



Naval Open Architecture

Changing the Way We Do Business Today



November 2006

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PEO IWS 7.0***



Our goal is to build a fleet where mission systems...



*... are **modular and affordable** to upgrade*



Open Architecture is an enabler for meeting this goal

***Naval Open Architecture (OA)
is an enterprise-wide,
multifaceted business and
technical strategy for
acquiring and maintaining
National Security Systems
as interoperable systems
that adopt and exploit open
system design principles
and architectures.***

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

Source: OPNAV Itr Ser N6N7/5U916276 dtd 23 Dec 05



Leadership's priorities are focused on OA

“ My vision for OA isn't 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.”

- CNO ADM Mullen, Defense Daily , 11 September 2006



“Half the cost of a new ship is in mission systems...OA is one of the real enablers for us to do things in the future and a key to making ships more affordable”

- ASN (RDA) Dr. Etter, DefenseNews.com, 1 November 2006



OA requires a shift in our model

Mil Spec

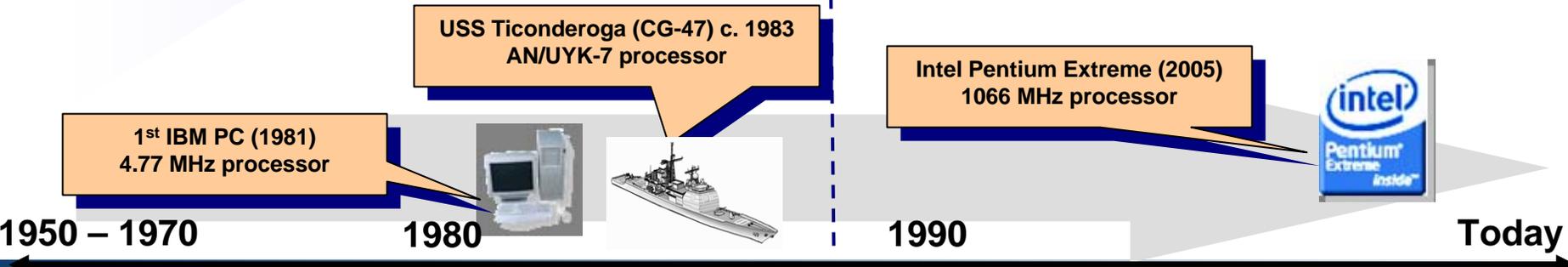
- Requirements driven
- Specification focus
- Rigid requirements
- Unique architecture
- Owner controls evolution
- Stable design
- Ignore evolution
- Cost emphasis
- Make custom hardware
- Develop software
- Obsolescence
- Waterfall-style development

**DoD leads
computer
technology
development**

Open Architecture

- Market driven
- Business plan focus
- Flexible requirements
- Open system architecture
- Market controls evolution
- Constant changes
- Design for evolution (tech refresh)
- TOC emphasis
- Leverage COTS or Reuse
- License software
- Early-managed obsolescence
- Spiral development

**Industry
leads
computer
technology
development**



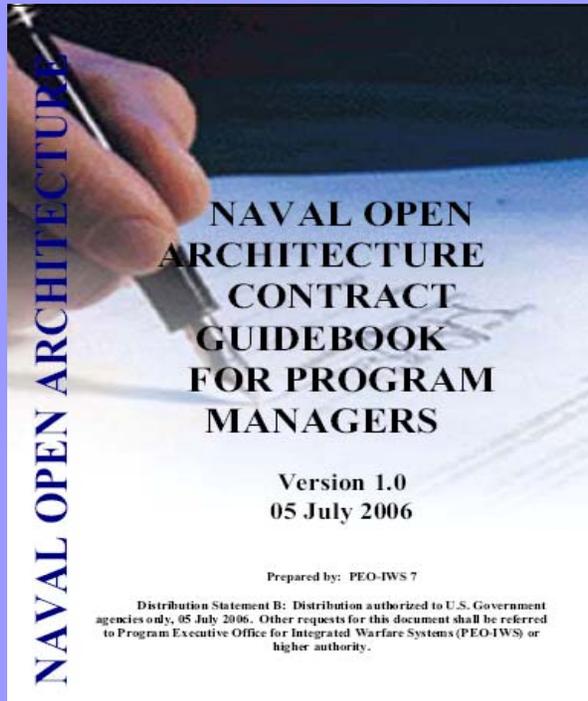


This includes opening business and system models

OPEN BUSINESS MODEL CHARACTERISTICS	OPEN SYSTEM MODEL CHARACTERISTICS
<ul style="list-style-type: none"> ✓ OA language in contracts 	<ul style="list-style-type: none"> ✓ Modular architecture
<ul style="list-style-type: none"> ✓ Appropriate Data Rights 	<ul style="list-style-type: none"> ✓ Isolated proprietary components
<ul style="list-style-type: none"> ✓ Design artifacts disclosed 	<ul style="list-style-type: none"> ✓ Widely accepted/supported standards
<ul style="list-style-type: none"> ✓ Design artifacts published in repositories 	<ul style="list-style-type: none"> ✓ Use of Commodity COTS
<ul style="list-style-type: none"> ✓ Collaboration / Peer Reviews 	<ul style="list-style-type: none"> ✓ Published Interfaces
<ul style="list-style-type: none"> ✓ Continuous competition 	
<ul style="list-style-type: none"> ✓ Rapid capability insertion process 	
<ul style="list-style-type: none"> ✓ Fleet involvement 	



Changing our contracts is an important first step



- Increase competition
- Negotiate appropriate data rights
- Allow for sharing of design artifacts
- Increase use of peer reviews
- Allow for tech insertions
- Leverage S&T

“Our contracts need to be written where we have the ability to have the integrator that is designing the architecture in an open way so we can do competition for various pieces. So [that it is] easier to update with new functionality later on.”

- ASN (RDA), Defense Daily ,10 October 2006

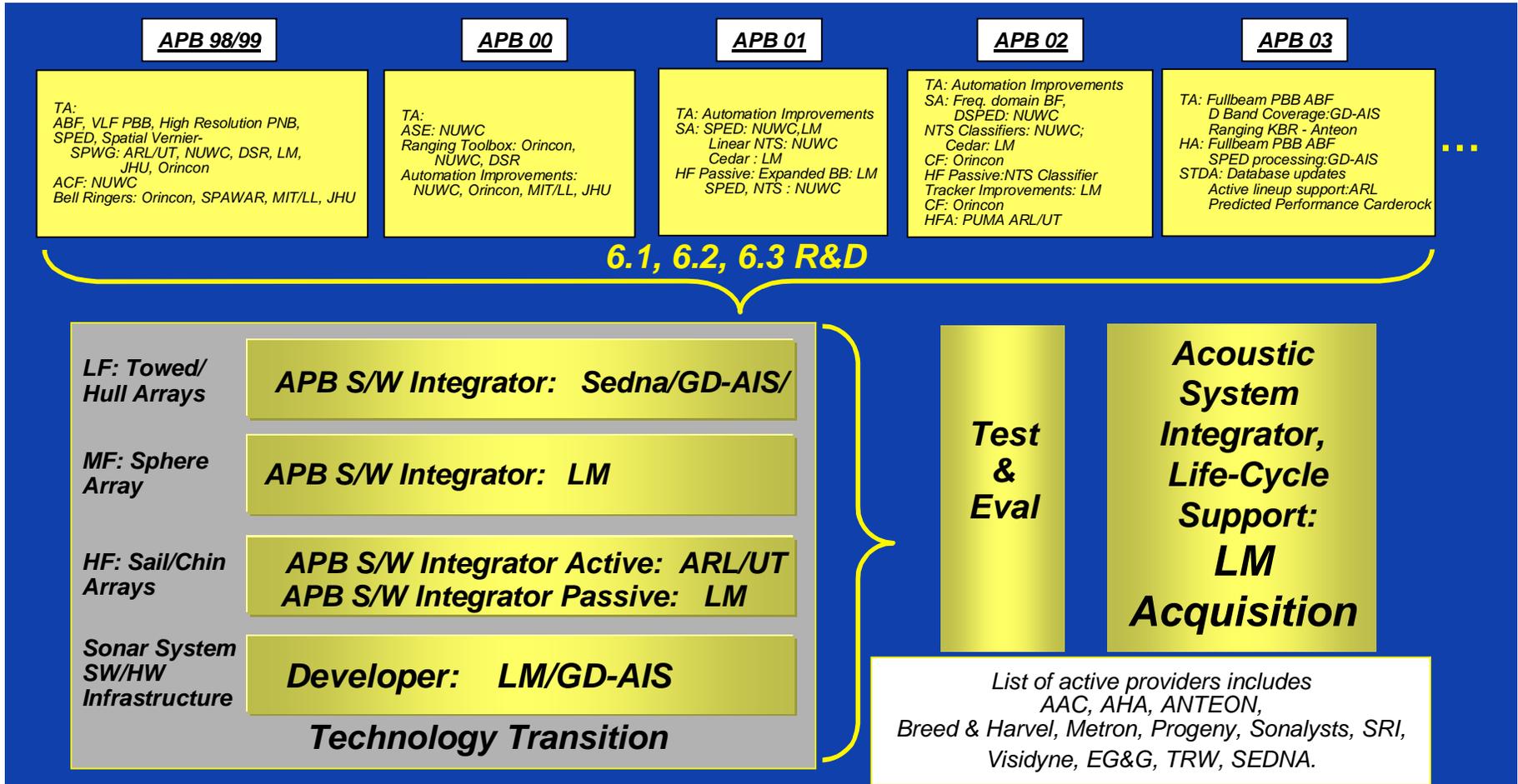
“The goal now is to write open architecture requirements into contracts and provide companies incentives to meet the goals.”

- ASN (RDA), Defense News ,01 November 2006



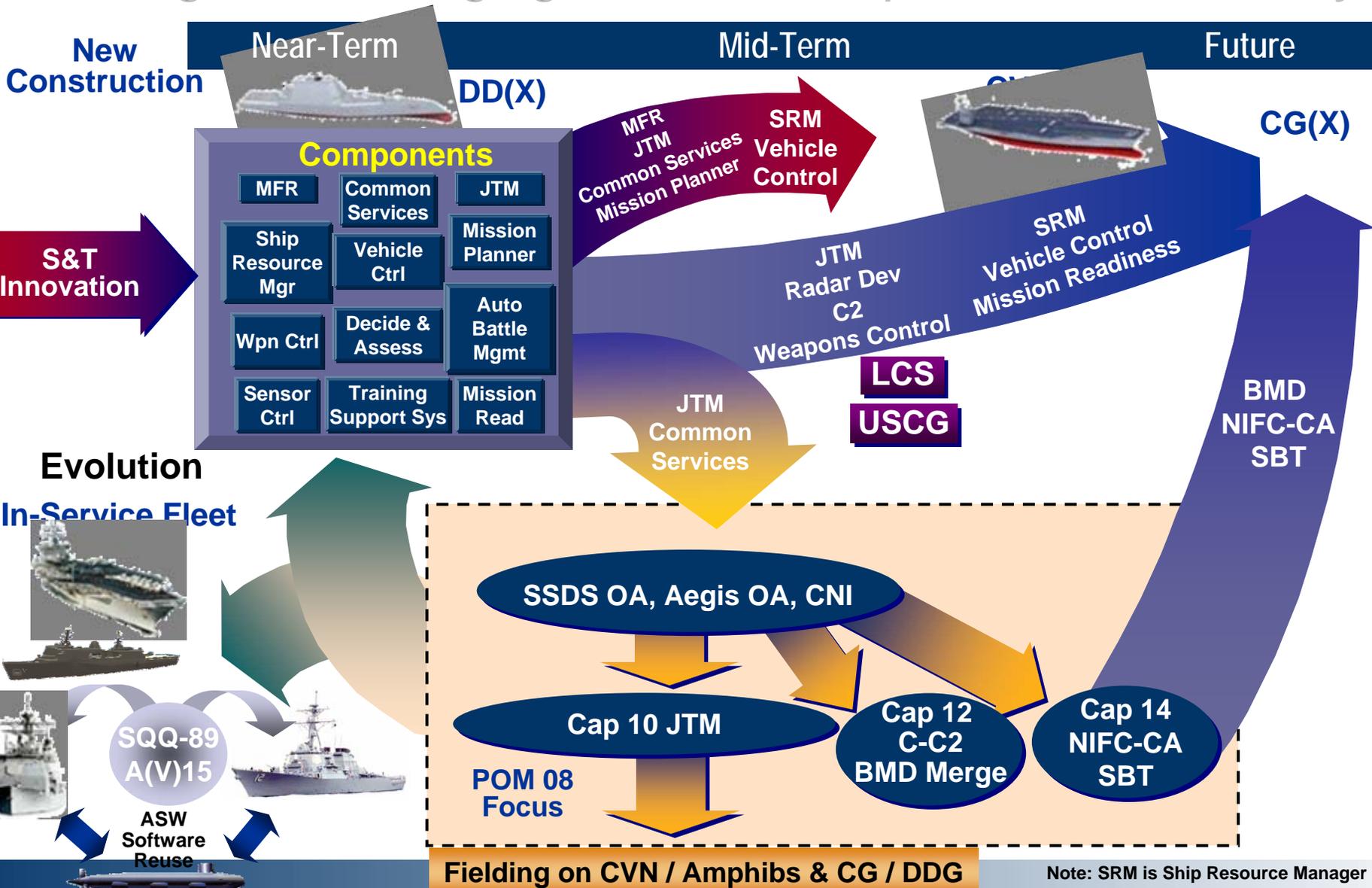
Facilitating competition for technology selection is key

The Submarine process is open and collaborative





Building and leveraging common components is underway

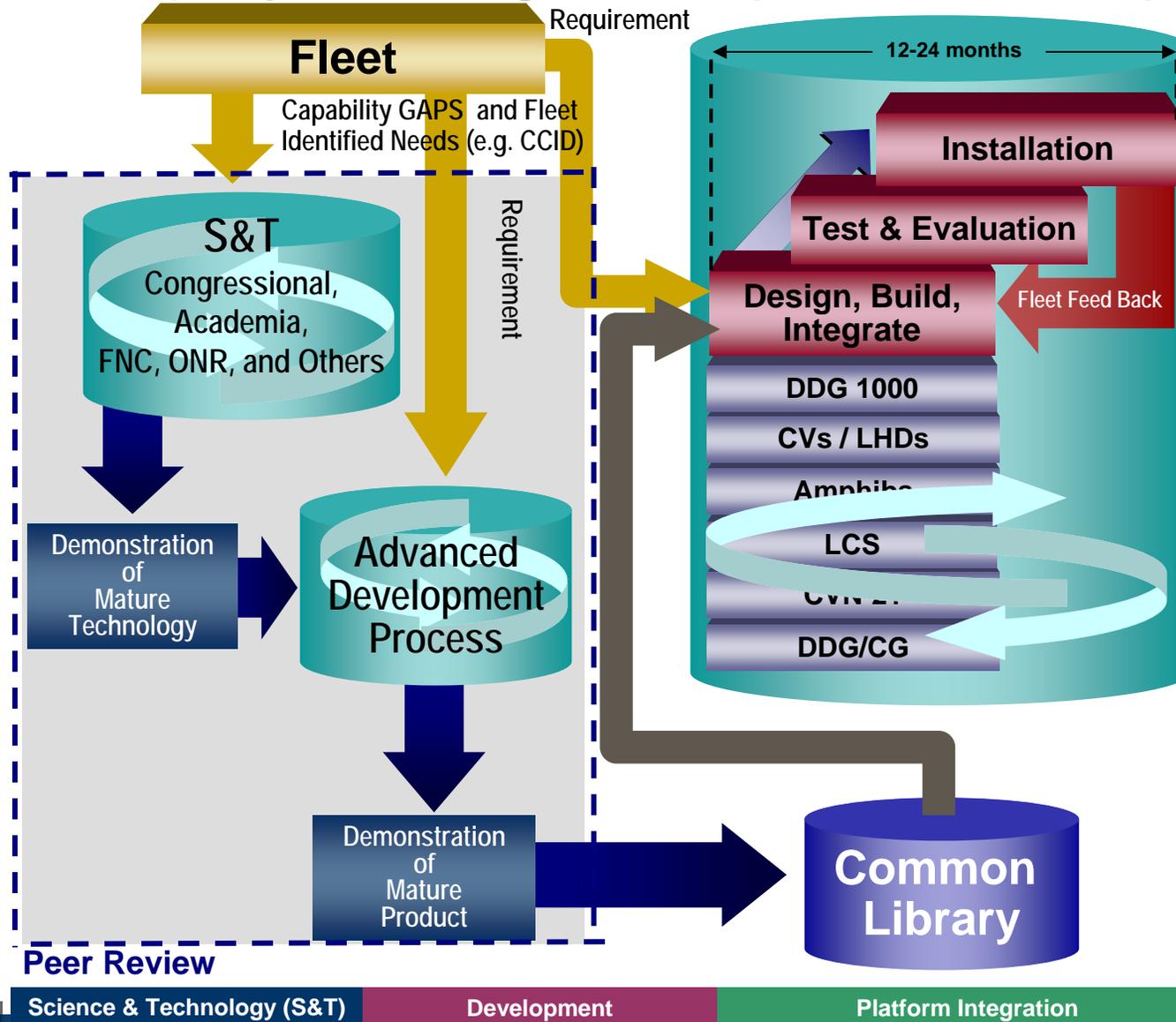


Note: SRM is Ship Resource Manager

29 November 2006



Rapidly inserting new capabilities is required



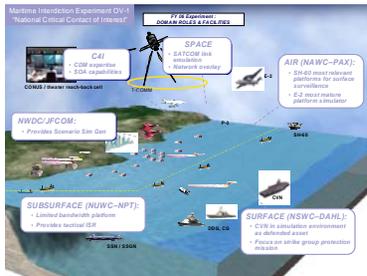
- Key attributes of RCIP:
 - Responsive to fleet input
 - Rapid capability development & fielding
 - Continuous competition
 - Modularized applications

- New capability examples:
 - Air Tasking Order Correlator
 - Small business innovative research approach
 - Addresses fleet requested capability
 - Common Combat ID (CCID)
 - ONR Future Naval Capability



Lastly, we must change our culture

Collaboration



OA / FORCEnet Experiment

Training



Learning Modules

Outreach



Industry Days

Sharing



ASW Community

Communication



<https://acc.dau.mil/oa>



Industry must also adapt to this change

Innovation

- Changes in business models and cultures to meet the Navy's needs
- New products and services

Collaboration

- Work with Navy and third parties to implement OA
- Share access to products
- Share ideas through community of interests

Componentization

- Define component and system interfaces
- Identify and evaluate existing components that can be reused

Justification

- Justify the use of proprietary, vendor-unique or closed components or interfaces
- Justify the need for restrictive data rights

Education

- Train business and technical employees on OA
- Provide feedback to the Navy on lessons learned, success stories, and best practices



“There is no time to continue debating and discussing; we have to move out.”

- ASN (RDA), Defense Daily , 10 October 2006