



U.S. Department of Defense
Office of the Secretary of Defense

Open Systems Architecture and Data Rights Overview



DOD OPEN ARCHITECTURE TEAM

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Agenda

- **Background**
- **What are Open Systems Architectures (OSA)?**
- **What are Data Rights?**
- **Why are OSA and Data Rights Important?**
- **Best Time to Acquire Data Rights**
- **Types of Data Rights**
- **Data Rights and the Life Cycle**
- **Approach to Developing a Business Case**
- **OSA Contract Guidebook for PM's**
- **Summary**

Open Systems Architecture – A Means to an End

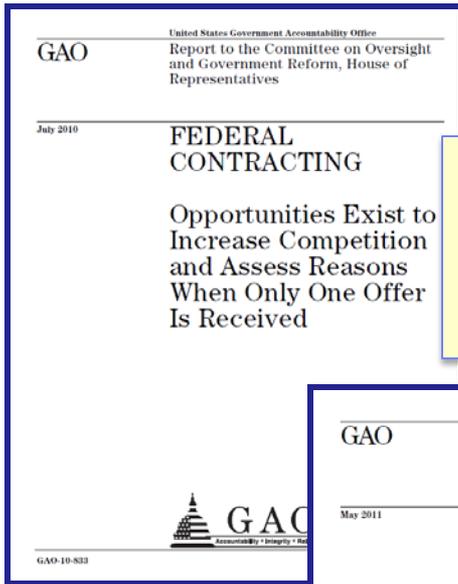
- We all want the best possible value to the warfighter
- Competition is a powerful tool to get the best deal from industry.
- Open Systems Architecture provides the framework for how to decompose a system into components that can be competed.
- The Government must have the right information to compete
 - Design documentation, interfaces, tools, etc.
 - Information that can be shared with others
- Competition is only valuable if the incumbent has a risk of loosing
 - We reduce the risk that a new player can win and execute
 - Many examples of programs doing it successfully
 - Industry must believe that the threat is real – not a paper drill

Nuanced understand on how to level the playing field so that we can risk-prudently award to a non-incumbent.

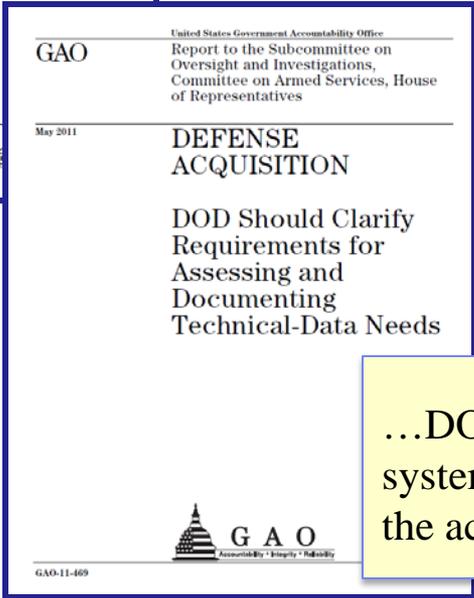
What are Open Systems Architectures?

- **Definition- Open Architecture:** A technical architecture that adopts open standards supporting a modular, loosely coupled and highly cohesive system structure that includes publishing of key interfaces within the system and full design disclosure
- **Tenets of a Successful Open System Architecture yield modular, interoperable systems allowing components to be...**
 - Added
 - Modified
 - Replaced
 - Removed
 - Supported
 -by different vendors throughout the life cycle in order to drive opportunities for enhanced competition and innovation.

Background...Problem as Identified in GAO Reports



Most of the contracting and program officials at DoD that we spoke with pointed to the **lack of access to technical data** as one of the main **barriers to competition**



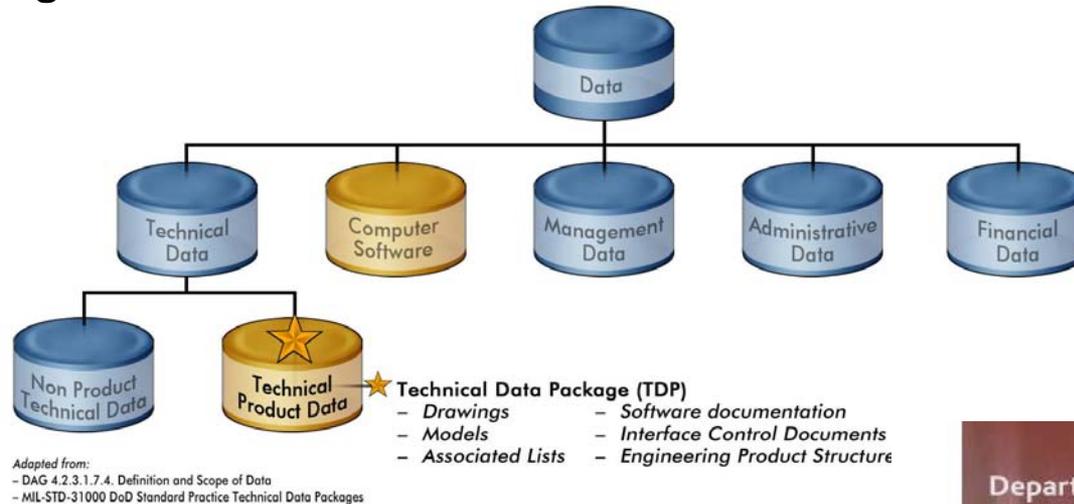
...DOD **needs access to technical data** related to its weapon systems in order to **control costs and maintain flexibility** in the acquisition and sustainment of those weapon systems

US Law and DOD Guidance...Not New, Renewed Emphasis

Law, Policy, Guidance	Relevant Text
<p>2320. Rights in Technical Data</p>	<p>Assess the long-term technical data needs of such systems and subsystems and establish corresponding acquisition strategies that provide for technical data rights needed to sustain such systems and subsystems over their life cycle.</p>
<p>DODI 5000.02 Operation of the Defense Acquisition System</p>	<p>Program Managers for ACAT I and II programs, regardless of planned sustainment approach ... shall assess the data required to design, manufacture, and sustain the system, as well as to support re-competition for production, sustainment, or upgrades.</p>
<p>Implementation Directive for Better Buying Power</p>	<p>The business case analysis will outline the open systems architecture approach, combined with technical data rights the government will</p>
<p>Implementation Directive for Better Buying Power Dr. Ashton B. Carter, Under Secretary of Defense for Acquisition, Technology & Logistics</p>	<p>The business case analysis will outline the open systems architecture approach, combined with technical data rights the government will pursue in order to ensure a lifetime consideration of competition in the acquisition of weapon systems.</p>

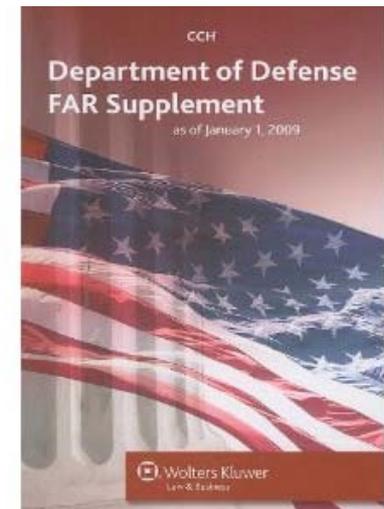
What are Data Rights?

- Data rights are rights granted to the Government for technical data and computer software

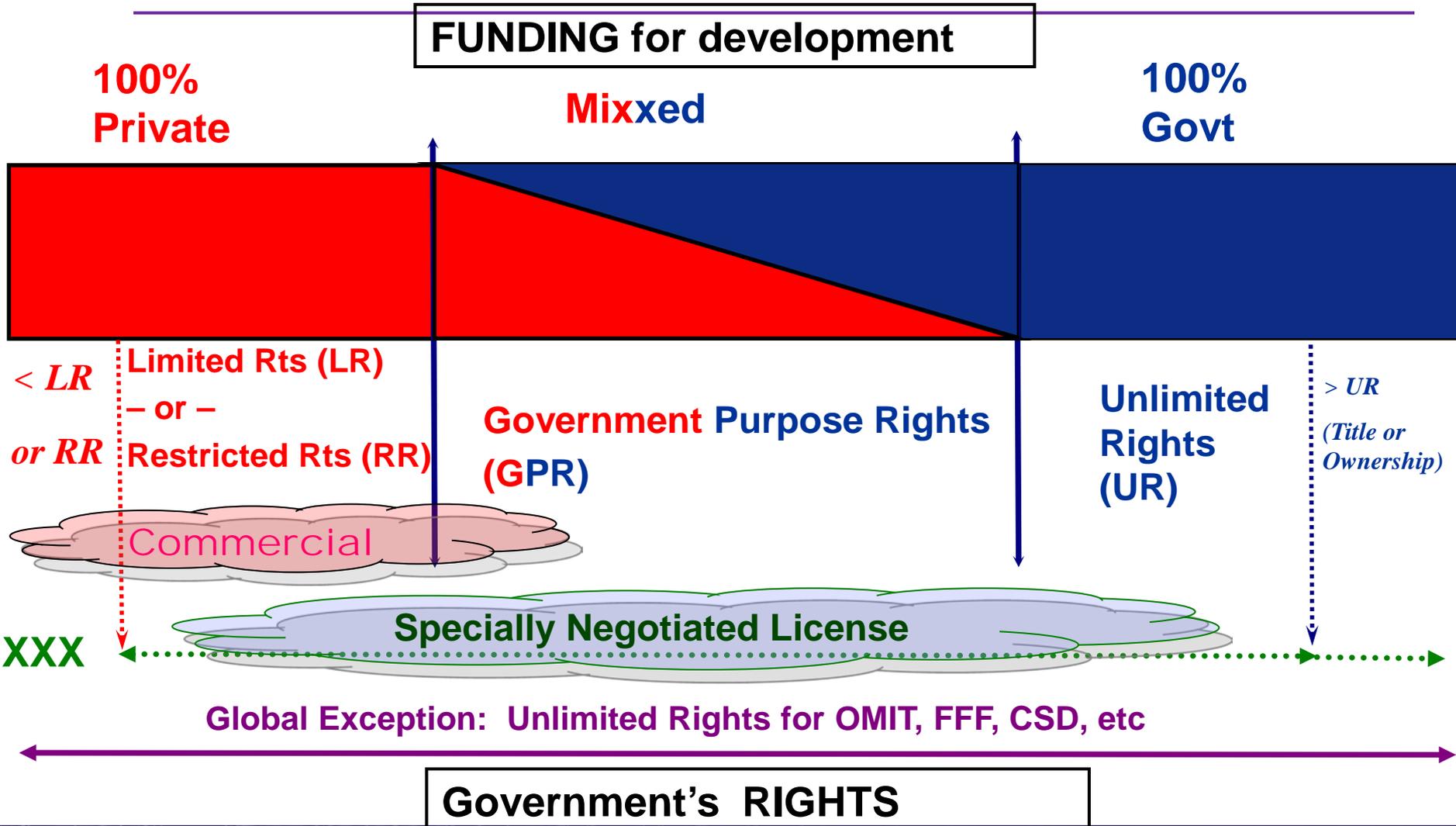


- **Defense Federal Acq Regulations Supplement (DFARS):**

- Rights granted to the Govt depend on the nature of the data (FFF,OMIT)
- Source of funding of the item, process, or computer s/w (e.g., 100% Government, 100% private, or mixed);
- Whether the Govt secured data rights through other agreements (e.g., Cooperative Research and Development Agreements).



License Rights in TD & CS



Types of Data Rights

- Unlimited Rights (UR)
- Government Purpose Rights (GPR)
- Limited Rights (LR)
- Restricted Rights (RR)
- Negotiated License Rights
- SBIR Data Rights
- Commercial TD License Rights
- Commercial CS Licenses

**Better Buying Power:
Understanding and Leveraging
Intellectual Property Rights in
DoD Acquisitions**



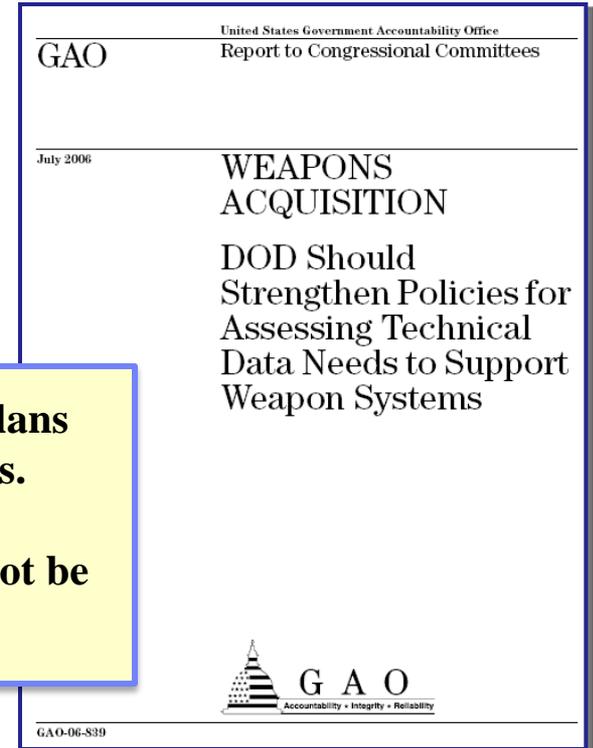
*Prepared by the
Department of Defense Open Architecture Team*

Why are OSA/Data Rights Important?

- **Data rights decisions made during the initial acquisition can have far-reaching implications over the system's life cycle:**
 - Maintain potential for competition
 - Flexibility in logistical support
- **Also, Will enable DoD to:**
 - Take advantage of emerging technologies
 - Quickly introduce new capabilities to warfighters
 - Reduce costs over the life cycle of the Program

...Services encountered limitations in sustainment plans for some fielded weapon systems...lack of data rights.

...60% of 47 non-competitive DoD contracts could not be competed...lack of access to data



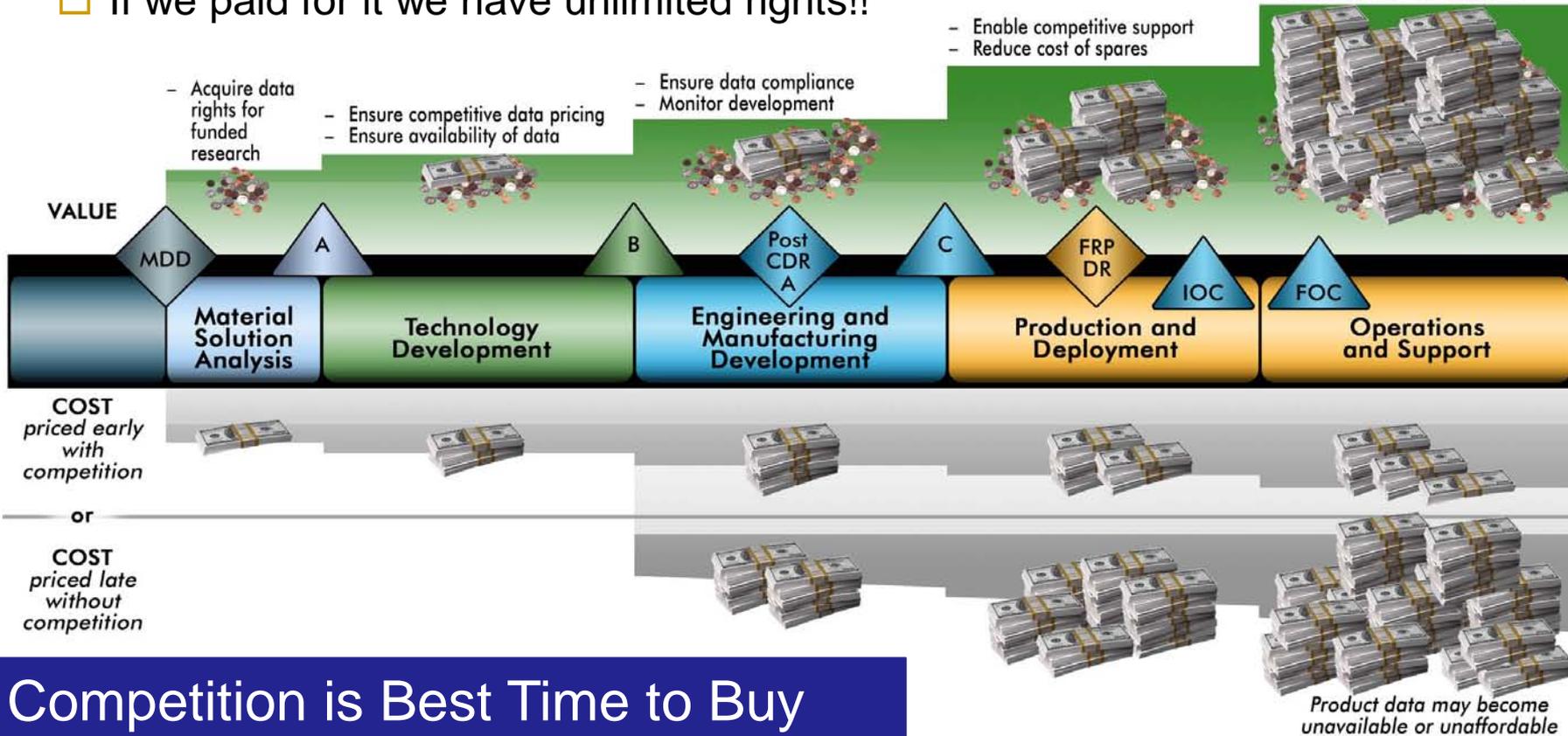
Best Time to Acquire Data Rights?

■ **Data rights – may be expensive, but in a competitive environment may be able to make a good “Business Deal”**

□ Rule of thumb for competition is a minimum savings of 10%

□ If we paid for it we have unlimited rights!!

- Enable emergency war fighter support
- Maintain critical organic support
- Maintain 50/50 organic support
- Enable competitive upgrades



Competition is Best Time to Buy

Product data may become unavailable or unaffordable

The Department is Mandating Business Case Analysis.....

- To evaluate alternatives and broaden its acquisition choices



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SEP 14 2010

Require open systems architectures and set rules for acquisition of technical data rights. At Milestone B, I will require that a business case analysis be conducted in concert with the engineering trade analysis that would outline an approach for using open systems architectures and acquiring technical data rights to ensure sustained consideration of competition in the acquisition of weapon systems.

redirection of defense budget dollars from unproductive to more productive purposes that is sought by Secretary Gates and Deputy Secretary Lynn over the next five years.

Since June, the senior leadership of the acquisition community – the Component Acquisition Executives (CAEs), senior logisticians and systems command leaders, OSD officials, and program executive officers (PEOs) and program managers (PMs) – has been meeting regularly with me to inform and craft this Guidance. We have analyzed data on the Department's practices, expenditures, and outcomes and examined various options for changing our practices. We have sought to base the spec the Department has available to it. In some cases, the Guidance makes provision for future so that unintended consequences can be detected preliminary estimates of the dollar savings are gradual, but steady and determined, progress as indeed be substantial.

Changing our business practices will require We have sought out the best ideas and initiative adopted in this Guidance. We have also sought experience in defense acquisition.



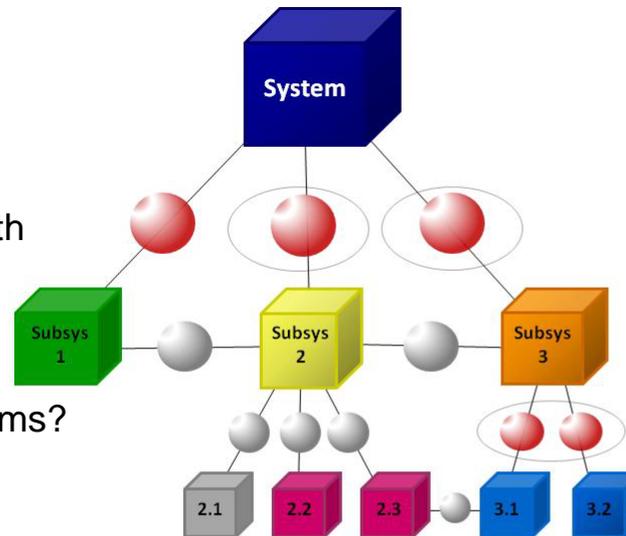
BCAs for Open Systems
- Architecture and Data Rights are now required



Approach to Developing a Business Case Analysis (BCA)...cont

■ Analyze system

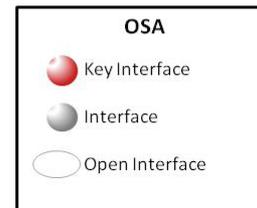
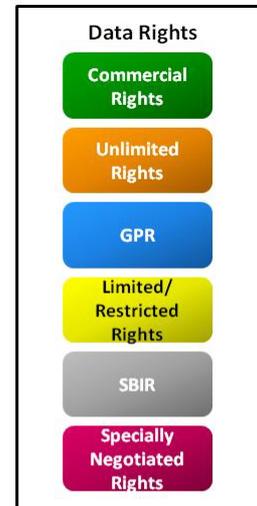
- What interfaces are open?
- Are there vendor issues?
- Does system require s/w updates with threat change?
- What s/w is imbedded?
- What rights do we have on subsystems?



■ Tools are available for BCA development

- The Open Architecture Assessment Tool (OAAT)
- Key Open Sub Systems (KOSS) tool to identify alternative states of OSA implementation
- Numerous resources from the DoD's Data Analysis Center for Software (DACs)

Subsystem	RISK TO COMPETITION/SUSTAINMENT					
	Tech Refresh	Changing Threat	Imbedded	Algorithm	Vendor Risk	Open System Architecture
Subsystem 1	Green	Green	Green	Green	Green	Green
Subsystem 2	Green	Green	Green	Green	Green	Green
2.1	Green	Green	Green	Green	Green	Green
2.2	Red	Red	Red	Red	Red	Red
2.3	Red	Red	Red	Red	Red	Red
Subsystem 3	Green	Green	Green	Green	Green	Green
3.1	Green	Green	Green	Green	Green	Green
3.2	Green	Green	Green	Green	Green	Green



A Guide and Template can Be Used to Build the BCA

- **BCA Template provides standardized process and methodology**

Open Systems Architecture (OSA)/Data Rights Business Case Analysis Guide & Templates

Version 1.14
8/9/2011

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OSA, DR and Contracting – Powerful tools for competition

- Get the right design information to 3rd parties
- The Government has rights to most data needed to compete
 - Only pay extra for what is missing
- SEWIP Sea Story
 - Early design asserting the Government's rights
 - Getting the deliverables and sharing with another program office
 - Used that data to support a full-and-open
 - Multiple cost competitive responses.
 - Awarded to the best-value offeror (non-incumbant)
 - Provided the Government rights to data that was privately funded
- The OA Contract Guidebook for Program Managers
 - Billions of dollars in contract awards
 - Compendium of best practices from across the services
 - Tools to measure how much of the guidebook is used

History of the *Contract Guidebook*

- The *Naval OA Contract Guidebook for Program Managers*, version 1.0, was released on 05 July 2006.
- Since that time, the Guidebook has gone through several iterations and updates.
- In 2010, as part of his “Better Buying Power” initiative, USD AT&L, Ashton Carter took notice of the Navy’s OA Contract Guidebook
- Dr. Carter recommended elevating the Contract Guidebook to be a Joint, DoD-level publication.
- Intended to be a living document, the next spiral of the *OSA Contract Guidebook* will incorporate feedback, lessons learned and best practices from practitioners across DoD’s acquisition community.



Introduction to the *DoD OSA Contract Guidebook*

- The Guidebook is recommended for use by all component Service Program Managers and Contracting Officers.
- For Programs incorporating OSA principles into National Security System (NSS) programs.
- The recommended language should be tailored based on Domain, PEO, or Program-specific requirements.
- The Guidebook is divided into six chapters of suggested contract language for Sections C, H, L, and M, CLINs and Incentive Plans.
- Additionally, there are 11 Appendices on various topics, including CDRLs, intellectual property rights, peer reviews, system specification language and breaking vendor lock.

Distribution Statement B - Distribution authorized to U.S. Government agencies only. Other requests must be referred to _____ of higher authority. DoD Contract Guidebook v.1.0 October 20, 2011 DRAFT

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Multiple Parallel Activities (see <https://acc.dau.mil/oa>)

- The Data Rights Brochure
- DoD Open Systems Architecture Contract Guidebook
 - See Naval OA Contract Guidebook, v2.0
- Business Case Analysis – Guide for Open Systems Architecture & Data Rights
- Update - DoD Instruction 5000.02, Encl. 12, ¶ 9
- Update – Defense Acquisition Guidebook
 - Chapters 2, 4, 5, 7, 12
- Integrate – Defense Acquisition University (DAU) course

Summary

- USD AT&L's memo of 14 Sept. 2010 requires a BCA in concert with the engineering trade analysis prior to Milestone B for OSA and data rights.
- OSA can yield modular, interoperable systems that maximize acquisition flexibility;
- Data rights decisions made during the initial acquisition of a weapon system can have far-reaching implications over the system's life cycle
- The DoD OSA-Data Rights Working Group has developed a BCA Guide and supporting templates to complete this process
- This information is available on the Government-Only website at: <https://acc.dau.mil/bbp>

Backup

Business Case Analysis - Costs

- **Acquisition costs based on the program's Data Rights Strategy**
 - What data must be acquired now?
 - What are the costs associated with each alternative examined?
 - What level of "data rights" is required now?
 - If additional rights must be acquired, what are the costs associated with each alternative examined?
- **Data maintenance and storage costs**
 - What are Govt's/contract costs of maintaining/storing data thru the life cycle?
 - What are Govt's/contract costs of monitoring/controlling data thru the life cycle?
- **Identify sources of cost data**
 - Before any milestone using a Request for Quote (RFQ)
 - At Milestones A & B as an evaluation factor in RFP
 - Benchmarking data
- **Ensure costs used are reasonable and accurate**

Benchmarking Cost Data is Limited

Business Case Analysis – Costs...OSA

- Costs associated with major components – Grouped by Hardware, Software, Middleware, and Operating Systems;
- Costs associated with varying utilization levels of COTS based Technical Interfaces, Hardware, Software, Middleware, and Operating Systems;
- Costs associated with varying utilization levels of Open Source Software (and/or reused);
- Costs associated with varying levels of insulation of the application from the O/S using Middleware;
- Costs associated with varying degrees of standardization for communications between layers;
- Costs associated with varying degrees of open, and published ICDs/APIs
- Costs of modularizing applications;
- Costs of exposing data in standardized format to network/enterprise;
- Costs associated with adherence to a common architecture across multiple programs/domains/platforms;
- Costs for the use of services (program unique services vs. cross-enterprise common services);
- Costs associated with use of commercial standards/best practices; and,
- Costs associated with pursuing evolutionary acquisition to facilitate rapid technology insertion as described in the Acquisition Strategy.

Business Case Analysis - Benefits

- **Monetary Benefits**

- Reduced costs of acquiring data during competition
- Reduced costs for life cycle support

- **Quantitative Benefits**

- Improved Schedule
- Improved Performance

- **Qualitative Benefits**

- Technology insertion
- Acquisition flexibility/choice

Business Case Analysis - Risk

- **Evaluate Risk**

- Identified Risk
- Risk Consequence
- Risk Likelihood
- Identified Actions Required/Costs to

- **Specific Risks to consider for data rights:**

- Data Access Risk
- Data Maintenance Cost Risk
- Data Storage Cost Risk
- Data Format Cost Risk
- Acquisition of Data Rights for Competitive Prototyping Contract Risk



Business Case Analysis - Findings

- **Assess the key alternatives**
- **Validate assumptions and differences across predicted outcome to**
- **Confirm results are credible and unbiased**
- **Ensure that results are “reasonable.”**
- **Identify any unexpected outcomes and reconcile differences**
- **Address uncertainty for selected alternatives**
- **BCA used by Milestone Decision Authorities and resource sponsors--
Briefly capture findings in the Executive Summary**

Recommendations for Section C Language

Section C of the Request for Proposal (RFP) and the resulting contract contains the detailed description of the products to be delivered or the work to be performed under the contract. **Recommended OA language for Section C covers topics such as:**

- Open architecture
- Modular, open design
- System requirements accountability
- Inter-component dependencies
- Modular Open Systems Approach
- Design information documentation
- Technology insertion
- Interface design and management
- Treatment of proprietary elements
- Open business practices
- Reuse of pre-existing or common items
- Third-Party Development
- Life Cycle Management and Open Systems
- Standards

Sample Language

“Open Business Practices – The contractor shall demonstrate that the modularity of the system design promotes the identification of multiple sources of supply and/or repair, and supports flexible business strategies that enhance subcontractor competition.”

Recommendations for CLINs

Recommended OA language for CLINs covers topics such as:

UNDER DEVELOPMENT

Sample Language

Section H of the RFP and the resulting contract contains special clauses that can be incorporated into contracts as appropriate. **Recommended Section H clauses for OA contracts include:**

- Requirement for an Open System Management Plan
- Early and Often Technical Disclosure
- Rights in Commercial Technical Data (TD), Commercial Computer Software (CS), and Commercial Computer Software Documentation (CSD)
- Specially Negotiated License Rights
- Special Provisions for the Purpose of Configuration Control
- Special Development Limitation Provisions

Sample Language

“Clause H: Requirement for an Open System Management Plan.

The contractor shall submit an Open System Management Plan. At minimum, the plan shall address:

Technical Approach and Processes

Open Systems Approach and Goals. The contractor shall prepare and submit for government approval its Open System Management Plan which shall include its approach for using ...”

Recommendations for Section L Language

Section L of the RFP provides proposal instructions, conditions and notices to Offerors. Offerors should be encouraged to clearly demonstrate, through their use of similar technologies previously developed, the ability to meet the design, development, testing, and production requirements of the solicitation. **Recommended OA language for Section L addresses:**

- Technical Approach and Processes
- System Compliance with DoD or Service OSA Guidance
- Management Approach
- Data Rights and Patent Rights
- OSA Past Performance

Sample Language

“Factor () Data Rights and Patent Rights ...

The Offeror shall describe its plan for making design and interface information available as soon as possible after it is defined or established. The Offeror shall establish and maintain a process that will provide ‘early and often’ design disclosure directly to the Government or to third-party contracts.”

Recommendations for Section M Language

Section M contains only recommended guidance for evaluation factors for contract award. Individual PEOs and programs can be flexible in selecting and weighting those items needed to meet their needs. **Recommended Section M evaluation factors for award of OSA contracts include:**

- Technical Approach and Processes
 - Open Systems Approach and Goals
 - Interface Design and Management
 - Treatment of Proprietary or Vendor-Unique Elements
 - Life Cycle Management and Open Systems
- System Compliance with DoD/Component Service OSA Guidance
- Management Approach
- Data Rights, Computer Software Rights and Patent Rights

Sample Language

“Factor () Management Approach:

The Offeror shall describe its approach for using Integrated Product Teams (IPTs) to improve processes, proactively manage risk and increase efficiency. The Offeror shall describe the steps it shall take to educate IPT members and others involved in the project on the importance and principles of OSA.”

Recommendations for Incentivizing Contractors

Award Fee, Incentive Fee, and Award Term plans can be used by programs to incentivize and award contractors for implementing Open Systems Architecture principles.

Incentive plans can be used to award contractors for:

- Incorporating considerations for portability, maintainability, technology insertion, vendor independence, and reusability
- Implementing a layered and modular system
- Minimizing inter-component dependencies
- Collaborating with the Government and other contractors and vendors
- Reducing development cycle time
- Using open, standards based interfaces
- Enabling rapid technology insertion

Award Terms – Instead of rewarding contractors with additional fees for exceptional performance, award term contracts reward contractors by extending the contract period of performance in the form of additional term periods added on to the basic contract.