



An Industry View



What Are We Going To Talk About



■ Preamble

- Understanding each other
- Open Architecture – An Imperative

■ What the Navy Defines as Open Architecture

- Core Principles
- Technical Conditions for OA Business Practices

■ Concept of a “Systems Integrator”

- ARCI and SWFTS
- Systems Integrator vs. Capability Provider

■ What a Notional Business Model Looks like

- Who is responsible for functions
- Role of Competition and Innovation

■ Perceptions, Challenges, and DoD Policy

■ Conclusions

Preamble



■ Open Architecture means many things to many people in both industry and Government

– Technical Perspective

- Hardware v. Software
- Modularity
- Standards

– Business Process Perspective

- Competition
- Best of Breed
- Small Business based innovation



■ OA is really about providing warfighting capability in a Network Centric Environment

- OA is critical to the timely upgrade of combat capabilities – systems that meet Navy missions
- Affordability is an important *element*, but not the only *driver*

Navy OA Enterprise Vision



Common Joint Architecture

Subj: NAVY OPEN A
5. I look forward to an



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OFFICE OF NAVAL OPERATIONS
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FORM NO. 647
AUG 28 700

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION

Subj: NAVY OPEN ARCHITECTURE

1. Although we have made considerable Open Architecture (OA) investments over the past several years, we have been holding onto traditional business models and the overall progress transitioning into OA business processes is disappointing. Having witnessed the cost-effective advantages gained through the Ansonic Rapid commercial off-the-shelf Insertion Advanced Processor Build (ARCI-APB) program, we must work together to rapidly transition open business lessons to other acquisition programs.

2. While I acknowledge ARCI-APB is neither a panacea nor a perfect form fit for every program, it provides a clear and compelling example of competitive alternatives bringing reduced costs, improved capability, and increased speed of delivery to the fleet. I need to see greater evidence of programs using continuous competition through all phases.

3. I look forward to participating in your next OA Executive Committee meeting and recommend it convene by the end of September, so we can assess how each of the Program Executive Offices is approaching open business practices for both legacy and new start programs. Specifically, I am interested in open business acquisition and contracting approaches, not technical approaches, and would like for them to address their progress in implementing the established OA principles. Specifically:

- a. Modular design and design disclosures.
- b. Reusable application software.
- c. Interoperable joint warfighting applications and secure information exchange using common services.
- d. Life-cycle affordability.
- e. Add (most importantly): Encouraging competition and collaboration through development of alternative solutions and sources.

4. For clarification, my vision for OA is not limited to systems built to a set of open standards, but rather it is focused on open business models for the acquisition and spiral development of new systems that enable multiple developers to collectively and competitively participate in cost-effective and innovative capability delivery to the Naval Enterprise.

Core Navy OA Principles

= *Modular designs*

= *Reusable application software*

= *Interoperability joint warfighting applications*

= *Life Cycle Affordability*

= *Encouraging collaboration and competition*

Necessary Pre-Condition— Break Software Dependence on Hardware

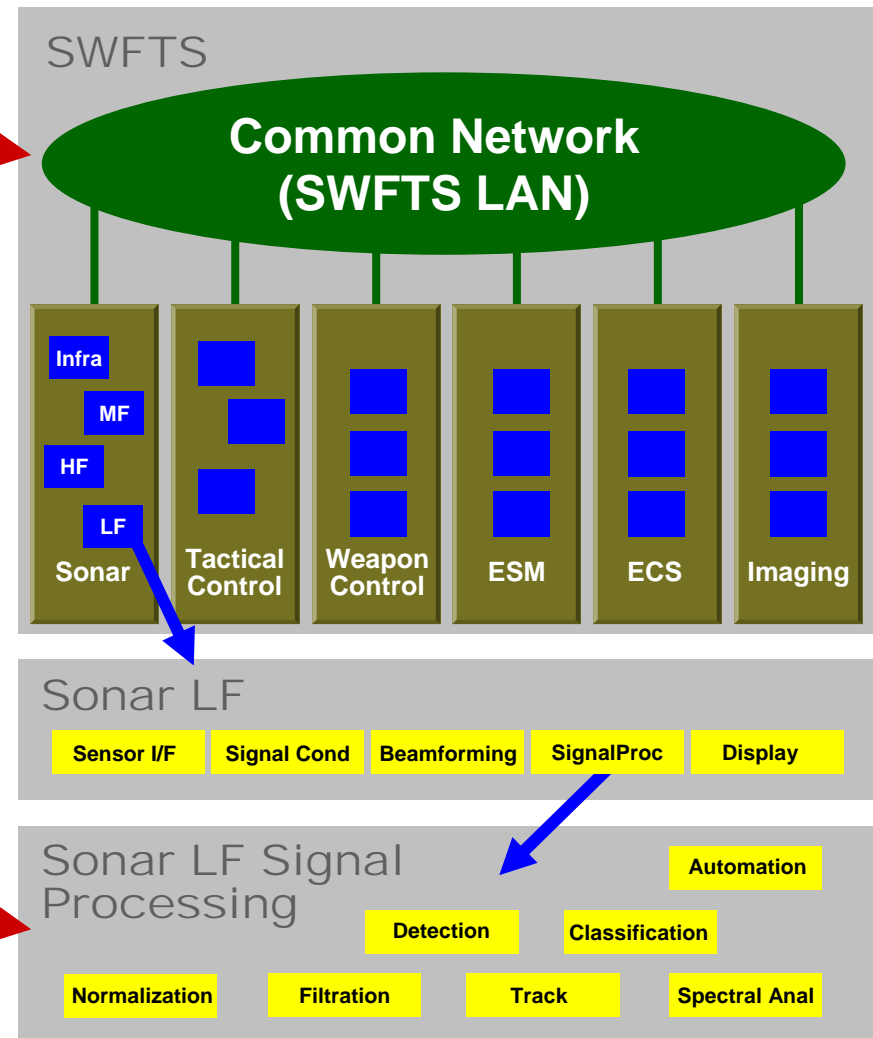
ARCI – Successful OA Model



- System Engineer and Integrator



- Robust Competition for Component Development



Supports Both Operational and Business Objectives

Systems Integrator



Three Responsibilities:

– **Systems Engineer and Design Agent**

- Manage Architectural Definition/Evolution
- Software segment interface coordination
- Technical Gap Identification
- Requirements decomposition and allocation

– **Facilitate Competitive Development Environment**

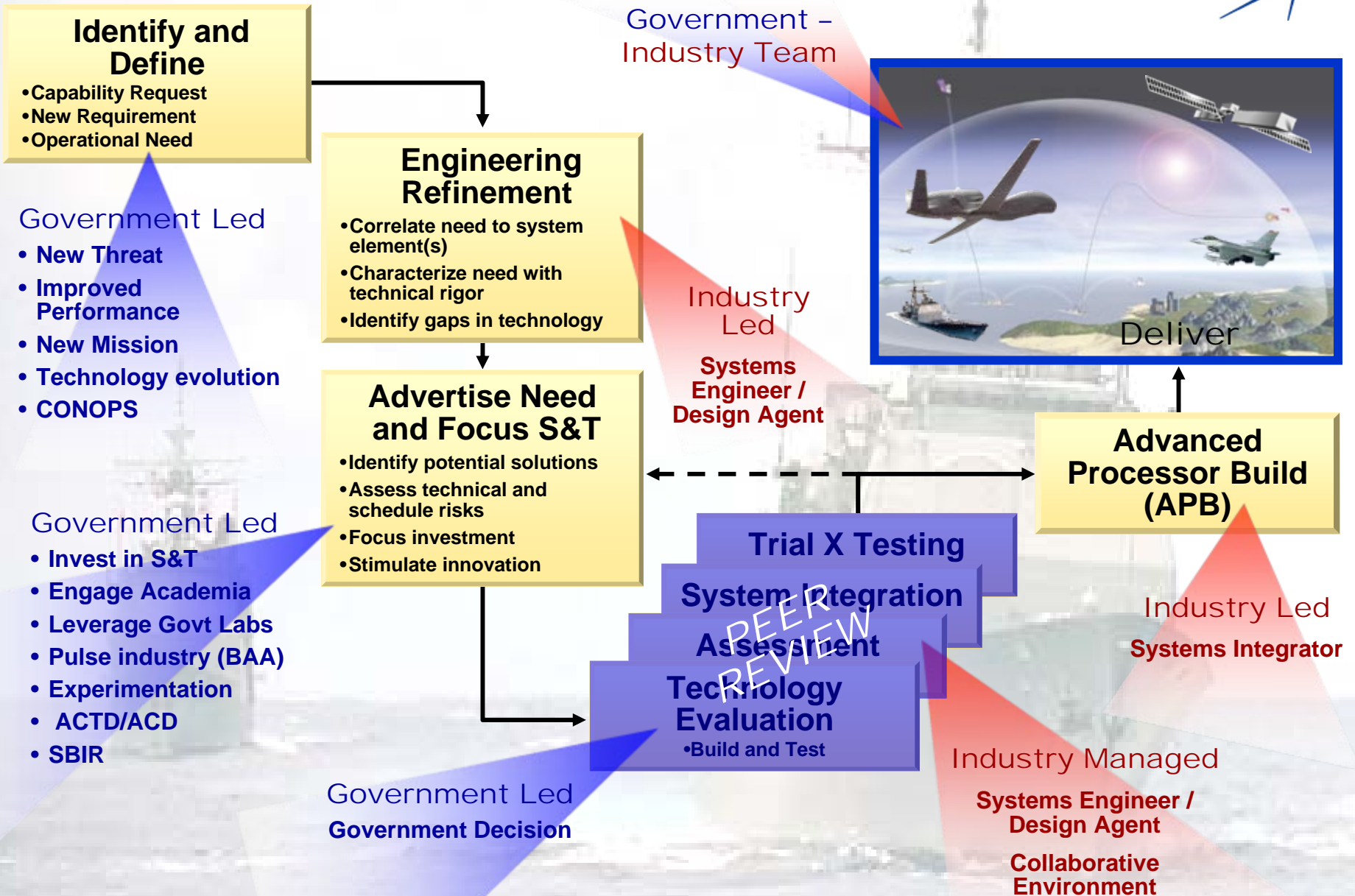
- Development infrastructure
- Peer Review Operation Support

– **Integrate “Best of Breed” Elements into System**

- Life Cycle Configuration Management
- Element, Directed, and Operational Test Support
- Technical Support to the End User

“Best of Breed” Decision - Inherently Governmental Responsibility

Business Model – Industry Perspective



Common (Mis)Perceptions



Systems Integrator must be excluded from participation in development efforts – Unfair in competitive environment

- Government leadership in Peer Review Process and Selection isolates SI from undue influence
- Exclusion potentially eliminates “Best of Breed, Best Value” Options
- Inhibits “Free Market” Access
- Competition for development work is the foundation of SI domain expertise



Common (Mis)Perceptions (Continued)



■ Maximum “Reuse” of Components is a Leading Driver

- Sensible “Reuse” is important, but **“Common”** is better
 - Reuse still requires maintenance in each separate instantiation
 - Common processing provides common results - SIAP
- Conditions should be considered
 - Where the Math Matters!
 - Large populations of Systems need the same functions and capabilities
 - Only if cost benefit is positive
 - Don’t replace existing adequate functions

■ Government Owns the Source Code and/or has Unlimited Rights if Components are produced under a Government NRE Contract

- Process must meet conditions of a “Free Market”
- Most Development Efforts include Industry Owned Intellectual Property
 - Fair Market construct must be available to recognize IP
- Industry must Recognize Government Ownership for its Contribution

Common (Mis)Perceptions (Continued)



■ Third Party Content is a Measure of How Open A System Is

- Metric should be how **quickly and affordably** a system can take third party content
- Third party content in any particular system is dependent upon:
 - How and when the system was originally developed
 - Capability upgrade requirements
 - Degree to which OA business practices have been developed and applied

■ OA Systems are, by definition, “Plug and Play”

- Modularity that allows for straight forward integration **does** reduce interface complexity and testing to a significant degree, but...
- Completely clean “plug and play” is not reasonably achievable
 - Interdependence of components not perfectly definable at interfaces
 - Systems that provide dynamic weapons control or ordnance delivery require exacting verification of functionality

Conclusions



- Industry has been listening to the U.S. Navy regarding its desire to move aggressively into OA.
 - Supported OA transformation of “capital ship” combat systems into modern OA CAT 3 condition
 - Working with the USN to define the business models and practices required to take advantage of this transformation
 - Ready to move out, however.....

- Industry cannot follow the USN into waters that do not have sufficient “free market” draft to make them navigable.
 - Loss of market space controlled by system boundary, means aperture must be opened to competition across all software based systems
 - Must strike the right balance between Government Rights and Industry IP
 - US Government must recognize the value of IP, particularly to small business
 - Acquisition policy that provides sufficient depth for all to sail

- Establishing the business model and putting the mechanisms in place to make it go, are essential for the USN to receive full benefit of its OA investment.
 - Technical is necessary, but it’s not sufficient
 - Process will produce only what it is designed to produce – won’t get different results without process change

OA is About Providing Capability ... Quickly and Affordably