



Naval Open Architecture NDIA 2008 Undersea Warfare Conference



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***Mr. Nickolas Guertin
Director
Naval Open Architecture
PEO IWS 7B***



Agenda

- Introduction
- Benefits of OA
- OA Principle of Reuse
- Navy Asset Repositories
- OA Report to Congress
- Conclusion

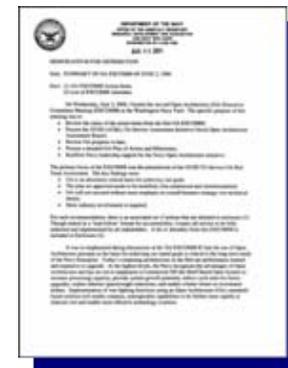




In Aug 04, ASN(RDA) directed PEO IWS to lead OA implementation across the Navy

- 2004 ASN(RDA) OA Policy Memo
- 2005 OPNAV Requirement Letter

Policy Memo



These documents directed PEO IWS to:

- Determine candidates for reuse
- Establish a reuse repository
- Conduct OA assessments and business case analysis

OPNAV Letter





OPNAV Rqmt Letter Set Out 5 Principles:

- Modular design & design disclosure
- Reusable software
- Interoperability
- Life cycle affordability
- Encouraging competition & collaboration

support run up and implement agile changes that support rapidly evolving requirements.

OA Principles include:

a. Modular design and design disclosure to permit evolutionary design, technology insertion, competitive innovation, and alternative competitive approaches from multiple qualified sources.

Subj: REQUIREMENT FOR OPEN ARCHITECTURE (OA) IMPLEMENTATION

b. Reusable application software, selected through open competition of 'best of breed' candidates, reviewed by subject matter expert peers and based on data-driven analyses and experimentation to meet operational requirements. Design disclosure must be made available for evolutionary improvement to all qualified sources.

c. Interoperable joint warfighting applications and secure information exchange using common services (e.g. common time reference), common warfighting applications (e.g. OA track manager) and information assurance as intrinsic design elements.

d. Life cycle affordability including system design, development, delivery and support while mitigating COTS obsolescence by exploiting the Rapid Capability Insertion Process/Advanced Processor Build (RCIP/ABP) methodology.

e. Encouraging competition and collaboration through development of alternative solutions and sources.

3. OA Requirements and Actions. OA principles shall be



The upside of OA is not just cost avoidance

Reduced Time to Field

- E-2C Hawkeye Mission Computer System

Increased Performance

- George Washington Carrier - doubled bandwidth
- Periscope Detection Radar (SBIR)

Improved Interoperability

- Naval Integrated Fire Control – Counter Air
- Submarine Warfare Federated Tactical System

Reduced Risk

- ASW Community of Interest
- NAV C2

Lifecycle Affordability

- Submarine Warfare Federated Tactical System
- Marine Air Ground Task Force Command & Control



Periscope Detection Radar (PDR)

- Requirement: Rapidly develop PDR capability
- Implementation:
 - Modular OA design
 - FORCEnet compliant interfaces
 - COTS Open Source software
- Results: 25 month development, reduced costs (~\$75m), reduced ship impact, improved reliability





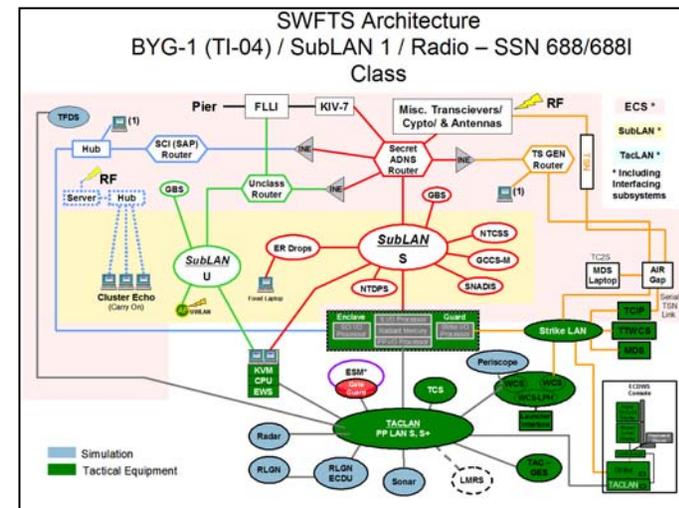
Submarine Warfare Federated Tactical System

- Requirement: Implement enterprise business strategy with technical solutions

- Implementation:

- Apply open, net-centric architecture
- Eliminate stovepipe, obsolete h/w & s/w

- Results: about 12-15 platform upgrades/yr, min. # of configurations requiring support, no maintenance actions required at sea





Common Submarine Radio Room

- Requirement: one common comms center for all submarine classes
- Implementation:
 - Modular architecture
 - Reuse of common comms components
- Results: One common sub radio room, increased lifecycle affordability, full rate production Aug 07



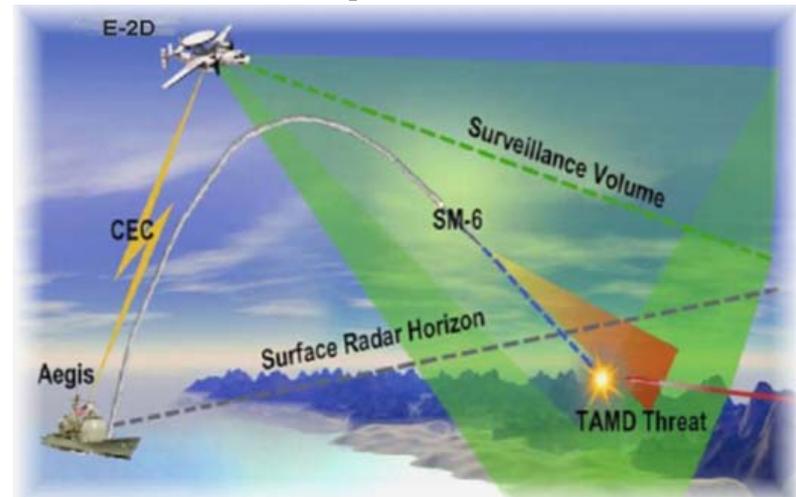


Naval Integrated Fire Control – Counter Air

- Requirement: Develop a NIFC-CA capability to expand the battle space

- Implementation:

- Peer reviews
- Modular architecture
- Wide use of COTS



- Results: Integrated capabilities and technologies across multiple platforms, expanded battle space



George Washington Aircraft Carrier

- Requirement: Increase bandwidth to ships at sea
- Implementation:
 - Modular architecture, published interfaces
 - Reused DISA-certified Army off-the-shelf component
- Results: Doubled an Aircraft Carrier's SHF capacity to 4 megabytes per second



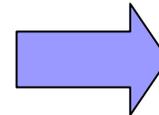
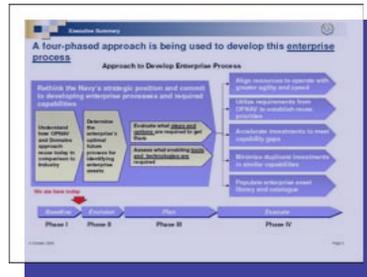
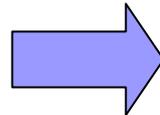
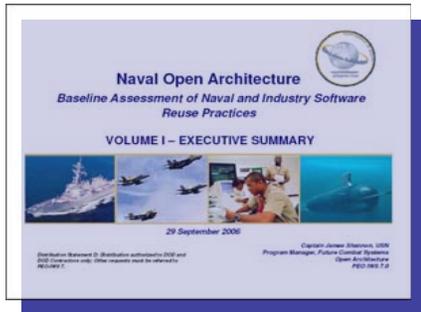


Our current focus is on asset reuse

- OA Enterprise Team (OAET) Lead Council wants a plan for reuse governance
- To do this, we need to determine how reuse is being done across the Navy today ...
- ... and what changes need to be made to take full advantage of reuse opportunities



2006 OAET study identified barriers to reuse



Interviewed Various Programs

Reported Findings

- Lack of an enterprise reuse strategy
- Lack of necessary skills within the Navy
- Lack of incentives
- Failure to exercise data rights



Reuse recommendations included:

- Develop an integrated, enterprise-wide strategic framework for reuse ...
- ... including an enterprise asset repository
- Determine the appropriate IPR for reuse
- Invest in developing workforce skills
- Establish reuse metrics to track progress



Lead Council also seeks reuse governance

According to the 2006 OAET assessment, reuse strategy governance would include:

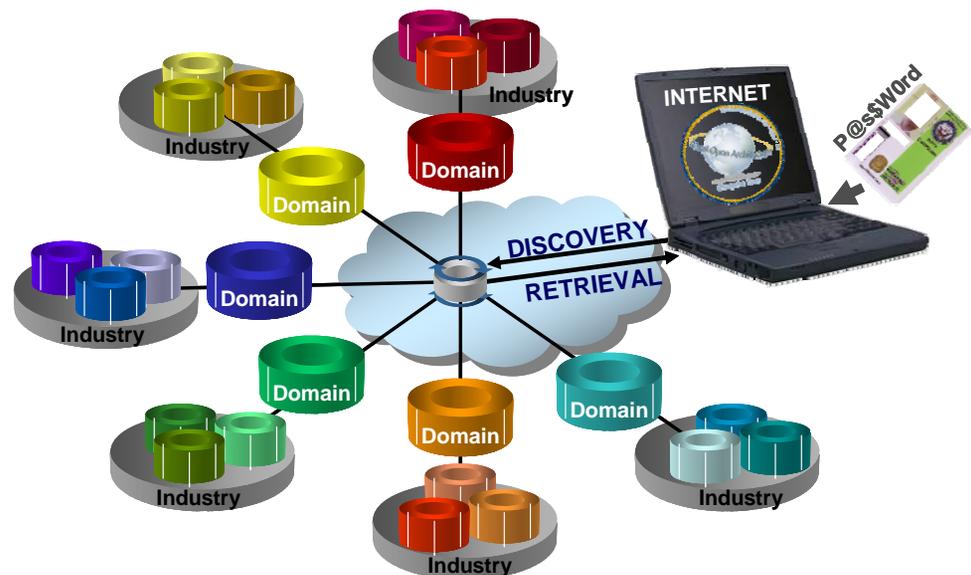
- Establishing goals for reuse based on mission areas, product lines, or domains
- Identifying an SES/Flag-level mgt. board to make asset investment decisions

To succeed, the Navy must plan and develop its systems with reuse in mind from the start



Asset repositories facilitate sharing of IPR

- PEO IWS created the Software Hardware Asset Reuse Enterprise (SHARE) library
- Anyone w/ govt contract can gain access
 - Users must sign 2 agreements
 - Modifications / changes must be re-deposited





Exercising our data rights is important

- Navy gets at minimum Government Purpose Rights (GPR) in intellectual property (IP) it pays to develop
- GPR enables the Navy to share data with third parties
- Which prevents vendor lock-in because other contractors can participate in modifications or upgrades to systems



Lead Council said more education needed

- Need OA education beyond the continuous learning module (CLM)
- Workshops and training sessions
- The NOA program office is ready to provide this training as requested
- The Naval Postgraduate School is developing a CLM on principles of reuse



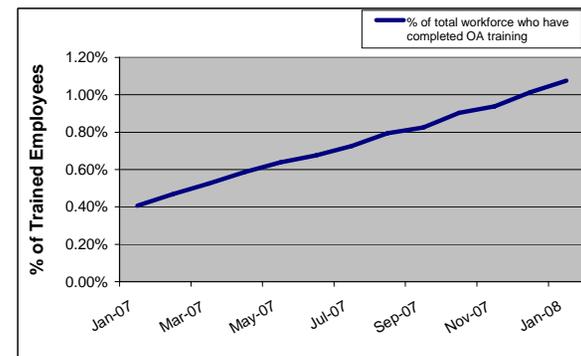
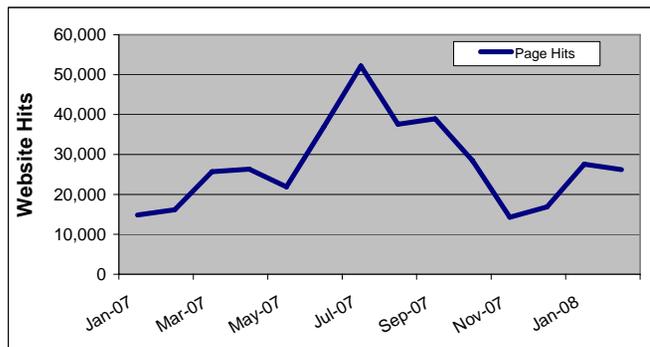
Collaboration between PEOs IWS & C4I

- Consolidated Afloat Networks and Enterprise Services (CANES) leverages SOA
- USW DSS (Decision Support System) is an Early Adopter (EA) of CANES
 - EA process accelerates capability delivery
 - EA process is critical risk reduction effort
- Oversight by cross-PEO (IWS & C4I) architecture IPT
- Common Service Identification/Consolidation



There are other metrics for cultural change

- OA assessments completed
- Number of programs implementing an Rapid Capability Insertion Process (RCIP)
- Number of OA website hits





Also, Congress is interested in Naval OA

The Naval enterprise is required to report to Congress quarterly on:

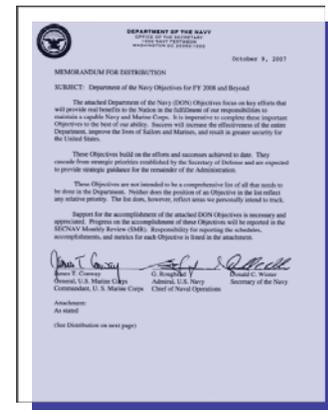
- New business models developed
- Contracts changed to include OA
- Assets published and/or disclosed
- Components reused





In summary, OA remains a Navy priority

- It is one of the “DoN Objectives for 2008 and Beyond”
- Thru OA, the enterprise is learning about the importance of IPR ...
- ... facilitating sharing of assets to which the Navy has GPR or less restrictive rights
- ... which enables collaboration and reuse
- ... driving down costs of weapons systems





QUESTIONS?