



Rewarding Small Business Innovation in an Open Architecture Navy: Supporting the 21st Century Maritime Strategy



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Our 21st Century Maritime strategy calls for a strong presence, naval power, and new partnerships





**To execute this strategy, we must change how we build systems
- the adoption of Open Architecture is critical to our Navy**

Naval Open Architecture is the confluence of business and technical practices yielding modular, interoperable systems that adhere to open standards with published interfaces. OA delivers increased warfighting capabilities in a shorter time at reduced cost.

OA CORE PRINCIPLES

Modular design and design disclosure

Reusable application software

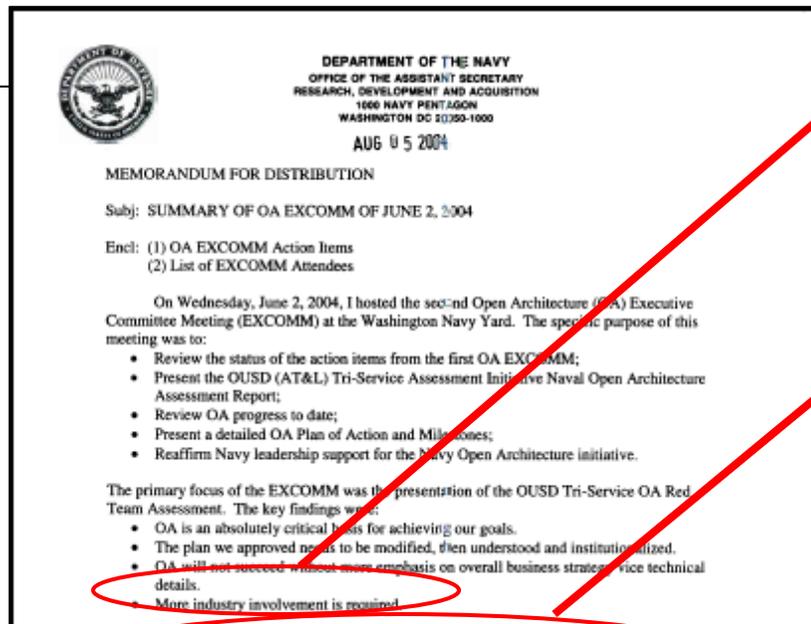
Interoperable joint warfighting applications and secure information exchange

Life cycle affordability

Encouraging competition and collaboration



In 2004, ASN(RDA) recognized the importance of ALL industry in creating a future Navy based on Open Architecture



- **More Industry involvement is required** to implement Open Architecture

- **“We must find ways to foster innovation** within these OA initiatives and make the most of **opportunities in the commercial marketplace.**”

- Mechanisms to promote Industry involvement in OA include **“Implementing and sustaining a proactive OA education and information exchange program** across the Industrial and Government communities.”

We must find ways to foster innovation within these OA initiatives and make the most of opportunities in the commercial marketplace. OA brings with it a profound cultural change where we should no longer think of traditional DoD prime contractors as the only contributors. In any case, we need to significantly involve industry and academia much more in the future to ensure OA's success.

Finally, I want to review our contractual obligations within the PEOs to fully understand all options with regard to alternate strategies for budgeting and contracting in order to maximize the benefits of open architecture.

Decision 4: More industry involvement is required.

Action: Identify mechanisms and venues to promote education, communication, and involvement in Open Architecture with industry and academia.

Mechanisms shall include, but are not limited to:

- Establishing an advisory team to interpret and advise other organizations on an as requested basis. Team should include industry and academia representatives.
- Implementing and sustaining a proactive OA education and information exchange program across the Industrial and Government communities.

Lead: PEO IWS
Follow: Enterprise Team



Our focus has been on addressing business, technical, and cultural changes

OA GOALS

1. Change the Naval processes and **business** practices to "utilize open systems architectures in order to rapidly field affordable, interoperable systems."
2. Provide OA **Technical Systems Engineering** leadership to field common, interoperable capabilities more rapidly at reduced costs
3. Change the Naval and Marine Corps **Cultures** to Institutionalize OA Principles

OA PRACTICES

- Disclose design artifacts
- Negotiate appropriate data rights
- Foster enterprise collaboration
- Institute Peer Reviews of solutions
- Develop new open business models
- Change contracts / increase competition
- Software Process Improvement Initiative
- Publish interfaces
- Isolate proprietary components
- Use widely adopted standards
- Modularize systems
- Reuse software products
- Build interoperable applications
- OA Training
- Outreach - Symposias & Industry Days
- Research

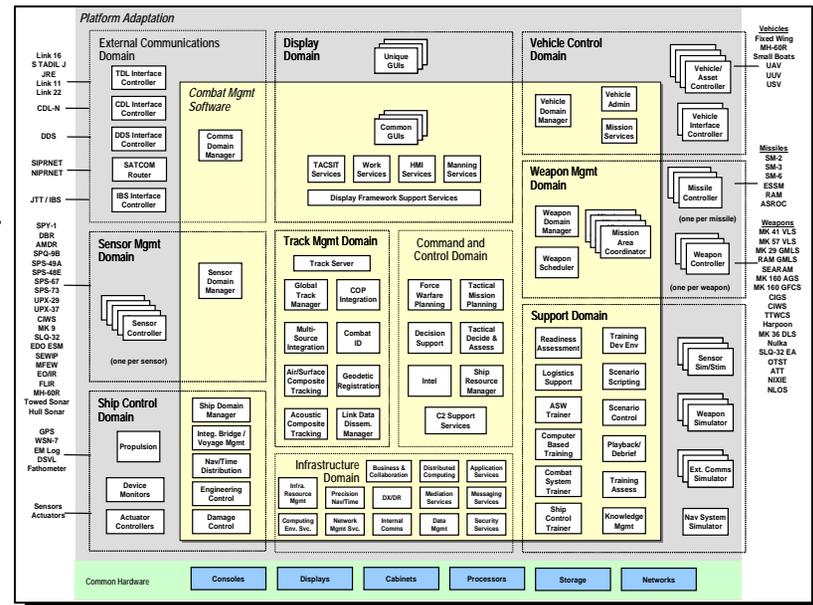


For example, PEO IWS is building a modular, common combat system architecture ...

Aligning platform combat systems ...



... to 1 common open objective architecture ...



"I expect us to compete whenever possible. Competition provides us with options to seek the best solution for the fleet and the taxpayer. ... I also expect us to foster an environment in which competition can be sustained over time. Competition once does not serve our interests."

—VADM Paul E. Sullivan

... to achieve commonality across multiple ship classes where business case supports

... to help increase competition



Programs are changing their contracts ...

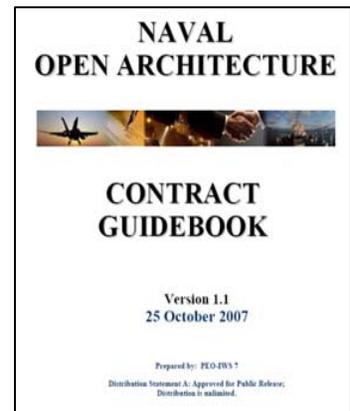
■ Contract Language

- Leveraging language in *Naval OA Contract Guidebook* to mandate adoption of OA principles
- In FY 07, 36 contracts incorporated OA language



■ Contract Award Evaluations

- Openness of proposed architecture for Ground/Air Task Oriented Radar was evaluated as a contract award selection criteria



■ Contract Incentives

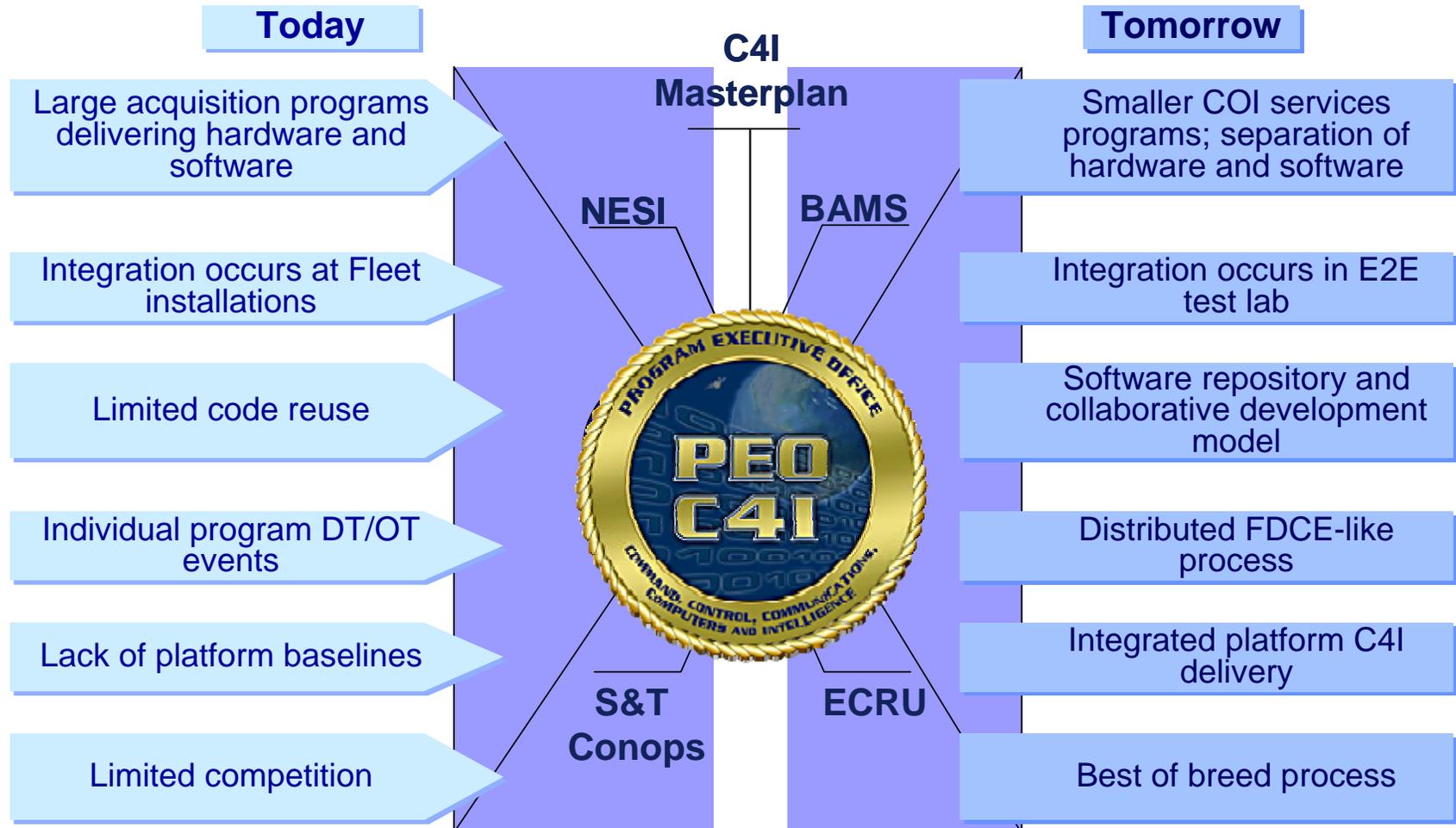
- P8-A contract includes OA compliance as a specific award fee criteria
- 30% of \$261M award fee pool tied to technical criteria



... to include OA business and technical principles



PEO C4I is developing new business models ...



... to neck down and move towards common services



A key part of OA is the proper exercise of the Navy's Intellectual Property Rights ...

- A key aspect to implementing OA is for the Government to **exercise** the intellectual property rights (IPR) it acquires
- Under the Federal Acquisition Regulations (FAR) and Defense Federal Acquisition Regulation Supplement (DFARS):
 - The Government gets **Unlimited Rights** in both Technical Data (TD) and Computer Software (CS) for noncommercial items **developed exclusively at the Government's expense**.
 - For noncommercial items developed with **mixed funding**, the Government gets **Government Purpose Rights (GPR)** in TD and CS.
- If a contractor asserts more restrictive rights over a system/component's IP and the Government fails to challenge such an assertion by exercising its rights, the contractor obtains the asserted rights
- It is imperative that the Government assert and exercise the IPR it acquires because it may lose the right to challenge after a period of time





... allowing re-use of software to reduce costs and risk



The P-8A re-uses 68% of mission software (over 2.5M software lines of code). The program is leveraging existing proven software from critical mission areas.

The Marine Air Ground Task Force Command and Control (MAGTF C2) incorporates components from eight DOD programs





Results are being achieved—PEO C4I is fielding new capabilities

Requirement

- One common communications center for all submarine classes

OA Implementation

- Modular architecture
- Reuse of common communications components for all submarine classes such as antennae, transceivers, terminals and networks

Results

- One Common Submarine Radio Room
- Increased lifecycle affordability
- Full Rate Production granted Aug 07
- Successful OPEVAL on SEAWOLF, SSGN and SSBN platforms
- Successfully deployed on SSN21
- Investigating to extend this concept to all Naval vessels

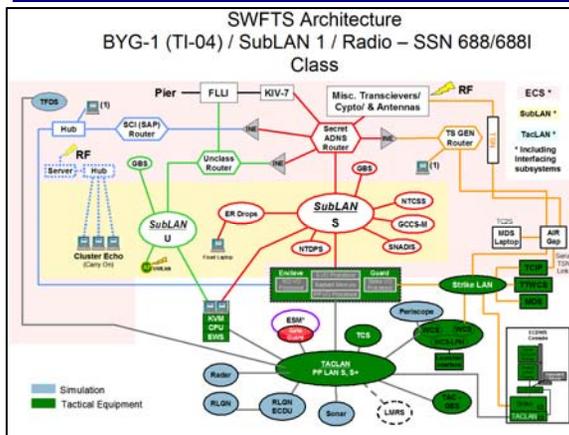




PEO Subs is reducing time to field capabilities

Requirement

- ❑ Implement enterprise business strategy with technical solutions



OA Implementation

- ❑ Apply an Open, Network Centric Architecture with Services and Applications
- ❑ Eliminate stovepipes, obsolete hardware and software
- ❑ Coordinate the development and definition of HW / SW Infrastructure Tech Insertion Baselines across SWFTS subsystems and platforms (currently used by BYG-1, ARCI, and Imaging)

Results

- ❑ Approximately 12-15 Platform Upgrades / Year
- ❑ Minimized number of configurations requiring support
- ❑ No maintenance actions required at sea (either planned or corrective)
- ❑ Integrated training approach (train like you fight)
- ❑ Development effort paces threat environment and technology evolution



Small businesses have an important role to play in OA but face challenges

- Small Business participation is good for the Government
 - Alternative sources for innovative solutions
 - Flexible, cost affordable solutions
 - Competitive market space that give Program Managers flexibility
 - Keeps everyone on their toes
 - “A rising tide raises all boats!”

- Challenges to including Small Business in acquisition programs
 - Appropriate scale and scope of work
 - Managing additional contracts
 - Programmatic risks and dependencies

- Big Business/Small Business relationship challenges
 - Predatory practices
 - IP protection
 - Shift of market share and associated profit loss/gain



Navy Programs have acquisition flexibility to make this work

- Programs can try to promote stable, long-term relationships with firms that demonstrate their ability to add value.
 - Longer term (such as a five-year duration) (e.g. IDIQ) contract for delivery of innovative services and products.
 - Steady stream revenue with Government obtaining appropriate data rights.

- Use of Peer Reviews can be a powerful mechanism for giving innovative organizations a “seat at the table.”
 - The Navy gets input from a range of experts.
 - Firms can gain a better understanding of how a system works, how technologies can be inserted into the system, and how the their innovation and can make it better.
 - Programs can release a Broad Agency Announcement seeking peer reviewers with certain skills or areas of expertise and pay them if selected.



There is seed money for small business in DoD

- Small Business Innovative Research (SBIR) contracts act as Venture Capital within the DoD space
- Congress established additional data rights for SBIR's to enable follow-on work and to provide incentives for participation
 - Foster creation and growth of specialized “hyper-niche” providers to fill industry gaps
 - Gives Small Business flexibility to pursue alternative business models
 - Leverage SBIR IP rights
 - Faster, more innovative, flexible implementation and negotiated rights
- Allows larger players to turn to viable sources of unique products, expertise or capabilities – freeing up their resources for core capabilities



There are benefits of this new business model to companies

- Modularity establishes the framework that the Navy can use to carve out business stratum.
 - Government ownership of the modular architecture and interfaces allows the Navy to manage the business model.
 - Technical architectures can guide the implementation of the business model,
 - Modular groupings competed at the appropriate level of granularity – by the Navy or the Systems integrator.
- Navy can compete the role of overall systems integrator.
- Establishing incentive structures for “good behavior” is very important – rewarding collaboration, successful integration, etc.
- Access -- “Non-traditional” organizations can become players in Navy programs.
- Small businesses can have access to modular software applications to that they can improve them – this can be an effective business model for some firms.



Implementing *Open Architecture* yields many benefits

Reduction in Time to Field

- Decreased development and acquisition cycle times to field new warfighting capabilities
- Faster integration of open standards based systems

Increased Performance

- Improved operator performance thru delivery of cutting edge technologies and increased bandwidth capabilities from spiral developments and technology insertions

Improved Interoperability

- Use of common services (e.g. common time reference)
- Use of common warfighting applications (e.g. track mgr)
- Use of published interfaces to standardize collaboration

More Competition

- Modular architectures enable competition at the component level
- Sharing data rights allows third parties to compete

Cost Avoidance

- Cost avoidance from software reuse and use of commodity COTS products at optimum prices
- Reduced training and streamlined lifecycle support



For further information:

- Naval OA Website: <https://acc.dau.mil/oa>
- Statement A *OA Contract Guidebook*:
<https://acc.dau.mil/CommunityBrowser.aspx?id=105662&lang=en-US>
- Nick Guertin: nickolas.h.guertin@navy.mil , 202-781-3425