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

Core Navy OA Principles

Necessary Pre-Condition—Break Software Dependence on Hardware

Modular designs
Reusable application software
Interoperability joint warfighting applications
Life Cycle Affordability
Encouraging collaboration and competition
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**

**Identify and Define**
- Capability Request
- New Requirement
- Operational Need

**Government Led**
- New Threat
- Improved Performance
- New Mission
- Technology evolution
- CONOPS

**Identify and Define**
- Capability Request
- New Requirement
- Operational Need

**Engineering Refinement**
- Correlate need to system element(s)
- Characterize need with technical rigor
- Identify gaps in technology

**Advertise Need and Focus S&T**
- Identify potential solutions
- Assess technical and schedule risks
- Focus investment
- Stimulate innovation

**Deliver**
- System Integration
- Technology Evaluation
- Advanced Processor Build (APB)

**Government – Industry Team**
- Systems Engineer / Design Agent

**Government Led**
- Invest in S&T
- Engage Academia
- Leverage Govt Labs
- Pulse industry (BAA)
- Experimentation
- ACTD/ACD
- SBIR

**Industry Led**
- Systems Integrator

**Government Managed**
- Systems Engineer / Design Agent
- Collaborative Environment
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