

SUCCESS ENABLERS FOR ORGANIC PARTICIPATION IN PERFORMANCE-BASED LIFE CYCLE PRODUCT SUPPORT STRATEGIES

Prepared for the Assistant Deputy Under Secretary of Defense
Materiel Readiness

Steve Geary
Scott Koster
Wesley Randall
Jeffrey Haynie



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INTRODUCTION

In DoD's Product Support Assessment report, published in November of 2009,¹ significant attention is paid to the vision for improving the integration of organic capabilities into performance outcome-based product support strategies. Rather than treating the organic base as distinct from the commercial base, the report develops the notion that there is only a single industrial base, partially managed by the government, and partially managed by the commercial sector. The vision for industrial integration strategy uses this foundation to speak to the opportunity for synergy from a more collaborative organic and commercial industrial base.

Effective product support requires contribution from both the public and private sectors. A significant challenge over the course of the next decade, in the face of declining financial resources combined with undiminished operational demands, is creating a more effective, unified, and fiscally prudent industrial integration strategy for product support. More than 60 years after World War II, when the standing commercial industry (still seen today) originally formed, DoD has yet to fully leverage and blend the knowledge, skills, and capabilities of the complete defense industrial base through a considered and deliberate integration strategy.

As a part of the continuing efforts to achieve acquisition reform, Congress has passed legislation better defining the role of the organic base in product support strategies. The government has always been fully responsible and accountable for product support delivered to the Warfighter. That principle has been reinforced with the passage of the National Defense Authorization Act of FY 2010. Section 805 adds clarity to and elaborates on this principle.

The provisions of section 805 require that the Secretary of Defense issue guidance on life-cycle management and the implementation of product support strategies for major weapon systems. Additionally, each major weapon system shall have a product support manager to develop, implement, and validate the product support strategy (e.g. performance-based logistics, sustainment support, contractor logistics support, life-cycle product support, or weapon systems product support).

The responsibility for the product support strategy is clearly in the hands of the government. In addition, most organic participation in product support is more expansive than oversight. Some product support must be performed by the government. To cite two common examples, this can be driven by statutory requirements or operational requirements in forward-deployed environments that dictate execution of certain tasks by the military. Other examples demonstrate that organic organizations are best practice contributors to product support because their role and participation are driven by best value, not statutory requirement.

Across the landscape of performance outcome-based product support strategies, there are examples that illustrate the adoption of best practices that allow organic capabilities to participate in product support strategies as best-in-class contributors. These examples demonstrate an ability to overcome commonly cited obstacles to participation by organic elements with a more successful integration of the organic assets into a unified industrial base.

¹ DoD Weapon Systems Acquisition Reform Product Support Assessment, November 2009

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While it is true that organic organizations are not profit-making businesses, they are businesses nonetheless and can successfully compete and win in Performance Based Logistics (PBL) using best-in-class practices.

The examples uncovered in this study demonstrate a spectrum of competitive practices available to organic resources to compete on merit for business as product support integrators and product support providers. The foundational development of core competencies through the execution of best practice capabilities, as envisioned in Section 2474 of US Code Title 10 that make this possible:

The Secretary of Defense shall establish a policy to encourage the Secretary of each military department and the head of each Defense Agency to reengineer industrial processes and adopt best-business practices at their Centers of Industrial and Technical Excellence in connection with their core competency requirements, so as to serve as recognized leaders in their core competencies throughout the Department of Defense and in the national technology and industrial base.²

From a financial standpoint, effective, efficient and best-value use of government-owned resources is a victory. There is a huge, long-standing taxpayer investment in organic support capabilities, particularly in inventory control, distribution, and maintenance depots. At the same time, although the organic base contributes significantly, it cannot do all of DoD's product support work. American industry provides a source of innovation and flexible and productive capacity for the Defense industrial base. The way ahead lies in effective blending of these complementary capability sets, when the best use is made of the entire industrial base facilitated by the continuing expansion of best business practices in the both the commercial and organic base.

This paper is intended to illustrate the opportunities that have been developed by organic resources already, clearly demonstrating and documenting success enablers for organic participation in performance-based life-cycle product support strategies.

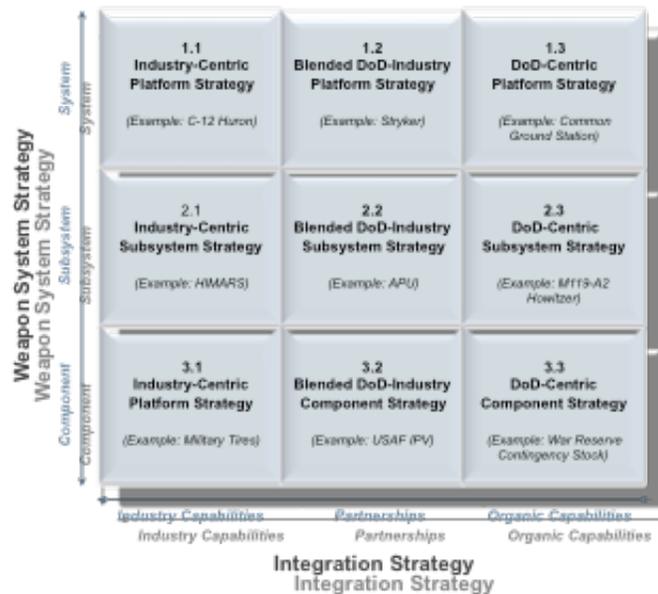
² TITLE 10 > Subtitle A > PART IV > CHAPTER 146 > § 2474. Centers of Industrial and Technical Excellence: designation; public-private partnerships

METHODOLOGY

The study team followed a simple three-step process to produce the resultant case study. The first step consisted of identifying candidate programs with characteristics that are germane to the research objectives. The second step was to research and interview representatives from the candidate programs. The final step includes the analysis and write-up of the submitted study.

To identify and select potential candidate programs for this study, the team used two primary criteria and one limiting factor. The primary criteria are location in the Decision Matrix for Product Support (DMPS), Figure 1, and high-performing product support strategy discriminators. The limiting factor on what programs the team reviewed was ultimately decided based on the availability of program sustainment teams on short notice for review. Further, the team attempted to look across the Services and at end-item operating environments (land, sea, air, and space) as a consideration in the selection of candidate programs to include.

Figure 1: Decision Matrix for Product Support³



Understanding how the candidate programs populate the DPMS in Figure 1 enabled the team to base the selection decision on the characteristics of the product support strategies from an objective perspective. In short, the DMPS was designed to help Program Managers identify their product support strategy. A program's location in the matrix will influence decisions relative to the Product Support Integrator (PSI) composition, metrics, incentives, Performance Based Agreements (PBA), and analytical tools. The matrix is based on a framework that outlines nine product support options as defined by the intersection of two key strategic system characteristics that drive the appropriate support strategy. The key strategic system characteristics are weapon system strategy and integration strategy.³ The two characteristics prove to be useful mechanisms to categorize programs so that the team can focus on only those programs that are in line with the study objectives.

³ DoD Weapon Systems Acquisition Reform Product Support Assessment, November 2009

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A primary focus of this study was to understand the product support strategies that maximize use of the entire military industrial base. Figure 2 uses the DPMS to identify those programs with “blended” integration strategies. From the population of programs with a “blended” integration strategy the team looked for programs from each of the weapon system strategies. With the limiting factor of program availability, the study team was able to identify candidate programs in two of the three weapon system strategy categories of subsystem and system.

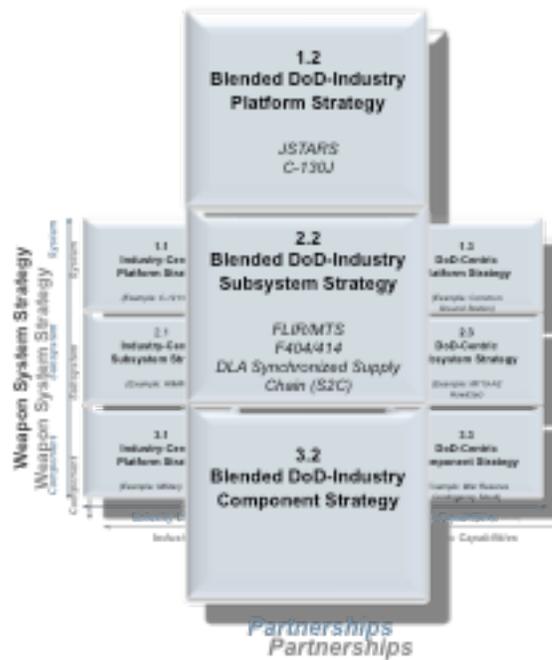


Figure 2: Identifying Partnership Candidate Programs

From this list of candidate programs the study team next looked for discriminating factors to identify five or six programs that form the target programs to review. Discriminating factors include recognition of excellence (DoD Performance Based Logistics (PBL) submission packages), duration of current “blended” product support strategy, “commerciality” of the materiel and ongoing and research efforts (Redstone Arsenal).

The selection process in conjunction with program availability resulted in the selection of four programs for the research and interview step. The study team focused its attention on the candidate programs; and gathered information on the programs; and traveled to the program offices, depot business offices, and re-manufacturing facilities to interview the managers and artisans involved in each project. Additionally, the team incorporated findings from related research conducted by Auburn University at United States Army Air and Missile Command in Huntsville, Alabama.

With the time available the team was able to do a deep dive on the F404 engine, which has twice won the DoD PBL award. Product support awards are a result of the remanufacturing activity at

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the Fleet Readiness Center, Southeast (FRCSE) and subsystem inventory management at the Defense Logistics Agency (DLA).

AN ENVIRONMENT FOR SUCCESS: HUNTSVILLE⁴

United States Army Air and Missile Command in Huntsville, AL (AMCOM) has created an environment of high performing and award winning product support teams. Huntsville organizations have earned recognition for their performance-based product support initiatives. Specifically, a number of Huntsville programs have won the annual Secretary of Defense Award for Excellence in PBL. They are:

- 2005 Shadow 200 Tactical Unmanned Aircraft System
- 2006 High Mobility Artillery Rocket System (HIMARS)
- 2007 Improved Target Acquisition System (ITAS)
- 2008 Tactical Airspace Integration System (TAIS)
- 2009 High Mobility Artillery Rocket System (HIMARS)

In fact, this is the complete list of PBL Award winners for the Army, and every one of these award winners is at Huntsville. There has never been an Army winner from any other location.

As the 2009 Award memo states, “Performance-Based Logistics (PBL) is the Department of Defense's strategy to improve weapon system readiness by obtaining lifecycle product support of weapon systems, sub-systems and components as an integrated package based on output measures; such as materiel availability, materiel reliability and reduced ownership cost. The Secretary of Defense PBL Awards recognize government and industry teams that have demonstrated outstanding achievements in providing our Warfighters with exceptional operational capability through PBL agreements.”

What makes Huntsville distinctive? How can it so completely dominate as the Army's leaders in PBL? What special enablers are present in the Huntsville environment? Why is Huntsville so successful in driving outcome-based product support strategies that maximize contributions from across the industrial base?

In this phase of the research we sought to understand and identify the practices that contribute to this high performance. We identified high performing product support teams from AMCOM, including many of the award winners, to investigate and to identify the practices that make them successful. The teams included in this research comprise government and industry personnel involved in the post-production support of U.S. and Allied defense systems. Thus, in each of these programs, there is strong organic participation.

Through discussion during site visits, we attempted to understand behaviors and perceptions of factors driving success from members of the support teams with differing perspectives. Through the course of the research visits, conversations spanned activities at Apache, Letterkenny Army Depot, Close Combat Weapon Systems, Corpus Christi Army Depot, Unmanned Aerial Systems Logistics Division, the Integrated Materiel Management Center, and the Precision Fires Project

⁴ Jeffrey J. Haynie, Wesley S. Randall, Achilles A. Armenakis, & Steve Geary, Unpublished manuscript, Team Innovation And Learning: A Qualitative Inquiry Into An Evolutionary Change Initiative, Prepared for Submission to the Journal of Management, December 2009

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Office. A number of the people who shared information provided support to multiple systems, giving them a rich perspective.

Research in supply chain management indicates that outcome-based sustainment is effective in controlling costs and improving performance. The strength of performance-based support strategies appears to be its ability to strategically align cross-functional and inter-organizational processes of multiple firms, customers, and bill payers, and focus them on a long-term performance goal in a manner that creates consistent and measurable success. The review of the environment at Huntsville was not intended to validate the efficacy of their performance-based approach. Rather, given the numerous Secretary of Defense Award winners from Huntsville, the research sought to discern the critical enabling factors that created the environment for success.

Critical Success Factors in the Organization

In effect, adoption of a performance-based product support approach represents a strategic change in inter-firm practice. By analyzing teams that implemented this new strategy of outcome-based product support, we found key enabling factors present in the environment that contributed to the successful participation in, and often leadership of, outcome-based programs by organic resources.

The factors identified at Huntsville include:

- Cooperative Interdependence. Cooperative interdependence is an understanding that goal attainment is dependent upon other team members reaching their goals
- Transformational Leadership. Transformational leaders transcend short-term goals and focus their attention on the higher order intrinsic needs of subordinates, inducing them to transcend their own self-interests for the benefit of the organization or team.
- Team Climate for Innovation. Team vision, participative safety, climate for excellence, and support for innovation are components in the creative process leading to greater team innovation.
- Team Innovation. Team innovation is the combination of the quality and quantity of creative ideas that have been implemented within an organization. These innovations represent changes and can be either administrative or technological in nature.
- Team Learning. Team learning is the process by which teams discuss and solve problems. Collectively, the team engages in information seeking and reflective decision-making processes that positively impact the degree of knowledge and information for other members.
- Team Performance. Objective performance represents the outcomes of the team's activities that are valued by one or more of its constituencies, such as reductions in operating costs, greater efficiency, and increases in profits.
- Change Appropriateness. Innovations can produce desired outcomes such as increased product quality and reduced support costs. However, it is important that the appropriateness of the innovation is taken into account: unbridled innovation can be counter-productive.
- Means Efficacy Climate. Means efficacy climate is the shared attitude concerning the degree of organizational support supplied to the team through policies, processes, and procedures.

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Each of these enablers is described and validated in the more generalized academic literature related to management and change management. These findings are not outliers. They demonstrate managements' understanding of best management practices.

To close the loop, the research team conducted validation sessions with senior executives, senior managers, engineers, program managers, and logisticians familiar with performance-based strategies. The subject matter experts confirmed that the data, the analysis, and the identified factors fit with their environment from their point of view.

Implications for Outcome-Focused Product Support Success

AMCOM innovation and leadership in product support is driven by the business and management environment itself, not some standardized process. It is a partnership approach across the organization and into partners in the industrial base that is less adversarial in style, based on a mutual understanding of where the motivations and interests of each party lie, acknowledging and managing areas of divergence and tension, and a willingness to share information in a spirit of openness and transparency at all levels. Creation of that environment must take place within the organic structure, and AMCOM in Huntsville identifies and demonstrates the elements that must become standard business practice.

There are challenges to expanding the role of DoD's organic sustainment infrastructure in the planning for, and delivery of, integrated, affordable, outcome-focused product support. What Huntsville demonstrates is that, regardless of the obstacles, there are critical success factors that are known, and are within the control of organic leadership. Good management drives performance-based success.

FROM SOURCE OF REPAIR TO BUSINESS PARTNER JACKSONVILLE'S JOURNEY

Fleet Readiness Center, Southeast's (FRCSE) mission statement states, "We provide aviation maintenance solutions that satisfy Navy Warfighter's demands." Actually, from a review of two product support efforts, the FRCSE, located in Jacksonville, FL is evolving by leveraging its robust manufacturing capability and forward-leaning business practices that help position existing capacity for use in partnerships. The new development is the extent that FRCSE and its private sector business partners have aligned their respective business models to create a blended and compelling value proposition for the Warfighter.

Like Huntsville, Jacksonville has created an innovative environment where the adoption and application of best commercial business practices has been embraced. Rather than replicating the discovery work at Huntsville that included a detailed validation of the elements required to develop a working environment receptive to the adoption of best practices in support of performance based product life-cycle product support, the review in Jacksonville focused on the implementation of specific best practices themselves.

There are high-visibility performance-based product support strategies in use by several programs in Jacksonville. The two that participated in the research are the F404 engine, used on the F-18 aircraft, and the forward looking infrared (FLIR) family of sensors, used on a variety of platforms. Meetings took place with the FRCSE Business Office, as well as company representatives from General Electric Aircraft Engines (GEAE) and Raytheon, the respective original equipment manufacturers (OEM) and business partners on these programs.

Foundation

For both of these programs, the solid foundation set down in the public-private partnership is fully aligned with the description offered in the Product Support Assessment Report.

Long-term committed relationships executed with flexibility and integrated across organizational boundaries, with complementary skill sets and abilities, are both essential and possible.

Shared partnership vision and objectives with the right metrics and incentives drive alignment and are especially effective when supported by a clear delineation of complementary roles and responsibilities.

Full coordination with all stakeholders, supported by transparency, open communication, and the flexibility to change partnership scope, is an essential ingredient to success.

Clearly documented objectives support alignment and fuel the success of the partnership. This can be achieved through incentives that drive desired outcomes and are supported by sound economic analysis.

There is nothing new or particularly innovative in these foundational elements of performance based product support. The essential elements were first documented by the Government

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Accountability Office (GAO) in 2003. What is interesting at Jacksonville is what they have established on top of this foundation.

Beyond Wrench-Turning: Creating an Integrated Business Model

One of the recommendations of the Product Support Assessment report speaks to the vision of leveraging organic capabilities outside of the traditional, program-centric events:

. . . expand partnering “beyond maintenance,” drive standardization across Services, and promote proactive establishment of single-source repair capability⁵

At Jacksonville, we see in execution a prototype defense industrial base of the future. Here is an organic operation that has moved beyond a job-shop maintenance operation becoming a fully capable industrial partner that is deeply integrated with commercial partners. The partnerships that are being created present a unified organic and industry front to the government customer. The individual activities in large part are not distinctive, but the degree of integration and coordination is.

In the engine shop, under one roof, they maintain engines from two different OEM. There are integrated process and shared capacities that support both OEM families, managed by a unified staff. Through this Navy capability set, they also maintain engines for the A-10, an Air Force platform. They are moving down the path of managing their engine maintenance capability in a standardized fashion across product families, and indeed across services.

Their success has led to the capture of additional work from GEAE, formerly performed at the GEAE facilities north of Boston. This is the typical pattern of success in the maintenance arena for depot partnerships. Yet, in Jacksonville it is creating an opportunity to move beyond legacy maintenance functions. The facility is now being audited by GEAE to become, in addition to the current role as a source of repair for the 404 and 414 engines, a new module manufacturing site for the 414 engines.

The FLIR team, including both Raytheon and FRCSE, also demonstrates highly evolved thought beyond the traditional maintenance partnership roles. In discussions, they are adamant: there are maintenance partnerships, and there are business partnerships, and for the FLIR sensors they maintain that they are in a business partnership and that they had moved beyond wrench turning a long time ago.

The original PBL in the FLIR family was for the device on the H-60 helicopter. Rather than viewing this as a unique opportunity, first Raytheon, and then Raytheon in partnership with FRCSE, saw this as a competitive opportunity to capture more work. Over time capacities and equipment were upgraded in Jacksonville. Raytheon as the Prime and FRCSE as a teammate and sub, competed for and earned additional work. Today, a single set of equipment in one building services a diverse set of FLIR devices.

A breakthrough took place in 2009. The capacities in Jacksonville were purposely designed to

⁵ DoD Weapon Systems Acquisition Reform Product Support Assessment, November 2009, p. 43

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be able to accommodate the FLIRs installed on the Air Force's Predator and Reaper UAV platforms. The ability to maintain these FLIRs is a core requirement, meaning that the DoD is statutorily required to maintain organic capability. The Navy's FRCSE was selected by the Air Force as the Depot Source of Repair for the Predator and Reaper FLIRs. The complete set of FLIRs that are now slotted to use this capacity are AAS-44V (older H-60 series), AAS-44(C)V (MTS-A for H-60R/S), AAS-52 (MTS-A for Predator), DAS-1 (MTS-B for Reaper), AAQ-27 (MV-22), and the AAQ-29 (CH-53E)

By viewing themselves as an integrated capability set, the various industry and FRCSE teams have been able to step beyond traditional program-centric maintenance relationships. They are now integrating horizontally across the portfolio. They are integrating across the services. The organics capabilities, developed under the umbrella of 2474 and nurtured by their industry partners, are stepping into higher-level activities, like new module assembly. Private industry has been instrumental in directly assisting the incorporation of these best practices into this public facility, and together the team is reaping the benefit. They are bootstrapping themselves through an evolutionary process toward becoming a single-source capability for specific technologies used across the services.

Enabling Best Practices

FRCSE has demonstrated an ability to deploy a broader approach to partnership that is not the typical Private Public Partnership (PPP) based on arms-length arrangements. This, in turn, has allowed industry to look at the organic for a capability that is sought by the industrial base. With the jet engine, that means FRCSE can provide jet engine fabrication and assembly expertise, not just artisan labor. For the FLIR, it means FRCSE has off-the-shelf, one-stop capacity and capability to perform MRO on a technology that is become more and more ubiquitous and sophisticated across military weapon systems.

This evolution did not happen overnight. According to one team member, before they could work toward the concept, there had to be a "business" partnership with a common strategic vision. Each party identified their revenue streams and they began to work towards a "business" relationship that addressed the needs of each participant. Prime needs for the government are inherently those of mission accomplishment and compliance, while industry is accountable to a bottom line.

These needs are different from the point of view of Jacksonville and the industrial partners. For the industrial partners, the definition of need is simple: profit. Real dollars flowing to the bottom line matter to commercial organizations. On the other hand, organics are "break even" operations. The FRCSE looks at sustaining or increasing labor hours, avoidance of Base Realignment and Closure (BRAC) recommendations, satisfaction of statutory requirements (core, 50/50, etc), and the ability to improve support of the fleet as "profit."

Rather than clashing over the differing needs, FRCSE has found common ground that allows them to operate in understandable swim lanes with their industrial partners. The FRCSE celebrates industry's ability to manage component supply more effectively than the FRCSE, and turn to industry to contribute. There are other areas where the FRCSE accepts help: tech data, information systems, test, training, technical assistance, transportation, packaging, engineering

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analysis, inventory management, quality support, logistical services, materiel movements, and engineering on the floor in the shops. It is a complicated set of best value decisions, but the FRCSE does not hesitate to grapple with them.

Motivated by self interest, FRCSE and its partners have maneuvered themselves into a position where they focus together on the joint opportunities and seek to grow the business and consequential benefits to each party. This is an extremely sophisticated, strategic approach to business. Or, as one industrial partner described the process, they worked diligently to “put the depot in a position that they would have to make a bad business decision by not forming a true business partnership.”

In conjunction with the development of a shared strategic vision, the organic has implicitly adopted a mindset that drives alignment to the desired outcomes. The introduction of performance into the equation encourages the OEM to competitively seek to meet the benchmarks, and to find partners who can help them do it. This, in turn, encourages the organic to improve in areas they have competency, thereby making them more attractive to the OEM. This creates a positive, perpetual cycle that drives best practices into the organic, all resulting from the embrace of a shared strategic vision

There are highly visible indicators of the depth of alignment and integration between commercial partners and the organic. Technical employees of the commercial partners are embedded within the organic operation, including on-site offices and free access to the work spaces of the artisans. FRCSE has embraced lean and Six Sigma approaches to continuous improvement. Bulletin boards are prominently displayed with objective performance measures so all employees can see what they are being measured against.

Further, contrary to conventional wisdom, artisans can earn incentive payments based on their performance. In the contemporary financial environment, cost reduction is an imperative in any performance-based agreement. So, although FRCSE works on a cost reimbursable basis, they have put in place a very aggressive gain-sharing program with the artisans, in a union environment no less. A “controllable” hourly labor cost is defined for each work center, and 40% of any achieved cost reduction against that rate is paid to the employees. For reimbursement purposes, the depot can still invoice or the incentives paid, because the bonuses are considered labor cost, but the achieved hourly cost reduction rolls into the controllable hourly rate for the next reporting period.

Open Issues

FRCSE follows conventional organic business practice relies on cost reimbursable contracts. FRCSE can become more completely integrated into a singular industrial base by acting like its partners and using fixed-price type, in particular a firm fixed price (FFP) contract. As described in the FAR:

“A firm-fixed-price contract provides for a price that is not subject to any adjustment on the basis of the contractor’s cost experience in performing the contract . . . It provides maximum incentive for the contractor to control costs and perform effectively and imposes a minimum administrative burden upon the

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contracting parties. The contracting officer may use a firm-fixed-price contract in conjunction with an award-fee incentive (see 16.404) and performance or delivery incentives (see 16.402-2 and 16.402-3) when the award fee or incentive is based solely on factors other than cost. The contract type remains firm-fixed-price when used with these incentives.⁶

This contract type can be a contentious issue in the organic community, even though the use of FFP could better align depot incentives with commercial objectives, it places a burden of risk on the shoulders of the depots that historically they have not had to face. On the other hand, an FFP could open up opportunities and address challenges that exist.

According to the office of Navy Air Systems Command (NAVAIR) Comptroller, per the DoD Financial Management Regulations (FMR) (Volume 2B Chapter 9 (090105)) “sales of DoD goods and services to private sector entities on a fixed price basis are authorized when the work is well defined and there is a reasonable basis upon which to predict costs.” This is analogous with private sector practices, improves the ability of private sector partners to predict production costs, and serves to constrain unit cost by more fully utilizing the production capacity of DoD maintenance depots. Cost reimbursable pricing is appropriate when future production costs cannot be reasonably predicted.⁷

Through participation in an FFP, an organic would create an opportunity to positively impact Net Operating Result over the life of the contract. This is the other side of the risk coin. However, if success under an FFP occurred, the FRC would “earn” funds to invest in capital equipment: variances can be reinvested in the depot. This could create a funding source to facilitate earlier standup of depot capabilities and facilitate the establishment of a single authoritative source of depot repair for the programs.

Finally, there is no single business office spanning the Navy organic capabilities, or even the depots themselves. Each depot maintains its own business office, using policies and practices in line with the Commander’s Intent for that installation. While this maximizes flexibility at the operating level, it undermines needed standardization and reforms.

⁶Federal Acquisition Regulation Subpart 16.2, Fixed-Price Contracts. 16.202-1, Description

⁷ Ser AIR-10.3CM/09-034, 8 December 2009

THE JOINT STARS CONTRACT: A DECADE OF SUCCESS

The E-8 Joint Surveillance Target Attack Radar System (Joint STARS) is a United States Air Force airborne Battle Management C2ISR platform that conducts ground surveillance to develop an understanding of the enemy situation and support attack operations and targeting that contributes to the delay, disruption, and destruction of enemy forces.

Product support is provided through a Total Systems Support Responsibility (TSSR) contract, with Northrop Grumman Corporation designated as the Product Support Integrator. From its inception, the Joint STARS TSSR has been recognized as a pathfinder in the Air Force. First awarded September 15, 2000, the Under Secretary of Defense for Acquisition, Technology, and Logistics selected the Joint Surveillance Target Attack Radar System Future Support Team to receive the David Packard Excellence in Acquisition Award. At the time, the Defense Contract Management Agency said, “This innovation sets a benchmark for partnering with industry and leverages that relationship to increase weapons system availability while reducing operating costs.”

Program oversight is provided by the Joint STARS TSSR Program Management Team, located at the Warner Robins Air Logistics Center. Northrop Grumman has the responsibility, authority, and accountability for the majority of day-to-day sustainment. Specifically, Northrop Grumman is fully accountable for OEM and vendor tasks, depot performance under a workshare agreement, and management of platform-unique items. The government manages and executes product support for the engine, common reparable, common consumables, and common support equipment.

Depot and depot-level repair work is executed via partnership between the organic depot at WR-ALC and Northrop Grumman. Northrop Grumman performs periodic depot maintenance and modifications on Joint STARS and all software integration. Some software support is performed at WR-ALC under partnership, and some software support is executed by Northrop Grumman. Likewise, some PME repair is performed by WR-ALC under partnership, while some PME repair is handled by Northrop Grumman. The engine is managed and maintained at the Oklahoma City ALC.

Rather than the traditional approach to TSSR, which tended to be a platform-level agreement with broad scope provided to the PSI, the organic structure maintains an active and visible role in directing, managing, and executing the product support strategy, while at the same time empowering a commercial entity as the PSI. It is an integrated approach, bringing together core competencies across the breadth of the industrial base, and tailoring the portfolio to meet the requirements of this strategic weapon system.

The net effect is an active and valuable role for the depots.

Enduring Performance

Joint STARS is a complex suite of technology riding on an antiquated airframe, the Boeing 707. Yet despite these challenges the integrated performance of the PSI has consistently met all requirements, even though, for example, the PSI has no direct authority over depot support.

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Northrop Grumman, over the past six years, in every six-month award period has always earned within a few percentage points of the maximum award fee available under the contract. Since 80% of the award fee recommendation is driven by specific and defined performance outcomes, it is clear that the platform is performing.

There is also a defined protocol for making award-term decisions. Initially awarded with a six-year base period, the Joint STARS contract was configured to allow up to an additional two years of contract performance, based solely on performance, during each year. As of the end of 2009, Northrop Grumman had already earned contract extensions through 2017.

Enabling Best Practices

The complexity of integrating a product support strategy as complex as Joint STARS into a functioning, integrated whole is considerable. To keep things aligned, the team has brought together tapestry of interwoven checks, balances, and incentives in order to drive desired outcomes. While each of these approaches is a best practice, the integration of all of these practices into an integrated strategy is truly best in class.

By any benchmark in the world of product support, a base period of six years is long. But in order to provide a secure umbrella for the business partnership to form, the Air Force elected to commit to a long horizon. Coupled with the opportunity for the contractor to earn a total of 22 years to perform, once Award Terms are considered, the Joint STARS PSI has a powerful incentive to both perform, and to make life-cycle decisions across a long horizon.

However, the Award Term provisions cut both ways. If the PSI performs poorly, it can lose performance period. It is possible, during one year of performance, to earn an additional two years of term. This clearly encourages consistent and reliable performance.

In many circles, there is reluctance for private industry to embrace workshare arrangements with depot resources, because industry has neither contractual control over the resource, nor the opportunity to earn revenue/profit on the work at the depots. At Warner Robins, it is a workshare arrangement, but a business model has been put in place to incentivize the PSI to influence, and hopefully drive, performance at the depots. Simply put, the PSI can earn Award Fee based on depot performance. This simple step makes the PSI a stakeholder that is deeply interested in making the depots successful.

Tools have been developed to allow the PSI to backstop organic performance. The PSI is authorized, when requested to do so by the government, to provide common item(s) when the government item manager's estimated delivery date does not meet Warfighter's need date. The PSI is also authorized to handle surge workload and shortfalls when the capacities at WR-ALC handling repair of mission systems are unable to meet the requirement.

Open Issues

One of the most difficult issues in establishing long-term, performance-based contracts is the establishment of objective performance outcome measures that remain relevant, challenging, and attainable over the life cycle. Today, almost 10 years into the Joint STARS TSSR, the PSI and the Air Force are revisiting the measures used to develop Award Fee recommendations. There

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have been attempts to modify the targets in the past, but because the targets are contractual terms, any modification requires mutual consent.

The grinding requirements of ongoing operations have caused a shift in perspective. Today, there is a greater interest on the part of the Warfighter in aircraft availability and sortie effectiveness. Consequently, the program team is working to rearrange the weights of certain governing metrics. Today, there are 17 metrics that roll up into a final weighted score. It is hoped that one of these, Depot Possessed Aircraft, can be moved from 12% of the total to 20%, and IFT sortie effectiveness moved from a mere 2% to 10%. This 10 percentage point weight shift would come by reducing the relative weight of cost measures.

What the right weights should be is a discussion best left to the team most familiar with the weapon system, but what this process highlights is the need to build reset and calibration mechanisms into measurement schemes to allow outcome definitions over time.

THE UPSTARTS: NAVAL SURFACE WARFARE CENTER, CRANE DIVISION

The C-130J is a modification of the C-130H, undertaken by Lockheed Martin Aeronautics Corporation (LMAC) as a private venture, with intended sales to the United States and various foreign markets. The C-130J aircraft is a medium-range, tactical aircraft and is the newest upgrade to the C-130 fleet. Specialized versions of the aircraft include the C-130J Stretch which has an increased cargo floor length of 15 feet, the WC-130J which performs weather reconnaissance missions, the EC-130J which performs electronic warfare missions, the KC-130J which performs air-refueling missions, and the HC-130J which performs search and rescue missions.

Today, the United States Government operates approximately 100 airframes, with 65 in the United States Air Force (USAF), 29 in the United States Marine Corps (USMC), and 6 in the United States Coast Guard (USCG). Another 60 are owned by foreign governments. Historical practice would suggest that since the C-130J was built using private investment the military would rely on a system-level performance-based product support acquisition strategy with the OEM either as the integrator or playing an active role in the integration. That has not been the case.

The NAVAIR – Crane Partnership

Initially, the Navy Air Systems Command (NAVAIR) followed the USAF product support strategy and relied on LMAC as the source of supply for KC-130J platform-unique components. However, as operational requirements and ongoing commitments grew without proportionate additions to budgets, the Navy found itself under financial pressure. Seeking alternatives, and unable to afford the pricing available through LMAC, the NAVAIR program office opened up a dialogue with the Naval Surface Warfare Center (NSWC), Crane Division.

In collaboration with the program office, NSWC Crane began seeking alternative repair item sourcing strategies for the C-130J. Since the C-130J is a complex weapon system, it was found that subcontractors on behalf of LMAC produced many items. Additionally, the government owned technical data for many of the components. The solution Crane offered was simple: it would operate as a supply chain integrator at the component level for the Program Office, and reach out directly to the supplier community. This arrangement offered the additional benefit of swift implementation without the need for a BCA: NSWC Crane is within the same Service and can readily accept MIPRs.

According to the Program Office, NSWC Crane has been extremely successful as an agent, driving dramatic cost reductions in costs per flight hour and in many cases obtaining warranty coverage superior to that available from LMAC. NSWC Crane is behaving entrepreneurially, and in conjunction with the Program Office has identified a way to apply the next generation business model described in the Product Support Assessment report to its advantage.

As reported by the NSWC Public Affairs Office, logistically re-engineering the sustainment program and re-baselining "by-the-flight-hour" has been successful. NSWC Crane receives a fixed rate for each KC-130J flight hour flown and promises a specific minimum level of

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performance. The project team employs continuous improvement Lean tools in keeping with NSWC Crane's continual efforts to provide timely, affordable and quality solutions to the Warfighter. This approach helped increase the desired efficiencies that ultimately benefited flight-hour costing and mission capability. The minimum level of performance was set at 85 percent mission capability due to supply issues, but successfully executed in excess of 95 percent since support moved to NSWC Crane. In 2007, NSWC Crane's role in KC-130J sustainment had saved the government \$42 million by reducing the cost per flight hour by nearly 75 percent from 2005 to 2007.⁸ More recently, according to PMA-207's APML, the relationship with NSWC Crane has yielded more reductions in operating costs. If NAVAIR had stayed with LMAC, estimates of the current cost are more than \$1K per flight hour. At times, the KC-130J has operated under \$300 per flight hour for KC-130J unique repair of reparable.

The organic element at NSWC Crane has leveraged its skill and operates as a viable competitor to the commercial OEM as a PSI on an FFP basis.

Open Issues

While the strategy employed on the KC-130J is innovative and successful, there are risks. Bypassing LMAC moves NAVAIR and NSWC Crane's PBL out from under the umbrella of LMAC. To mitigate, NAVAIR contracts for technical support from LMAC through another contract arrangement, managed as a part of the program portfolio. The program office has elected to retain more responsibility, and more risk, by accepting a more active and central role in the execution of the support strategy.

To illustrate the potential risks of the approach, consider the life cycle. The KC-130J is a maturing platform, and obsolescence challenges as well as diminishing manufacturing sources of supply can be anticipated. Will the Program Office and NSWC Crane be able to manage transitions as effectively as LMAC? Or would NAVAIR be better off by involving the OEM more directly in the PBL strategy through some sort of integrated accountability for performance and outcomes, instead of acquiring technical support in a fee for service arrangement? There are tradeoffs, and costs to date have clearly been positively impacted by the arrangement, but as the platform matures a strategy review may be appropriate to ensure continuing success.

As NAVAIR and the USAF have charted independent courses, they have disaggregated the support strategy for the platform itself. The USAF maintains a separate program office at WR-ALC, with its own strategy and portfolio of contracts. Against the imperatives of the individual Services, reasonable managers have made reasonable decisions. However, opportunities for cross-service standardization and cross-pollination may exist

⁸ NSWC Crane Supports OIF, Saves DoD \$42M, Receives Award Story Number:NNS080201-14 Release Date: 2/1/2008 12:55:00 PM

FINDINGS AND RECOMMENDATIONS

The next generation product support strategy will not deliver unless the whole community, including both government and industry, is able to make the necessary shifts in behaviors, organizations, and business processes. What we have seen in a cross-cutting sample of organic participation in Performance-Based Life Cycle Product Support strategies is that organics can effectively and aggressively participate.

We have included organic examples from each of the Components, and have taken care to include programs from a spectrum of commercial companies, including Pratt & Whitney, General Electric, Raytheon, Northrop Grumman, and Lockheed Martin. The examples presented demonstrate that, regardless of the perceived obstacles, determined and motivated organics can identify opportunities and compete effectively and successfully. What we are now seeing in the organics is the emergence of competitive organizations, fully capable of participation not as a matter of entitlement, but as a matter of competence.

Adoption of partnership approaches on a broader scope necessarily provides impetus to the cross-fertilization of best practices between industry and the organic base. At the same time, there exists considerable core competency in the government community, particularly in human capital and infrastructure, which means that there should be cross-fertilization from the organic base to industry. In the General Electric example, we have seen the Jacksonville FRCSE moving into a new line of business, original equipment manufacture, because General Electric views the organic capabilities as more cost effective than its own.

The Product Support Assessment report describes a visionary agenda for structural change to facilitate a more integrated industrial base. In fact, it recommends that DoD “Propose modifications to Title 10 to enable maximum implementation of industrial integration.” The report then elaborates:

“A rethinking of the nature of partnership includes statutory requirements and issues which may impede effective and affordable implementation of a Warfighter-based product support strategy. A more consistent approach to financial rules and incentives, putting organic and commercial organizations on equal footing, will inevitably lead to more predictable results. Revised or new statutory requirements should do three things:

- Propose a strategy for enabling, requiring, and monitoring the ability of the Department of Defense supply chain offices and industrial activities to produce performance-driven outcomes and meet materiel readiness goals with respect to availability, reliability, total ownership cost, and repair cycle time.
- Enable industry investment in DoD’s industrial and other product support activities by submitting a legislative change to modify the government ownership requirement of depot and other support equipment and facilities used in support of core capabilities.
- Establish reporting constructs to stimulate financial and cost reporting equivalency (i.e., comparable) between industry and the government and require cost transparency

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to the greatest extent possible while respecting the need to protect competition sensitive information.”⁹

As we have illustrated through the case studies in this report, there is an active and vibrant community across the Defense Industrial Base that is already bringing the vision of the Product Support Assessment Report to life. The initiatives proposed in the report would serve as a catalyst to the community current success.

The report also recommends, “Establish policy and training to expand partnering ‘beyond maintenance,’ drive standardization across Services, and promote proactive establishment of single-source repair capability.” As we have seen in this report, there is ample opportunity and proven best practice available to fuel this effort in the organic structure.

How to interpret and apply the examples presented in this report is subjective, but within the context of establishing policy and training, driving standardization, and promoting single-source repair capability there are specific actions possible.

- Train leadership levels in the organics on how to apply the critical success factors uncovered at Huntsville, and demonstrate their linkage to PBL.
- Highlight the ability of the organics to make use of incentives paid to hourly workers, and demonstrate how to align that with outcome-based product support strategies.
- Make visible the proven utility and legality of FFP contract approaches at the depots.
- Train the organics in identifying their core competencies, and establish business plans to grow, manage, and market these capabilities across programs and Components.
- Develop case studies on taking a portfolio approach to depot standup, and build single-source repair capability from the ground up, incrementally.
- Promote the long-term success of the Joint Stars program, to demonstrate that hybrid approaches utilizing long-term contracts can be successful.
- Provide guidelines and training to appropriate organic organizations on the business opportunities available if core capabilities as a PSI for supply chain integration are developed and marketed.
- Work directly with the leadership at DLA to develop a business strategy for the organization that promotes horizontal integration across the Services and develops DLA’s position as a channel master, while remaining the flexibility to tailor to meet specific customer requirements.
- Support the development of training materials and case studies at DAU based on the organic successes documented in this report.
- Create virtual business offices for each Service, a mechanism to promote standardization while leaving the resources resident in the individual commands.
- Continue to drive for the adoption of performance-based product support across the enterprise, and use the examples in the report to demonstrate the opportunity that this approach provides for the organic base.

There are success enablers for organic participation in performance-based life cycle product support strategies. It’s time to spread the knowledge.

⁹ DoD Weapon Systems Acquisition Reform Product Support Assessment, November 2009, p. 45.