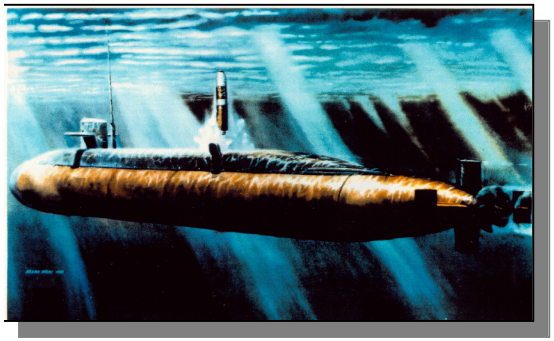
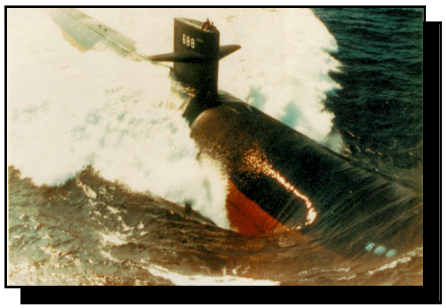


A Discussion of Lifetime Support Concepts

May 26, 2000

Joe Grosson
Lockheed Martin
Naval Electronics & Surveillance Systems



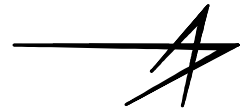
A TOTAL TRANSFORMATION OF THE DoD LOGISTICS SYSTEM

Jacques S. Gansler
Under Secretary of Defense for Acquisition and Technology

- **Current Systems**
  - **Consume over $80 billion annually**
  - **Secondary item inventory of $65 billion**
  - **Utilizes approximately ½ total DoD manpower (2 times more military logistics personnel than active duty combat personnel)**
  - **Average order-to-receipt time 36 days**
  - **Inventory management costs of 3.5 billion per year**
  - **Management systems maintenance costs of $1.8 billion per year**

- **Needed Industry Participation**
  - **Expanded use of "prime vendor" agreements**
  - **Reengineering of logistics data management**
  - **Focus efforts on selected, high-payoff segments of supply chain that directly impact customer service and visibility**

Policy Statements on Contractor Provided Lifetime Support



". . . Ability to Fund O&S at the Amounts Necessary to Ensure High Levels of Readiness and Sustainability . . . Will Depend On Changes to the Way We Do Business and the Overall Level of Resources Dedicated to Naval Forces." (Department of the Navy FY1999 Budget)

"Contractor Logistics Support Is Being Applied Essentially to All New Weapon Systems and Major Equipment Except Where Military Requirements or "Best Value Analyses" Dictate Organic Support Is More Appropriate." Deputy USD (Logistics), 1998 Edition DOD Logistics Strategic Plan

"Navy will competitively select long-term partners who best tailor their support to fleet customer needs. The focus will shift more towards total outcomes, such as the cost effectiveness of levels of readiness and operational availability". "Product Support for the 21st Century" (OSD Section 912 Report - Product Support Reengineering Implementation Team)

"Support concepts for new and modified systems shall maximize the use of contractor provided, long-term, total life-cycle logistics support." (DOD 5000.2-R (3.3.9 Source of Support)

SEC DEF Report to Congress, 1 April 1998

- *We continue to spend too much on infrastructure at the expense of equipping our forces*
- *Vision is …smaller and fewer organizations … focused on the total cost of ownership*
- *Focus on managing suppliers rather than supplies*
- *The time is right to re-engineer and modernize product support*
- *Maintenance of inventories will undergo dramatic change as contractors will retain most inventories*
- *All of this depends on modern information systems and rapid transportation and supply*
- *DOD can consign existing inventory to the contractor, allowing the contractor to manage its gradual reduction*
- *We must enable modernization of our systems through the maintenance process*
- *More managers and leaders, and less hands-on doers*
- *Promote the use of Performance Based Requirements*

Government Policy Has Changed the Lifetime Support Paradigm

The Business Perspective

The NAVY Lifetime Support Market Is an Important Challenge for Lockheed Martin as our Systems are on:

- ***116 Surface Combatants***
- ***60 Attack Submarines***
- ***18 SSBN Submarines***
- ***221 P3 and 139 S3 Aircraft***
- ***F/A-18: 440 NITE Hawk Pods***
- ***H-60s, Aircraft Carriers, Surveillance Systems, DSRVs, SEASHADOW, ...***

~70% of TOC

- ***Manpower & Training***
- ***Inventory, Consumption, Maintenance, Sustainment***
- ***Fleet Operations***
- ***Overhaul***
- ***POL, Tech Doc***

Navy Will Spend Over $200B In the Next 10 Years

$10B to $20B Could be Saved through Aggressive Implementation of Prime Vendor Support

The DOD Market is Over Three Times this Size

Questions to Ponder Before Discussing LTS

- Has Industry ever been incentivized to Reduce TOC?
- Has either the Government or Industry ever been incentivized to prevent or eliminate unnecessary infrastructure?
- Can TOC be reduced if systems engineering is performed before deployment but management of parts is done after deployment?
- Can TOC be reduced without direct interaction with the Fleet or Military Units in the Field, vice through the SYSCOM middle man?
- Will TOC Reduction Initiatives be truly effective without intra-corporate implementation?
- In a COTS intensive system, can only the Prime Contractor perform lifetime support?
- SURGE - what is it and why is it important?
- Best Practices (Design to Value, IPDE, SCM, …)
- The Quest for MFOP - The Ultimate Objective and Why
- Power by the Hour - Structuring the Contract and Wherewithal for Reinvestment
- Public Provider Subcontracting - Why it Can't Work

30% of LCC
- R&D
- Production
- Modernization

+

Linked Indirect - Other Costs
- Common Support System/Items
- Infrastructure Mgmt & Operation
- Tech Base
- Central Logistics, C3, Environmental Support
- Real Property Mgmt, Family Housing
- Working Capital Fund
- T&E
- Navy Management Hierarchy

+

70% of LCC
- Manpower & Training
- Inventory, Consumption, Maintenance, Sustainment
- Fleet Operations
- Overhaul
- POL, Tech Doc

Navy Total Ownership Cost Components

Acquisition

PEO Supporting Infrastructure
SYSCOM Acq. Mgr., PARMs, & Support Matrix
- SYSCOMs
- Warfare Centers
- NAVSUP, Field Activities, NAVICP
- SPAWAR & SSC

- R&D
- Production
- Modernization

Operations

OPTAR

- MP&T
- Fleet Support
- Training
- MILCON
- Working Capital Fund

Sustainment

Fleet Support Infrastructure
- NAVSUP/NAVICP/ISEA
- CNET/CNTT
- BUPERS/NPRDC
- NAVFAC
- DLA
- Shipyards

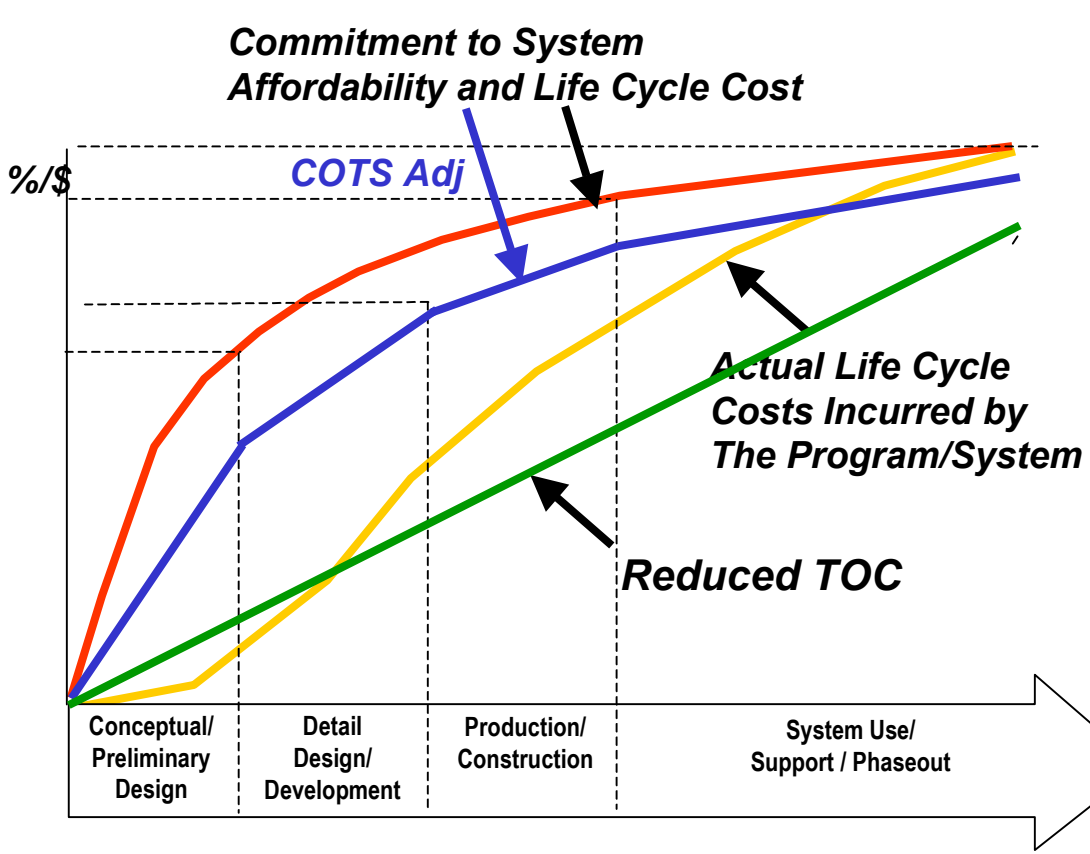
CNO (Resource Sponsors)
- N1 Personnel
- N7 Training
- N8 Platform/Warfare
- N4 Logistics

SECNAV
- ASN RD&A
- ASN MR&A

Tech Base & Lab Support (Unlinked Indirect)

What's TOC?

The Prime System Integrator Drives Supportability



TOC = f(Reliability, Open Architecture, Technology Refresh)

Reliability Investment Reduces

- *Maintenance*
- *Spares/Inventory*
- *Training*
- *Manning*
- *Technical Documentation/CM*
- *Support Infrastructure*

Open Architecture =

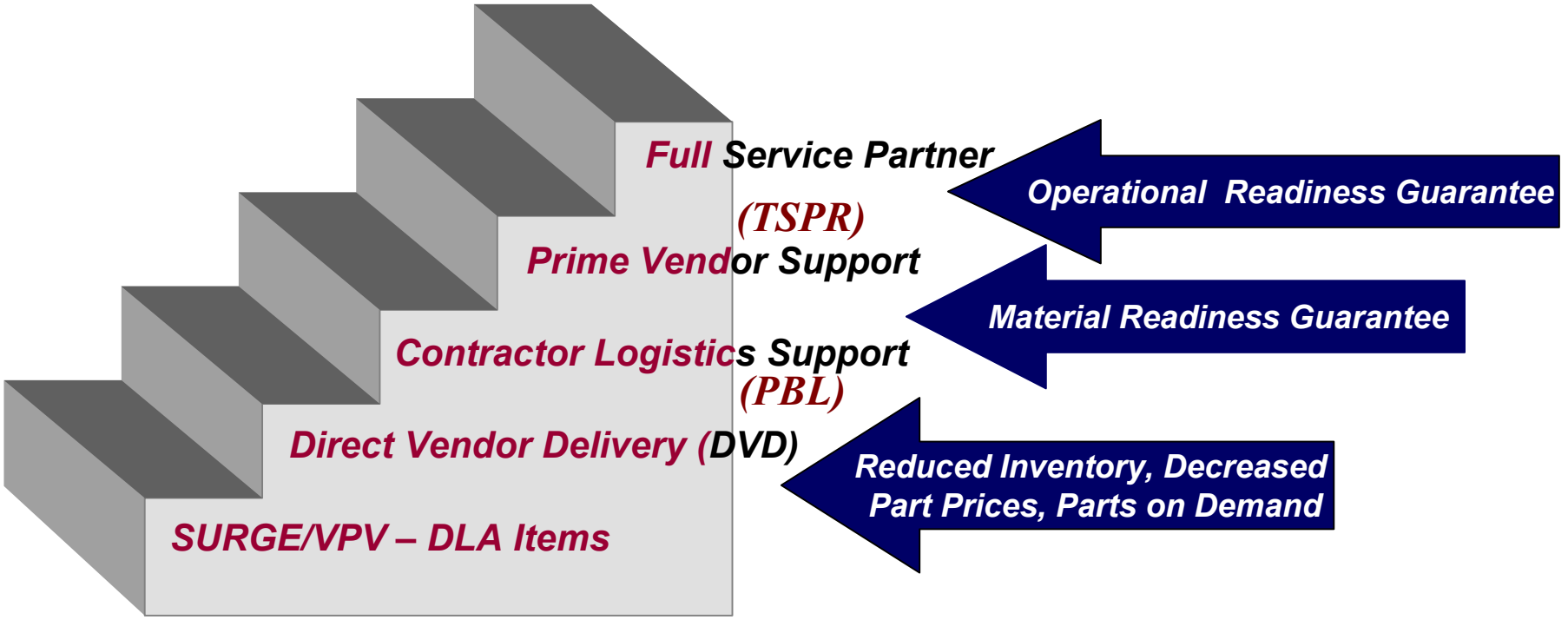
- *Upgradability/Adaptability*
- *Software Portability*

Technology Refresh =

- *Increased Performance*
- *Continuous Reliability Improvement*

Early New & Modernization Program Decisions = Greater TOC Savings

Levels to Full Service Contracting



Walking the Staircase Mitigates Risk - but Services are Interested in PVS

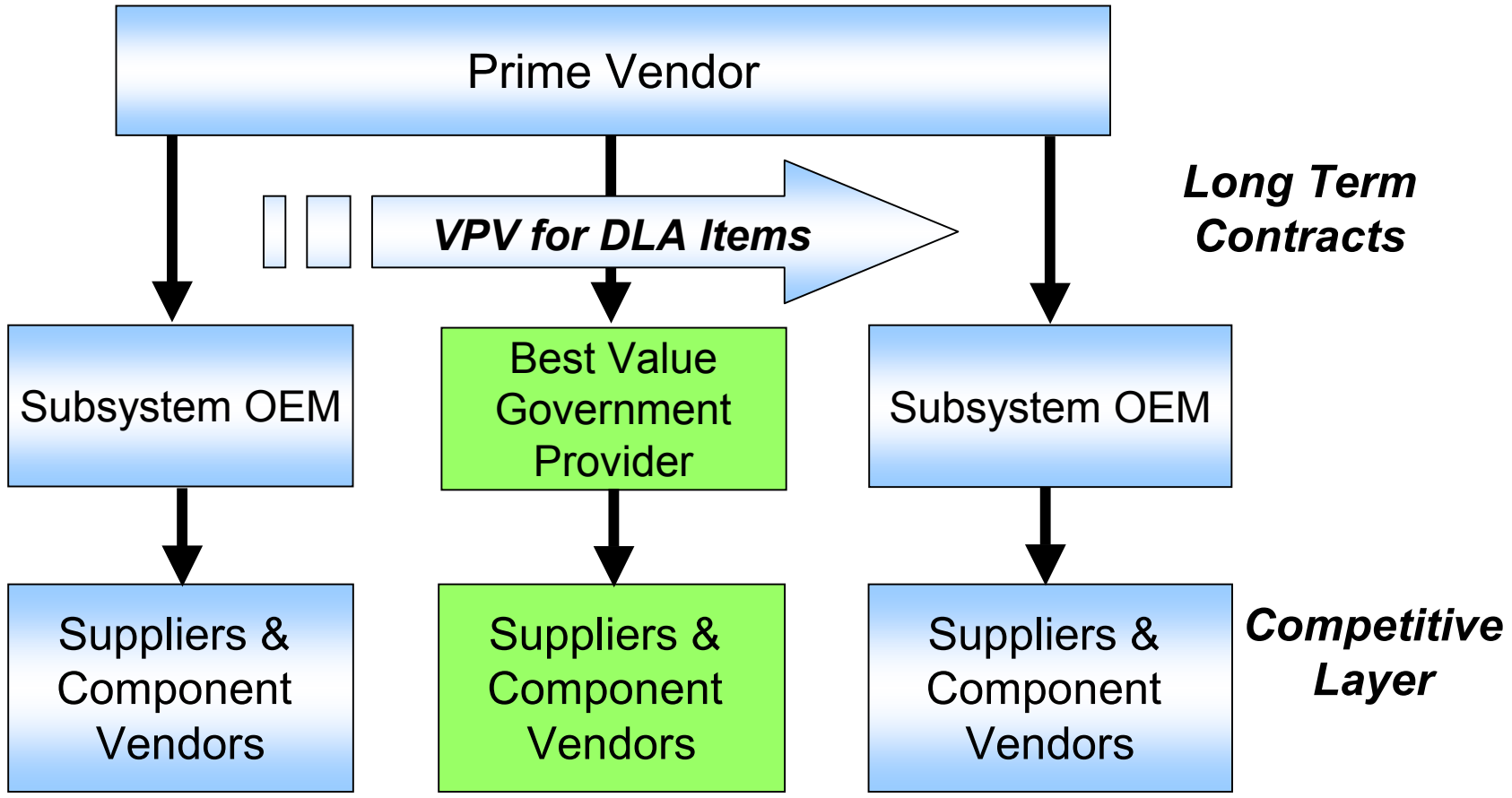
Full Service Contracting
(or Prime Vendor Support)

- It's not only **Support**;
- It's not only
- It is: the integration of **planning** (refresh, modernization, Operating Cycles, …) **implementation** (includes system engineering, design and production) and **support processes** from design to disposal of the system.

Major Components of PVS:

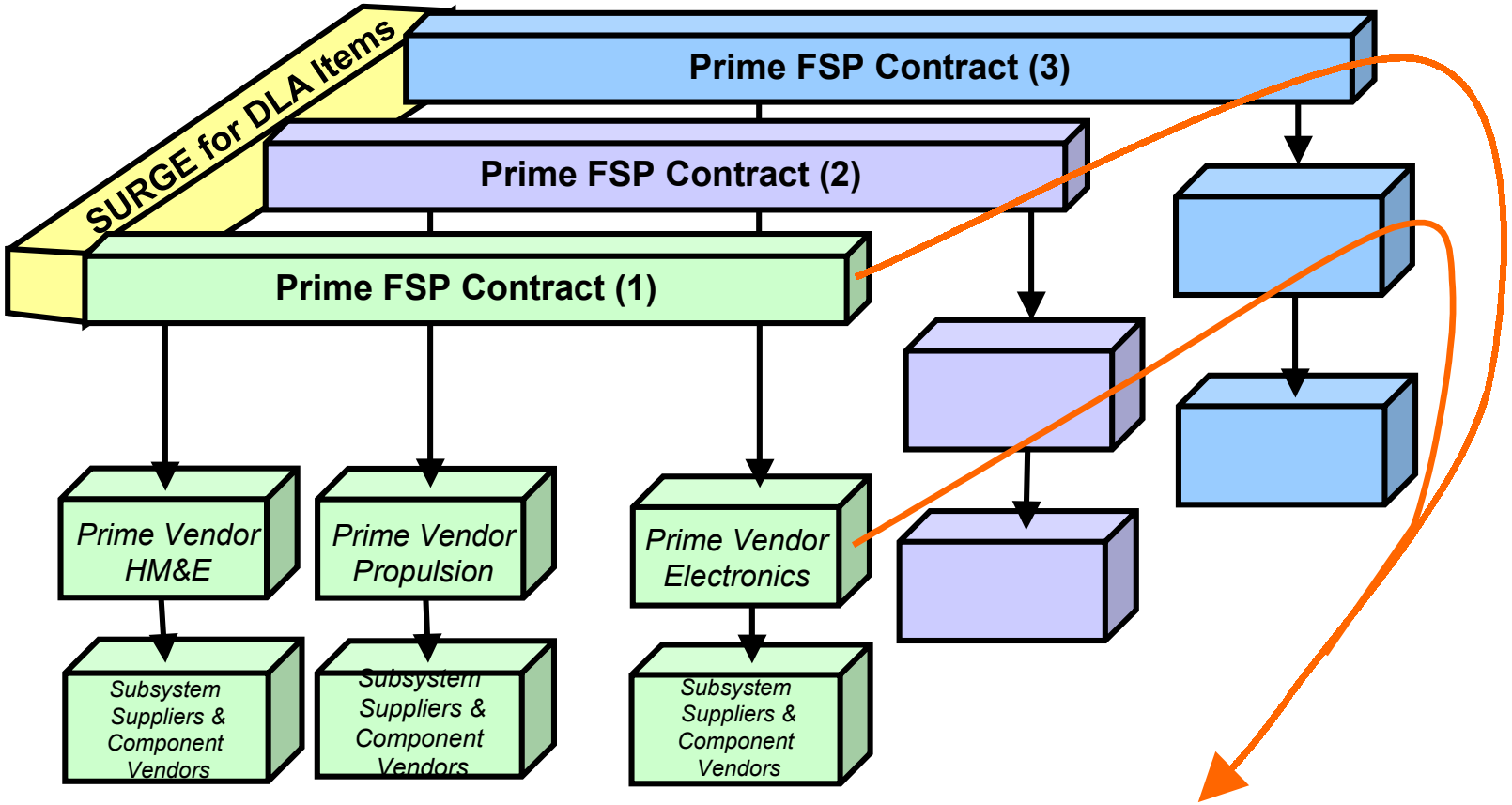
- Traditional Industry Prime Contractor Responsibilities:
  - design, production, modernization, etc.
- Traditional Government In-Service Engineering Activity Functions
  - reengineered and performed by Industry
- Waterfront or Field Support
  - maintenance, repair and assistance
- Depot and Warehousing
- Supply Support
- Training

Notional Prime Vendor Structure



Contractor Hierarchy with a Single Accountable Prime

The Third Dimension - Depth, Across Platforms and Systems, Multiplies the Value Impact of Changes



TOC Reduction Across Systems Drives Commonality and Transportability

Components Architecture Software Networks Support Systems & Processes

Prime Vendor Support

A **life-cycle acquisition strategy for**:

- Government partnering with a contractor (or contractor collaboration): Trust, Collaboration, Open Communication, IPTs, Risk Sharing
- Industry fully performing or deeply integrated into the life cycle process and involved with development, engineering, production, delivery, training, sustainment, supply, maintenance, disposal and support functions
- Outsourcing all or the majority of these elements, with contract incentives to:
  - ***minimize total ownership costs***
  - ***provide continuous modernization through technology refreshment and insertion***
  - ***sustain high levels of readiness in both peace and times of conflict***
  - ***Mitigate government risk through provision of System Level Availability and Material Readiness Warrantees.***

Prime Vendor Support
-What Else?

Total System Support
- Item Management
- Transportation
- Configuration Authority
- Obsolescence Management
- Product Improvement
- Long-Term Contracting
- Single-Focus Accountability

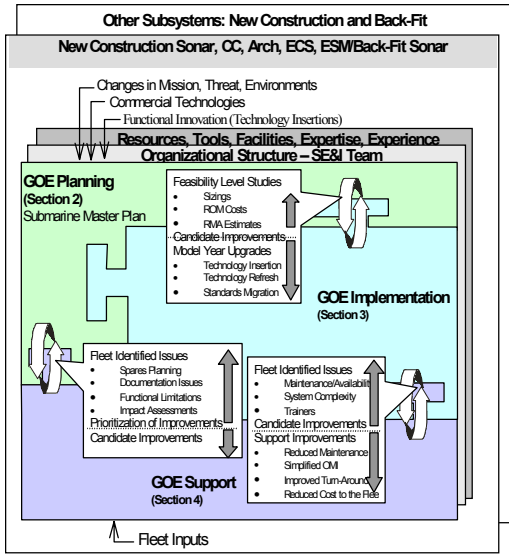
Government Benefits
- Lower TOC
- Continuous Upgrades & Modernization
- Single-Point Accountability
- Performance-Based Contracting

Contractor Benefits
- Leverage Multiple-year Contracts
- Predictable Business Provides Wherewithal for Investment
- Long-Term Parts & Services Management
- Quick Design Change Action
- Simplified, Efficient Contracting
- Proactive Obsolescence Control

Guaranteed Operational Effectiveness

What is GOE?

- Prime Vendor Support
- Figure of Merit, and Metrics to measure success
- Annual (or Periodic) Planned System Upgrades and/or Tech Refresh)
- Managing the Entire Trade-Space, from Specification to Design, and through Disposal - Shift from "Stove-Pipe" Optimization



PVS - Focus on TOC Reduction

- *DOD Focus on **Reduction in Total Ownership Cost demands a new look** at how Lifetime Support is performed and Conducted*
- As a basic planning factor, **Every element of redundant cost needs to be identified** and ferreted out.
  - Do not replicate expensive industrial capability: for development, production or operational support
  - Replace layers of review with hard performance incentives imposed upon system integrators
  - Reengineer Processes: e.g., A Performance Incentivized Prime Vendor, offering a Fleet Readiness Warrantee, out of necessity maintains his own CM process
  - Use the Best Value Performer regardless if it is a government or industrial organization

PVS - Focus on TOC Reduction

- **System design must reduce lifecycle cost drivers**
  - maintenance free operating periods (invest up front to save throughout the system life)
  - remote diagnostics
  - reduced manning
  - innovative ways to train
  - Systems Level Availability - not sub-optimized at the component level

The COTS Impact

- **COTS** content in tactical systems represents the need for a **new paradigm in support philosophies**:
  - Demand Forecasting techniques linked to commercial refresh points dramatically changes the way that inventory management is performed and system upgrades are planned
  - Continuous COTS refreshment couples cost deflation with capability growth
  - Management of the COTS supplier base must be robust and intense; care to avoid DMS
  - COTS refresh requires a new level of configuration management and hot-box testing. Before refresh can be accomplished, the system level impact must be tested.

PVS - Focus on TOC Reduction

- By **integrating production and support** through reengineering of processes, cost efficiencies can result throughout the entire lifecycle:
  - integration of production parts into the repair & return process to decrease inventory
  - Government not responsible for inventory investment in an environment of continuous change
  - Responsive Grouped Enterprise philosophy for buying both production & replacement items
  - Expanded EDMs used for development, testing and training
- **Doing Things Differently:**
  - Repair & Return of Expensive Consumables - save $
  - EC/EDI: Prime to OEM/Vendor/Government - faster
  - Visibility through IDE vice Review & Approval - less infrastructure

Statutory Compliance

Compliance is Necessary -

- **Competition (CICA):**
  - **Compete for the Basic SI Contract**
  - **Specific Incentives for the PV to maintain competition in the Industrial Base with traditional set-asides**
- **Section 346 of FY 00 Authorization Act Regarding Prime Vendor Contracts for Depot-Level Maintenance & Repair:**
- **Statutory Requirements:**
  - **Core Logistics**
  - **Notice to Congress**
  - **Depot Level Maintenance**
  - **Depot Contracting Out**

Structuring the PVS Contract

- Business Strategy Objectives
  - Reduce Cost of Ownership over time based on negotiated price curve
  - Motivate contractor investment for improvements
  - Structure to allow ROI
  - Evolve from Cost Reimbursable to FFP Incentive
    - hybrid-transitioning CLINs;
    - Initially: FFP, CP and T&M
    - Eventually transition entire Contract to FFP based upon a set of metrics
    - Award Term Provisions Could be Included
  - Periods of Performance Must be Long Term
  - The proper Contract Incentives and Risk Mitigation Infrastructure should be designed to Assure Success
  - Focus should be Cross-Platform; and Cross-Service when practicable, and on
  - Managing a Robust Competitive Industrial Base

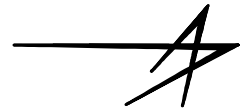
Army Apache PVS and Navy H-60 PBL

Characteristic	Apache PVS	H-60 PBL
Objective	*Reduced O&S costs; Modernization*	*Reduced O&S costs; Enhanced Readiness*
Acquisition Path	*Sole Source; Contract negotiations complete*	*Competitive; Awaiting draft RFP/SOW*
Contracting Agency	*AMC/AMCOM*	*NAVICP*
Envisioned Contract Type	*FFP/Cost per flight hour/ No hassle warranty*	*FFP/Cost per Flight Hour*
Funding	*Army Working Capital Fund; Potential surcharge relief*	*Navy Working Capital Fund; Tailored surcharge*
A-76 Requirement	*May apply*	*Not required per NAVICP*
Industry Team	*50-50 JV: LM M&FC/Boeing (Team Apache Systems)*	*50-50 JV: LMFS/Sikorsky (Maritime Helo Support Co)*
Depot Caucus Support	*Garnered thru Rep Ortiz/LTG Kern/CCAD union mtg*	*PMA to brief Rep Ortiz' staff week of 4/24/00*

Comparing Team Apache Systems with LM NE&SS Guaranteed Operational Effectiveness

TEAM APACHE SYSTEMS	GUARANTEED OPERATIONAL EFFECTIVENESS
– Primarily O&S and material oriented – Leverages on-site tech reps (TASERS) to provide assistance – Changes that expand the performance envelope of the system are not allowed – Reduces O&S cost through incentives that increase reliability and improve supply chain metrics	– A more holistic systems engineering approach that holds the Prime Integrator accountable for the Ownership Cost of the system – design freedom to optimize from a TOC perspective, providing the performance parameters are met – includes proposing re-engineering the support infrastructure processes where applicable
Saves O&S Costs A Support Solution	***Saves Ownership Costs A Systems Engineering Solution***

GOE versus TAS



Greater Ownership Cost Reduction through:

- Design Incentives for Maintenance Free Operating Periods - reduces training, manning, OBRPs, maintenance, through -
- Design to Value Trade Space Analysis throughout system life
- Eliminate Redundant Government & Industry Infrastructure
- Continuously Reengineer Support Processes
- Master planning for Tech Refresh to Coincide with Insertion for Modernization
- Leverages COTS infrastructure where-ever possible
- Training/Technical Manuals - capitalize on COTS courseware and web-enabled IETM
- Maintenance -- Organic Repair Depots are not required
- Supply Chain -- Similar
- TASERs versus Certified Maintenance Technicians - Similar
- Contract -- Similar; Performance by the Hour Type; multiple incentives; long term

Summary - What Does PVS Mean to the Government and Industry?

- To The Customer
  - –Reduced Total Ownership Costs (TOC)
    - Leveraging Commonality
    - Executing Technology Refreshment
    - Exploiting Commercial OEM Support Infrastructure
  - –System Infrastructure Performance Improvements Facilitate Functional Upgrades
  - –Elimination of Obsolescence
  - –Guaranteed Operational Availability
- To Industry
  - –Strategic Discriminator as a System Integrator
  - –Expanded Business Base
    - Technology Refresh and Insertion Planning
    - Management of Spares, Spares Inventory, and Repairs
  - –Uniform Resource Planning - Eliminates Large Shifts in the Manning Profile to Re-Design for Obsolescence

Back-Ups

Obstacles

- Lack of an Accountable Focal Point for Coordinating TOC Reduction Causes Sub-optimized Cost Decisions
- DOD Inability to Quantify TOC Makes it Difficult for Industry to Determine Total Cost Savings and Perform Business Case Analyses
- Depot Caucus Influence on Business Decisions Implies: “Don’t Privatize if Government Jobs are in any way impacted.”
- A76 and Price Competition:
  - A76 Waiver Request is Very Difficult
  - Uneven Playing Field
  - Flexible Ground Rules
- DOD Contracting Organizations Unfamiliar with LTS

Obstacles

- Industry Inventory Management and Depot Operation, despite Substantial Cost Savings, are hard to implement because of impact on Working Capital Fund
- Unwillingness by Government to Invest Up-front to Effect Real TOC Savings throughout System Life; Industry expected to Pay Entire Investment Cost and also accept Cost-Savings Incentives
- Interpretation of Statutes Precludes Industry-Like Contracting when Subcontracting to Government Organizations. While Public-Private Partnerships are desired, they won't work well if the government partner cannot be held accountable for performance and schedule