directly involved with near term reform must be trained prior to initiating specific implementation events and the time frame (estimated to be at least a year) is dependent on the details of implementation which are yet to be decided. The long term task is to merge the NGS-IPT generated training material into the existing DoD/industry acquisition training infrastructure (acquisition reform training management, current acquisition courses, Defense Acquisition University (DAU) Consortium, etc.). General awareness and “how to” training for the entire acquisition work force must begin as soon as possible to aid the transition to “a new way of doing business.” Special efforts will be needed to support the immediate (onset surge) near term training requirements.

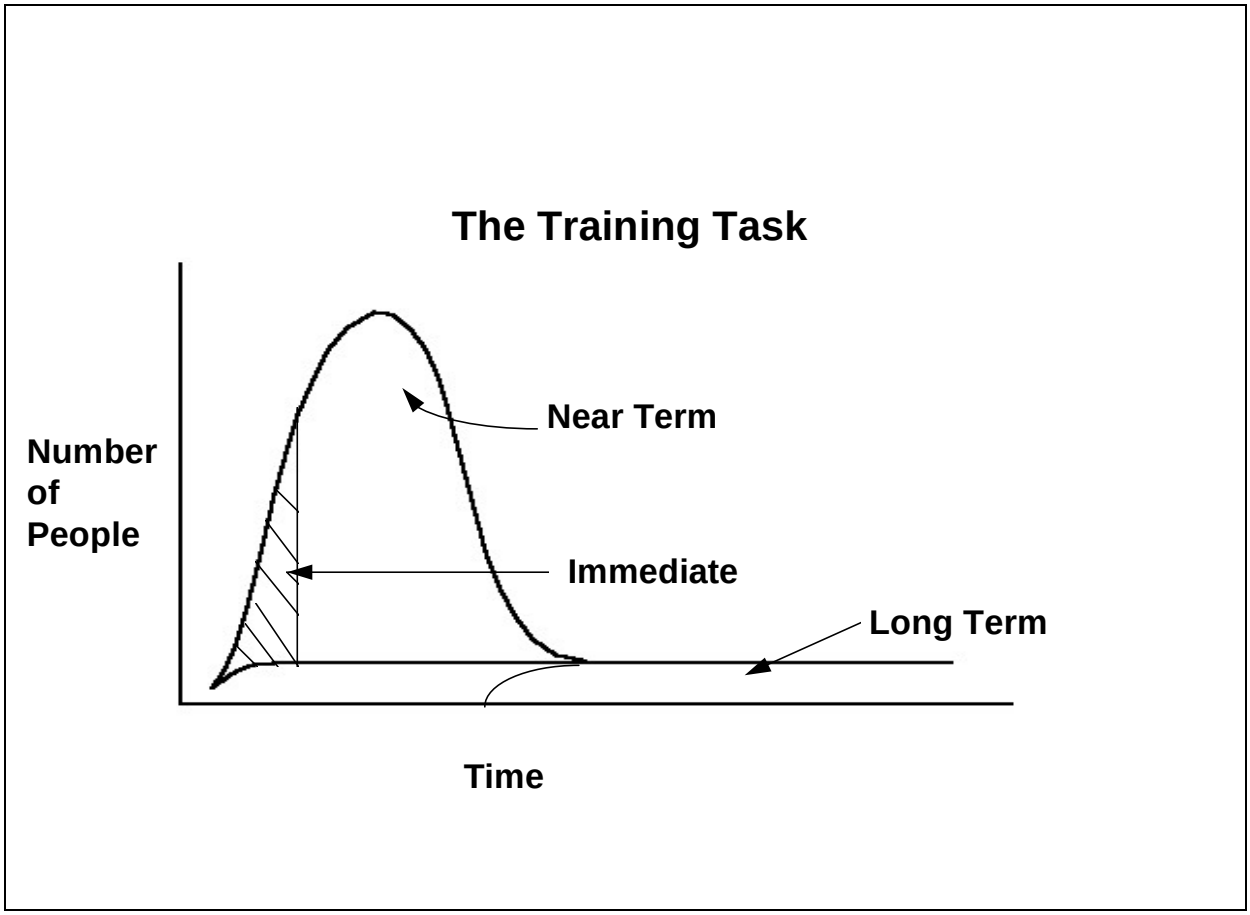

Figure L-1. Training Throughput Profile.

An acquisition reform training IPT should be established under the Joint Aeronautical Commander's Group (JACG), with DAU participation, to specifically coordinate the development of common courseware, to provide oversight and coordination for deployment and delivery of training by the services, Defense Logistics Agency (DLA) and industry. These latter groups should be tasked to tailor the common courseware and deliver the required training to their people.

2.0 APPROACH.

The TWG was formed within the Integration and Training Panel to develop a training strategy to support implementation of the NGS-IPT findings. The team included representatives of the services and industry with training program development and acquisition backgrounds. A modified version of the basic instructional development process was followed with primary emphasis on requirements analysis.Subject Matter Experts (SMEs) were identified in each panel to serve as the primary interface between the panel and the TWG. A questionnaire was sent to each SME as a central focus representing a consolidated panel. In addition, each service was contacted about current acquisition reform training, plans for future training, and work force

demographic data. DAU and service schools were contacted as well as industry organizations and a sampling of aerospace companies (members of the NGS-IPT).

The TWG analyzed the information gathered from the panels, plus additional inputs from the Integration Panel, to identify the key training points and primary work force functional disciplines impacted. Demographic information was collected from the services, DLA, and industry to quantify the number of personnel in the work force who would need training and the disciplines in which they work. Each of these disciplines was impacted by the various reforms in varying degrees. It was also recognized that the depth of training each individual required was dependent on their specific position in the organizational structure; e.g., executive decision maker, day to day implementer of procedures, etc. Training needs were identified as well as suggestions for courses/topics to be developed by the DoD components (military services and DLA) and industry working in conjunction with the Acquisition Reform Communications Center (ARCC) Suggested organizational responsibilities for delivery of training were included that align with other NGS-IPT implementation.

3.0 TRAINING REQUIREMENTS ANALYSIS.

This section provides an overview of the Training Requirements Analysis (TRA) conducted by the TWG. The TRA methodology employed a set of analysis tools and a defined process for performing the analysis. During the analysis phase of this process instructional designers, along with training experts, conducted occupational target population analyses as well as analyses of the reports from the other panels.

3.1 Process.

Three steps were used in the analysis. The first step was to break the current acquisition process down into its parts. Next, the relationship between each of the parts was examined and compared with the NGS-IPT initiatives and the changing acquisition reform principles. Finally, occupational disciplines within the acquisition community were related to the process parts to establish performance requirements which ultimately lead to training requirements.

1. Determining instructional need: The instructional need was identified through the following:
    a. Analysis of the recommended changes to identify the necessary implementation actions and organizing the data by referencing each action to an NGS-IPT panel reports.
    b. Identification of the need for both cognitive training (knowledge of recommended acquisition changes) and affective training (interpersonal skills or attitudes...cultural changes).
    c. Analysis of the actions proposed by each panel to identify the key training points.
    d. After the key training points were developed, review and validation with a SME and NGS-IPT panel was done to ensure completeness and accuracy.

2. Identifying target groups: Selection of acquisition work force groups requiring instruction was based on the criticality of task and level of training needed.
3. Identifying applicable instructional methods and media: Lecture, demonstration, seminar, hands-on, large group, small group, roadshow, distance learning, computer-based training, video, etc., are all candidates.

3.2 Courseware Development.

Table L-I is a list of candidate near term courses that are recommended. Table L-II relates these candidate courses to a list and brief description of topics derived from the analysis of panel reports. Table L-III relates candidate topics and level of training to specific work force categories/functional disciplines. Awareness training is the immediate communication of the rationale behind acquisition reform initiatives and how they are being implemented. The purpose is to begin the slow process of changing the mind set--why we have to change the way we do business. An executive level version is at a summary level to present an overall picture of the initiatives. A more inclusive version for the near term includes communication of the initiatives, some case studies, and dialogue with the acquisition work force as a whole. Detailed training is the "how to" training for specific functional personnel who must immediately understand how to work with new processes, procedures, and methods. Because the TWG's efforts followed the work of the other groups and specific acquisition reform decisions are still to be made, the training analysis was not completed. One of the initial follow-on tasks that needs to be addressed is to complete the requirements analysis which is dependent on decisions and subsequent implementation plans of the NGS-IPT.

Table L-I. Candidate Near Term Courses.

Initiatives Awareness ("Roadshow")	Awareness of the initiatives being implemented; Two levels; executive and general work force
Process Evaluation	Details of the attributes of each process, associated metrics; Use of evaluation results. How to conduct an evaluation.
Source Selection	Details of preparing Request For Proposals (RFP)s, responding to RFPs, proposal evaluations. Emphasis on performance-based acquisition, past performance, dependence on contractor processes.
Contract Execution	Details of performance-based acquisition, enhanced Contractor Performance Assessment Reports (CPARs), flexible sustainment, dependence on contractor processes, use of contractor data.

Table L-II. Candidate Course Topics.

Topic	Awareness	Process Evaluation	Source Selection	Contract Execution
Contractor Process Dependency	X	X	X	X
Flexible Sustainment Concept	X			X
Engineering Process	X	X		
Advanced Quality Process	X	X		
Subcontractor Mgmt. Process	X	X		
Manufacturing Process	X	X		
Program Management Process	X	X		
Process Evaluation Method	X	X		
Block Change Method	X	X		
Supplier Rating Method	X	X	X	
Past Performance Method	X	X	X	X
Form, Fit, Function & Interface	X		X	X
Source Selection	X		X	
Contract Execution	X			X

3.3 Topic Descriptions.

The following is a more detailed breakout of the significant concepts addressed under each candidate course topic.

1. Contractor Process Dependency:
   - a) Non-government standards and industry-wide practices
   - b) Facility / business sector class action proposal
   - c) Government evaluation and approval process
   - d) Timing
   - e) Elements/Attributes/and Metrics

2. Flexible Sustainment:
   - a) Reliability-based Logistics Process Concept
   - b) Trigger-based Item Management Process Concept
   - c) Support Process Decision Trees
   - d) F^3 I Concept in Sustainment
   - e) Logistics Support Analysis
   - f) Logistics Support Elements

3. Engineering process:
   - a) Performance Based Acquisition (PBA)
   - b) Clear Accountability in Design (CAID)
   - c) Integrated Master Plan (IMP) / Integrated Master Schedule (IMS)
   - d) Sector specific best practices
   - e) Elements / Attributes / and Metrics
   - f) Scope of engineering process
   - g) Incremental Verification

4. Advanced Quality Process:
   - a) “Big Q” Advanced Quality
   - b) “Little Q” Advanced Quality
   - c) Key Characteristics
   - d) Continuous Process Improvement (CPI)
   - e) Elements / Attributes / and Metrics

5. Subcontractor Management:
   a) Integrated Product Teams (IPTs)
   b) Information sharing and joint problem solving
   c) Interface with program and engineering management

6. Program Management:
   a) Integration and coordination with other processes
   b) Allocation of resources and assignment of responsibilities
   c) Communication with the stakeholders
   d) Data management
   e) IMP/IMS

7. Manufacturing Process
   a) Factory design
   b) Product design influence
   c) Elements/Attributes/and Metrics

8. Process Evaluation Method:
   a) Defense Contract Management Command (DCMC) role
   b) Procuring agency's role
   c) The evaluation process
   d) Elements/Attributes/and Metrics

9. Block Change Method:
   a) Scope of possible changes
   b) Legal considerations
   c) Roles and responsibilities
   d) The mechanics of converting to performance type contracts
   e) Facility or business sector class block changes

10. Supplier Rating Method:
    a) Assessment process
    b) Elements/Attributes/and Metrics
    c) Centralized Repository
    d) Suppliers' review/appeal process

11. Past Performance Method:
    a) Commonality across components
    b) Revised RFP and Source Selection process
    c) Enhanced Performance Risk Assessment Group (PRAG) and CPAR instructions

12. Form, Fit, Function & Interfaces:
    a) The key to performance specifications
    b) Verification requirements
    c) Systems Engineering/Configuration Management
    d) Proper control of detailed design
    e) Use in development, production, sustainment

13. Source Selection:
    a) RFP scrub teams
    b) Implementing acquisition reforms
    c) Enhanced Past Performance
    d) Early industry involvement
    e) Selection of key discriminators and their use

14. Contract Execution:
    a) Performance Based Acquisition
    b) Enhanced CPARS
    c) Flexible sustainment
    d) Reduction of direct Government oversight

Table L-III. Levels of Required Training.

Topic	Executive Senior Mgr.	Technical	Program Mgr.	Logistics Mgr.	Mfg. Production	Contracting	T&E	Financial Mgr.
Contractor Process Dependency	A	D	D	D	D	D	D	D
Flexible Sustainment Concept	A	D	D	D	A	A	A	A
Engineering Process	A	A/D	A	A	A/D	A	A/D	A
Advanced Quality Process	A	A/D	A	A	D	A	A	A
Subcontractor Mgmt Process	A	A/D	D	A/D	A/D	D	A	A/D
Program Management Process	A	A/D	D	D	A/D	A	A/D	A/D
Manufacturing Process	A	A/D	A	A	D	A	A/D	A
Process Evaluation Method	A/D	D	D	D	D	D	D	D

Table L-III. Levels of Required Training (Cont'd).

Topic	Executive Senior Mgr.	Technical	Program Mgr.	Logistics Mgr.	Mfg. Production	Contracting	T&E	Financial Mgr.
Block Change Method	A/D	A/D	D	A/D	A/D	D	A/D	A/D
Supplier Rating Method	A/D	A/D	A/D	A/D	A/D	A/D	A/D	A/D
Past Performance Method	A/D	D	D	D	D	D	A	D
F^3I	A	D	A/D	A/D	D	A	A/D	A/D
Source Selection	A/D	D	D	D	D	D	A/D	D
Contract Execution	A	D	D	D	D	D	D	D

A = AWARENESS D = DETAILED

3.4 Panel Derived Training Requirements.

1. The TWG analyzed individual panel reports and identified the key training points which then formed the basis for the recommended topics listed above. During the analysis, certain factors affecting the training of acquisition reform in general became apparent which helped define the training strategies. These general training factors are:

   a. The training must include the relationships among the applicable acquisition reform initiatives, as well as relationships to other applicable acquisition reform initiatives.

   b. The panel reports and draft process guides will be used as primary source material for training development.

   c. Approval to implement change must precede training. This approval may come in different forms and at different times.

   d. Training must be developed for various levels of depth. For this effort, these levels are defined as basic understanding, working knowledge of specific processes, and complete understanding.

e. Training has two degrees of immediacy: Near term and long term.

f. Acceptance of acquisition reform initiatives will involve major cultural changes in addition to academic and procedural training.

g. Some training should immediately precede specific implementation events.

h. There may be some impact to basic functional training that is very significant; e.g., systems engineering.

2. The following are some of the foundation topics upon which the NGS-IPT is based (some do not apply to all panels). Training on these topics should be included in the overall training program.

a. Performance based specifications

b. Form, Fit, Function and Interfaces (F^3 I)

c. Clear Accountability in Design (CAID)

d. Use of company-based key processes

e. Types of specifications & specification tree (System/Segment/Development/Product)

f. Requirements flow-down

g. Incremental verification

h. Baselines

i. Change control

j. Overall source selection

3. Block Change Process: The Block Change initiative is the initial method proposed by the NGS-IPT to implement Dr. Perry's policy to transition into "A New Way of Doing Business" within ongoing contracts. The NGS-IPT definition of the Block Change Process is: a contractual process by which the contractor will propose, and the government will agree to negotiate and authorize a contractor to implement block changes from government directed "How-To" processes (Mil-Specs/Stds) across multiple contracts or a facility. This is a move from Compliance-Based to Performance-Based Acquisition (PBA).

a. Key Training Points:

1.) Purpose of the Block Change process: Background of this initiative, the cultural change involved, and the expected benefits of implementing this "new way of doing business."

2.) Description of the process (the flow): The mechanics of converting from "compliance type" DoD contracts to "performance type" contracts at a given contractor's facility or business sector. It will address the following areas:

a.) Scope: The range of Block Changes and options for implementation that are facilitated by policy/regulation amendments.

b.) Proposal development: Proposal development guidelines and definition of common process facility/common sector-wide facility. This information is critical for industry participants since they must initiate the process. This is also important to those government officials who must coordinate closely with the contractor, such as the Administrative Contracting Officers (ACOs), Procurement Contracting Officers (PCOs)/Program Managers (PMs), and the process evaluation teams.

c.) Approval process: How DoD will assess and approve contractor proposals, what offices are involved, and the normal schedule that can be expected. How disagreements are resolved.

d.) Implementation plan and execution: The government implementation plan associated with each block change proposal and the manner in which it will be executed after approval. It will include the administrative details concerning the individual contracts.

e.) Process evaluation: How a process evaluation is conducted, the process attributes.

3.) Roles and Responsibilities: The activities required of the key participants/offices involved in the process such as the prime contractor, DCMC, Administrative Contracting Office)/ Administrative Contracting Office and process evaluation teams. Addresses the relationship with the past performance assessment process and data base.

4.) Contractual aspects: Recent Federal Acquisition Regulation/Defense Federal Acquisition Regulation (FAR/DFAR) rules and streamlining initiatives that impact the Block Change process.

b. Some factors which affect development or delivery of this training:

1.) Acquisition work force affected: These changes would affect all involved in the acquisition process to some degree since they would involve fundamental changes to contracts. (Government functional requirements will supersede existing military specifications and standards.)

a.) DoD work force affected: Primarily affects PMs, PCOs, and ACOs. Other functional specialists would be affected depending on the particular process involved.

b.) Industry work force affected: Primarily affects proposal, procurement, pricing and finance, and program management personnel. Functional and management personnel responsible for specific processes.

2.) Impact on DoD acquisition process: The principal impact of this initiative would be on contract administration processes. In particular, the method to supersede or delete existing compliance-oriented military specification and/or standards, and implementation (possibly a time-phased or work center phased implementation) of the superseding government, commercial, or contractor performance-oriented requirements (if any) must address the order of precedence and process flexibility issues that arise.

3.) Timing: Just-in-time training will be required for the government proposal evaluation teams, contractor proposal teams, and DCMC led process evaluation teams. Just-in-time training would be that training which is timed to support the start up or implementation of the new initiative.

4. Flexible Sustainment: This initiative emphasizes that procurement organizations, at an early milestone, develop a logistics support concept to maintain or increase combat capability of a weapon system and its components while minimizing life cycle support costs.

a. Key Training Points:

1.) The impact of establishing a maintenance concept early in the program.

2.) Reliability-based logistic process concept: An approach which addresses logistic support life-cycle questions of spare-repair and source issues during the acquisition and post production support.

3.) Trigger-based item management process concept: An approach which addresses a process to foster proactive management of life-cycle logistic support of fielded systems.

4.) Support process decision trees: The decision process used for reliability-based logistics and trigger-based item management.

5.) F^3 I concept in sustainment: How form, fit, function and interface complements reliability-based logistics.

b. Some factors which affect development or delivery of this training:

1.) Certain things must be determined before training can proceed. Among them are:

a.) Identification of system resource drivers.

b.) Data collection procedures.

c.) Identification and quantity of triggers.

2.) Guidance must be generated on:

a.) The criteria for creating the reliability-based logistics and trigger-based item management decision trees.

b.) How to create the reliability-based logistics and trigger-based item management decision trees.

c.) Preparing performance-based specifications for both new development and spares re-procurement, including identifying pertinent performance attributes and acceptance test procedures (ATPs), and writing interface control documents (ICDs) and ATPs.

d.) Understanding the possible impacts and considerations when using performance-based specifications and how to effectively manage their use.

5. Enhanced Past Performance: The purpose of this initiative is to expand the use of past performance as a discriminator in formal source selection and to decrease reliance on non-interface and non-test government specifications and standards.

   a. Key Training Points:

      1.) A common method for identifying, recording, and using contractor past performance, with access available throughout DoD.

      2.) The combination of contractor approaches with commercial standards, Mil-Stds, and legal and regulatory requirements.

      3.) The parameters of past performance.

      4.) Past performance as it relates to a performance unit rather than to a corporation.

      5.) Contractors' feedback and comment process.

      6.) RFP and source selection process modifications and practices to fully realize the potential risk reduction benefits of the initiative.

      7.) The integration and use of past performance as a factor in source selections.

      8.) Selection of key discriminators and their use.

   b. Some factors which affect development or delivery of this training:

      1.) Potentially replaces at least eleven existing DoD systems.

      2.) Primary information sources are a "tri-service Performance Risk Assessment Group (PRAG) guide" (a modified USAF PRAG guide), and "tri-service CPAR form and instructions", all drafted by the sub-panel.

      3.) Systems are in use - the challenge is standardization and consistency of effective use as a factor in source selection.

      4.) Immediate near term training targets are executive levels; key people initiating new programs (contracting officers, program managers, and program engineers) in government and industry; and process assessment teams.

      5.) This process interfaces directly with the initiative on key supplier processes for acquisition programs, in that both help determine the level of government surveillance appropriate (and indirectly the comparative cost).

6. Key Supplier Processes: This initiative supports the implementation of a process to allow contractor control of system design, development, and production to the maximum extent feasible, through the use of technical and management processes assessed to be of high quality.

   a. Key Training Points

      1.) Contractor processes to be used in lieu of processes defined and controlled by military standards. Processes not to be placed on contract.

      2.) Processes and process elements with accompanying attributes and cost, schedule, & performance metrics.

      3.) Program management authority and responsibility to select applicable processes for a given acquisition.

      4.) Sector-specific practices to be generated for each defined major business sector.

      5.) Applicability of the processes, elements, attributes, and metrics to other acquisition reform initiatives.

   b. Some factors which affect development or delivery of this training:

      1.) Primary source material is the focus group report defining processes, attributes, and metrics.

      2.) Even though the basic concept of dependency on best contractor processes is partially implemented already, training will still involve a cultural change throughout the primary functional areas of the acquisition community.

      3.) Sector-specific practices may affect the general applicability of the training.

      4.) Immediate near term training is required for executive levels; contracting officers, program managers, and program engineers in government and industry anticipating system acquisitions; and process assessment teams.

      5.) This initiative interfaces directly with the Supplier Facility Assessment Process, Enhanced Past Performance, and Block Change initiatives in the breakout and definition of processes, their attributes, and metrics. This should be trained in conjunction with them, or at least the training must include the relationships to them, as well as to the F^3 I and CAID initiatives.

7. Supplier Facility Assessment Process: This initiative strives to develop and implement a single system for evaluating and assigning assessment ratings to the selected processes used by government suppliers, including baseline and periodic update data, and to establish a centralized tri-service repository for assessments of suppliers' facilities.

   a. Key Training Points:

      1.) Assessment process concept: The assessment process from the process and metric selection stage through supplier validation and assessment stage.

      2.) Selected processes and metrics (standard criteria): The selected processes and metrics for conducting the on-site evaluations of suppliers' facilities.

      3.) Centralized repository: The rules structure and input/output data transfer of past performance assessments.

      4.) Suppliers' review/comments/appeal process: The suppliers' assessment review and appeal process.

   b. Some factors which affect development or delivery of this training:

      1.) Guidance must be generated on the number of selected processes, including elements, attributes, characteristics and metrics.

      2.) Data collection procedures must be generated.

      3.) Both government and supplier resources must be available.

      4.) The development and stability of the process evaluation team will affect the training need.

3.5 Demographics

3.5.1 DoD.

The makeup of the DoD acquisition work force is based on the Defense Acquisition Work force Improvement Act (DAWIA) Estimates. There are over 100,000 people in the DoD acquisition community serving in acquisition corps positions and about 30,000 work in the aerospace sector. Providing adequate training for this group is important so they will be knowledgeable about current practices. Table L-IV is a breakout of the number of military and civilian acquisition corps work force positions in each DoD component.

Table L-IV. DoD Acquisition Work Force.

Air Force	30,800
Navy & Marine Corps	31,100
Army	29,700
DLA	15,300
TOTAL	**106,900**

3.5.1.1 New Training.

The number of people who will require training to learn about changes in acquisition practices due to the reform measures in this report will be more than the current number of DAWIA positions. There are people outside of the DoD acquisition corps who should be trained in acquisition reform but are not required to have DAWIA certification such as the component users who define operational requirements, those working in early RDT&E programs, and some technical personnel who work with the acquisition process. The numbers of DAWIA positions tallied above do not include some special projects. Another consideration is the increased training that will be required as integrated product teams become more widespread. This will require significant cross-training of employees across various career fields. For example, DLA has transitioned their organization to multi-functional teams and are planning to request enough training to ensure the teams are properly cross-trained. Although the number of DAWIA positions may decrease in the years to come due to DoD downsizing, the amount of acquisition training required will increase due to increased cross-training. To estimate the size of the community that will need this training, the current acquisitions corps numbers should be increased to account for the impacts discussed above.

3.5.1.2 Career Fields.

Knowing the size of the total acquisition community is not enough to determine how many acquisition reform courses will be required. Table L-V breaks out the acquisition positions for Air Force, Navy/Marine Corps, Army, and DLA into the types of positions and number of people currently enrolled in that category. Contracting; Systems Planning, Research, Development, Test and Engineering (SPRDT&E); and Acquisition Logistics are currently the top three career fields in terms of population and make up over 50% of the total DAWIA work force. The types of changes that are being made in acquisition reform will affect certain career fields more than others. Specific impacts to career fields were discussed earlier in this section of this report.

Table L-V. DoD Acquisition Categories.

Category	Percent of Total	Number of People
Systems Planning, RDT&E	26.1%	27,900
Contracting	18.6%	19,900
Acquisition Logistics	9.5%	10,200
Program Management	8.5%	9,100
Quality Assurance	7.8%	8,300
Test & Evaluation Engineering	5.7%	6,100
Purchasing & Procurement	4.8%	5,100
Business, Cost Est. & Financial Management	4.3%	4,600
Manufacturing & Production	2.9%	3,100
Communications/Computer Systems	2.4%	2,600
Industrial Property Management	0.4%	500
Other / Not Coded	8.9%	9,500
TOTAL	**100%**	**106,900**

3.5.2 Industry.

The estimated number of industry personnel who require some training regarding the new acquisition reform was based on numbers from the Aerospace Industries Association (AIA) and field questionnaires distributed among industry representatives at the NGS-IPT July meeting in St. Louis. Data from industry questionnaires indicated that approximately 40% of the industry work force would require some training. The percentages in Table L-VI were derived from the information in the field questionnaires. Based on the AIA estimate of the total work force in aerospace industry for 1995 and the 40% mentioned above, it was computed that over 300,000 people would need to be trained in the new reform processes to some degree.

AIA Estimate of Total Aerospace Industry Work force for 1995	779,000
40% of Personnel	311,600

Table L-VI. Industry Estimates.

Category	Percent of Total	Number of People
Proposals	3.6%	11,218
Pricing	15.9%	49,544
Marketing	2.3%	7,167
Contracting	3.9%	12,152
Program Management	3.6%	11,218
Technical/Scientists	42.4%	132,118
Integrated Logistics Support (ILS)	8.5%	26,486
Management Information System	2.2%	6,855
Executive Staff/Management	1.2%	3,739
Others	16.4%	51,103
TOTAL	**100%**	**311,600**

The sum total aerospace sector work force requiring training, considering all the factors noted above, is estimated to be approximately 350,000 people.

4.0 STRATEGY IMPLEMENTATION.

The implementation approach is two-fold: near term and long term training. Near term training will cover the period when implementation of acquisition reform initiatives are evolving and maturing and when the work force can not be trained using the existing infrastructure. A subset of near term training is the potential need for some immediate training to support the onset of reform implementation. Long term training covers the period when the throughput needs can be accommodated by the existing infrastructure. Each of these is amplified below. The DAU's Acquisition Reform Communication Center (ARCC) should work with the JACG, DoD Components and industry for the development of common courseware and subsequent tailoring of it. The following sections address a strategy to implement this approach for acquisition reform training required to successfully deploy the NGS-IPT report.

4.1 Near Term Implementation.

The following summarizes the conclusions from Section III of this report. Near term is estimated to be about 12-18 months (see Figure L-1).

1. Executive-Level Awareness Training: This is the near term communication of the substance of the acquisition reform initiatives to both government and industry. The

purpose is to begin the process of changing the mind set to “a new way doing business”. The concept is similar to the Air Force / Army / Navy Roadshows and should present an overall picture of the initiatives presented herein.

2. Working-Level Awareness Training: This is the near term communication of the initiatives through some case studies, and dialogue with the acquisition work force as a whole. The concept is similar to the Air Force /Army / Navy Roadshow initiatives.
3. Specific “How To” Training: This is the near term “how to” training for specific functional personnel who must understand how to work within the new processes, such as the Block Change process or Supplier Rating Process.

An IPT under the JACG is needed to manage the development of common courseware for this training. One of the initial tasks is to complete the requirement analysis. The core objectives, concepts, topics, and courseware should be a single development for common use by the DoD components and industry.

4.2 Intermediate Training.

Immediate Training is characterized by the crosshatched area previously referenced in Figure L-1. This will be required if some NGS-IPT implementation begins before the near term courseware is developed and deployed to the field for delivery. In the event that immediate training will need to be accomplished, products of the NGS-IPT (final report, briefing charts, draft guides, etc.) and related acquisition reform organizations should be used as a basis for training materials. The need for immediate training may emanate from acquisition reform in areas such as Block Change, Supplier Ratings, and Source Selection. It is critical that acquisition reform be implemented in a controlled manner which allows training to be accomplished before the reform is instituted so that false starts and promulgation of incorrect information can be avoided. It is recognized that maturing of new and revised processes will occur and the training materials will have to be updated. Management of this training could be performed by the JACG IPT(see above Paragraph) call upon the members of other JACG Boards. This approach could draw upon the expetise of current members of the NGS-IPT on an interim basis and is not a solution for the entire near term period.

4.3 Long Term Training.

The long term source for government training should be the DAU Consortium, other service-unique education and training sources, and an industry sponsored association such as the Compliance Training Management Consortium (CTMC) and commercial training companies. Long term training should be directed by DAU through the existing course upgrade process. DAU should support the near term training effort and utilize the lessons learned from it.

4.4 Organizational Responsibilites

4.4.1 DoD.

a. The DAU, as the DoD's acquisition university, should be tasked to support an overarching IPT to ensure consistent implementation throughout the services, DLA, and industry and to keep the necessary focus on the near term time-critical needs. DAU should be tasked to support the development, deployment, and effectiveness measurement of near term and long term training. Its ARCC would be valuable in the communication processes, and could play a lead role. The JACG, as the lead DoD business sector for implementation, should form an IPT through its board structure to oversee the near term training task. This will include coordination with DAU and Industry to capitalize on their expertise and will provide the needed focus for rapid support of acquisition reform implementation.

b. Each DoD component should establish an acquisition reform training IPT to work with the DAU and JACG to tailor the common core products to service and agency needs and manage the development of service-specific supplementary courseware. For example, the Air Force has formed Lightning Bolt (LB) #9 Training IPT, which is chartered to implement or assure training for all acquisition reform initiatives within the Air Force and the Navy has identified a training focal point within their Acquisition Reform Office. The other components also have acquisition reform organizations identified and are actively implementing new initiatives. Each DoD component may elect to use the common core products "as is" or modify them to include service-specific examples and terminology. In addition, some supplemental training materials will likely be required to enhance the effectiveness of the training and each service or agency may elect to create additional courses from the core products.

c. Below is a listing of the DAU Consortium and some other service unique organizations:

Air Force Institute of Technology (AFIT)

Army Logistics Management College (ALMC)

Army Management Engineering College (AMEC)

Defense Contract Audit Institute (DCAI)

Defense Logistics Agency Civilian Personnel Support Office (DCPSO)

Defense Systems Management College (DSMC)

European Command (EUCOM) Contracting Training Office (CTO)

Industrial College of the Armed Forces (ICAF)

Information Resources Management College (IRMC)

Lackland Training Facility (LTF)

Naval Facilities Contracts Training Center (NFCTC)

Naval Postgraduate School (NPS)

Naval Warfare Assessment Division (NWAD)

Navy Acquisition Management Training Office (NAMTO)

Office of the Assistant Secretary of the Navy (OASN), Research, Development and Acquisition OASN (RD&A/APIA-PP).

4.4.2 Industry.

The industry associations that are part of the DAU's ARCC can serve as a link between the DoD and the commercial training development and delivery industry, other industry associations such as the CTMC, and the companies which employ the work force requiring the training. Overall coordination should be in conjunction with the Aerospace Industries Association. Industry should support the completion of the training requirements analysis and the common core courseware development. Industry may elect to use the common core products "as is" or modify them to include industry-specific examples and terminology. In addition, some supplemental training materials will likely be required to enhance the effectiveness of the training and each company may elect to create additional courses from the core products.

4.5 Development and Delivery.

Training of the work force must be coordinated with the implementation of the NGS-IPT report and should precede the deployment of new processes, procedures, methods, etc. A two phase approach is suggested.

1. The long term solution is to use the existing training infrastructure. Again, DAU should be the lead organization to direct the integrated, consistent updating of existing DAU acquisition courses affected by the initiatives proposed herein. DAU already has a process established to update courses offered by the DAU Consortium. Even though contractors may attend DAU courses, throughput will be limited and supplemental training should be provided. DAU should guide the development and/or update of industry courses through the industry's CTMC.
2. The solution for the near term is to use the organizations discussed in the previous section to coordinate the development and subsequent delivery of training through the services and industry organizations. Actual delivery of training should be the responsibility of each DoD component and industry. Because of the very large number of people to be trained and the need to rapidly train the work force, a variety of media should be utilized. The ARCC should support near term training through the use of its existing resources such as distance learning satellite broadcasts, material posted on its World Wide Web home page on the Internet, etc. There is an immediate need to begin the planning for subsequent delivery because some, if not all, of the NGS-IPT report may begin implementation this calendar year. Specific details need to be addressed by the aforementioned organizations.

5.0 ACTIONS.

DoD needs to decide which parts of the NGS-IPT report will be adopted and provide appropriate direction to the implementing organizations to establish action plans. This is necessary to implement a training program.

As part of the implementation, the following training actions are suggested based on the observations and opinions of the individual members of the Training Working Group:

1. The DAU should be directed to support the JACG, DoD Components and industry IPTs formed to develop and deploy training, including funding for the near term common courseware development, and update consortium courses for the long term.
2. The JACG should establish an IPT to develop near term training courseware and coordinate delivery with the individual components.
3. DoD Components and industry should establish IPTs to tailor the common courseware, develop unique courseware, manage the delivery of training and provide necessary funding.
4. Acquisition reform implementing organizations and the NGS-IPT should provide SMEs to support courseware development.
5. The NGS-IPT, in conjunction with the JACG and industry, should develop and deliver training for the immediate time period, if required.

ENCLOSURE 1: TRAINING WORKING GROUP MEMBERS

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ENCLOSURE 2: ACRONYMS

ACO	Administrative Contracting Officer
AFMC	Air Force Material Command
AIA	Aerospace Industries Association
ARCC	Acquisition Reform Communication Center (under DAU)
ASC	Aeronautical Systems Center (AFMC)
ATP	Acceptance Test Procedure
CAID	Clear Accountability In Design
CPAR	Contractor Performance Assessment Report
CTMC	Compliance Training Management Consortium
DAU	Defense Acquisition University
DAWIA	Defense Acquisition Work-force Improvement Act
DCMC	Defense Contract Management Command
DFAR	Defense Federal Acquisition Regulations
DLA	Defense Logistics Agency
DoD	Department of Defense
DSMC	Defense Systems Management College
FAR	Federal Acquisition Regulations
F^3I	Form, Fit, Function & Interfaces
ICD	Interface Control Document
ILS	Integrated Logistics Support
IMP	Integrated Master Plan
IMS	Integrated Master Schedule
IPPD	Integrated Product and Process Development
IPT	Integrated Product Team
LB	Lightening Bolt (SAF/AQ Initiatives)
NGS	Non-Government Standards
NGS-IPT	Non Government Standards - Integrated Product Team
PBA	Performance Based Acquisition
PCO	Procurement Contracting Officer
PM	Program Manager
PRAG	Performance Risk Analysis Group
RDT&E	Research, Development, Test and Engineering
RFP	Request For Proposal
SAE	Service Acquisition Executive
SME	Subject Matter Expert
TWG	Training Working Group
USD(AR)	Under Secretary of Defense for Acquisition Reform

APPENDIX M

TRAINING SYSTEMS AND DEVICES PANEL

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1.0 INTRODUCTION.

The Training Systems and Devices Panel (TSDP) addressed application of the NGS-IPT framework to the acquisition of training systems and devices. This report reflects the observations, advice, and opinions of individual members of the panel, and in some cases the recommendations and/or consensus of the Government members of the panel. The report does not indicate, describe, or accept, and should not be interpreted as indicating, describing, or accepting, any group deliberations or discussions as a source of agreement, consensus, advice, or recommendations of the group as a whole. Sections following are:

2.0 Panel History and Background

3.0 Panel Role in the NGS-IPT

4.0 Unique Characteristics of the Training Systems Industry

5.0 Description of the (existing) Commercial Practices Option

6.0 Key Business Practices of the Training Systems Industry

7.0 Findings and Recommendations

8.0 Application of NGS-IPT concepts to training acquisitions.

2.0 HISTORY AND BACKGROUND.

The Training Systems and Devices Panel was originally formed in March of 1995 as a joint government-industry Commercial Acquisition Practices Initiative Team under the auspices of the Air Force Training System Product Group, the Naval Air Warfare Center-Training Systems Division, and the Army Simulation, Training and Instrumentation Command. The team was chartered to define and analyze commercial acquisition practices used by government and industry, to identify and prioritize cost drivers, and to recommend changes. In June 1995 the Commercial Practices Initiative was merged into the Non-Government Standards Integrated Product Team as the Training Systems and Devices Panel. Original team size was reduced from 38 participants (20 Industry, 18 Government) to a core team of 12 people. The panel re-focused it energy on issues concerning application of the NGS-IPT concepts within the training systems industry segment. See appendix for list of participants.

3.0 ROLE OF THE TRAINING SYSTEMS AND DEVICES PANEL IN THE NGS-IPT.

The Training Systems and Devices Panel assumed five core responsibilities. As the first "product" area represented on the NGS-IPT, it became the lead industry segment for application of IPT policies and concepts. Each was considered as it would apply to the acquisition of:

- Training: Training based on guaranteed student qualifications and system through-put levels.
- Training Systems: Integrated systems comprised of training devices, courseware, instructional materials, etc.
- Training Devices: Flight simulators, maintenance trainers, computer based interactive trainers, etc.
- Device Subsystems: Visual Image Generators, Radar Landmass Simulators, Threat Simulators, Motion, etc.
- CLS: Contract Logistics Support; the maintenance and modification of any installed training systems, equipment, devices, etc.

The NGS-IPT functional flow was examined, and determined to be sufficient to the needs of the training systems segment. The panel identified interrelational "hooks" between the weapon platform development process and the training system development process. Individual panel members served as advocates for selective application of existing commercial acquisition practices for flight training devices, the same commercial practices used by the airlines, and supported by the FAA, the International Airline Transport Association (IATA), and the International Civil Aviation Organization (ICAO).

4.0 UNIQUE CHARACTERISTICS OF THE TRAINING SYSTEMS INDUSTRY.

The following practices characterize the training systems industry:

Commercial Fabrication: Most military training equipment and system developments are now based on use of commercial off-the-shelf (COTS) subsystem elements. In most cases, the computers, network interface units, cockpit controls and displays, visual display systems, motion platforms, etc. selected by device developers are strictly COTS. In a larger sense, training device hardware elements are becoming commodities. Development challenge and risk for both systems and devices will lie in development of software and the transport and handling of system data.

Production: Most training systems and devices are acquired and produced in small quantities; devices are typically built a few at a time. Most training device programs have no "manufacturing" phase.

Concurrent Development: Training device developments usually start after the weapon platform has been defined (typically at the mid-DEMVAL phase). However, training device delivery is normally required prior to delivery of the weapon platform. Hence, trainer development cycles are very short when compared to the weapon system.

Design Data Sourcing: Training device and system developers are totally dependent on availability of weapon system platform design and performance data to support training device design and test. Timely availability of such data is crucial when concurrent development and early delivery are required. Commercial airframe suppliers view the timely provision of such data (to training system developers) as a necessary priority to meet overall business objectives; however, military system program offices often take a more narrow view, and neglect or defer acquisition of required platform data, making concurrent development (necessary to meet military training objectives) difficult or impossible.

Use of Commercial (Airline) Practices: Airlines use an established commercial system for acquisition of training devices. The military services have yet to embrace this acquisition approach. See section 5.0, below.

5.0 TRAINING INDUSTRY COMMERCIAL PRACTICES.

Airlines around the world acquire training devices and systems using an established acquisition system supported by the Federal Aviation Agency (FAA) the International Airline Transport Association (IATA), and the International Civil Aviation Organization (ICAO). This commercial system is built on the use of five standard documents which address training device performance requirements, device design specifications, air platform design and performance data, test and certification procedures, and contract logistics support data. Government members of this panel recommend the NGS-IPT acquisition framework support a “toggle” or “option” to apply such commercial practices where and when applicable. Panel members believe some aspects of the commercial system can be applied to military buys without the need to modify existing commercial practice, existing government acquisition policy or law, while application of other aspects of the commercial system will require changes to the system, to policy, or to law.

5.1 The Commercial Environment.

The commercial acquisition system used by the airlines has evolved over the past decade. The commercial airline market is highly competitive, and training system support costs are spread over the number of seat miles flown by the operator. Many factors influence commercial trainer costs, but this report focuses on those factors applicable to the military acquisition environment which make a significant impact, and which can result in the elimination of high cost or risk.

When a carrier orders a new aircraft, particularly a development program such as the Boeing 777, the carrier must provide training for flight crews and maintenance personnel in a timely manner that results in the aircraft being received and put into service without delay driven costs. Interest cost on grounded equipment, replacement crew training on older equipment, substitution of equipment required to maintain schedules, and idle crews are factors which drive startup costs beyond what is reasonable by any measure.

Carriers must have trained people available at the right point in time. Accordingly, they procure training equipment in ways such as to minimize risk of the above cost drivers, consistent with availability of platform data and the delivery schedules of competent providers. Carriers rely on qualified vendors whose very existence is based on a proven track record of performance. Neither the carrier or the vendor can cut corners on quality because of performance based requirements levied and evaluated by third parties (the FAA). Carriers meet in industry forums, (ATA, IATA, Aircraft User Symposiums), and the vendor who has delayed the introduction of a new fleet will be made known to all. Therefore, key practices and core competencies described in Section 6.0 of this appendix are rigidly implemented in the application of Commercial Practices which reduce cost and time required to solve the much more complex issues discussed above. The success or failure of the entire program is dependent on ALL players being responsible and qualified. Promises of future achievement are not weighed as heavily as past performance. Costs associated with a one day delay can easily be more costly than the entire cost of the training device. Therefore, proper priorities must be established in the procurement phase, and core competencies of qualified suppliers must rise to the top of the source selection criteria.

A supplier who can maintain a training device may not be qualified to build one, a courseware developer probably cannot maintain a device and a device manufacturer may not build subsystems. The commercial market place establishes roles and opportunities for all vendors, large and small, to provide the products and services that each does best, following the rules that *performance* will weed out those that cannot meet the challenge, without the risks and costs to the buyer, whether it be commercial or governmental.

5.2 The Commercial Infrastructure.

Commercial acquisitions are supported by five key documents. They are:

Standard Device Definitions: FAA Circular 120-40B defines airplane simulator qualifications and performance criteria for simulators used in support of airline training programs. This document defines the *functional performance requirements and device characteristics* required for various levels of flight training and pilot certification. It serves the industry as a top level performance specification.... a *pre-coordinated* specification which is known to all buyers and sellers alike. When a buyer solicits a bid from a vendor for a “Level D simulator for a B-777 tail number xyz”, there should be no question on either side regarding device capabilities, functional characteristics, intended use, or application. Air Force Pamphlet 36-2211 extends the FAA concept of standard device definitions to address devices supporting training for military transport aircraft.

Standard Format for Prime Item Development Specifications: Training device manufacturers, working through their trade associations and the IATA, have standardized the format for prime item development specifications, the specifications provided as part of a vendor’s bid or proposal. The prescribed spec format is very comprehensive, addressing details of functional performance, design, and construction. Vendor specifications typically reference a large number of both government and non-government specifications and standards. When a buyer solicits more than one vendor for bids, he can expect to receive development specifications in a common format which line up with each other, section by section.

5.2.1 Platform Data.

Current, timely air platform design and performance data is required to support development of training devices and systems. Airline buyers recognize this, and require airframers to provide platform data as an integral part of any aircraft sale. IATA/ICAO has established a standard data requirements set, which is far more robust than that developed for most military trainer acquisitions. As a part of an aircraft sale, airframers normally make the platform data available to training device developers at a nominal cost. Data is provided ahead of air platform deployment to support timely trainer development. Airframers also maintain the data packages for the life cycle of the airframe, issuing change notices to data holders (in the training industry) as platform changes occur.

5.2.2 CLS Support Package.

Training Device and System developers normally provide a contract logistics support package to airlines purchasing their equipment. The CLS package normally includes virtually all the design and fabrication drawings developed for the trainer, all commercial manuals associated with sub-systems, operator manuals, and comprehensive software documentation. Data is provided on a *limited rights* basis; airlines are free to use the data to maintain or modify the training devices, but are prohibited from using the data to fabricate new devices or systems.

5.2.3 Acceptance Test Procedures/Device Qualification.

Commercial aircraft training device test and qualification requirements are pre-defined by the FAA in Circular 120-40B. Both the buyer and the seller know well in advance of the sale exactly what the FAA requires for device test and qualification to any given functional performance level. Both also know what periodic (annual, semi-annual) tests and qualification will be required throughout the life cycle of the trainer. All tests are cut and dried. Sellers understand that they have to please both the FAA inspectors and the buyer in qualifying the device. Buyers accept the FAA qualification as necessary and sufficient.

5.3 Comparison: The NGS-IPT Framework with Existing Commercial Practice.

Panel members believe most elements of existing commercial practice are compatible, if not complimentary, of the standard NGS-IPT acquisition framework. Government members recommend a “toggle” be placed within the acquisition framework which enables the Services to switch to commercial practice where practical and to the extent supported by law. Table M-I compares characteristics and limitations of each system.

Table M-I. Comparison of Full Commercial to NGS-IPT Business Practices.

Commercial Characteristics:

- Supports rapid contract award
- Requires minimal buyer oversight
- Little schedule risk
- System completely performance based
- System leverages airline industry investment
- System benefits from FAA/Industry process maintenance
- System strongly supports device acquisitions
- Requires minimum buyer resources

NGS-IPT Characteristics:

- Deals with ALL bidders
- Modulates oversight with perceived risk
- Supports all training sector

Commercial System Limitations:

- Not suited to programs with
  - Floating functional requirements
  - High risk development
- Does not incorporate ALL key processes
  - Therefore not applicable to buys requiring specialized processes
- Optimized for aeronautical training sector only - may not be suited for other training sector buys

NGS-IPT Limitations:

- Full Source Selection required
- Significant overhead costs
- Longer delivery schedules - allow for increased oversight and approval cycles.

6.0 KEY BUSINESS PRACTICES FOR THE TRAINING SYSTEMS INDUSTRY.

This section summarizes the key business practices and core competencies common to the training industry segment. It includes a description of each key practices, its performance attributes, and the criteria by which one could judge successful implementation.

These key practices are offered *in addition* to the core processes identified by the NGS-IPT at large. The processes below are built upon the core processes, to include program and data management, systems engineering; advanced quality systems, manufacturing, procurement/ subcontract management; logistics support/sustainment and others described by the NGS-IPT Key Process document. Suppliers are expected to have many core processes, which are aggregated to form the key training systems processes shown below.

The training systems and devices (TSD) unique elements of the Systems Engineering practice are training system development and integration; training requirements analysis; simulation devices; environmental simulation; courseware; and contractor logistics support (CLS). The TSD unique development is defined to encompass all phases of the training system characterization in support of a weapon system acquisition program. The basic core specific enabling practices including performance, functional and interface requirements of the program, are specified by technical and training requirements documents in support of the required operating environments. These core

enabling practices for hardware, software and courseware are a part of the primary components needed to train an individual, team, or organizational element and are appropriate for both training systems and devices in virtual or constructive training programs.

The following practices emphasize and provide a disciplined approach to engineering design, analysis, verification, production, and life cycle management of training systems and devices.

6.1 Key Practice #1: Training System Development and Integration.

Description: This practice provides the ultimate user with the analysis of training requirements, training methodology, materials, resources, equipment and their integration to consistently produce qualified personnel to meet the requirements of the weapon platform roles and missions. The training system is composed of an integrated combination of all necessary curriculum materials, related instructional elements, facilities, equipment, management, students, instructors and sustaining support required to conduct training for the specified training objectives. Interactive courseware (ICW), part task trainers (PTT) and full task trainers (FTT) are usually included as part of the overall training system.

Attributes:

- experience in managing subcontractors, teammates and internal disciplines required to ensure the timely and concurrent delivery of the weapon platform training system with the actual user required training capability
- the ability to analyze a Training System Requirements Analysis (TSRA), design, and build the curriculum, simulation components, and training and evaluation methods
- manage the training system development interface which includes: courseware, full and part task trainers, instructors, students, and interfaces with the weapon system being simulated in a dynamic environment (including in-flight training or in support of in-flight training)
- the ability to obtain needed data early in the program, obtain concurrency with the weapon system being simulated and provide for life maintenance and update
- the ability to apply software technology and interfaces for sub-systems being implemented

Criteria:

- degree of currency of training system with weapon system
- degree to which weapon system training requirement has been fully characterized by the training system used by the student
- timely production of students fully meeting weapon system performance goals

6.2 Key Practice #2: Training System Requirements Analysis.

Description: TSRA is the process used to determine what instruction/training is needed. Training task performance requirements are analyzed and a training task listing developed. Simply put, the difference between what incoming students know, and what the task requires, determines what training is necessary. In a broader sense, TSRA further defines the training system concept and the total training system configuration so that all training system functions are defined.

Attributes:

- the ability to provide an acceptable training requirements definition process
- the ability to provide derived training requirements
- the ability to provide an accurate definition of expected training resource requirements

Criteria:

- Training system functions are defined for the particular task application. Passing grade is obtained on a system requirement review (SRR).

6.3 Key Practice #3: Courseware Development.

Description: Courseware is defined as all training materials such as technical data, textual, audio/visual instructional, and computer based instructional materials that are used to train a particular task. Courseware is developed to meet the instructional goals outlined during the TSRA process. The development process includes the incremental writing, coding, and programming of each lesson in conjunction with reviews and tryouts to confirm that requirements are being met.

Attributes:

- the ability to achieve the objective or instructional completeness for which it was designed in a way that optimizes training effectiveness and efficiency
- the ability to complement successfully the total training system concept and be integrated into the full training system

Criteria:

- Data collection activity is needed to determine a metric set. Data includes:

  Number/priority of technical discrepancies

  Timelines of response

  Number of Changes

  Cost

  Student/Instructor feedback on training effectiveness is an important qualitative metric.

6.4 Key Practice #4: CLS Competencies.

General Description: This effort consists of Training Systems Sustainment throughout their "life cycle". While internal/organic DOD sustainment is still a factor and will be utilized, the thrust of this document is "Contracted Logistics Support (CLS)" or Contractor Operation and Maintenance of Simulations (COMS). The key sub-practices within this key practice area are:

a) Training Systems Support Center (TSSC) operations,

b) Student Through-put/Training management Systems (TMS)/Instruction,

c) Maintenance, and

d) Modifications.

Sub-Practice: Systems Operations (TSSC Operations).

Description: Training Systems Support Center (TSSC) operations involve managing the single-site stand-alone hardware and software resources utilized to develop/test training "mission" changes and configuration system software changes. New software loads are subsequently run on the actual training system and if successful, exported to related training sites. The TSSC is a prime repository and configuration control point for all manuals, engineering drawings, software media, and data utilized by the systems.

Attributes:

- the ability to accomplish missionization changes
- the ability to accomplish configuration controlled changes
- the ability to validate software changes on an installed system

Criteria:

- timely and effective completion of TSSC assigned tasks

Sub-Practice: Training Delivery; Student Through-Put/TMS/Instruction.

Description: Student Through-Put deals with all aspects of training as a crew member moves through the training curriculum. Training Management System (TMS) expertise deals with any of several computerized student tacking systems covering such aspects as schedules, grades, retesting, competencies, etc. Instruction deals with the effective use of devices, courseware, and classroom time to effectively train students. Instructors are used to operate, monitor, provide feedback, and insert faults and threats during training missions.

Attributes:

- the ability to utilize effectively and maintain a TMS in scheduling, grading and re-testing students
- the ability to acquire and/or provide appropriately skilled personnel
- the ability to recommend alternative training solutions

Criteria:

- the successful first pass completion of proficiency or check ride testing

Sub-Practice: Maintenance.

Description: All aspects of organizational, Intermediate, and Depot level maintenance of Training Systems. Can be accomplished by on-call, on-site, or in-plant or by a mix of contractor resources. Responsible for other functions formerly performed by organic DOD Service personnel such as:

a) Run I/O station and replicate tower, FAC, and other A/C,

b) Perform security/custodial functions,

c) Accomplish janitorial functions for facilities.

Attributes:

- the ability to preserve all aspects of design integrity throughout the system operational life
- the ability to initialize/operate all aspects of the training system
- the ability to replicate all control tower responses/calls to students
- Acquire/provide the appropriately skilled personnel;
- Conduct training of these personnel; and
- Perform the required tasks; i.e., maintenance, modification, configuration management, operation, and training of simulators /training systems.

Criteria: Performance is measured utilizing the following metrics:

- Ability to maintain a Contractor Performance Factor (CPF) or "system availability rating of" 95%. CPF is based on an equation involving operational ready time (ORT), non-chargeable downtime (NCD), and chargeable downtime (CD);
- Completion of Preventative Maintenance (PM) tasks;
- Quality of completed maintenance; and
- Cleanliness of assigned equipment and areas.

Subpractice: Modifications.

Descriptions: Training Systems Modifications are significantly of two types:

a) Weapon Systems Compatibility modifications, and

b) Training Systems unique modifications affecting such things as Visual Systems, Motion bases, and data bases.

The modification contractor must be able to simulate weapon changes with a combination of software and hardware, stimulate actual weapon equipment to gain the desired results, or change courseware or Instructional materials as approved by the respective Service.

Attributes:

- the ability to simulate weapon system changes through a combination of software and hardware changes to the training system
- the ability to utilize actual weapon system components and stimulate them to acquire the intended results
- the ability to track weapon changes and propose a corresponding training system change

Criteria:

- concurrent delivery of platform configuration changes
- the successful completion of any required ATP/fidelity checks

6.5 Key Practice #5: Environmental Simulation.

Description: The environmental simulation process develops the subsystems which provide for the artificial simulation environment. A supplier would develop the attributes and components necessary to satisfy the system requirements for elements such as:

1) Visual Out The Window (OTW). Forward Looking Infra-Red (FLIR) and other optical sensor systems

2) Electromagnetic sensors, including Radar and Electronic Warfare

3) Acoustic sensor systems

4) Data Bases to support the operation of provided sensors and all other supporting environmental information (e.g., atmosphere)

5) Network Interoperability for integrated simulation operations using prescribed interface protocols.

The attributes and components necessary to complete these systems development activities should be adequate and sufficient to meet the needs of the TRA and the performance specification. These systems and supporting data development activities may be completed with a combination of developed and off the shelf products which are in place to meet the requirements. These components are integrated into the total simulation environment by the integration under the Simulation Device practice.

Attribute #1.

Developed product line, or ability to develop a product line for associated components for each system.

Criteria:

- The “Catalog” product(s) are available and “compliant”.
- A viable technology and product growth plan

- Developed systems are flexible enough to adapt to system requirements.
- Architecture is robust and extensible with future growth potential.

Attribute #2.

Capability to manipulate various source data and build it into operationally useful formats and data sets.

Criteria:

- Manages and manipulates data with various input and output formats to the level of fidelity, functionality and completeness required

Attribute #3.

Ability to develop software and hardware architectures and systems interfaces which allow for interaction with the external simulation environment.

Criteria:

- Demonstrates interaction of dissimilar systems to effect the operation of each other.
- Capability to develop and produce systems which allow for proper interfacing and Interoperability.
- Demonstrate understanding of protocols, interface technology and implementation in a distributed environment.

6.6 Key Practice #6: Simulation Devices

Description: Simulation devices are defined as:

- The trainee station,
- simulation software and computer/interface system,
- instructor/operator station and supporting instruction,
- operation and maintenance subsystems, and
- components combined to train tasks allocated to specified devices.

The simulation device may be a full task or part task trainer for weapons system operator or maintainer training. Simulation device development applies the six key processes to achieve the static and dynamic fidelity level of simulation needed to support the required training capability. In addition to simulating required systems/subsystems of the weapon platform, other friendly and hostile threat platforms and their interaction may be simulated and interfaced with other environment simulation systems, including Distributed Interactive Simulation (DIS) using predetermined protocol standards.

Attributes:

The ability of the simulation device to achieve the training requirements for which it was designed in a way that optimizes training effectiveness and efficiency

Criteria:

- the successful first pass completion, by all students trained or tested, of at least 95%

7.0 FINDINGS AND RECOMMENDATIONS.

The following are the key findings and recommendations were made sole by the government members of the Training Systems and Devices Panel with input from the industry panel members.

7.1 The NGS-IPT Recommended Acquisition Framework.

7.1.1 Finding.

Acquisition concepts developed by the Government members of the NGS-IPT strongly support training industry segment implementation of commercial practices. Concepts of F3I, vendor ratings, and flexible sustainment have been practiced within the commercial training industry for almost 20 years, and performance based requirements and contract logistics support have been the norm for military procurements for almost a decade. NGS-IPT mechanisms associated with Key Supplier Processes, Risk Based Oversight, and Source Selection are all consistent with the training systems industry segment desire to adopt commercial acquisition practices.

7.1.2 Government Members' Recommendation.

Government members of the panel recommend that constituent industry members support the NGS-IPT recommendations. They further recommend that the Service acquisition arms for training (USAF Training System Product Group, Army STRICOM, Navy NAWC-TSD and PMA-205) adopt the NGS-IPT practices immediately for new business, and employ the block change process (either by plant, or by product line) to rebaseline existing contracts where practical.

7.2 Commercial Practices

7.2.1 Finding.

Individual members of the panel observed that industry has a well established, robust, performance based commercial practice which can be used to reduce the cost and schedule of similar military training acquisitions. Panel members believe this commercial model can be expanded to meet many military unique requirements without losing its benefits and it can be implemented immediately for some systems.

7.2.2 Government Members' Recommendation.

The government members recommend use of commercial practices where applicable, and extension of supporting commercial documentation to military applications. They also recommend the Services execute a pilot program to prove use of commercial practices for military acquisitions.

7.3 Competition in Contracting Act (CICA)

7.3.1 Finding.

Panel members observed that use of best commercial practice and the Competition in Contracting Act (CICA) are inconsistent. Military contracts experience a wide variance of product quality and contractor performance as a result of novice entrants supported by CICA. Appropriately structured vendor qualification, if supported in law, would eliminate frivolous submittals by non-qualified suppliers, reduce proposal costs included in overheads passed on the government on other contracts, and reduce the amount of manpower required by the government for formal source selection, while maintaining qualified competition. House bill HR 1670 supported some changes in CICA to allow for verification of vendor qualification and past performance in a pre-source selection evaluation.

7.3.2 Government Members' Recommendation.

Passage of House Bill 1670 is still pending as of the publication of this report. At such time as this bill is enacted into law, Government panel members recommend formation of a joint Government/ Industry team to define vendor qualification procedures based on the final language adopted by Congress.

7.4 Weapon System Design and Performance Data

7.4.1 Finding.

Panel members found that the timely availability of weapon system design and performance data is crucial to training system development. Most military training system contracts suffer late deliveries and performance deficiencies due to lack of required data. Military trainer configurations are not kept current with changes to the weapon platform due to late delivery of platform data. Life cycled aircraft performance and design data delivery to trainer developers and maintainers is a mandatory, inherent element of commercial practice.

7.4.2 Government Members' Recommendation.

Government members of the panel recommend that priority be given to timely procurement of weapon system platform data, concurrent with platform development.

7.5 Use of Ada for Software Development

7.5.1 Finding.

Panel members observed that commercial trainer development practice is based on use of commercial software languages and development environments (typically C++ in an object oriented environment). Panel members believe commercial development environments have now surpassed those available to Ada programmers in terms of efficiency and utility (i.e., it is now easier to achieve Ada goals and objectives using commercial software development environments, than if using environments offered by Ada providers.) Members opined that since military training devices and systems are maintained under contract logistics support, developers should be accorded the latitude to select the software language and development environment offering the best life cycle cost benefit.

7.5.2 Government Members' Recommendation.

Government panel members recommend revision of policy as necessary to allow optional use of commercial software development standards.

8.0 APPLICATION OF NGS-IPT CONCEPTS.

The NGS-IPT framework and flow of activities is shown below, tailored to development of training systems or devices. The "top" flow line reflects NGS-IPT concepts applied to acquisition of a weapon system; the flow below it shows acquisition of the training system or device, and the lines connecting each are the "hooks" between the two acquisition processes, where flow of data or information is required.

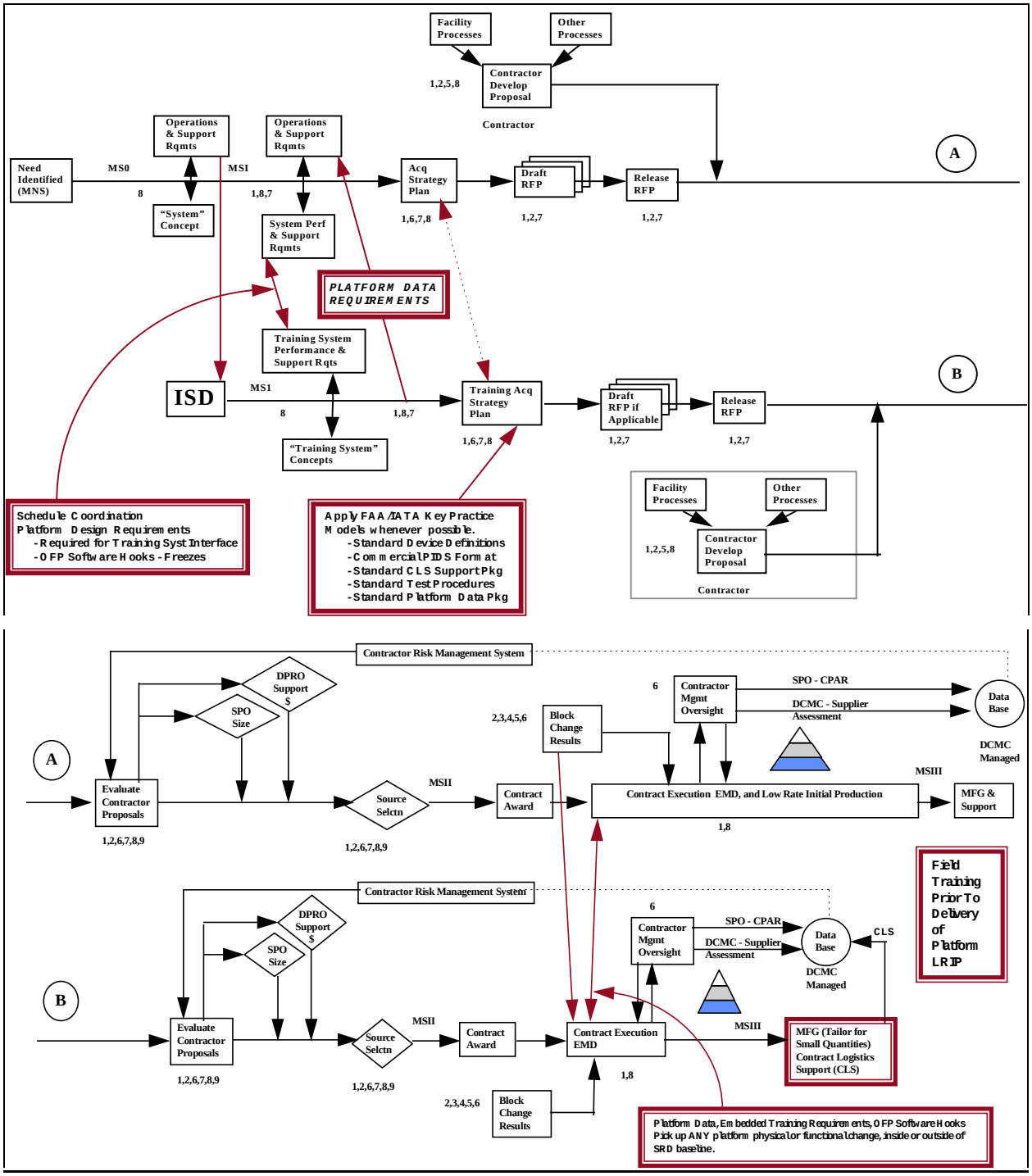

Figure M-1. NGS-IPT Framework and Flow of Activities.

APPENDIX N

NGS-IPT ORGANIZATION AND CONTRIBUTORS

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1.0 IPT MEMBERSHIP

- **Mix of Business Sectors**
  - **Aeronautical** - **Aerospace**
  - **Command, Control, Communication, and Computer (C^4 I)**
- **Tri-Service Membership @ SES Level**
  - **JACG Lead**
- **Industry Membership @ VP, Director and Senior Manager Level**
  - **Prime Contractors**
  - **Major Subcontractors**
  - **Vendors**
- **Cross Functional Representatives**
  - **Tech Management** -- **Program Management**
  - **Business Management** -- **Commodity/Reprocurement**
  - **Contracting** -- **Program Management**
- **Advisers**
  - **AIA/CODSIA** -- **Government** -- **Industry**

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2.0 ORGANIZATION OF ORIGINAL IPT INTO PANELS

Steering Group
- Dr John Halpin - Gvt Co-chairman *
- Mr Jim Sinnett Industry Co-chairman *
- Mr Jim O'Connell - Gvt
- Grover Cleveland - Gvt
- Mr Malt Maltagliati - CODSIA
- Mr Gordon Neary - AIA

Business Practices
- Morris Goodrich *- Gvt
- James Edwards *
- Greg Carter
- R.J. Glasson - Gvt
- Doug Campbell - Gvt
- Nick Kuzemka
- Joel Marsh

Technical/Management Requirements
- Frank Goodell *
- Roger Goodson * - Gvt
- Jim Ray - Gvt
- Terry Little - Gvt
- Jeff Allen - Gvt
- Gary Stanley - Gvt
- Jim Horton

RFP/Source Selection
- Harold Fogg *
- Les Bordelon - Gvt*
- Tony Gentile/Loftes
- Dick Findley - Gvt
- Richard Boyer - Gvt
- Ed Kalapinski - Gvt
- Kathy Regan - Gvt
- Emily Willey

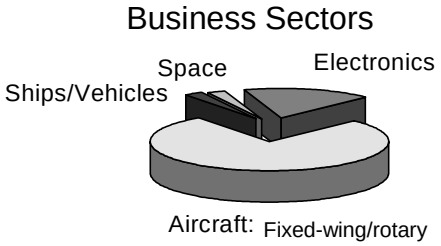
Sustainment & Logistics

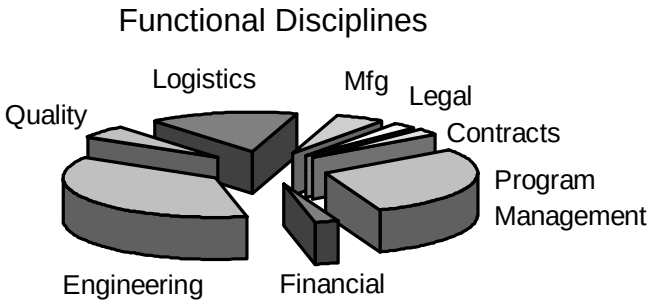
Don Lucht - Gvt
Col John Traugott - Gvt
Norman Way -Gvt
Steve Kasper
Ralph Meoni
Jim Hughes -Gvt

As of 12 Apr 95

***Denotes Co-chairperson**

3.0 TEAM SECTOR REPRESENTATION





NGS-IPT - TEAM MEMBERS for CONCEPT DEFINITION PHASE

Government

NAME	RANK	OFFICE SYMBOL
John Halpin	SES	ASC/EN
Roger Goodson	SES	NAVAIR (4.0D)
Dick Findley	SES	NAVAIR(4.10)
Tom House/Jim Ray	SES	ARMY:AMSAT/R-Z
Morris Goodrich	SES	OO-ALC/PK
Les Bordelon	SES	SMC/SD
R.J. McGlasson	GM-15	SPARWAR (PD72P)
Ed Kalapinski	GM-15	ESC/IA
John Traugott	COL	OC-ALC/LH
Jeffery Allen	GM-15	DCMC/AQC
Terry Little	GM-15	ASC/YU
Kathy Regan	GM-14	AFMC/PKP
Doug Campbell	GM-14	AFMC/JAS
Richard Boyer	GM-14	AFMC/DRI
Donald Lucht	GM-14	AFMC/LGPE
Norman Way	GM-14	NAVAIR
Grover Cleveland	GM-14	ASC/ENSI
Jim O'Connell	GM-15	ASC/ENSI

Industry

NAME	RANK	OFFICE SYMBOL
Jim Sinnett Co-Chair	VP	McDonnell Douglas
Joel Marsh	Dir	United Technologies
James Edwards	VP	Northrop-Grumman
Jim Horton	Dir	Texas Instruments
Harold Fogg	Mgr	GE Engines
Tony Gentile	VP	Coltec Ind
Jerry Norely	Dir	Motorola
Ralph Meoni	Dir	ITT
Frank Goodell	Dir	Boeing Def & Space
Emily Willey	Dir	Honeywell
Steven Kasper	Mgr	Hughes
Nick Kuzemka	Dir	Lockheed
Louis Basile	Ind Sec	McDonnell Douglas
ADVISORS		
Gordon Neary	Mgr	McDonnell Douglas
Malt Maltagliati	Mgr	AIA

Membership expanding for detailed development.

ORIGINAL NGS-IPT - GOVERNMENT SELECTED TEAM MEMBERS

NAME	RANK	OFFICE SYMBOL	SPECIALTY	PHONE
John Halpin	SES	ASC/EN	Engineering	513-255-3208
Roger Goodson	SES	NAVAIR (4.0D)	Cmd Impv Exec	703-604-3374X7890
Dick Findley	SES	NAVAIR(4.10)	Source Selection	703-604-3380X8100
Tom House/Jim Ray	SES	ARMY:AMSAT/R-Z	Engineering	693-1012
Morris Goodrich	SES	OO-ALC/PK	Contracting	458-6000
Les Bordelon	SES	SMC/SD	Prgmt Mgmt/Engr	833-0387
R.J. McGlasson	GM-15	SPARWAR (PD72P)	Acq & Resources	703-602-8754
Ed Kalapinski	GM-15	ESC/IA	Engineering	617-271-7622
John Traugott	COL	OC-ALC/LH	Program Mgmt	405-736-5641
Jeffery Allen	GM-15	DCMC/AQC	Engineering	703-274-7726
Terry Little	GM-15	ASC/YU	Program Mgmt	882-3525-3005
Kathy Regan	GM-14	AFMC/PKP	Source Selection	787-6057
Doug Campbell	GM-14	AFMC/JAS	Legal	787-5727
Richard Boyer	GM-14	AFMC/DRI	Program Mgmt	787-7033
Donald Lucht	GM-14	AFMC/LGPE	Logistics	787-3264
Norman Way	GM-14	NAVAIR	Logistics	DSN664-3090x4135
Grover Cleveland	GM-14	ASC/ENSI	IPT Secretariat	513-255-3449X250
Jim O'Connell	GM-15	ASC/ENSI	Spec/Std Advisor	513-255-3449X286

2 May 95

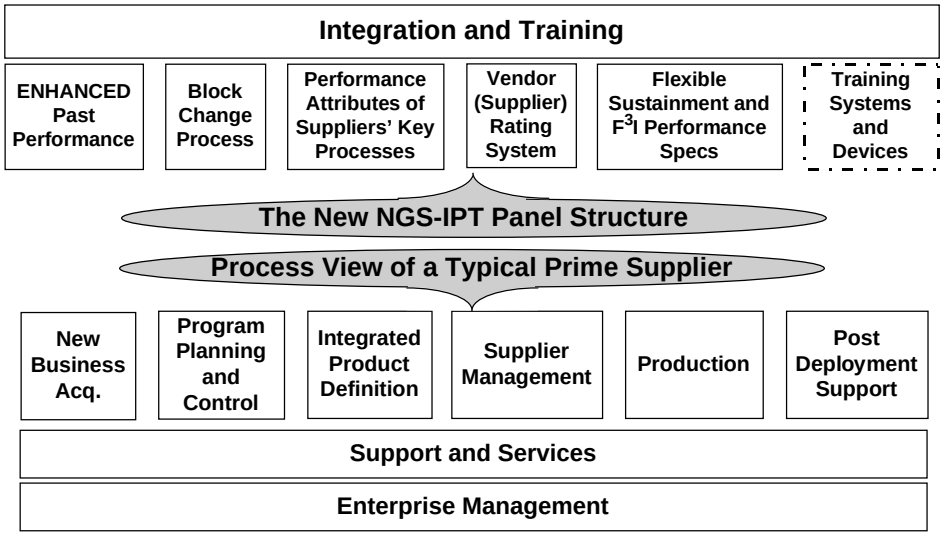
ORIGINAL NGS - IPT - Industry SELECTED TEAM MEMBERS

NAME	RANK	OFFICE SYMBOL	SPECIALTY	PHONE
Jim Sinnett Co-Chair	VP	McDonnell Douglas	Engineering	314-232-7800
Joel Marsh	Dir	United Technologies	Acquisition Policy	202-336-7406
James Edwards	VP	Northrop-Grumman	Subcontracts	310-201-3397
Jim Horton	Dir	Texas Instruments	Comercial Conv.	214-917-6218
Harold Fogg	Mgr	GE Engines	Acq Reform	513-243-9317
Tony Gentile	VP	Coltec Ind	Engineering	203-523-2281
Jerry Norely	Dir	Motorola	Quality	602-441-8621
Ralph Meoni	Dir	ITT	Strategic & Op Plan	703-790-6353
Frank Goodell	Dir	Boeing Def & Space	Spec & Std Impv Tm	206-662-0750
Emily Willey	Dir	Honeywell	Reqm'ts & Govt Rel	703-734-7850
Steven Kasper	Mgr	Hughes	Repair & Spares	310-513-5330
Nick Kuzemka	Dir	Lockheed	Contract & Pricing	818-876-2280
Louis Basile	Ind Sec	McDonnell Douglas	Engineering	314-232-2802
ADVISORS				
Gordon Neary	Mgr	McDonnell Douglas	Engineering	314-232-3671
Malt Maltagliati	Mgr	AIA	TO Council	202-371-8452

As of
28 Apr 95
Approved by CODSIA

4.0 NGS-IPT ORGANIZATION RESTRUCTURED FOR IMPLEMENTATION

- **Transfer Process Ownership to Industry;**
- **Reinforce Integrated Product Development; and**
- **Develop Implementation Mechanics**



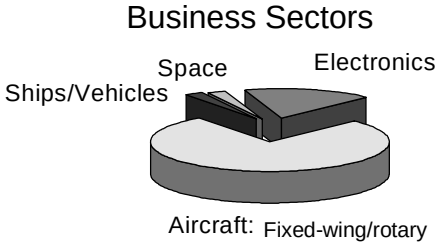
5.0 RESTRUCTURED NGS-IPT SUBPANEL CO-CHAIRS

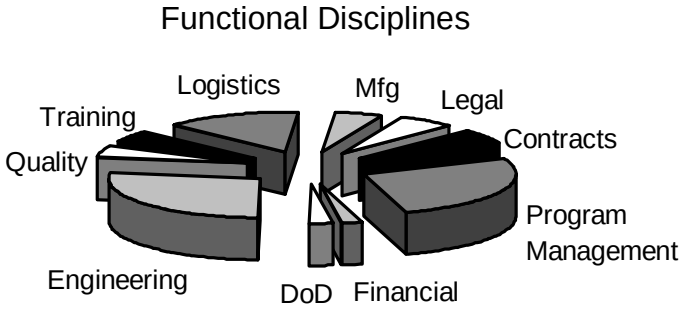
Government / Industry Subpanel Cochairs

- **Supplier Rating Systems Subpanel**
  - Govt Cochair: Morris Goodrich, OO-ALC, 801-777-6000, FAX 801-777-9850
  - Industry Cochair: Jim Edwards, Northrop-Grumman, 310-201-3397, Fax 310-201-3023
- **Performance Attributes of Suppliers' Key Processes Subpanel**
  - Govt Cochair: Gary Adams, ASC/ENSI, 513-255-7126x333, Fax 513 255-5899
  - Industry Cochair: Keith Adrien, GE, 513-243-4309, Fax 513-786-1425
- **Block Change Process Subpanel**
  - Govt Cochair: Leantha Sumpter, NAVAIR, 703-604-2525x8804, Fax 703-604-2491
  - Industry Cochair: Nick Kuzemka, Lockheed Martin, 301-897-6893, Fax 301-897-6704
- **Enhanced Past Performance Subpanel**
  - Govt Cochair: Dick Findley, NAVAIR, 703-604-3380x8100, Fax 703-604-4179
  - Industry Cochair: Paul Graves, Boeing, 206-662-0750, Fax 206-662-0736
- **Flexible Sustainment and F^3I Performance Specs Subpanel**
  - Govt Cochair: Captain Bruce Hawk , NAVAIR, 703-604-3733x6703, Fax 703-604-4516
  - Industry Cochair: Frank Goodell, Boeing, 206-773-9700, Fax 203-773-9853
- **Integration and Training Subpanel**
  - Govt Cochair: John Halpin, SES, ASC/EN, 513-255-5874, FAX 513-255-3672
  - Industry Cochair: Jim Sinnett, McDonnell Douglas, 314-232-7800, Fax 314-232-0120
- **Training Systems and Devices Subpanel**
  - Govt Cochair: Bill Curtice, ASC/YW, 513-255-4591x235, Fax 513-476-4651
  - Industry Cochair: Al Gagne, Hughes-Link, 607-721-5636, Fax 607-721-4264

Chairs.ppt

Team Composition





6.0 ENHANCED PAST PERFORMANCE SUBPANEL

Product: Develop implementation plan and the mechanisms to expand use of past performance as discriminator in formal source selection.

- Government:
  - Cochair:
    Dick Findley — NAVAIR
  - Lt Col Frank Gorman — AFMC/PKP
  - Jim Boxx — AMSAT-A-AE
  - Syd Pope — DCMC
  - Joe Flaig — NAVAIR
  - Don Lucht — AFMC/LGPE
  - Terry Spencer — AFMC/ENPI
  - Jim Boxx — ATCOM
  - Tom Orf — ATCOM
  - Joe Flaig — NAVAIR 4.10C
  - Melissa Rider — SAF/AQCO
  - Capt Daniel Behne — AFMC/PKP
- Industry:
  - Cochair:
    Paul Graves — Boeing D&SG
  - Dave Stone — Hughes
  - Ralph Meoni — ITT
  - Bob Voskamp — McDonnell Douglas
  - Ralph Johnston — McDonnell Douglas
  - Doug Magnant — Rockwell Aircraft
  - Dick Hibma — Rockwell Aircraft
  - Joe Rogers — Lockheed Martin
  - Pat Sullivan — UTC (P&W)

7.0 BLOCK CHANGE PROCESS SUBPANEL

Product: Develop procedure for implementing plant-wide change(s) to processes, converting from MILSTD to commercial/company/industry processes, across multiple contracts, for multiple DOD customers *and other applicable goverment agencies.*

- Government:
  - Cochair:
    - Leantha Sumpter — NAVAIR (1.1A)
  - Randy Britton — ATCOM
  - Bob Reis — ASC/AZ
  - Kathy Thompson — ASC/PKC
  - Rix Edwards — DCMC Legal
  - Tina Ballard — ASC/PKC
  - Doug Campell — AFMC/JAQ
  - Maj Dave McKinney — AFMC/PKP
  - Mary Kay Fannerella — NAVAIR
  - Sandra Selby — NAVAIR
  - Scott McLennan — AFMC/ENPI
  - John McGrath — DLA
  - Marc Pearlman — NAVY/SSP
  - Sandra Selby — NAVAIR
  - Sharon Butler — ATCOM
- Industry:
  - Cochair:
    - Nick Kuzemka — Lockheed Martin
  - Tom White — Rockwell
  - Dan Petru — McDonnell Douglas
  - Larry Blair — Westinghouse
  - Jim Horton — Texas Instruments
  - Joel Marsh — United Technologies
  - Jack McCoy — Northrop-Grumman
  - Pat Manix — General Electric
  - Lee Dowd — Boeing
  - Kannan Ganesan — Boeing
  - Don Murphy — Sikorsky
  - Marvin Spalline — UTC (P&W)
  - Timm Rich — UTC (P&W)
  - Jeffery Chanin — UTC

8.0 PERFORMANCE ATTRIBUTES OF SUPPLIERS' KEY PROCESSES SUBPANEL

Product: Determine specific performance attributes and candidate metrics of suppliers' key processes.

- Government:
  - Cochair:
    - Gary Adams — ASC/ENSI
  - Ann Marie Burns — ASC/ENSI
  - Tim Hughes — ATCOM
  - Gary Stidham — ASC/ENSM
  - Jim Koenig — ASC/ENSS
  - Chuck Triska — AF/TEP
  - Will Urschel — AFMC/ENPI
  - Jim Bauer — DCMC
  - Chuck Triska — AF/TEP
  - Jesse McCurdy — USN
  - Tom Hall — USN
  - Tom Bernard — ASC/ENC
  - Malinda B. Goforth — ASC/ENSD
  - Gary Stidham — ASC/ENSM
  - Robert Craven — ASC/ENSM
  - Support Members:
    - Mark Wilson — ASC/ENF
    - Craig Wall — ASC/ENA
    - Tom Bernard — ASC/ENSC
    - George Thielen — ASC/AZ
- Industry:
  - Cochair:
    - Keith Adrien — General Electric
  - John Fialko — Hughes
  - Dick Hickok — General Electric
  - Owen Carson — McDonnell Douglas
  - Joe Neffinger — Hamilton Standard
  - Rob Lacalli — Boeing
  - Bill Jascomb — Lockheed Martin
  - Bruce Samitt — ITT
  - Richard Ullman — ITT
  - Jerry Norley — Motorola
  - Michasel Midura — UTC (P&W)
  - Harry Brown — Westinghouse
  - Don Mayo — Texas InstrumentsI
  - William Silvestri — Hamilton Standard
  - Jiim White — Northrop Grumman

9.0 SUPPLIER RATING SUBPANEL

Product: Develop a prime contractor capability assessment system to be used by DoD Programs by benchmarking the best of class vendor rating systems.

- Government:
  - Cochair:
    Morris Goodrich OO-ALC/PK
  - Col Gary Zura AFMC/PK
  - Lyle Bare DCMC
  - Jerry Mowery DCMC
  - Don Doll AMSAT-R-EB
  - R.J. McGlasson SPAWARIPD72P
  - Bob Tourville NAVAIR
  - B.P. Smith AFMC/ENPI
  - Syd Pope DCMC
- Industry:
  - Cochair:
    Jim Edwards Northrop-Grumman
  - Jerry Braga Northrop-Grumman
  - Greg Carter Northrop-Grumman
  - Bill Lewanowski AIA
  - Dave Scott Lockheed Martin
  - Terry Shivers Texas Instruments
  - Ed Sause Sikorsky
  - William Sparaco UTC (P&W)

10.0 FLEXIBLE SUSTAINMENT AND F^{3}I PERFORMANCE SPECS SUBPANEL

Product: Build a tactical implementation plan including acquisition strategy options for flexible sustainment using F^{3}I specs in a NGS environment.

- Government:
  - Cochair:
    Capt Bruce Hawk NAVAIR3.2
    Col Bob Leavitt NAVAIR3.2
  - Col John Traugott OC-ALC/LH
  - Chris Boyer NAVAIR3.6.1
  - Norman Way NAVAIR3.6.1
  - Terry Tucker ASC/YFE
  - Jim Ray ATCOM
  - John Over AFMC/ENP
  - Col Lee Cox ASC/SDL
  - Michael Amidan OOALC/LA
  - Lester Snellen OOALC/LIIR
  - Joe Riccomini SMALC/PKP
- Industry:
  - Cochair:
    Frank Goodell Boeing
  - Steve Kaspar Hughes
  - Steve Bray Raytheon
  - Devon Smith Lockheed Martin
  - William Halpen Pratt & Whitney
  - Joe Warner General Dynamics

11.0 INTEGRATION AND TRAINING SUBPANEL

Product: Integrate effort of other panels into a consistent acquisition approach and develop accompaning training modules.

- **Government:**
  - Cochair:
    John Halpin — ASC/EN
  - Les Bordelon — SMC/SD
  - Roger Goodson — NAVAIR/4.0D
  - Tom Eden — NAVAIR 1.3T
  - Howard Miller — NAVAIR 4..1C
  - John Jones — NAVAIR 1.3.3
  - Robert Scott — DCMC/DLA
  - Jeff Allan — DCMC/AQCOF
  - William Smith — ATCOM/AMSAT
  - Rick Boyer — AFMC/DRI
  - Vern Menker — AFMC/ENPI
  - Jim O'Connell — ASC/ENSI
  - John Kordik — ASC/ENSI
  - Grover Cleveland — ASC/ENSI
- **Industry :**
  - Cochair:
    Jim Sinnett — McDonnell Douglas
  - Gordon Neary — McDonnell Douglas
  - Lou Basile — McDonnell Douglas

- **Training Requirements Subpanel**

– Tom Hoog, Cochair	ASC/ENSS	- Rod Lester	McDonnell Douglas
– Bob Deem	ASC/ENSI	- Bruce Smith	Hughes Traing
– Maj Warren Anderson	AFMC/ENPI	- Mike Manning	ITC
– Dineen O'Coleman	ASN(RD&A)	- Larry Wade	ITC
– Bill Terrell	NAWCTSD		
– Lt Danny Nguyen	ASC/ENSS		

12.0 TRAINING SYSTEMS AND DEVICES SUBPANEL

Product: Develop a comprehensive implementation plan to apply NGS-IPT concepts to the Training/Simulation Industry as a first trial case .

- Government:
  - Cochair:
    Bill Curtice — ASC/YWE
  - Walt Chambers — Army-AMSTI-E
  - Jim Clemens — NAWCTSD
  - Paul Larsen — OO-ALC/LIKT
  - Paul Little — NAWCTSD
  - Jim Seidenschmidt — ASC/ENS
  - Larry Streadbeck — OO-ALC/LIR
- Industry:
  - Cochair:
    Al Gagne — Hughes-Link
  - Budd Convers — ECC Int
  - George Burgess — Lockheed Martin
  - John Little — Lockheed Martin
  - Sam Malone — Loral Defense Sys
  - Dick Walter — Loral Defense Sys

13.0 INDIVIDUAL PARTICIPANT'S ORGANIZATION/ TEL # LISTED BY SUBPANEL.

Co-Chairs are identified in Bold Type.

Block Change

Ballard, Tina		DLA Liaison, ASC/PKC	513-255-6520		
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Marsh, Joel		United Technologies	202-336-7406	202-336-7515	eyest!washdc!hempelm@utcdc.attmail.com
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Spalline, Marvin		Pratt & Whitney	407-796-7298	407-796-6985	
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White, Tom		Rockwell	310-797-5512	310-797-5618	

Flexible Sustainment

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		JTF			
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Hebert, John S.	Lt Col	WF-ALC/TIE	912-926-5311		
House, Tom	SES-4	AMSAT/R-Z	314-263-1012	314-263-1640	house%temo2@st-louis-emh7.army.mil
Kaspar, Steve		Hughes	310-513-5330	310-513-4005	sbkaspar@ccgate.hac.com
Leavitt, Robert	Col	NAVAIR(AIR3.2)	703-604-3090x4102	703-604-3669	leavittrn.jfk@navair.navy.mil
Logan, Glen	Lt Col	OUSD(A&T)/OS-JTF	703-578-6584	703-578-0527	logangt@acq.osd.mil
Over, John		AFMC/ENP	513-257-5569	513-257-0841	overj@wpgate1.wpafb.af.mil
Petersen, Charles	GS-12	ATCOM/ -R-EBB	314-263-0406	314-263-5603	
Ray, Jim	GM-15	ATCOM-R-E	314-263-1100	314-263-1622	rayj@avrdec.army.mil
Riccomini, Joseph	GS-12	SM-ALC/PKP	916-643-6805	916-643-2950	
Ryan, Michael S.	Col	ASC/SDL WPAFB	513-255-0935	513-476-4102	ryanms%adc.sd@sd_prod7,wpafb.af.mil
Smith, Devon		Lockheed Martin	817-763-3298	817-777-2115	
Snellen, Lester	GM-14	OO-ALC/LIIR	405-736-2641	405-736-7030	
Stewart, Maurice	GS-14	ADUSD(L)/MPP&R	703-695-5315	703-693-7037	stewarm@acq.osd.mil
Traugott, John	Col	OO-ALC/LH	405-736-5641	405-736-5607	traugott@ocdis01.tinker.af.mil
Tucker,Terry	GM-15	ASC/VFE	513-255-4470	513-256-7169	tuckertl@ascvf.wpafb.af.mil
Warner, Joe		General Dynamics	203-433-1494	203-433-3594	
Way, Norman	GM-14	NAVAIR(AIR3.6.1)	703-604-3090x4135	703-604-3669	wayno.jfk@navair.navy.mil

Integration

Allan, Jeff	GM-15	DCMC	703-767-3396	703-767-3377	jeffrey_allan@ccgw1.hq.dla.mil
Basile, Lou		McDonnell Douglas	314-232-2802	314-232-0120	
Bordelon, Les	SES	SMC/SD	310-363-3818	310-363-0387	bordelonLL@post6.laafb.af.mil
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Eden, Tom		NAVAIR/1.1D	703-604-2525x8805	703-604-2491	edentd.ntrprs@navair.navy.mil
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Jones, John B.	GS-14	NAVAIR(AIR-1.3.3)	703-604-2525x8824		
Kordik, John	GS-14	ASC/ENSI	513-255-7126x246	513-255-5597	kordikjp@asc-en.wpafb.af.mil
Menker, Vern	GM-15	AFMC/ENPI	513-257-3435	513-257-0841	menkerl@wpgate1.wpafb.af.mil
Miller, Howard	GM-14	NAVAIR	703-604-3910x6010	703-604-4491	millerhl.nimitz@navair.navy.mil
Neary, Gordon		McDonnell Douglas	314-232-3671	314-777-6047	
O'Connell, Jim	GM-15	ASC/ENSI	513-255-7126x286	513-255-5597	oconnejj@asc-en.wpafb.af.mil
Scott, Robert	SES-5	DCMC/DLA	703-767-2380	703-767-2399	
Sinnett, Jim		McDonnell Douglas	314-232-7800	314-232-0120	
Smith, William	GS-14	ATCOM(-R-EDS)	314-263-0442	314-263-1622	

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Adrien, Keith		GE	513-243-4309	513-786-1425	
Bauer, Jim		DCMC	404-590-6132	404-590-2674	JBAUER@DCMDS.DLA.MIL
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Burns, Ann Marie	GS-13	ASC/ENS	513-255-7126x336	513-255-9679	burnsam@asc-en.wpafb.af.mil
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Cohen, Steve		EMCUBE	703-256-7924	703-256-7798	cohenstevr@aol.com
Craven, Robert		ASC/ENSM	513-255-7126x215	513-255-9679	cravenrm@asc-en.wpafb.af.mil
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Goforth, Malinda B.	GS-12	ASC/ENSD	513-255-7126x205	513-255-9679	gofortmb@asc-en.wpafb.af.mil
Hall, Tom	GM-15	USN	703-604-4200x7558	703-604-4199	halltw.ntrprs@navair.navy.mil
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Hughes, Tim	GM-15	AMSAT-R-ED	314-263-1881	314-263-1622	hughest%lcse@st-louis-emh7.army.mil
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Mayo, Don		Texas Instruments	214-462-2252	214-462-5552	
McCurdy, Jesse	SES-3	USN	703-604-4200x7555	703-604-4199	mccurdyjw.ntrprs@navair.navy.mil
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Miller, Howard	GM-14	NAVAIR	703-604-3910x6010	703-604-4491	millerhl.nimitz@navair.navy.mil
Neffinger, Joe		Hamilton Standard	203-654-4318	203-654-3852	
Norley, Jerry	Mgr	Motorola	602-441-8621		
Samitt, Bruce		ITT	201-284-3370	201-284-2772	bsamitt@avionics.itt.com
Silvestri, William		Hamilton Standard	203-654-4448	203-654-4090	silvesw@hsmil1
Stidham, Gary		ASC/ENSM	513-255-7126x234	513-255-9679	stidhamg@asc-en.wpafb.af.mil
Thielen, George		ASC/AZ	513-255-6732	513-476-4307	thielegj@asc-en.wpafb.af.mil
Triska, Chuck		AF/TEP	703-695-0900	703-695-0803	triskac@tep.hq.af.mil
Ullman, Richard		ITT	703-790-6348	703-790-6363	
Urschel, Will		AFMC/ENPI	513-257-2151	513-257-0841	urschew@wpgate1.wpafb.af.mil
Wall, Craig		ASC/ENA	513-255-5078	513-476-4762	walllc@asc-en.wpafb.af.mil
White, Jim		Northrop Grumman	213-600-1334	213-600-3040	
Wilson, Mark		ASC/ENF	513-255-3330x4144	513-476-4546	wilsonmk@asc-en.wpafb.af.mil

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Findley, Dick	SES-4	NAVAIR(4.10)	703-604-3380x8100	703-604-4179	findleyra.ntrprs@navair.navy.mil
Flaig, Joe	GM-15	NAVAIR(4.10C)	703-604-3600x7203	703-604-4062	flaigjw.ntrprs@navair.navy.mil
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Johnston, Ralph		McDonnell Douglas	513-298-2438	513-259-1191	
Lucht, Don		AFMC/LGPE	513-257-3264	513-257-5612	
Magnant, Doug		Rockwell Aircraft	310-797-3403	310-797-3506	
Meoni, Ralph		ITT	703-790-6353	703-790-6363	
Orf, Thomas	GS-13	Army ATCOM	314-263-2360	314-263-3541	
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Spencer, Terry		AFMC/ENPI	513-257-7705	513-257-0841	tspencer@wpgate1.wpafb.af.mil
Stone, Dave		Hughes	520-794-1550	520-794-2200	dqstone@ccgate.hac.com
Sullivan, Pat		UTC-Pratt & Whitney	203-565-7439	203-565-0582	gcgk03a@prodigy.com
Voskamp, Bob		McDonnell Douglas	513-259-1172	513-259-1191	

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Carter, Greg		Northrop Grumman	213-600-1349	213-600-3040	
Doll, Don	GM-14	AMSAT-R-EB	314-263-0326	314-263-5602	dolld%lcse@st-louis-emh7.army.mil
Edwards, Jim		Northrop Grumman	310-201-3397	310-201-3023	Gerri_Vaught@ccmail.Northrop.com
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Smith, B. P.	GM-14	AFMC/ENPI	513-257-5621	513-257-0841	smithbp@wpgate1.wpafb.af.mil
Sparaco, William		Pratt & Whitney	203-565-1889	203-565-9019	sparacw/@pweh.com
Tourville, Bob	GM-15	NAVAIR	703-604-6060 x5679	703-604-1744	tourvillerm.ntrprs@navair.navy.mil
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Hoog, Tom	GM-15	ASC/ENSS	513-255-7126x268	513-255-5597	hoogtw@asc-en.wpafb.af.mil

Lester, Rod		McDonnell Douglas	314-232-7488	314-234-8938	
Manning, Mike		ITC	513-252-2145	513-254-6853	
Nguyen, Danny	2Lt	ASC/ENSS	513-255-7126	513-255-5597	nguyendn@asc-en.wpafb.af.mil
O'Colman, Dineen	GM-13	ASN(RD&A)	703-602-5508	703-602-5481	
Smith, Bruce		Hughes Training	817-695-3741	817-695-3833	
Terrell, Bill	GS-13	NAWCTSD	407-380-8570	407-380-4219	william_terrell@ntsc.navy.mil
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Convers, Budd		ECC International	407-859-7410	407-855-4840	
Curtice, Bill		ASC/YW	513-255-4591x235	513-476-4651	curticewl@asc-yw.wpafb.af.mil
Gagne, Al		Hughes-LINK	607-721-5636	607-721-4264	agagne@link.com
Larsen, Paul	GM-14	OO-ALC/LIKT	801-777-4705		larsenp@likt.hill.af.mil
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Little, Paul	GM-15	NAWCTSD	407-380-8291	407-380-4007	paul_little@ntsc.navy.mil
Malone, Sam		Loral Def Sys - Ak	216-796-9844	216-796-7009	
Seidenschmidt, Jim		ASC/ENS	513-255-7126x273		seidenja@asc-en.wpafb.af.mil
Streadbeck, Larry	GM-13	OO-ALC/LIR	801-777-4724	801-775-2568	streadl@lir2.hill.af.mil
Walter, Dick		Loral Defense Sys	216-796-7258		

APPENDIX O

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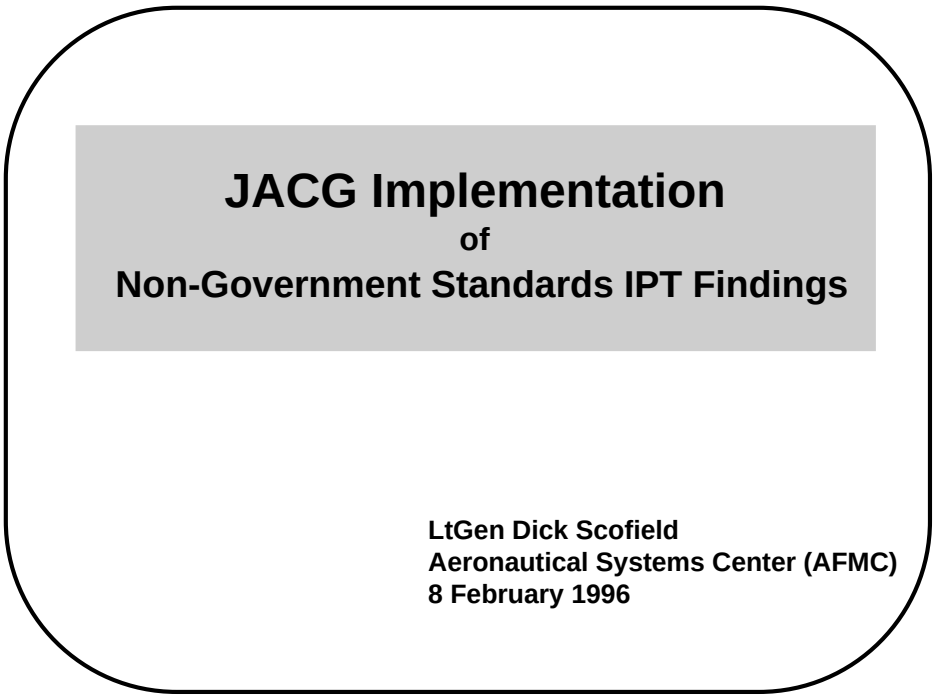

Figure O-1. JACG Implementation of Non-Government Standards IPT Findings.

Outline

- **Background**
- **JACG implementation plans and products**
- **Ongoing implementation actions**
- **Summary**

Figure O-2. Outline.

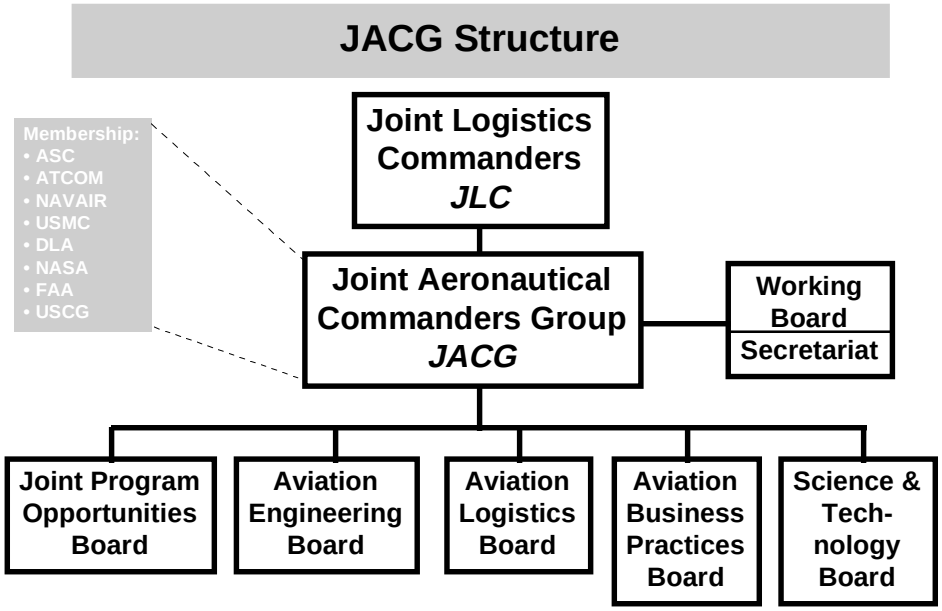

Figure O-3. JACG Structure.

Chronology: Non-Government Standards IPT

- **Jun 94** — **SecDef Memo on Mil-Spec/Std Reform**
- **Sep 94** — **NGS-IPT Chartered by AFMC Commander**
- **Mar 95** — **IPT begins work**
- **May 95** — **Interim concepts briefed; challenged by Mr. Longuemare to have 80% solution by Oct**
- **11 Sep 95** — **JLC video teleconference, decision road map**
- **18 Sep 95** — **Detailed findings briefed to JACG**
- **19 Sep 95** — **OUSD(A&T) charges JACG to implement**
  - **aviation sector pilot**
  - **coordinate with OSD acq reform initiatives**
- **21 Sep 95** — **Findings briefed to industry at Air Force CEO-Day**
- **11 Oct 95** — **PEO/SYSCOM/PM conf., Dr. Kaminski expects integrated approach, prompt implementation**
- **16 Oct 95** — **AIA letter to USD(A&T): industry endorsement**
- **22 Nov 95** — **JLC briefing of implementation status to Dr. Kaminski**
- **6 - 7 Dec 95** — **JACG Principals' meeting**
- **11 Dec 95** — **MG Cusick briefs DTSE&E (Mr. Burt)**
- **13 Dec 95** — **LtGen Scofield briefs at AIAA Acq Reform Conference**

Figure O-4. Chronology of Events.

Actions from 11 Dec Briefing to DTSE&E

- **Need more detail on JACG implementation products *[included with this briefing , handouts available]***
- **Fix implementation matrix to show "DTSE&E" oversight of the JACG effort for OUSD(A&T) . . . *[done]***
- **Supply a hard copy of the NGS-IPT final report *[submitting draft with this briefing]***
- **Clarify action office on locating training funds. *[JACG is looking for source of funds; making DUSD(AR) aware of this need was intent of chart]***

Figure O-5. Actions from 11 Dec Briefing to DTSE&E.

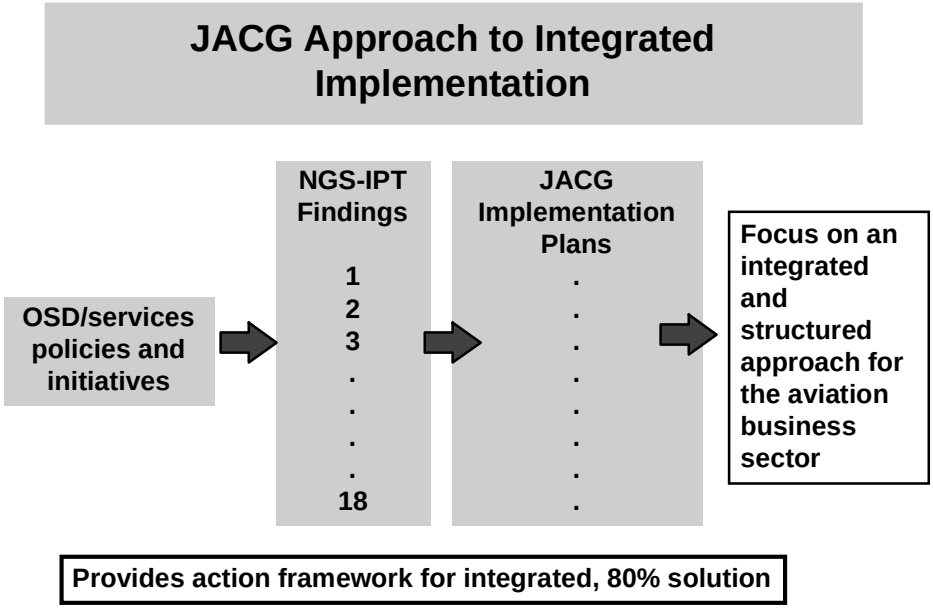

Figure O-6. JACG Approach to Integrated Implementation.

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i. Foreword
ii. Table of Contents
1. Executive Summary
2. Observations & Findings
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   A. SecDef Memo, Jun 94
   B. IPT Charter
   C. IPT Schedules
   D. Performance-Based Acquisition (Specifications, Standards & Technical Data Packages)
   E. Key Supplier Processes
   F. Flexible Sustainment
   G. Supplier Capability Assessment
   H. Supplier Capability Assessment & Rating (SCARs)
   I. Past Performance: CPAR Form & Instructions; Performance Risk Assessment Desk Guide
   J. Source Selection Enhancements
   K. Block Change
   L. Training
   M. Training Devices
   N. Participants
   O. JACG Working Board NGS Implementation Activities
   P. Potential Impact on Gov't Acq Centers and Industry Organizations
   Q. Abbreviations, Definitions of Terms

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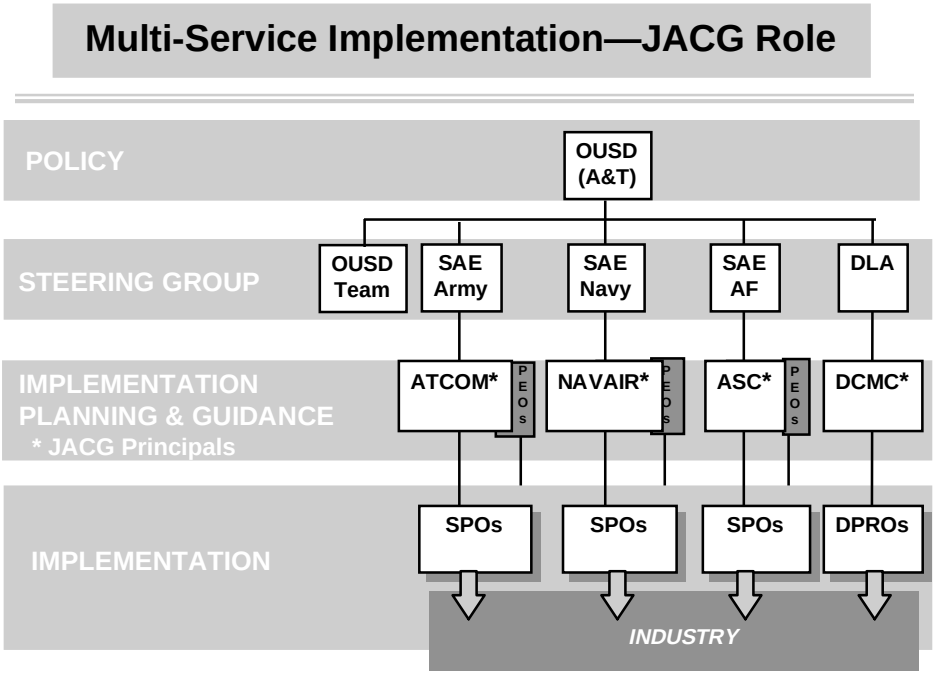

Figure O-8. Multi-Service Implementation - JACG Role.

JACG Implementation Matrix

Concepts | Policy | Implementation

First Order NGS IPT Topics		OUSD(A&T)Team	JACG Process Board
Performance Requirements	F^3I Spec Content	DTSE&E	Aviation Engineering
	Joint Service Guide Specs	DTSE&E	Aviation Engineering
Key Supplier Processes		DTSE&E/DCMC	Aviation Engineering
Flexible Sustainment	Reliability-Based Logistics	DTSE&E/Logistics	Aviation Logistics
	Trigger-Based Item Mgt	Logistics	Aviation Logistics
	Life Cycle Logistics	DTSE&E/Logistics	Aviation Logistics
Risk Based Oversight Mgt	Supplier Rating System	DCMC/DTSE&E	Aviation Business
	Supplier Assessment System	DCMC/DTSE&E	Aviation Business
	Tri-Service Repository	DCMC	Aviation Business
Enhanced Source Selection	Performance Based RFPs	Acq Reform	Aviation Business
	Integrated Risk Mgt	DTSE&E	Aviation Business
	Source Sel Discriminators	Acq Reform	Aviation Business
	Past Performance Emphasis	Acq Reform	Aviation Business
Contract Retrofit	Common Process Facility	DTSE&E/DCMC	Aviation Business
	Performance Based	DTSE&E/DCMC	Aviation Business
Integration and Training		Acq Reform	Aviation Business

Figure O-9. JACG Implementation Matrix.

Products/Schedule

ENGINEERING BOARD

Focus Area	*Products*	*Schedule*
Key Processes	JACG Key Supplier Process Handbook	Jul 96
	Eng. guide for use of key supplier processes	Jul 96
	Performance spec language (the "whats") in absence of Mil-Std "how to")	Jul 96
Performance Specs	Prep. guide for performance-based Joint Service Guide Specs (JSGS)	Jul 96
	JSGS for fixed wing structures	Jul 96
	Initial drafts of remaining JSGS	Dec 96
	Publish remaining JSGS	Sep 97

Figure O-10. Products/Schedule.

Products/Schedule Backup: "Guidance for Preparation and Use of Joint Services Guide Specifications"

This document is intended to assist in developing performance-based aeronautical guide specifications. It addresses:

1) Definition of terms,
2) General guidance for preparation of guide specifications,
3) General guidance for use of guide specifications,
4) Format and content guidance,
5) Special interest initiatives for guide specifications.

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Figure O-11. Guidance for Prep and Use of Joint Services Guide Specifications.

Products/Schedule Backup:
"Airframe / Structures Guide Specification"

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4.1	Detailed structural design requirements	24	72
4.2	General parameters	25	75
4.3	Design and construction parameters	27	151
4.4	Structural loading conditions	28	204
4.5	Aeroacoustic durability	29	238
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Contains a specification outline with blanks for specific performance parameters and a handbook containing guidance for determining appropriate values for the specification.

Figure O-12. Airframe/Structure Guide Specification.

Products/Schedule

LOGISTICS BOARD

Focus Area	*Products*	*Schedule*
Flexible Sustainment	**Draft/coordinate Flexible Sustainment Guide**	**1/96-6/96**
	Publish Flexible Sustainment Guide	**7/96**
	Services identify/implement initial applications	**4/96-12/97**
	Initial training modules developed	**6/96**

Figure O-13. Products/Schedule.

Products/Schedule Backup:
FINAL REPORT—Flexible Sustainment Sub-Panel

The Flexible Sustainment sub-panel report provides the building blocks necessary to understand and apply the concepts of F^3I and performance based acquisition to the integrated logistics support process for currently fielded systems as well as new development programs. The result is the potential to significantly reduce out year support costs and provide re-investment money to sustain force levels and capabilities.

CONCEPT TO BE DEVELOPED INTO A JACG GUIDE

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Figure O-14. Final Report - Flexible Sustainment Sub-Panel.

Products/Schedule

BUSINESS BOARD

Focus Area	*Products*	*Schedule*
Risk Oversight Management	Assessment of DCMC Risk Assessment Model for use as Supplier Rating System	Apr 96
Integrated Program Risk Mgt	IRMP Guide	Jun 96
Enhanced Source Selection	Improved CPAR Form and Instruction	Feb 96
	PRAG Desk Guide	Feb 96
Block Change	OSD Direction/Policy	Dec 95
	Assistance to DCMC/Services on Implementing Procedures	As Required

Figure O-15. Products/Schedule.

Products/Schedule Backup:
"ASC Handbook for Integrated Risk Management"

The purpose of this handbook is to support Integrated Product Teams (IPTs) in identifying, assessing and managing risk in their programs. This handbook defines the Integrated Risk Management Process (IRMP) and focuses on the planning and assessment elements of Integrated Risk Management. It is a process that aids in employing risk management from concept exploration through sustainment.

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Figure O-16. ASC Handbook for Integrated Risk Management.

Products/Schedule Backup:
"Contractor Performance Assessment Reporting System"

APPENDIX B
DRAFT JACG CPAR INSTRUCTIONS
CONTRACTOR PERFORMANCE ASSESSMENT REPORT (CPAR)
INSTRUCTIONS FOR COMPLETING CPAR
JACG MASTER CPAR LIBRARIES
JACG CPAR FOCAL POINTS

This instruction assigns responsibilities and provides procedures for systematically assessing contractor performance on all contracts written by JACG activities above $5M, except contracts awarded under FAR 8.6, FAR 8.7, construction contracts, and architect-engineering contracts.

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Figure O-17. Contractor Performance Assessment Reporting System.

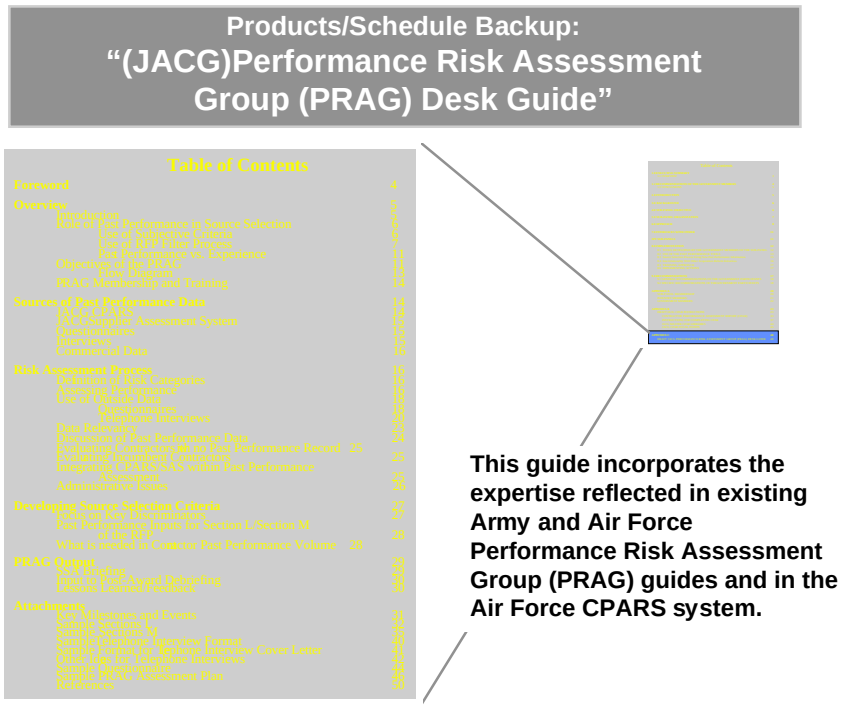


Figure O-18. JACG Performance Risk Assessment PRAG Desk Guide.

Products/Schedule

TRAINING BOARD

Focus Area	*Products*	*Schedule*
Training	Training Strategy	Jan 96
	Training Plan for Near-Term Period	May 96
	Inputs for Courseware for Long Term Training (e.g. DAU)	Aug 96 - Dec 98

Figure O-19. Product/Schedule.

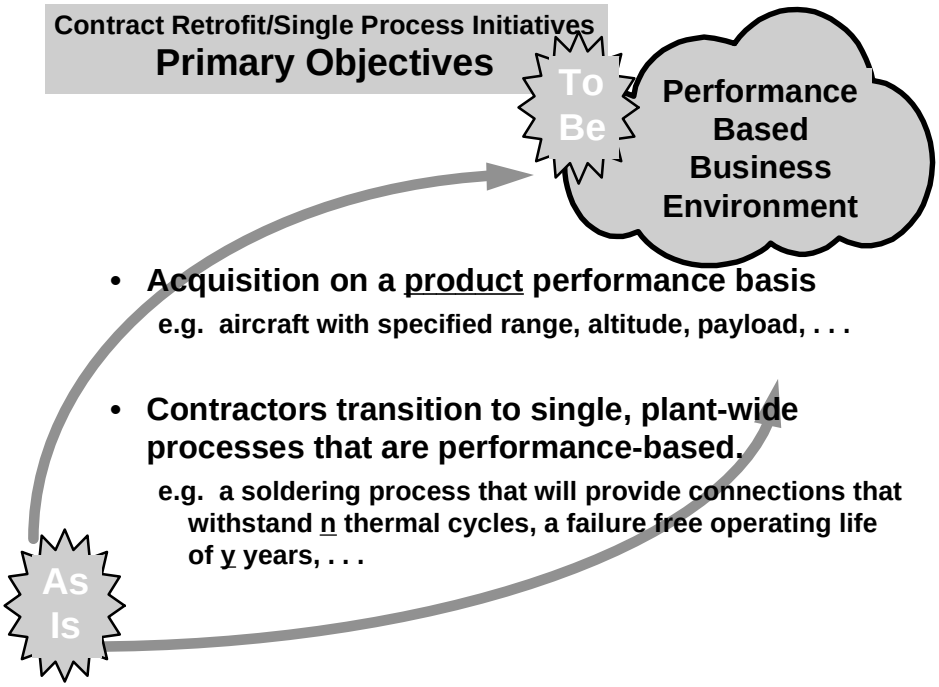
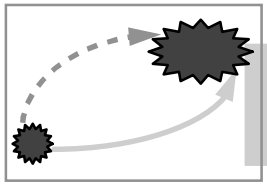


Figure O-20. Contract Retrofit/Single Process Initiatives Primary Objectives.

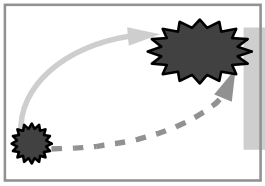


Contract Retrofit/Single Process Initiatives

Horizontal Change Option

- Changing individual processes to single, plant-wide processes (i.e. "Single Process Initiative")
  - Block change for one process at a time, or lump several into same block change action
  - Replace one or more gov't-directed "how-to" standards with performance-based, contractor-owned processes
  - Deletion of gov't-directed standard with no replacement
- DCMC lead, SPOs support
  - Ongoing: L-Mart Ft Worth, GE, Raytheon, Hughes

Figure O-21. Horizontal Change Option.

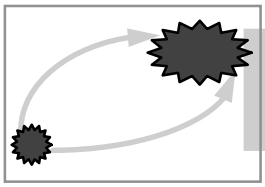


Contract Retrofit/Single Process Initiatives

Vertical Change Option

- **Retrofitting individual program's contracts to performance-based <u>product</u> requirements**
  - **top down restructure beginning with system specification**
  - **preserves intent of mil-std reqts, without the "how-to"**
  - **secondary benefit: single, performance-based, plant-wide processes**
- **Affected program offices lead, DCMC supports**

Figure O-22. Vertical Change Option.



Contract Retrofit/Single Process Initiatives

Combined Approach

- **Early concentration on horizontal change, with commitment to effect vertical change**
  - **quick benefits to both industry and gov't**
  - **exercises mechanism for eventual change to performance-based requirements**
- **Partnering of SPOs and DCMC, with early lead by DCMC (horizontal change) and SPOs taking lead eventually (vertical change)**
  - **maximizes benefits of horizontal change actions**
  - **ultimately achieves Dr. Perry's vision of a performance-based business environment**

Figure O-23. Combined Approach.

SUMMARY

- **Good policies & initiatives exist**
  - **OSD**
  - **Services/DLA**
  - **NGS-IPT**
- **JACG has implementation plan for integrated approach**
  - **Supporting near-term block change, "Single Process Initiative" actions with DCMC**
  - **Ultimately, achieve "to-be" performance-based environment**
- **JACG committed to products, schedules, resources**

Figure O-24. Summary.

APPENDIX P

ABBREVIATIONS: DEFINITION OF TERMS AND PROCESSES

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1.0 DEFINITIONS.

Block Change. A "class action" contractual process by which the Government will authorize a contractor to implement changes from Government directed, "How-To" processes (military specifications, standards and other business processes) across multiple contracts or a facility without preparing proposals at the individual contract level. (See Appendix K.)

Block Change Process. A contractual process by which the contractor will propose, and the government will agree to negotiate and authorize a contractor to implement block changes from government directed "How-To" processes (Mil-Specs/Stds) across multiple contracts or a facility. This is a move from existing Compliance-Based Acquisition Process to Performance-Based Acquisition (PBA). (See Apendix K)

Contract Logistics Support (CLS). The maintenance and modification of any installed training systems, equipment, devices, etc. Includes both organic and flightline repair of systems/subsystems under contract management. CLS can be extended to include management of spares and their distribution through the supply pipeline. (See Appendix F)

Contractor Performance Assessment Reporting System (CPARS). A comprhensive system for formally recording a DoD contractor's current and past performance for input into the source selection process. Establishes policy, assigns responsibilities, and provides procedures for systematically assessing contractor performance on all contracts and applied against all JACG activities above $5M, except contracts awarded under FAR 8.6 (Federal Prison Industries, Inc.), FAR 8.7 (nonprofit agencies employing blind or severely handicapped persons), construction contracts, and architect-engineering contracts. Data contained in the CPARS is source selection sensitive. (See Appendix I)

Design Criteria. Generated by the developer from technical requirements through the Engineering Process to define end item requirements in terms which allow for detailed design and verification activities. (See Appendix D & E)

Element. A lower level indenture of a process which has all the characteristics of a process. Elements may function independently or in conjunction with other elements including those of other processes. Examples of elements for the Engineering Process include the following: Systems Integration, Requirements Analysis, Functional Analysis and Allocation, Synthesis, System Verification and Technical Control. (see Appendix E)

Enhanced Past Performance. A NGS-IPT initiative to expand the use of past performance as a discriminator in formal source selection and to decrease reliance on non-interface and non-test government specifications and standards. (See Appendix I)

Flexible Sustainment. A NGS-IPT initiative which emphasizes procurement organizations, at an early milestone, develop a logistics support concept to maintain or increase combat capability of a weapon system and its components while minimizing life cycle support costs. Requires binding logistics support decisions as part of Demonstration Validation Phase exit criteria. (See Appendix F)

Key Supplier Processes. A NGS-IPT initiative which supports the implementation of a process to allow contractor control of system design, development, and production to the maximum extent feasible, through the use of technical and management processes assessed to be of high quality. (see appendix E, G & H)

Management Council Forum. A Government block change decision forum organized to evaluate plant-wide proposals submitted by the contractor. The Council is comprised of key members of the customer base, the contractor, and in-plant representatives of DLA. (See Appendix K)

Measure Of Effectiveness (MOE). A metric used to quantify the performance of integrated system solutions (people, product, and process) in terms that describe the utility or value when using those solutions to meet customer needs. MOEs can include cost effectiveness metrics. (See Appendix E)

Non-Developmental Items (NDI). NDI is a broad, generaic term that covers material available from a wide variety of sources with little or no development effort required by the Government. NDIs include L items obtained from a domestic or foreign commercial marketplace; items already developed and in use by the Services, other Defense activities, and Government agencies; and items already developed by foreign Governments which can be supplied in accordance with mutual defense cooperation agreements and Federal and DoD acquisition regulations. (See Appendix D&E)

Non-Government Standard. A document developed by a private sector association, organization, or technical society which plans, develops, establishes, or coordinates standards, specifications, handbooks, or related documents. The term does not include standards of individual companies. (See Appendix E)

Performance Attribute. A critical characteristic associated with a process or element which describes the expectations for that process or element in terms of capabilities. (See Appendix E)

Performance Based Acquisition. A strategy that has been developed to move the DoD acquisition process toward the commercial models by providing more flexibility to contractors in defining and implementing innovative and cost effective solutions for the development,

procurement, and support (e.g., maintenance, reprocurement of replenishment spares and depot level repair) of weapons systems. (See Appendix D)

Performance Risk.

High (H) - Significant doubt exists, based on the offeror's performance record, that the offeror can satisfactorily perform the requested effort.

Moderate (M) - Some doubt exists, based on the offeror's performance record, that the offeror can satisfactorily perform the requested effort.

Low (L) - Little doubt exists, based on the offeror's performance record, that the offeror can satisfactorily perform the requested effort.

Not Applicable - No significant performance record is identifiable. This is a neutral rating.

Process. A process is a set of procedures and methodologies which, when applied, provide a consistent set of outputs for a given set of inputs. (See Appendix E)

Process Implementation. The application of key processes for a given program. The overall implementation and associated dependencies will be described in an Integrated Master Plan (IMP). The detailed tasking schedule and dependencies associated with the implementation will be defined in an Integrated Master Schedule (IMS). (See Appendix E)

Requirements. Unless otherwise modified, this term will be used to denote engineering/technical requirements as defined below. Other related terms are also defined below.

Operational/User Requirements. End user generated requirements, normally defined in terms of a system capability or characteristic required to accomplish mission needs. User requirements are initially stated in a Mission Need Statement (MNS) and progressively evolve to system specific performance requirements in the Operational Requirements Document (ORD).

Engineering/Technical Requirements. Acquisition community generated performance, functional, and interface statements derived from user requirements and defined in terms which are verifiable. Technical requirements apply to both product and process capabilities. Government program technical requirements are initially stated in some form of requirements document, frequently a System Requirements Document (SRD), which progressively evolves to the System Specification or appropriate program requirements document. Lower level technical requirements are stated in Configuration Item (CI) specifications.

Verification Requirements. Generated by the acquisition community to define the method(s) and criteria by which the achievement of technical requirement will be substantiated during incrementally development. Verification requirements apply to both product and process capabilities.

Service Team Leader. A leader of the service specific team representing the customer(s) base affected by a block change proposal. This leader shares responsibility with other service team leaders in building consensus within and between the services for common block changes in addition to helping to organize the management council forum. (See Appendix K)

Source Selection Evaluation Team. The Source Selection Evaluation Team is focused on evaluating the cost, schedule and technical risk of each offeror's proposal.

Specification. A document prepared to support acquisition that describes essential technical requirements for materiel and the criteria for determining whether those reuqirements are met.

> **Guide Specification.** A generic specification developed by the Government for a class of like end items (system, segment, or key development items) which identified, but does not assign values to, the complete set of requirements which must be achieved. Requirements are sated in terms of required capabilities and must be achieved. Requirements are stated in terms of required capabilities and must be design independent. These specifications are used as guidance by the Government or contractor for preparing the system, segment, or development specifications.
>
> **Performance Specification.** Defining requirements in terms of "what," not "how to." It can be a process performance specification (e.g., quality) or an end product performance specification (i.e., missile or subassembly). or A specification that states requirements in terms of the required results with criteria for verifying compliance, but without stating the methods for achieving the required results. A performance specification defines the functional requirements for the item, the environment in which it must operate, and interface and interchangeability characteristics. **(MIL-STD-961D)** (See Appendix D)

Specification Tree. Depicts the structured decomposition of requirements to achieve verifiable end-item product requirements and to define the physical and functional relationship between items (i.e., interfaces) necessary to achieve the overall system requirements. (See Appendix D)

Supplier Capability Assessment Rating System (SCARS). An NGS-IPT inititative which proposes the DCMC and the acquisition services, using the assessment areas identified by the Supplier Rating Sub-Panel, assess each contractor's capability to successfully execute its processes and satisfy government contract requirements on an ongoing basis and assign an earned "rating level" (e.g., gold, silver, bronze) for each contractor. (See Appendix H)

Supplier Facility Assessment Process. An NGS-IPT initiative which strives to develop and implement a single system for evaluating and assigning assessment ratings to the selected processes used by government suppliers, including baseline and periodic update data, and to establish a centralized tri-service repository for assessments of suppliers' facilities. (See Appendix G)

Technical Performance Measurement. The continuing verification of the degree of anticipated and actual achievement for technical parameters. Confirms progress and identifies deficiencies that might jeopardize meeting a system requirement. Assessed values falling outside established tolerances indicate a need for evaluation and corrective action. (See Appendix D&E)

Training Startegy. The basic approach for instructing the work force in the methods, processes and tools to be used in performance based acquisition. (See Appendix L)

Training Devices. Flight simulators, maintenance trainers, computer based interactive trainers, etc.

> **Device Subsystems.** Visual Image Generators, Radar Landmass Simulators, Threat Simulators, Motion, etc.

Training Systems Integrated systems comprised of training devices, courseware, instructional materials, etc. (See Appendix L &M)

2.0 ACRONYMS.

ACAT I/II	Acquisition Category I/II
ACO	Administrative Contracting Officer
AEB	Aviation Engineering Board
AFFARS	Air Force Supplement
AFMC	Air Force Materiel Command
AFMCFARS	AFMC Federal Acquisition Regulation Supplement
AFMCI	Air Force Materiel Command Instruction
AIA	Aerospace Industries Association
AMC	Army Materiel Command
AMC CIS	Army Materiel Command Corporate Information System
AP	Acquisition Plan
AQS	Advanced Quality System
ARCC	Acquisition Reform Communication Center (under DAU)
ASC	Aeronautical Systems Center (AFMC)
ATCOM	Aviation and Troop Command (Army AMC)
ATP	Acceptance Test Procedure
BAFOs	Best and Final Offers
BCWP	Budgeted Cost of Work Performed
BCWS	Budgeted Cost of Work Scheduled
C^4I	Command, Control, Communication, Computer and Intelligence
CAGE	Commercial and Government Entity
CAID	Clear Accountability In Design
CAO	Contract Administration Office
CASC	Cataloging and Standardization Center
CBB	Contract Budget Base
CCP	Contract Change Proposal
CD	Chargeable Downtime
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CEO	Chief Executive Officer
CI	Configuration Item

CICA	Competition in Contracting Act
CIR	Contractor Information Report
CIS	Corporate Information System
CLIN	Contract Line Item Number
CLS	Contractor Logistics Support
CM	Configuration Management
CM	Contract Monitor
CODSIA	Council of Defense and Space Industry Associations
COMS	Contractor Operation and Maintenance of Simulations
COR	Contracting Officer's Representative
COTS	Commercial Off The Shelf
CPAR	Contractor Performance Assessment Report
CPARS	Contractor Performance Assessment Report System
CPARS [/CIM]	Contractor Performance Assessment Report System/Corporate Information Management
CPF	Contractor Performance Factor
CPI	Continuous Process Improvement or Cost Peformance Index
Cpk	One specific index for expressing Process Capabiity
CPR	Cost Performance Reports
CRs	Clarification Requests
CSCSC	Cost Schedule Control System Criteria
C/SSR	Cost/Schedule Status Reports
CTMC	Compliance Training Management Consortium
DAC	Designated Acquisition Commander
DAE	Defense Acquisition Executive
DAU	Defense Acquisition University
DAWIA	Defense Acquisition Work-force Improvement Act
DCAA	Defense Contract Audit Agency
DCMAO	Defense Contract Management Area Office
DPRO	Defense Plant Representative Office
DCMC	Defense Contract Management Command
DEM/VAL	Demonstration and Validation
D&F	Determination and Finding
DFAR	Defense Federal Acquisition Regulation
DFARS	Defense Federal Acquisition Regulation Supplement

DIS	Distributed Interactive Simulation
DLA	Defense Logistics Agency
DoD	Department of Defense
DPRO	Defense Plant Representative Office
DSIC	Defense Standards Improvement Council
DSMC	Defense Systems Management College
DUNS	Data Universal Numbering System
EAC	Estimate at Completion
ECP	Engineering Change Proposal
EIA	Electronic Industries Association
EMD	Engineering Manufacturing Development
F^3I	Form, Fit, Function And Interface
FAA	Federal Aviation Agency
FAC	Federal Acquisition Circular
FAE	Functional Area Evaluator
FAR	Federal Acquisition Regulation
FASA	Federal Acquistion Streamling Act
FCA	Functional Configuration Audit
FFRDC	Federal Funded Research and Development Contractor
FLIR	Forward Looking Infra-Red
FOIA	Freedom of Information Act
FTT	Full Task Trainers
GAO	General Accounting Office
IATA	International Airline Transport Association
ICAO	International Civil Aviation Organization
ICD	Interface Control Document
ICP	Inventory Control Point
ICW	Interactive Courseware
ID	Indefinite Delivery
ILS	Integrated Logistics Support
IMP	Implementation Management Plan
IMP	Integrated Master Plan
IMP/IMS	Implementation Management Plan/Integrated Master Schedule
IMS	Integrated Master Schedule
IPPD	Integrated Product and Process Development

IPT	Integrated Product Team
IRA	Integrated Risk Assessment
JACG	Joint Aeronautical Commanders Group
JLC	Joint Logistic Commanders
JSGS	Joint Services Guide Specification
LB	Lightening Bolt (SAF/AQ Initiatives)
LCC	Life Cycle Cost
LSA	Logistics Support Analysis
MDA	Milestone Decision Authority
MIL SPECS	Military Specifications
MIL STDS	Military Standards
MNS	Mission Need Statement
MOE	Measure of Effectiveness
N/A	Not Applicable
NAVAIR	Naval Air Systems Command
NCD	Nonchargeable Downtime
NDI	Non Developmental Item
NGS	Non Government Standards
NGS-IPT	Non Government Standards - Integrated Product Team
OASD	Office of the Assistant Secretary of Defense
OFPP	Office of Federal Procurement Policy
O&M	Operation & Maintenance
ORD	Operational Requirements Document
ORT	Operational Ready Time
OSD	Office of the Secretary of Defense
OTB	Over Target Baselines
OTW	(Visual) Out The Window
PAC	Product Acceptance Criteria
PAR	Proposal Analysis Report
PBA	Performance Based Acquisition
PCO	Procurement Contracting Officer
PDR	Preliminary Design Review
PEO	Program Executive Officer
PL	Public Law
PM	Preventative Maintenance

PM	Program Manager
PM/CM	Program Manager/Contract Monitor
PM/PEO	Program Manager/Program Executive Officer
POC	Point of Contact
PP/CSC	Program Planning/Cost and Schedule Control
PPRAG	Past Performance Risk Assessment Group
PRAG	Performance Risk Analysis Group
PTT	Part Task Trainers
QAE	Quality Assurance Evaluator
QDR	Quality Deficiency Reports
R&D	Research and Development
RDT&E	Research, Development, Test and Engineering
RFP	Request For Proposal
SAE	Service Acquisition Executive
SAF	Secretary of the Air Force
SAS	Systems Acquision School
SCARS	Supplier Capability Assessment Rating System
SECDEF	Secretary of Defense
SETA	Systems Engineering and Technical Assistance
SFR	System Functional Review
SME	Subject Matter Expert
SOO	Statement of Objectives
SOW	Statement of Work
SPC	Statistical Process Control
SPI	Schedule Performance Index
SPO	System Program Office
SRR	System Requirement Review
SRD	System Requirements Document
SS	Source Selection
SSA	Source Selection Authority
SSAC	Source Selection Advisory Council
SSEB	Source Selection Evaluation Board
SSEG	Source Selection Evaluation Group
SSET	Source Selection Evaluation Team
SSP	Source Selection Plan

STD	Standard
SVR	System Verification Review
TINA	Truth in Negotiation Act
TMS	Training Management Systems
TO	Technical Order
TPM	Technical Performance Measurement
TPP	Technical Performance Parameters
TQ	Total Quality
TRD	Technical Requirements Document
TSD	Training Systems and Devices
TSDP	Training Systems and Devices Panel
TSRA	Training System Requirements Analysis
TSSC	Training Systems Support Center
TWG	Training Working Group
USAF	United States Air Force
USD(AR)	Under Secretary of Defense for Acquisition
USD(A&T)	Under Secretary of Defense (Acquisition and Technology)
VECP	Value Engineering Change Proposal
VR	Variability Reduction
WBS	Work Breakdown Structure