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2011 INTEGRATED WARFARE SYSTEMS CONFERENCE

"Right On The Money: When Strategy and Budgets Align"

Arlington, VA

6 - 7 December 2011

Agenda

TUESDAY, DECEMBER 6, 2011

WELCOME AND CALL TO ORDER

- Mr. Jimmy Smith, SES, Director, Above Water Sensors, Integrated Warfare Systems

OPEN ARCHITECTURE

- Mr. Chris Deegan, SES, Executive Director, Integrated Warfare Systems

KEYNOTE ADDRESS: AFFORDABILITY BASED ON MILESTONE DECISIONS

- Mr. David Ahern, Deputy Assistant Secretary of Defense, Strategic and Tactical Systems, Office of the Assistant Secretary of Defense for Acquisition

BALANCING BUDGET WITH PROVIDING CAPABILITY TO THE FLEET

- RDML Victorino Mercado, USN, Deputy, Surface Warfare

THE CHALLENGE OF POST BELLUM

- RDML James Shannon, USN, Commander, Naval Surface Warfare Center

INNOVATING ACQUISITION

- Ms. Allison Stiller, SES, Deputy Assistant Secretary of the Navy (Ships), Office Assistant Secretary of the Navy Research, Development and Acquisition

CONGRESSIONAL SPEAKER

- Dr. Eric Labs, Analyst, Congressional Budget Office

ONR TECHNOLOGY STRATEGY, TODAY AND TOMMORROW FOR PEO IWS

- Dr. Lawrence Schuette, SES, Director of Innovation, Office of Naval Research

INDUSTRY STAKEHOLDER PANEL DISCUSSION

Moderator: Mr. Rick Udicious, Chairman, Undersea Warfare Division; Vice President and General Manager, Lockheed Martin MS2 Eagan

Panelists:

- Mr. Orlando Carvalho, President, Mission Systems and Sensors, Lockheed Martin Corporation
- Ms. Karen Conti, Chief Operating Officer, Rite-Solution
- Mr. Alan McCall, Vice President, NAVSEA Account Manager, S.A.I.C.
- Mr. Richard McNamara, Managing Director, Richard R. McNamara and Associates
- Mr. John O'Neill, Senior Partner, Innovative Defense Strategies

WEDNESDAY, DECEMBER 7, 2011

AEGIS BALLISTIC MISSILE DEFENSE: THE WAY AHEAD

- Ms. Lauren DeSimone, Deputy Program Executive, Aegis Ballistic Missile Defense

KEYNOTE ADDRESS: ACQUISITION ACCOUNTABILITY

- Mr. Sean Stackley, Assistant Secretary of the Navy, Research, Development and Acquisition

A VIEW FROM THE MISSILE DEFENSE AGENCY

- Mr. John James, Jr., Executive Director, Missile Defense Agency

CONFERENCE COMMENTS

- Mr. Chris Deegan, SES, Executive Director, Integrated Warfare Systems

CONCURRENT BREAKOUT SESSIONS

BETTER BUYING POWER - GETTING REAL COMPETITION (DASN)

- Mr. Nick Guertin, Director, Open Architecture, DASN RDT&E

INTEGRATED COMBAT SYSTEMS (IWS 1)

- Mr. Nilo Maniquis, Deputy Major Program Manager, PEO IWS Integrated Combat Systems

RADARS AND ELECTRONIC WARFARE (IWS 2)

- CAPT Douglas Small, USN, Radars and Electronic Warfare, PEO IWS

CONCURRENT BREAKOUT SESSIONS

AMPHIBIOUS SYSTEM INTEGRATION (IWS 8)

- CAPT Joseph Iacovetta, USN, Program Manager, Mine Warfare, Amphibious, Auxiliary, and Command Ships System Integration

SURFACE SHIP WEAPONS

- CAPT Timothy Batzler, USN, Surface Ship Weapons, PEO IWS

INTERNATIONAL & FMS PROGRAMS (IWS 4)

- CAPT James Dick, USN, International & FMS Programs, PEO IWS

CONCURRENT BREAKOUT SESSIONS

UNDERSEA SYSTEMS (IWS 5)

- CAPT Dean Nilsen, USN, Undersea Systems, PEO IWS

COMMAND AND CONTROL (IWS 6)

- CAPT Red Hoover, USN, Command and Control, PEO IWS

FUTURE COMBAT SYSTEMS & HUMAN SYSTEM INTEGRATION (IWS 7)

- CAPT Brian Gannon, USN, Future Combat Systems & Human System Integration, PEO IWS
-

2011 INTEGRATED WARFARE SYSTEMS CONFERENCE

*Right On The Money: When Strategy
and Budgets Align*



DECEMBER 6-7, 2011
WWW.NDIA.ORG/MEETINGS/2820

2011 INTEGRATED WARFARE SYSTEMS CONFERENCE

The purpose of this conference is to bring together DoD, Navy, industry, and university leaders for two days of meaningful discussion, including a view of key action being taken on current and future programmatic direction.

This first Integrated Warfare Systems Conference will highlight:

1. National, DoD, and Navy leadership perspectives.
2. The DoD acquisition climate and its effects on the Program Executive Office for Integrated Warfare Systems (PEO IWS) programs and transitions to the Fleet.
3. Successes and obstacles to effective business planning and practices.
4. Capability gaps, technological challenges, critical initiatives, and provide an opportunity for informal discussions with PEO IWS Major Program

TUESDAY, DECEMBER 6, 2011

- 8:00 am - 7:15 pm** **REGISTRATION OPEN**
- 8:30 am - 8:35 am** **WELCOME AND CALL TO ORDER**
▶ Mr. Jimmy Smith, SES, *Director, Above Water Sensors, Integrated Warfare Systems*
- 8:35 am - 8:45 am** **NATIONAL ANTHEM**
▶ United States Navy Color Guard
▶ Ms. Bertillia Lavern, *Vocalist*
- 8:45 am - 9:15 am** **OPEN ARCHITECTURE**
▶ Mr. Chris Deegan, SES, *Executive Director, Integrated Warfare Systems*
- 9:15 am - 10:15 am** **KEYNOTE ADDRESS: AFFORDABILITY BASED ON MILESTONE DECISIONS**
▶ Mr. David Ahern, *Deputy Assistant Secretary of Defense, Strategic and Tactical Systems, Office of the Assistant Secretary of Defense for Acquisition*
- 10:15 am - 10:45 am** **NETWORKING BREAK**
- 10:45 am - 11:15 am** **BALANCING BUDGET WITH PROVIDING CAPABILITY TO THE FLEET**
▶ RDML Victorino Mercado, USN, *Deputy, Surface Warfare*
- 11:15 am - 11:45 am** **THE CHALLENGE OF POST BELLUM (2011-TBD)**
▶ RDML James Shannon, USN, *Commander, Naval Surface Warfare Center*
- 11:45 am - 1:15 pm** **NETWORKING LUNCHEON**
- 1:15 pm - 1:45 pm** **INNOVATING ACQUISITION**
▶ Ms. Allison Stiller, SES, *Deputy Assistant Secretary of the Navy (Ships), Office Assistant Secretary of the Navy Research, Development and Acquisition*
- 1:45 pm - 2:15 pm** **CONGRESSIONAL SPEAKER**
▶ Dr. Eric Labs, *Analyst, Congressional Budget Office*

TUESDAY, DECEMBER 6, 2011

- 2:15 pm - 2:45 pm ONR TECHNOLOGY STRATEGY, TODAY AND TOMORROW FOR PEO IWS**
- ▶ Dr. Lawrence Schuette, SES, *Director of Innovation, Office of Naval Research*
- 2:45 pm - 3:15 pm NETWORKING BREAK**
- 3:15 pm - 5:15 pm INDUSTRY STAKEHOLDER PANEL DISCUSSION MODERATOR**
- ▶ Mr. Rick Udicious, *Chairman, Undersea Warfare Division; Vice President and General Manager, Lockheed Martin MS2 Eagan*
- PANELISTS**
- ▶ Mr. Orlando Carvalho, *President, Mission Systems and Sensors, Lockheed Martin Corporation*
 - ▶ Ms. Karen Conti, *Chief Operating Officer, Rite-Solutions*
 - ▶ Mr. Alan McCall, *Vice President, NAVSEA Account Manager, S.A.I.C.*
 - ▶ Mr. Richard McNamara, *Managing Director, Richard R. McNamara and Associates*
 - ▶ Mr. John O'Neill, *Senior Partner, Innovative Defense Strategies*
- 5:15 pm - 7:15 pm NETWORKING RECEPTION**

WEDNESDAY, DECEMBER 7, 2011

- 8:00 am - 4:00 pm REGISTRATION OPEN**
- 9:00 am - 9:30 am AEGIS BALLISTIC MISSILE DEFENSE: THE WAY AHEAD**
- ▶ Ms. Lauren DeSimone, *Deputy Program Executive, Aegis Ballistic Missile Defense*
- 9:30 am - 10:30 am KEYNOTE ADDRESS: ACQUISITION ACCOUNTABILITY**
- ▶ Mr. Sean Stackley, *Assistant Secretary of the Navy, Research, Development and Acquisition*
- 10:30 am - 11:00 am NETWORKING BREAK**

Agenda at A Glance

Tuesday, December 6, 2011

- 8:00 am Registration Open
- 8:30 am Welcome and Call to Order
- 8:35 am National Anthem
- 9:15 am Keynote Address: Affordability Based on Milestone Decisions
- 10:15 am Networking Break
- 10:45 am Balancing Budget with Providing Capability to the Fleet
- 11:15 am Business Model Requirements
- 11:45 am Networking Luncheon
- 1:15 pm Innovating Acquisition
- 1:45 pm Congressional Speaker
- 2:15 pm ONR Technology Strategy, Today and Tomorrow for PEO IWS
- 2:45 pm Networking Break
- 3:15 pm Industry Stakeholder Panel Discussions
- 5:15 pm Networking Reception

Wednesday, December 7, 2011

- 8:00 am Registration Open
- 9:00 am AEGIS Ballistic Missile Defense: The Way Ahead
- 9:30 am Keynote Address: Acquisition Accountability
- 10:30 am Networking Break
- 11:00 am A View from the Missile Defense Agency
- 11:30 am Conference Comments
- 11:45 am Networking Luncheon
- 1:00 pm Concurrent Breakout Sessions
- 2:00 pm Concurrent Breakout Sessions
- 3:00 pm Concurrent Breakout Sessions
- 4:00 pm Conference Concludes

WEDNESDAY, DECEMBER 7, 2011 (CONTINUED)

11:00 am - 11:30 am

A VIEW FROM THE MISSILE DEFENSE AGENCY

- ▶ Mr. John James, Jr., *Executive Director, Missile Defense Agency*

11:30 am - 11:45 am

CONFERENCE COMMENTS

- ▶ Mr. Chris Deegan, SES, *Executive Director, Integrated Warfare Systems*

11:45 am - 1:00 pm

NETWORKING LUNCHEON

1:00 pm - 2:00 pm

CONCURRENT BREAKOUT SESSIONS

BETTER BUYING POWER - GETTING REAL COMPETITION (DASN) - ROOM: STUDIO E

- ▶ Mr. Nick Guertin, *Director, Open Architecture, DASN RDT&E*

INTEGRATED COMBAT SYSTEMS (IWS 1) - ROOM: SALON 4

- ▶ Mr. Nilo Maniquis, *Deputy Major Program Manager, PEO IWS Integrated Combat Systems*

RADARS AND ELECTRONIC WARFARE (IWS 2) - ROOM: SALON 6

- ▶ CAPT Douglas Small, USN, *Radars and Electronic Warfare, PEO IWS*

2:00 pm - 3:00 pm

CONCURRENT BREAKOUT SESSIONS

AMPHIBIOUS SYSTEM INTEGRATION (IWS 8) - ROOM: SALON 6

- ▶ CAPT Joseph Iacovetta, USN, *Program Manager, Mine Warfare, Amphibious, Auxiliary, and Command Ships System Integration*

SURFACE SHIP WEAPONS (IWS 3) - ROOM: SALON 4

- ▶ CAPT Timothy Batzler, USN, *Surface Ship Weapons, PEO IWS*

INTERNATIONAL & FMS PROGRAMS (IWS 4) - ROOM: STUDIO E

- ▶ CAPT James Dick, USN, *International & FMS Programs, PEO IWS*

3:00 pm - 4:00 pm

CONCURRENT BREAKOUT SESSIONS

UNDERSEA SYSTEMS (IWS 5) - ROOM: STUDIO E

- ▶ CAPT Dean Nilsen, USN, *Undersea Systems, PEO IWS*

COMMAND AND CONTROL (IWS 6) - ROOM: SALON 6

- ▶ CAPT Red Hoover, USN, *Command and Control, PEO IWS*

FUTURE COMBAT SYSTEMS & HUMAN SYSTEM INTEGRATION (IWS 7) - ROOM: SALON 4

- ▶ CAPT Brian Gannon, USN, *Future Combat Systems & Human System Integration, PEO IWS*

4:00 pm

CONFERENCE CONCLUDES



2011 Integrated Warfare Systems Conference

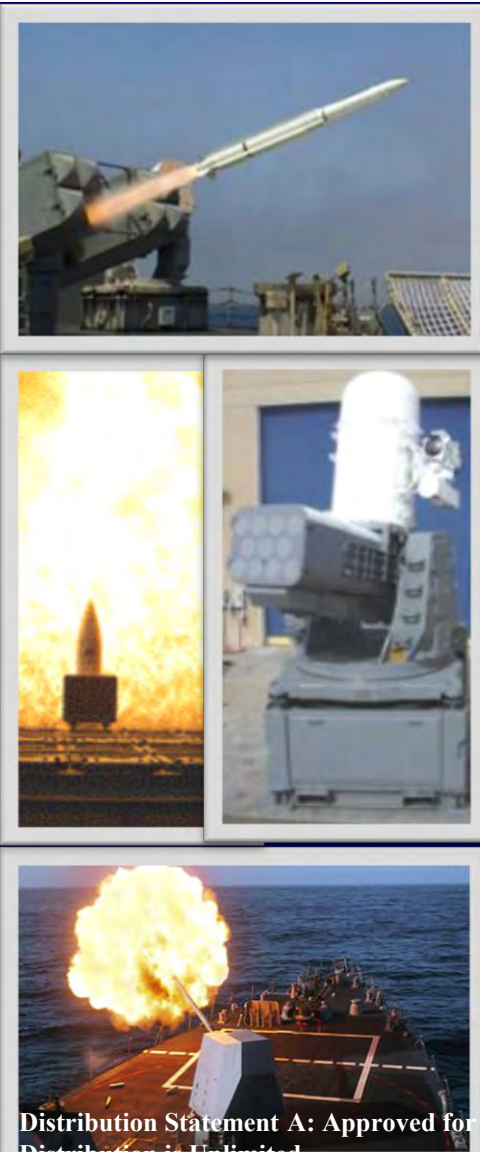
Surface Ship Weapons (IWS 3.0) *Captain Tim Batzler*

UNCLASSIFIED



PEO IWS 3 Mission

- To Deliver Safe, Effective and Affordable Missiles, Launchers and Guns to the United States Navy, our Cooperative Partners, Allies & Friends
- To Design, Build, Field and Maintain the Finest Surface Ship Weapons in the World that integrate seamlessly with the Navy's current and future Combat Systems



IF WE FAIL...THEY DON'T COME HOME!!



Supporting the Warfighter Today

Mission:

- Force Protection
- Counter-Rocket Artillery & Mortar (Phalanx)
- Anti-ship cruise missile defense
- Fleet area air and missile defense
- Joint theater air and missile defense
- Anti-Surface Warfare
- Naval Surface Fire Support

Description:

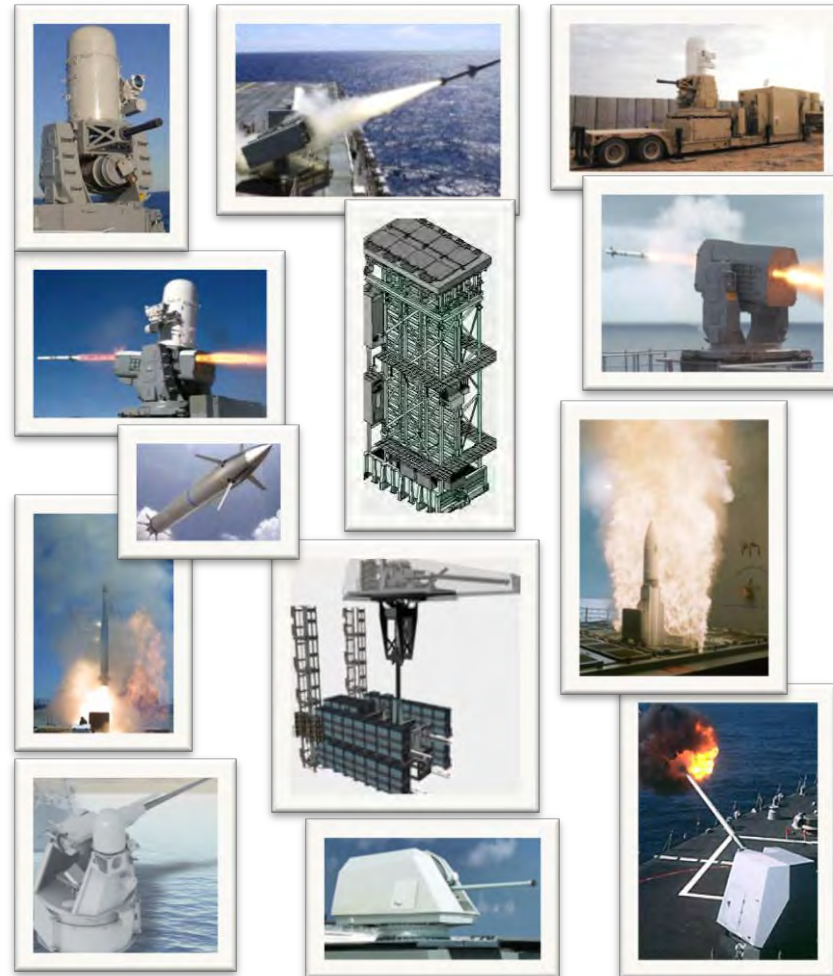
- Autonomous and/or integrated close-in weapons
- Lightweight, low cost, high firepower ASMD
- Medium range, all-weather, guided missiles
- Extended range surface-to-air missile
 - Compatible with joint integrated fire control
- Advanced Gun System / 155mm LRLAP
- Digital, joint-integrated, naval fires control system
- Conventional naval gun systems and ammunition
 - Major, intermediate, minor caliber, and small arms

Platforms:

- CVN, LHD, LHA, LSD, LPD, CG, DDG, FFG, LCS, USCG WMEG/WHEH/WMSL/WMSM

Employment:

- Effective against current and future air threats
- Layered defense against terrorist and conventional small fast surface craft
- Engage land targets at long range with precise, high volume fires





STANDARD Missile (SM)

Mission:

- Anti-Air Warfare (AAW)

Description:

- SM-2 is a solid propellant, tail-controlled surface to air missile
 - SM-2 BLK IIIB improves the BLK IIIA baseline incorporating a dual mode IR/RF guidance system to counter an existing ECM technique
 - SM-2 BLK IV incorporates a separable booster with thrust vector control which provides capability for projecting air defense to theater ranges. SM-2 BLK IVs have been modified for Terminal Ballistic Missile Defense
 - SM-6 combines the tested legacy of SM-2 propulsion and ordnance with the AMRAAM active seeker. It provides for over-the-horizon engagements, enhanced capability at extended ranges and increased firepower

Platforms:

- Primary air defense weapon for AEGIS Cruisers & Destroyers



Employment:

- U.S. Navy & 15 Allied Navies (SM-1/SM-2 Blk IIIB and prior)
- SM-6 is U.S. Navy only



Rolling Airframe Missile (RAM)

Mission:

- Anti-Ship Missile Defense against current and evolving threats

Description:

- Cooperative program between US and Germany
- Dual RF/IR Guidance System (Block 0)
- Addition of IR All-The-Way Guidance (Block 1)
- Asymmetric Threat Capable with Helo, Air, Surface (H.A.S.) Mode
- Counter High Maneuverability, Low Probability of Intercept (Block 2)
- Target designation from installed shipboard sensors, no Fire Control Illuminators required
- Successful integration into Ship Self Defense System, COMBATSS-21 and AN/SWY Combat Direction Systems

Platforms/Employment:

- CVN, LHA, LHD, LPD 17, LCS and LSD





MK 15 Close In Weapon System (CIWS)



Phalanx Block IB
MK15 Mod 21 thru 28

- Upgrading entire USN Phalanx Fleet to Block IB (250+ Mounts)
- Radar Upgrade significantly increases radar performance
- Asymmetric-thru-Supersonic ASM defense capability



LPWS
MK15 Mod 29

- Critical detection & engagement element in US Army's Counter-Rocket/Arty/Mortar (C-RAM) system
- 120+ successful combat engagements in Iraq
- 45 US Army LPWS Systems
- Integrated Into Army's Forward Area Air Defense (FAAD) Network



SeaRAM
MK15 Mod 31

- Autonomous, low cost, complete Combat System solution
- Spec'd to handle future threats
- Incorporates Phalanx Block IB Radar Upgrade.
- Critical LCS-2 class combat system element

Target Set: 60mm Mortars Through Supersonic Cruise Missiles
Including Boats and Aircraft / UAVs



Guns and Gun Weapon Systems

Major/ Medium / Minor Caliber Gun Weapons System Mission:

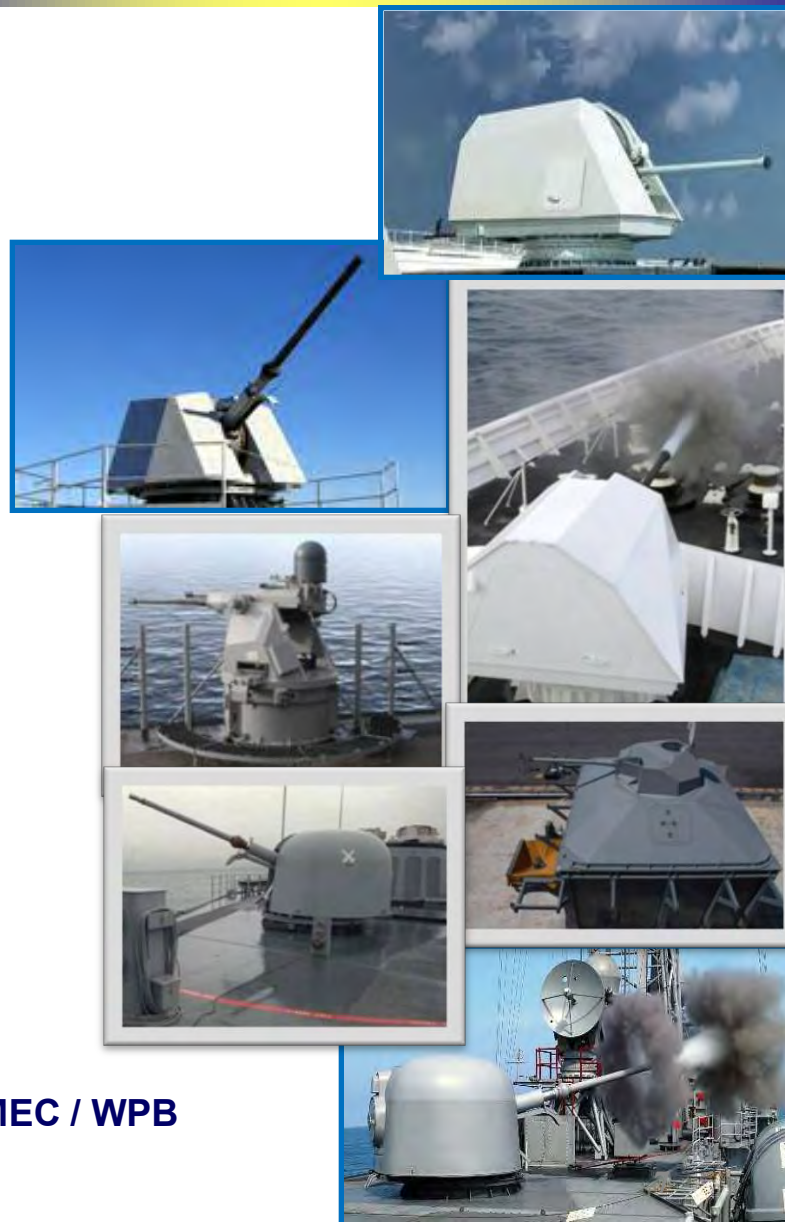
- Warning, disabling & destructive gun fire to respond anti-small boat asymmetric threats in support of Surface Warfare (SuW) and low, slow flyers
- Surface Warfare (SUW), Air Warfare (AW), Naval Surface Fire Support (NSFS), Anti-Surface Warfare, Anti-Terrorism, Force Protection

Description:

- **Minor Caliber Guns:** Lightweight, low cost, remotely controlled stabilized gun weapon systems with on-mount Electro-Optic Fire Control System (EOFCS)
- **Medium Caliber Guns:** Main battery deck guns on frigate size platforms; also used as secondary battery on DDG 1000 Destroyers
- **Major Caliber Guns:** Receives target data from shipboard sensors, computes a ballistic solution, selects projectile types, and generates fire orders to the gun mount, 155mm Advanced Gun System

Platforms/Employment:

- DDG / CG
- LPD-17 / LPD / LHD
- Large Deck Amphibs
- FFG Class Frigates
- Littoral Combat Ships (LCS)
- US Coast Guard Cutters
 - WMSL / WHEC / WMSM / WMEC / WPB





Evolved SeaSparrow Missile (ESSM)

Mission/Employment:

- Provide Self Defense Battlespace and fire power against fast, low, small, maneuvering anti-ship cruise missiles

Description:

- ESSM is a kinematic upgrade to the RIM 7P SEASPARROW Missile, which provides enhanced ship defense for 10 participating Navies
- International cooperative development program under MOU:
 - 10 of 12 NATO SEASPARROW Consortium Navies participating -- Australia, Canada, Denmark, Germany, Greece, The Netherlands, Norway, Spain, Turkey and the United States
 - Memorandum of Understanding for production signed December 1997
 - Associated cooperative development program
 - MK41 Vertical Launching System (VLS) Quad Pack capability with ESSM
 - 7 nations participating--Australia, Germany, The Netherlands, Norway, Spain, Turkey, and the United States

Platforms:

- CVN, LHD, CG, DDG, DDG 1000, LHA-6

Distribution Statement A: Approved for Public Release:

Distribution is Unlimited

U.S. Self-Defense Test Ship
24 April 2009





MK 41 Vertical Launching System (VLS)

Mission:

- Multiple Warfighting Mission Areas
 - AAW/ASW/BMD/Land Attack/Strike

Description:

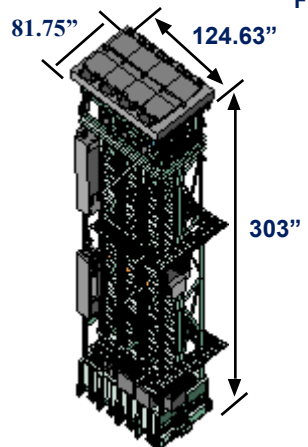
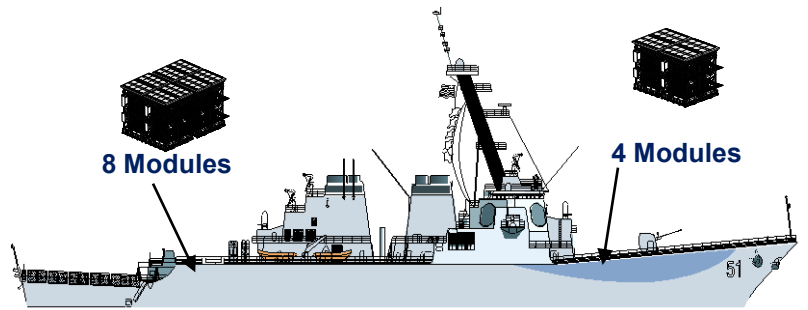
- Modular, Below Deck Missile Launcher
 - Gas Management System
 - Any Missile/Any Cell
 - Deluge System
 - Canister As Shipping Container

Platforms:

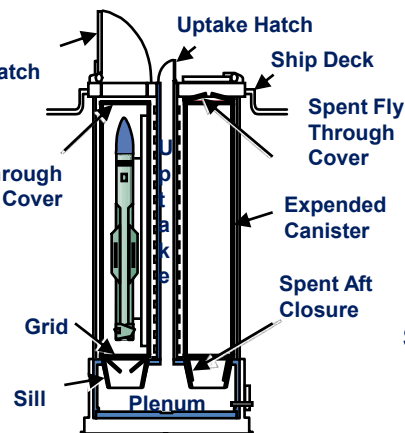
- DDG 51 Class (DDG 51 – 112)
- CG 47 Class (CG 52 – 73)
- DD 963 Class (Decommissioned)
- Eleven Allied Nations



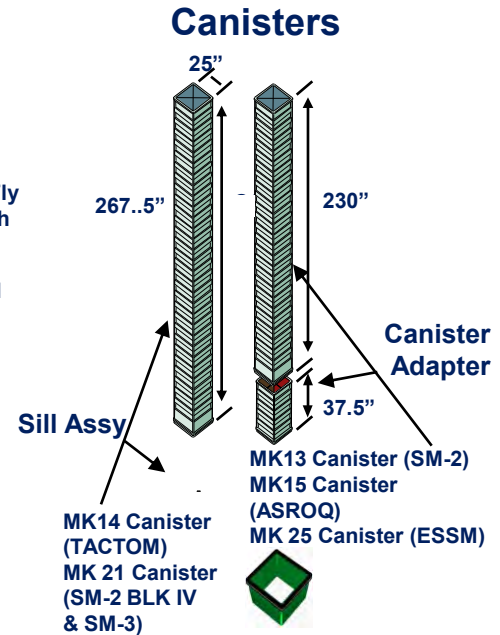
Two Redundant Launch Control Units



8 Cell Module



Module Structure & Gas Management System

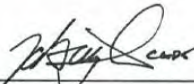


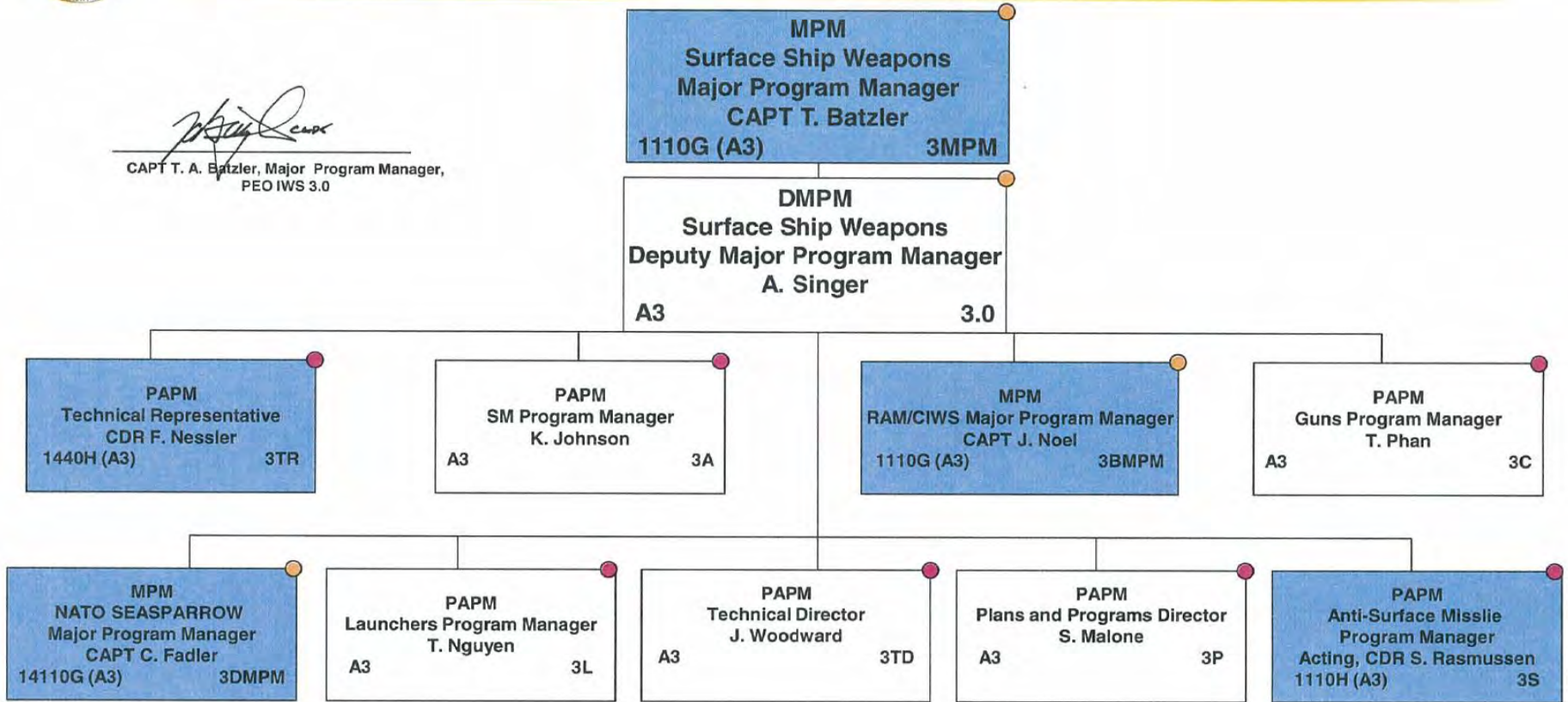
Shipping, Storage & Firing Container



PEO IWS 3.0

Surface Ship Weapons


 CAPT T. A. Batzler, Major Program Manager,
 PEO IWS 3.0



- Military Onboard
- Military Vacant
- Other Military, USMC
- Civilian Filled
- Civilian Vacant
- Key Leadership Position
- Critical Acquisition Position

Civilian On-Board	112
Military On-Board	13
Civilian Vacancies	9
Military Vacancies	2



Priority For Fleet Introduction

- **Extend service life**
- **Lower fleet operating cost**
- **Lower cost per mission kill**
- **Improve safety**



Technology Development Focus

Technologies

- **Material Science**
 - **Reduce Component Weight**
 - **Volumetric efficiency**
 - **Reduce Environmental effects**
 - **Reduce Barrel Weight**
 - **Aero Thermal Heating**
 - **Improve performance**
 - **Insensitive Munitions (IM) mitigation**
 - **Reactive materials**
 - **Energetics to improve lethality**



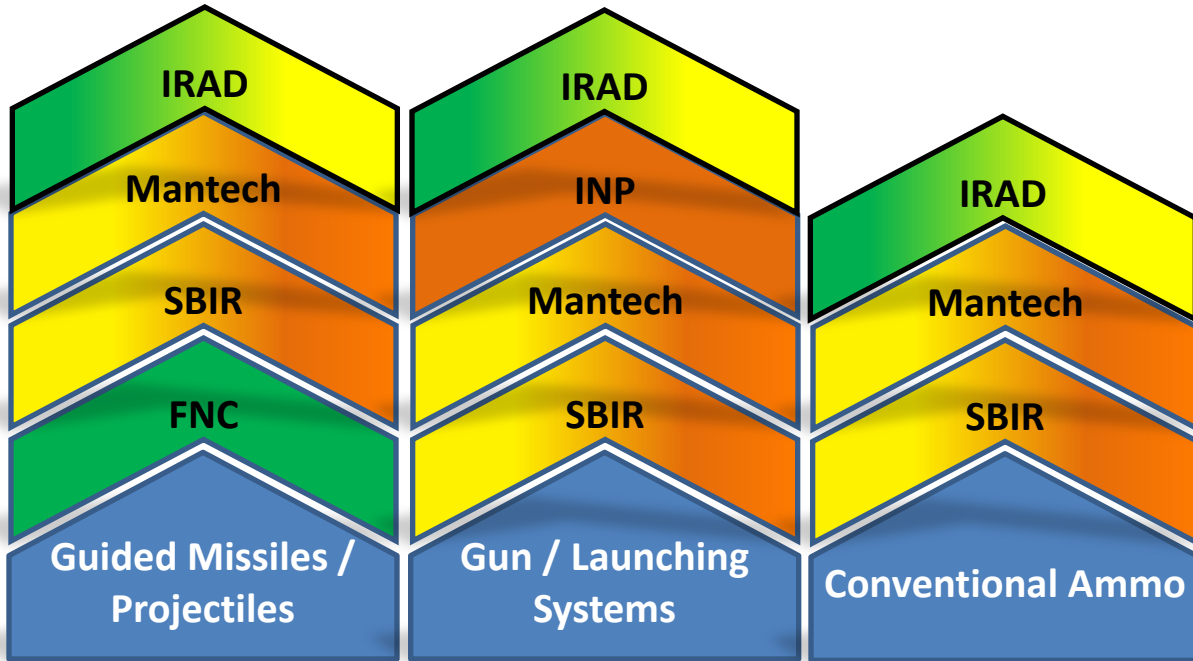
Technology Development Focus (Cont.)

Technologies

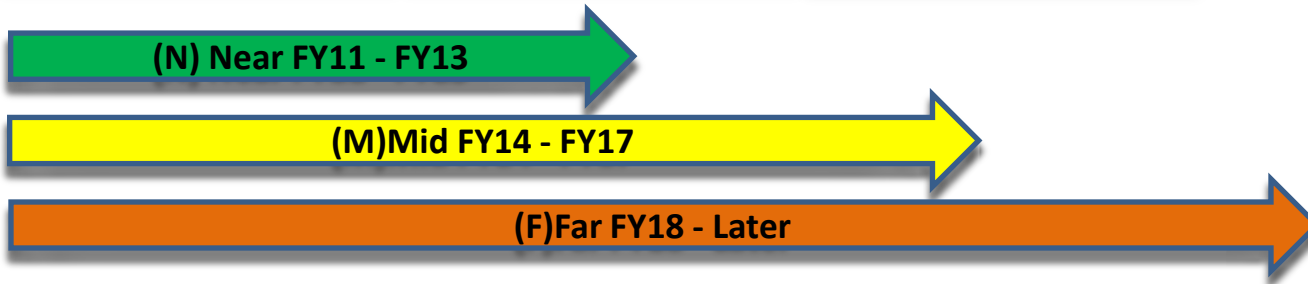
- **Energy Management**
 - **Improve Thermal Management**
 - **Extend battery life**
 - **Launch options**
 - **Alternatives to conventional launch energetics**
- **Manufacturing Process Improvements for Affordability**
 - **Improve reliability/performance**
 - **Improve efficiency/Improve production rate**
 - **Improve service life**
- **Processing Improvements**
 - **Target recognition**
 - **Network enabled**



Investment Strategy



- FNC: Future Naval Capabilities
- INP: Innovative Naval Prototype
- IRAD: Independent Research and Development
- SBIR: Small Business Innovation Research





Investment Timeline

Guided Missiles / Projectiles	Gun / Launching Systems	Conventional Ammo
Volumetric Efficiency (M) ●	Volumetric Efficiency (M) ●	Reduce Barrel Wear (NM) ● ●
Aero Thermal Heating (M) ●	Alternatives to conventional launch energetics (F) ●	Reactive Materials (MF) ● ●
IM Mitigation (NMF) ● ● ●	Improve Reliability/Performance (NM) ● ●	Energetics to improve lethality (MF) ● ●
Reactive Materials (MF) ● ●	Improve Service Life (NM) ● ●	Improve Production Rate (MF) ● ●
Energetics to Improve lethality (MF) ● ●		
Extend Battery Life (MF) ● ●		
Target Recognition (MF) ● ●		
Network Enabled (MF) ● ●		

(N) Near FY11 - FY13 →

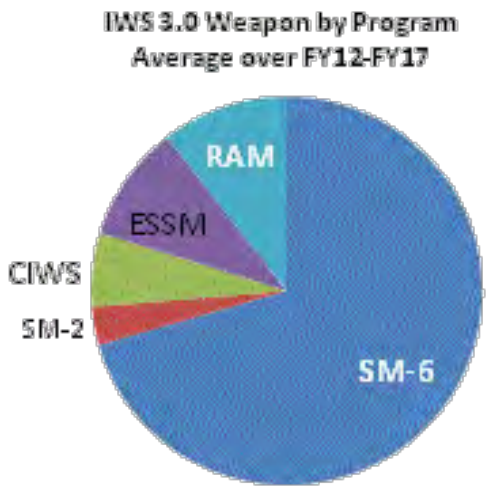
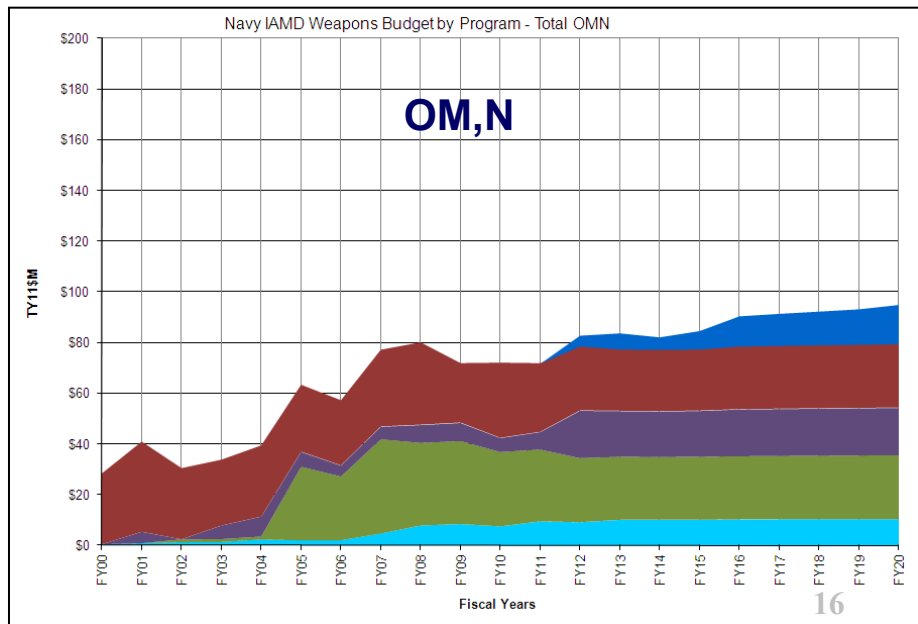
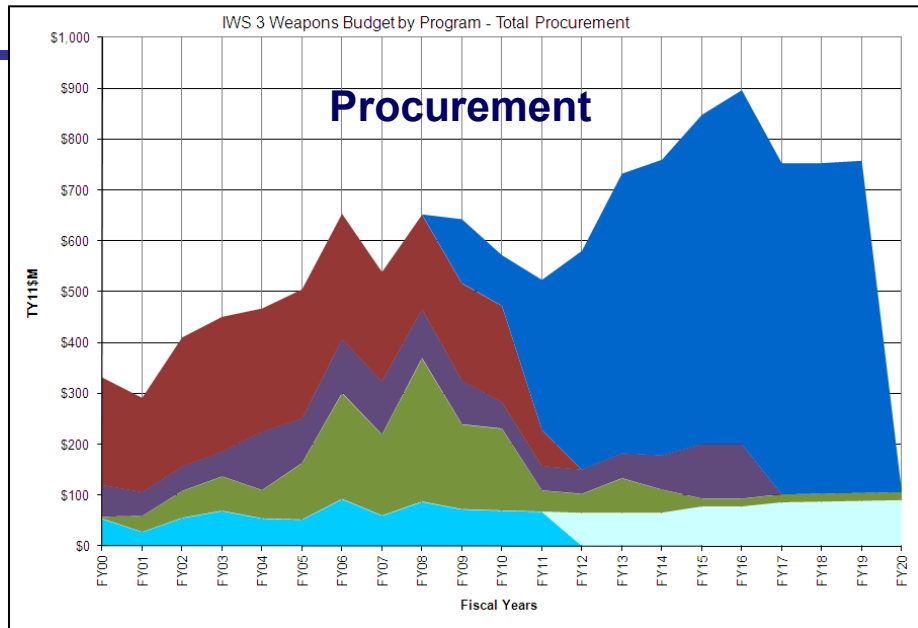
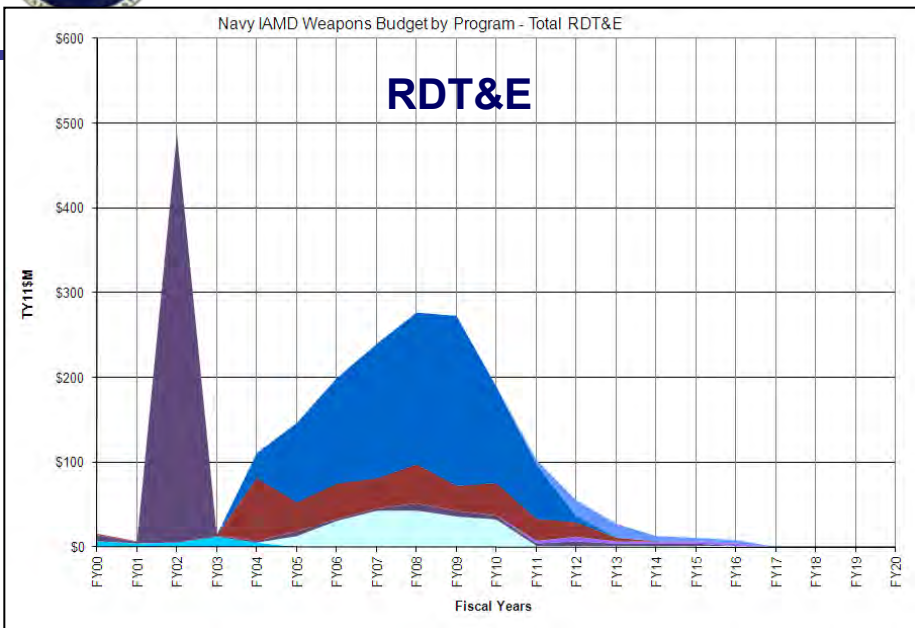
(M) Mid FY14 - FY17 →

(F) Far FY18 - Later →



Understanding Cost Drivers

Within The IWS 3 Portfolio (PB12)



- SM-2
- SM-6
- CIWS
- ESSM Bik I
- ESSMBIK 2
- RAM Bik I
- RAM Bik II

Total Ownership Cost



Procurement Initiatives

- **Development of an Acquisition Philosophy Across the entire IWS 3.0 Weapon Portfolio that looks to leverage investments.**
 - Includes a look at needed technology through 2025 and the path to effective implementation for the warfighter.
 - Leveraging technology investments across weapon platforms
 - Common data links between ESSM and STANDARD Missile for Interrupted Continuous Wave Illumination (ICWI).
 - Technology planning efficiencies to map common requirements when developing new propellant capabilities so technology can be applied across platforms (ESSM, RAM, SM).
 - Bundling Purchases across variants and agencies
 - Aligning buys for MK-104 between SM-2, SM-3 & SM-6.
 - Development of multi-year procurements to increase lot sizes.



Better Buying Concept

- **Contracting Initiatives**
 - **Multi-year procurements across the IWS portfolio, one per year, to level- load proposal and contracting efforts, extending contracting capacity**
 - **Deliver unit cost savings on follow-on production programs, as well as reducing bid, proposal, and contracting costs**
 - **Utilize three year contract horizons to minimize impact to procurement flexibility – lower quantity risk**
 - **Pursue “buy out” opportunities on configurations with limited life**

Looking for collaborative contracting efficiencies that support our priorities



Better Buying Power Initiatives

- **Mandate affordability** as a requirement
- Drive **productivity growth** through will cost/should cost management
- **Eliminate redundancy** within warfighter portfolios
- Make **production rates economical** and hold them stable
- **Reward contractors** for successful supply chain and indirect expense management
- Extend the **Superior Supplier Incentive Program** to a DoD-wide pilot
- **Reinvigorate industry's IRAD** and protect the defense technology base
- **Promote Real Competition**
- **Increase dynamic small business base** in Defense market place competition
- **Reduce non-productive processes** and bureaucracy and deliver savings to customer
- **Establish Affordability Performance Specification Goal/Objective**
 - **Target influences Should Cost**
- **Pursue Multi-Year Contracting Strategies**, where appropriate, to drive affordability and yield significant savings
 - **Leverage Complementary Layers in IWS Portfolio**
 - **3-5 year procurements allow Prime and Supplier base to Optimize Production Performance and Accountability**
 - **Stabilizes Production Rates and Funding**
- **Establish Negotiation Targets based on Should Cost**
 - **Identify Opportunity Set and Cost Drivers**
- **Establish incentive strategy to reward performance**
- **Invest in application of more IRAD in Next Generation Technologies** for across IWS portfolio of systems
 - **Enhance Small Business Innovation Research (SBIR) program opportunities**
- **3-5 year contracting cycle significantly reduces bid/proposal and negotiation efforts**

Initiatives Aggressively Pursued To Control Cost and Increase Competition



Potential Industry Opportunities

- **Next Generation Anti-Surface Ship Missile**
 - Opportunities in development and production
 - Missile
 - Launcher
 - Integration
- **Build to print**
 - MK 45 Gun Spares
- **Component breakout of major systems**
 - Potential for multiple competitive actions
 - System Integrator/Design Agent
- **Support Services contracts**
 - Consolidating requirements and leveraging talent
 - Reducing down from 10 contracts



Take-Aways

- **Our top priority is to deliver safe, effective and affordable missiles, launchers, and guns to the United States Navy**
- **DoD budget is tighter due to the current austere economic environment**
- **Adjusting our portfolio to balance requirements with what is available**
- **Need to work with industry as partners to ensure the fleet's priorities are met**



Question & Answer Period

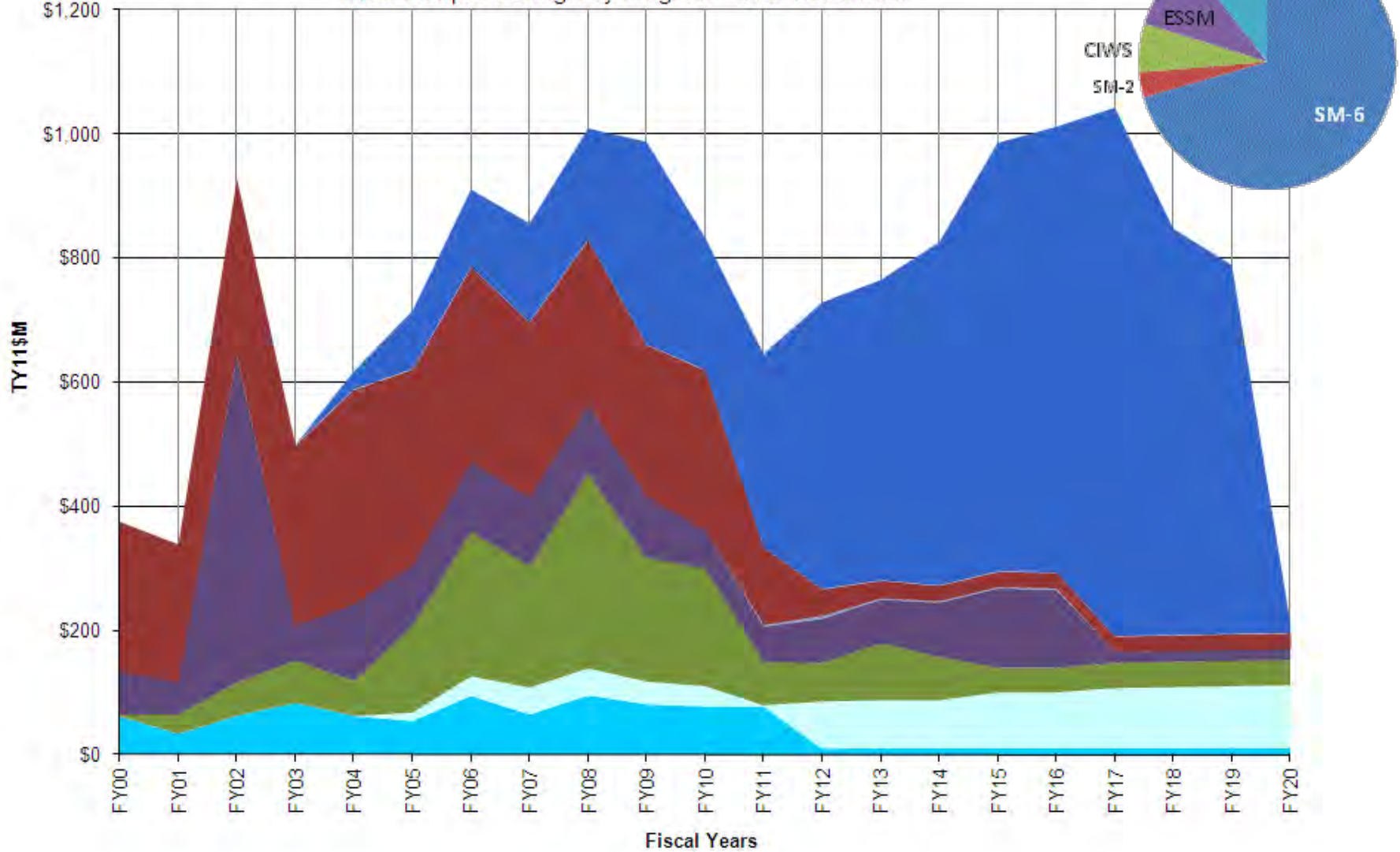


Understanding Cost Drivers Within IWS 3 Portfolio (PB12)

IWS 3.0 Weapon by Program
Average over FY12-FY17

Total Ownership Cost

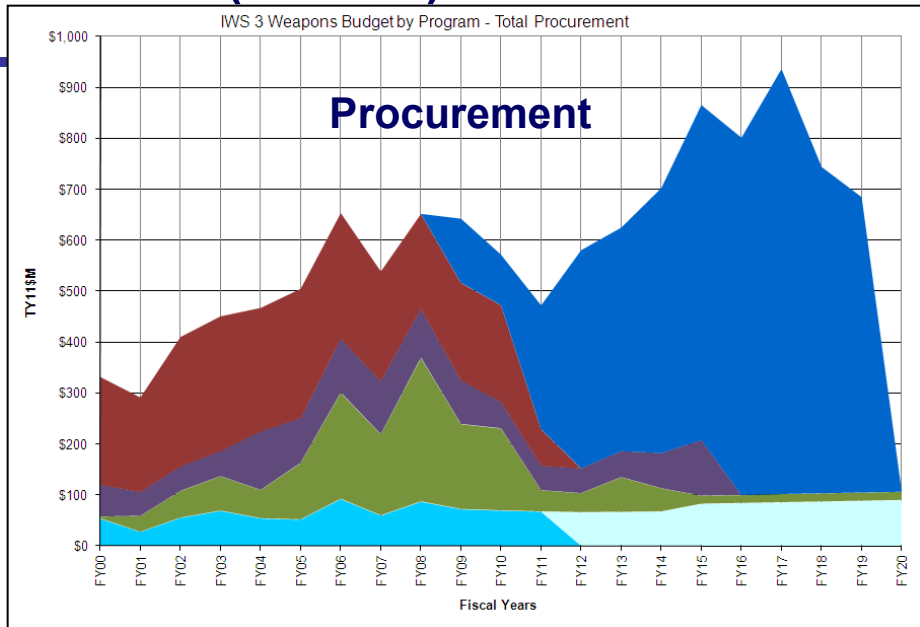
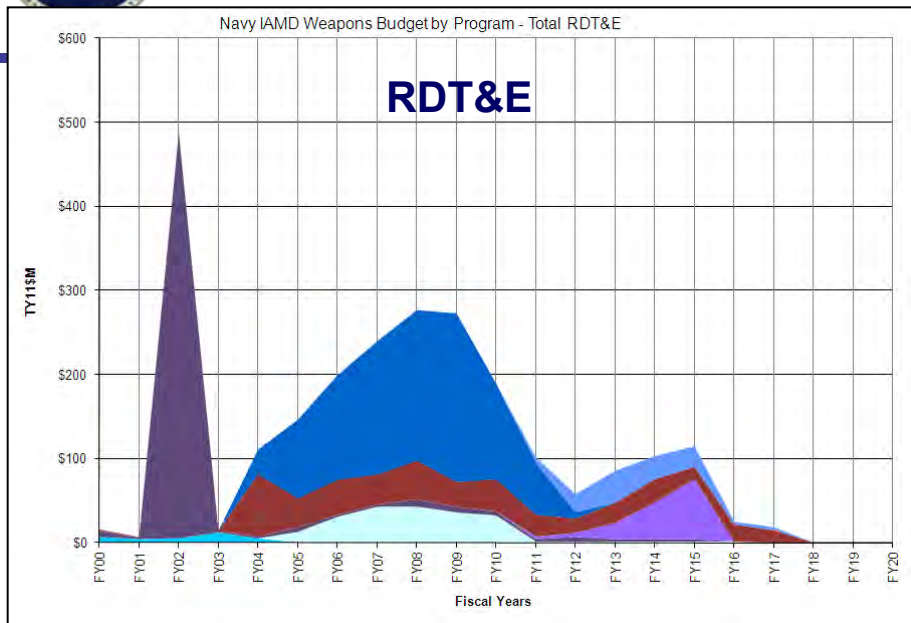
IWS3 Weapons Budget by Program - Total Investment



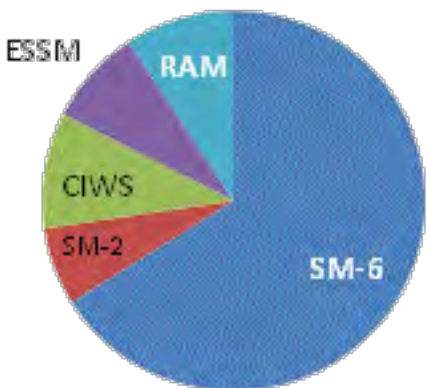


Understanding Cost Drivers

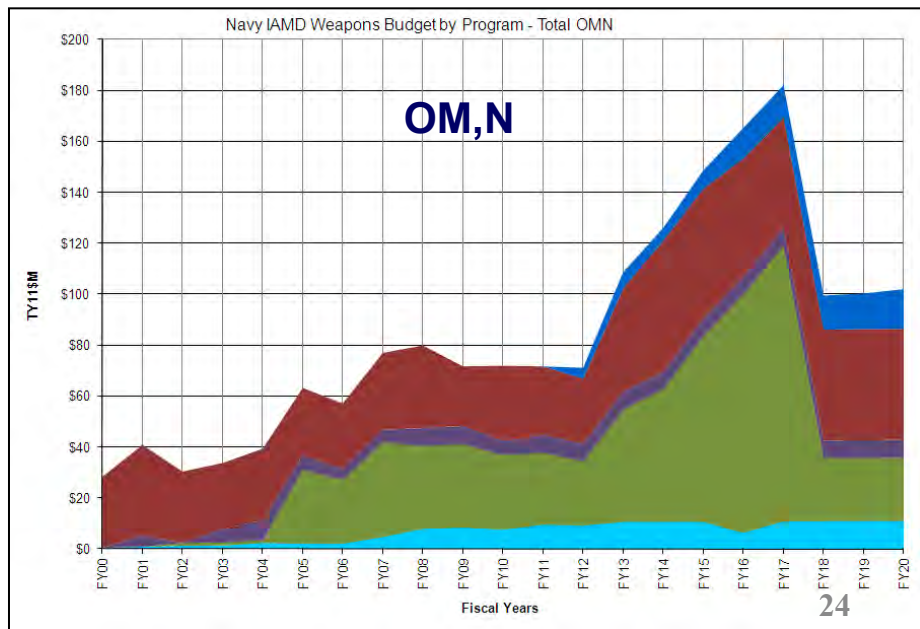
Within The IWS 3 Portfolio (BES 13)



IWS 3.0 Weapon by Program
Average over FY12-FY17



Total Ownership Cost



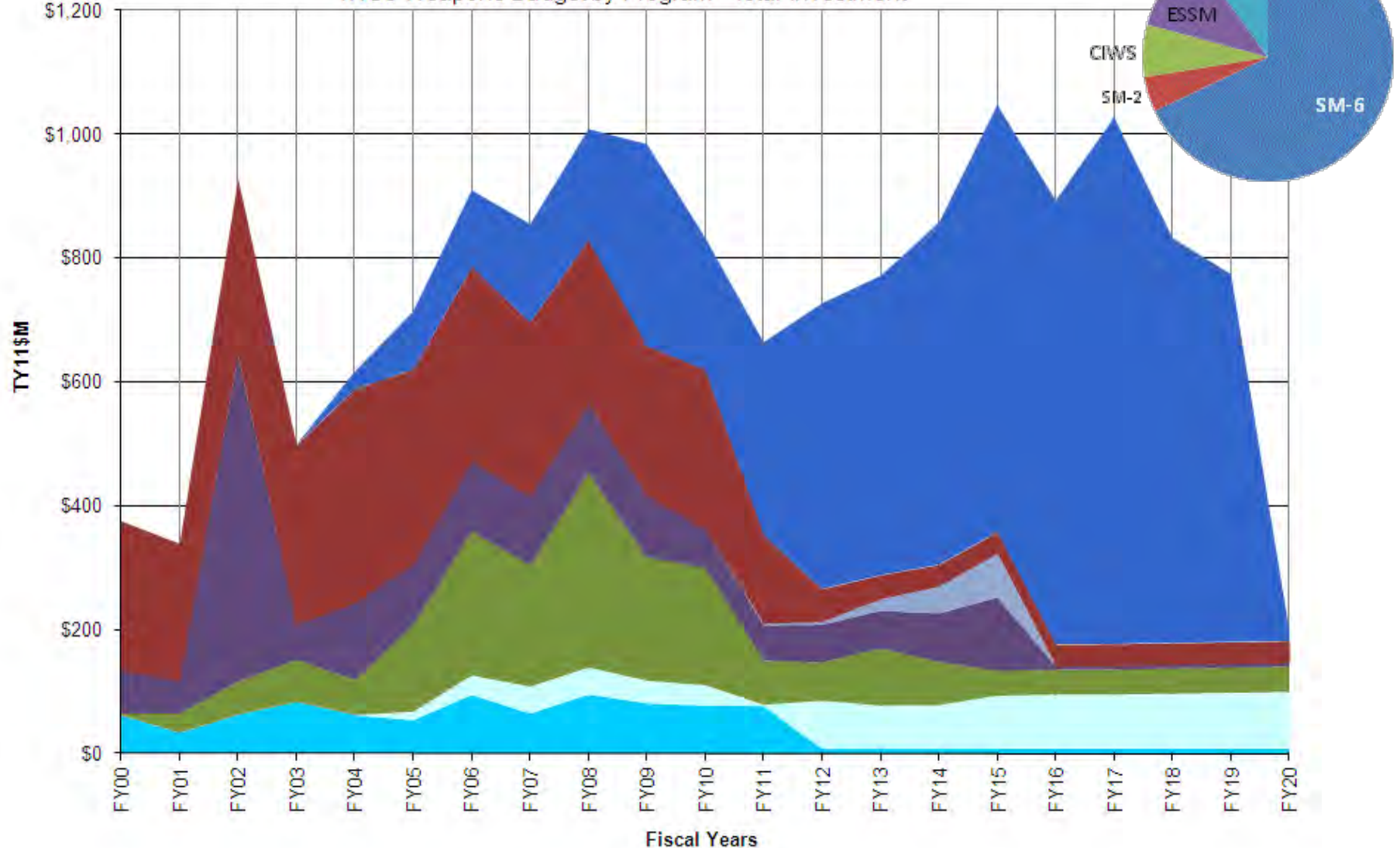


Understanding Cost Drivers Within Our Portfolio (BES 13)

IAMD Weapon by Program
Average over FY12-FY16

Total Ownership Cost

IWS3 Weapons Budget by Program - Total Investment





Open Architecture Summit

Mr. Chris Deegan

Executive Director

Program Executive Office Integrated Warfare Systems

Sponsored By Defense Daily

Wednesday, 9 Nov 2011



Challenge

Can a qualified third party – Big or Small . . .

- add,**
- modify,**
- replace,**
- remove, or**
- provide support**

for a component of a system, based on open standards and published interfaces.



Program Executive Officer Integrated Warfare Systems

- ◆ The PEO IWS organization is aligned to develop, procure and deliver Enterprise Warfighting Solutions for Surface Ships
 - ◆ PEO IWS has life cycle responsibilities for combat system performance, design management, systems engineering, installation, integration, test, maintenance and disposal

DELIVERY

- 238 USN Ships
- 8 USCG Ships
- 25 Nations
- PEO IWS executes 211 FMS Cases at \$567M funding level

INNOVATION

- APLs
- Industry
- NSWC
- NUWC
- ONR
- SBIR/SST
- DARPA
- Aegis BMD





Five Areas for Improvement

- ***Target Affordability and Control Cost Growth***
- ***Incentivize Productivity and Innovation in Industry***
- ***Promote Real Competition***
- ***Improve Performance in Services Acquisition***
- ***Reduce Non-Productive Processes and Bureaucracy***

*Ashton Carter, Under Secretary of Defense for Acquisition, Technology & Logistics,
September 14, 2010*



Understanding Data Rights

- **A data rights license comes with delivery**
- **Navy will exercise data rights strategically**
- **Use data rights to escape vendor lock**
- **Proprietary systems will fully disclose interface definitions**

**Better Buying Power:
Understanding and Leveraging
Intellectual Property Rights in
DoD Acquisitions**



*Prepared by the
Department of Defense Open Architecture Team*



OA Accomplishments Across the Navy

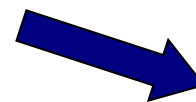
- **Submarine Warfare Federated Tactical Systems (SWFTS) model**
- **Acoustic Rapid COTS Insertion (ARCI)**
- **Littoral Combat Ship (LCS)**
- **SHARE on Forge.mil**
- **AN/SQQ-89A(V)15 Sonar**
- **NAVAIR Contracts Openness**
- **Mine Warfare Environmental Decision Aids Library (MEDAL)**
- **Maintenance Free Operating Period (MFOP)**
- **Consolidated Afloat Network Enterprise Services (CANES) Early Adopter Installations**
- **USMC Combat Operations Center (COC)**





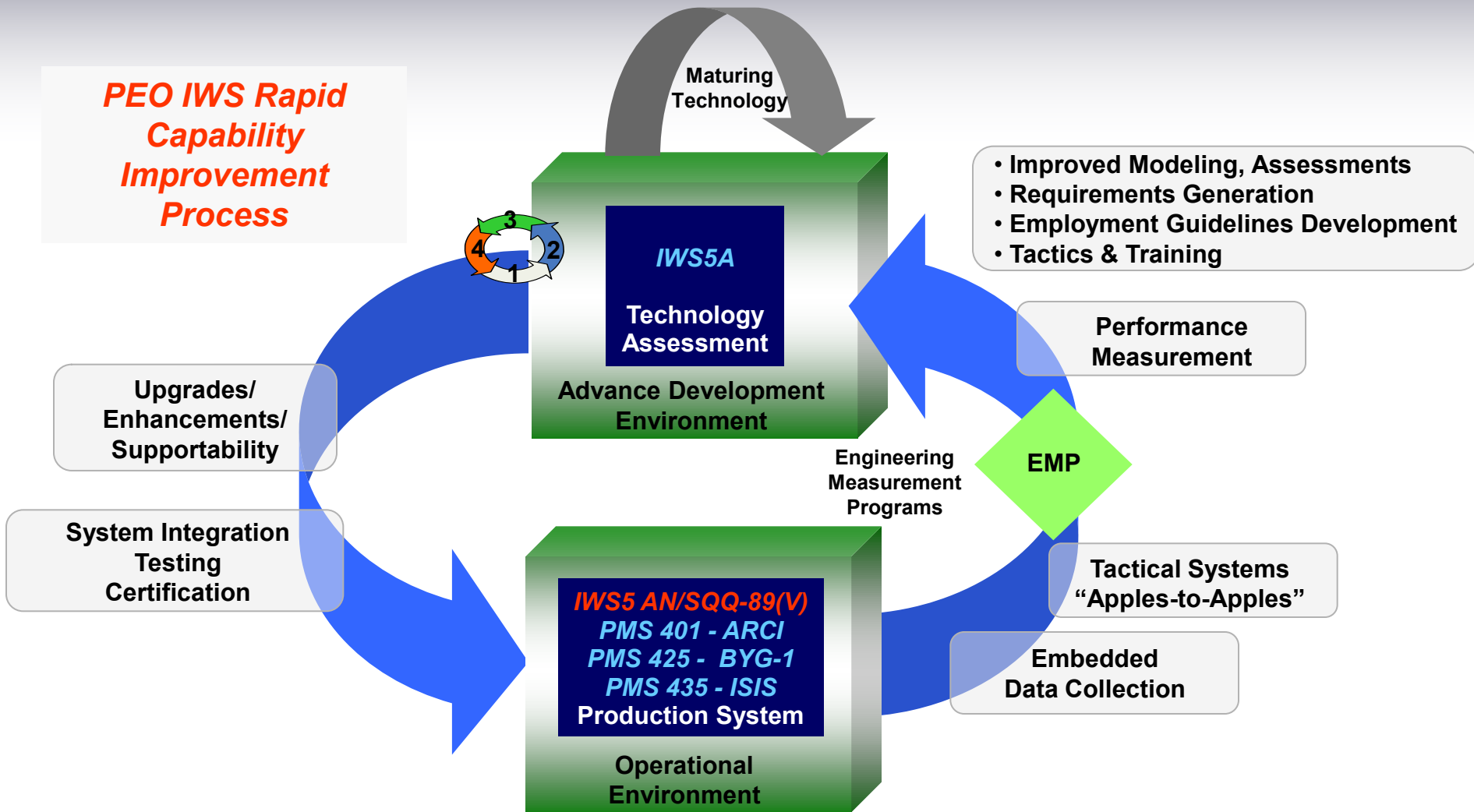
History of the *Contract Guidebook*

- **The Naval OA Contract Guidebook for Program Managers**
 - ver. 2.0, Oct 2007
- **USD AT&L endorsed Navy's OA Contract Guidebook**
 - Better Buying Power
- **Lessons learned and best practices from practitioners across DoD's acquisition community.**
 - DoD OA CGB for PMs ver. 1.0, December 2011
- **The OA Contract Guidebook for Program Managers**
 - Billions of dollars in contract awards
 - Compendium of best practices
- **Guidebook utilization tool**
 - Used by IWS successfully





System Performance Improvements Through Incremental Development



A Proven Process for Rapid Capability Improvement



USW ACB Business Model

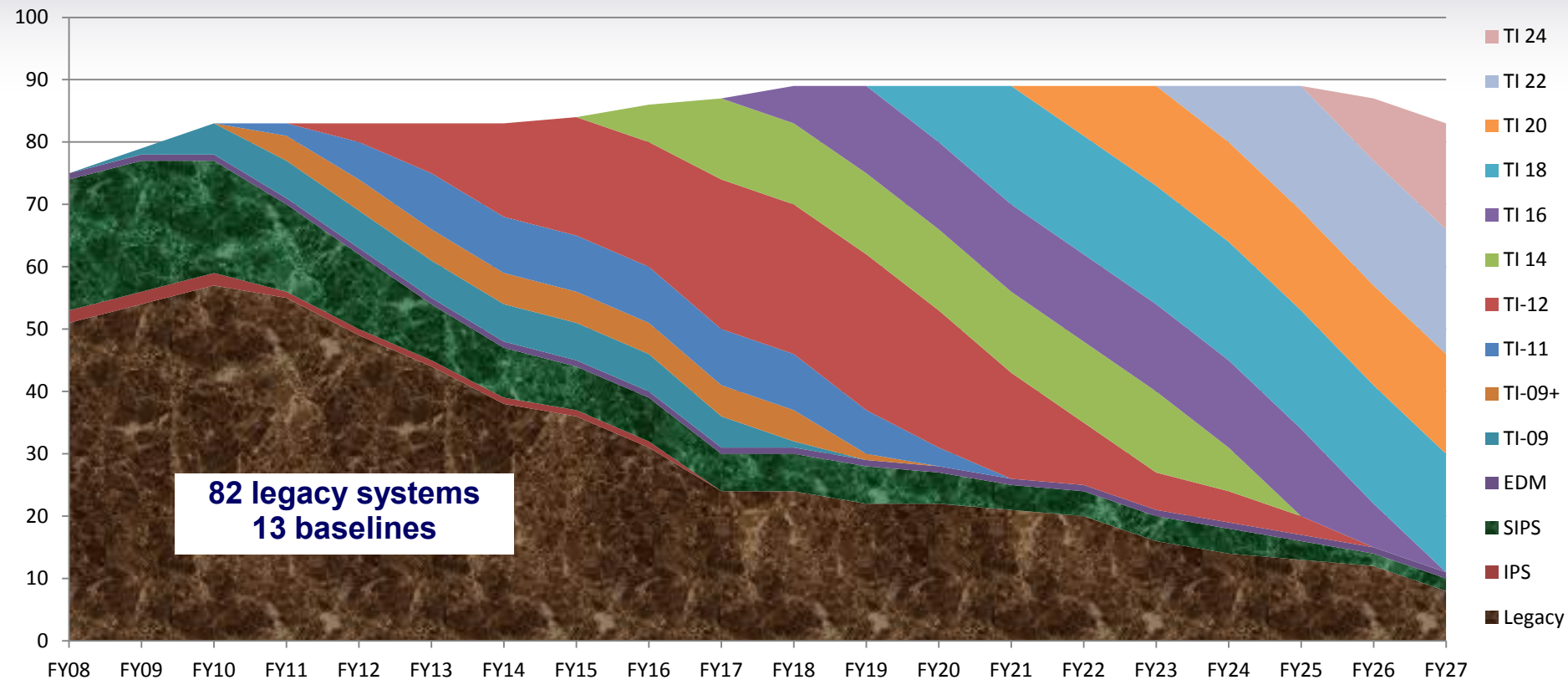
	FY12				FY13				FY14				FY15				FY16				FY17				FY18				FY19													
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4										
TI-14	◊		◊		Design				Procure																																	
ACB-13/TI-14	Recompete RFP for Integr & Prod								Integrate /Test																																	
ACB-15	◊				◊				Develop				Integrate/ Test				Initial delivery "First of Class"																									
TI-16	BAA for Developers								Design				Procure																													
ACB-15/TI-16																			Integrate /Test																							
ACB-17									◊				◊				Develop				Integrate/ Test				Initial delivery "First of Class"																	
TI-18									BAA for Developers								Design				Procure																					
ACB-17/TI-18																			Integrate /Test		Initial Delivery																					
ACB-19													◊				◊				Develop				Integrate/ Test				Initial Delivery "First of Class"													
													BAA for Developers																													

**ACB's named for year first delivered to the fleet.
TI's named for first of two year procurement.**



Surface Ship USW Combat Systems

Legacy to Future Systems Hardware



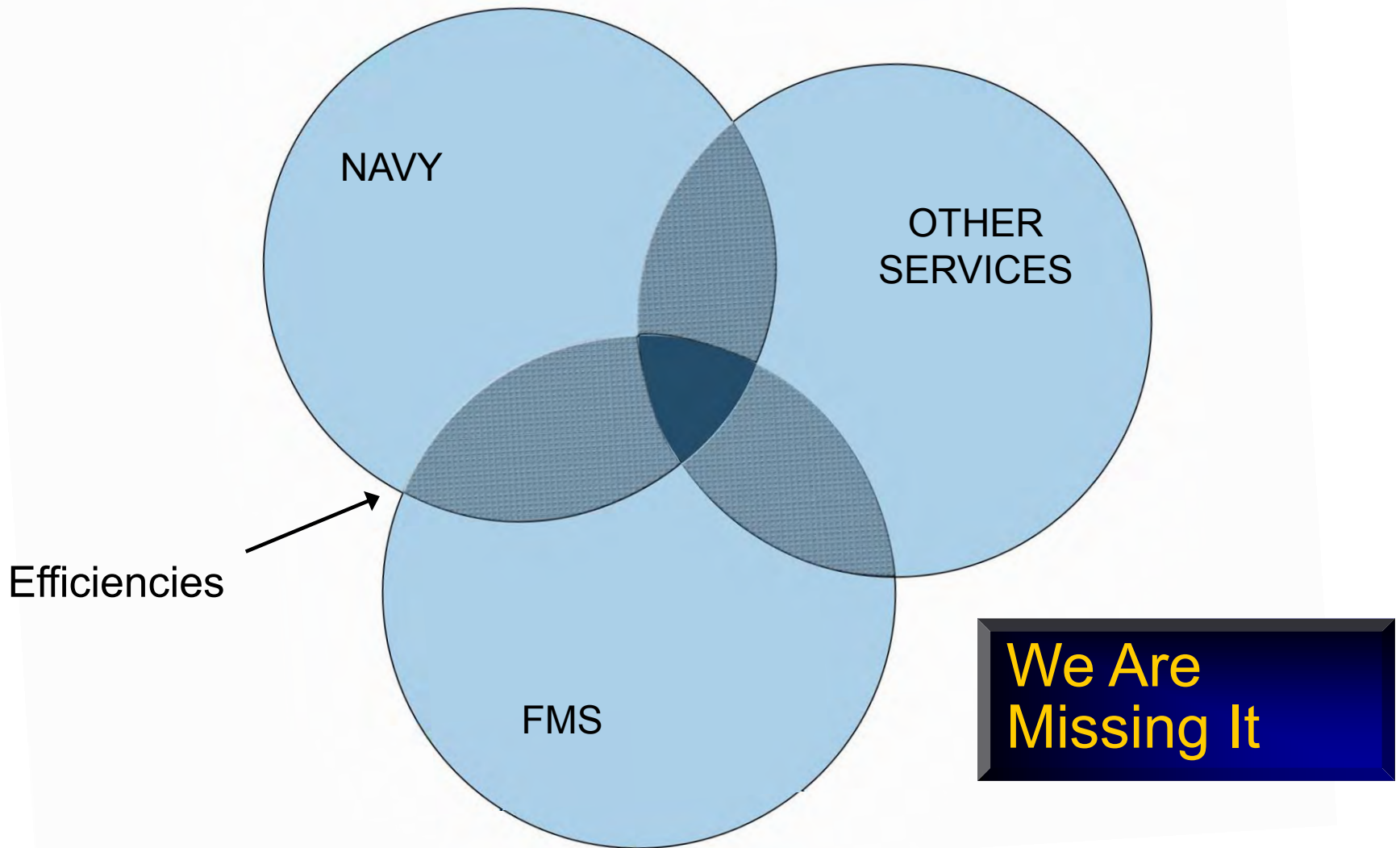
Tech Insertion strategy minimizes Support Costs and improves Training Posture



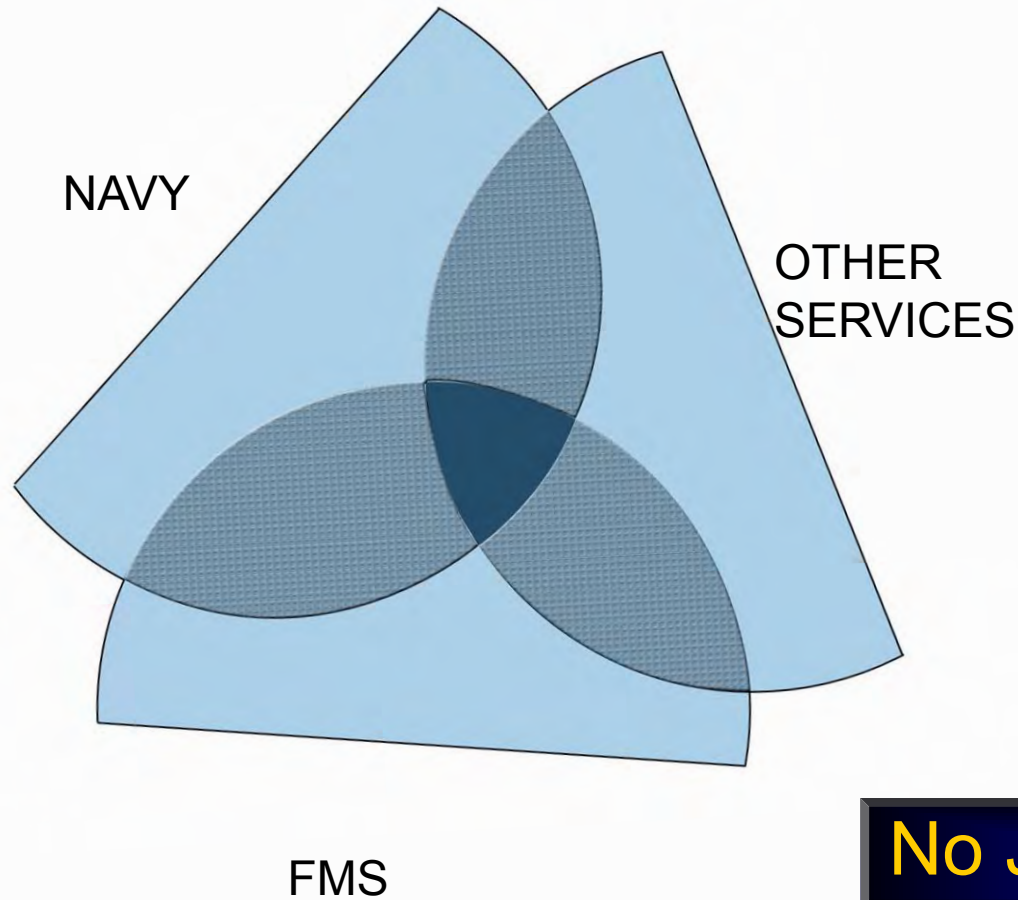
Utilizing Data Rights and Contracting – Powerful Tools for PEO IWS

- Past
 - CDS/CPS
 - Track Manager/Track Server
 - SEWIP Block II
 - MK41 VLS
- Current
 - AEGIS CSEA
 - Mk99 Illuminator
 - SQQ-89
 - CEC
- Future
 - SSDS
 - SEWIP Block III
 - AMDR
 - TBD

If This is the Focus...



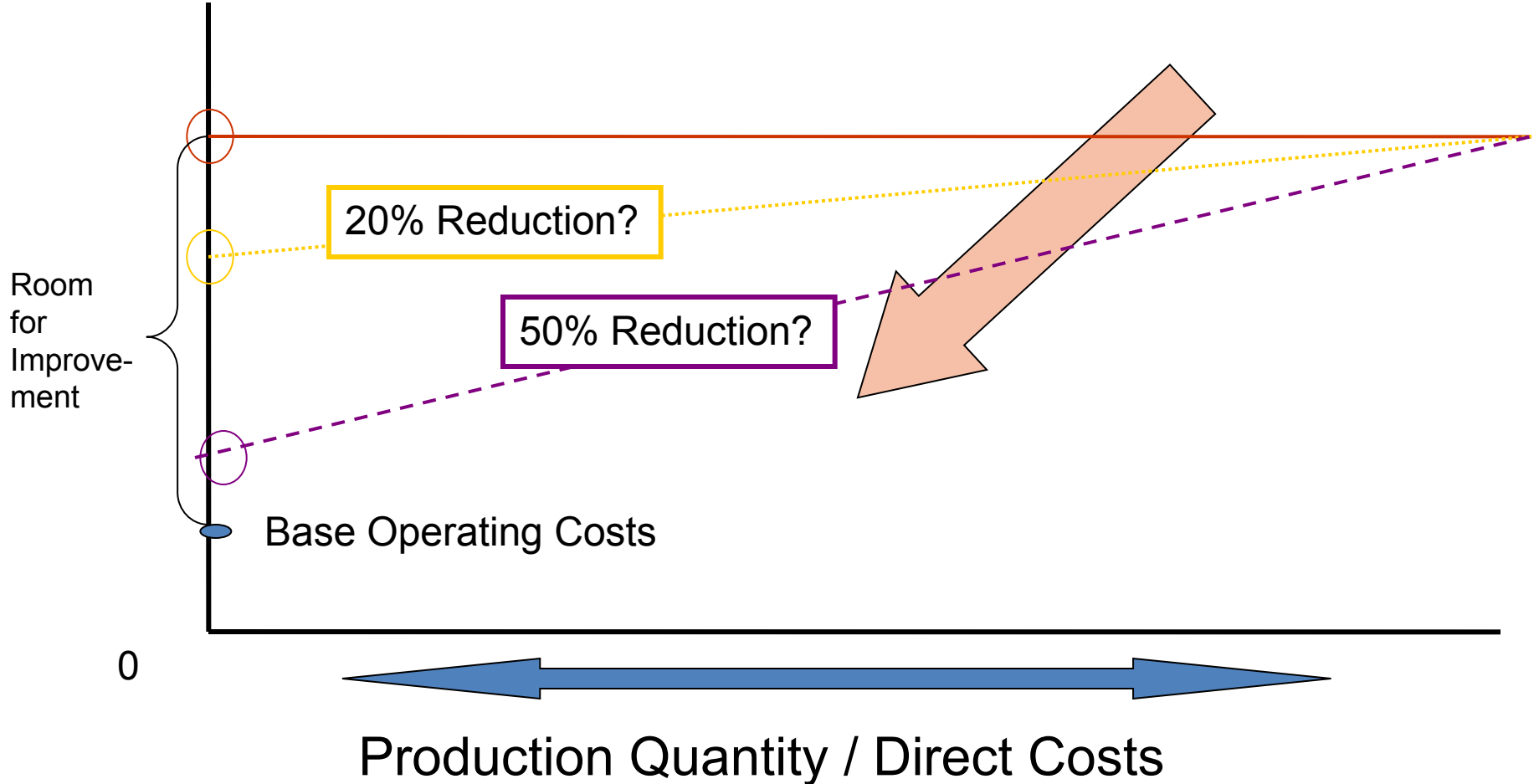
This is what is Expected



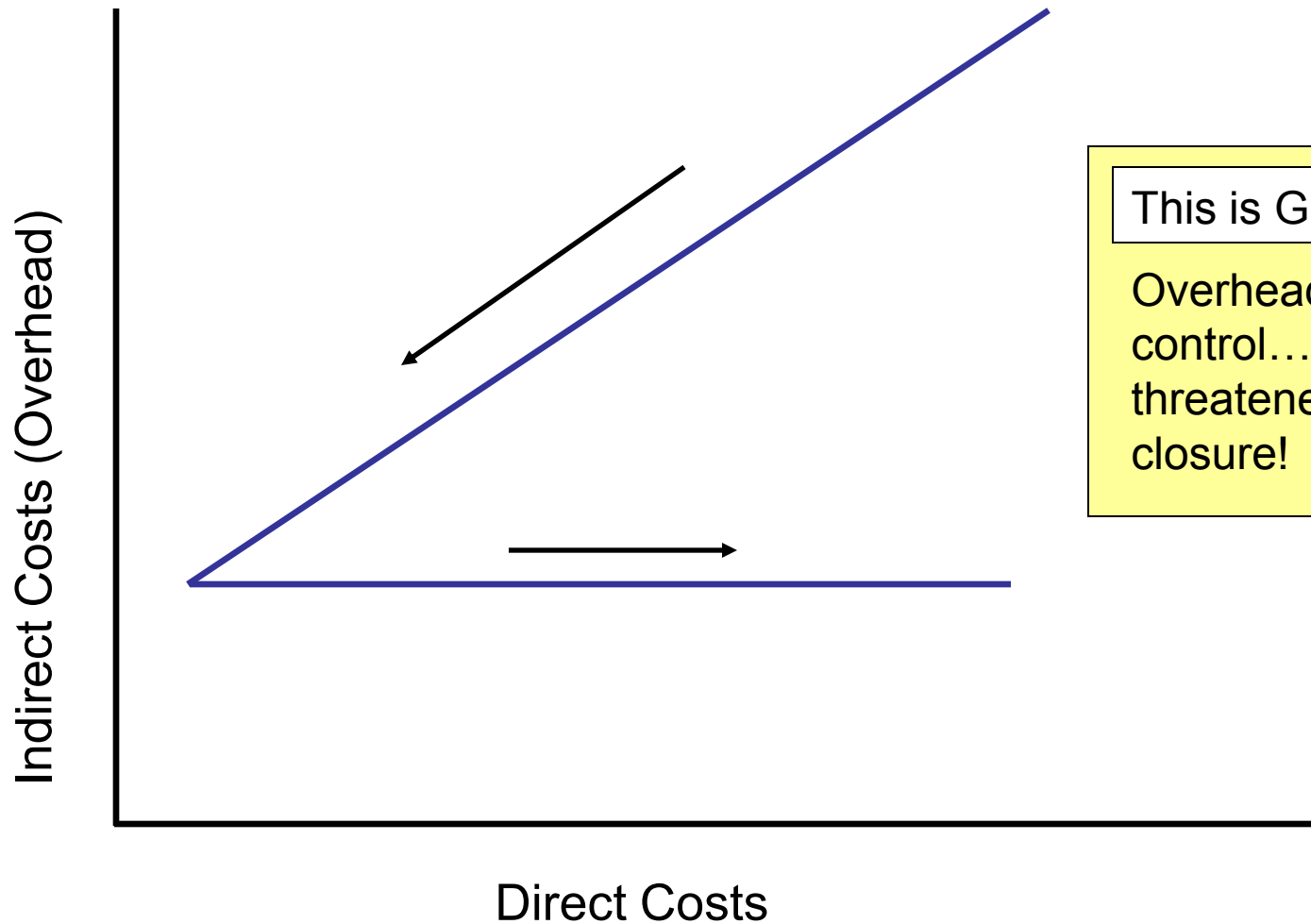
No Joke

It's About Addressing Overhead Costs

Indirect Costs



Overhead vs. Direct Costs



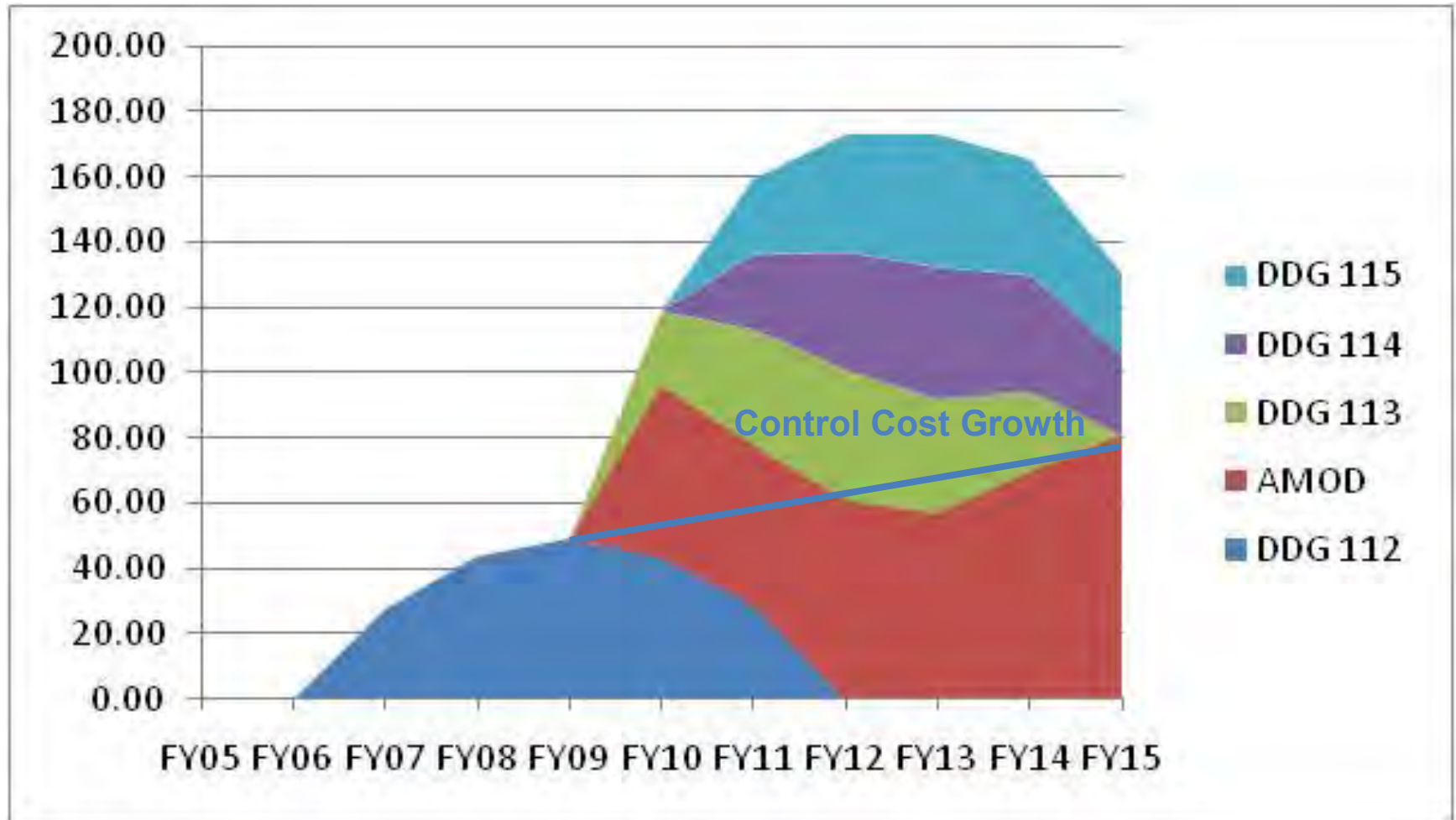
This is Good.

Overhead “found”
control...when
threatened with
closure!

It's About Addressing Direct Costs

- How are cross program efficiencies budgeted, contracted and executed
- Pressurizing support costs at all levels
- Multi Year Procurement potential
- Planning realistic projections and margins

Example of System Cumulative FTE Support Effect



Community Perception is Reality - Pros

- Experienced Workforce
- STRONG Technical Knowledge
- DoN Center / Combat System of Excellence
- Understand the Problems
- Many important contributions over decades of service

Recognized as World Leaders, but...

Community Perception is Reality - Cons

- Permit inefficiencies in order to maintain current staffing levels
- Cost is not important – High Overhead – Multiple management layers
- Encourage Duplicate Tasking
- Take too long to produce – Inefficient
- Suffer from Structural Arthritis – Organizational Misalignment / Silos
- Have Monopoly Mentality – Little competition drives bad behavior
- Exhibit Welfare State Symptoms – Why work hard?

Perceptions only get defeated with positive results

4 Questions:

25-50% Challenge for Support Costs

- Identify how to challenge fixed cost
- Identify how to maximize leverage across product lines and programs
- Identify what Government and Industry can challenge together
- Identify what each of you can challenge internally

Perceptions only get defeated with positive results

Transparency and Open Communication...

We're in this together

- **Achieving and sustaining a Competitive Playing Field**
- **Developing RFPs to stimulate innovative responses**
- **Sharing and Protecting Sensitive Information**
- **Making Timely Source Selection Decisions**
- **Sustaining Our Workforce through challenging Budget Times**
- **Stimulating and Fostering Legal and Ethical Collaboration**
- **Soliciting Competition with Incentives for Industry**
- **Adapting Acquisition Strategies to Enable Win-Win Outcomes**

➤ **PEO IWS will provide feedback**

➤ **Provide us yours today**



AEGIS

BALLISTIC

MISSILE

DEFENSE

Aegis BMD; The Way Ahead

***Ms. Laura DeSimone
Deputy Program Executive, Aegis BMD***

6 December 2011

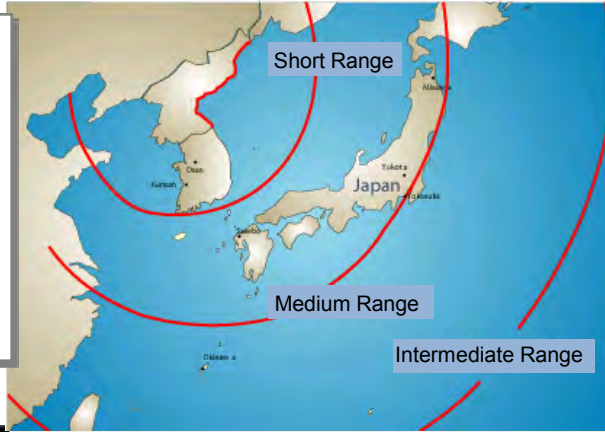


Aegis BMD's Role in the BMDS



Aegis BMD

Ascent/Midcourse Engagement Capability Defeats Short, Medium & Intermediate Range Ballistic Missiles

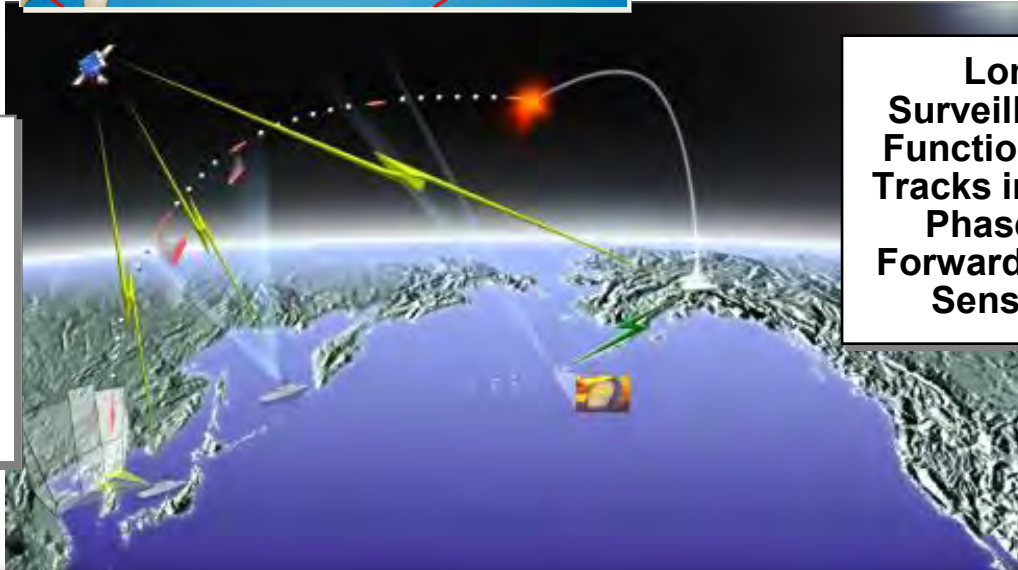


Terminal Defense Capability Defeats Shorter Range Ballistic Missiles

Long Range Surveillance & Track Function Detects and Tracks in Early Ascent Phase Providing Forward Based BMDS Sensor Support

Future Adding Early Intercept Capability

Anti-ICBM w/SM-3 Blk IIB (Aegis Ashore)



Proven Against Single Salvo, Dual Salvo & Separating Targets



Aegis BMD Fleet Today (November 2011)

Aegis BMD

SM-3 Blk I Deliveries

CY04		FM-7 FM-8 PB 08	CY05	
------	--	-----------------------	------	--

SM-3 Blk IA Deliveries

CY06		FTM-10	
CY07		FTM-11 FTM-11a FTM-12	FTM-13 (2) Burnt Frost
CY08			
CY09		FTM-17	
CY10			Key <input type="checkbox"/> Delivered <input type="checkbox"/> Procured
CY11		FTM-15	

SM-3 Blk IB Deliveries

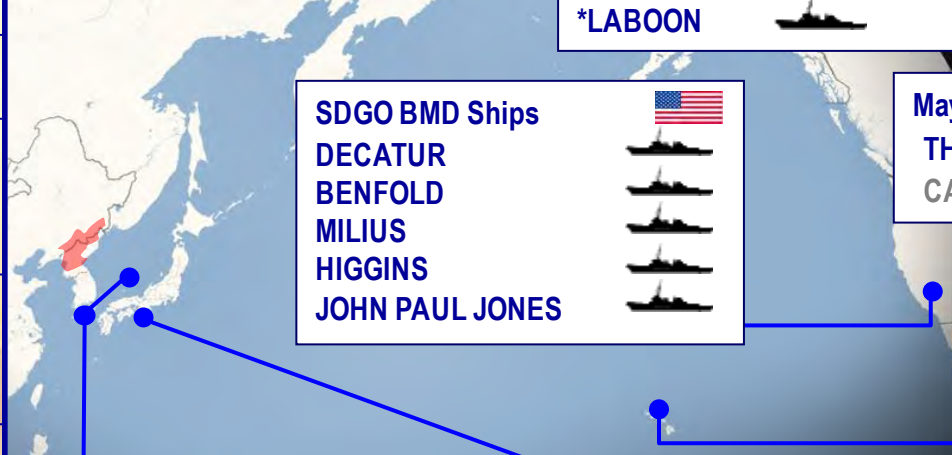
CY11		FTM-16 E2 (Pathfinder Round)
------	--	---------------------------------

SM-2 Blk IV Deliveries (75)

FTM-14 (2)	
Stellar Daggers	

Norfolk BMD Ships

VELLA GULF		*BARRY (FY11)	
MONTEREY		MAHAN (FY12)	
RAMAGE		ROSS (FY12)	
STOUT		ARLEIGH BURKE (FY12)	
COLE		DONALD COOK (FY12)	
*LABOON			



SDGO BMD Ships

DECATUR	
BENFOLD	
MILIUS	
HIGGINS	
JOHN PAUL JONES	

Mayport Based BMD Ship

THE SULLIVANS	
CARNEY (FY12)	

Japan Maritime Self Defense Force

KONGO	
CHOKAI	
MYOKO	
KIRISHIMA	

YOKO BMD Ships

SHILOH	
STETHEM	
CURTIS WILBUR	
JOHN S. MCCAIN	
FITZGERALD	

PHBR BMD Ships

LAKE ERIE (4.0.1 EDM)	
PORT ROYAL	
RUSSELL	
O'KANE	
PAUL HAMILTON	
HOPPER	

AB201109CC003

* Not Yet Certified



Aegis BMD SM-3 Evolution

Spiral Development with Incremental Capability Improvements

Aegis BMD

	SM-3 Blk I/IA	SM-3 Blk IB	SM-3 Blk IIA	SM-3 Blk IIB
	<ul style="list-style-type: none"> • Kinetic Warhead (KW) <ul style="list-style-type: none"> – 1-Color Seeker – Pulsed Solid Divert / Attitude Control System (SDACS) 	<ul style="list-style-type: none"> • KW <ul style="list-style-type: none"> – 2-Color Seeker – Throttleable Divert / Attitude Control System (TDACS) 	<ul style="list-style-type: none"> • Large Diameter KW <ul style="list-style-type: none"> – 21" Clamshell Nosecone – 2 Color Seeker – High Divert DACS – Increased Operating Time 	<ul style="list-style-type: none"> • Lightweight KV (Notional)
2 nd and 3 rd Stage	<ul style="list-style-type: none"> • 13.5" Propulsion 	<ul style="list-style-type: none"> • 13.5" Propulsion 	<ul style="list-style-type: none"> • 21" Propulsion <ul style="list-style-type: none"> – Increased Missile Vbo 	<ul style="list-style-type: none"> • New U.S. Developed 27" Propulsion • High Performance Liquid Upper Stage
1 st Stage	<ul style="list-style-type: none"> • MK 41 Vertical Launch System (VLS) 	<ul style="list-style-type: none"> • MK 41 VLS 	<ul style="list-style-type: none"> • MK 41 VLS 	<ul style="list-style-type: none"> • Modified MK 41 VLS
	<ul style="list-style-type: none"> • MK 72 Booster 	<ul style="list-style-type: none"> • MK 72 Booster (Potential Range Safety Mods for Aegis Ashore) 	<ul style="list-style-type: none"> • MK 72 Booster 	<ul style="list-style-type: none"> • Large Diameter Booster
	<p>Deployed Since 2004 PAA Phase I</p>	<p>First Flight 2011 PAA Phase II</p>	<p>First Flight 2015 PAA Phase III</p>	<p>2020 Deploy Land-Based PAA Phase IV</p>



Aegis BMD 4.0.1 & SM-3 Block IB 2nd Generation Weapons System

Aegis BMD

*Aegis BMD 4.0.1 Computer Program and Equipment System:

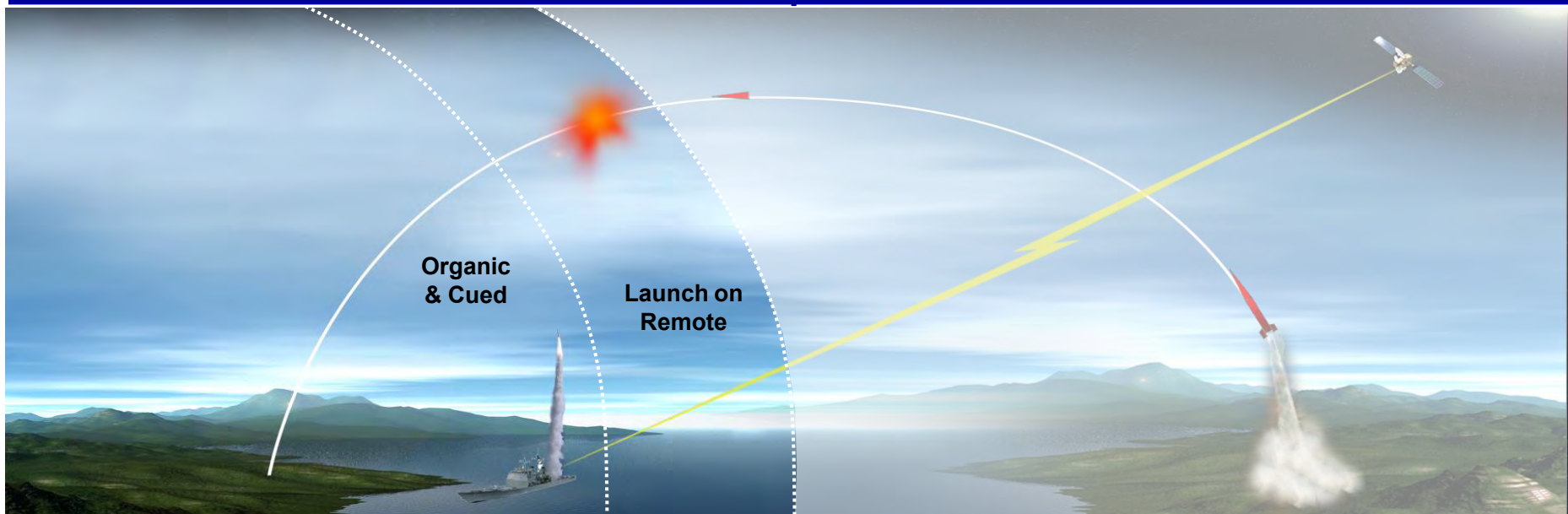
Approach:	Improve Shipboard Signal & Data Processing
Threats:	More Sophisticated Short to Intermediate Range Ballistic Missiles
	Launch on Remote
Operational:	- Increased Raid Density - Flexible Firing Doctrine
Cost:	\$45-\$55M
Quantity:	1 Test Ship
Provider:	Lockheed Martin, NJ & Navy Field Activities/Labs
Status:	Initial At-Sea Testing Underway, Available Late CY2011

*Can Also Fire SM-3 Blk IA

SM-3 Block IB Missile:



Approach:	Improve SM-3 Kill Vehicle Seeker & Engine
Battle Space:	Above the Atmosphere
Threats:	More Sophisticated Short to Intermediate Range Ballistic Missiles
Cost:	\$12-\$15M (est.)
Quantity:	>300 Planned, Test Rounds Being Fabricated
Provider:	Raytheon, Arizona & Navy Field Activities/Labs
Status:	First Flight CY2011 IOC 2013

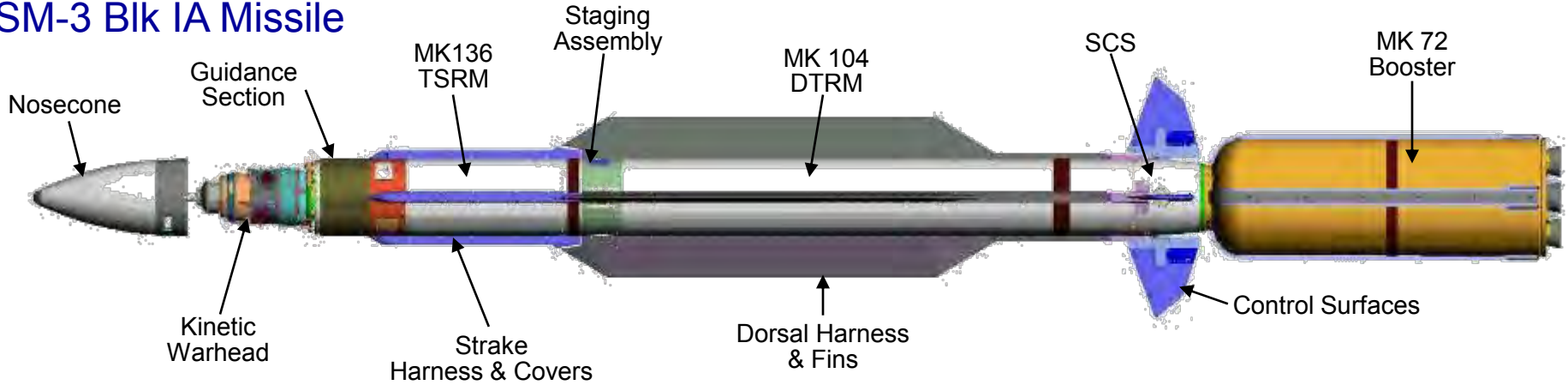




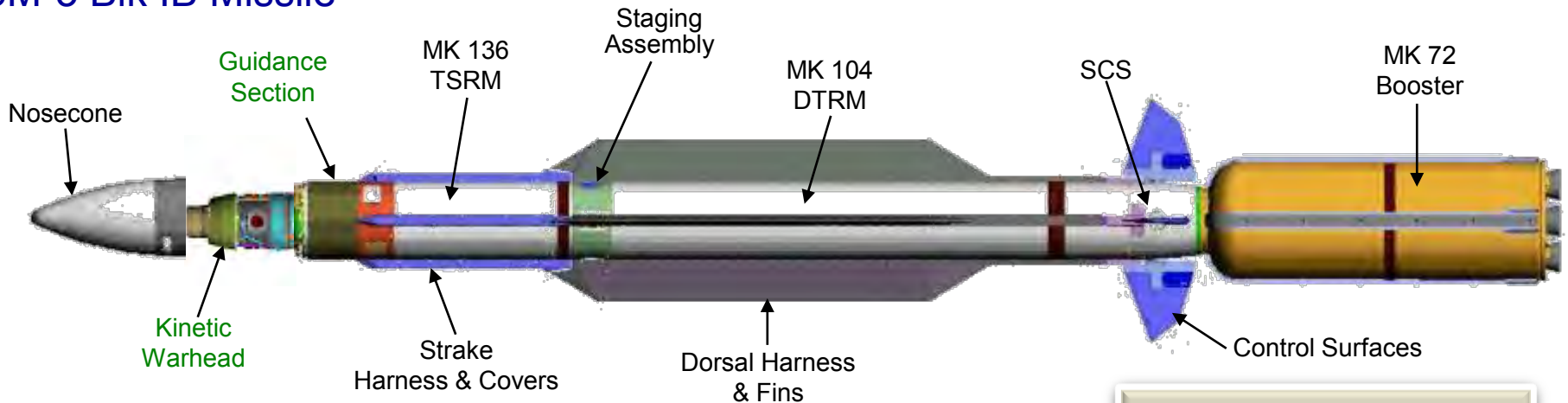
Aegis BMD SM-3 Missile Profile

Aegis BMD

SM-3 Blk IA Missile



SM-3 Blk IB Missile



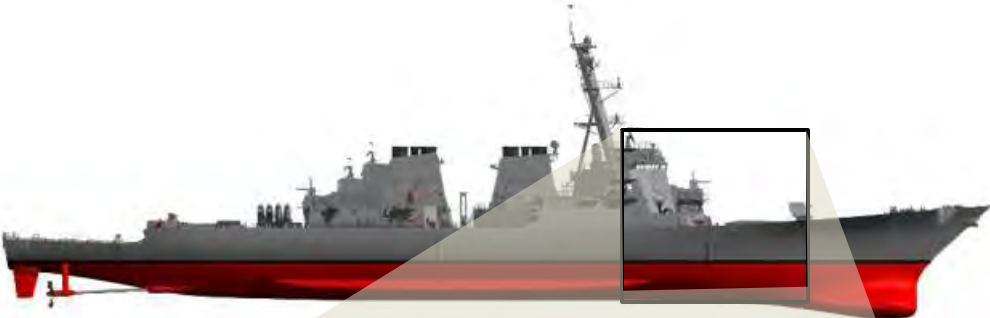
Common with SM-3 Block IA
Changed for SM-3 Block IB

TSRM – Third Stage Rocket Motor
 DTRM – Dual Thrust Rocket Motor
 SCS – Steering/Control Section

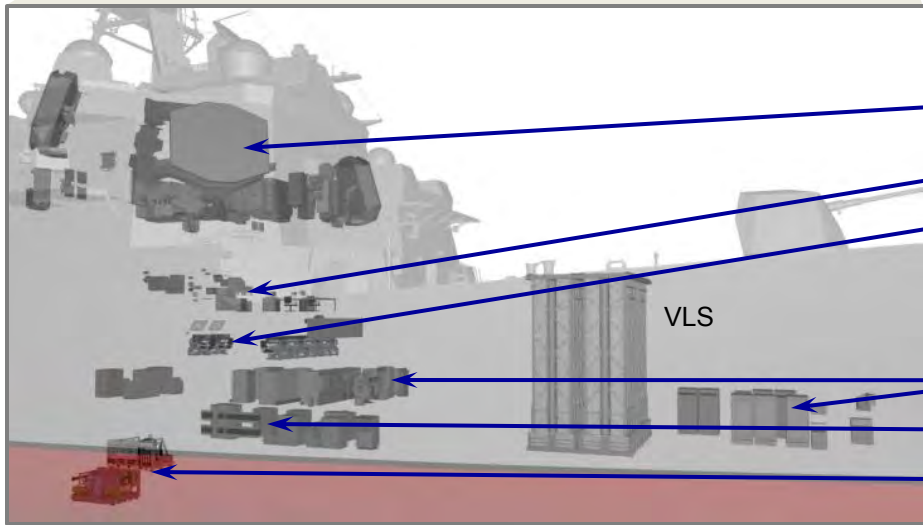
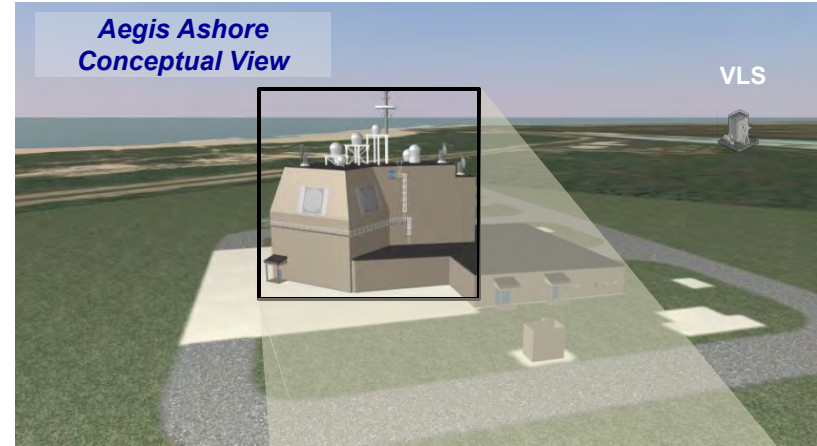


Aegis BMD Transition From Sea To Ashore

Aegis BMD



U.S. Navy Destroyer (DDG 113)



SPY Radar and FCS

CSMC

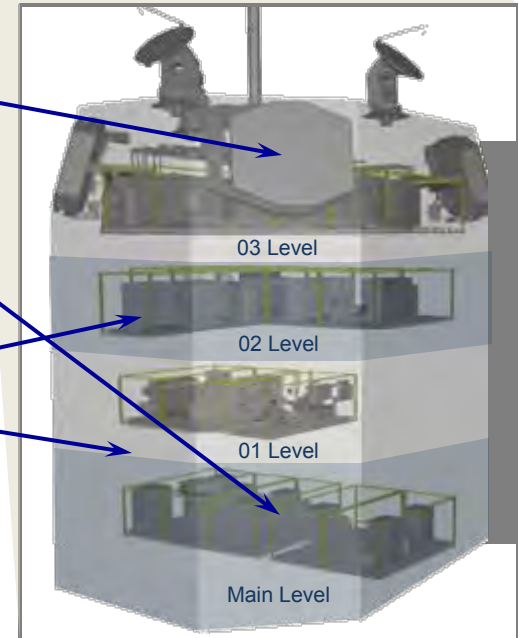
CIC

VLS

Processors

Power Supplies

Water Coolers



03 Level

02 Level

01 Level

Main Level

Acronyms	
FCS	Fire Control System
CSMC	Combat System Maintenance Central
CIC	Combat Information Center
VLS	Vertical Launch System

AB201110CC009



Aegis BMD 5.0 & SM-3 Block IB


Aegis BMD

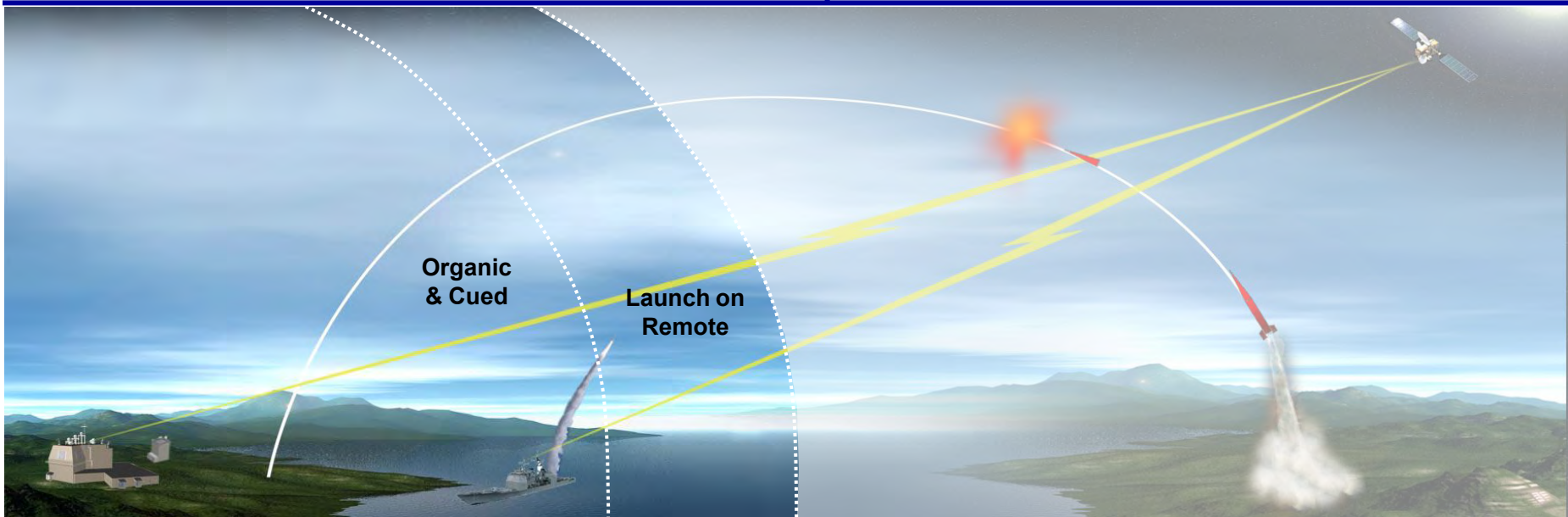
* † Aegis BMD 5.0 Computer Program and Equipment System:

Approach:	Integration of BMD 4.0.1 Capability into Aegis Modernization/Advanced Capability Build-12
Threats:	More Sophisticated Short to Intermediate Range Ballistic Missiles
	Launch on Remote
Operational:	- Increased Raid Density - Flexible Firing Doctrine
Cost:	\$10M for Ship Integration of BMD 5.0 as part of ACB-12 (Material; Procurement of ORDALTS; Installation)
Provider:	Lockheed Martin, NJ & Navy Field Activities/Labs
Status:	Under Development as Part of ACB-12, Available 2014

* Can Also Fire SM-3 Blk IA
† BMD Module in Navy's ACB-12

SM-3 Block IB Missile:

	Approach:	Improve SM-3 Kill Vehicle Seeker & Engine
	Battle Space:	Above the Atmosphere
	Threats:	More Sophisticated Short to Intermediate Range Ballistic Missiles
	Cost:	\$12-\$15M (est.)
	Quantity:	>300 Planned, Test Rounds Being Fabricated
	Provider:	Raytheon, Arizona & Navy Field Activities/Labs
	Status:	First Flight CY2011 IOC 2013





Aegis BMD 5.0 CU, SM-3 Block IB & SM-6

Aegis BMD

• Aegis BMD 5.0 CU Development Strategy

- Aegis Baseline 9 (ACB12/ABMD 5.0) is foundation for Aegis BMD 5.0 Capability Upgrades
- Integrates into the Baseline 9 Common Source Library

• Aegis BMD 5.0 CU Capabilities

- Incorporate Endo Organic Engagement
- Expand/Update Baseline 9 MRBM and IRBM threat set
- Increase SM-3 engagement capacity and Max SM-3 Missiles in Fight
- Sea-Based Terminal Increment 1 with SM-2 Block IV and SM-6

SM-3 Block IB Missile:



Approach: Improve SM-3 Kill Vehicle Seeker & Engine

Battle Space: Above the Atmosphere

Threats: More Sophisticated Short to Intermediate Range Ballistic Missiles

Cost: \$12-\$15M (est.)

Quantity: >300 Planned, Test Rounds Being Fabricated

Provider: Raytheon, Arizona & Navy Field Activities/Labs

Status: First Flight CY2011
IOC 2013

SM-6 Missile (Modified):



Approach: Modify Existing SM-6 Missiles

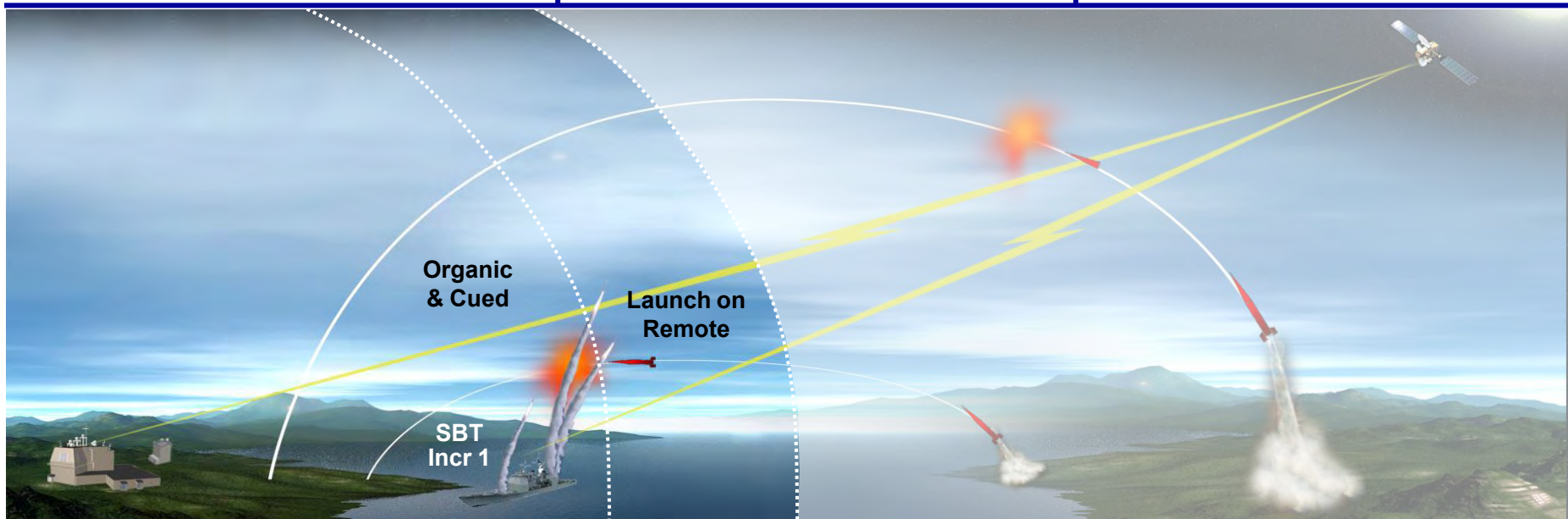
Battle Space: In the Atmosphere

Threats: Short and Medium Range Ballistic Missiles

Quantity: TBD

Provider: Raytheon, Arizona & Navy Field Activities/Labs

Status: IOC FY15





Aegis BMD 5.1, SM-3 Block IIA & SM-6 3rd Generation Weapons System

Aegis BMD

Aegis BMD 5.1 Computer Program and Equipment System:

Approach: Modify Existing Systems to Fly SM-3 Blk IIA & Use Off Board Sensors for Engagement

Threats: More Sophisticated Short to Intermediate Range Ballistic Missiles



Engage on Remote

Operational: Flexible Firing Doctrine

Cost: \$23M

Quantity: TBD

Provider: Lockheed Martin, NJ & Navy Field Activities/Labs

Status: Development, IOC 2018

SM-3 Block IIA Missile:



Approach: Increased Reach & Velocity Biggest Missile Compatible w/Mk41 VLS

Battle Space: Above the Atmosphere

Threats: More Sophisticated Short to Some Intermediate Range Ballistic Missiles

Cost: ~\$20M-\$24M

Quantity: TBD

Provider: Joint U.S. & Japan

Status: Development, 1st Flight Late 2016

SM-6 Missile (Modified):



Approach: Modify Existing SM-6 Missiles

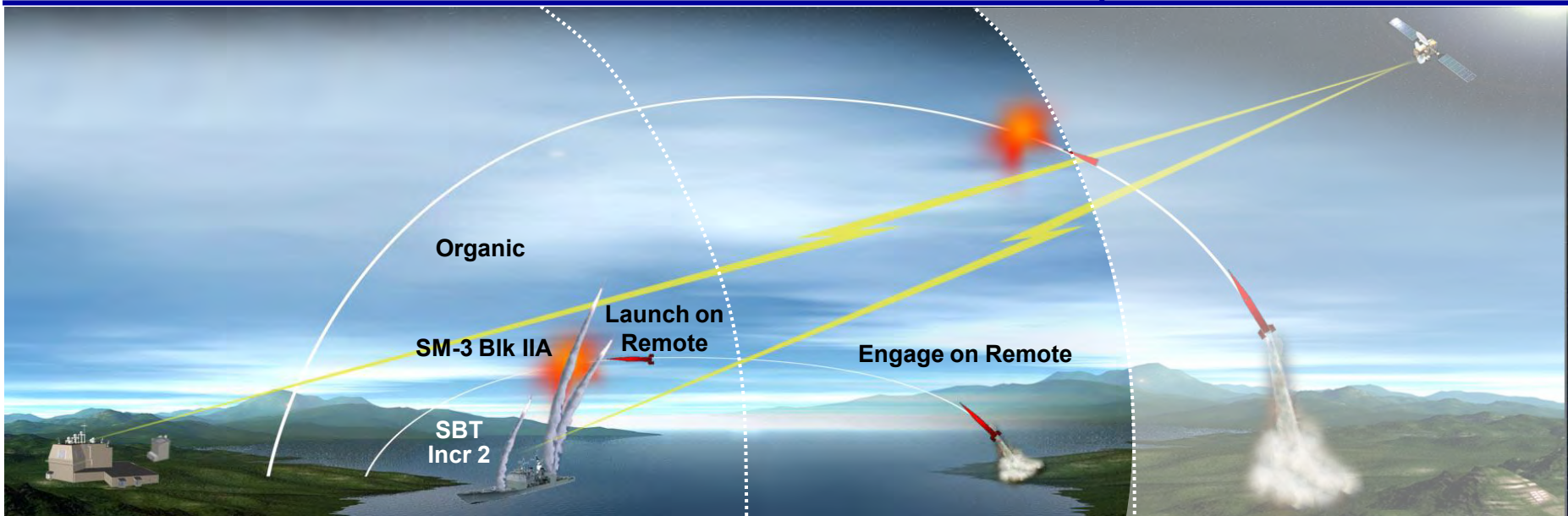
Battle Space: In the Atmosphere

Threats: Short and Medium Range Ballistic Missiles

Quantity: TBD

Provider: Raytheon, Arizona & Navy Field Activities/Labs

Status: IOC FY15





Navy/MDA Joint Management

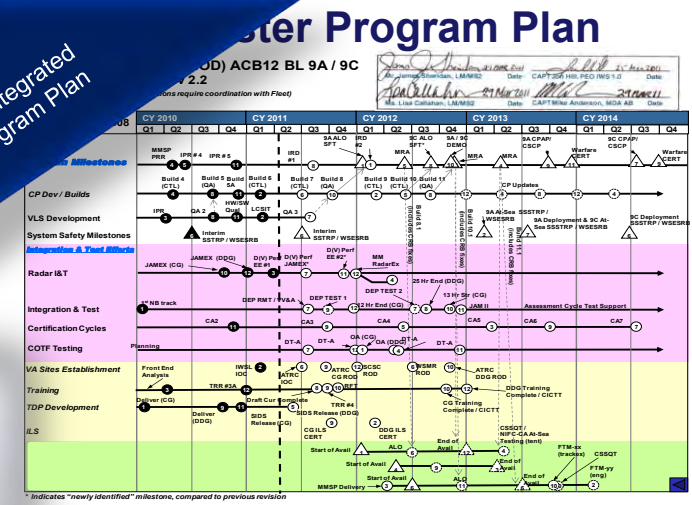
Aegis BMD

Integrated Work Breakdown Structure (WBS) ACB-12/PAA 2 Progress (B/L 4 CG, DDG 113 and PAA2 upgrade SRRs)

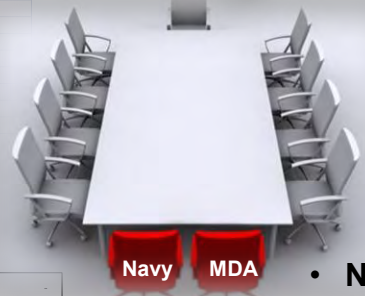
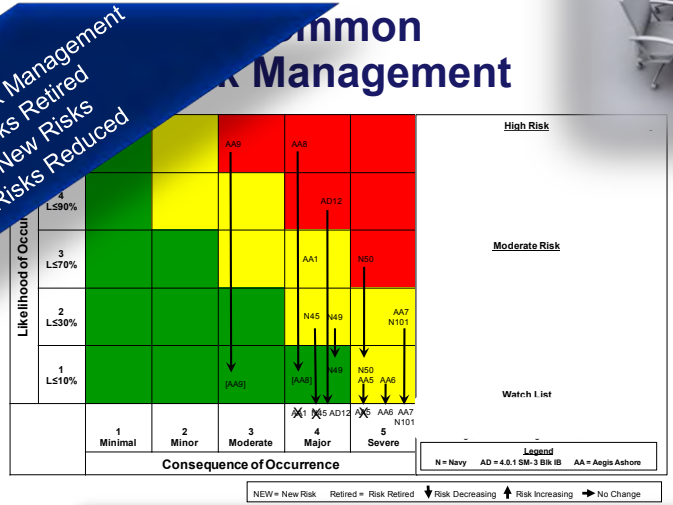
Common WBS Breakdown Structure (Rev 5A)

Code	Description
BB.01.01.01	Program Management
BB.01.01.02	Radar Program Management
BB.01.01.03	Quality/Mission Assurance/CMMI
BB.01.01.04	Program Business Mgmt Support/Finance
BB.01.01.05	Data Management Support
BB.01.01.06	Configuration Management
BB.01.01.07	Business Services
BB.01.01.08	Program Planning
BB.01.01.09	Common Cost Model Working Group
BB.02.01	Systems Eng Integration Team
BB.02.01.01	Systems Engineering & Tech Oversight
BB.02.01.02	System Safety Engineering Services
BB.02.01.03	Combat System Design

Navy/MDA Integrated Master Program Plan



Integrated Risk Management * X Risks Retired * Y New Risks * Z Risks Reduced



Coordinated & Joint Reviews

- Navy / MDA BODs
- Certification Panels
- Mission Readiness Assessments (MRA)/ Test Readiness Reviews (TRRs)
- Engineering Technical Reviews, AA PDR, CDR, B/L 4 CG/SBT SRR and DDG 113/PAA 2 SRR
- Risk Management Board (RMB)
- Deep Dives/Focus Days for Engineering Technical Reviews (AA...SRR)

Collaboratively Managing Lockheed Martin Through Common Processes, Reviews and Coordinated Contractual Direction



Aegis BMD . . . We Deliver

Aegis BMD



Installation

Computer Program Development



Missile Development

Firing



FTM-15 Movie

Enabling Capabilities, Providing Options for U.S. and Allies





Aegis BMD 3.6.1, SM-2 Block IV & SM-3 Block IA Currently Fielded Weapon System

Aegis BMD

Aegis BMD 3.6.1 Computer Program and Equipment System:

Approach: Modify Existing Ship Systems

Threats: Short to Intermediate Range Ballistic Missiles

Initial Launch on Remote

Operational:

- Retain Multi Mission Capability
- Near Term Sea Based Terminal

Quantity: 23 (as of 16 November 2011)

Provider: Lockheed Martin, NJ & Navy Field Activities/Labs

SM-2 Block IV Missile:



Approach: Modify Existing SM-2 Block IV Missiles

Battle Space: In the Atmosphere

Threats: Short Range Ballistic Missiles

Quantity: 72 (as of 16 November 2011)

Provider: Raytheon, Arizona & Navy Field Activities/Labs

SM-3 Block IA Missile:



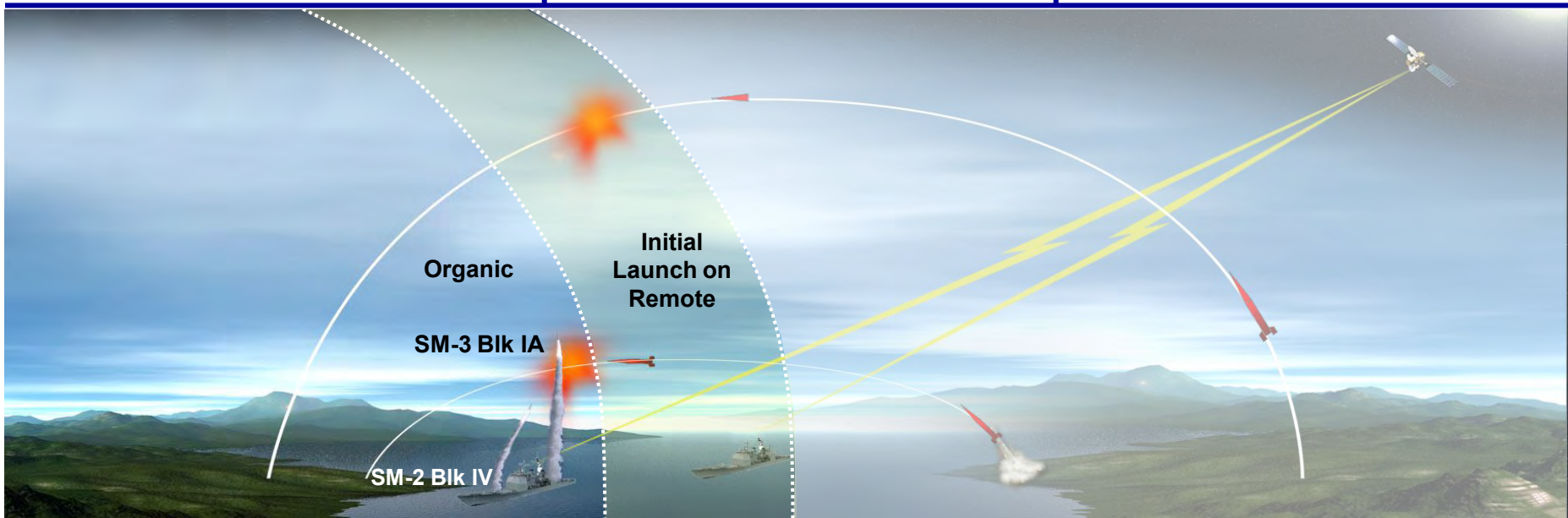
Approach: Add 3rd Stage & Kill Vehicle to Existing SM-2 Blk IV Booster Stack

Battle Space: Above the Atmosphere

Threats: Short to Intermediate Range Ballistic Missiles

Quantity: 81 (as of 16 November 2011)

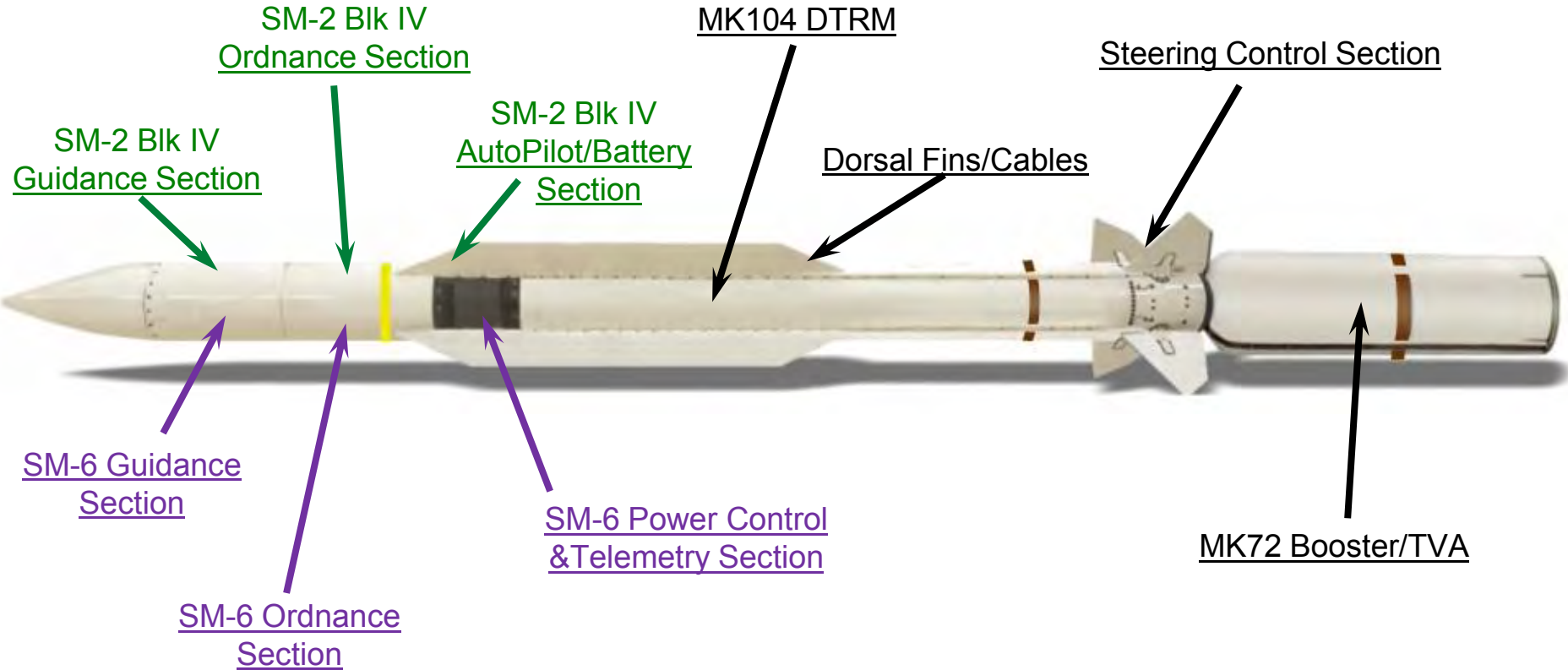
Provider: Raytheon, Arizona & Navy Field Activities/Labs





Aegis BMD SM-6 Missile Profile

Aegis BMD



BLACK = Common
PURPLE = SM-6 Unique
GREEN = SM-2 Bk IV Unique



2011 Integrated Warfare Systems Conference

International Programs & Foreign Military Sales (IWS 4.0) CAPT Jim Dick



Discussion Topics



- **Why bother with International Programs?**

- **International Organization**
 - **Vision, Mission & Structure**

- **International & FMS Challenges**
 - **A Short List**

- **Near and Mid-Term Future**
 - **A New Strategy for International Engagement**



CNO International Guidance



“Foster and sustain **cooperative relationships** with an expanding set of allies and international partners **to enhance global security**”

*Admiral Jonathan Greenert, CNO
21 September 2011 “Sailing Directions”*

“We are in a time of **unprecedented global interdependence** and we have abundant maritime activity and a lot of constructions out there. It’s a time of budget constraints, so **we’ve got to innovate**, we’ve got to **share capabilities, share technologies**, and be willing **to work together.**”

*Admiral Jonathan Greenert, CNO
19 October 2011, International Seapower
Symposium, Newport RI*

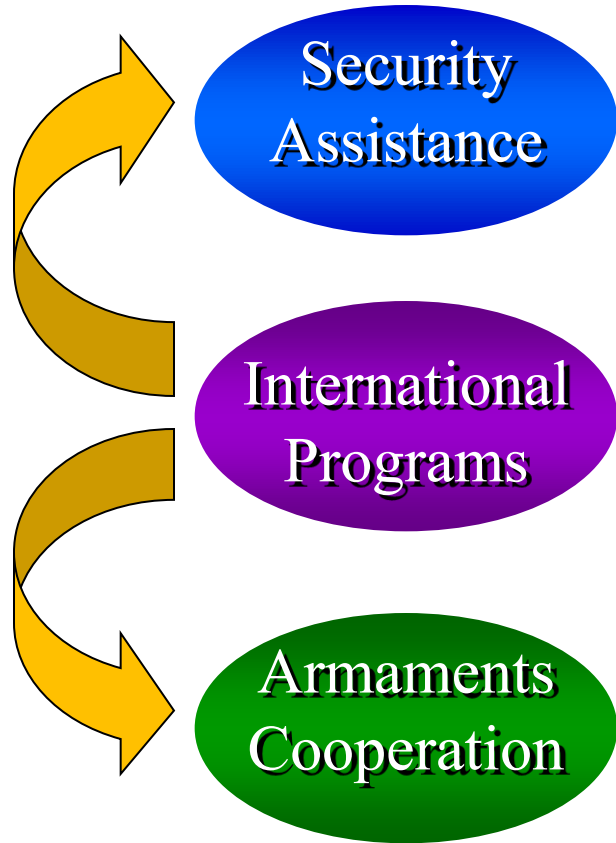


International Organization

... Vision, Mission & Structure ...



Two Parts to “International Programs”



“**Security Assistance**” is a group of programs authorized by the Foreign Assistance Act of 1961, as amended, and the Arms Export Control Act, as amended, or other related statutes by which the United States provides defense articles, military training, and other defense related services, by grant, credit, cash sale, lease, or loan, in furtherance of national policies and objectives. *

- e.g., FMS program

“**Armaments Cooperation**” includes information on the research, development, test, and evaluation (RDT&E) of defense systems or equipment; joint production (including follow-on support) of defense articles or equipment resulting from a cooperative R&D program; DoD procurement of foreign equipment, technology, or logistics support; testing of foreign equipment as part of the Foreign Comparative Testing (FCT) program. **

- e.g., DEA /IEA program

* The Security Assistance Management Manual, Oct. 2003

** International Armaments Cooperation Handbook, Nov 2006



PEO IWS 4.0

International Programs



Vision

Make the 1000-ship Navy a reality by promoting/supporting International Programs across PEO IWS.

Mission

Develop, deliver and support full spectrum of Weapons and Integrated Combat System solutions for International Programs.

Coordinate international initiatives and technology transfer policies for PEO IWS International Programs.

■ **Central Interface for PEO's International Programs**

- **Jointly develop/implement PEO's International Strategy**
- **Horizontally integrate international combat systems**

■ **Responsibilities**

- **US Combat System Sales**
- **Integrated Combat System Development**
- **Acquisition of US Systems**
- **Comprehensive Logistics/Lifetime Support**
- **Tech Transfer and Release Policy**



PEO IWS 4.0

Foreign Military Sales & International Programs



Major Program Manager
CAPT J. Dick, USN

Deputy Major Program Manager
V. Brahosky

Australia In-Country Support
CDR K. Smith, USN (4B1A)

Technical Director
G. Ettenger (4TD)

Director, Pacific Rim
V. Trinh (4A)

Director, Europe/Americas
A. Padilla (4B)

Director, International Engagement
T. Kuntz (4C)

Director, Plans & Policies
L. Roberts (4M)

APM, Combat Systems (JA)

APM, Combat Systems (KS)

APM, Weapons & Launchers Team Lead

APM, Combat Systems (NO)

APM, Combat Systems (Tech Transfer)

APM, Business Financial Manager

APM, Combat Systems Engineer (JA)

APM, Combat Systems Engineer (KS)

PM, Weapons & Launchers (CN/PT/SR/IS/AT)

PM, Engineer Manager Combat System (NO)

PM, International Outreach

PM, Financial Execution

APM, Combat Systems (AT)

PM, Weapons & Launchers (JA/PK)

PM, Weapons & Launchers (GY/DE/NE)

APM, Combat Systems (SP)

PM, Financial Analyst

APM, Combat Systems Engineer (AT)

PM, Weapons & Launchers (TW/KS/MF)

APM, Combat System Engineer & Si&T (SP)

PM, Contracts

PM, Engineering Manager (AT)

PM, Weapons & Launchers (JA)

Logistician

Logistician

PM, LOA Development

PM, LOA Development

Country Legend:

Australia (AT), Bahrain (BA), Canada (CN), Chile (CI), Denmark (DE), Egypt (EG), France (FR), Germany (GY), Greece (GR), Israel (IS), Italy (IT), Japan (JA), Korea (KS), Malaysia (MF), Netherlands (NE), New Zealand (NZ), Norway (NO), Pakistan (PK), Poland (PL), Portugal (PT), Saudi Arabia (SR), Spain (SP), Taiwan (TW), Turkey (TK), United Kingdom (UK)



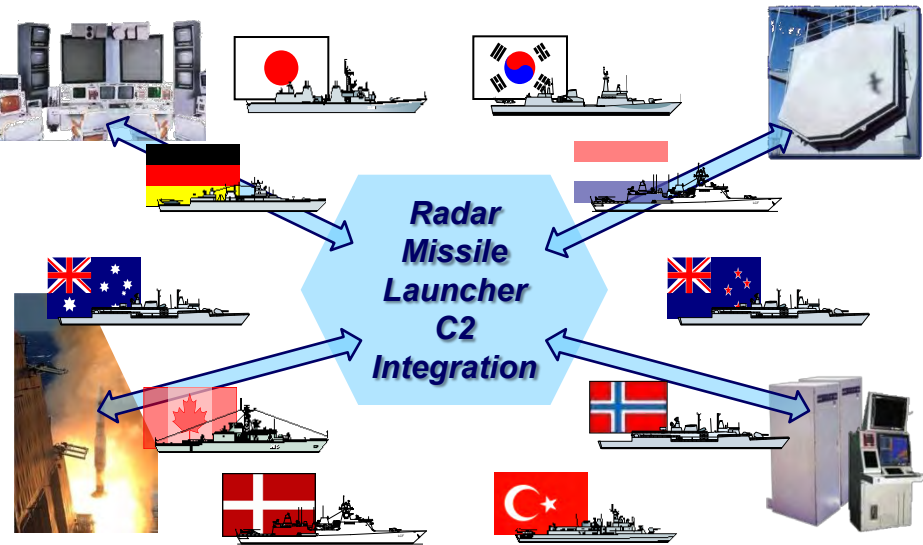
Recent Change International Engagement Branch



- **Increase allied interoperability through cooperative programs and FMS**
- **Reduce costs in PEO IWS programs by leveraging allied expertise and involvement where feasible**
- **Promote stronger and more synergistic relationships with agencies that can assist in achieving these goals and who have a vested interest in the systems that PEO IWS manages**

Security Assistance (Foreign Military Sales, FMS)

INTEGRATED COMBAT SYSTEM SOLUTIONS



- Case Management for FMS sales of Aegis and other Combat Systems
- FMS combat system engineering and ship integration & test

WEAPONS & LAUNCHERS



- Case Management for FMS sales of missiles, launchers, guns and ammo



Security Assistance FMS Program Snapshot



SM SUMMARY
130 CASES

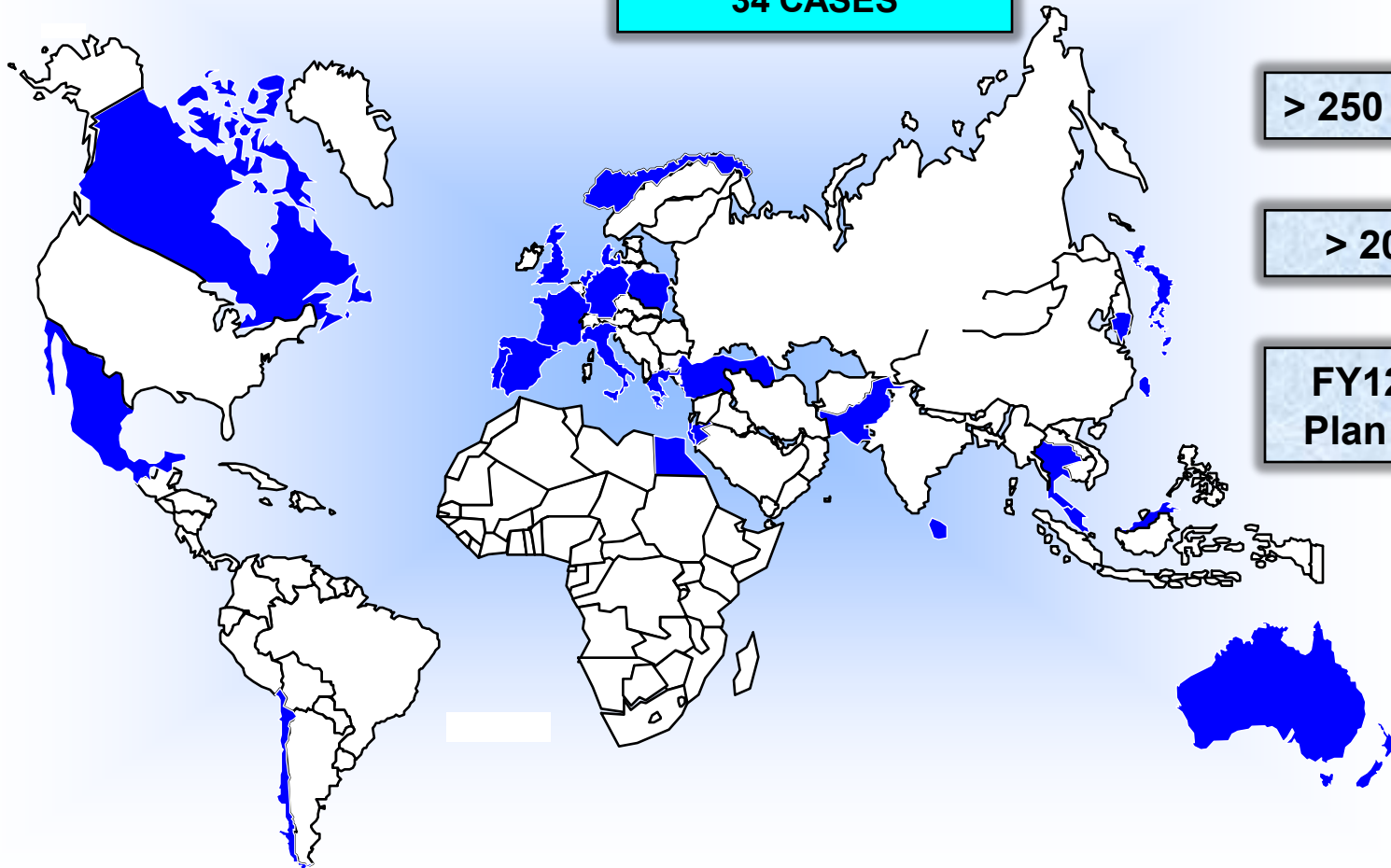
VLS SUMMARY
16 CASES

RAM SUMMARY
2 CASES

AMMO SUMMARY
34 CASES

CIWS SUMMARY
13 CASES

AEGIS SUMMARY
62 CASES



> 250 Active Cases

> 20 Countries

FY12 Obligation
Plan is ~ \$ 300 M



Armaments Cooperation Objectives



Operational

Achieve interoperability that facilitates combined operations, reduces operational hazards and minimizes OPSEC compromises

Political

Strengthen alliances and other relationships with friendly countries; encourage willingness to act collectively; promote international legitimacy in coalition operations

Economical

Reduce U.S. costs for short and long-term support of fielded systems (e.g. foreign sales reduce U.S. unit costs; cooperative programs reduce U.S. share of new developments.)

Technical

Ensure U.S. access to the best global technologies; help minimize capabilities gap with allies/coalition partners

Industrial

Bolster domestic and allied defense industrial base

Objectives are Mutually Supporting throughout the PEO

* Source: Al Volkman, Director, International Cooperation Office of the Under Secretary of Defense (Acquisition, Technology and Logistics), May 2003



Armaments Cooperation US Technical Project Officer (TPO)



- Approves/denies disclosure of US technical information to allies
- Receives technical information from allies for transfer to stakeholders
- Recommends visitation by allies
- Coordinates with MPMs to appoint technology area experts – Associate Technical Project Officers (ATPOs)
- Recommends new areas for information exchange
- Manages scope of Annexes
- Provides yearly assessments on allied technology



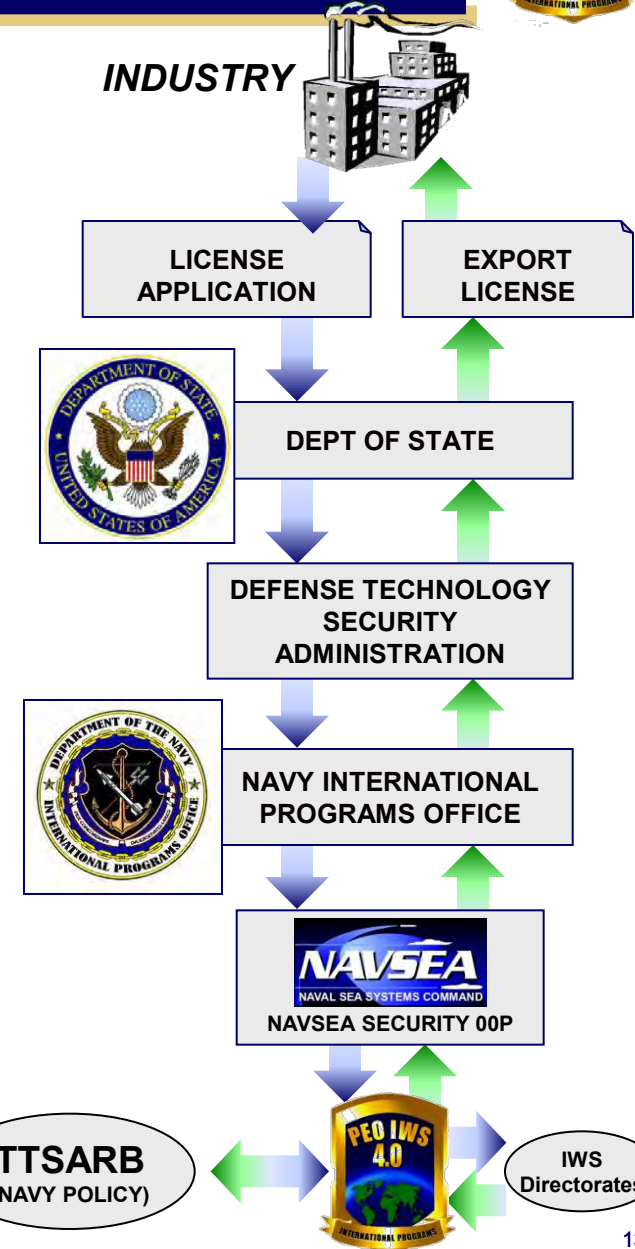
Source: TPO Handbook, Sep 2009



Armaments Cooperation Export Licenses in PEO IWS



- Industry pre-briefs IWS 4.0 prior to submitting Export License to State Department in order to preclude Return Without Action (RWA) or “Denial” responses
 - Industry initiative reviews help identify future license requirements
- Close working relationships with NIPO and NAVSEA 00P (Security) & teamwork with key offices essential to timely reviews
 - When an application arrives in IWS 4.0 it is normally due in 5-8 business days
- “Bright Line” initiative could change how export licenses are handled



**Early Communication between
Industry and other PEO Directorates
is Key to Success**



International & FMS Challenges

... A Short List ...



Challenge - Approval Process -



- **Export Approval Process**
 - **Current policy process is reactive, not proactive**
 - ❖ **Doesn't support exploratory discussions**
 - ❖ **Reactive approval can delay discussions weeks or months – leads to customer dissatisfaction**

- **Overly protectionist approach to technology sharing results in customers seeking other alternatives**
 - **Broad interpretation of stake-holder responsibilities leads to**
 - ❖ **Undue influence**
 - ❖ **Delay in decisions**
 - ❖ **Loss of time-critical opportunities**
 - **Consideration not given to availability of comparable technology from foreign sources**



Challenge

- International Perspective -



■ Evolving International approach to FMS

- Increasing trend toward integration of combat system elements vice turn-key solutions
- Inclusion of national content a growing priority among customers
- Foreign competitors are poised to fill the void left by the US
- US companies become overly aggressive in business development to compensate for a decreasing US market share
- Continued FMS success requires a different US approach, such as:
 - ❖ Integration of non-USN radar with USN command & control systems
 - ❖ Cooperative Radar Development with select countries
 - ❖ Integration on non-USN combat systems with USN missiles

The US must adapt to the changing International perspective or be squeezed out of the market place



Challenge

- Export Policy / Release -



- **FMS sales are key to increasing affordability for US programs, but systems have to be releasable to partners**
- **Releasability is usually a design after thought**
- **Acquisition guidance requires that US Critical Technology and Information be protected prior to FMS Sale**
- **Protection is usually one of the first trade-offs in any program because the requirement is not rigidly enforced in the acquisition process**

Releasability is “considered”... and promptly dismissed for US programs

Designing releasability into a program at the beginning is much cheaper than back-fitting later

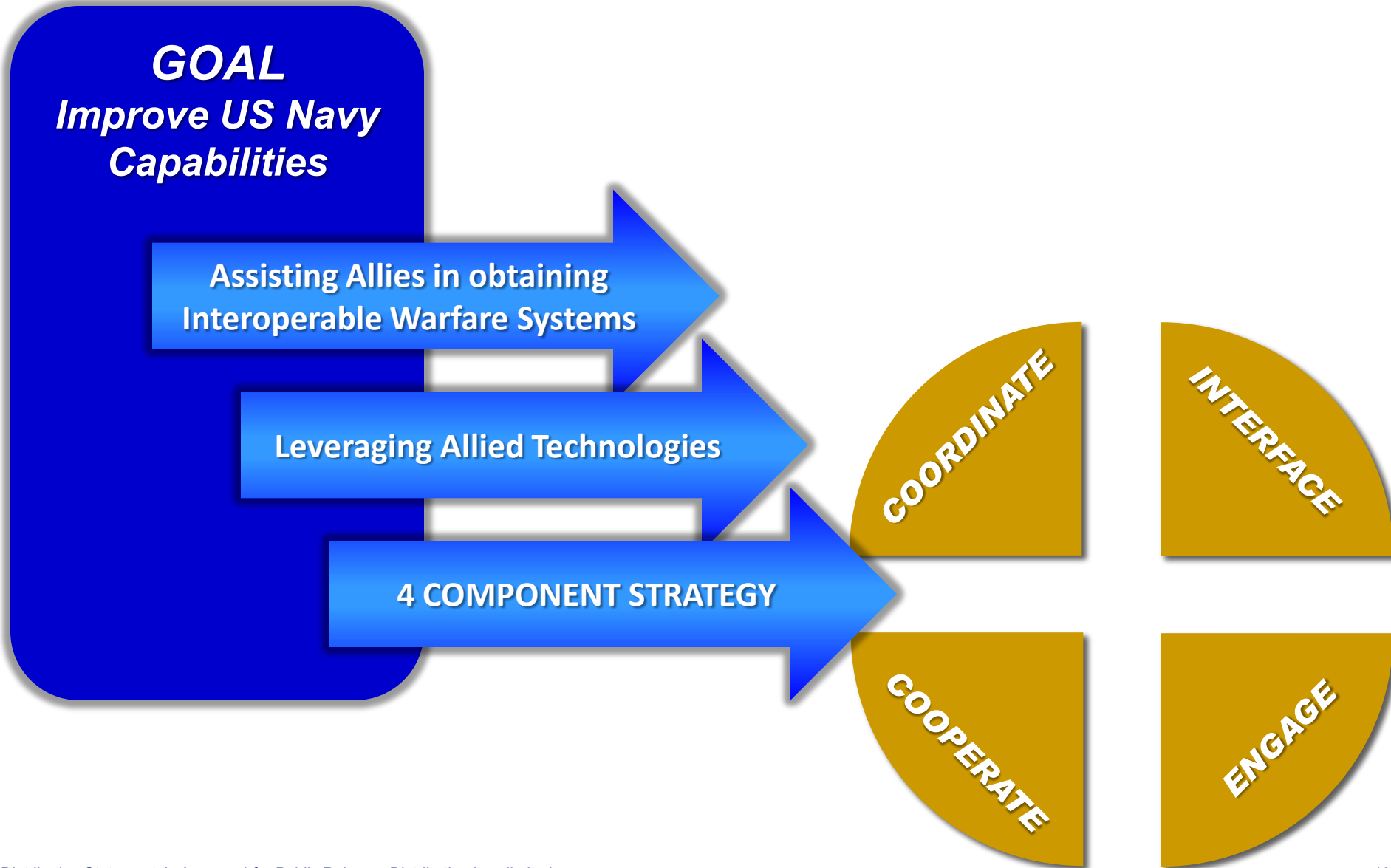


Near & Mid Term Efforts

*... A New Strategy for
International Engagement ...*



PEO IWS International Engagement





PEO IWS International Engagement

How we will implement our strategy (1/2)



COORDINATE

Coordinate with USN stakeholders (across the PEO and NAVSEA, NIPO, OPNAV, the Fleets, ONR, ONI) to understand requirements, opportunities and priorities for international engagement

- **Gather metrics to aid in understanding value added and pay back on investment**
- **Develop anticipatory disclosure and releasability policy in support of future international activity**
- **Participate in reviews and other meetings and forums to gain an understanding of requirements and to develop priorities and plans**

INTERFACE

Interface with and support the PEO IWS Program Managers to leverage foreign technology and research for the benefit of USN programs

- **Reach out to MPMs to educate them on our engagement initiative and on the potential benefits of an international contribution to their programs**
- **Assist MPMs in developing cooperative efforts and FMS cases**
- **Engage the USN and international technical community to pursue new technologies or capabilities that can be used by PEO IWS program managers to improve USN systems and lower cost**



PEO IWS International Engagement

How we will implement our strategy (2/2)



COLLABORATE

Collaborate with industry to identify and capitalize on international opportunities

- Build relationships with our industry partners
- Synchronize industry and USN priorities, to the maximum extent possible, to focus effort
- Leverage industry contacts in the US and Allied nations to gain insight and understanding

ENGAGE

Engage with Allies to understand their requirements and ensure they recognize how PEO IWS can support their demand signal

- Utilize available vehicles and venues to build relationships, establish dialogue and seek opportunities
 - ❖ DEAs/IEAs
 - ❖ Trade Shows
 - ❖ Navy-Navy forums
 - ❖ Other Opportunities
 - ❖ Exhibitions
- Assist Allies in developing and understanding their requirements
- Provide information and insight to the Allies on what PEO IWS has to offer and how it can help meet their requirements



Summary



- **PEO IWS 4 is involved in**
 - **Security Assistance**
 - **International Cooperation**
 - **Release and Export Policy**
- **Increased international engagement activity within the PEO to meet CNO/OSD Strategy and Objectives**
 - **Created a new International Engagement and Outreach Team (IWS 4C)**
- **IWS 4 has established a strategy to execute the PEO's international engagement goal**
- **Improvements needed in policy/release process to enable a more varied USN-International partnership**
- **Innovative approaches to integration of US components into International combat systems will be required**

Questions ?



2011 Integrated Warfare Systems Conference

Future Combat Systems Open Architecture(IWS 7.0) CAPT Brian Gannon

UNCLASSIFIED



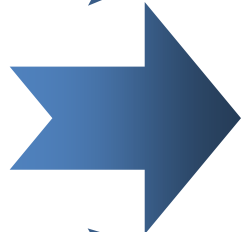
Future Combat Systems Open Architecture (IWS 7)

PEO-IWS Vision
Deliver enterprise solutions for Naval warfare systems that operate seamlessly and effectively within the Fleet and Joint Force

**Enterprise
Open Architecture
Policy**



**Enterprise
Information
Assurance**



**Enterprise
Emerging
Technologies**

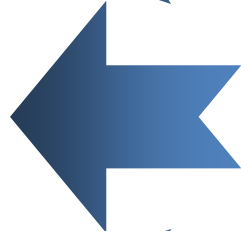


PEO-IWS 7.0
*Field capabilities that
optimize the Navy
Enterprise's total
systems performance
while minimizing total
ownership costs*

**Naval Integrated
Fire Control-
Counter Air (NIFC-
CA)**



**Training
Systems**



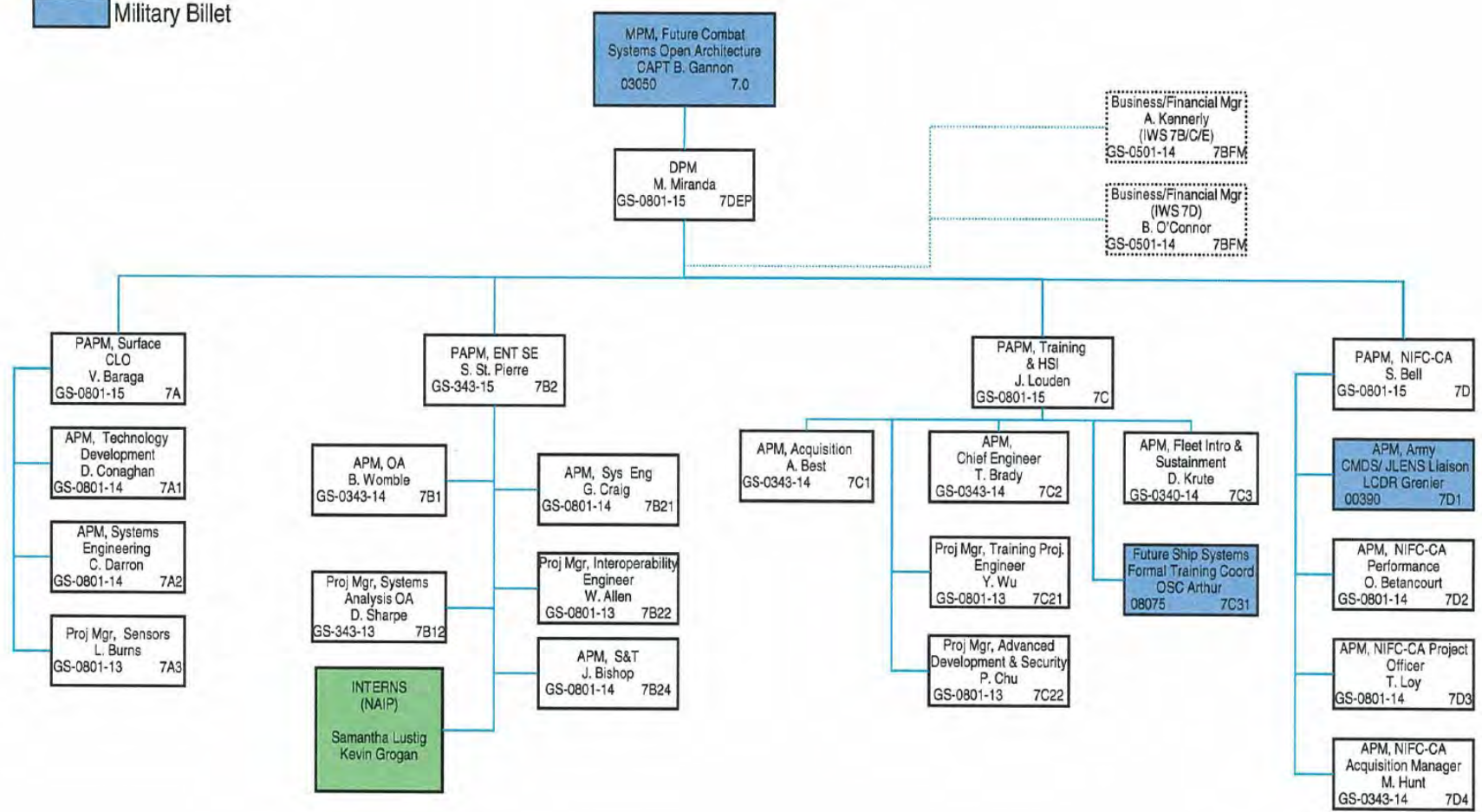
**Future Combat
Systems**





Future Combat Systems Open Architecture (IWS 7)

Military Billet Military Billet



UNCLASSIFIED



Enterprise Open Architecture (OA)

- Naval Enterprise OA Policy
- Open Business Environment
 - ❑ Enable businesses to compete, regardless of size or incumbency
 - ❑ SHARE III information sharing portal
- Tools
 - ❑ OA Contract Guidebook for Program Managers
 - ❑ Business Cases Assessment Guide
 - ❑ OA Assessment Tool
- Education
 - ❑ DAU Continuous Learning Modules
 - ❑ Data Rights Brochure
 - ❑ Better Buying Power support



Enterprise Information Assurance (IA)

- IA is critical to National Security
 - Cyber Commands focused on combat system IA implementation
- Platform Information Technology (PIT) IA policy and process
 - Implement holistic approach to combat system security
 - Simplify, streamline, and standardize IA across all programs
 - IA is a design characteristic of system architecture
 - Establish defense-in-depth reference architecture
 - Ensure complementary security features implemented across the ships network architecture, systems, applications, and hosts
 - Conduct Risk assessments of the aggregated sub-network
- Include IA in contract language
 - Delineate IA design experience
 - Include IA implementation approach



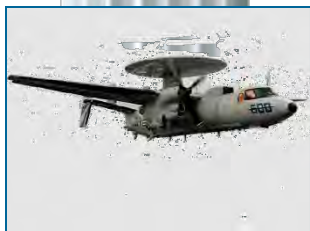
Enterprise Emerging Technologies

- Facilitate Small Business Innovation Research (SBIR)
 - Annual Navy Opportunity Forum
- Coordinate with Office of Naval Research (ONR)
 - Rapid Technology Transition (RTT)
 - Technology Insertion Program for Savings (TIPS)
 - Future Naval Capabilities
 - Rapid Innovation Fund (RIF)
- Support the development of the Technology Master Plan
- Support Annual Naval Joint Capability Technology Demonstration (JCTD)



NIFC-CA From The Sea (FTS) Pillars

NIFC-CA FTS



E-2D



JLENS



CEC



Aegis



SM-6

NIFC-CA SEI&T

- Capture pillar requirements and performance and demonstrate SoS capability



Enterprise Training Systems

- Goal: Combat System training capability that allows “Train where you Fight, Train like you Fight” on tactical systems simulating real world environments & threats
- Approach: Coordinated evolutionary Combat System upgrades in all baselines
 - Aegis
 - SSDS
- End State: Integrated training capability as an integral part of combat system hardware & software

Build it in, not bolt it on



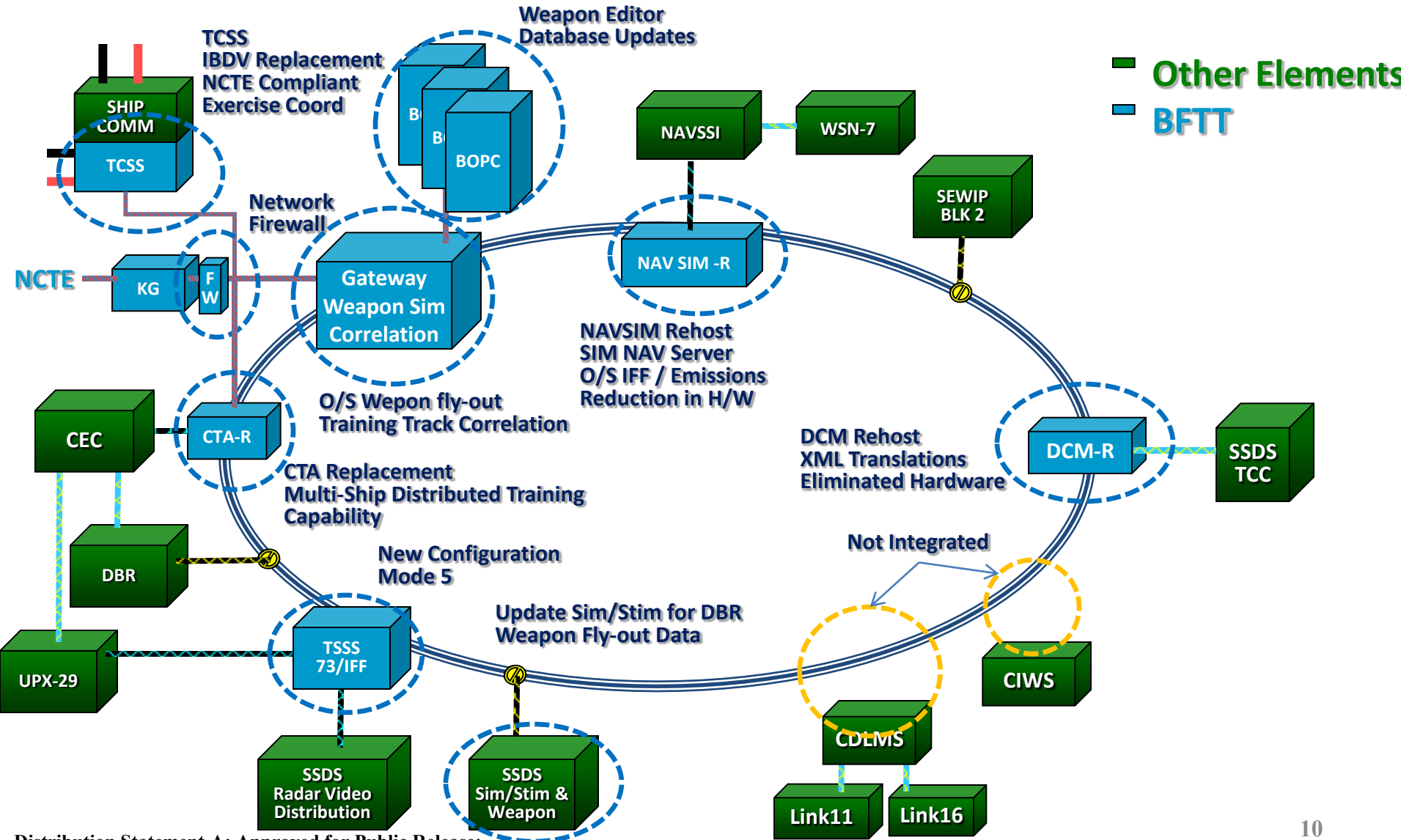
Focus Areas

- Reliability Improvements
 - Mitigate obsolescence and improve system training stability
 - Gathering reliability data on systems in training. This data will be used to prioritize system reliability changes for upcoming baselines.
- Simplicity Improvements:
 - Streamlining training procedures
 - Gathering fleet feedback in order to understand ship and system specific challenges when putting system into training
- Functionality:
 - Coordinating PEO IWS training capabilities to meet emerging combat system capabilities
 - Rapid development of critical infrastructure to meet the needs of mandated Information Assurance (IA) controls
- Fidelity Improvements:
 - Designing embedded training systems with common networks and common databases

Drive Training Capabilities toward equivalency to Tactical Capabilities

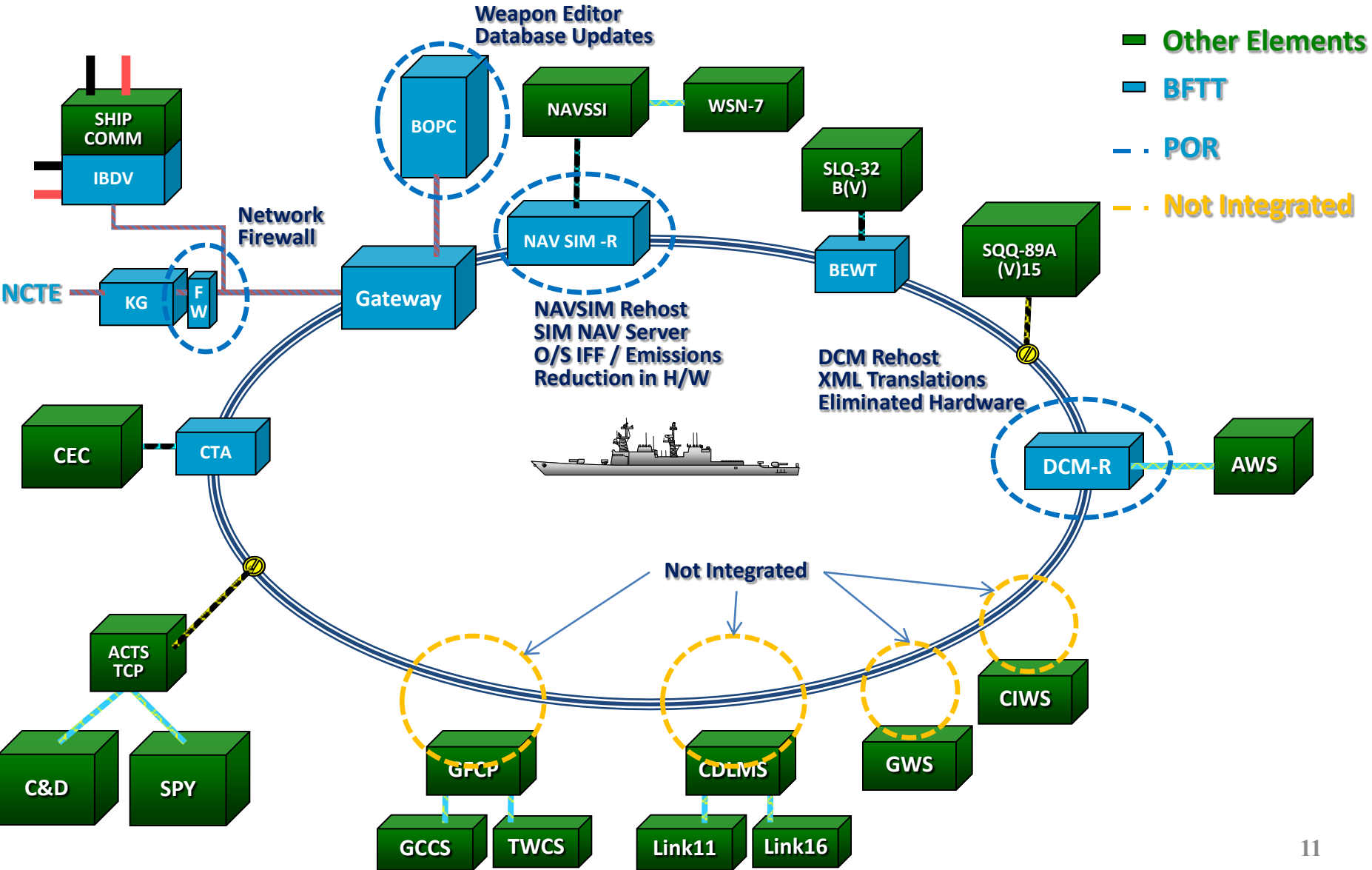


CVN-78 Embedded Combat Systems Interface Diagram



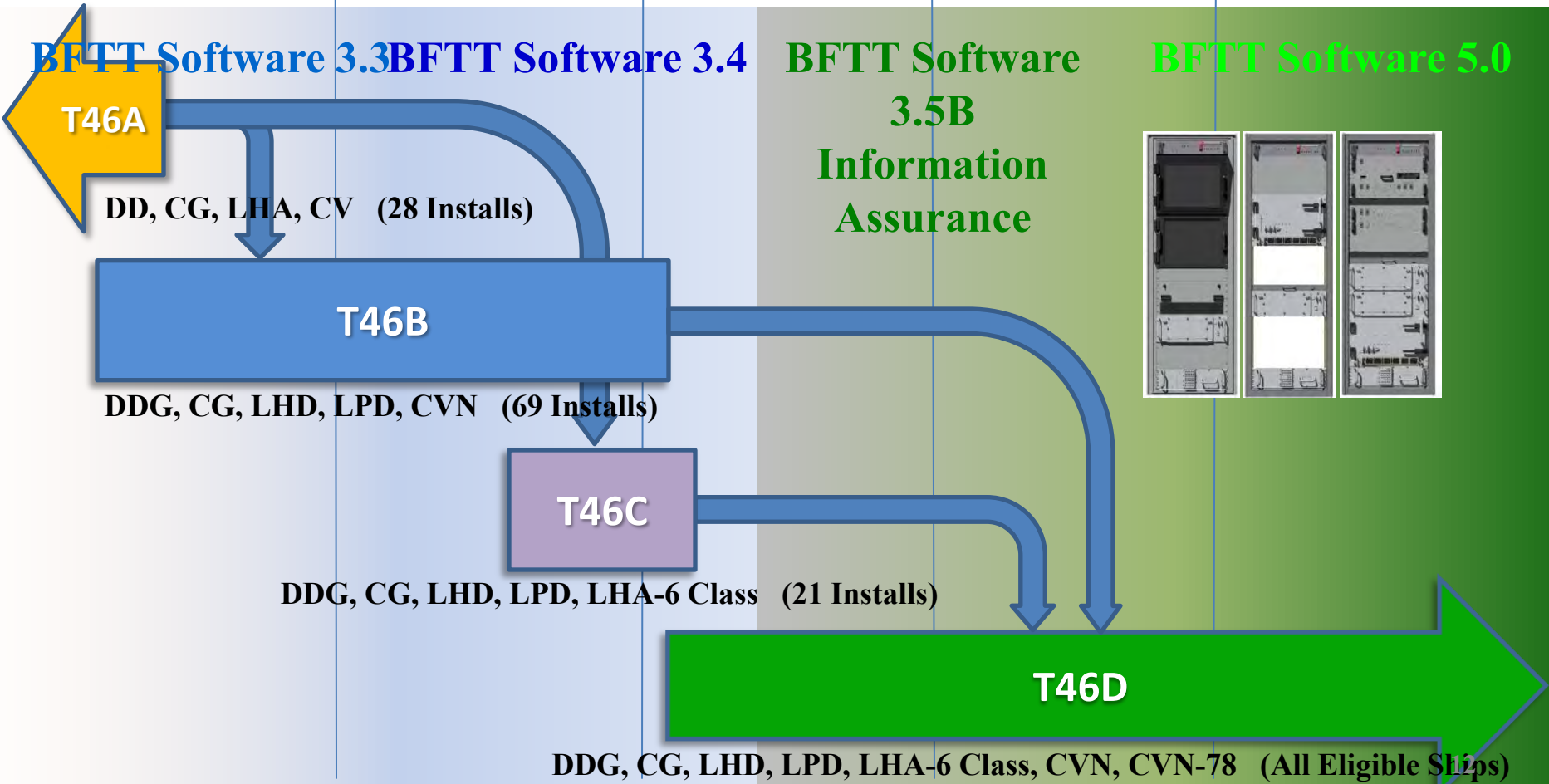
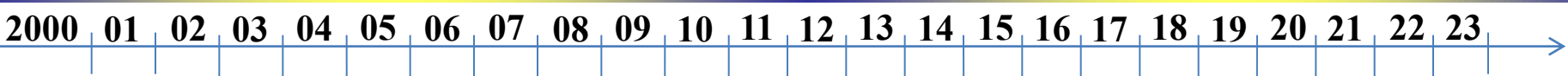


AEGIS ACB12 Embedded Combat Systems Interface Diagram





BFTT Product Technology Progression



Goal: Design out training unique hardware



How Do We Buy Better?

- Smarter Contracting
 - Multi-System procurement
 - Realize Economic Order Quantity savings when delivered to a single CS baseline.
 - Eliminate, where possible, warehousing requirements
 - Increase business participation through competition
- Product Line Architecture (PLA) Modules



Summary

- Enterprise Focused
 - OA
 - IA
 - Training Systems
- Training System Programs
 - Complex Connections
 - Training Equates to Tactical



Question & Answer Period



U.S. Department of Defense
Office of the Secretary of Defense

Open Systems Architecture and Data Rights Overview



DOD OPEN ARCHITECTURE TEAM

Nickolas H. Guertin, P.E.

DASN RDT&E

Nickolas.H.Guertin@navy.mil

1 November 2011

Agenda

- **Background**
- **Open Systems Architectures (OSA)**
- **Evolving an Open Business Marketplace**
- **Strategic use of Intellectual Property Data Rights**
- **Supporting Tools**
 - **Developing a Business Case**
 - **OSA Contract Guidebook for PM's**
 - **Forge.mil SHARE**
 - **Understanding the Governments IP License Rights**
- **Bringing it all together**
- **Summary**

Open Systems Architecture – A Means to an End

- We all want the best possible value to the warfighter
- Competition is a powerful tool to get the best deal from industry.
- Decompose a system into components that can be competed.
- The Government must have the right information to compete
 - Design documentation, interfaces, tools, etc.
 - Information that can be shared with others
 - Competition of components small enough to be risk-prudent
 - Competition scale big enough to bring new innovation
- Competition is only valuable if the incumbent has a risk of loosing
 - We reduce the risk that a new player can win and execute
 - Many examples of programs doing it successfully
 - Industry must believe that the threat is real – not a paper drill

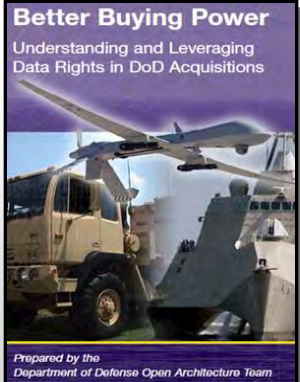
Nuanced understand on how to level the playing field so that we can risk-prudently award to a non-incumbent.

Definitions

- Open Systems Architecture - technical architecture
 - open standards, publishing of key interfaces, full design disclosure.
 - modular, loosely coupled and highly cohesive system structure. OA includes
- OSA – the Open Business Model.
 - Transparency and leveraging of innovation with collaboration across the Enterprise.
 - Sharing risk, maximized asset reuse and reduced total ownership costs.
- **Tenets of a Successful Open System Architecture**
 - Added
 - Modified
 - Replaced
 - Removed
 - Supported
 - by different vendors throughout the life cycle

Coordinated Suite of Products

Strategic use of IP Rights



1

DoD OA Contract Guidebook



2



DoD Open Marketplace



3

DoD BCA Guide & Templates

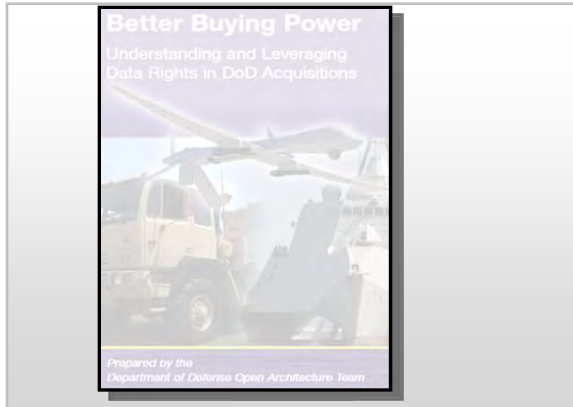
*Open Systems Architecture
(OSA) Data Rights Business Case
Guide and Templates*

*Version 1.14
892011*

4

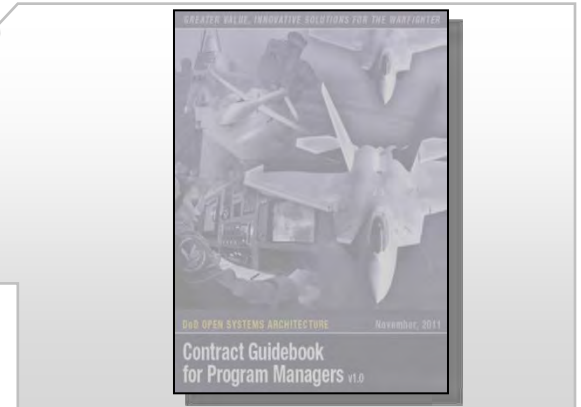
Coordinated Suite of Products

Strategic use of IP Rights



1

DoD OA Contract Guidebook



2

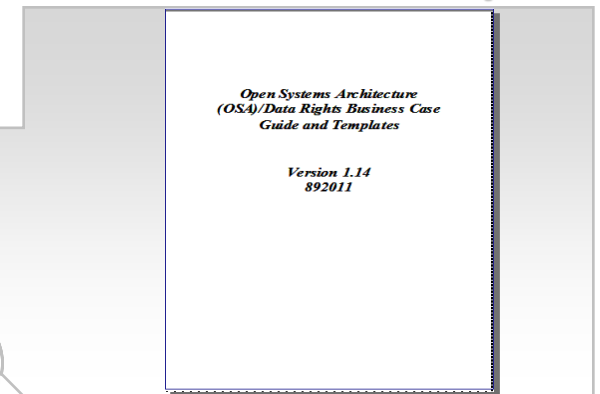


DoD Open Marketplace



3

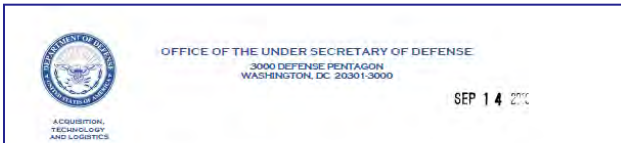
DoD BCA Guide & Templates



4

The Department is Mandating Business Case Analysis.....

- To evaluate alternatives and broaden its acquisition choices



Require open systems architectures and set rules for acquisition of technical data rights. At Milestone B, I will require that a business case analysis be conducted in concert with the engineering trade analysis that would outline an approach for using open systems architectures and acquiring technical data rights to ensure sustained consideration of competition in the acquisition of weapon systems.

redirection of defense budget dollars from unproductive to more productive purposes that is sought by Secretary Gates and Deputy Secretary Lynn over the next five years.

Since June, the senior leadership of the acquisition community – the Component Acquisition Executives (CAEs), senior logisticians and systems command leaders, OSD officials, and program executive officers (PEOs) and program managers (PMs) – has been meeting regularly with me to inform and craft this Guidance. We have analyzed data on the Department's practices, expenditures, and outcomes and examined various options for changing our practices. We have sought to base the spec the Department has available to it. In some cases, the Guidance makes provision for future so that unintended consequences can be detected preliminary estimates of the dollar savings are gradual, but steady and determined, progress as indeed be substantial.

Changing our business practices will re We have sought out the best ideas and initiative adopted in this Guidance. We have also sought experience in defense acquisition.



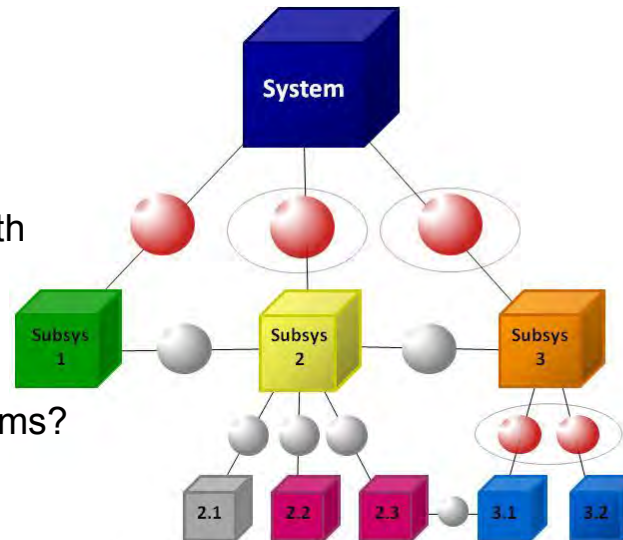
BCAs for Open Systems - Architecture and Data Rights are now required



Approach to Developing a Business Case Analysis (BCA)...cont

■ Analyze system

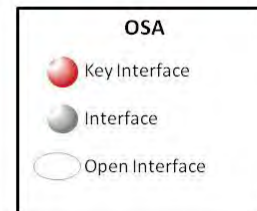
- What interfaces are open?
- Are there vendor issues?
- Does system require s/w updates with threat change?
- What s/w is imbedded?
- What rights do we have on subsystems?



■ Tools are available for BCA development

- The Open Architecture Assessment Tool (OAAT)
- Key Open Sub Systems (KOSS) tool to identify alternative states of OSA implementation
- Numerous resources from the DoD's Data Analysis Center for Software (DACs)

Subsystem	RISK TO COMPETITION/SUSTAINMENT					
	Tech Refresh	Changing Threat	Imbedded	Algorithm	Vendor Risk	Open System Architecture
Subsystem 1	Green	Yellow	Green	Green	Green	Green
Subsystem 2	Green	Yellow	Green	Green	Green	Green
2.1	Green	Yellow	Green	Green	Green	Green
2.2	Red	Red	Red	Red	Red	Red
2.3	Red	Red	Red	Red	Red	Red
Subsystem 3	Green	Yellow	Green	Green	Green	Green
3.1	Green	Yellow	Green	Green	Green	Green
3.2	Green	Yellow	Green	Green	Green	Green



A Guide and Template can Be Used to Build the BCA

- **BCA Template provides standardized process and methodology**

Open Systems Architecture (OSA)/Data Rights Business Case Analysis Guide & Templates

Version 1.14
8/9/2011

1

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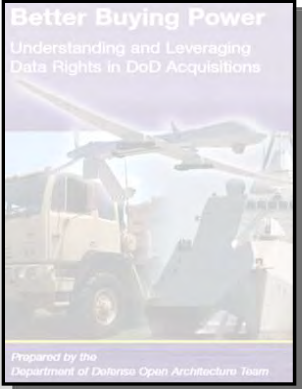
Methods

- Developing a Business Case
- **OSA Contract Guidebook for PM's**
- Forge.mil SHARE
- Understanding the Governments IP License Rights

Coordinated Suite of Products

Strategic use of IP Rights

1



DoD OA Contract Guidebook

2



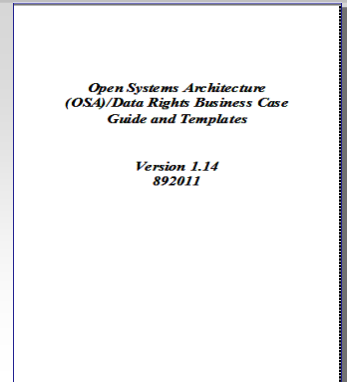
DoD Open Marketplace

3



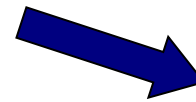
DoD BCA Guide & Templates

4



History of the *Contract Guidebook*

- The *Naval OA Contract Guidebook for Program Managers*, version 1.0, was released on 05 July 2006.
- Since that time, the Guidebook has gone through several iterations and updates.
- In 2010, as part of his “Better Buying Power” initiative, USD AT&L, Ashton Carter took notice of the Navy’s OA Contract Guidebook
- Dr. Carter recommended elevating the Contract Guidebook to be a Joint, DoD-level publication.
- Intended to be a living document, the next spiral of the *OSA Contract Guidebook* will incorporate feedback, lessons learned and best practices from practitioners across DoD’s acquisition community.



Introduction to the *DoD OSA Contract Guidebook*

- The Guidebook is recommended for use by all component Service Program Managers and Contracting Officers.
- For Programs incorporating OSA principles into National Security System (NSS) programs.
- The recommended language should be tailored based on Domain, PEO, or Program-specific requirements.
- The Guidebook is divided into six chapters of suggested contract language for Sections C, H, L, and M, CLINs and Incentive Plans.
- Additionally, there are 11 Appendices on various topics, including CDRLs, intellectual property rights, peer reviews, system specification language and breaking vendor lock.

Distribution Statement B - Distribution authorized to U.S. Government agencies only. Other requests must be referred to _____ or higher authority. DoD Contract Guidebook v 1.0 October 20, 2011 DRAFT

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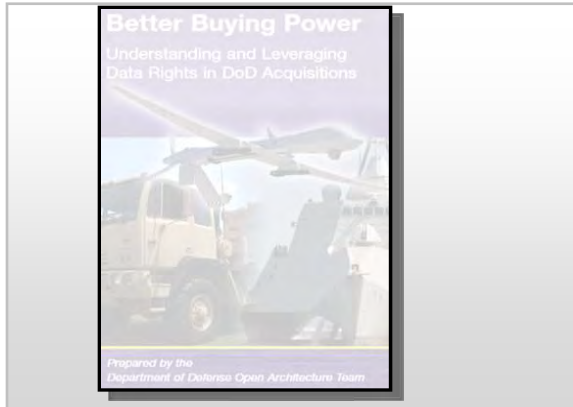
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Methods

- Developing a Business Case
- OSA Contract Guidebook for PM's
- **Forge.mil SHARE**
- Understanding the Governments IP License Rights

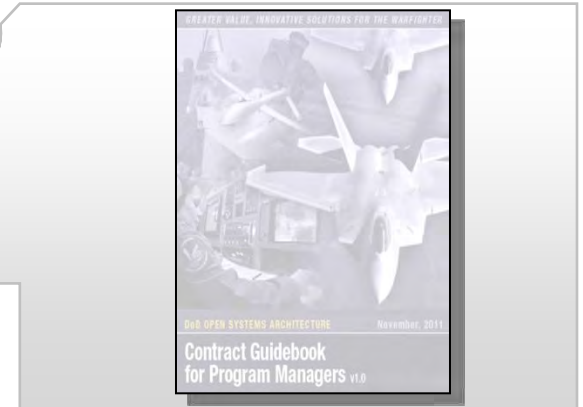
Coordinated Suite of Products

Strategic use of IP Rights



1

DoD OA Contract Guidebook



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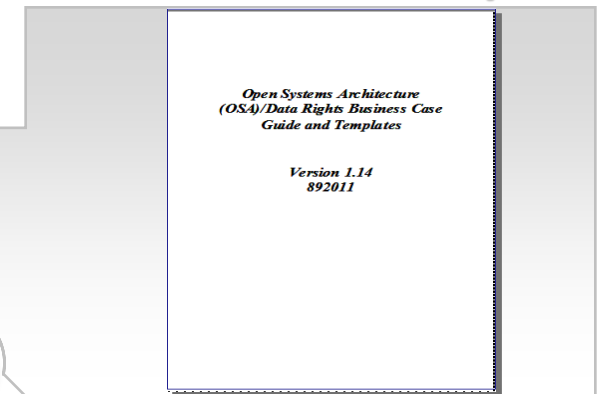


DoD Open Marketplace



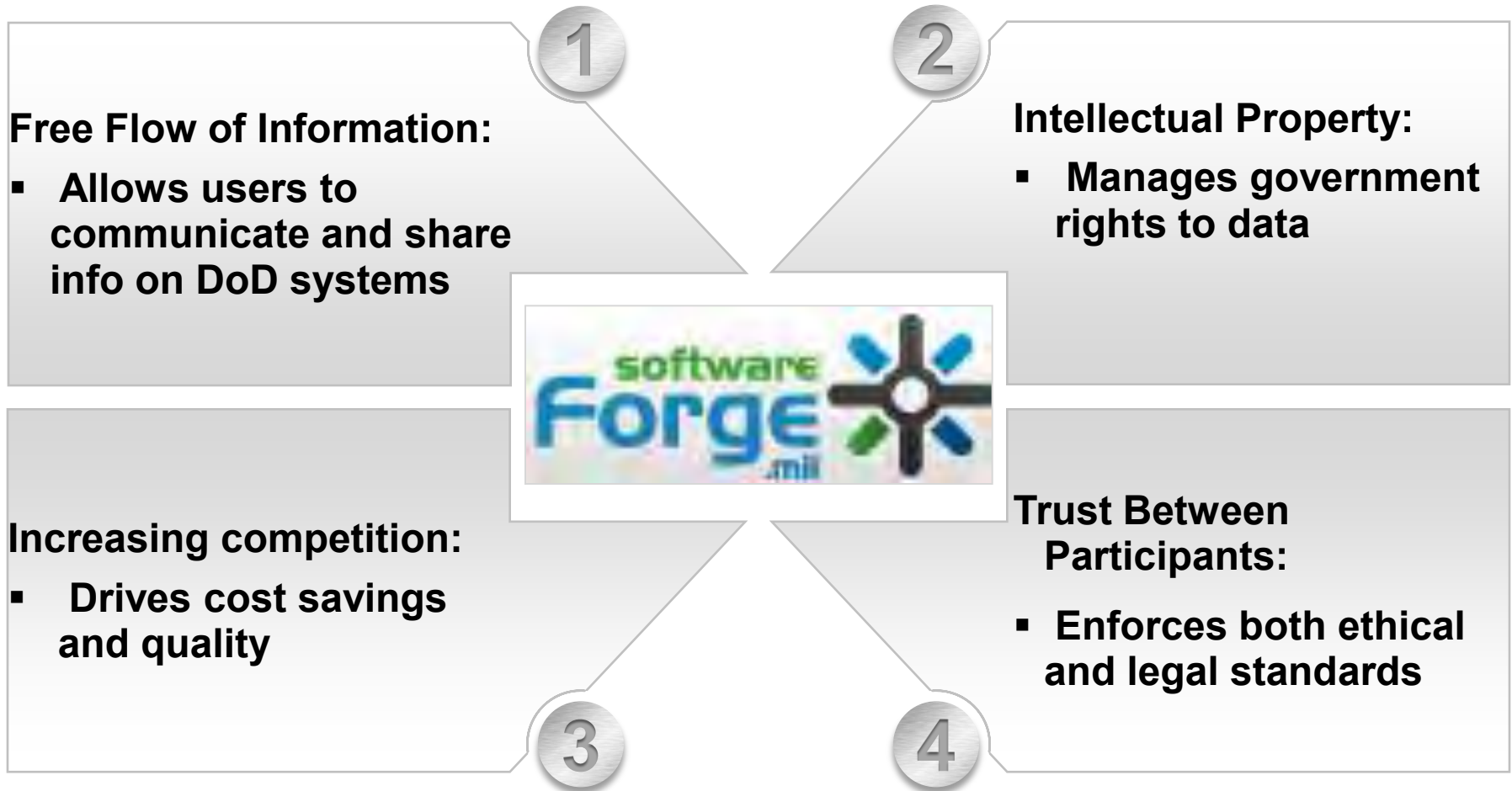
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Forge.mil Marketplace Success



Coordinated Suite of Products

Strategic use of IP Rights

1



DoD OA Contract Guidebook

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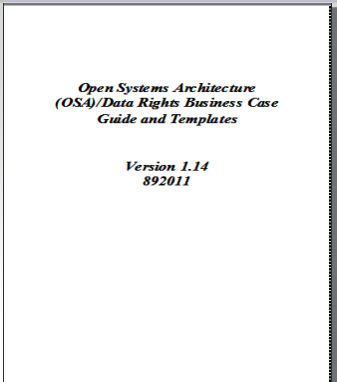
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DoD BCA Guide & Templates

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Types of Data Rights

- Unlimited Rights (UR)
- Government Purpose Rights (GPR)
- Limited Rights (LR)
- Restricted Rights (RR)
- Negotiated License Rights
- SBIR Data Rights
- Commercial TD License Rights
- Commercial CS Licenses

**Better Buying Power:
Understanding and Leveraging
Intellectual Property Rights in
DoD Acquisitions**



*Prepared by the
Department of Defense Open Architecture Team*

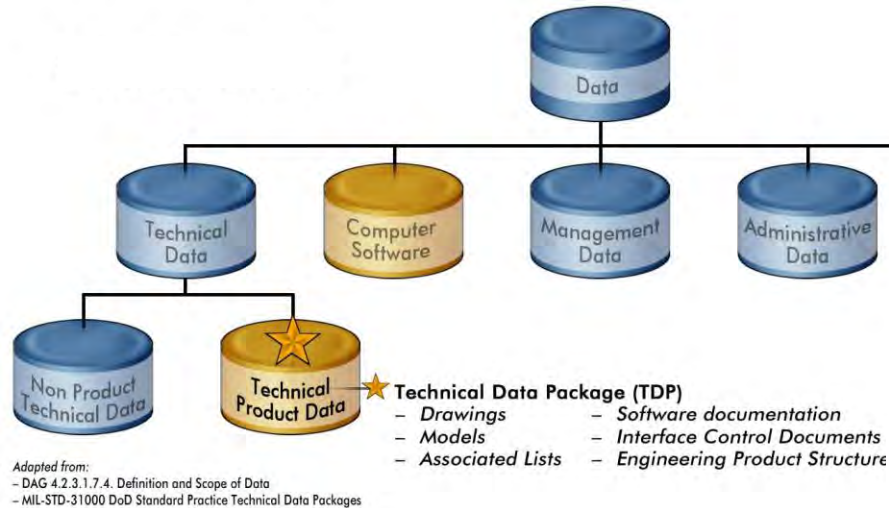
US Law and DOD Guidance...Not New, Renewed Emphasis

Law, Policy, Guidance	Relevant Text
<p>2320. Rights in Technical Data</p>	<p>Assess the long-term technical data needs of such systems and subsystems and establish corresponding acquisition strategies that provide for technical data rights needed to sustain such systems and subsystems over their life cycle.</p>
<p>DODI 5000.02 Operation of the Defense Acquisition System</p>	<p>Program Managers for ACAT I and II programs, regardless of planned sustainment approach ... shall assess the data required to design, manufacture, and sustain the system, as well as to support re-competition for production, sustainment, or upgrades.</p>
<p>Implementation Directive for Better Buying Power Dr. Ashton B. Carter, Under Secretary of Defense for Acquisition, Technology & Logistics</p>	<p>The business case analysis will outline the open systems architecture approach, combined with technical data rights the government will pursue in order to ensure a lifetime consideration of competition in the acquisition of weapon systems.</p>

<p>Implementation Directive for Better Buying Power Dr. Ashton B. Carter, Under Secretary of Defense for Acquisition, Technology & Logistics</p>	<p>The business case analysis will outline the open systems architecture approach, combined with technical data rights the government will pursue in order to ensure a lifetime consideration of competition in the acquisition of weapon systems.</p>
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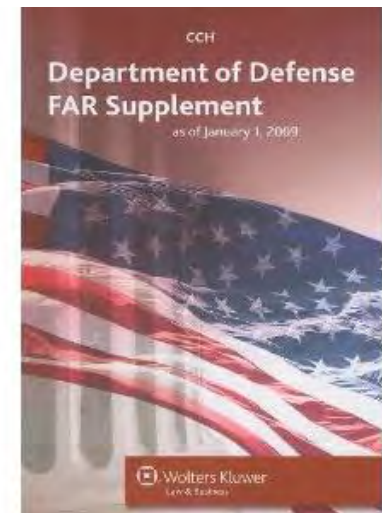
What are Data Rights?

- Data rights are granted to the Government for technical data and computer software

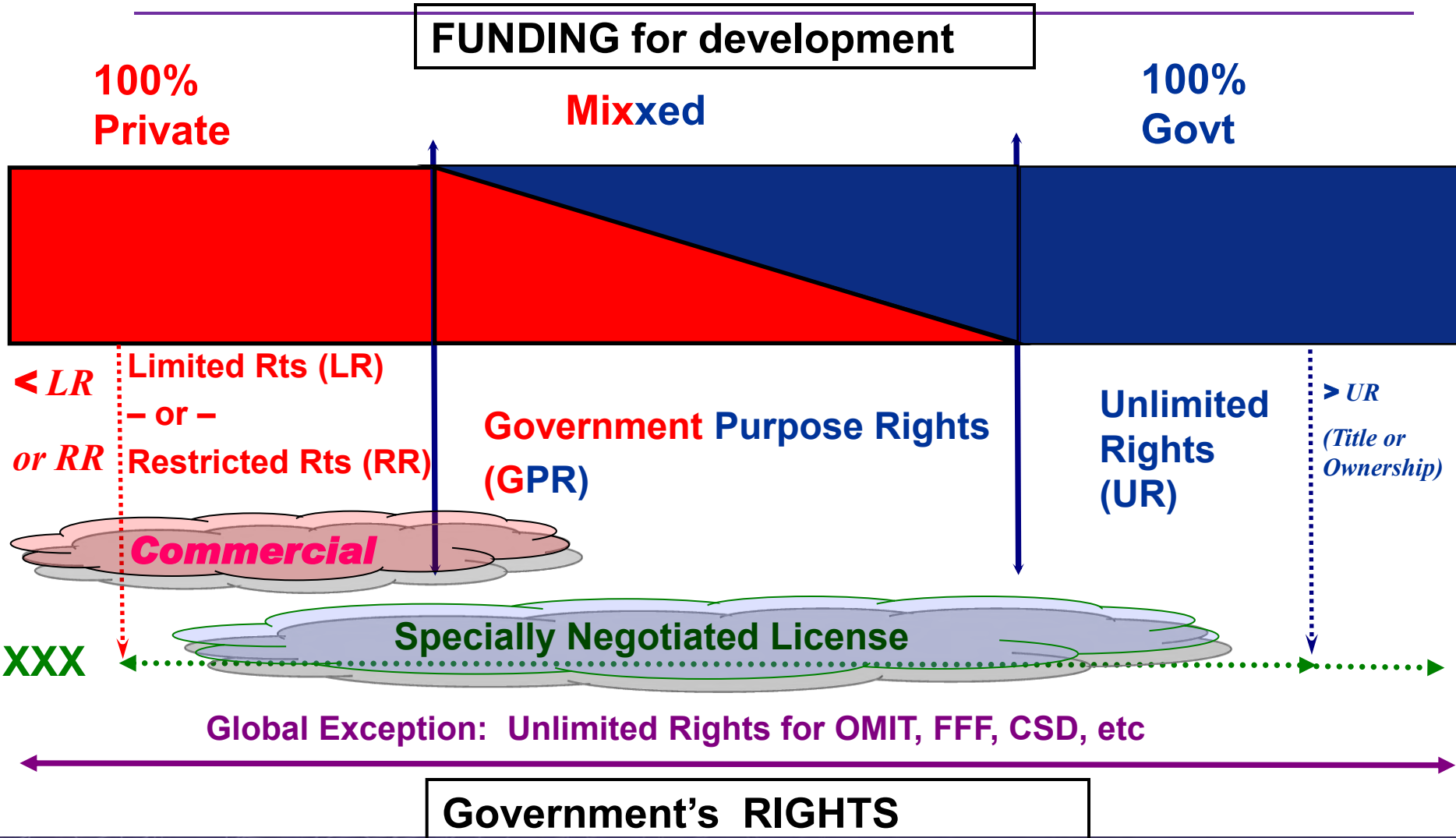


- Defense Federal Acq Regulations Supplement (DFARS):**

- Rights granted to the Govt depend on the nature of the data (FFF,OMIT)
- Source of funding of the item, process, or computer s/w (e.g., 100% Government, 100% private, or mixed);
- Whether the Govt secured data rights through other agreements (e.g., Cooperative Research and Development Agreements).



License Rights in TD & CS

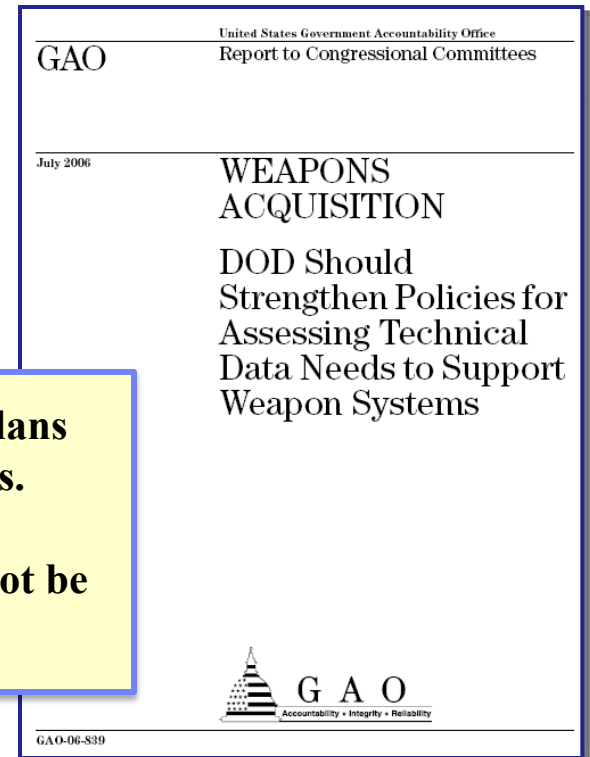


Why are OSA/Data Rights Important?

- **Data rights decisions made during the initial acquisition can have far-reaching implications over the system's life cycle:**
 - Maintain potential for competition
 - Flexibility in logistical support
- **Also, Will enable DoD to:**
 - Take advantage of emerging technologies
 - Quickly introduce new capabilities to warfighters
 - Reduce costs over the life cycle of the Program

...Services encountered limitations in sustainment plans for some fielded weapon systems...lack of data rights.

...60% of 47 non-competitive DoD contracts could not be competed...lack of access to data



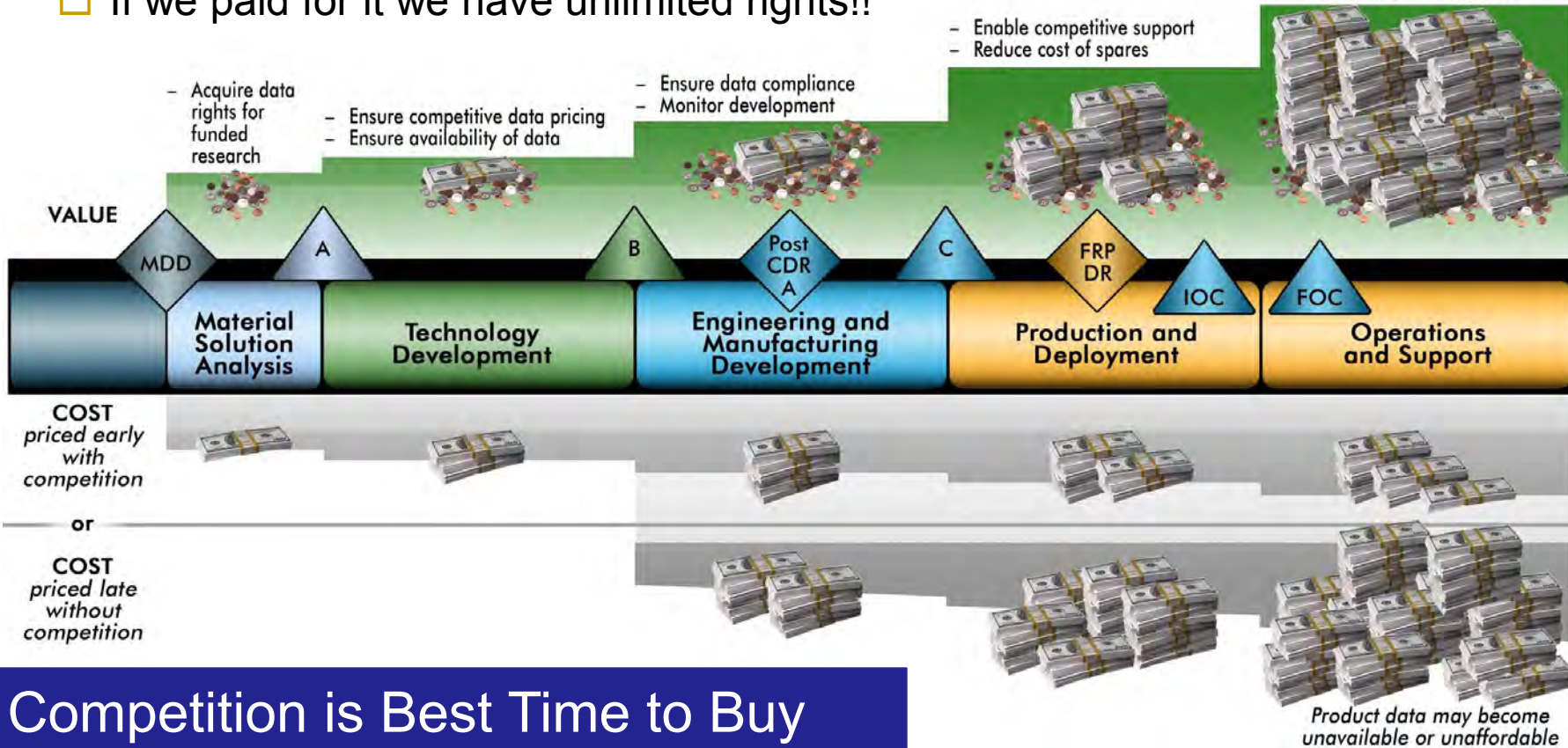
Best Time to Acquire Data Rights?

■ ~~Data rights – may be expensive, but in a competitive environment may be able to make a good “Business Deal”~~

□ Rule of thumb for competition is a minimum savings of 10%

□ If we paid for it we have unlimited rights!!

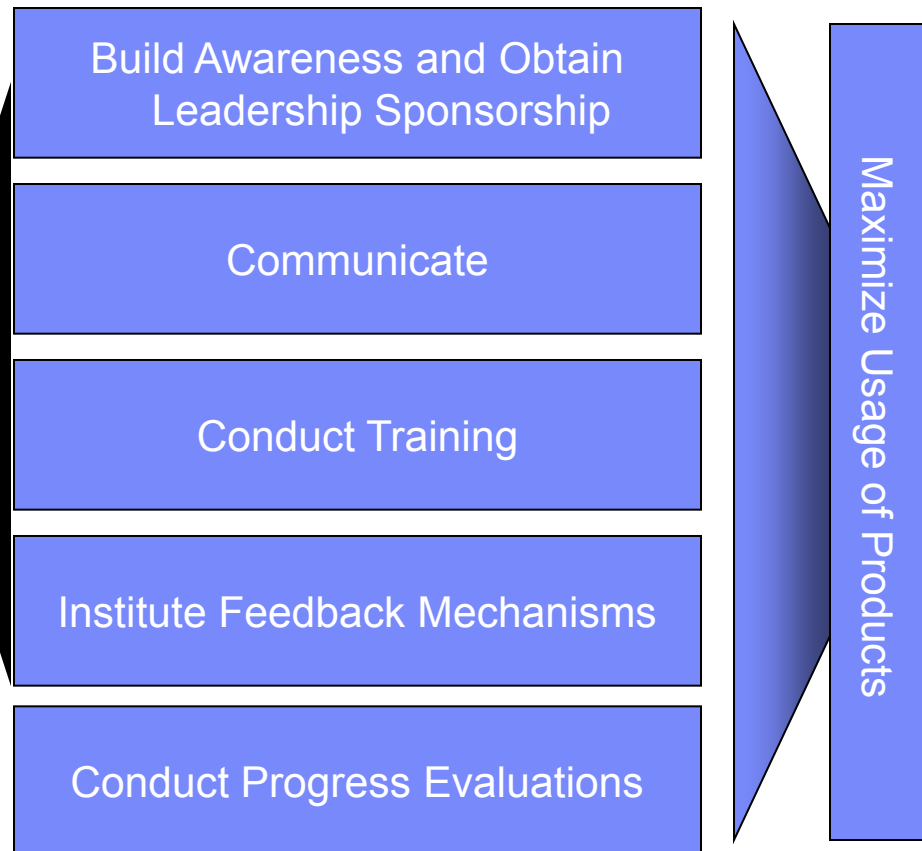
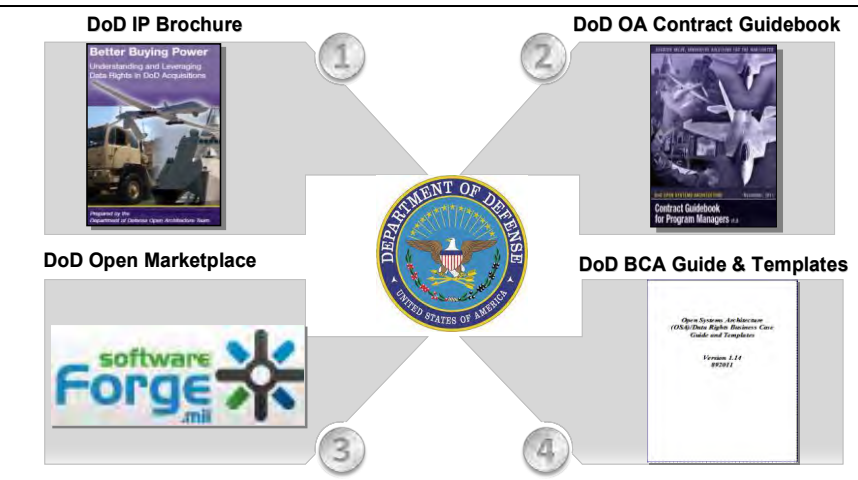
- Enable emergency war fighter support
- Maintain critical organic support
- Maintain 50/50 organic support
- Enable competitive upgrades



Competition is Best Time to Buy

Product data may become unavailable or unaffordable

Rollout Strategy Elements



Breaking Vendor Lock

Agenda

- What is Vendor Lock?
- Roadmap Outlining Approaches to Breaking Vendor Lock
- React to a Crisis and Create an Environment for Change
 - Case Study: PEO Subs Acoustic Rapid COTS Insertion Program
- Leverage and Exercise Data Rights
 - Case Study: ONR SEWIP Program
- Change approach to Systems Engineering
- Hold Competition
 - Case Study: Unmanned Aircraft Systems Control Segment Working Group
- Incentivize Good Behavior
- Change Contracts

What is Vendor Lock?

Definition

Vendor Lock is...



- Where acquisition choices are limited and an organization becomes dependent on a single manufacturer or supplier for product(s) and/or service(s)
- The organization cannot effectively compete the associated work to another vendor without unacceptable costs and/or inconvenience

Approaches to Breaking Vendor Lock

Establish a Crisis and an Environment for Change

- Publish the intent to compete
- Establish Gov' t/Industry/Academia forum
- Establish a Flexible Contracting Approach

Leverage and Exercise Data Rights

- Assess what you have/need
- Require delivery of non-delivered CDRLs and assert data rights

Change approach to Systems Engineering

- Develop a common architecture across a product line or similar Programs of Record
- Functionally decompose legacy Programs

Hold Competition

- Create an alternative
- Limit Integrator role
- Share GPR for next competition
- Inject OSA through technical insertions
- Use Government Labs for Integration

Vendor Lock

Incentivize Good Behavior

- Vendor-to-vendor cooperation as part of past performance evaluation

Change Contracts

- Incentive fees
- Include OSA as part of evaluation
- Reward reuse in evaluation Criteria

Establish a Crisis and Create an Environment for Change

Reacting and Creating a Crisis

Opportunity

Development of a crisis in the marketplace will dramatically change the competitive landscape of a program and force Program Manager's to seek-out new solutions

Actions

Publish the intent to compete

- Compete for system upgrades, technology insertion, operations and maintenance support, training, etc.
- A credible threat may motivate an incumbent

Establish Gov' t / Industry / Academia forum

- Put the incumbent and its current business practices under scrutiny

Establish a Flexible Contracting Approach

- Ensure contracts and acquisition organizations are modular in nature

Case Study: PEO Subs Acoustic Rapid COTS Insertion Program



- In 1995, the U.S. Navy faced a serious crisis...
- The Program Executive Office for Subs adopted an OA approach for sonar which resulted in:
 - Modularized the sonar system;
 - Disclosed designs of the architecture;
 - Published interfaces, and;
 - Increased competition.
- ARCI generated significant large cost savings:
 - A reduction in Development and Production costs by a factor of six;
 - A reduction in Operating and Support costs by a factor of eight.
- ARCI realized over \$25 million in cost avoidance for logistics support, including:
 - Over \$1 million in technical manuals;
 - Over \$2 million in direct vendor delivery;
 - Over \$19 million in interactive, multimedia instruction;
 - Over \$3 million in outfitting spares reduction.

Leverage and Exercise Data Rights

Data Rights

A program will become vendor locked when the government does not possess the data rights needed to re-compete.

Assess what you have and what you need.

- Perform a rigorous assessment of your data rights to help;
- Use results to inform your team of future activities to prevent and/or break out of vendor lock situations;
- Utilize a data rights strategy worksheet to assess current data rights and evaluate what additional rights they may need in the future.

Require delivery of non-delivered CDRLs and assert data rights.

- Contracts should contain the appropriate language to require delivery of any non-delivered CDRLs;
- Program offices should ensure they are also fully asserting their data rights for these non-delivered CDRLs.

Leverage and Exercise Data Rights Case Study: ONR SEWIP Program

- Surface Electronic Warfare Improvement Program (SEWIP) was born out of the Multi-Function Electronic Warfare (MFEW) program from the Office of Naval Research (ONR).
- ONR was also able to capture Government Purpose Rights (GPR) on most of the hardware and software.
- In the competition for SEWIP, the Navy provided the actual MFEW GPR data as GFI with the RFP.
- Data rights options were included as part of the Block 2.
- The RFP thus provided the option for offerors to price data rights and included evaluation criteria on that option in the RFP.
- This resulted in all offerors addressing the data rights option directly in the RFP.
- Produced a contract award with Unlimited Data Rights at no cost for all SEWIP Block 2 hardware and software technical data developed under the contract.



~~Change approach to Systems Engineering~~

Systems engineering is a fundamental component of breaking vendor lock

Inflexible, proprietary system architectures prohibit technology insertion from third-party vendors.

Develop a common architecture across a product line or similar Programs of Record.

- A common architecture will expand the potential for competition;
- This approach will permit economies of scale and improved learning to enhance prospects for innovation and reduced costs.

Decompose legacy Programs to determine where competition will reap the most benefits.

- Identifying which parts of the system architecture would benefit most from being competed;
- Approach helps programs better understand the potential return on investment.

Hold Competition

Competition is widely believed to be the best way to break up a vendor lock situation

The threat of competition can be used as an incentive for the incumbent to improve performance and reduce costs.

Create an alternative, and then compete it

- Generate an alternative or competing product;
- Enables non-traditional vendors to be considered;
- Places additional competitive pressures on the vendor.

Limit Integrator Role

- Limit the role of the integrator (technology insertion vs. integration).

Share GPR for next competition

- Exercise GPR rights in support of a follow-on competition;
- GPR data may be shared as part of the RFP package.

Inject OSA through technical insertions

- Inject various OSA features into existing programs.

Use Government Labs for Integration

- Government labs have been successful used for integration in the past.

Case Study: Office of the Secretary for Defense, Unmanned Aircraft Systems Control Segment Working Group

- The UCS-WG changed DoD's traditional approach to systems engineering
- The UCS WG funded a limited number of development pilots to demonstrate the UCS architecture.
- The set of Initial Work Packages (IWP) demonstrated how the U.S. Air Force Weather service capability could be integrated into other Service's GCS.



The service was developed by the USAF it was successfully integrated into Navy and Army GCS'. The demonstration resulted in:

- 75% reduction in development and integration costs;
- Integration time of one - three weeks;
- Reduction of nearly \$4M in redundant GCS-specific weather services.

Incentivize Good Behavior

Incentives

Provided the proper business case can be made, incentivizing good behavior can be another tool for breaking vendor lock

Vendor-to-vendor cooperation as part of past performance evaluations

- Include cooperation and third-parties as part of the proposal evaluation process;
- Require a bidder to demonstrate how they have historically included other businesses in their previous contracts
- Generate a plan of action for contract execution

Change Contracts

Competition is executed through contracts

The Program Managers Contract Guidebook gives a detailed overview of contractual language that should be included to maximize prospects for open systems and minimize vendor lock.

Incentive fees for delivery, collaboration, and life cycle savings

- Incentive fees and award terms for a vendor locked program to encourage change;
- Having the program office hold the contractor accountable is key.

Include OSA as part of evaluation criteria

- Key OSA technical requirements can be included in source selection evaluation criteria.

Reward reuse of existing products in evaluation Criteria

- A program office can reward reuse of existing products in a vendor's proposal by requiring reuse.

Summary

- Programs can break out of vendor lock by:
 - Establish a Crisis and Create an Environment for Change;
 - Strategically Leveraging and Exercising Data Rights;
 - Changing approach to Systems Engineering;
 - Holding Competition;
 - Incentivizing Good Behavior;
 - Changing Contracts.

- For more information see our website at:
 - <https://acc.dau.mil/oa>

Challenge

Can a qualified third party – Big or Small . . .

- add,**
- modify,**
- replace,**
- remove, or**
- provide support**

for a component of a system, based on open standards and published interfaces.

Summary

- USD AT&L's memo of 14 Sept. 2010 requires a BCA in concert with the engineering trade analysis prior to Milestone B for OSA and data rights.
- OSA can yield modular, interoperable systems that maximize acquisition flexibility;
- Data rights decisions made during the initial acquisition of a weapon system can have far-reaching implications over the system's life cycle
- The DoD OSA-Data Rights Working Group has developed a BCA Guide and supporting templates to complete this process
- This information is available on the Government-Only website at: <https://acc.dau.mil/bbp>

Questions???



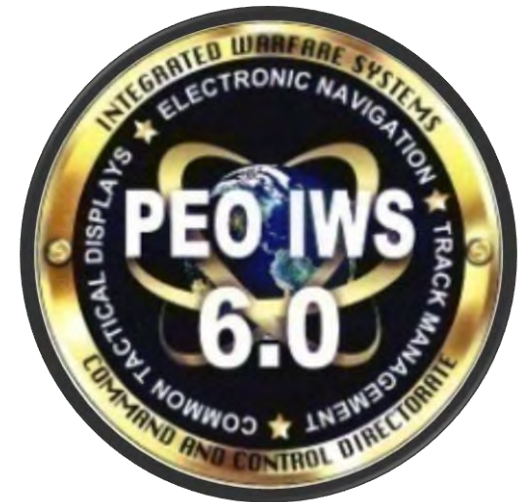
2011 Integrated Warfare Systems Conference

Command & Control (IWS 6.0)
CAPT Red Hoover



PEO IWS 6.0 Mission

Develop and Deliver Sensor Netting & Track Management, Navigation and Display & Processing products, systems and capabilities to the Fleet that support and enhance warfighting capability at a reduced cost while meeting evolving DoD requirements.



Deliver Advanced C2 Capability to the Warfighter



PEO IWS 6.0 Program Portfolio

ACAT ID
Cooperative Engagement Capability (P&D)

ACAT III
Maritime IAMD Planning System (E&MD)
(ACAT III Designation Received with Final Approval
Following MS B)

Abbreviated Acq Program
AN/WSN-7B RLG (P&D)

Non-ACAT
CDS (E&MD)-Seeking ACAT designation
CPS (E&MD) - Seeking ACAT designation
CNI (O&S)
AN/UYQ-21 (O&S)
AN/WSN-9 DHYSL (P&D)
AN/BSN-2 DDD (P&D)
AN/WSN-8/8A DEML (P&D)
ECDIS-N (P&D)

Inactive-ACAT
SACC-A (O&S)
AN/WSN-7/7A RLGN (O&S)
AN/WQN-2 DSVL (O&S)
AN/WSN-2/5 (O&S)
Legacy Navigation (O&S)
Legacy Navy Tactical Computer Resources
AN/UYK-20/43/44/7 (O&S)
AN/UYA-4 (O&S)
Legacy Peripherals
RD-358, USH-26, OJ-172, USQ-69 (O&S)
AN/UYH-16/3 (O&S)

Additional programs not currently reflected in official IWS 6.0 Portfolio
Joint Track Management Capability (TD)
Naval Integrated Fire Control Counter-Air (TD)



Command and Control Systems (IWS 6)

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------------------------------------	-------------------------------	-------------------------------

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P. Hester IWS6B3 1E2099	J. Mette IWS6B4 1E2094	L. Harrison IWS6F2 1E2013
E. Howard IWS6B5 1E2097	M. Evans IWS6B6 1E2038	T. Nguyen IWS6F3 1E2015
		C. Shuford IWS6F4 1E2011
		K. Jackson IWS6F5 1E2018
		J. Fultz IWS6F6 1E2017
		B. Bergen NAIP 1E2012B

NAVSEA 05H SIM
 T. Scaramozzi
 IWS6ENGSIM

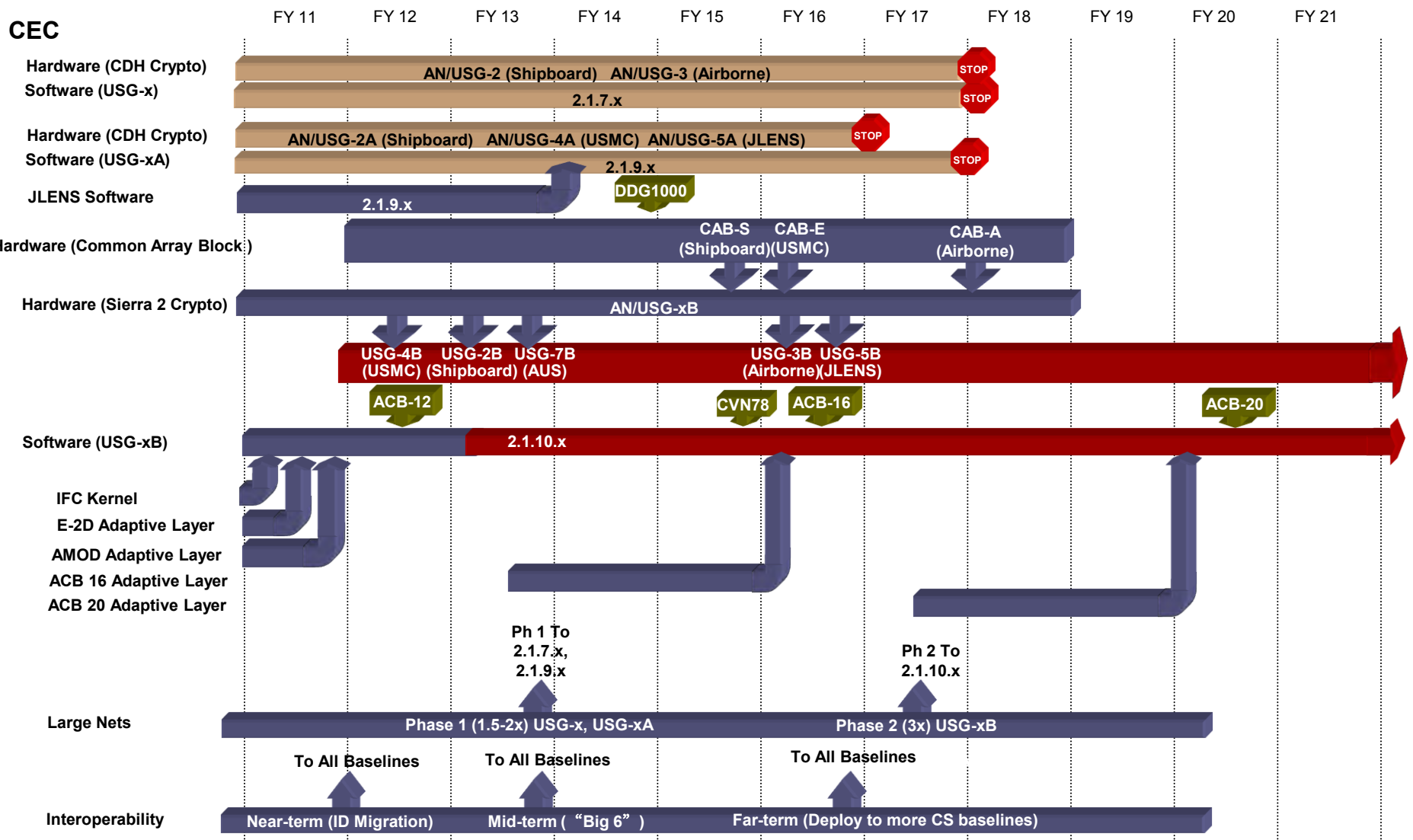
NAVSEA 05C Cost Analyst
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P. Tolbert IWS6ENG3 1E2113	D. Kenney IWS6ENG5 1E2066	S. Rathmanner IWS6ENG4 1E2114	E. McCabe IWS6ENG9 1E2137	B. Gault IWS6ENG12 1E2092
F. Vogel IWS6ENG11 1E2064	A. Coleman IWS6ENG7 1E2067	E. VanNortwick IWS6ENG8 1E2065	B. Burdsall IWS6ENG10 1E2063	



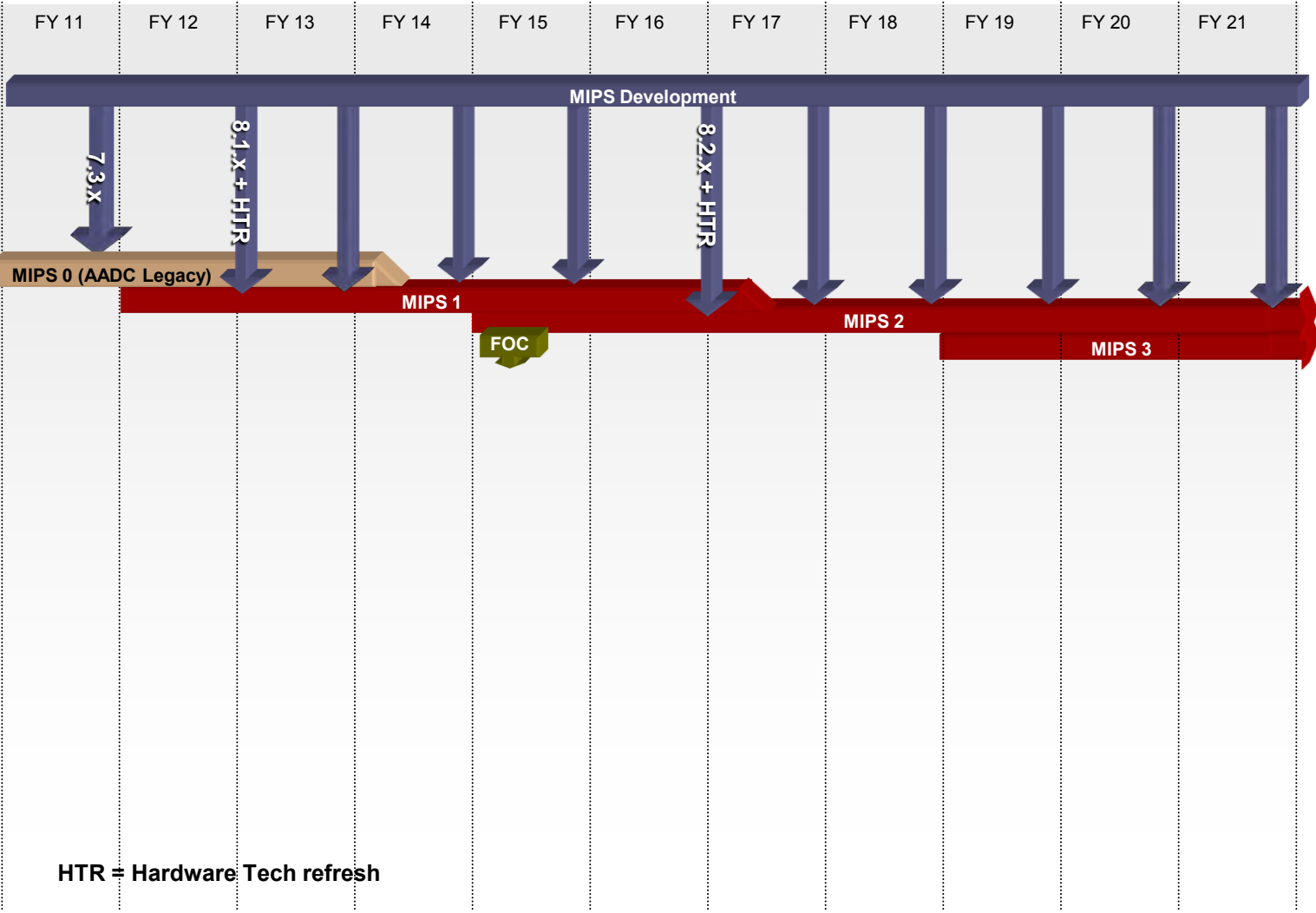
Track Management & Sensor Netting Product Line Roadmap





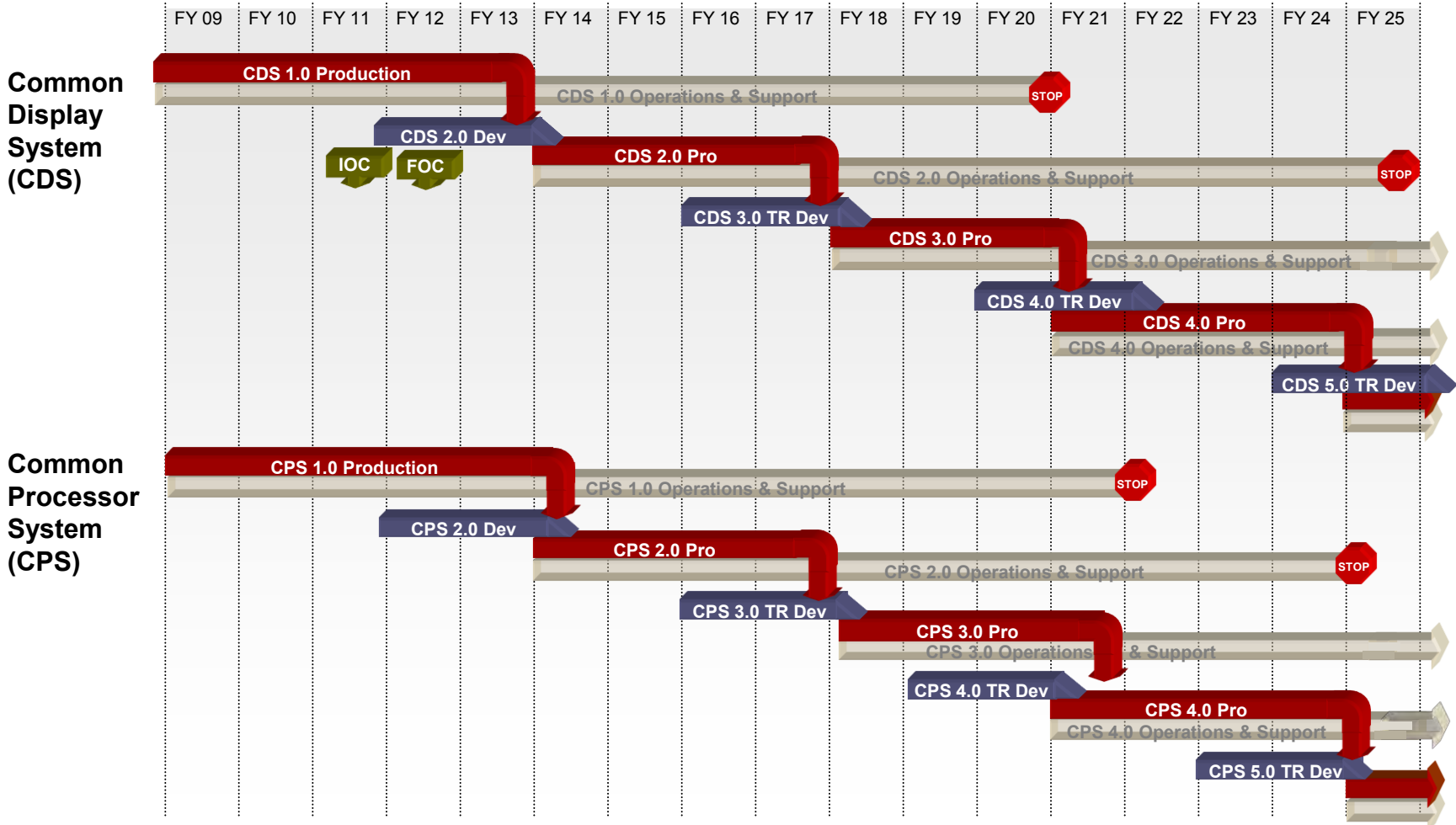
Maritime IAMD Planning System (MIPS) Product Line Roadmap

MIPS
Annual
Incremental S/W
Releases



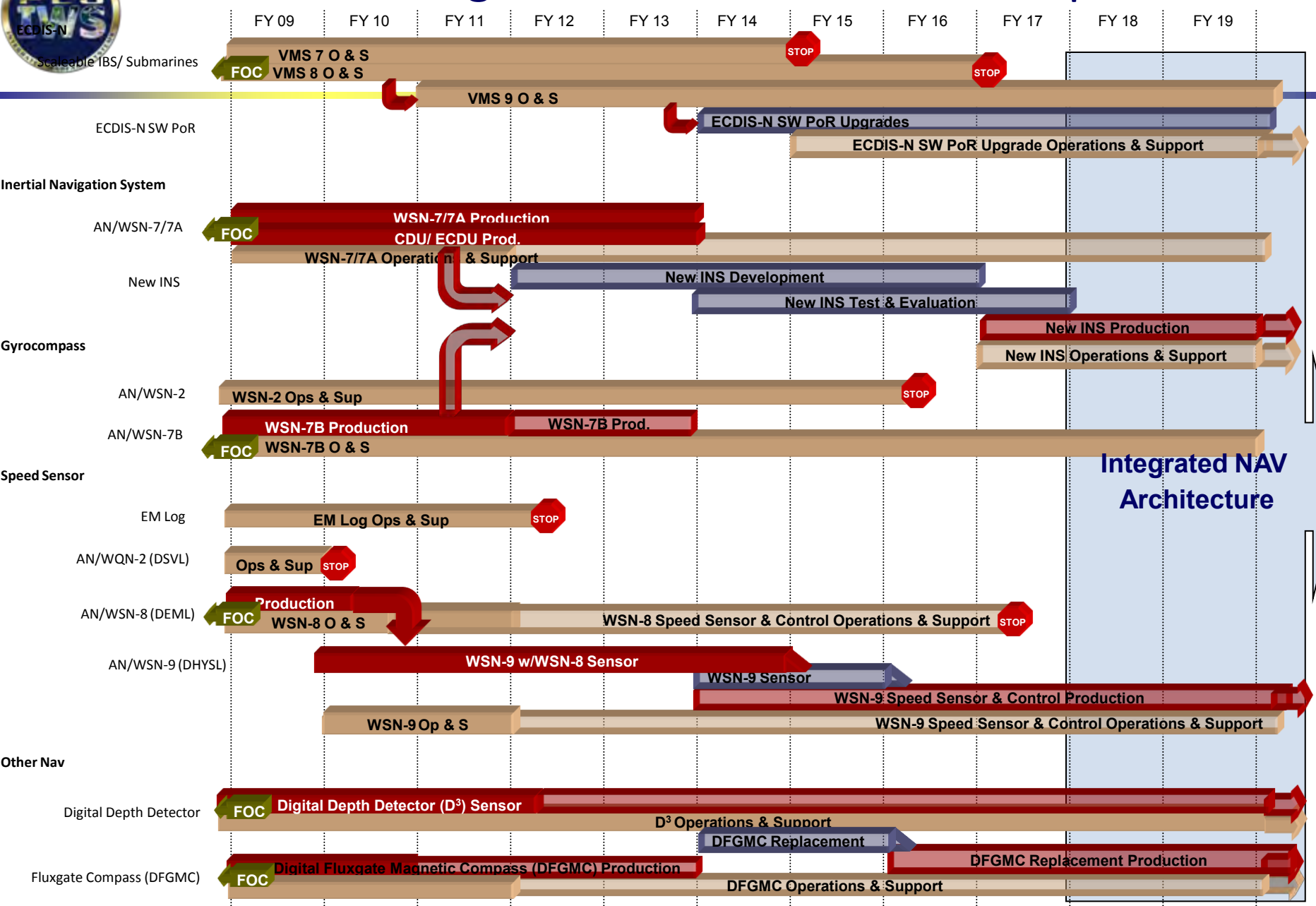


Common Display & Processor Systems Product Line Roadmap





Navigation Product Line Roadmap



Integrated NAV Architecture



Priorities of Capability to the Fleet

- Interoperability
- Information Assurance (IA)
- CDS/CPS
 - Obsolescence and Life Cycle Support
- Navigation
 - Next Generation Inertial Navigation
 - Next Generation Digital Speed Log
 - Common / Certified Electronic Charting



DoD “Better Buying Power” Guidance Roadmap

To address current DoD fiscal realities, IWS 6.0 is applying mandated DoD Better Buying Power and identifying total ownership reduction opportunities

Sensor Netting/Track Management

- **Promote real competition**
 - Latest direction promotes competition for CEC system and components
- **Improve tradecraft in services acquisition**
 - Next SDP production contract will be small business set aside
- **Reduce Cost**
 - Common Antenna Technology

Maritime IAMD Planning System (MIPS)

- **Competitive Procurement**



DoD “Better Buying Power” Guidance Roadmap (Cont’d)

Displays and Processors (DSP)

- **Target affordability and control cost growth (\$TY)**
 - Conducted Tech Insertion /Tech Refresh (TI/TR) to enable early detection of parts obsolescence and verify replacement components
 - Common Displays / Common Processors
- **Promote Real Competition**
 - Latest direction promotes competition for Displays & Processors

Navigation

- **Target affordability and control cost growth (\$TY)**
 - ECDIS-N Software Program of Record (GFE vs. CFE)
- **Promote Real Competition**
 - Latest direction promotes competition for Navigation systems



Driving Affordability

- Moving towards common hardware components
 - Reduces spares and life cycle costs
 - Reduces integration costs
- Competing at the sub-system level
 - Enables more innovation by allowing more companies to focus on specialty areas
 - Enables price realism in both bid offer and source selection
 - Companies can bid in areas better aligned to their core expertise driving price down
- RTOC
 - Identifying TOC reductions where possible (IA/CAB)



PEO IWS Contract Plan

- CEC Industry Day, held December 2010, identified the following contracts for competition:
 - Signal Data Processor (SDP-S) Production
 - Common Array Block (CAB) Family of Antennas Design Agent
 - CEC AN/USG 2B/3B/4B/5B/6B/7B (Surface ships, Aircraft, USMC, Army, FMS) Production
 - CEC BOA
 - CEC Design Agent / Engineering Services
- MIPS
 - Maritime Integrate Air and Missile Defense Planning System (MIPS) Follow on Design and Production System
- Navigation
 - Competition for INS-R Development contract in FY12

See CEC update to FEDBIZOPS dated 27 October 2011



PEO IWS Contract Plan (Cont'd)

- CDS Industry Day, held June 2011, identified the following contracts for competition:
 - Common Display System (CDS) Variant “A” Production
 - Common Display System (CDS) Variant “A”, Variant “B” and Remote CEM Follow on Production
 - Common Display System (CDS) Variant “A”, Variant “B” and Remote CEM Future baseline Development and Production
- For CPS Milestones, the following contract is being competed or will be competed in the near future
 - Common Processing System (CPS) Future baseline Development and Production



What Can Industry Do For Us?

- Participate in IWS 6.0 competitive contracting opportunities through FEDBIZOPS announcements
- Identify Reduced Total Ownership Cost (RTOC) opportunities
- Introduce state-of-the-art technology while mitigating obsolescence and supportability risks
- Design to address DMSMS



Question & Answer Period

UNCLASSIFIED

2011 Integrated Warfare Systems Conference



*Amphibious Ship Integration Manager (IWS 8.0)
Captain J.M. (IKE) Iacovetta*



Agenda

- Role of the SIPM
- PEO IWS 8.0 Organization
- PEO IWS 8 Priorities
- Amphib Combat System Modernization
- Potential Industry Opportunities
- Take-Aways



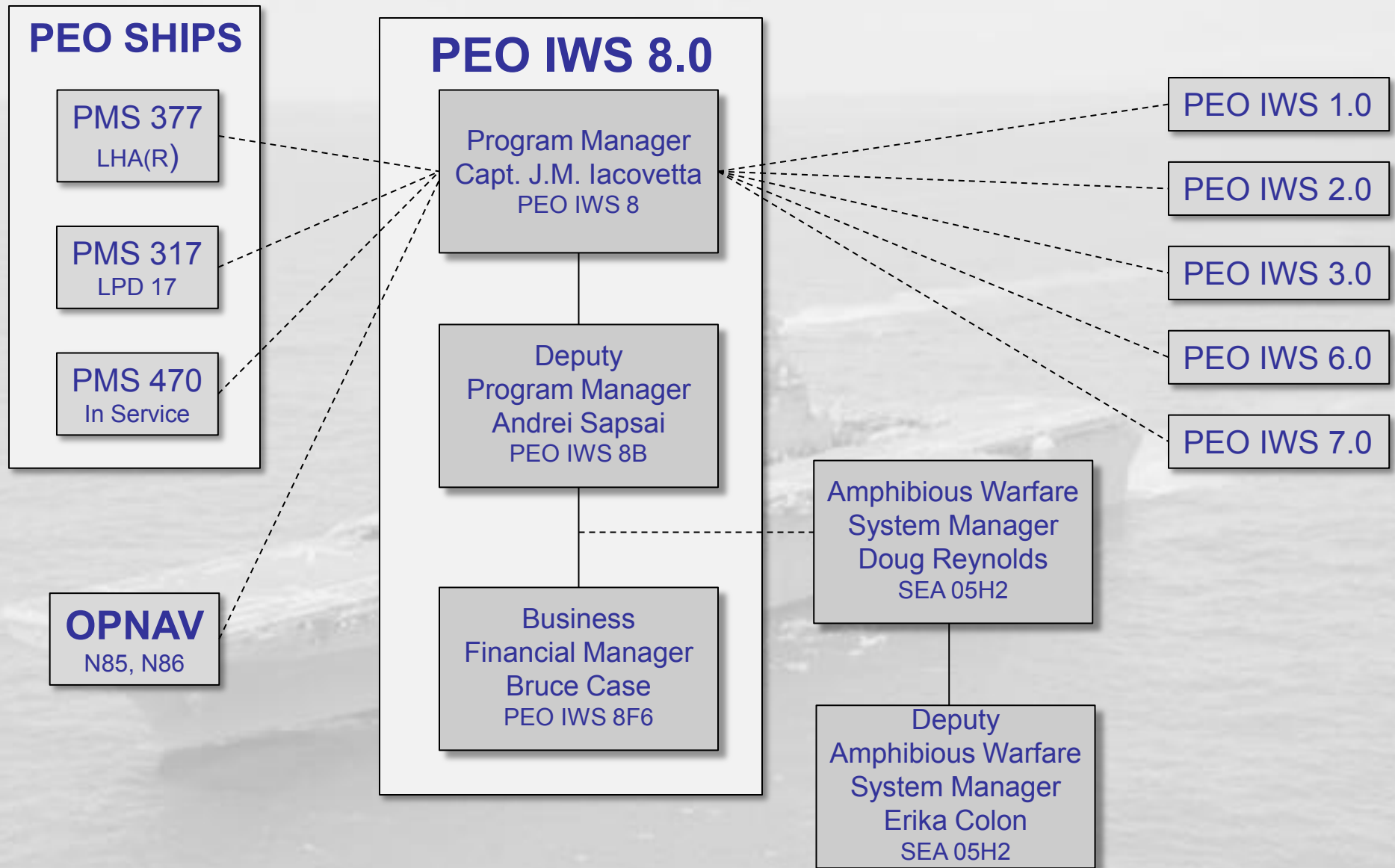
Role of the SIPM

PEO IWS 8.0 is the Mine, Amphibious, Auxiliary, and Command (MAAC) System Integration Program Manager (SIPM) and is responsible for:

- Oversight of the LHA/LHD Class, LPD Class, LSD Class, and LCC Class Warfare Systems design, development, integration, test and certification efforts.
- Coordination and integration of all PEO IWS Combat System Elements into the Amphibious fleet, both new construction and In-Service



Mine, Amphibious, Auxiliary, and Command (MAAC) System Integration Program Manager (SIPM) Organization



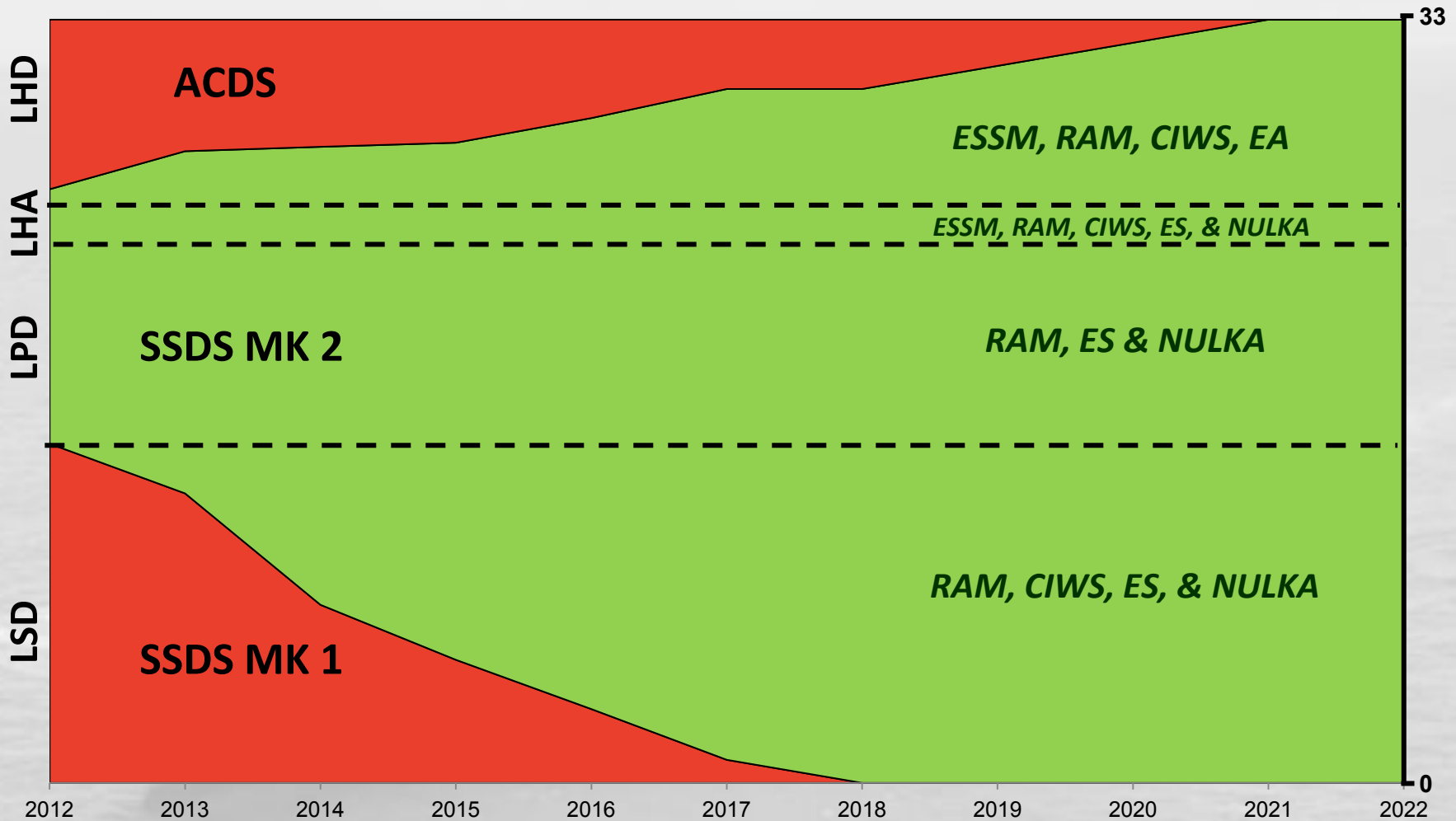


Priority of Capability to the Amphibious Fleet

- Self-Defense
 - Improved Probability of ASCM Raid Annihilation (P_{RA})
 - Improved Small Boat Defense
 - Low Velocity Air Threats (LVATs)
- Interoperability
 - Fleet (SSDS & Link16, CEC, CDLMS, SGS/AC)
 - Joint Strike Fighter (F-35B)
- Sustainability
 - Extend Service Life
 - Lower Operating Cost
 - Improved Operational Availability
- Training
 - Operator & Team



Amphib Combat System Modernization



Single Source SSDS Library



Potential Industry Opportunities

Amphibious Ship RADAR (Air / Fire Control) Replacement

LSD(X)

LHA(R) Flight 1



Next generation NAV – AN/WSN-7, AN/WSN-7B
Replacement



AN/UYQ-70 Life-Cycle Support



Cost Avoidance

- Transition to Open Architecture
- Shared Aegis/SSDS Advanced Capability Build (ACB) software development approach
- Take advantage of quantity buying opportunities
- Capitalize on Lessons Learned on repetitive tasks
- Should Cost/Will Cost analyses prior to purchase
- Limit Engineering Change Proposals (ECPs) post Contract Award

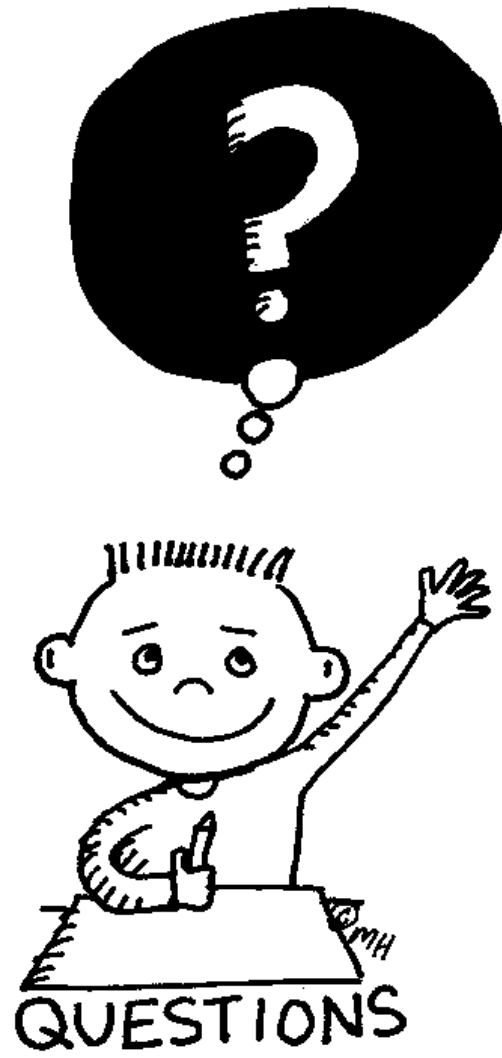


Take-Aways

- Budgets are tight and getting tighter; Global commitments remain
 - USN will be required to “Do more with less”

An aerial photograph of a US Navy fleet, including a large aircraft carrier and several escort ships, sailing on the open ocean. The image is faded and serves as a background for the text.

**COST EFFECTIVE & CAPABLE
SOLUTIONS WILL BE REQUIRED**





2011 Integrated Warfare Systems Conference

PEO IWS Enterprise Product Lifecycle Management Integrated Data Environment (ePLM IDE)

*Jolene Marshall
Thomas Murphy*



ePLM IDE Initiation Malcolm Baldrige



Source: National Institute of Standards and Technology (NIST)

ePLM IDE IS THE ENABLING ENVIRONMENT



PEO IWS

Current State of Affairs

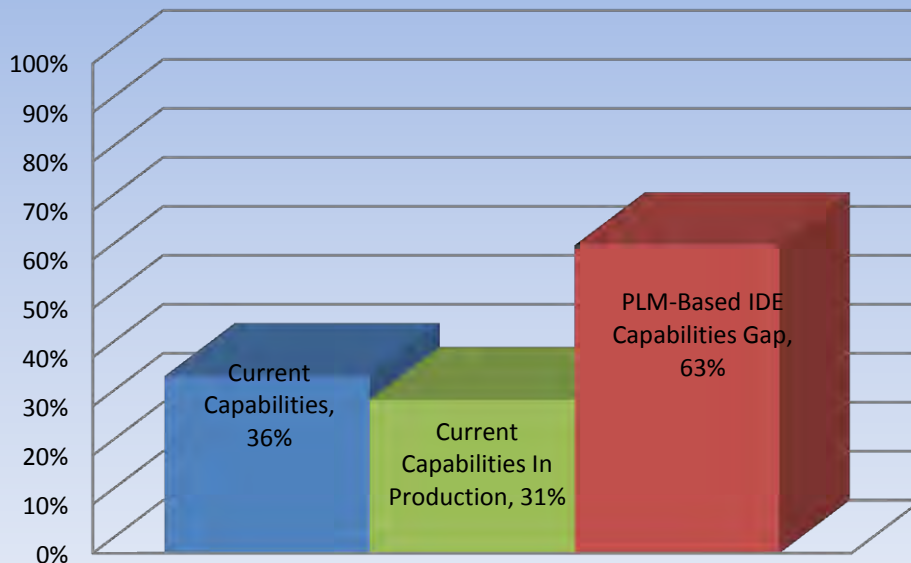
KNOWLEDGE MANAGEMENT = INTEGRATED DATA ENVIRONMENTS (IDEs)

IDE FUNDING PROFILE (\$M)

	FY11	FY12	FY13	FY14	FY15	FY16	Total
Maintenance / Software	\$5.39	\$6.09	\$5.51	\$5.68	\$5.90	\$5.72	\$34.29
Infrastructure (servers, hosted hw, etc.)	\$2.08	\$2.03	\$1.92	\$2.02	\$2.31	\$2.07	\$12.43
Development	\$6.29	\$3.72	\$3.78	\$3.85	\$3.93	\$4.32	\$25.89
Total Ownership Cost	\$13.76	\$11.85	\$11.21	\$11.55	\$12.14	\$12.10	\$72.62

- PEO IWS will spend \$12.1 M/ year over the next six years on Integrated Data Environment (IDE) technology (\$72.62 M total over six years)

PEO IWS IDE Average Capability



- On average, a 63% capability gap exists in that any one PEO IWS IDE does not address the full capability set identified by OPNAV N4 in the Navy PLM/IDE Strategic Plan
- IDE capabilities are consistently duplicated across the 26 IDE instantiations that PEO IWS funds to support its programs



PEO IWS ePLM IDE The Solution

DoD 5000.02 IDE Requirement

2.3.14.2. Integrated Data Environment

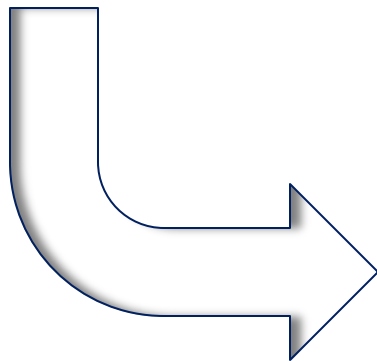
The PM should summarize in the Acquisition Strategy plans to establish a cost-effective data management system and [digital environment](#).

PMs should establish a data management system within the IDE that allows every activity involved with the program to cost-effectively create, store, access, manipulate, and exchange digital data. This includes, at minimum, the data management needs of the system engineering process, modeling and simulation activities, test and evaluation strategy, support strategy, and other periodic reporting requirements.

The PM should use existing infrastructure (e.g. internet) as appropriate and the summary in the Acquisition Strategy should briefly include leveraged and/or planned new development IDE infrastructure.

PEO IWS Implementation BCA

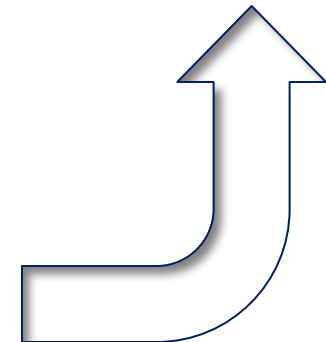
Program Executive Office Integrated Warfare Systems (PEO IWS) enterprise Product Lifecycle Management Integrated Data Environment (ePLM IDE) Business Case Analysis (BCA)



Fleet Readiness & Logistics IT Governance
EXCOMM WORKING GROUP: Product Data Management
**Product Lifecycle Management
Strategic Plan**



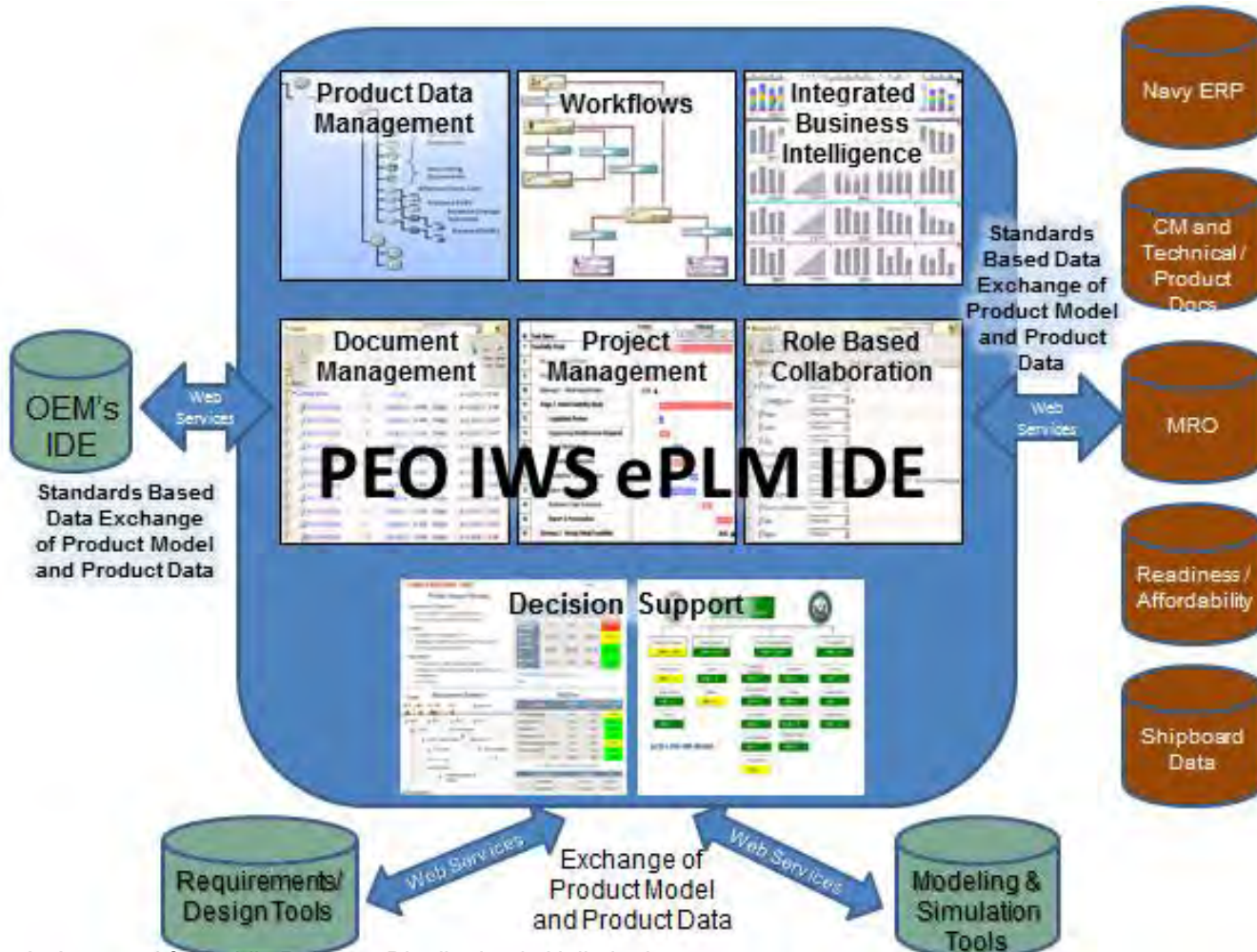
Solution





PEO IWS ePLM IDE Vision Architecture

“Employ a single business process, data management strategy and decision support environment for PEO IWS and its Government and industry partners (OEMs, Design Agents, Engineers, Product Support Integrator’s, Product Support Provider’s, etc.)”

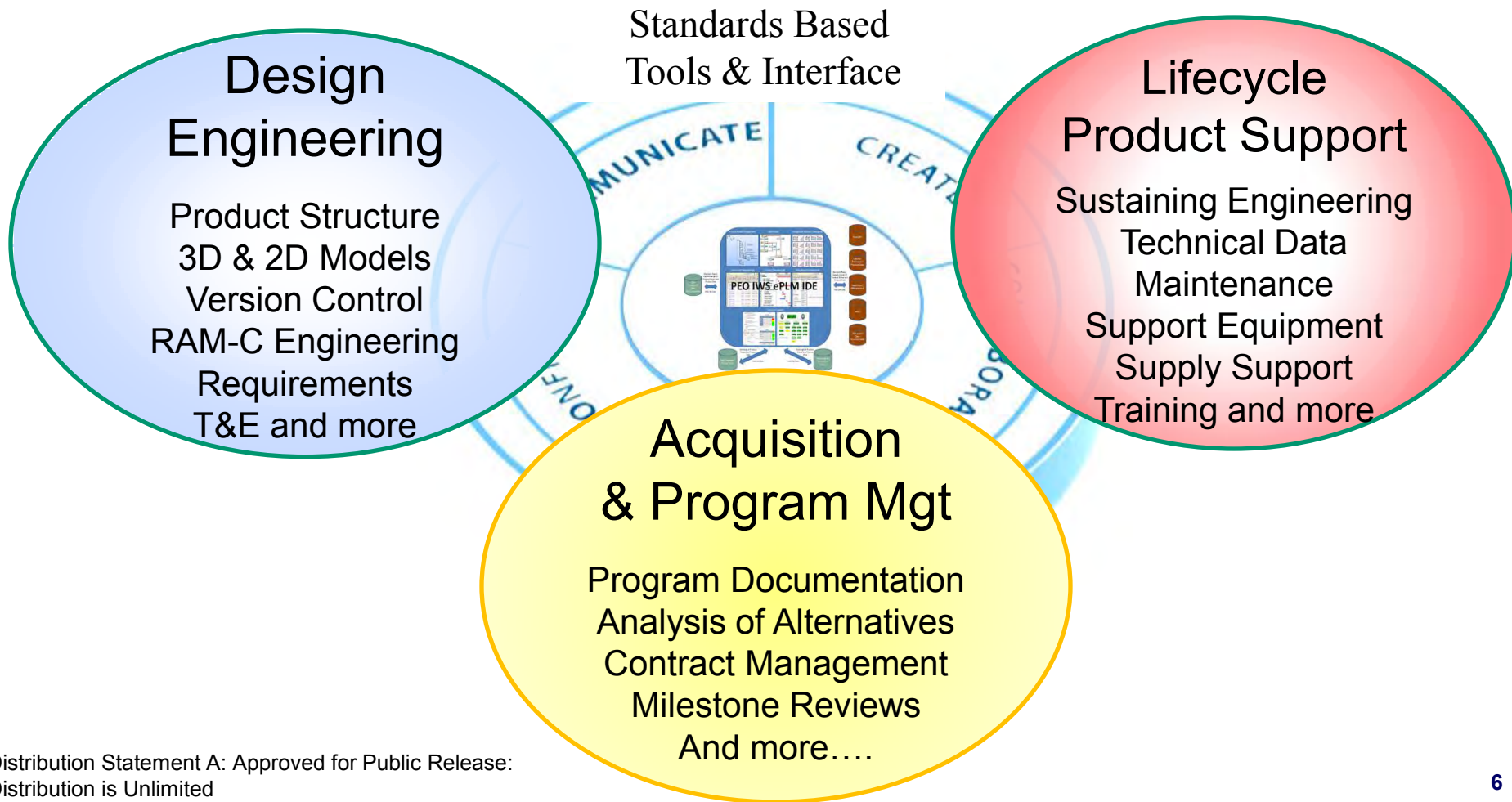




The ePLM IDE Vision

Organizational Change

Bridge the gap between the Engineering Product Development and Lifecycle Product Support worlds with a robust “enabling” environment by leveraging a suite of COTS PLM technologies

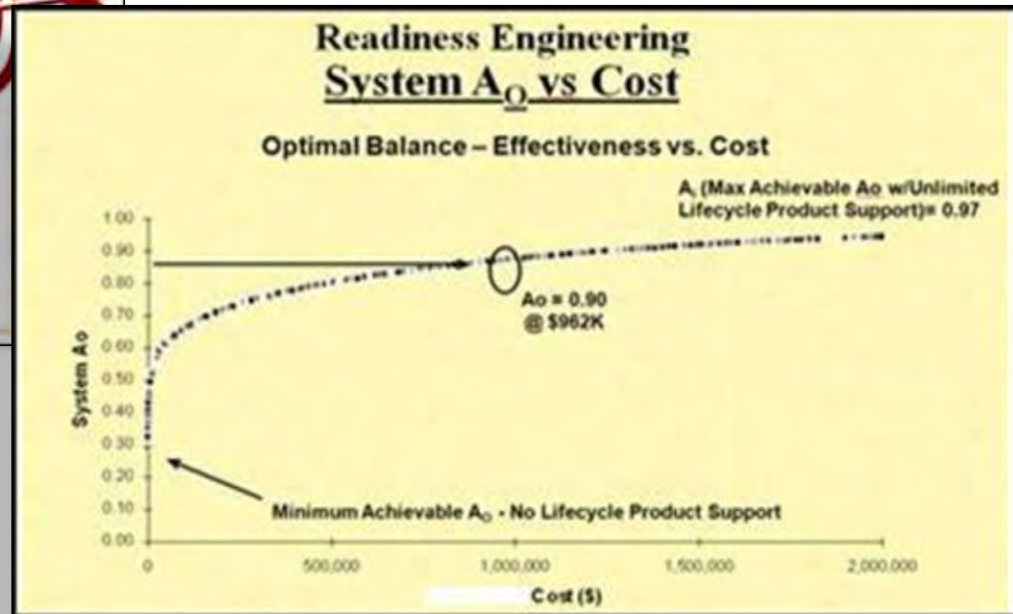
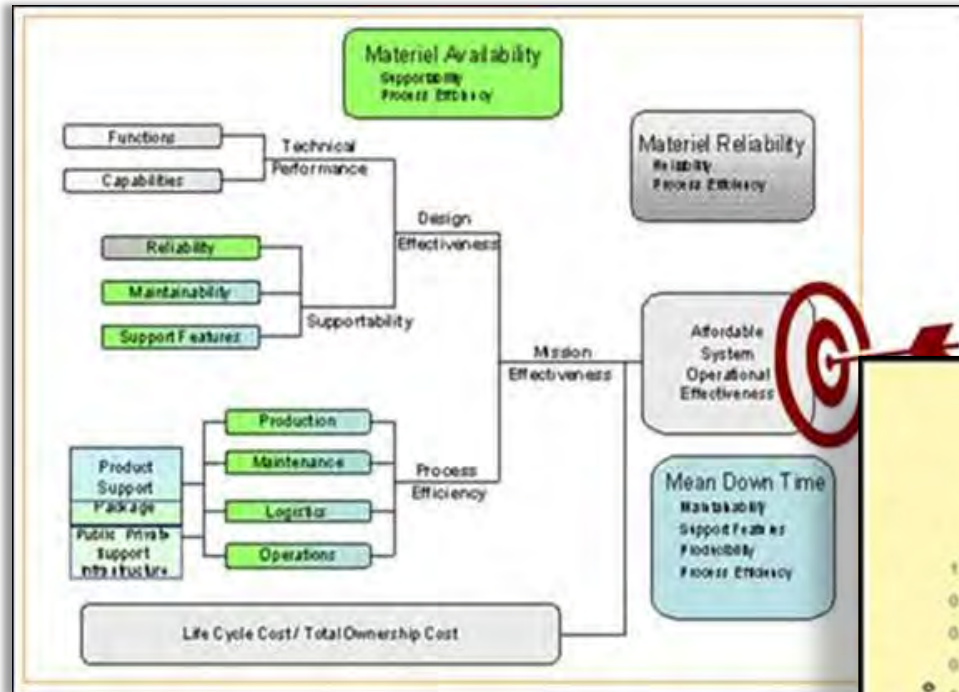




The ePLM IDE Vision

Affordability Trade-Offs

Provide the required/authoritative information, business processes, and analytical tools to ensure Affordable System Operational Effectiveness via *continual* materiel and non-materiel trade-offs throughout a Weapon System's lifecycle





The Perfect Storm

THE UNDER SECRETARY OF DEFENSE
DIRECTORS OF THE DEFENSE AGENCIES
WASHINGTON, DC 20301-3019

NOV 02 2006

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
DIRECTORS OF THE DEFENSE AGENCIES

Dr. Ashton Carter
Better Buying Power

SUBJECT: **Dr. Ashton Carter Better Buying Power**

This memorandum is to inform you of the Department of Defense's (DoD) commitment to better buying power. It is a key element of the DoD's overall strategy to improve efficiency and productivity in defense spending. The DoD is committed to better buying power in the following five areas: (1) Target Affordability and Control Cost Growth, (2) Increase Productivity and Increase Quality, (3) Increase Real Competition, (4) Improve Trademark in Services Acquired, and (5) Increase Efficiency and Productivity.

This memorandum is to inform you of the Department of Defense's (DoD) commitment to better buying power. It is a key element of the DoD's overall strategy to improve efficiency and productivity in defense spending. The DoD is committed to better buying power in the following five areas: (1) Target Affordability and Control Cost Growth, (2) Increase Productivity and Increase Quality, (3) Increase Real Competition, (4) Improve Trademark in Services Acquired, and (5) Increase Efficiency and Productivity.

Target Affordability and Control Cost Growth

Mandate: Affordability. Effective November 15, 2010, I will implement affordability-based decision making at milestone decision points for all Acquisition Strategy (ACAT) programs. Specifically, I expect the following actions:

Building a Better Buying Power Culture: DoD will implement affordability analysis, you will use affordability analysis in all acquisition decisions. Examples include tactical vehicles, tactical aircraft, surface combatants, and communications satellites.

Milestones: DoD will establish an affordability target to be tracked by the program manager (PM) for each ACAT program. The target will be based on the program's target cost, average unit acquisition cost (AUAC), and unit cost per unit (UCPU). The target will be based on the program's target cost, average unit acquisition cost (AUAC), and unit cost per unit (UCPU). The target will be based on the program's target cost, average unit acquisition cost (AUAC), and unit cost per unit (UCPU).

THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENNSION
WASHINGTON, DC 20301-3019

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
DIRECTORS OF THE DEFENSE AGENCIES

Requirements for Lifecycle Management and Product Support

SUBJECT: **Requirements for Lifecycle Management and Product Support**

Reference: DoD Directive-Type Memorandum (DTM) 16-015 - Requirements for Life Cycle Management and Product Support

Purpose: This DTM:

- Establishes the DoD's policy on lifecycle management and product support for all DoD systems.
- Establishes the DoD's policy on lifecycle management and product support for all DoD systems.
- Establishes the DoD's policy on lifecycle management and product support for all DoD systems.

Applicability: This DTM applies to:

- All DoD systems.
- All DoD systems.
- All DoD systems.

DEPARTMENT OF THE NAVY
3000 NAVAL OPERATIONS CENTER
WASHINGTON, DC 20301-3000

20 July 2011

MEMORANDUM FOR DISTRIBUTION
SAC, DEPARTMENT OF THE NAVY (DON) DATA CENTER CONSOLIDATION (DCC) POLICY GUIDANCE

Ref: 1st Under Secretary of the Navy memo of December 3, 2009, 1st Under Secretary of the Navy (DON) Information Technology (IT) Openness Efficiency Initiatives and 2nd Under Secretary of the Navy (DON) Information Technology (IT) Openness Efficiency Initiatives

Data Center Consolidation

A memorandum is established to inform all DON personnel of the consolidation of data centers. The consolidation of data centers is a key element of the DON's overall strategy to improve efficiency and productivity in defense spending. The consolidation of data centers is a key element of the DON's overall strategy to improve efficiency and productivity in defense spending.

WSARA
DoD Acquisition Reform
Product Support Assessment

Support Assessment

November 2009

PEO IWS ePLM IDE

2.3.14.2. Integrated Data Environment

The PM should summarize in the Acquisition Strategy plans to establish a data management system and digital environment.

DoD 5000 Integrated Data Environment Requirement

PMs should establish a data management system within the IDE that allows every stakeholder to view, create, update, and exchange digital data. This includes, at minimum, the data management needs of the system engineering process, model-based systems engineering (MBSE), support strategy, and other periodic reporting requirements.

The PM should use existing infrastructure (e.g. internet) as appropriate and the summary in the Acquisition Strategy should briefly include leveraged and/or planned new development IDE structure.



DoD 5000 Data Management Strategy Policy

PMs should develop a long-term strategy integrating data requirements and data management into the system engineering process. This strategy should be a part of the Acquisition Strategy for major systems and is a best practice for all acquisitions. It must contain at least the content specified by statute (10 U.S.C. 2420 and Public Law 109-244) and regulation (DEARS part 221.10 and 221.11).

- Assess the data required to design, manufacture, and sustain the system as well as to support the system's operation.
- Identify the data management strategy to be used to support the system's operation.
- Identify the data management strategy to be used to support the system's operation.

THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENNSION
WASHINGTON, DC 20301-3019

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
DIRECTORS OF THE DEFENSE AGENCIES

Reliability Analysis, Planning, Tracking, and Reporting

SUBJECT: **Reliability Analysis, Planning, Tracking, and Reporting**

Reference: DoD Directive-Type Memorandum (DTM) 16-015 - Requirements for Life Cycle Management and Product Support

This memorandum is to inform you of the Department of Defense's (DoD) commitment to reliability analysis, planning, tracking, and reporting. It is a key element of the DoD's overall strategy to improve efficiency and productivity in defense spending.

WSARA 2009

WSARA 2009

MANDATED FORMAT FOR ALL SYSTEMS ENGINEERING PLANS

PROGRAM NAME - ACAT LEVEL

Systems Engineering Plan Template

Supporting Milestone AND

Deputy Assistant Secretary of Defense
Systems Engineering
(Eg. MDAP's and MAIS Programs)

(or designated SEP approval authority)

SAMPLE PROGRAM: "ABC"

Product Support Strategy

Metric	Target	Actual	Trend	Compliance
Cost	70%	80%	77%	Red
Quality	37%	50%	50.8%	Green
Issues	245	185	65	Green

Sustainment Quad Chart

Metric	Target	Actual	Trend	Compliance
Cost	70%	80%	77%	Red
Quality	37%	50%	50.8%	Green
Issues	245	185	65	Green



PEO IWS Enterprise Product Lifecycle Management Integrated Data Environment (ePLM IDE)

Executive Overview

September 2011

***Distribution Statement D: Distribution authorized to DoD and DoD US contractors only,
Critical Technology (26 August 2011). Other U.S. requests shall be referred to the
Program Executive Office Integrated Warfare Systems.***

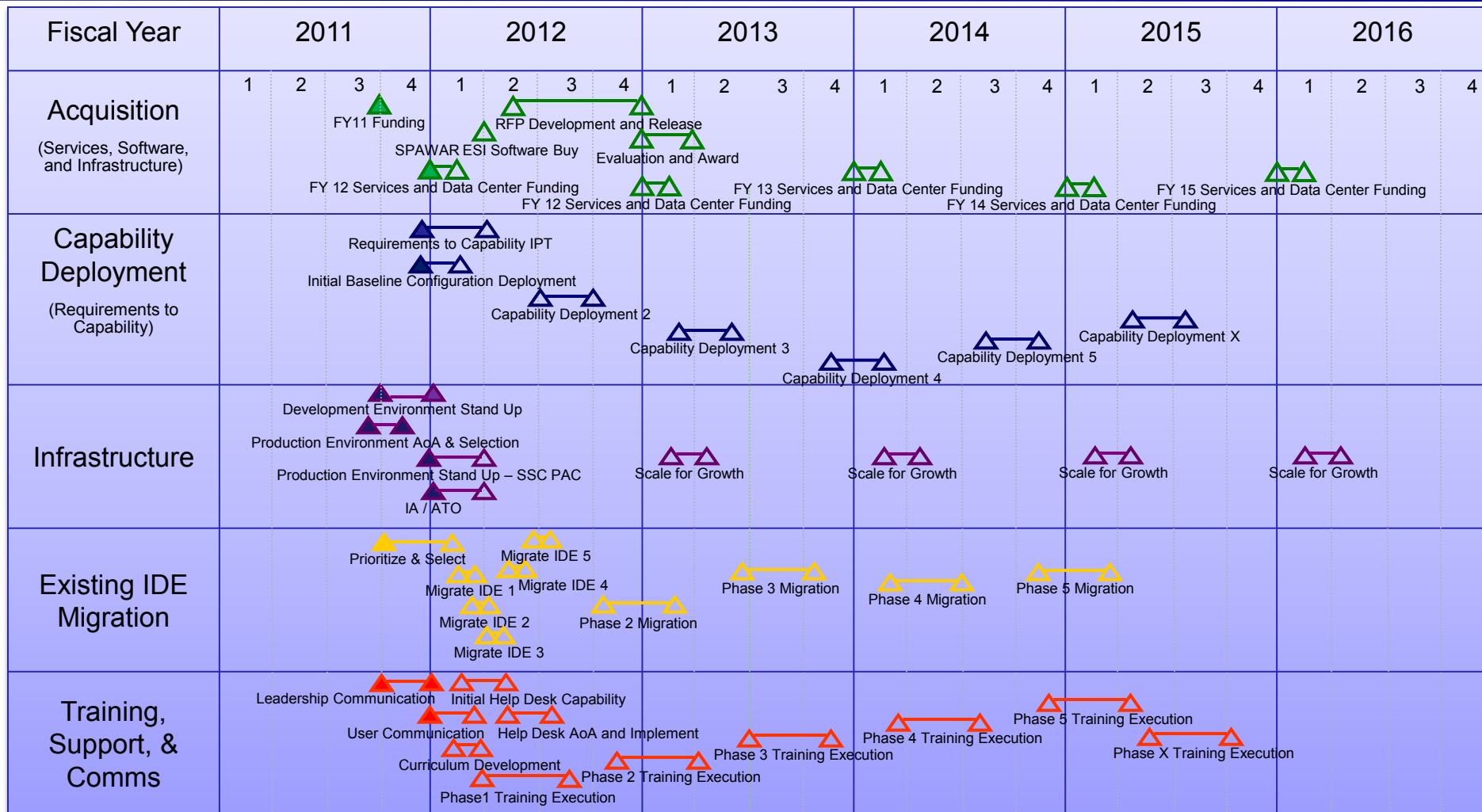


Summary ePLM IDE Benefits

- Reduce man hours to find and analyze data associated with solving readiness, affordability, capability, and suitability issues
- Facilitate more effective, informed, and traceable decision making
- Reduce business process cycle times
- Fund and implement advanced capabilities as an enterprise vice funding “programs” individually
- Enable continuous material and non-material tradeoffs
- Satisfy Data Center Consolidation (DCC) mandates saving PEO IWS ~\$12 million over 6 years
- Increase collaboration and data sharing amongst Government and Industry organizations



PEO IWS ePLM IDE Roadmap





Backup



Product Lifecycle Management (PLM) Defined

CIMdata, a leading independent PLM organization defines PLM as:

- **A strategic business approach that applies a consistent set of business solutions that support the collaborative creation, management, dissemination, and use of product definition information**
- **Supporting the extended enterprise (customers, design and supply partners, etc.)**
- **Spanning from concept to end of life of a product or plant**
- **Integrating people, processes, business systems, and information***

Three core or fundamental concepts of PLM are:

- **Universal, secure, managed access and use of product definition information**
- **Maintaining the integrity of that product definition and related information throughout the life of the product or plant**
- **Managing and maintaining business processes used to create, manage, disseminate, share and use the information**

A View From The Missile Defense Agency



DISTRIBUTION STATEMENT A:
Approved for public release;
distribution is unlimited.

**To: Program Executive Office
Integrated Warfare Systems Industry Day Conference**

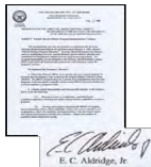
**By: Mr. John H. James, Jr.
Executive Director
Missile Defense Agency
December 7, 2011**



Keystone Authority



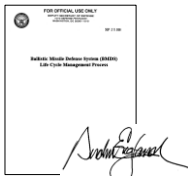
SECDEF Memo, Missile Defense Program Direction, 2 JAN 02



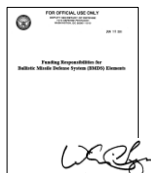
USD/AT&L Memo, Ballistic Missile Defense Program Implementation Guidance, 13 FEB 02



DoD Directive 5134.9, Missile Defense Agency, (MDA "Charter") 17 SEP 09



BMDS Life Cycle Management Process (LCMP), DepSecDef memo 25 SEP 08

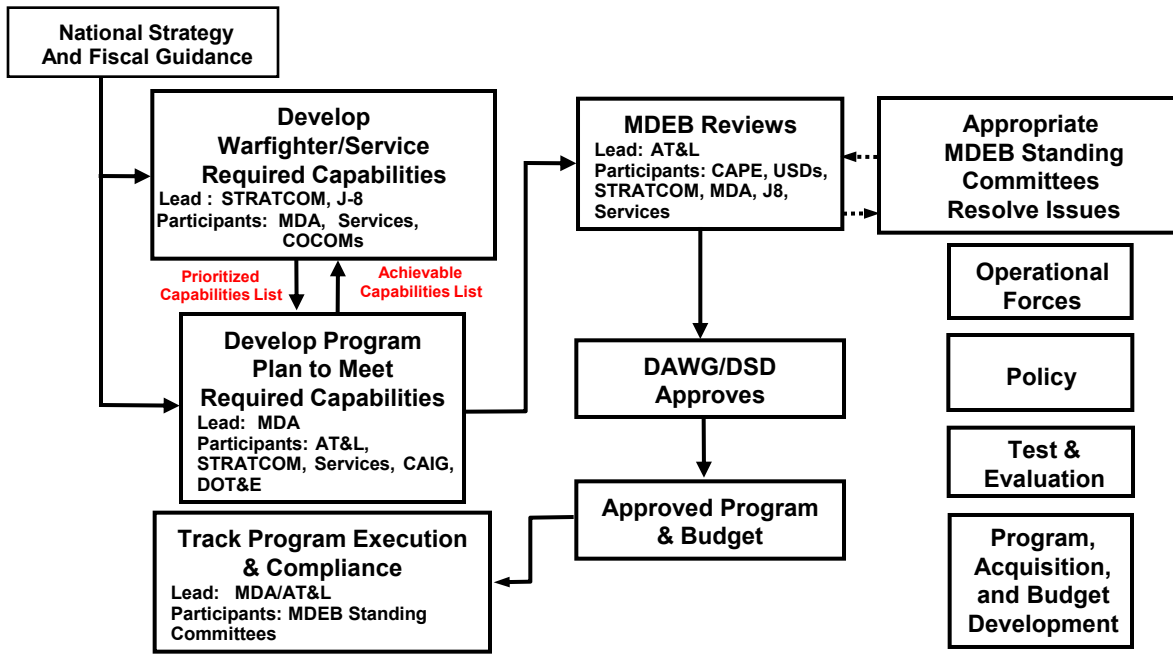


Funding Responsibilities for BMDS, DepSecDef memo 10 JUN 11



Focused Governance

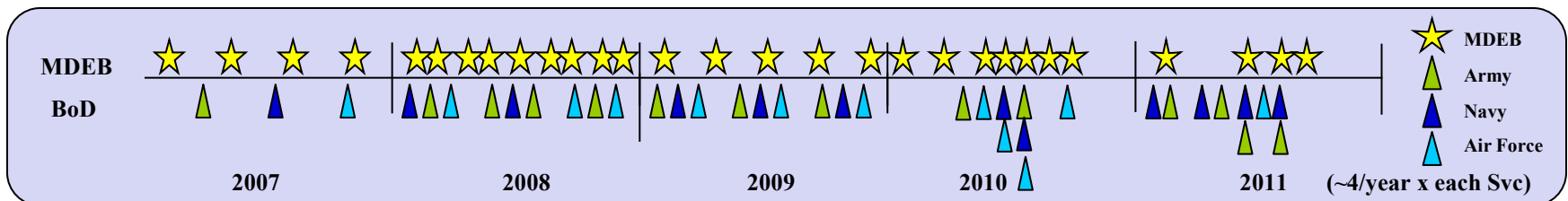
BMDS Life Cycle Management Process



Missile Defense Management Principles

- Single line of authority from SecDef
- Effectively adjudicate competing stakeholder needs
- Frequent access to decision makers
- Decision makers require direct access to expertise
- Stakeholder involvement in all decisions

- Warfighter Interface
 - Board of Directors
 - Decision making authority
 - Meet every 60-90 days





Flight Test Maritime (FTM-15) Mission



Launch Vehicle-2



Army Navy/Transportable Radar Surveillance (AN/TPY-2)



Command, Control, Battle Management & Communications (C2BMC)

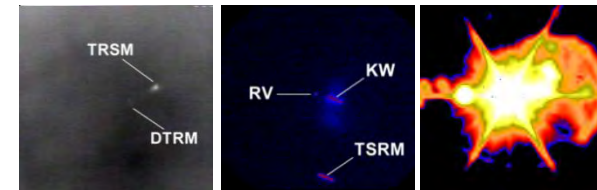
- ✓ Intercept of Intermediate Range Ballistic Missile with SM-3 Block IA
- ✓ Live intercept by Aegis BMD with remote engagements authorized
- ✓ Use of AN/TPY-2 radar as remote Sensor in the fire control loop with Aegis BMD
- ✓ Live Fire Event using C2BMC Global Engagement Management in control of AN/TPY-2
- ✓ COCOM-led Theater Regional Test Operational Overlay in a Live Fire Event
- ✓ BMDs Operational Test of the Phased Adaptive Approach (PAA) Architecture



USS O'Kane Combat Information Center



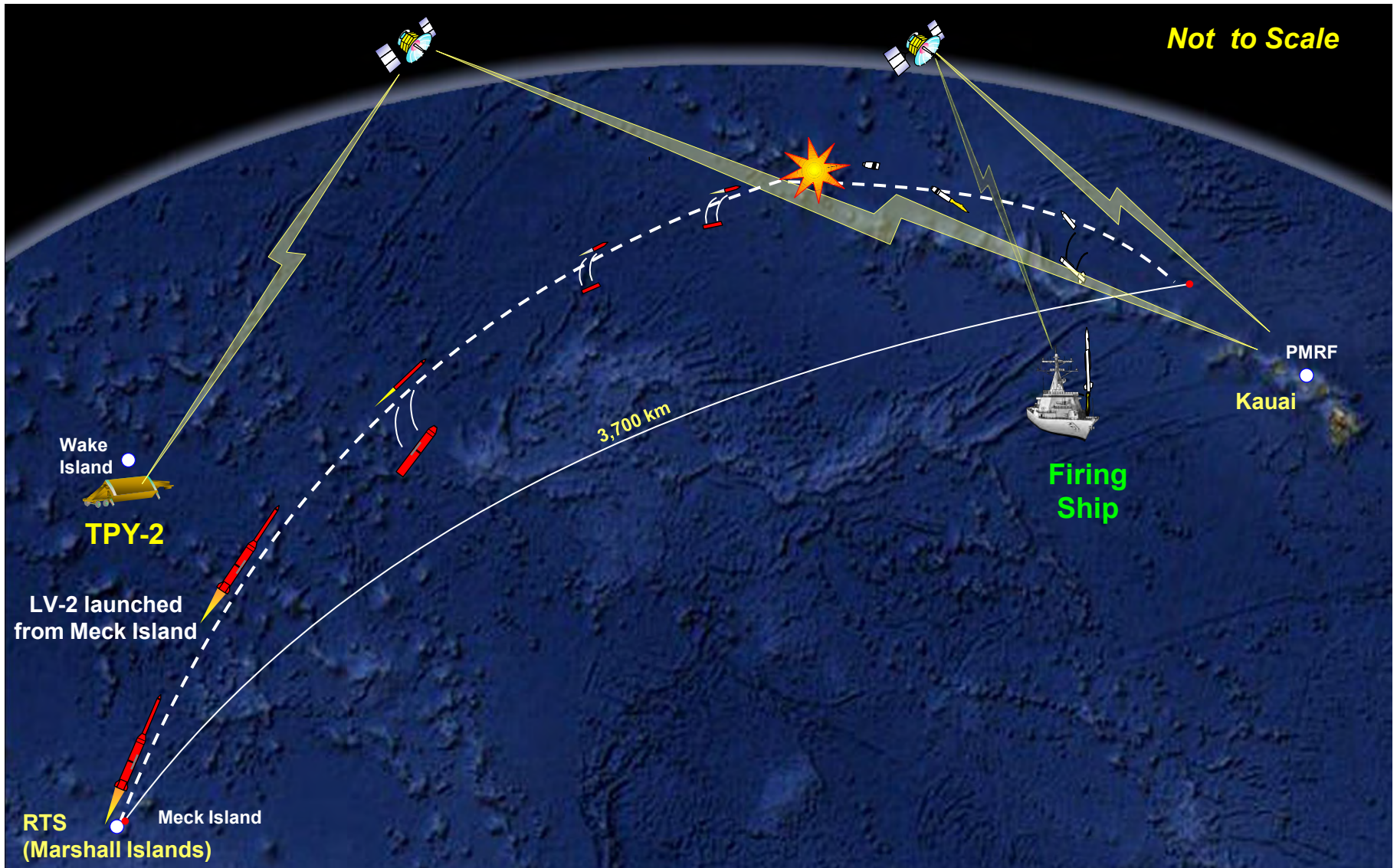
USS O'Kane and Standard Missile-3 (SM-3)



Intercept



Flight Test Maritime (FTM-15)







Integrated Warfare Systems Conference CBO Presentation December 6, 2011

Eric J. Labs

Senior Analyst for Naval Forces & Weapons

Congressional Budget Office



Disclaimer: The Views Expressed Here
are Not Those of Congressional Budget
Office or the U.S. Congress

Relevant CBO Publications

- Found at www.cbo.gov:
 - *An Analysis of the Navy's Fiscal Year 2012 Shipbuilding Plan*, June 2011.
 - *Long-Term Implications of the 2012 Future Years Defense Program*, June 2011.
 - Testimony of CBO Director Douglas Elmendorf on *Discretionary Spending* before the Joint Select Committee on Deficit Reduction, October 26, 2011.

Outline

- Navy's 2012 Fiscal Year Shipbuilding Plan
- Potential Impact of Budget Control Act of 2011 on Navy Topline and Shipbuilding Budget
- Developments Since the 2012 Plan was Produced

Ships Goals under Fiscal Year 2012 Plan

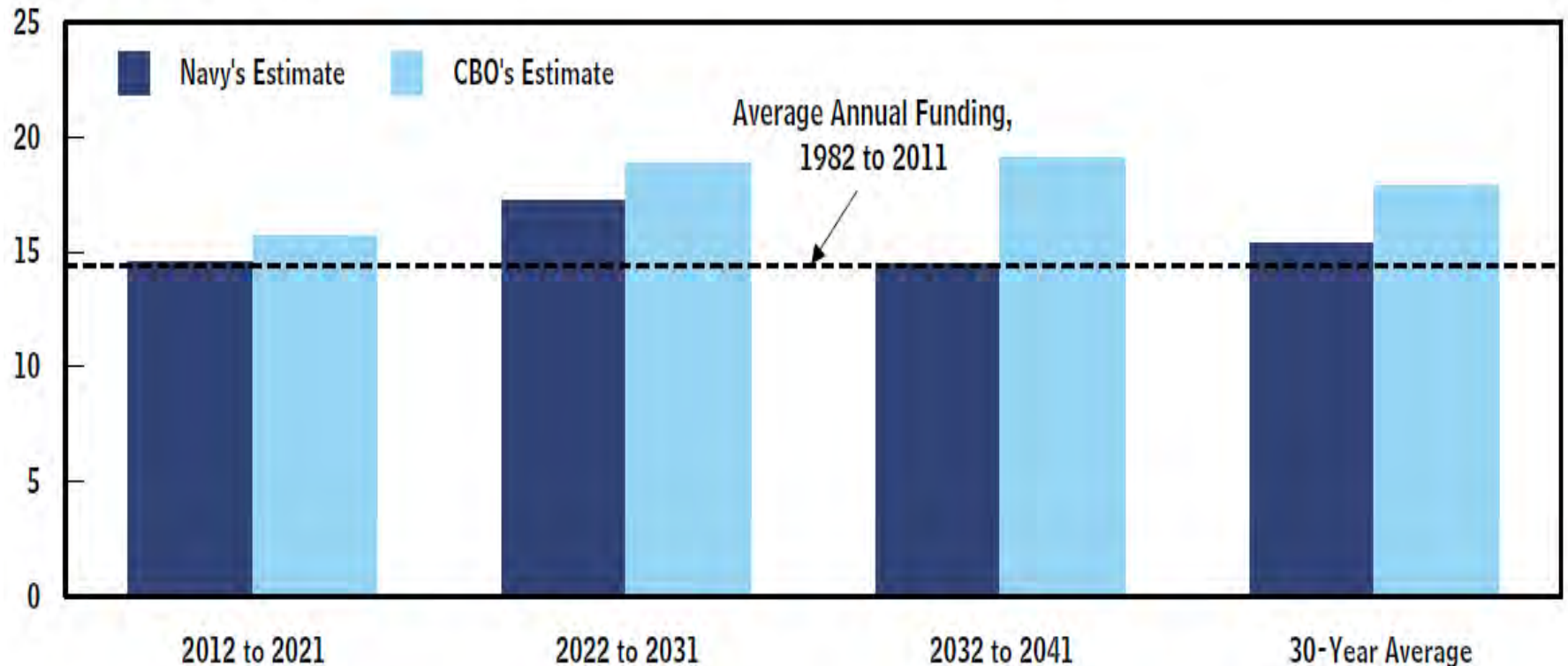
Ship Type	Inventory Objective
Aircraft Carriers	11
Ballistic Missile Submarines	12
Attack Submarines	48
Cruisers and Destroyers	94
Littoral Combat Ships	55
Amphibious Ships	33
Combat Logistics Ships	30
Joint High Speed Vessels	21
Other Support Ships	<u>24</u>
Total	328

Ships Purchased between 2012-2041

Ship Type	Number
Aircraft Carriers	6
Ballistic Missile Submarines	12
Attack Submarines	44
Destroyers	
DDG-51 Flight IIA	9
DDG-51 Flight III/DDG(X)	43
Littoral Combat Ships	71
Amphibious Ships	20
Combat Logistics Ships	19
Joint High Speed Vessels	34
Other Support Ships	<u>17</u>
Total	275

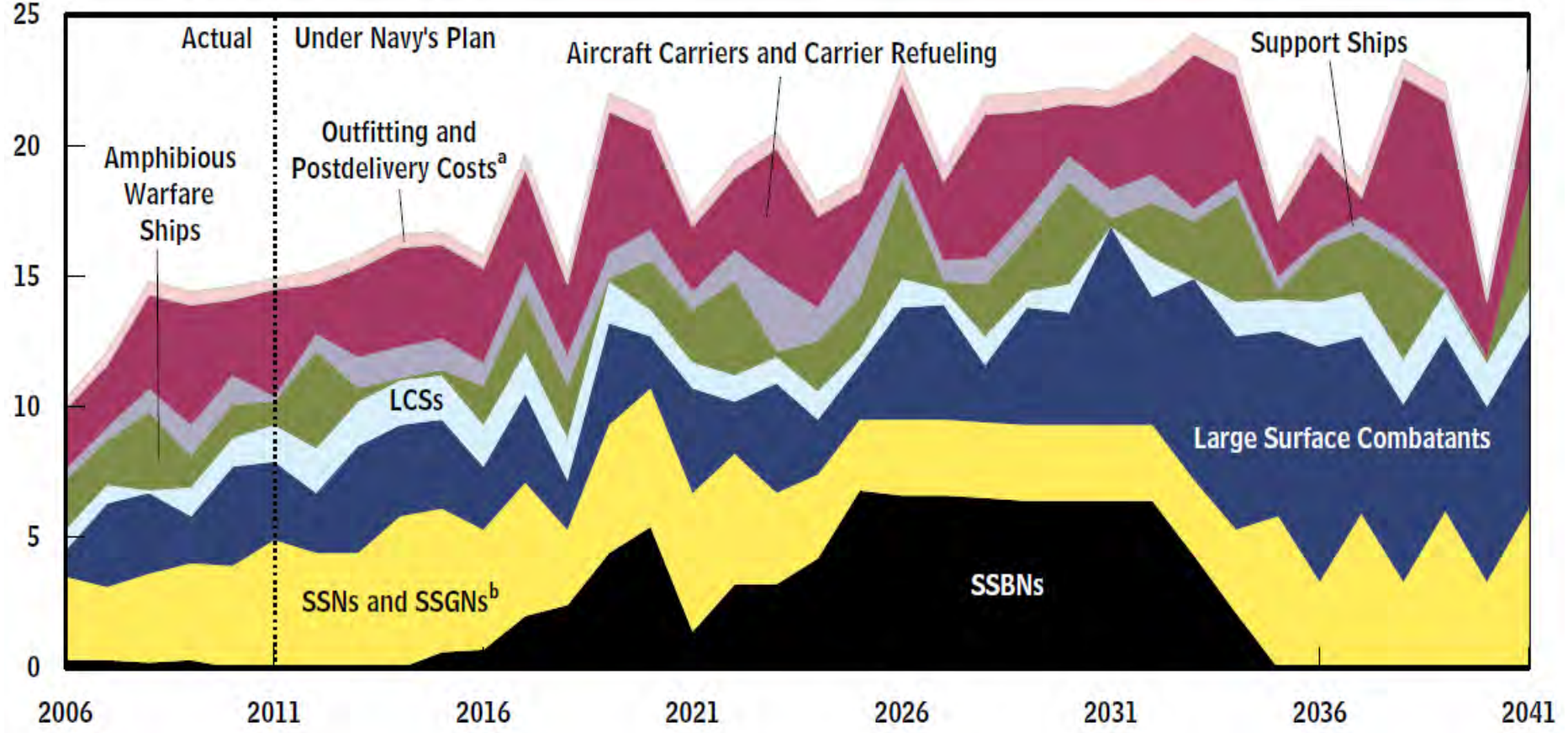
Average Annual Costs of New-Ship Construction Under the Navy's 2012 Plan

(Billions of 2011 dollars)

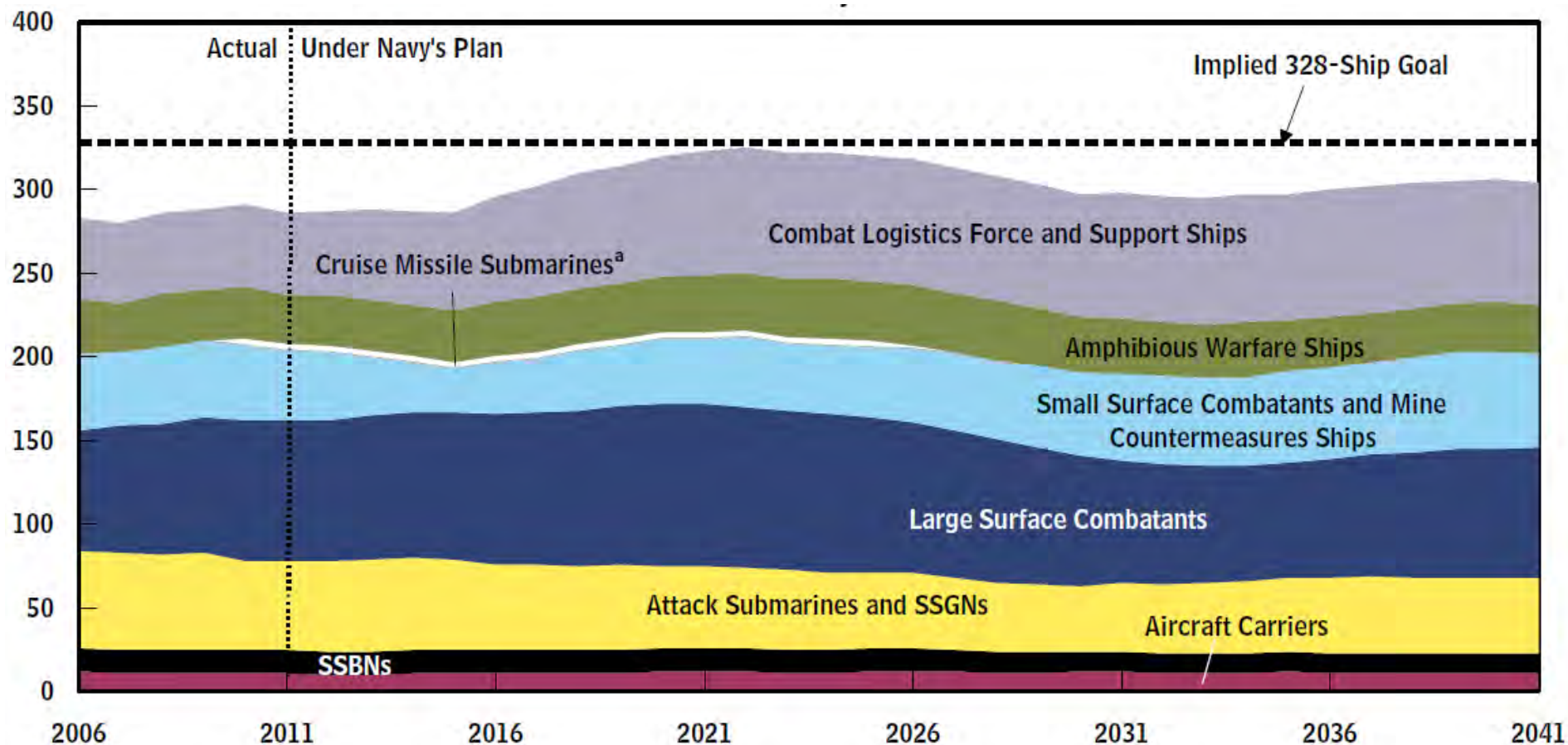


CBO's Estimate of Annual Total Shipbuilding Costs Implied by the Navy's 2012 Plan

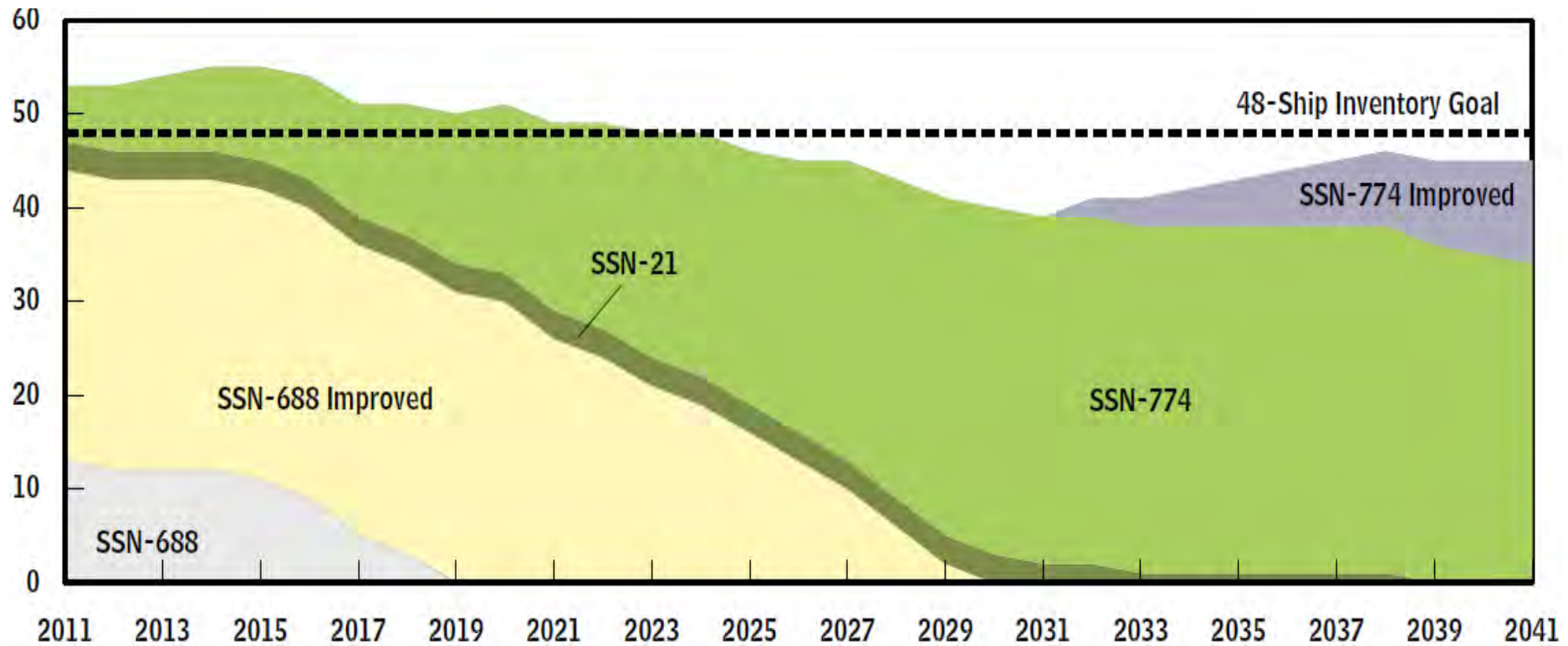
(Billions of 2011 dollars)



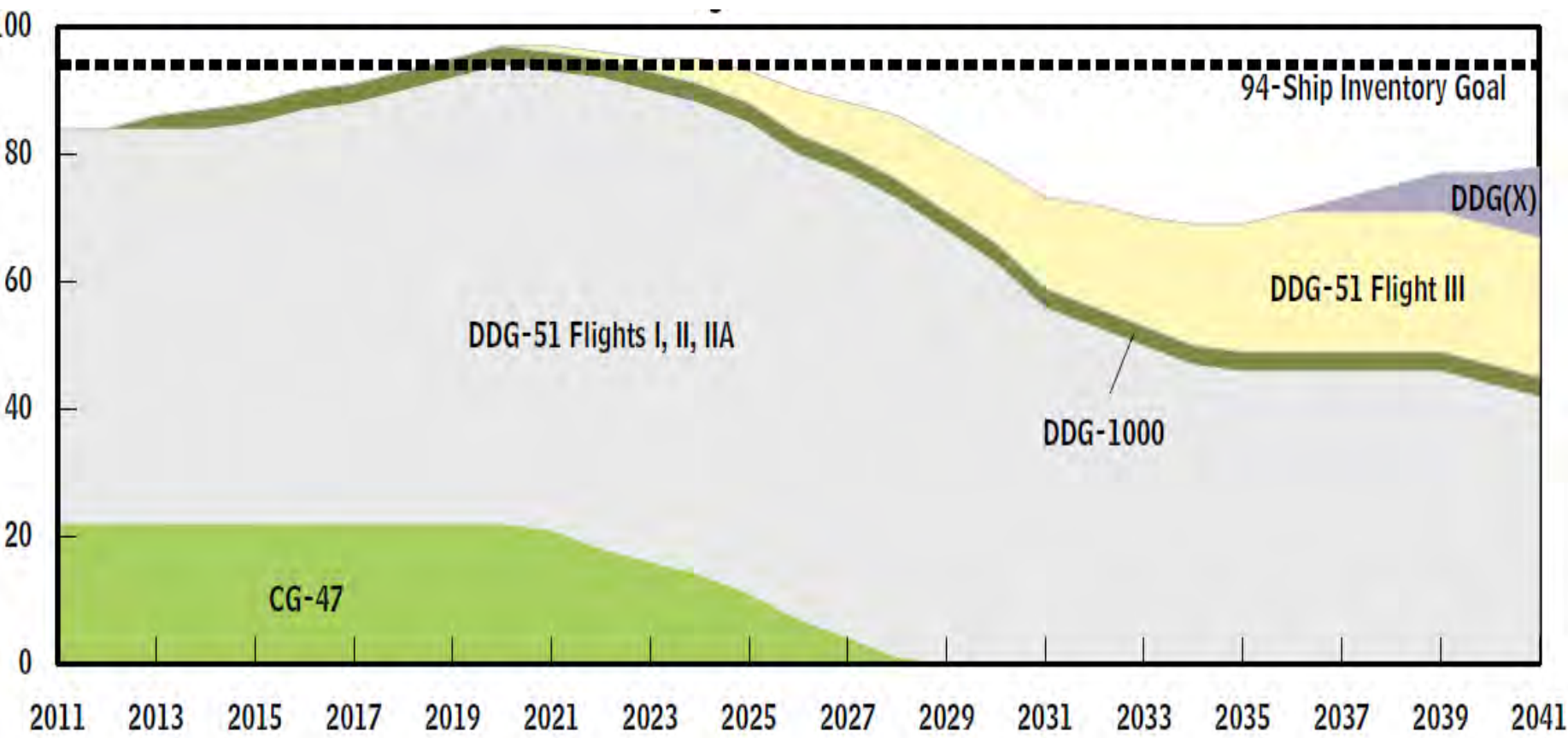
Battle Force Ship Inventory under the Navy's 2012 Shipbuilding Plan



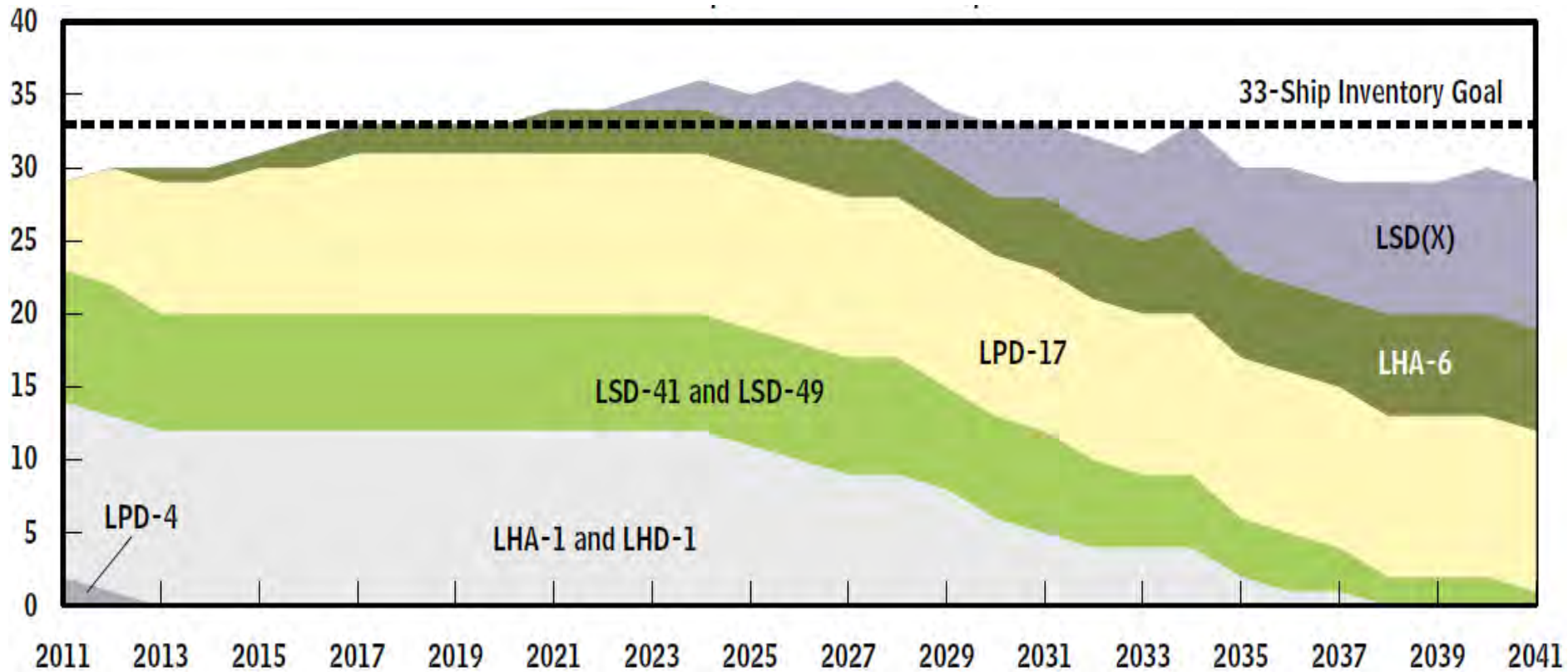
Attack Submarine Inventory under 2012 Plan



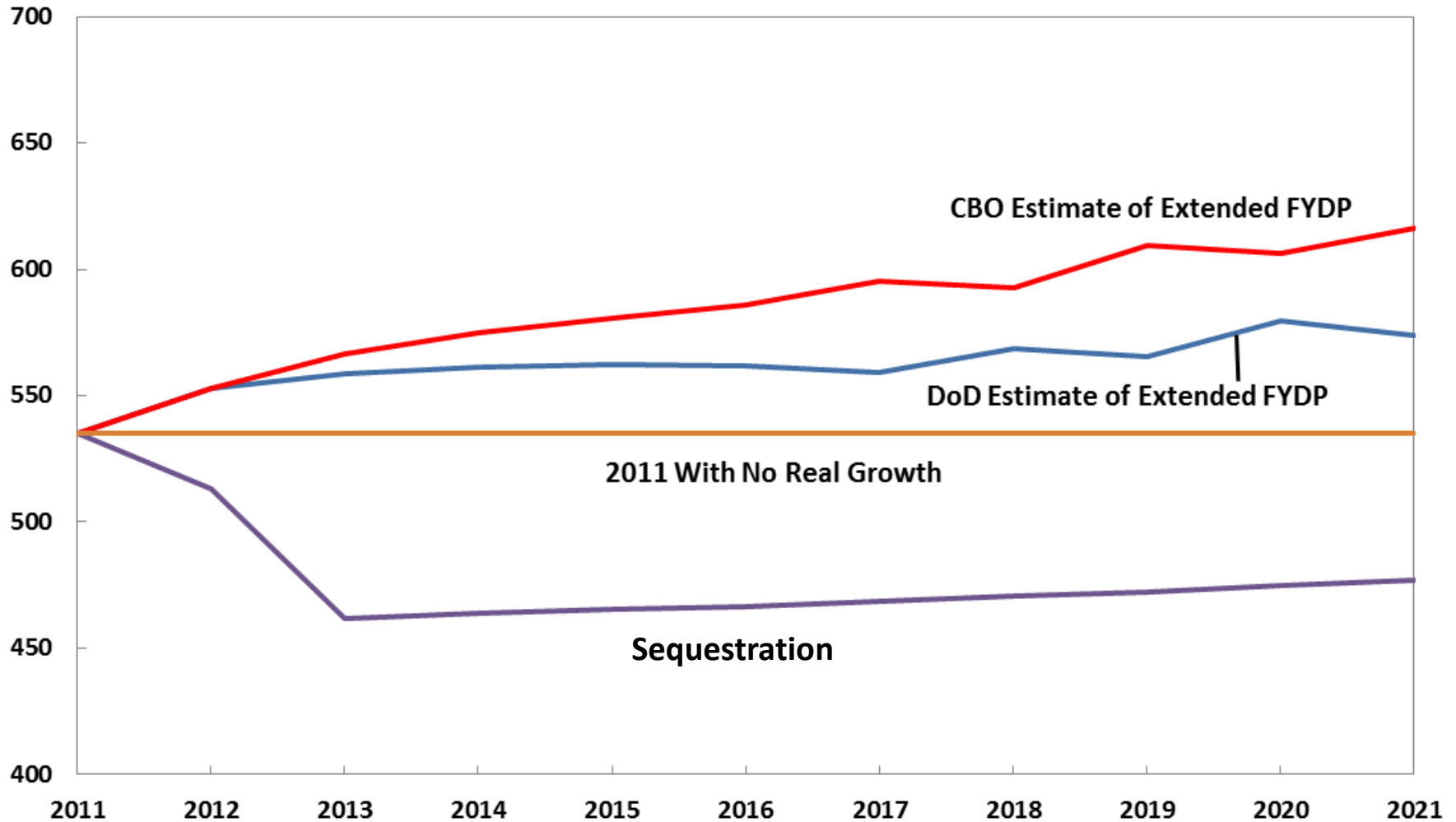
Surface Combatants under the 2012 Plan



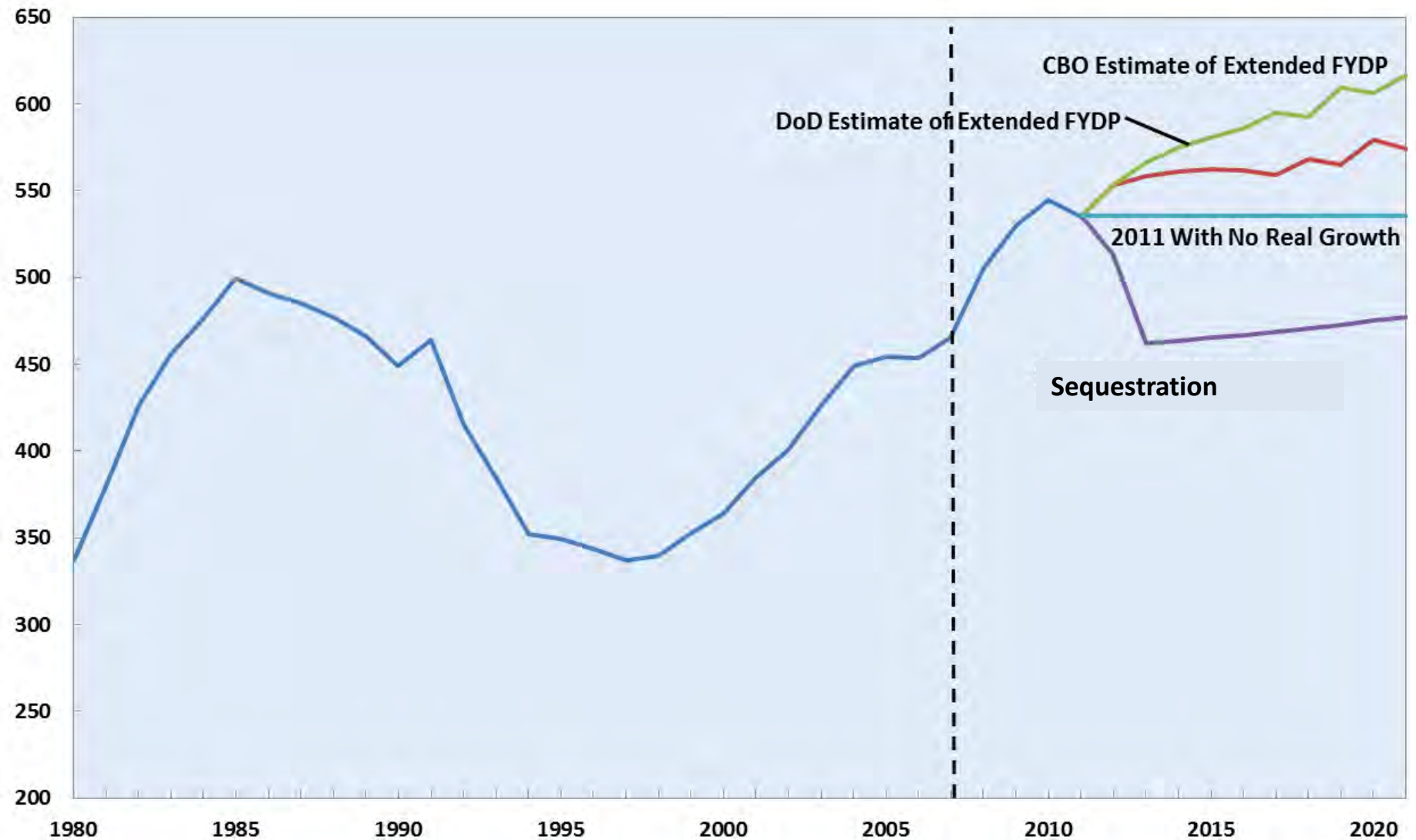
Amphibious Ships under the 2012 Plan



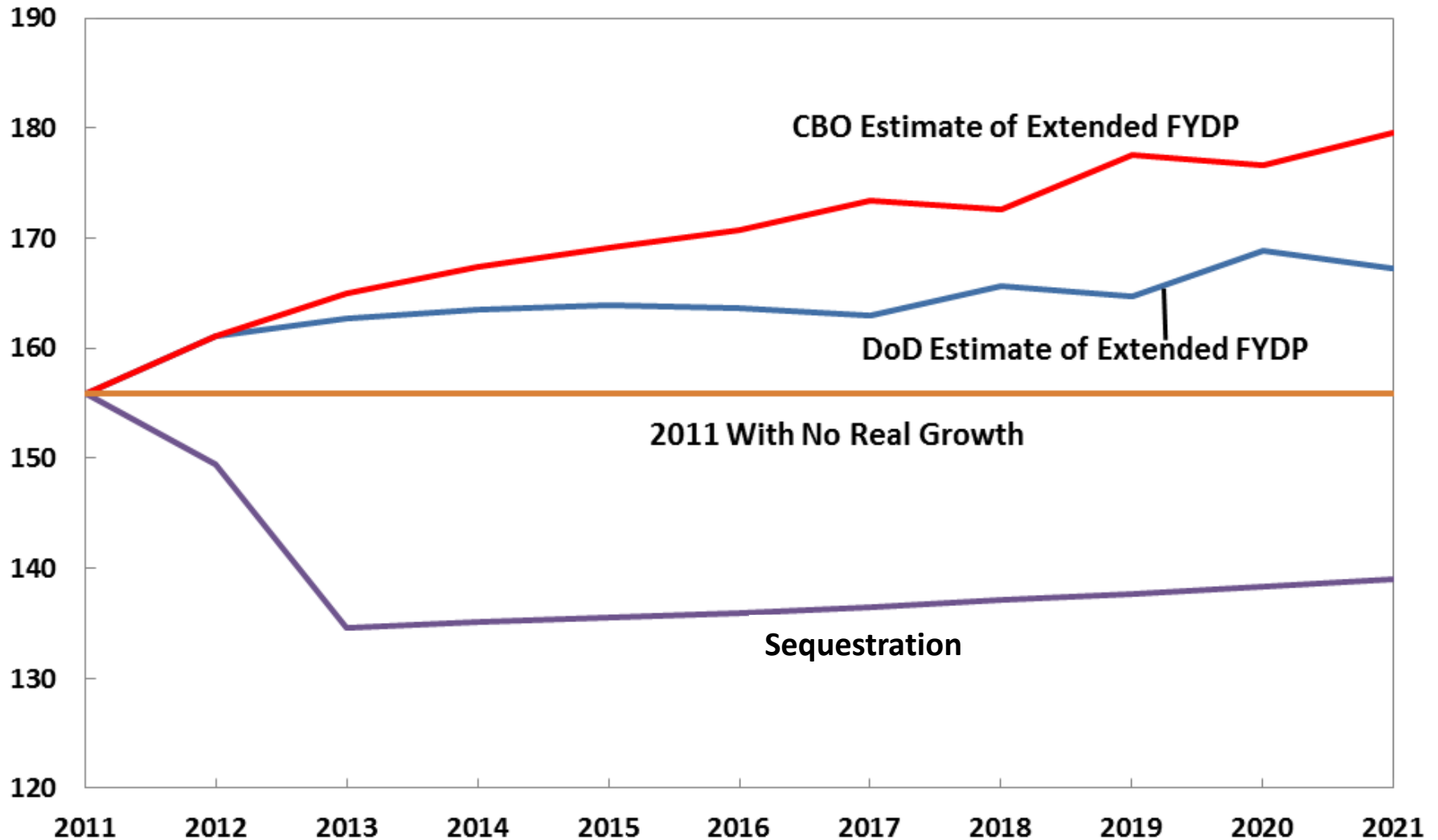
DoD Budget Under Various Scenarios (2012 Dollars)



DoD Base Budget, 1980-2021 (2012 Dollars)



DoN Budget Under Various Scenarios (2012 Dollars)



Ships Purchased between 2012-2021

Ship Type	Number
Aircraft Carriers	2
Ballistic Missile Submarines	1
Attack Submarines	19
Destroyers	
DDG-51 Flight IIA	9
DDG-51 Flight III	7
Littoral Combat Ships	32
Amphibious Ships	6
Combat Logistics Ships	8
Joint High Speed Vessels	13
Other Support Ships	<u>8</u>
Total	105

Total Shipbuilding Costs: 2012-2021

Estimate Method	Billions of 2012 Dollars
10% of Navy Budget under DoD Extended FYDP	164
10% of Navy Budget Under CBO Estimate of Extended FYDP	171
Navy's 2012 30-Year Shipbuilding Plan	167
CBO's Estimate of Navy's 2012 30-Year Shipbuilding Plan	179
Sequestration	138

This represents almost to the dollar the exact amount spent on shipbuilding between 2002-2011.



Sequestration: Potential Shipbuilding Cuts (2012-2021)

- Navy Ship Cost Estimates: 18
 - CBO Ship Cost Estimates: 24
- Both Numbers are Understated: Cuts of that size will increase individual and thus average ship costs.
- By 2025, the fleet would fall to ~260 ships and likely continue to decline.

New 313-Ship Plan Inventory Objective

Ship Type	FY 2012 Plan*	September 2011
Aircraft Carriers	11	11
Ballistic Missile Submarines	12	12
Cruise Missile Submarines	0	4
Attack Submarines	48	48
Cruisers and Destroyers	94	94
Littoral Combat Ships	55	55
Amphibious Ships	33	33
Combat Logistics Ships	30	30
Joint High Speed Vessels	21	10
Other Support Ships	<u>24</u>	<u>16</u>
Total	328	313

* Represent changes since Feb. 2006 requirement of 313-ships.

Smaller Fleet Options?

- Navy reportedly considering:
 - ~250-ship fleet with 10 CVNs
 - ~240-ship fleet with 8 CVNs
 - Fleet with 9 CVNs
 - Retiring 9 Aegis cruisers and 3 LSDs
- Assumptions underlying those options and possibly others are not clear.

Backups

Annual Rates of Shipbuilding Inflation and GDP Price Inflation

(Percent)





NDIA 2011 Integrated Warfare Systems Conference

Integrated Combat Systems (IWS 1.0)
CAPT Jon Hill, MPM
Mr. Nilo Maniquis, Deputy MPM



PEO IWS 1.0

Integrated Combat Systems

- ◆ **Responsible for integrated combat systems for surface combatants, carriers, and amphibious ships**

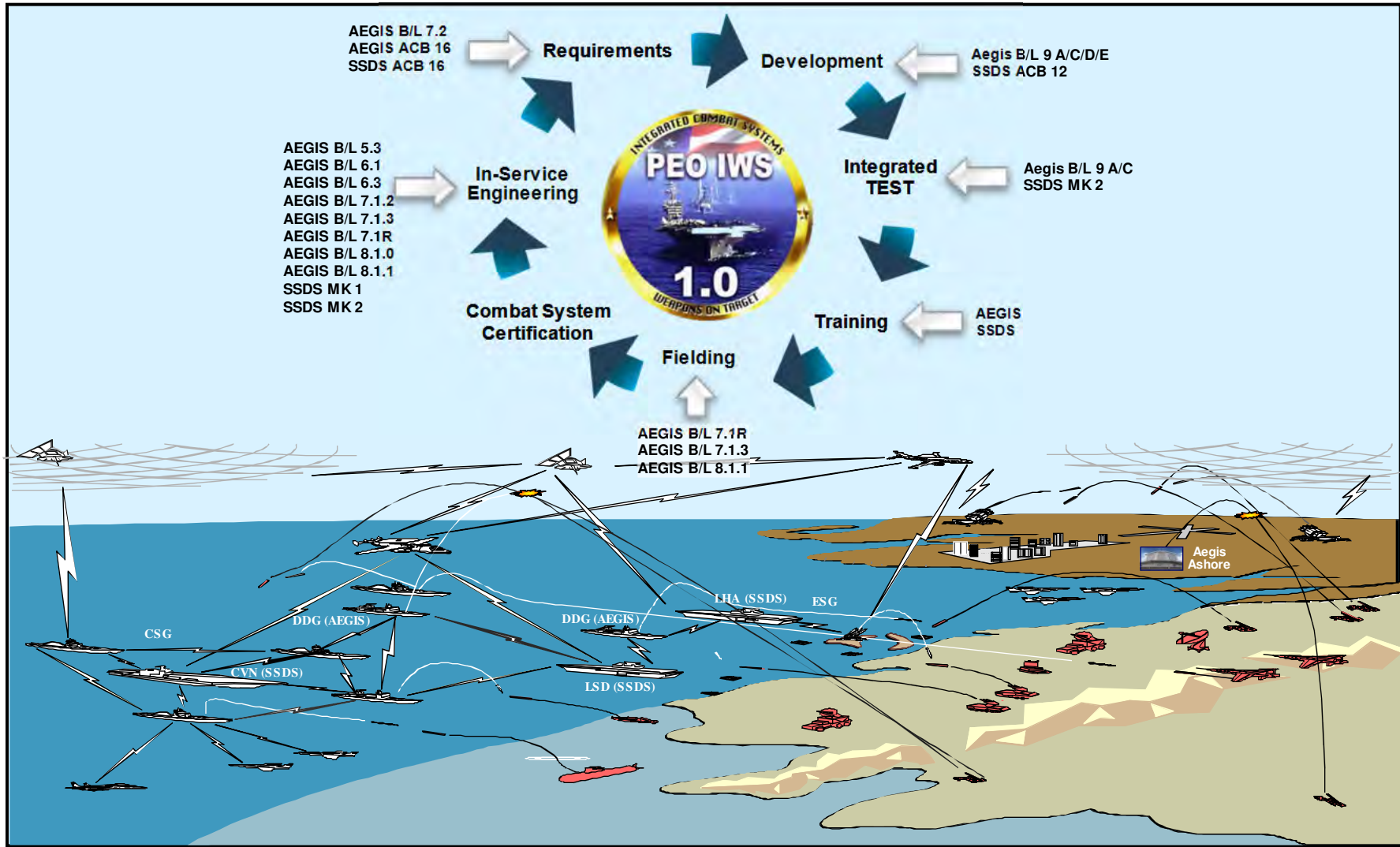
- ◆ **Responsible for integration of weapon system elements into SSDS combat system, AEGIS combat system, and AEGIS weapon system**

- ◆ **Key functions:**
 - **Design and development**
 - **Production and fielding**
 - **Maintenance and upgrades**





IWS 1.0 - Integrated Combat Systems





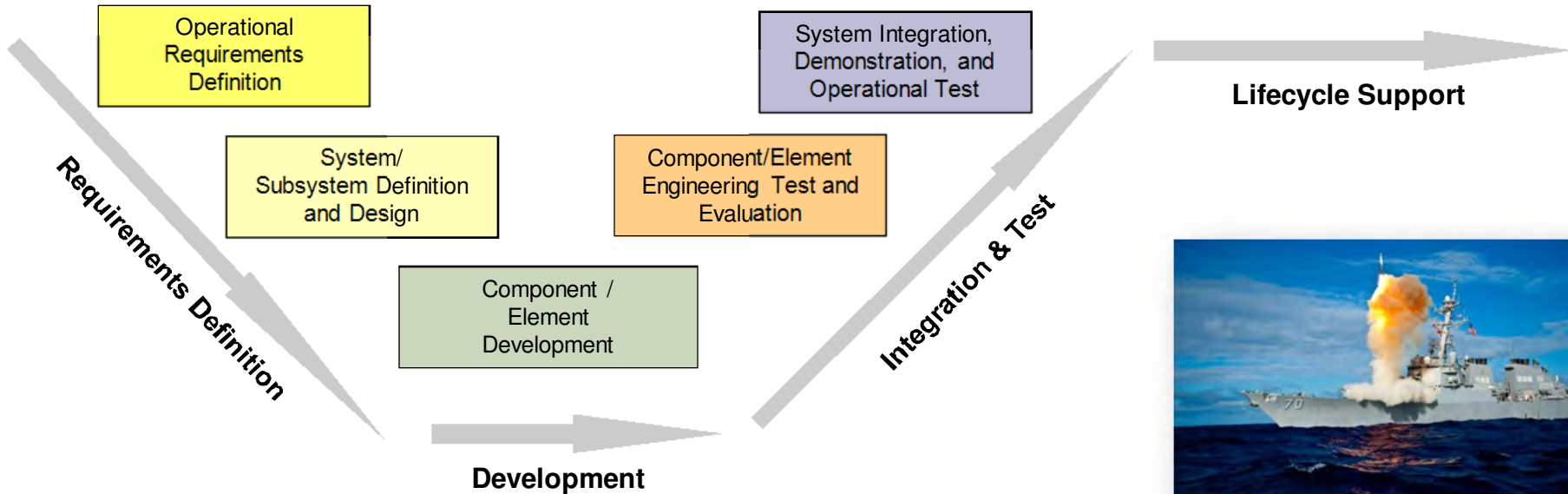
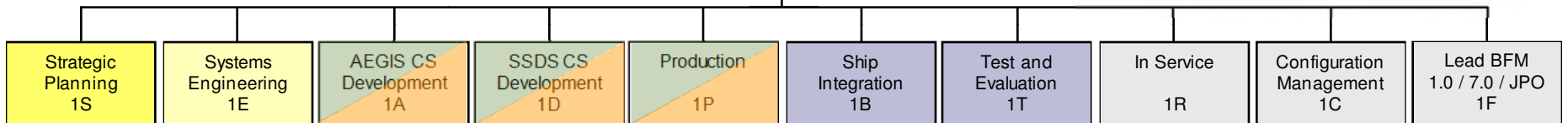
Integrated Combat Systems (IWS 1.0)

Functionally Aligned Organization

MPM, Integrated
Combat Systems
1.0 MPM

DMPM, Integrated
Combat Systems
1.0 DMPM

PM, Fleet
Readiness
1.0 FR





PEO IWS 1.0 High Priority Efforts

- ◆ **Combat Systems Wholeness**
 - AEGIS Readiness initiatives underway
 - Carrier Wholeness under assessment
- ◆ **Fleet Interoperability (CEPN/Link 16)**
 - AEGIS Baseline 7.1.3
 - Accelerated Mid Term Interoperability Improvement Program (AMIIP)
- ◆ **ACB 12 AEGIS Baseline 9 Completion & Fielding**
- ◆ **Future**
 - ACB 16 and Evolution to ACB 20
 - Science and Technology & Technology Insertion
 - Competition



The Total Combat System

A Strong Industrial Base is Critical

People

Paper

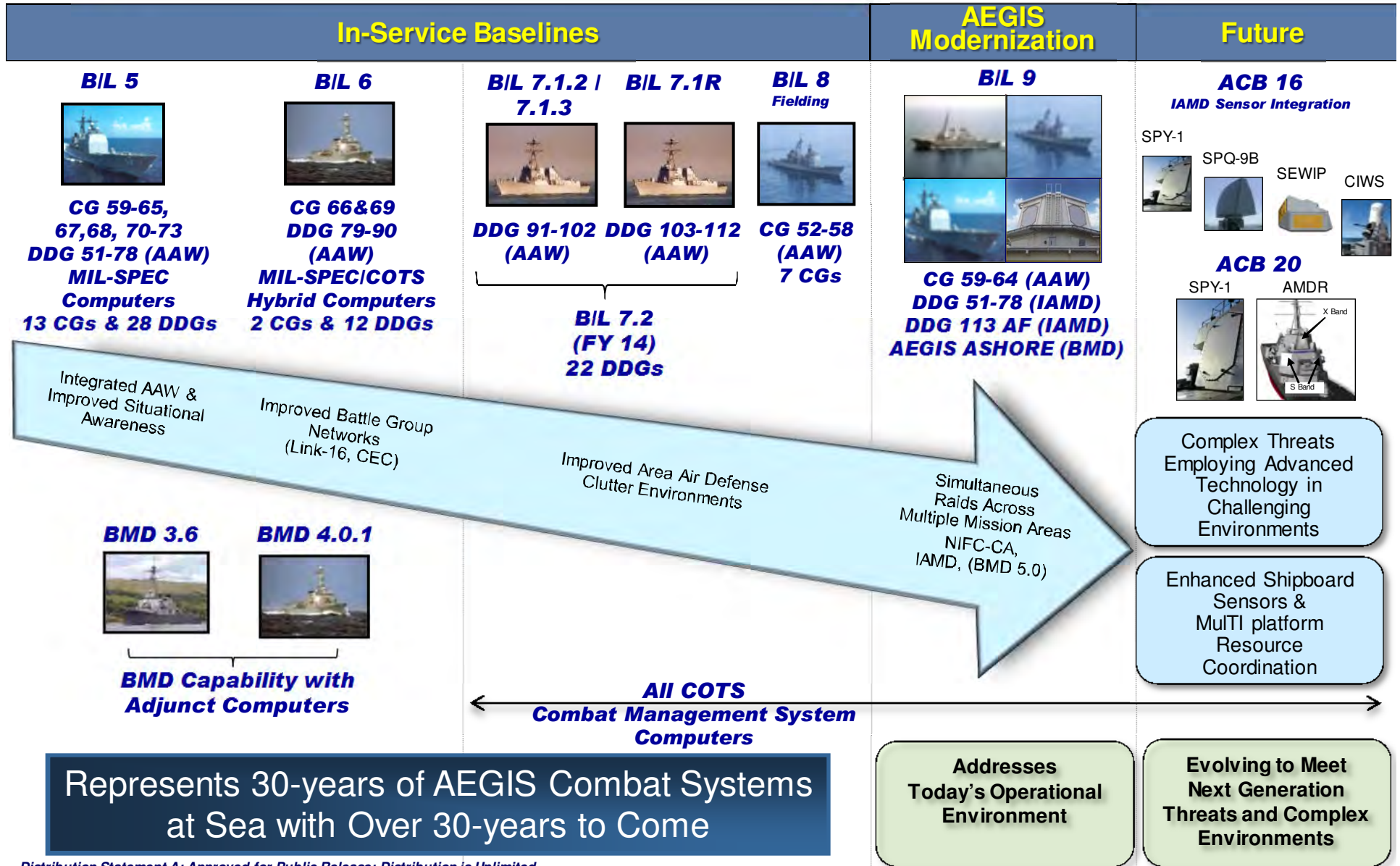
Parts

Production

Computer Programs



AEGIS Baselines & Capabilities





AEGIS Wholeness Review

Navy Efficiency Efforts

- ◆ SIAP (2000)
- ◆ Optimum Manning (2001)
- ◆ Revolution in Training (2001)
- ◆ AEGIS COTS Complexity (2002)
- ◆ Increased OPTEMPO (2003)
- ◆ Decreased Live-Fire Missile Events (2003)
- ◆ Reduced Shore Support (2005)
- ◆ In-service AEGIS Baseline Freeze (2005)

Task Force Evaluations

- ◆ B/L 7.1.2 Issues and Recommendations (NSWC/ATRC/RMC/NAVICP)
- ◆ AWS / SPY Readiness Task Force Report (SEA 21)
- ◆ Fleet Review Panel of Surface Force Readiness (VADM Balisle, USN(Ret))
- ◆ Standard Missile-2 Independent Review Team for ASN(RD&A) (Mr. Giacchi)

- Interoperability
- Maintainability, Supportability, Sustainability
- Manpower, Personnel, Training
- Fleet Proficiency – AAW Readiness
- ACB 12

Leading Indicators Begin to Expose Seams and Unintended Consequences impacting AEGIS Wholeness

Integration of a Body of Studies into a Single AEGIS Wholeness Plan



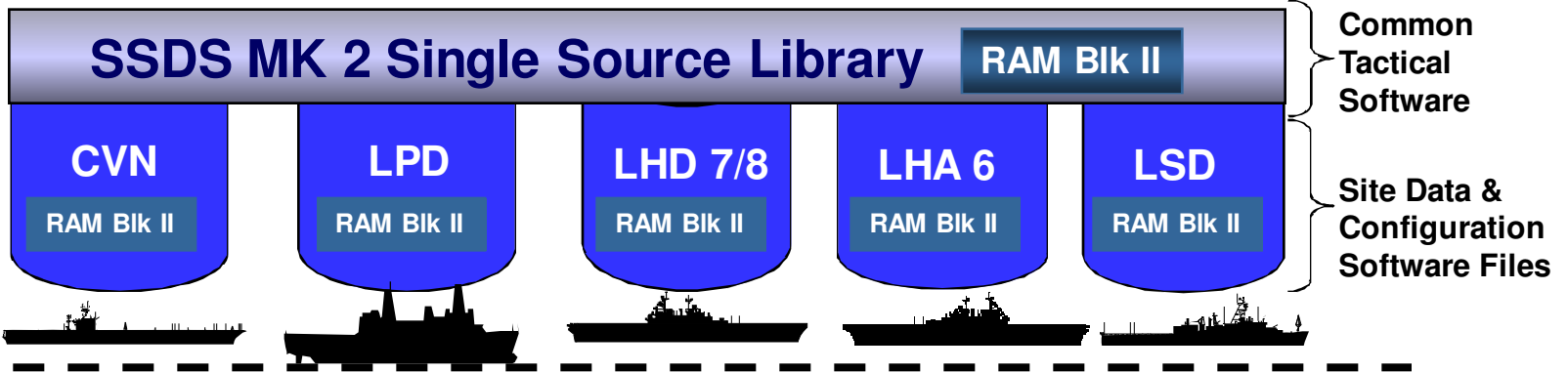
PEO IWS Combat Systems Engineering Development, Modernization, and Fielding Precepts

- ✓ Decouple Combat Systems development from Ship Development**
- ✓ Decouple Combat System Application Software from the underlying COTS Computing Hardware**
- ✓ Use a Product Line Approach to develop new capabilities and software upgrades**
- ✓ Build once and apply to many baselines**
- ✓ Exercise Government Purpose Rights (GPR) to the maximum extent practicable to allow multiple Developers to contribute new Combat System technology and extend legacy capabilities**



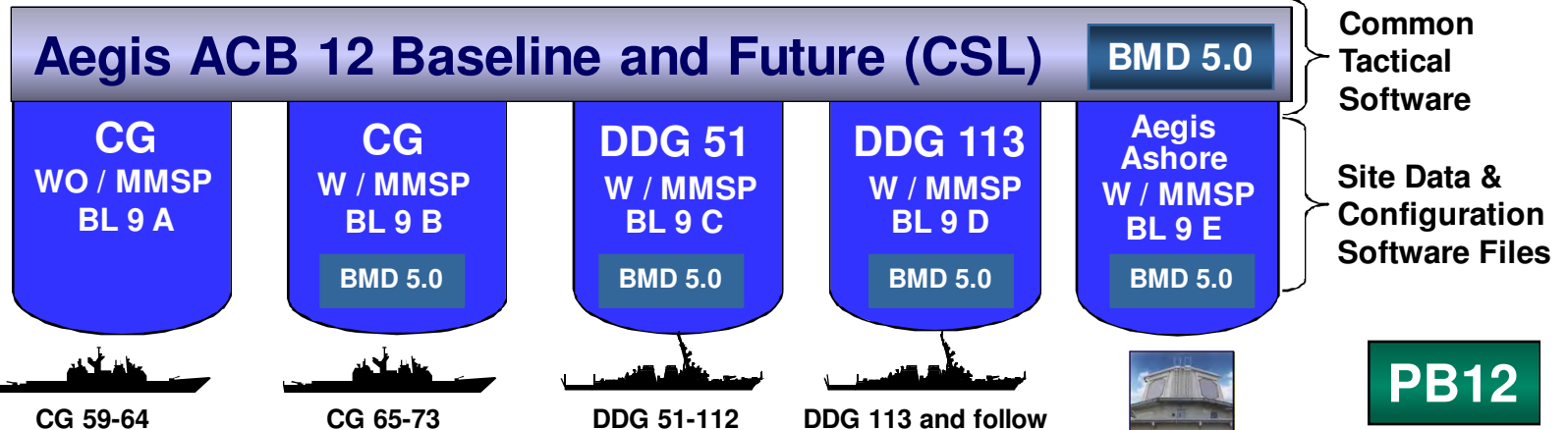
Common Source Software Library (CSL)

One Software Change Fits ALL SSDS Ship Classes Since the 1990s



Aegis BL 9 Supports five Different Combat Systems Configurations & Begins Fielding in FY12

In-Service Baselines (BL) are supported from CSL after modernization availability





Common Source Library . . . Build Once and Apply to Many Baselines

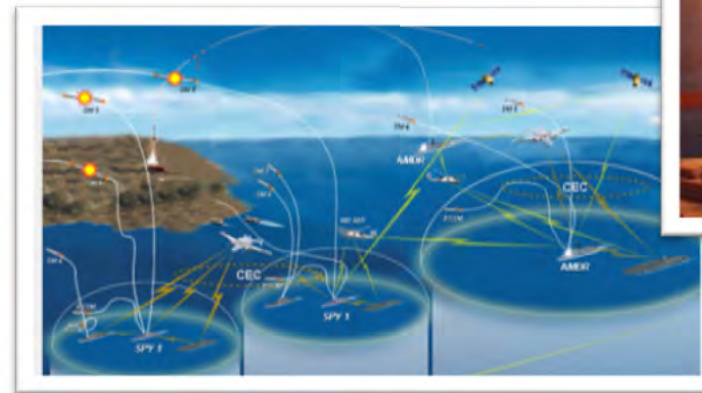
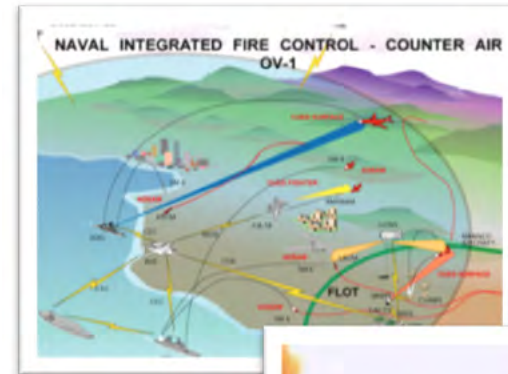
- ◆ **Common Source Libraries allow reuse and commonality within a combat system family for modernized ships and new construction ships**
- ◆ **Modernized ships and new construction ships will have the same combat system capabilities**
- ◆ **Investing in disciplined cross-program Configuration Management is critical to leveraging Common Source Library (CSL) components across the enterprise**
- ◆ **Advanced Capability Build (ACB) Process can only be implemented via a CSL**
- ◆ **CSL is critical to improving fleet interoperability issues**
- ◆ **The increasing number of ships supported from CSL will simplify 3rd party competition and integrate product line architectures**

Surface Navy Combat Systems will achieve commonality and reuse through implementation of Common Source Libraries



Integrated Air & Missile Defense

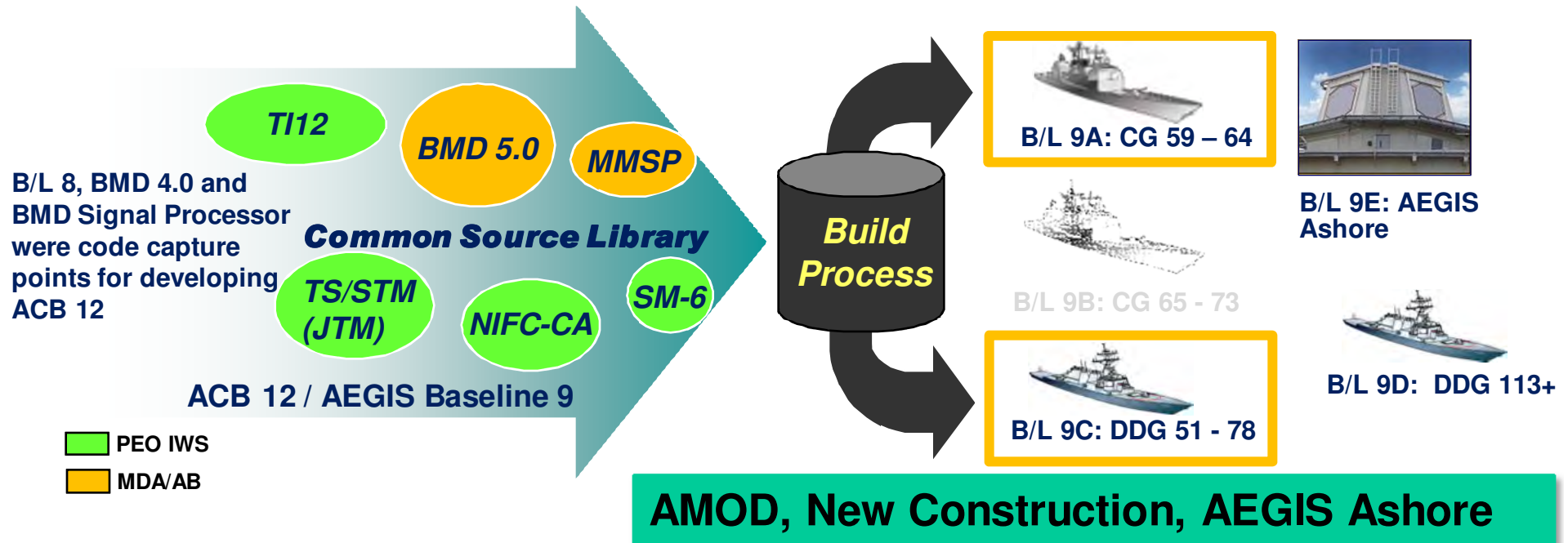
- ◆ **Navy Integrated Fire Control (NIFC-CA)**
- ◆ **Standard Missile Improvements**
- ◆ **Ballistic Missile Defense (BMD)**
- ◆ **Advanced Radar Developments**



***Combatant Commander Demand for Navy
IAMD Capability / Capacity is Increasing***



ACB 12 / AEGIS Baseline 9 (B/L 9)



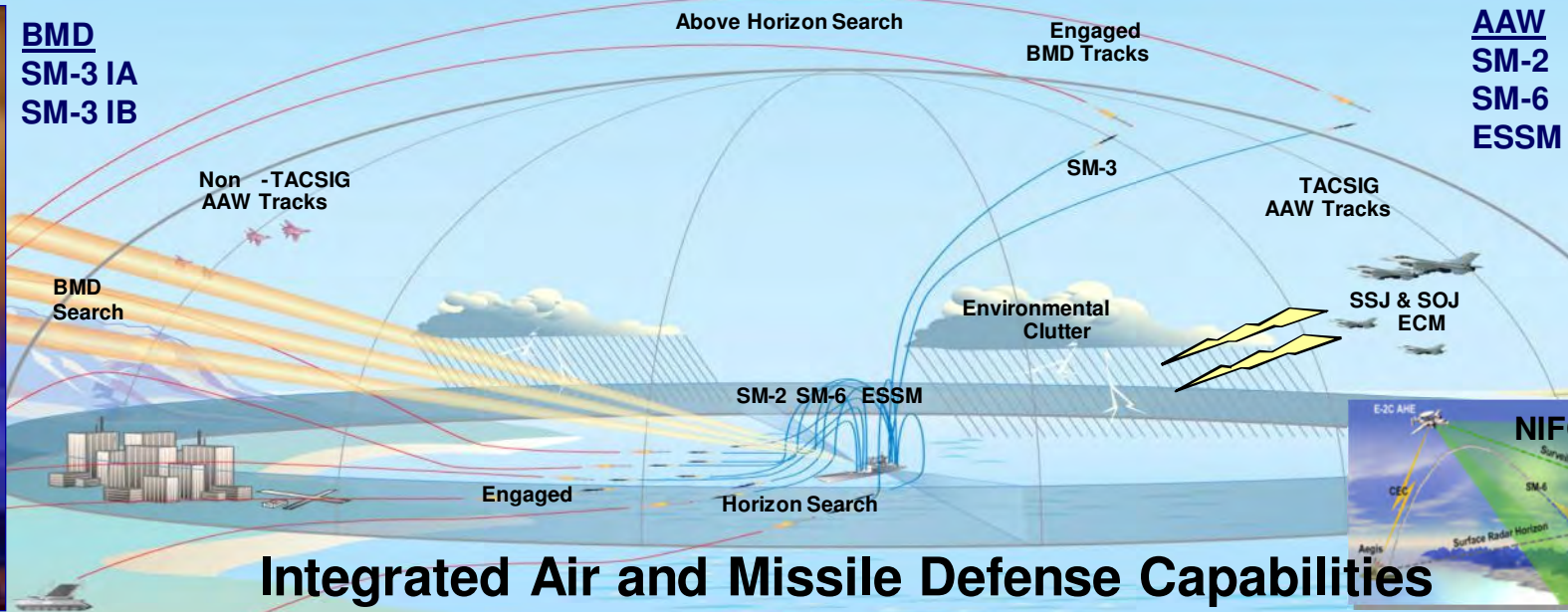
- ◆ Integrates AEGIS AAW and BMD capability into one computer program and equipment suite
- ◆ Foundation for all future AEGIS IAMD:
 - B/L 9A – CGs 59-64 (AAW Only)
 - B/L 9B – CGs 65-73 (IAMD): Cancelled (Impacts BMD Capacity and Force Structure)
 - B/L 9C – DDGs 51-78 (IAMD)
 - B/L 9D – DDG 113 and Follow (IAMD)
 - B/L 9E – AEGIS Ashore (BMD Only)



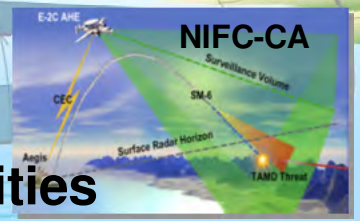
Advanced Capability Build (ACB 12)



BMD
SM-3 IA
SM-3 IB



AAW
SM-2
SM-6
ESSM



Integrated Air and Missile Defense Capabilities

ACB 12 / TI 12

Processing Upgrades



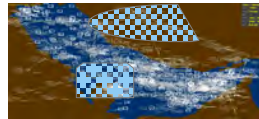
Display Upgrades



SPY-1 / SIGPRO Upgrades
MMSP



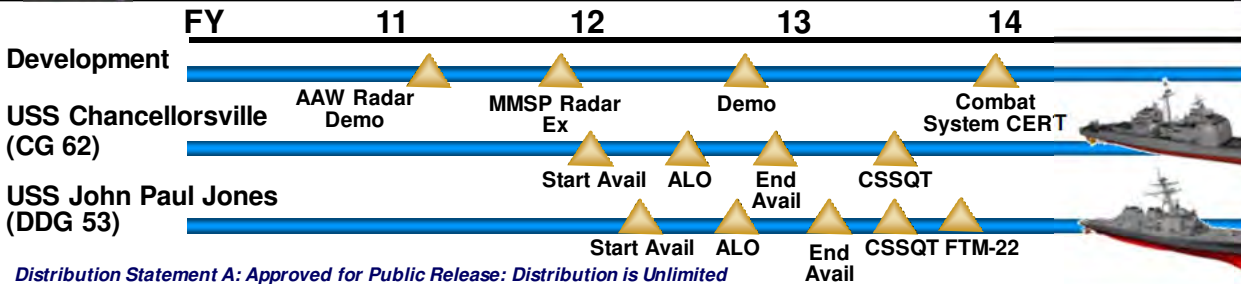
Track Management Upgrades



ACS Upgrades
Guns
SPQ-9B
BMC4I
CIWS



Common Source Library



Distribution Statement A: Approved for Public Release: Distribution is Unlimited

- ◆ Aegis Modernization
 - CG 59-73
 - DDG 51-78
- ◆ DDG 113 +
- ◆ Aegis Ashore



AEGIS Combat System Evolution

Improved Multi Mission & IAMD

Programmatic, Vision, Pending Funding Decisions

ACB 12

Integrated Air & Missile Defense

Radar

- SPY-1 Open Architecture
- MMSP
- AAW, BMD & IAMD Modes

Combat System

- AEGIS OA
- BMD 5.0
- NIFC-CA
- I/O Trident Warrior
- TI-12 Equipment

Missiles


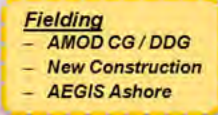
- ESSM, SM-2
- SM-3 BLK IA/IB
- SM-6

EW

- SLQ-32

Mission Planning

- BMD 5.0 Mission Planner

ACB 16

Improved Coordination of Netted Force Operations to Counter Mid-Term Threats

Radar

- Layered Defense Sensor Integration –SPQ-9B

Combat System

- AWSC Integration
- Combat ID Improvements (IFF Mode 5/S)
- C5I Upgrades (CANES, JTT-M, GCCS-M, CDL, CDLMS)
- Improved BMD with EOR and SBT (BMD 5.1)

Missiles

- ESSM, SM-2
- SM-3 BLK IA/IB
- SM-3 BLK IIA
- SM-6

EW

- SEWIP BLK II & III Integration (w/RDDL)

ASW

- Periscope Detection (SPQ-9B)
- Open ASW Interface with MH-60R Integration

Readiness

- Total Ship Training Capability








ACB 20

Improved Joint Weapon & Sensor Coordination to Counter Far-Term Threats

Radar

- AMDR, Active X & S Band
- AMDR CW illumination
- SPY-1

Combat System

- Support AMDR & SPY-1 Ships
- Improved IAMD raid handling capability
- BMD 6.X
- Multi-Sensor Integration
- PLA Components & Arch
- Sensor Coordination
- TI-20 Equipment

Missiles

- ESSM, SM-2
- SM-3 BLK IA/IB
- SM-3 BLK IIA
- SM-6

EW

- SEWIP BLK II / III

Mission Planning

- Advanced AAW & BMD Mission Planner






Integrated Air & Missile Defense

- Multi-Mission Radar Utilization
- Active Missile with OTH Targeting
- Improved Fleet Interoperability

Improved Coordination of Netted Force Operations to Counter Mid-Term Threats

- Multi-Sensor Coordination
- Extended Range BMD Engagements
- Multi-Ship Engagement Coordination
- Joint Sensor Netting (IAMD)
- Increased ASW/SUW Surveillance
- Employment of Advanced EW
- Coordinated IAMD Tracking

Improved Joint Weapon & Sensor Coordination to Counter Far-Term Threats

- Advanced Force Level Resource Management (Radar/EW)
- Integrated Active and Electronic Defense
- IAMD Mission Planning
- Joint Integrated Fire Control



SSDS Combat System Evolution

Improved Ship Survivability & Interoperability

Programmatic, Vision, Pending Funding Decisions

ACB 12 Improved Situational Awareness

Radar/Sensor

- DBR Integration
- SPS-48G Integration
- MH-60R / PLVC Ph 0
- CIWS 1B BL2 Integration (LSD class)
- IFF Mode 5/S Implementation

Combat System

- System Track Manager/Track Server
- CEC (USG-2B)
- CV-TSC Incr. 2
- CANES
- GCCS-M (1-way)
- CPS & CDS
- IA Hardening

Weapons



- ESSM (Uplink)
- Improved CIWS Integration (LSD Class)


EW

- SEWIP BLK II

Fielding

- CVN -LPD
- LHA -LSD
- LHD



ACB 16 Improved Coordination of Netted Force Operations

Radar/Sensor

- CIWS 1B BL2 Sensor Integration (CVN, Amphib Class)
- SPS-48G Elevation Upgrade

Combat System

- C5I/C4I Updates
- Interoperability Improvements (IFF Mode 5/S)

Weapons

- CIWS Integration

EW

- SEWIP BLK II (incl RDDDL)

Training



- Integrated Training / Fleet Synthetic Training

Readiness

- Total Ship Training Capability

Fielding

- CVN -LPD
- LHA -LSD
- LHD

ACB 20 Improved Command & Control

Radar/Sensor

- DBR Engage on Remote Support
- SPQ-9B 3D support
- IFC sensor support via CEC

Combat System

- Integrated HK/SK weapon scheduling
- CVN 68 Class Radar Upgrades
- Expanded Fault Det/Isolation
- Improved Network Health/Diagnostics
- Force Level Sensor Coordination
- Space Track Processing (CEC)
- Advanced IA Protection

Weapons

- ESSM Block 2 integration (CVN 78)
- NSSMS 2T Uplink (CVN 78)

EW


- SEWIP Block 3 integration
- SEWIP Block 2 Backfit
- SEWIP Block 2/HGHS integration
- RDDDL Backfit

Training

- Training Upgrades

Fielding

- CVN -LPD
- LHA -LSD
- LHD



Improved Situational Awareness

- Adv. Senor Integration (DBR)
- Improved Fleet Interoperability
- Increased ASW/SUW Surveillance
- Employment of Advanced EW

Improved Coordination of Netted Force Operations

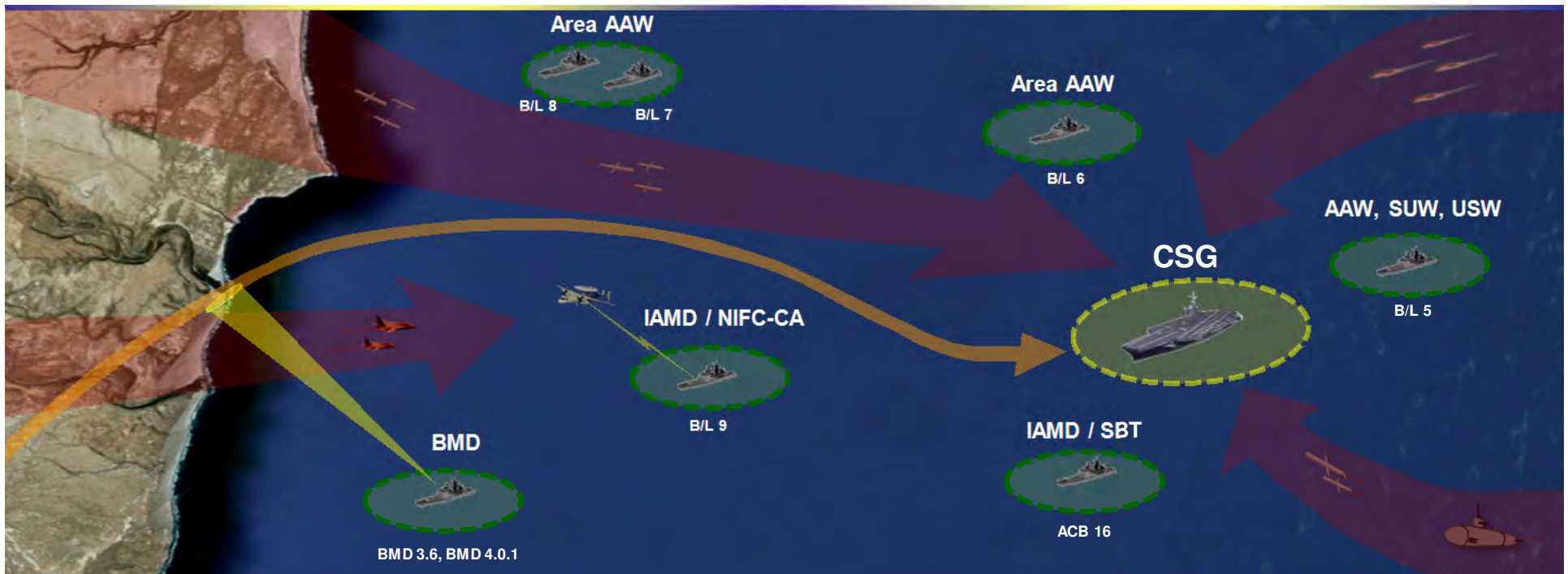
- Integrated Tactical & Operational Picture
- Joint Digital Air Control
- ASW Ship Defense
- Coordinated IAMD Tracking
- Joint Sensor Netting (IAMD)
- Multi-sensor Coordination
- Improved EW Capability for Advanced Threats

Improved Command & Control

- Integrated Hard and Soft Kill
- Increased OTH Surveillance (UxVs)
- Integrated Mission and Tactical Planning
- Joint Integrated Fire Control
- Spectrum Management



Strike Group Composition Support



◆ Mix of AEGIS Baselines / Ships Provide Mission Capability Options

- Guarded Unit Defense → Forward BMD SAG
- SRBM / MRBM / Limited IRBM Defense → Independent BMD SAG
- Sea-Based Terminal (SBT) Protection → Layered IAMD Support
- NIFC-CA Operations → Extended Strike Group Reach
- Littoral Operations → Clutter Environments and Restricted Operational Areas

◆ Focus Development Efforts and Upgrades on Deployers



S&T and Technology Insertion

- ◆ **Select investments and potential technology insertion for near, mid and far-term applications based on combat system capabilities vision**
 - **Prioritize to Address Fleet Issues & Concerns**
 - **Systems Engineer and Test prior to integration**

- ◆ **One Key Focus Area:**
 - **Development of an Automated Test / Analysis (ATA) capability provides reproducible and quantitative evaluation of system performance in order to support improved quality and affordability**

Focus efforts toward improving capabilities for in-service and future combat systems



Combat System Engineering Agent (CSEA) Competitions

- ◆ **CSEA Competitions**
 - Government control of design decisions, interfaces, and the open system architecture
 - Acquisition of appropriate data rights
 - Directs use of Common Source Library (CSL)
- ◆ **Expected benefits to the Navy**
 - Encourage innovation, incentivize superior performance, and reduce costs
 - Improve the Navy's ability to encourage participation from third party developers
 - Allow the Navy to provide mature technology and high quality products and engineering services to the fleet at a competitive price

AEGIS CSEA RFP

- ◆ Update released through FEDBIZOPS
19 OCT 2011
- ◆ Key Dates
 - Proposals due 15 DEC 2011
 - Projected Contract Award 1 OCT 2012

SSDS CSEA RFP

- ◆ Projected RFP Release Late 2012
- ◆ Projected Contract Award 2014



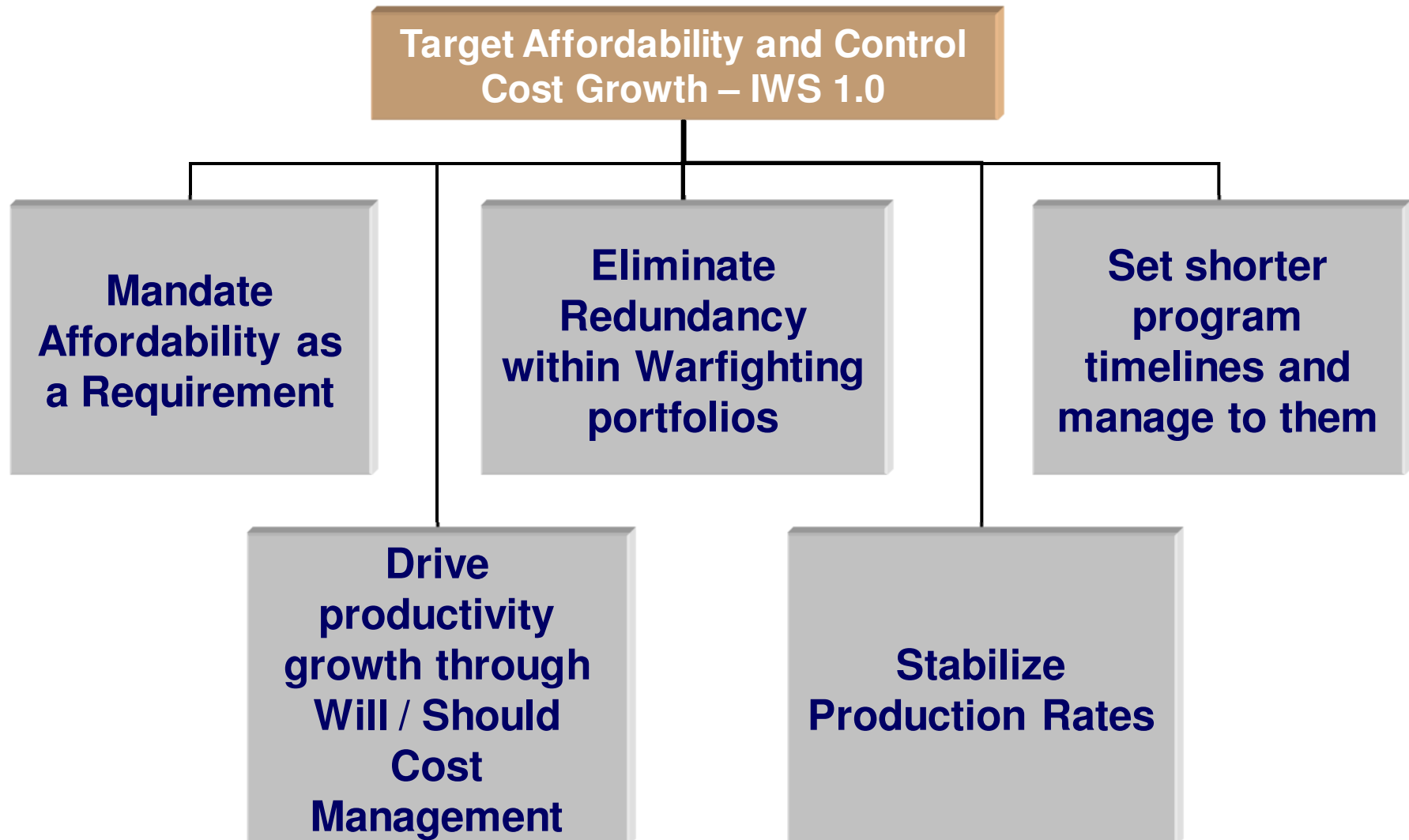
Ship Integration & Test (SI&T) Agent Competition

- ◆ **Competition**
 - Government control of design decisions and interfaces
 - Acquisition of appropriate data rights
- ◆ **Expected benefits to the Navy**
 - Encourage innovation, incentivize superior performance, and reduce costs
 - Allow the Navy to provide mature technology and high quality products and engineering services to the fleet at a competitive price

- ◆ **Projected RFP release 2012**
- ◆ **Projected contract award late 2013**



Affordability & Better Buying Power





Questions & Answers

UNCLASSIFIED



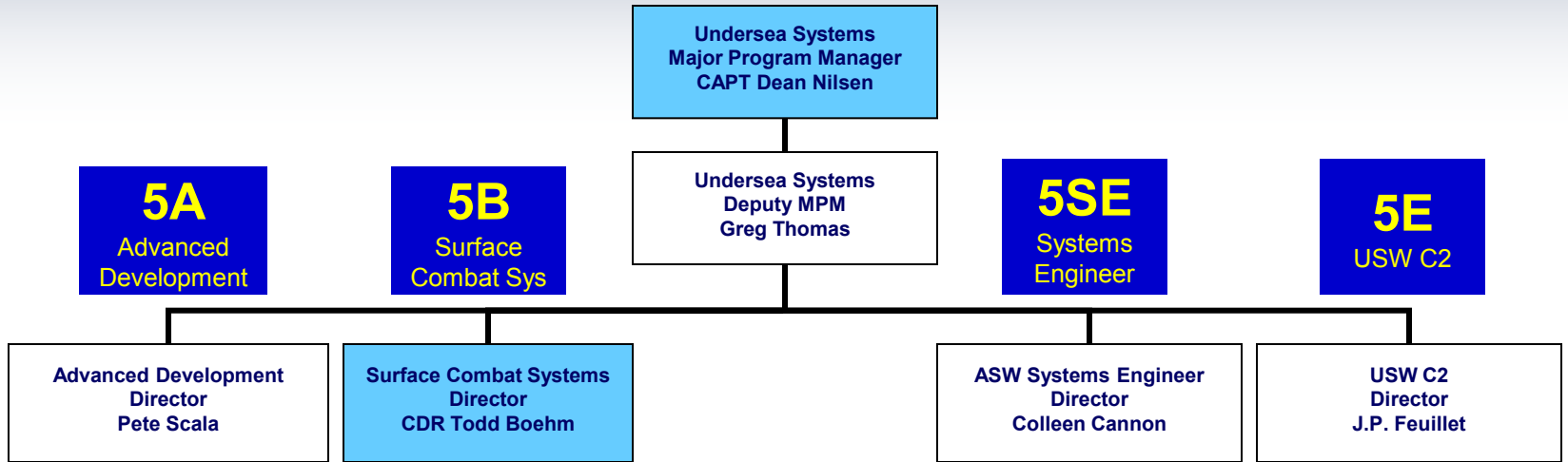
2011 Integrated Warfare Systems Conference

Undersea Systems (IWS 5.0)
Captain Dean Nilsen
dean.nilsen@navy.mil

UNCLASSIFIED



IWS 5.0 Organization



- Submarine APB
- Submarine sensors
- Surface Ship ACB
- Distributed Netted Sensors

- Combat System Production & Installation
- Training
- Integrated Logistics Support
- Multi-Function Towed Array

- ASW Community of Interest Data Model (ACDM)
- Open Architecture

- Common ASW Tactical Picture Development
- USW-DSS
- CV-TSC



PEO IWS Stand-up – IWS 5.0 ASW Lead



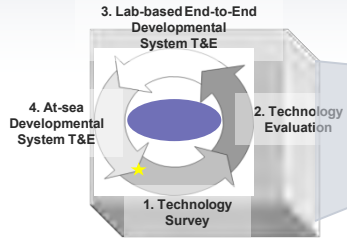
ASN RDA Oct 2002 message created a new PEO for Integrated Warfare Systems (PEO IWS):

- ...Responsible for all Surface Ship and Submarine combat systems**
- ...Responsible for coordinating all ASW warfare area programs across PEOs**
- ASW software development, including the annual submarine combat systems software update, will migrate to PEO IWS, facilitating optimal development of ASW software across platforms**
- As the Navy moves to Open Systems Architectures and highly integrated Systems of Systems, it is critical that those efforts have a strong, consistent focus**

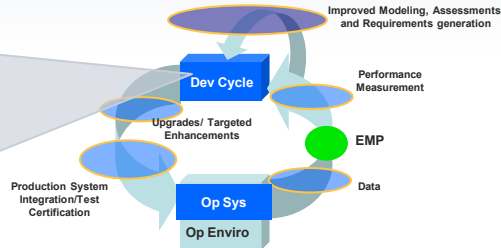
PEO IWS 5.0 Undersea Systems

Submarine APB

4-Step Process Transitions Advanced Development



Engineering Measurement Programs Assess System Performance Operationally



Submarine Sensors



LWLCCA

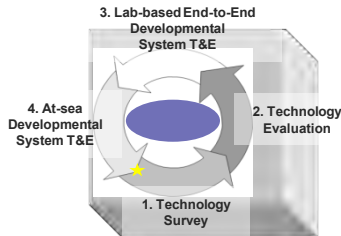


CTA

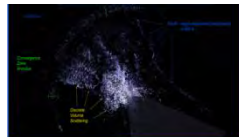


CAVES LVA

Surface Ship Advanced Development



ACB

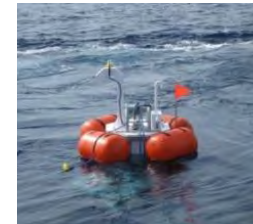


- Surface ASW Synthetic Trainer
- Continuous Active Sonar
- Active Clutter Reduction

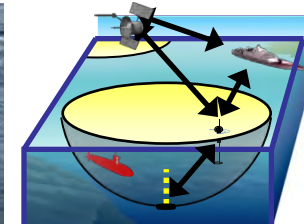
Distributed Netted Sensors



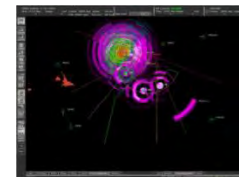
DWADS



RAP VLA



Common ASW Tactical Picture



USW-DSS



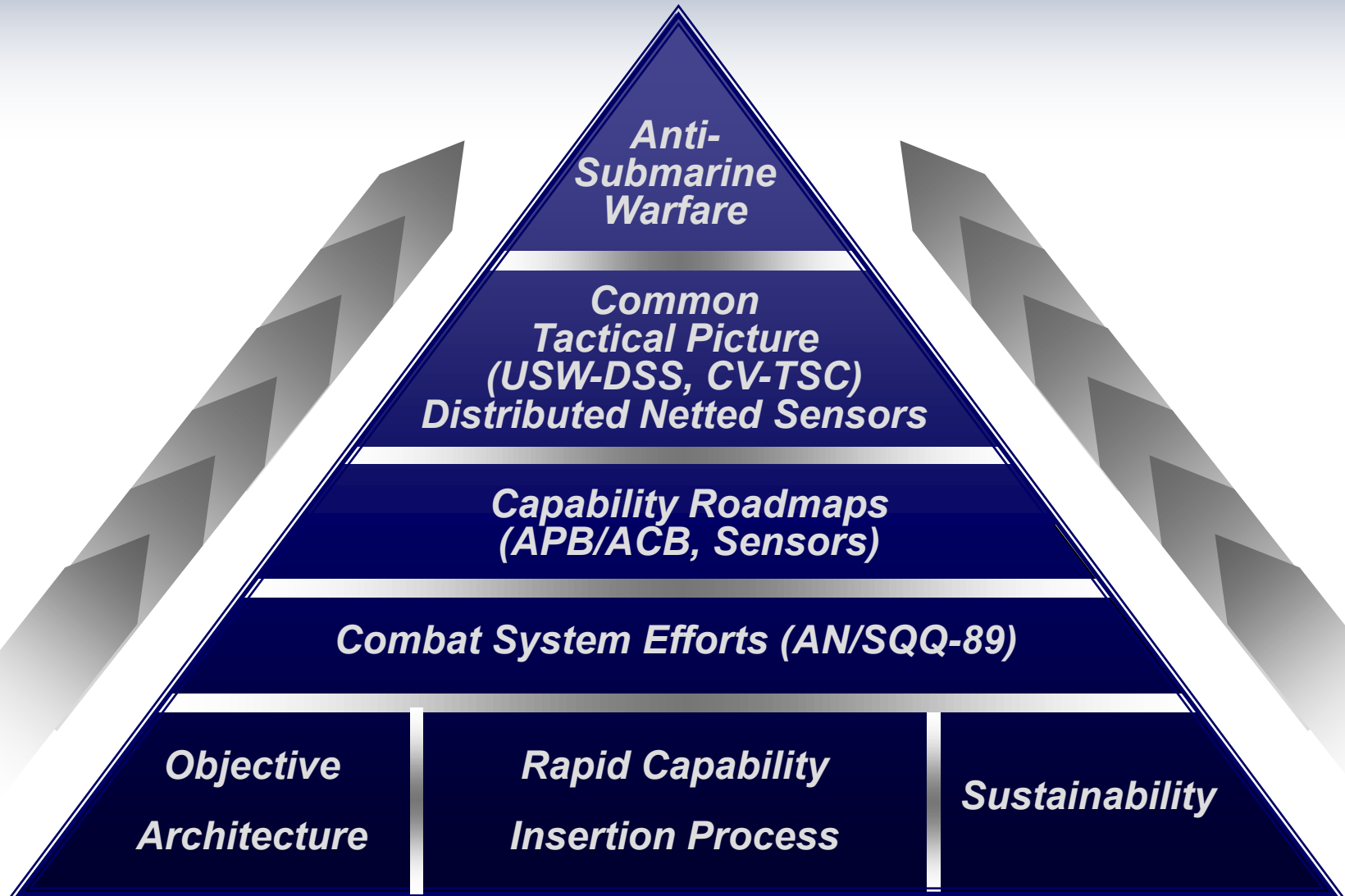
CV-TSC

Mission: Develop, field, and support robust ASW systems and transform capabilities for tomorrow's forces

Vision: We are an investment made by the U.S. Navy in support of its mission. As trusted stewards, we will ensure this will lead to immediate and long-term value by providing: - Warfighting capabilities for today's Fleet - Expanded capabilities for tomorrow - Broader contributions to the science of ASW

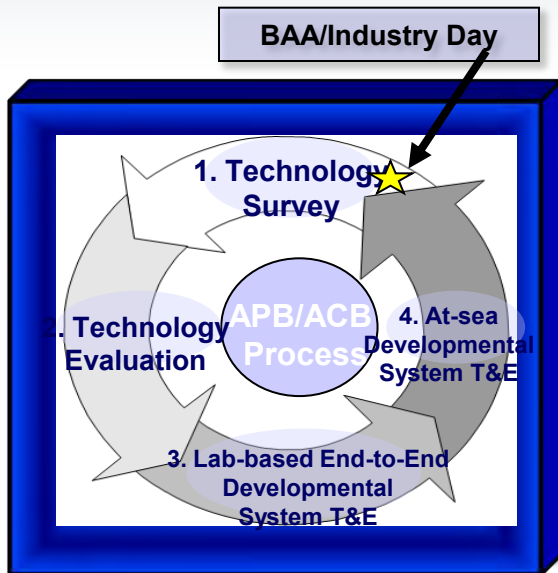


PEO IWS 5.0



IWS 5.0 business model is dependent on successful transition of new technologies

APB/ACB Overview

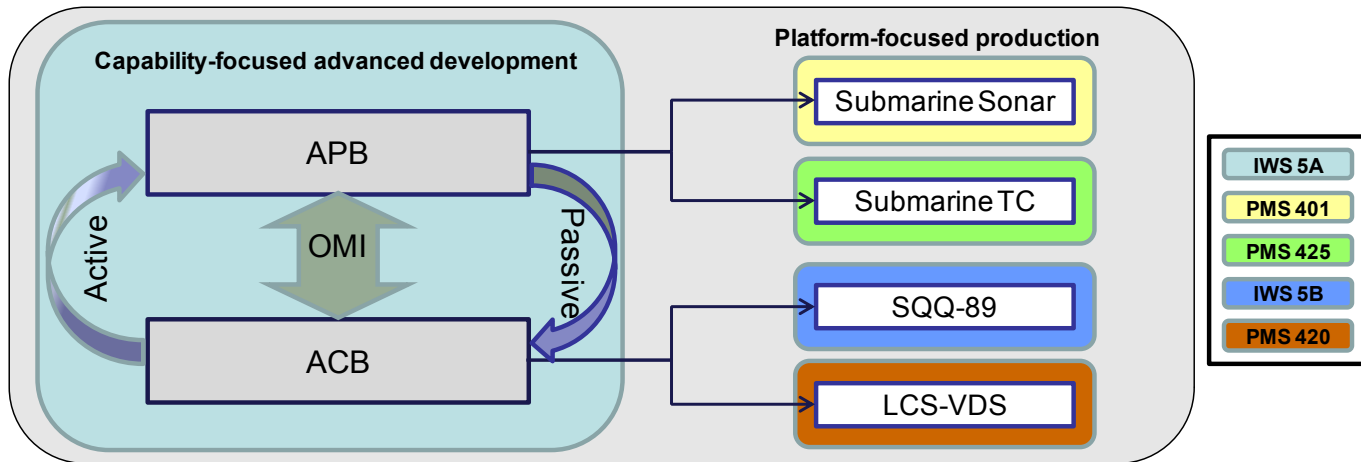
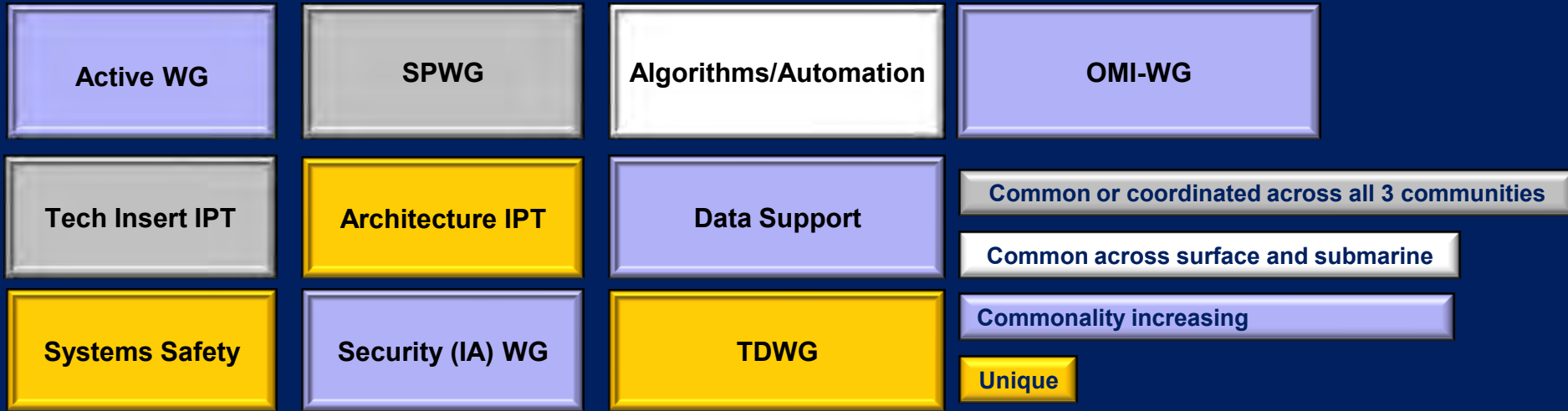


- **Proven Cost Effective Build Test Build ARCI Model**
 - Fleet Driven Processes
- **Targets Affordability and Control Cost Growth, With LOE Funding**
 - Maintains SMEs and stable industry base
 - Targets obsolescence, maintenance and improvements
 - APB/ACB is an effective COTS supportability strategy
 - Rapid capability insertion strategy
- **Promote Real Competition, Multiple Awards vs. Single Developer**
 - Companies and Labs are Part of Larger Team
 - Harvests “best of breed” solutions from all possible sources
 - Industry is a partner in productivity and innovation
 - Small Businesses courted for new technology (SBIRs)
 - Utilize BAAs and SBIRs for rapid, efficient technology acquisition
- **Reduce Non-Productive Processes and Bureaucracy**
 - Sub and Surface Use Same Core Team Member
 - Maximize OMI, HW, ILS and Training Commonality
 - Eliminates Duplicative Infrastructure for Each System

Open Process, Open Product, Data Driven Collaborative Development



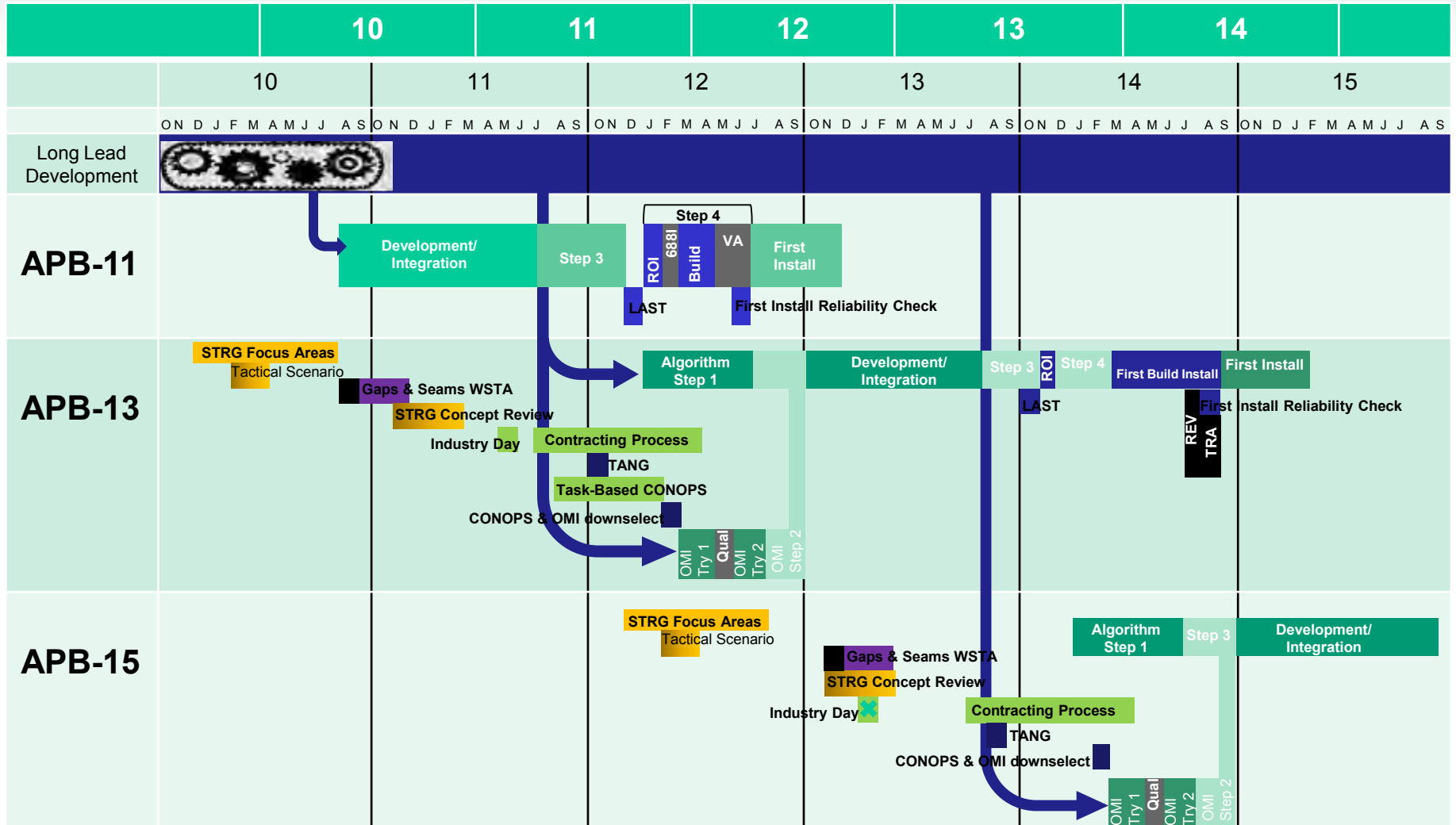
APB/ACB Process Efficiencies



Driving Organizations, processes and content to maximize efficiency



APB Schedule





DRAFT APB Roadmap

Increasingly Capable Multi-Mission Submarines

End to end emphasis improves the submarine's multi-mission capability
 Fast follow commercial *design*: key information, system simplification, increasingly intuitive OMI

2011 2012 2013 2014 2015 2016

APB-11
ASW Hold at Risk

- Range triage display (RAZ)
- Integrated WAA, TB-34, LCCA
- 360° stitched sonar
- Image contrast
- Consolidated ranges
- Track monitor
- STDA redesign

APB-13
ASW Multi-mission, Intermittent Track

- Intuitive interfaces for passive narrowband
- Layered commercial geo for contact centric intermittent track
- RAZ extension to TB-34, further range estimation consolidation
- 360° image stitching, auto-tracking, auto-focus
- Hands free TMA
- Standardized colors and symbols across the federated systems
- Mission planning

APB-15
Multi-Mission ASW/ISR

- Extend leveraged commercial designs → "One System"
- Commercial based information management techniques
- Information mobility
- Collaborative workspaces
- Workload reduction, automation improvements
- Extension of pipelined signal processing techniques enabled by COTS

APB-17
 Steady state fast follow:

- COTS hardware
- Commercial design
- Advanced signal processing enabled by the COTS



STRG scenario/requirements

DRAFT

Continuous innovation: brainstorming, prototyping, data collection and advanced development



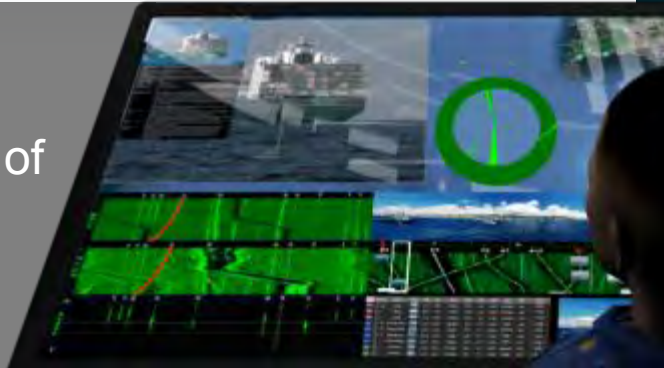


Combined Approach to Managing Information Effectively



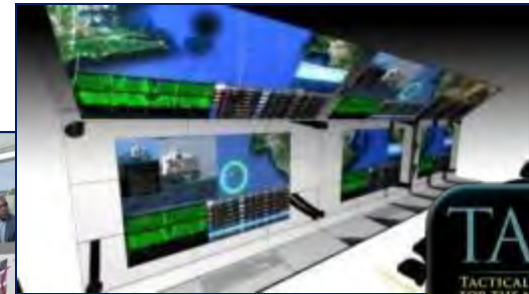
Continue to lead in high performance algorithms

- Continue to exploit advantages of Moore's law and new TIs
- Consolidate hands-free ranging
- Integrate imaging



Add Fast Following in Design

- Sailors come "trained" by commercial information management products
- Add flexibility for multi-touch composite glass workspaces
- Add Industrial Design methods, including the TANG Workshop



Disciplined Engineering

The APB process and its peer groups/test program will bring commercial innovations to the submarine environment : Rapidly, Efficiently, and Safely.

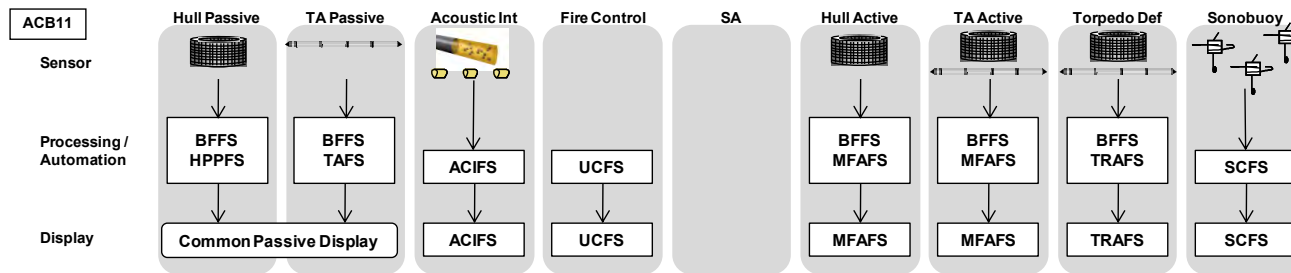
Movement to ACB Process

ACB09

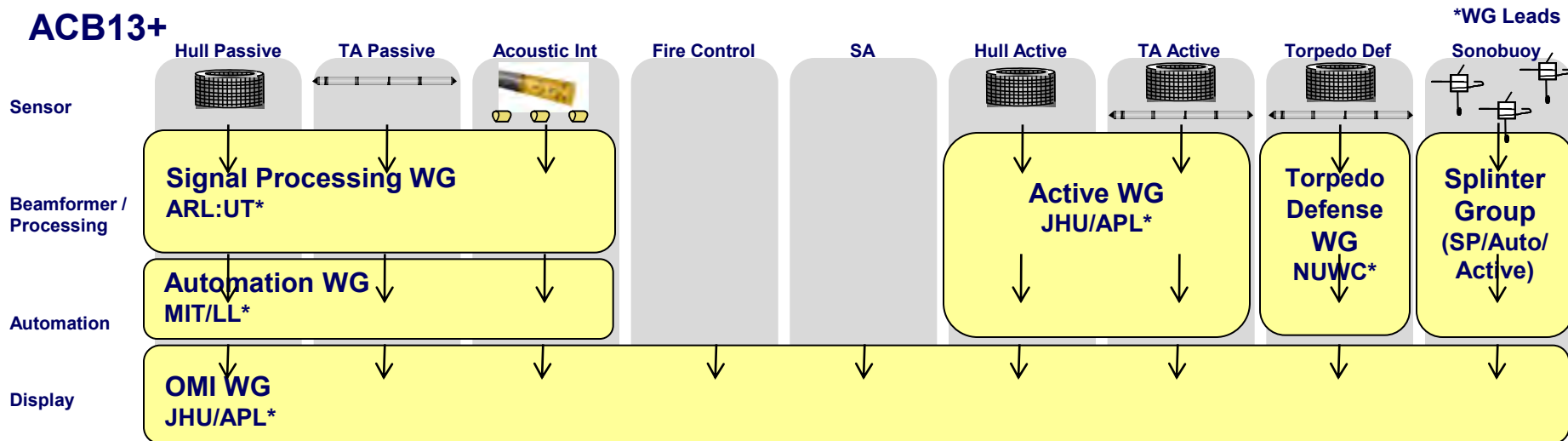
- Significant capability gains
- Stove-piped sensor to display
- Not a four-step ACB build
- TI to enable ACB11+

ACB11

- First ACB Working Group build – one prime integrator, multiple small business teams
- Began breakdown of stove-piped development with common passive



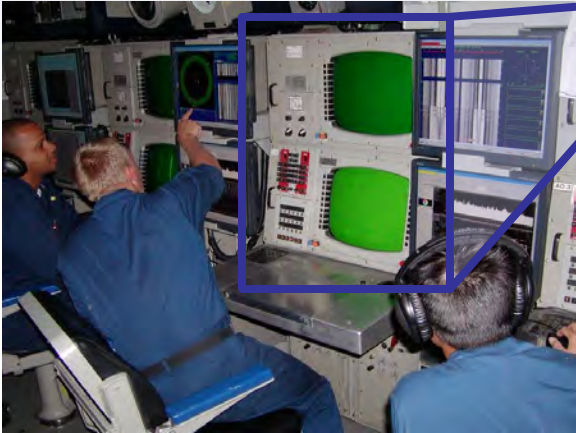
ACB13+



- Increase in commonality with reduced cost development and support
- Corporate knowledge transitions from labs/companies to Working Groups

Infrastructure IPTs

Advanced Capability Builds (ACB) Roadmap



Legacy green screens

Proposed

ACB15
Build – Test – Build Evolution

- Passive: APB improvements
- Torpedo: Active TDCL waveforms w/ fusion
- MH-60R integration*

* concurrent with AEGIS Implementation

ACB13
Multi-sensor / Workload

- Active: Common displays
- Torpedo: Radar fusion
- Weapons separation
- Additional sensors simulated in SAST
- Situational awareness OMI / CADRT Geo
- Integrated PM/FL

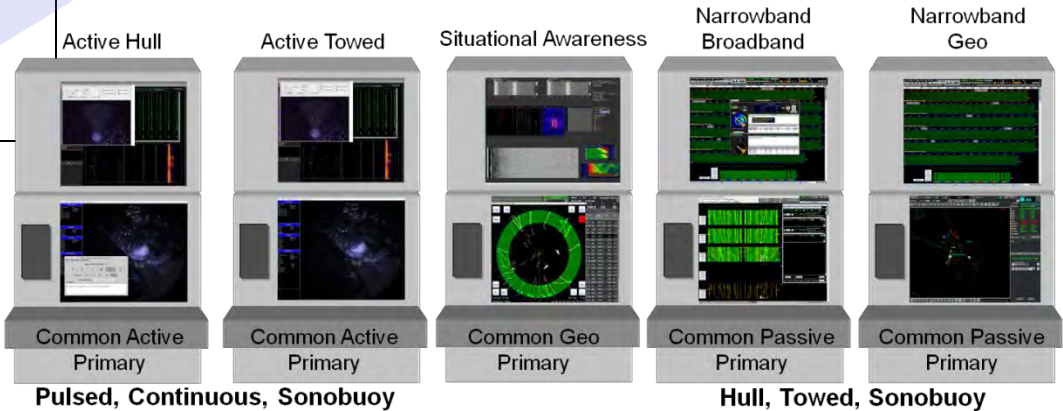
ACB11
Detection / Tracking

- Passive: APB09 Automation & OMI
- Active: Clutter reduction
- Improved integrated training (SAST)
- Initial PM/FL

Planned ACB15 Sonar Layout

ACB09
Sensors/Integration

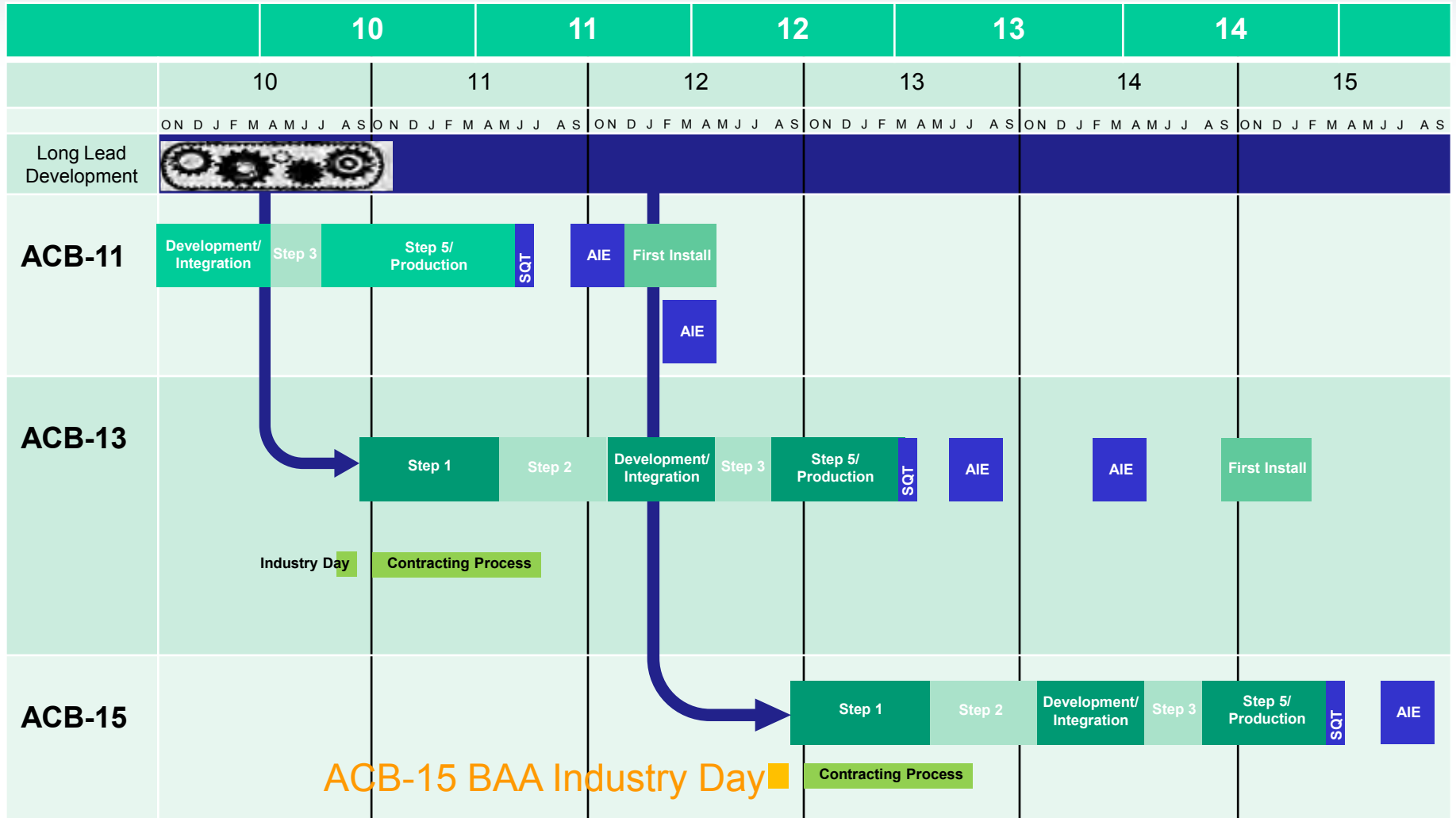
Multi-Function TA (MFTA)
 Significant updates in:
 Passive processing (APB00)
 Active processing (MFAFS)
 Torpedo Defense (TRAFS)



Significant improvements in capability with A(V)15 as the vehicle



ACB Schedule



ACB-15 BAA Industry Day

ACB09 to ACB11

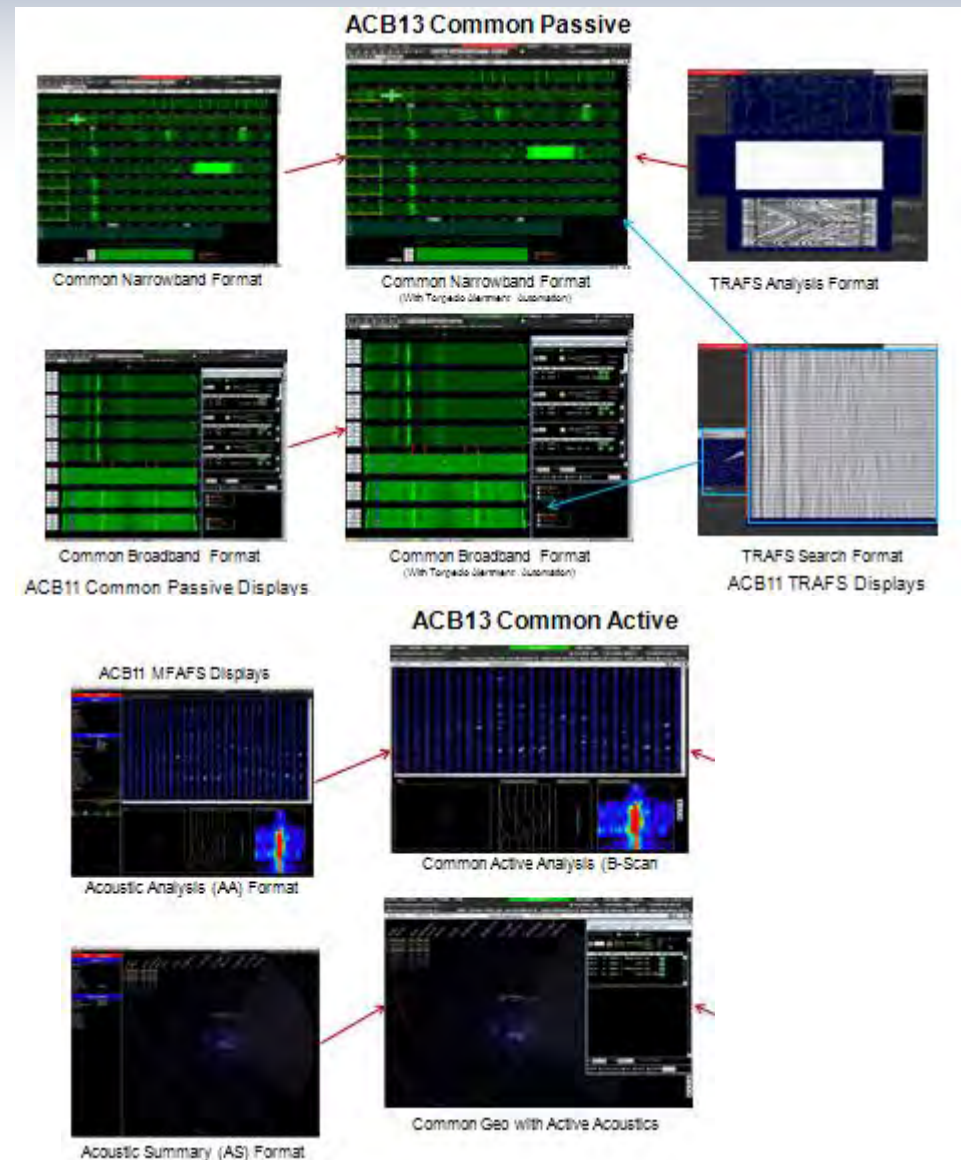
- Consolidated hull passive and towed array passive displays into APB09 Common Passive
 - **Reduces by 6 total number of ACB09 passive display formats**

ACB11 to ACB13

- Common Passive incorporates TRAFS Display functionality
 - **Reduces by 2 total number of ACB11 passive display formats**

ACB15+

- Consolidate Sonobuoy and Acoustic Intercept into common display formats
 - **Reduces by 4 total number of ACB13 display formats**





ACB High Interest Items

ACB-13

- **Continue advancements in active**
 - Processing and display
 - Automation
 - Operator Interaction
- **LCS-VDS/MFA Processing Combination**
- **Display Consolidation / Commonality**
- **SAST advanced development items**
- **Further improvements in passive processing and automation in concert with APB capability improvements**

ACB-15

- **Passive APB improvements from APB11/13**
- **Active waveforms and processing for torpedo defense**
- **MH-60R integration**
 - Concurrent with Aegis implementation



Advanced Sensors Methodology

Promising Technology
(6.3 – 6.4)

+

Clear Need

+

Concept

High level requirements

Studies

Develop array design

Build, test components

Integrate & lab/lake test

Environmental tests (shock,
thermal, etc)

Drawings & Technical
Package

Install on ship (OPALT)

Sea tests and deployment

Characterize performance

Crew feedback

Develop operating
procedures

Refine requirements

Provide to program office:

Draft CDD

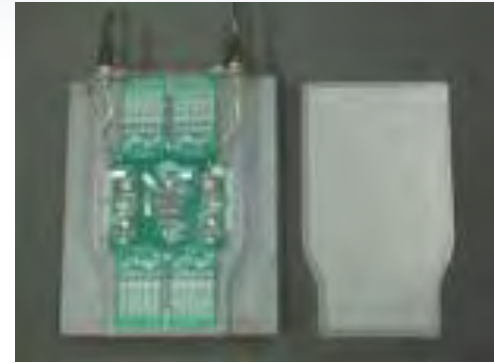
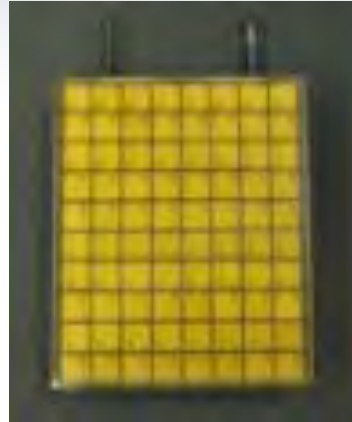
Cost estimate

Drawing/technical package

Lessons learned

Assist with production/test

Lightweight Low Cost Conformal Array (LwLCCA)



Schedule

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
FY10	LW ADM Design and Development			
FY11	LW ADM Design and Development			
FY12	LW ADM Design and Development	LW ADM Lake Test	LW ADM Integration	
FY13	LW ADM At-sea Test			

Concept:

- Upgrade LCCA design for lighter weight and simplified ship installation
- Design Objectives
 - Reduce sonar array costs
 - Lighter weight with performance refinements/upgrades

Concept of Employment:

- LwLCCA will be used to establish and maintain situational awareness

Deliverables:

- Initial plan is targeted for Virginia Class with an option to install on 688I Class
- Advanced development work key milestones:
 - ADM initial design complete - 1QFY11
 - ADM fabrication complete - 2QFY12
 - ADM in lake testing - 3QFY12
 - ADM shipboard installation – 4QFY12; at-sea test 1QFY13

Advanced Towed Array Technology (ATAT)

TB-29 FOLLOW - ON TOWED BODY



Schedule

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
FY12		TB-29(x) ▲ LPO	TB-29(x) R/V ▲	TB-29(x) ▲ Sub Demo
Fy13	CTA MFTA R/V Test ▲			CTA MFTA Sea Test ▲

Concept:

- Develop capability to provide improved performance and reliability.
- Develop next generation TB-29 and MFTA ADM systems with twin-line technology, Compact Towed Array telemetry.
- Transition to PMS 401 for production

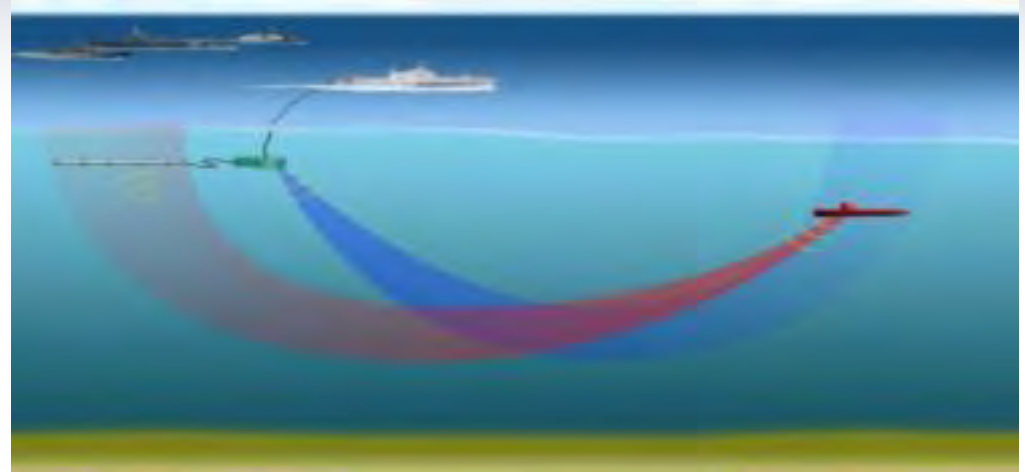
Concept of Employment:

- Backward compatible with TB-29A systems without ship impact
- Replace current MFTA receiver with the newly developed universal MFTA receiver to compatible with the existing MFTA and future towed array system

Deliverables:

- TB-29(X) ADM LPO (FY12)
- TB-29(X) ADM R/V (FY12)
- TB-29(X) Sub Demo (FY12)
- TB-29(X) ADM Sub Demo Reports (FY13)
- TB-29(X) Array transition documents (FY13)
- CTA MFTA ADM LPO test (FY13)
- CTA MFTA ADM sea test (FY13)
- CTA MFTA ADM sea test report (FY13)

Littoral Combat Ship (LCS) Variable Depth Sonar (VDS)



Schedule

	Quarter 1	Quarter 2	Quarter 3	Quarter 4
FY10			ADM Dev	
FY11	ADM Dev			
FY12	ADM LBIT			

Concept: (from OPNAV letter of direction dated 31JUL09)

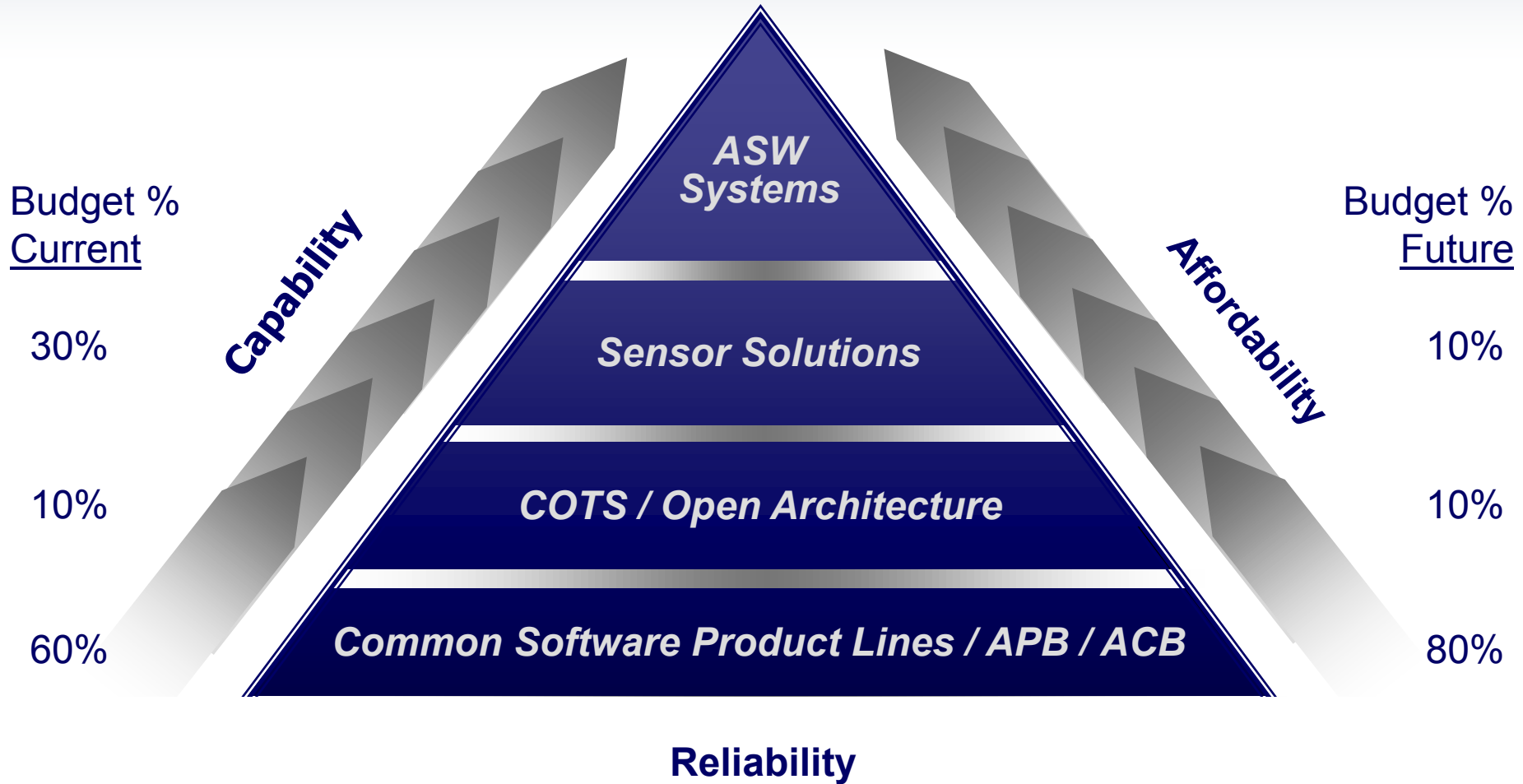
- Develop an effective and affordable, deep water, wide area active ASW search capability
- Modular Variable Depth Sonar (VDS) form factor for LCS
- Fulfill HVU escort mission requirements.

Concept of Employment:

- Active Sonar
- High Dynamic Range, Bistatic Receiver (MFTA)
- High Reliability, Wideband source array in VDS form factor



Investment





Current IWS5A SBIR Topics

- **N02-207** - Anti-terrorism Technologies for Asymmetric Naval Warfare
- **N04-071** - Surface Ship, Hull Mounted, Mine Avoidance Sonar
- **N04-166** - Fiber Optic/Electrical Lightweight Tow Cable for Optical Towed Arrays
- **N05-059** - Hi-Fidelity Simulator for Physics Based Unit Level Training Surface ASW
- **N05-077** - Station Keeping Buoy
- **N05-125** - Compact Towed Array
- **N06-051** - Marine Mammal Mitigation Domain Awareness
- **N07-144** - Wave Energy Harvesting Buoy
- **N07-215** - Fiber Optic Vector Sensor
- **N08-054** - Marine Assessment, Decision, and Planning Tool for Protected Species
- **N08-056** - Active Sonar Clutter Mitigation through Enhanced Training and Automated Contact Detection and Tracking
- **N08-057** - Torpedo Detection, Localization, and Classification
- **N08-171** - Distributed Sensor Communications
- **N08-208** - Ultra Low-Cost Low-Noise Hybrid Integrated Laser
- **N08-213** - Affordable Small Diameter Heading Sensor
- **N08-216** - Fatline Towed Array Vector Sensor
- **N08-219** - Advanced Communications at Speed and Depth
- **N09-068** - Mid Frequency Active Distributed Fusion and Tracking
- **N09-132** - Advanced Hybrid Energy System for Wet and Dry Submersibles
- **N09-137** - Array Shape Estimation Using Fiber Optics Shape Sensing
- **N09-188** - Image Fusion for Submarine Imaging Systems
- **N09-204** - High Data Rate Storage
- **N111-037** - Modeling and Simulation Technologies Development for Combat System Integration and Certification
- **N111-041** - Strike Group Active Sonar Exploitation
- **N111-050** - A Lightweight, Flexible, Scalable Approach to Trainer Systems
- **N111-051** - Improved Towed Array Localization for Active Systems
- **N111-055** - Low Cost Hydrophones for Thin Line Towed Arrays
- **N111-061** - Serious Games for Sailor Proficiency
- **N121-374** - Embedded Sensors with Low Power Telemetry
- **N121-374** - IA compliant remote application administration for reliability, maintainability, and availability (RM&A)

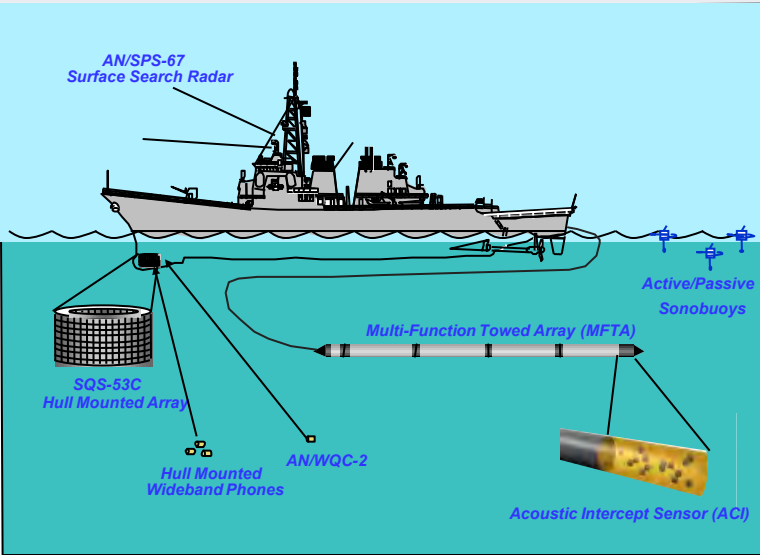
A great opportunity for Small Business to participate



Future Technology Needs



- **Automation techniques to assist (but not replace) operators**
- **Hull URO Solutions – hull corrosion and flaw inspections**
- **High Density through-hull telemetry**
- **Towed array vertical discrimination**
- **Improved acoustic sensors (lower cost, better coupled, wider bandwidth, vector sensors, etc.)**
- **Long range organic non-acoustic sensor technology**
- **Improved CAVES installation techniques**
- **Improving Single Crystal yields**
- **DNS data exfiltration in satellite-denied environment and long endurance power sources.**



What it Does: Greatly *expands sensor performance* using OA COTS processing.

- Developed using an “ARCI-like” best of breed build-test-build process
- Achieves *cost effectiveness* through the use of *common software components* (CAUSS, PNB, MF Active, and torpedo defense are common across Surface ASW programs)
- Will become the maintenance and modernization process for the Surface Fleet USW Combat System

What it brings

- New Sensors
 - Towed Array (MFTA) and Calibrated Reference Hydrophone (CRH)
- COTS Software
- State of the Practice Signal and Data Processing Hardware
- Improved PM/FL
- Improved Warfighting Capability

AN/SQQ-89A(V)15 ...significant advancement in Surface ASW

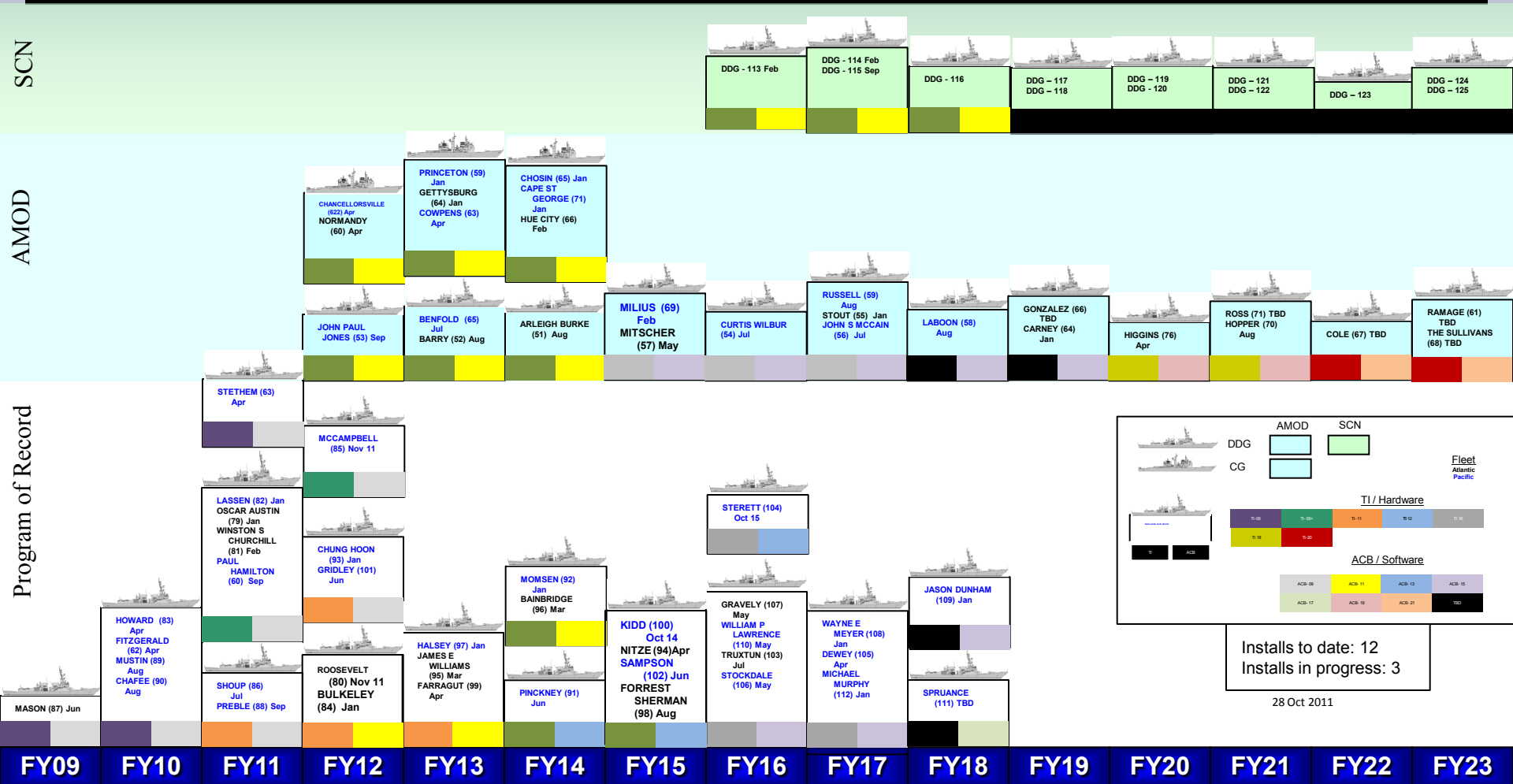


ACB/TI Relationship

- **ACB process to provide software updates with improved capabilities every two years.**
- **Hardware upgrades known as Technology Insertions (TI) will also begin a two year update cycle. Hardware is planned to support two ACB software cycles.**
- **Provides a formal method for the transformation of Fleet operational requirements into new capabilities while maintaining the fewest number of system baselines in the Fleet.**



AN/SQQ-89(V) Fielding Plan



ACB 09	ACB 11 Candidate	ACB 13 Candidate	ACB 15 Candidate	ACB 17 Candidate	ACB 19 Candidate	ACB 21 Candidate	ACB 23 Candidate
<ul style="list-style-type: none"> - MFTA - Improved Active - Passive - MK54 DFCI/OTS - Bi-Static 	<ul style="list-style-type: none"> - ASW Trainer Upgrade Ph I - Continuous Active Sonar - Active Clutter Reduction - Bellringers 	<ul style="list-style-type: none"> - ASW Trainer Upgrade Ph II - Netted Systems/Sensors - COTS Hardware Tech Refresh 	<ul style="list-style-type: none"> - Architecture - Automation - Displays - Multi-Static Active - MK-60R A(V)15 Integration 	<ul style="list-style-type: none"> - Architecture - Automation - Displays - Multi-Static Active 			

MAJOR SURFACE ASW CAPACITY AND CANDIDATE CAPABILITY UPGRADES



AN/SQQ-89A(V)15 Contract Highlights



Goals

- Procure a fully integrated, fully supportable, certifiable A(V)15 system that meets the Navy's requirements
- Competitive Award
- Open systems architecture, collaborative development environment
 - Incorporate ARCI-like processes into procurement
- Incorporate options (flexible) to meet new FMS requirements

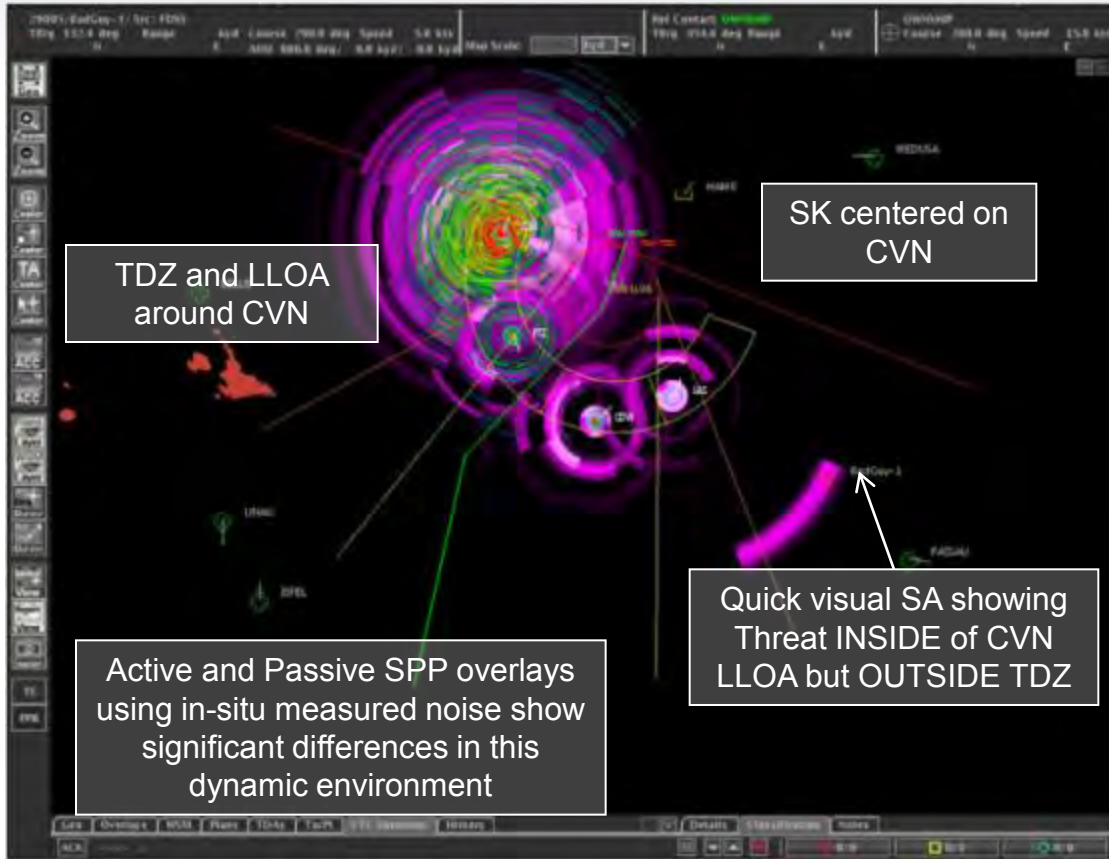
Major Areas

- Integrated Program Management
- Engineering
- Test & Evaluation
- Integrated Logistics Support
- Configuration Management
- Training
- Checkout, Field, and Installation Support

Common ASW Tactical Picture

Undersea Warfare Decision Support System (USW-DSS)

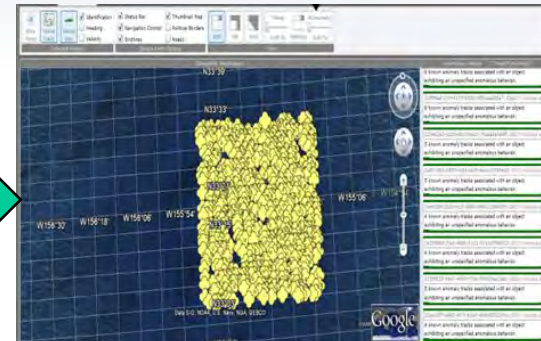
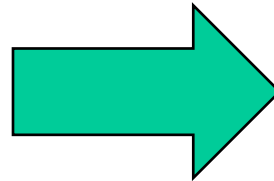
Carrier Strike Group Screen Kilo



- **Cross Platform Sensor/Data**
- **Dynamic Situational Awareness**
- **Automated Sensor Inputs**
 - Acoustic Reverb Data
 - Passive Beam Data
 - Sound Velocity Profiles
- **Sensor Measured Environmental Data Modeling**
- **Tactical Decision Aids**
- **Shared Across CSG**
- **Plotting Errors Eliminated**
- **Near Real-time**

Near Real-time SCC CASWTP and Shared Across CSG with In-Situ Environmental Updates

Level 2-3 Information Fusion

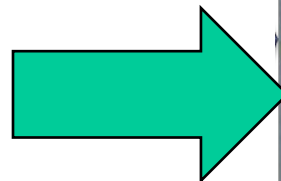
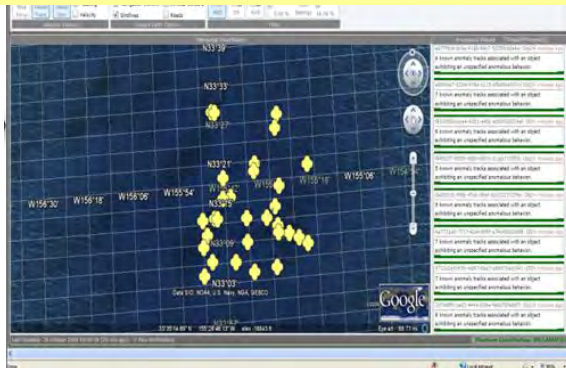


Current Shortcomings

- False alerts and alert redundancy
- Screen clutter
- Cognitive overload for the analyst
- Minimal reach back and pedigree information
- Inadequate anomaly detection models

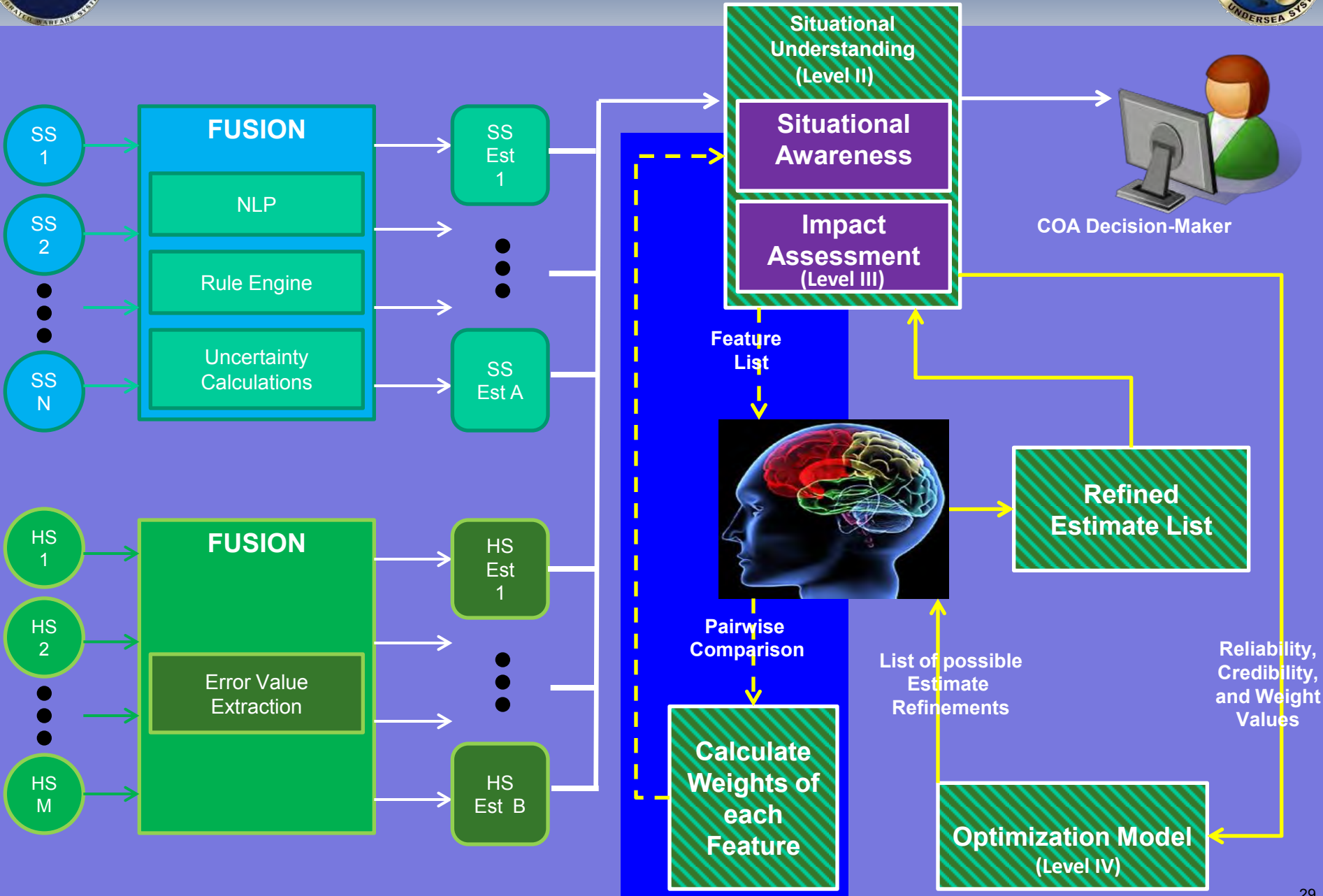
Level 2-3 Fusion benefit to the sailor:

- What vessels are important?
- Where should I focus my attention?
- What threat do these vessels pose to me and my assets of interest?





Proposed ASW C2 Level IV Implementation





Aircraft Carrier Tactical Support Center (CV-TSC)



Concept:

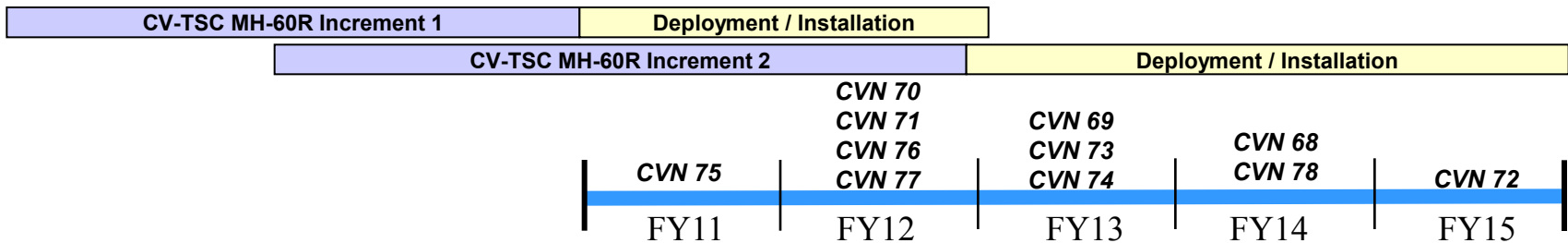
- Integrates multi-mission aircraft with CVN shipboard systems (ASW, SUW, MIO, SAR, etc...) S-3, SH-60F → MH-60R
- Integrates off-board sensors/systems with shipboard systems to detect, classify, and localize threats
 - Process, Exploit, and Distributes Sensor Data
 - Exchanges tactical data with embarked aircraft
 - Exercises sensor control of off-board sensors
 - Reduces aircrew operator workload
- Provides Local Platform C2 for ASW Operations

Deliverables:

- Field Integrated CV-TSC on all CVNs
- Provide updated software builds on 2-year cycles to address fleet priority upgrades
- Aligned with Major Acquisition initiatives of MH-60R and future air platforms (P-8/BAMS)

Highlights:

- First Installation Supporting MH-60R Integration on CVN-75 (TRUMAN) complete in Jan 2012
- FY13 software upgrade to begin formal testing in Jan 2012



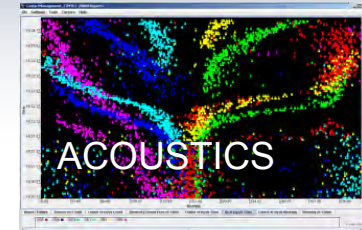
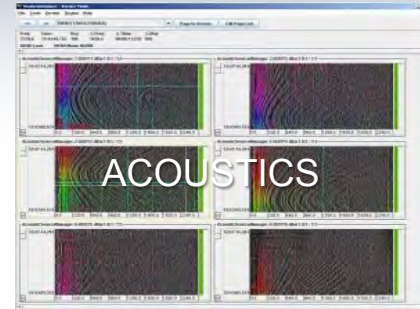


CV-TSC Variant Summary



Existing Systems, AN/SQQ-34A/B/C(V)1 (Fielded)

- Support SH-60F
- DICASS/DIFAR/VLAD/BT Sonobuoy Processing
- Primarily Post-Mission Analysis



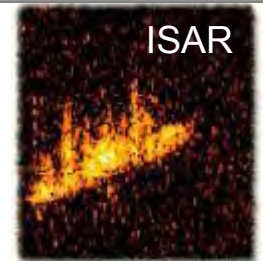
AN/SQQ-34C(V)2, Increment 1 (Field in FY 11)

- MH-60R Integration Baseline
- Link with helo through Ku-Band Common Data Link (CDL)
- Partial Implementation of MH-60R Air-Ship Message Interface - Downlink Focus
- Transition to Common Display System and Common Processing System (CDS/CPS)



AN/SQQ-34C(V)2, Increment 2 (Field in FY 13)

- Uplink Messaging Capability to the MH-60R
- Remote Control of Common Data Link System (CDLS)
- User Interface Improvements
- Ability to Participate in Fleet Synthetic Training (FST) Scenarios with SSDS
 - Update To SSDS Interface
- Expansion of System to Support up-to 4 MH-60R Simultaneously (Requires Future Upgrade to CDL)
- Initial Increment of Automated Acoustic Fusion Capability
- Obsolescence Issue – Removing Dependency on GCCS Common Operating Environment (COE)



AN/SQQ-34C(V)2, Future Upgrades

- PEO IWS Product Line Architecture (PLA) Transition, MH-60R Upgrades (ARRPD), P-8 Integration, ADAR Sonobuoy Processing, Surface Ship Torpedo Defense (SSTD) Integration, Periscope Detection Radar Integration, Simulation/Training, Future Aircraft Integration (BAMS)



Prioritized CV-TSC S&T Needs

Higher Priority

- Automated Classification Aids for EO/IR, ISAR, and Acoustic Sensors
- High Fidelity Embedded Training Capabilities
- Analysis of Multi-Statics Using ALFS and DIFAR Bouys
- Multiple Levels of Data Fusion
- Improved Search Optimization Algorithms to Include Multiple Acoustic and Non-Acoustic Sensors
- Faster than Real-Time Automated Screening Techniques for Operator Workload Reduction

Lower Priority

- Information Assurance Compliant Remote Application Administration
- 3-Dimensional Visualization Tools
- Optimized Naval Search and Rescue Routing Algorithms

Opportunities for SBIRs / RTTs



Science and Technology Activities for USW-DSS and CV-TSC



Activities that will enable vision for Information Dominance:

- **Global Net-Centric Interoperability**
 - ONR FNT 09-04 (Level B): Dynamic Command and Control for Tactical Forces and Maritime Operations
- **Data Processing, Exploitation, Fusion, and Analysis**
 - ONR RTT: Theater Undersea Warfare Initiative (TUSWI)
 - SBIR N05-046 (CPP): Multi-Sensor Data Fusion System
 - SBIR N06-050: (CPP): Undersea Warfare Intelligent Controller
 - SBIR N06-109 (Phase II): Data Fusion Handoff
 - SBIR N08-057 (Phase II): Distributed Multi-Layer Fusion
 - SBIR N08-173 (CPP): Intelligent Network Traffic Management
 - SBIR N10-145 (Phase I): Enabling Netted Sensor Fusion for ASW in Uncertain and Variable Environments
 - SBIR N10-152 (Phase I): Near Field Passive Tracking
 - SBIR N10-158 (Phase I): Intelligent Agents for ASW Threat Prosecution
 - SBIR N10-154 (Phase I): Collaborative ASW Threat Assessment
 - SBIR N04-175 (Phase II): Acoustic Surveillance Multi-Array Search Aid
 - SBIR OSD05-SP3 (Phase II): Software Test Engineering Analysis of Trace Semantics
- **Alert Management**
 - SBIR N09-037 (Phase II): Real-Time, BW Optimized Collaboration Mission Planning Infrastructure
- **Situational Awareness / Visualization / Training**
 - ONR SHD-FY10-02 (Level C): High Fidelity Active Sonar Training (HIFAST) ASW C2
 - ONR SHD-FY10-02 (Level C): Surface Active Synthetic Trainer (SAST)
 - SBIR N09-136 (Phase II): Training Cognitive situational Awareness for Multi-Platform Command and Control
 - SBIR N09-193 (Phase II): Shared Situational Awareness Measurement
 - SBIR N09-125 (Phase II): Context-Aware Visualization for Tactical Multi-Tasking
 - SBIR N04-119 (Phase II): USW SA Interface Design
- **Mission Planning**
 - SBIR N08-054: (Phase II Option 1): Marine Assessment Decision and Planning Tool (IWS 5A)
 - SBIR N10-048 (Phase II): Environmentally Constrained Naval Search Planning Algorithms



ASW COI Data Model (ACDM) Purpose



The ACDM is the common language for ASW data exchange between systems

Enablers for Plug and Play, Net-Centric Warfare of the Future

- Common Language
- Policies and Procedures
- Robust Communications
- Governance and Strategy
- Supporting Infrastructure

Common interfaces provide clarity and reduce system development and integration costs





Industry Involvement



NDIA USW Division C4I Committee Tasking

- **Participate in review of ACDM Data Model and associated documentation**

Review the ACDM for applicability

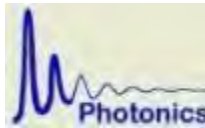
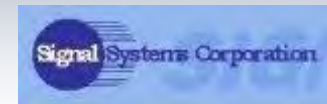
- **ACDMv3 and supporting material available December 2011**
- **Industry Conference mid-January 2012**

Get help from the ACDM developers

- **Align the ACDM with your system's information exchange needs and requirements**
- **Utilize documentation, tools, and assistance to develop a system specific profile and implementation**



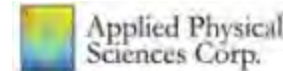
IWS 5.0 Relationships



Pacific Sciences



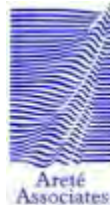
SONALYSTS



General Magnetics



Sigtech Inc.





ONR Technology Strategy: Today and Tomorrow for PEO-IWS



Larry Schuette
Director of Innovation, ONR
larry.schuette@navy.mil

Agenda

- **Opening thoughts**
- **ONR 101**
- **Funding Levels and Opportunities**
- **Code 31, C4ISR:**
 - Electronic Warfare (EW)
 - Integrated Topside (InTop) Innovative Naval Prototype
- **Code 33, Ocean Battlespace Sensing:**
 - Asymmetric Warfare (ASW)
- **Final thoughts**
- **Save the Date**

Bottom Line Up Front: ONR & PEO IWS

- **ONR and PEO IWS must be tightly coupled**
 - ONR develops S&T, PEO delivers Programs of Record (PoR)
- **ONR & PEO IWS have a great transition record (82%)**
- **Some great relationships/success stories, working to make them all great**
- **Key is communication and trust**
- **Processes (FNC & INP) formalize communication but trust is important**
- **Typically ONR is “one deep”. There is usually only one (possibly two) Program Managers in any research area. We’ll look at a few.**

You Want the Truth?



Bottom Line Up Front: ONR & PEO IWS

- **Great people at ONR and IWS are required for a chance at success**
- **Details matter but communication is vital**

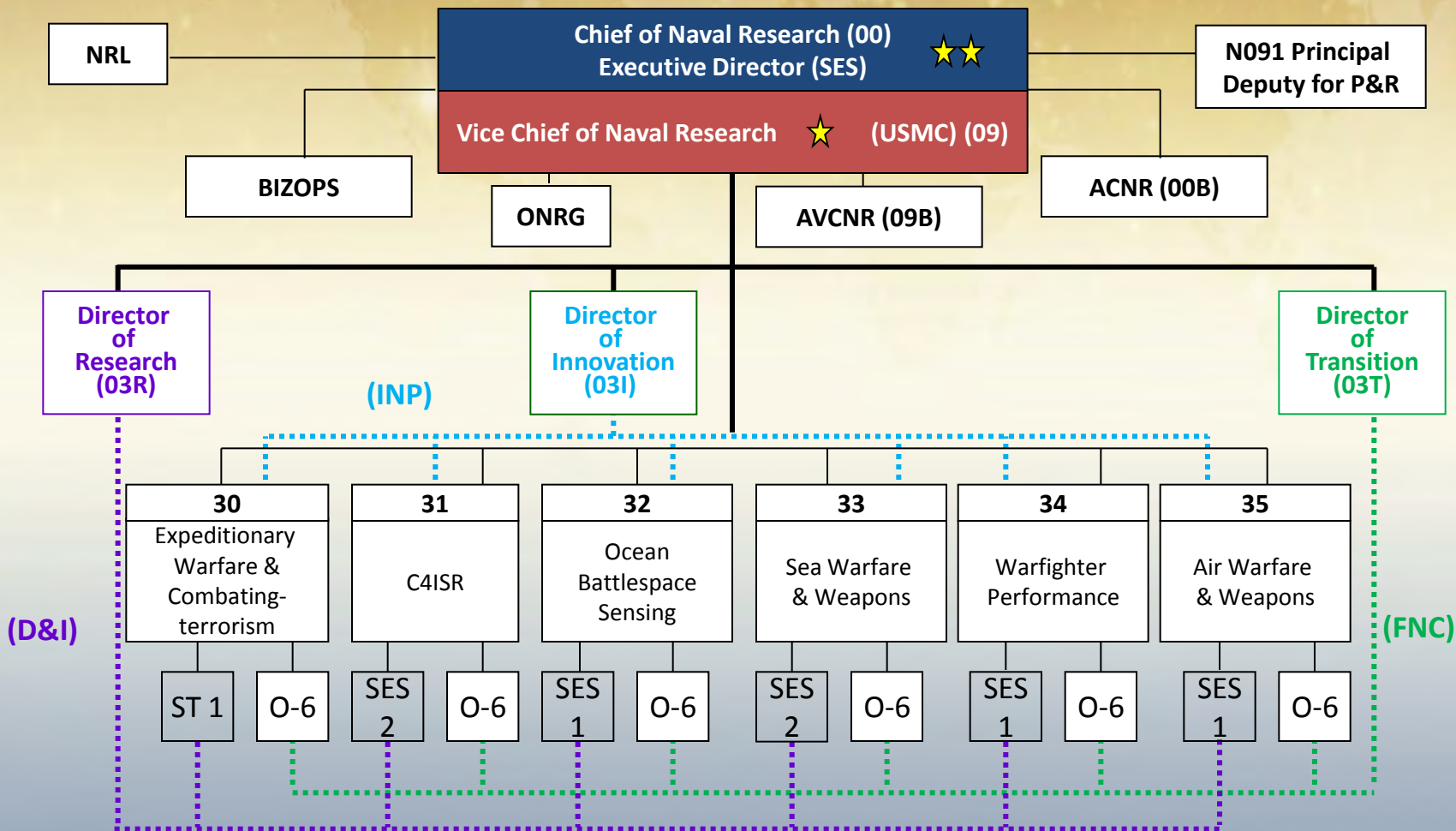
Failure to Communicate



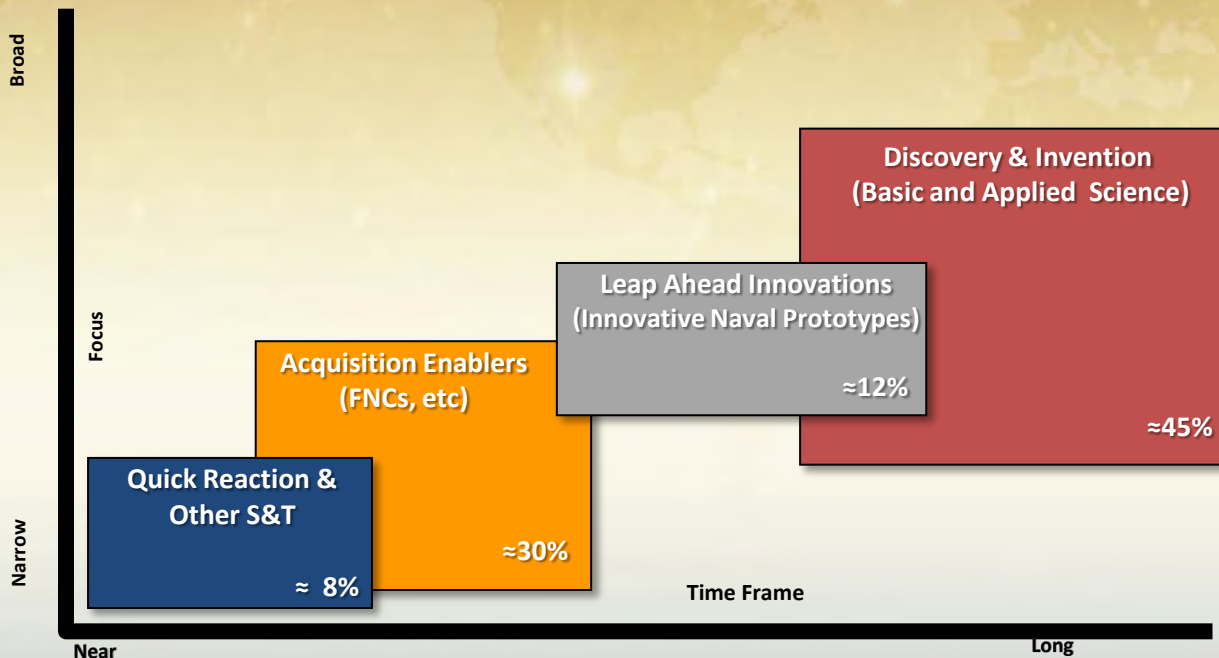
“The effort will begin in FY08 and continue with the initial demonstration of the integrated sensor occurring in the second quarter of FY10 followed by complete system testing in FY11.”

“This development will take place of a four-year period culminating with a system testing in FY11, product transition/product orders in FY12, and introduction into the Fleet in FY13.”

ONR Organization



Naval Science and Technology



Focus Areas:

- Assure Access to Maritime Battlespace
- Autonomy & Unmanned Systems
- Expeditionary & Irregular Warfare
- Information Dominance
- Platform Design & Survivability
- Power & Energy
- Strike & Integrated Defense
- Total Ownership Cost
- Warfighter Performance

Science, Technology, Engineering & Math (STEM)



Quick Reaction

Fleet Driven Material Solutions

1-2 yrs



Acquisition Enablers

Evolutionary POR component improvements

3-5 yrs



Leap Ahead Innovations

Disruptive Technologies

5-7 yrs



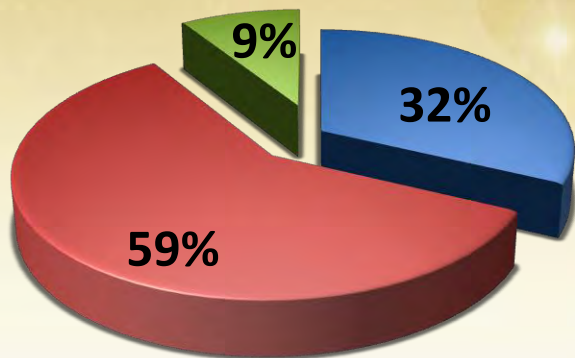
Discovery & Invention

Fundamental Science focused on naval problems

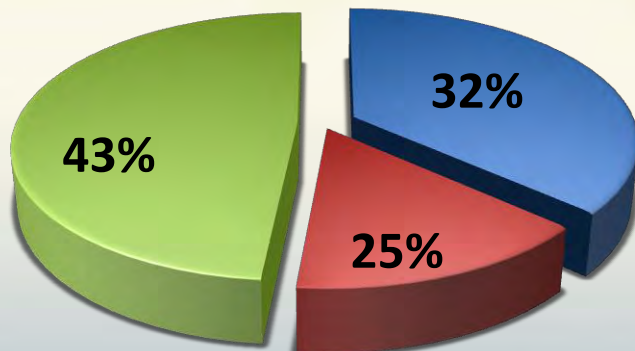
5-20 yrs

ONR Investment Balance

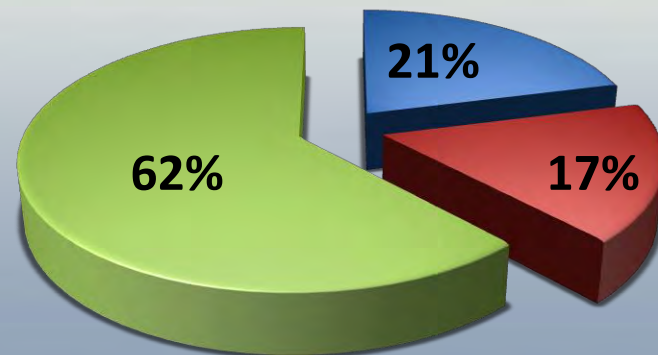
6.1: Basic Research



6.2: Applied Research



6.3: Advanced Tech Development

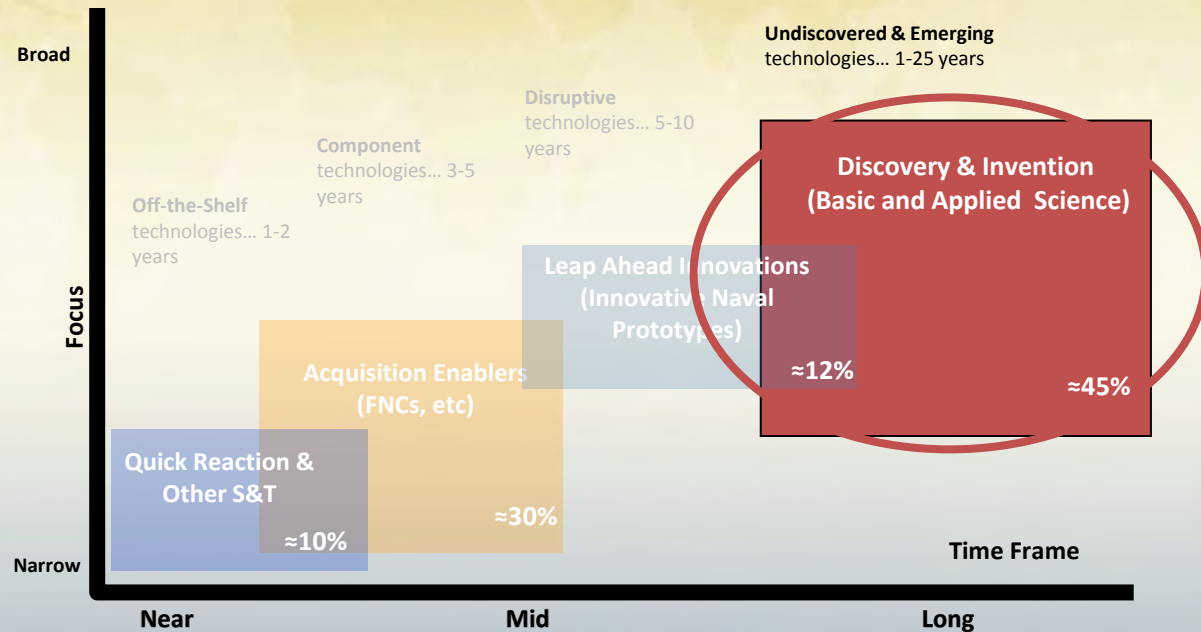


Obligations During FY10

Director of Research



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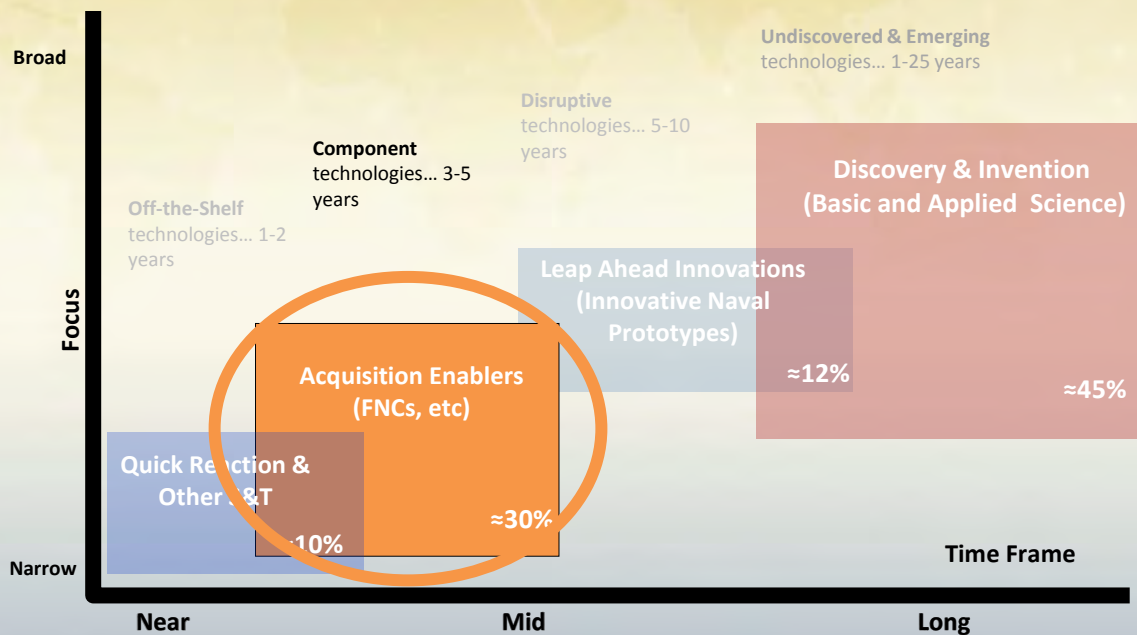


- 6.1-6.2 funding
- Grants, Academia, UARCS, Labs

Director of Transition



Dr. Joseph Lawrence
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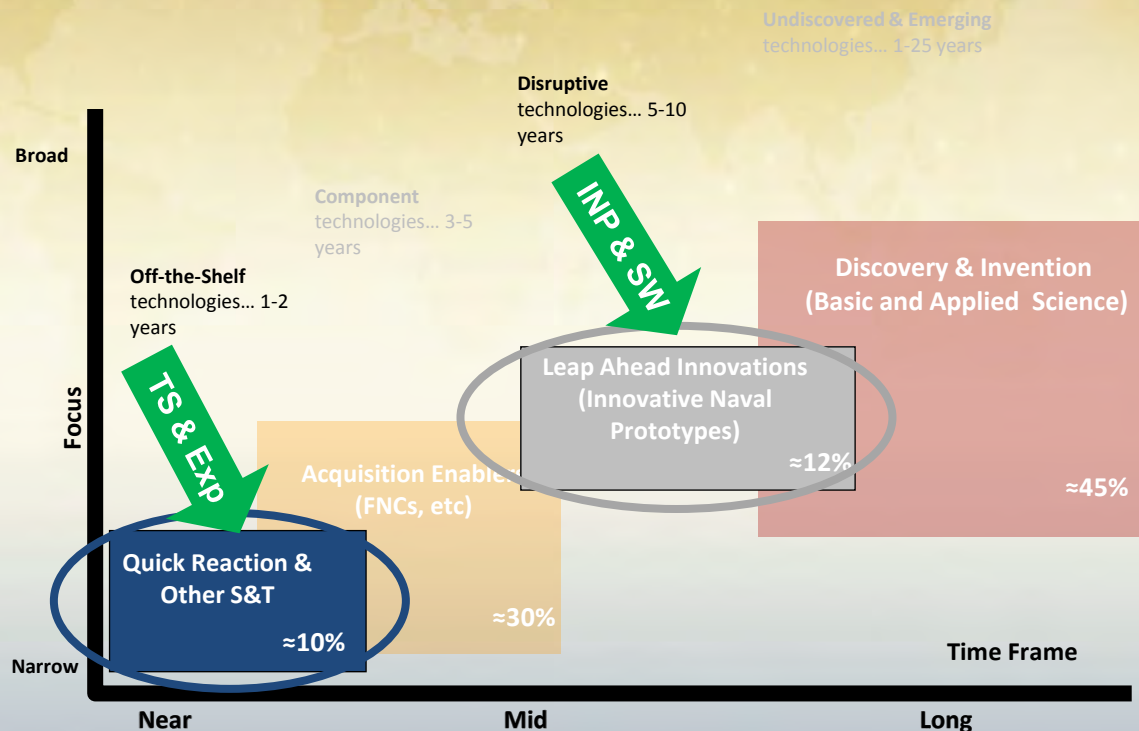


- FNC, PEOs, Industry
- ManTech
- SBIR

Director of Innovation



Dr. Larry Schuette
larry.schuette@navy.mil



- INPs – PEO, Industry, Labs
- SwampWorks – COCOMs, Labs
- TechSolutions – Sailor, Marines

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roger.ellis@navy.mil

FEL

Quentin Saulter, Code 35

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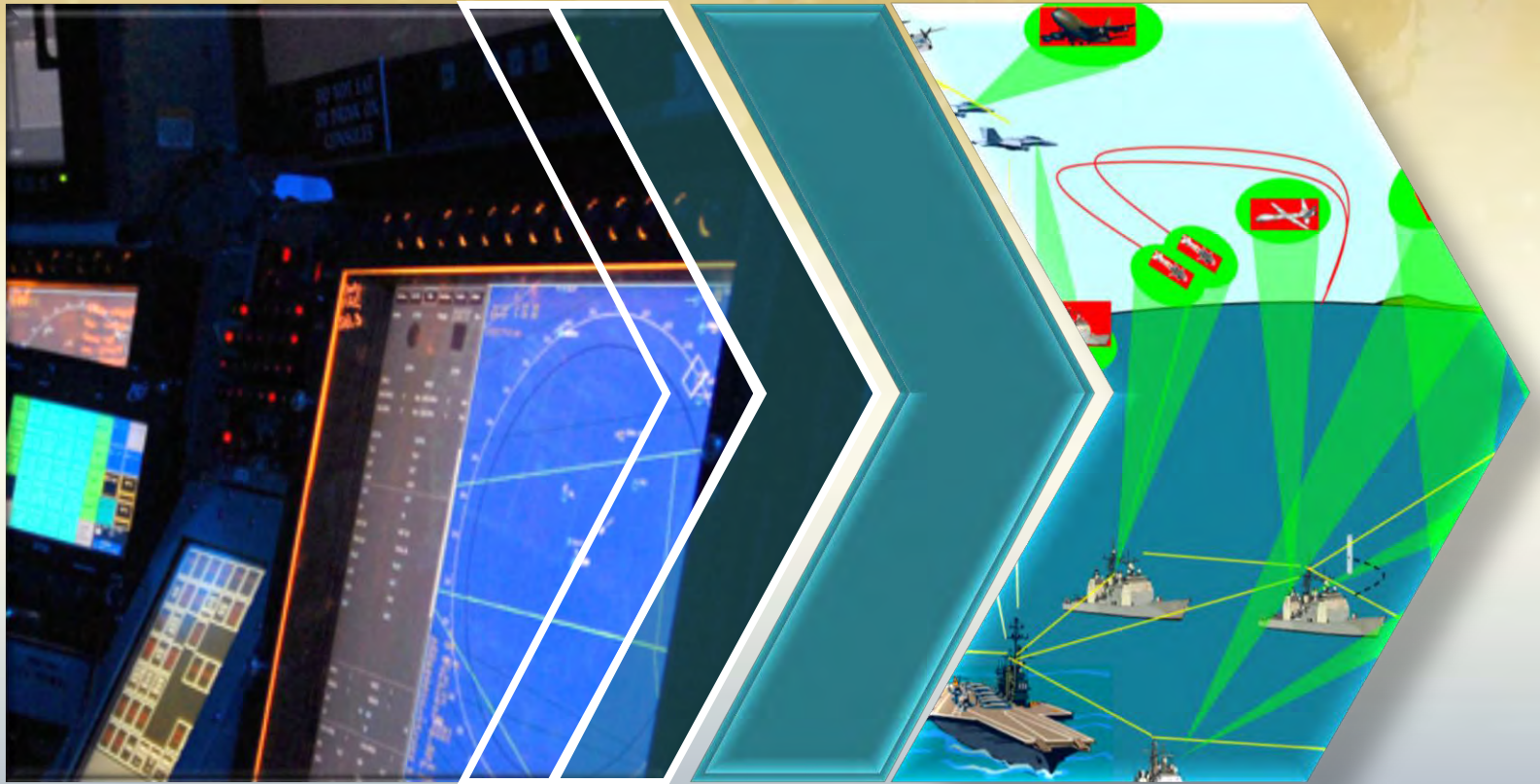
ONR Business Processes

- **More than 80% of ONR-sponsored S&T is awarded to external performers in academia, industry and the NRE:**
 - Efficient and effective business processes are vital to achieving S&T objectives
- **Types of business operations:**
 - Grant and contract administration
 - Contracting activities and policy
 - Acquisition and research business policy
 - Information and statistical reporting processes
 - Stakeholder communication and engagement

Funding Opportunities

- Visit our website: www.onr.navy.mil/contracts-grants.aspx
- Funding Opportunities
 - **Broad Agency Announcements (BAAs)**
 - **FOA12-002:** Fiscal Year 2012 Funding Opportunity Announcement (FOA) for Navy and Marine Corps STEM Programs
 - **12-001:** Long-Range BAA for Navy and Marine S&T
 - **11-030:** Fiscal Year 2012 ONR Young Investigator Program
 - **11-032:** Department of the Navy Rapid Innovation Fund
 - **11-031:** Simulation Toolset for Analysis of Mission, Personnel Systems (STAMPS)
 - **11-027:** Navigation and Timekeeping Technology
 - **Requests for Information (RFIs)**
 - **Requests for Proposals (RFPs)**
 - **Requests for Quotes (RFQs)**
 - **Special Notices**
 - **11-SN-0025:** DARPA/ONR Field-Reversible Thermal Connector (RevCon Challenge)
 - **12-SN-0001:** Energetics Materials Program (2012 ONR Opportunity)

Code 31: C4ISR ONR Electronic Warfare (EW) S&T



ONR EW S&T Points of Contact

EW Program Manager

Dr. Peter Craig

peter.craig@navy.mil

peter.craig@navy.smil.mil

EW Program Officers

Mr. David Tremper

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Mr. Bradford Crane

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bradford.crane@navy.smil.mil

EW LO/CLO Liaison

Mr. Richard Renfro

richard.renfro@navy.mil

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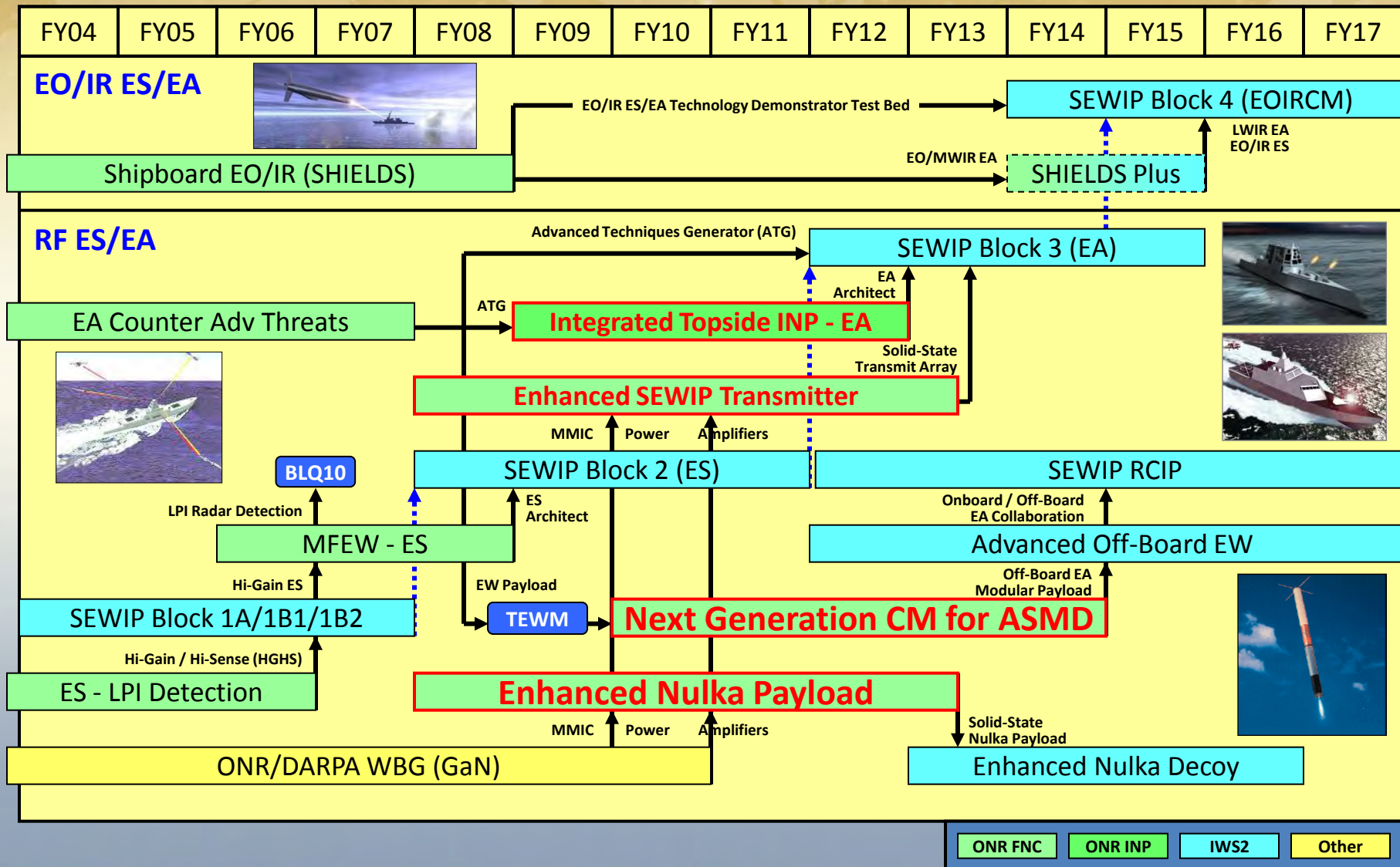
Office of Naval Research (ONR 312 EW)

One Liberty Center
875 N. Randolph Street
Arlington, VA 22203

312_EC@onr.navy.mil

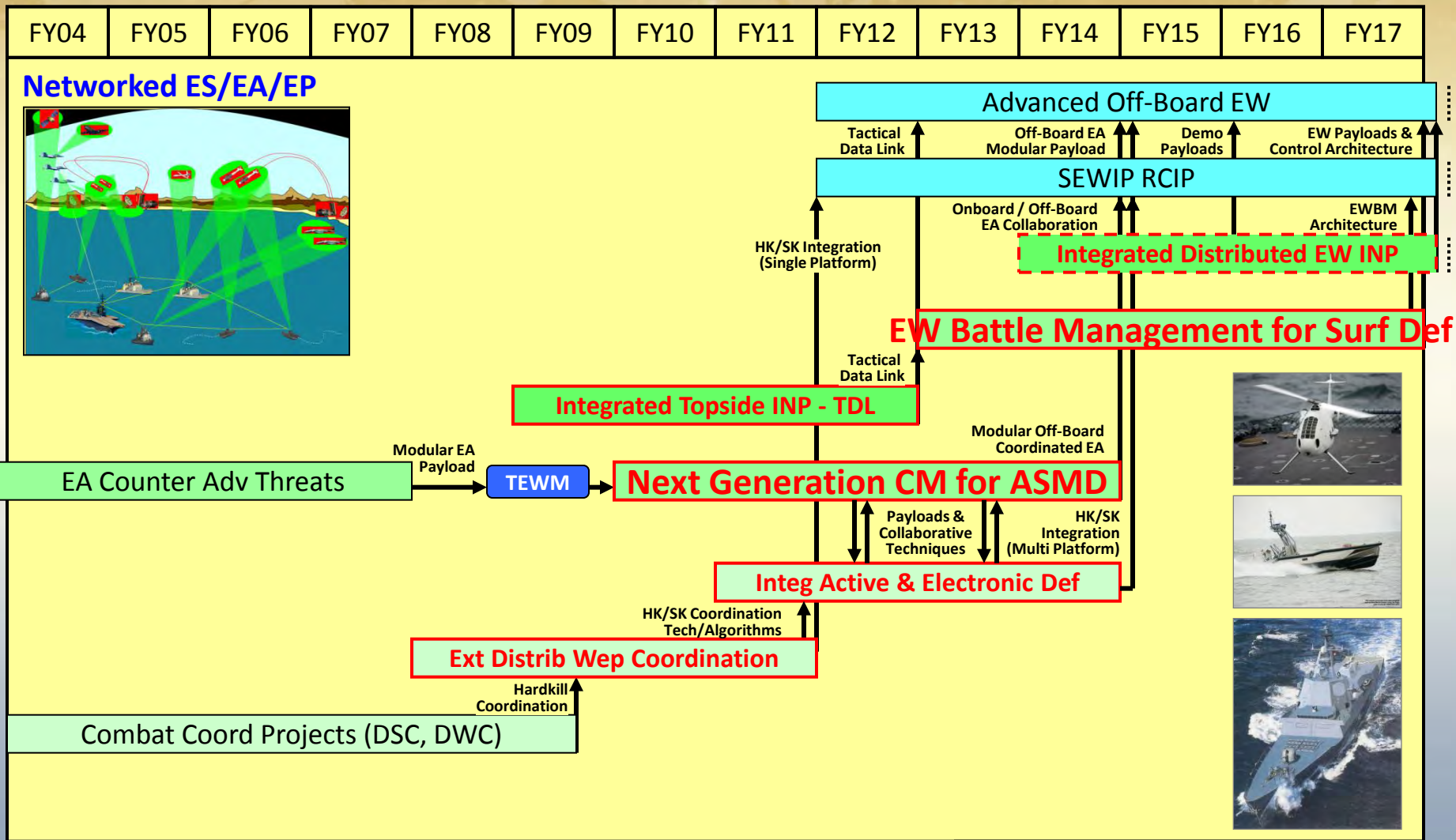
ONR EW FNC Products

Surface EW Product Transition Alignment



ONR EW FNC Products

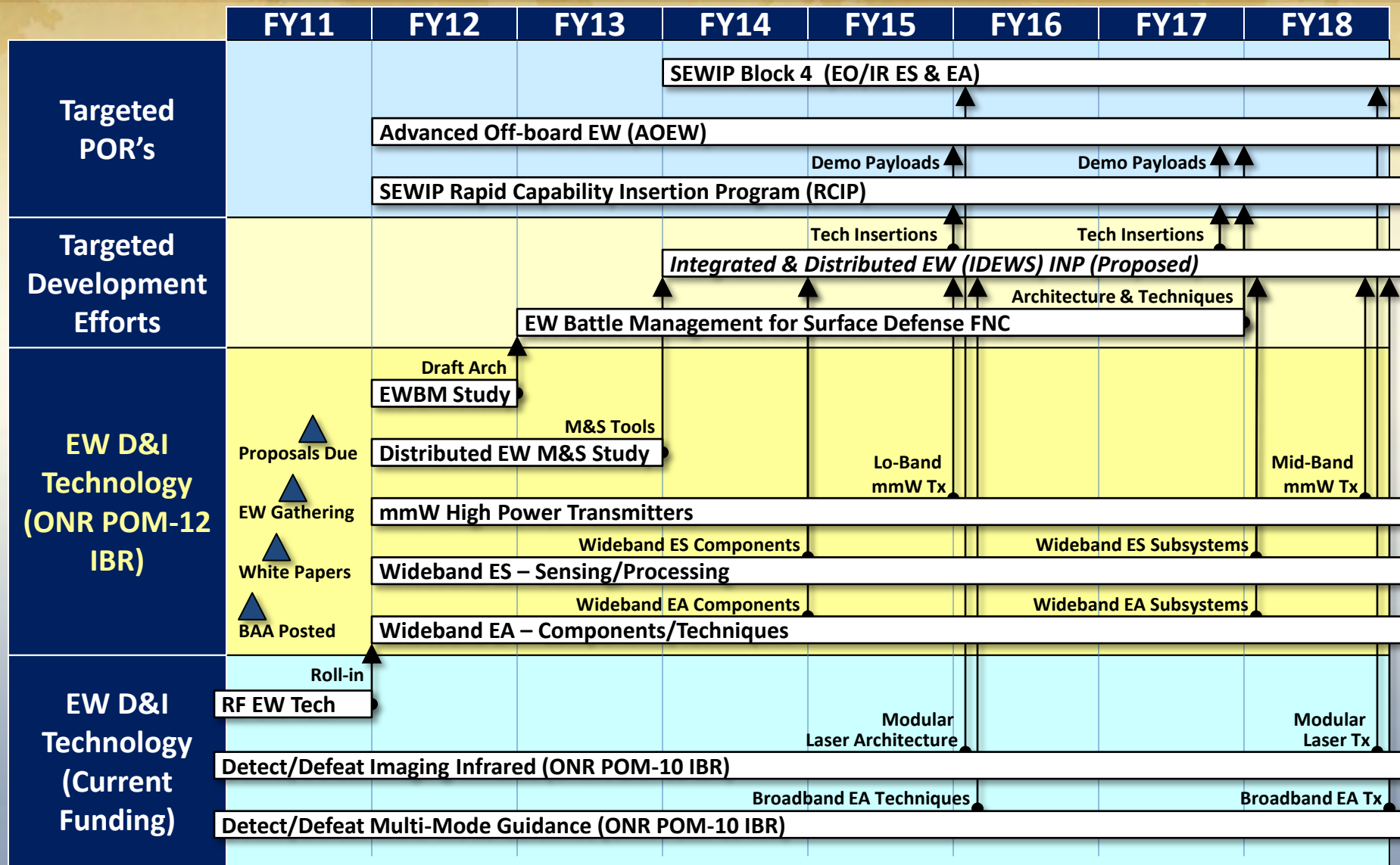
Surface EW Product Transition Alignment



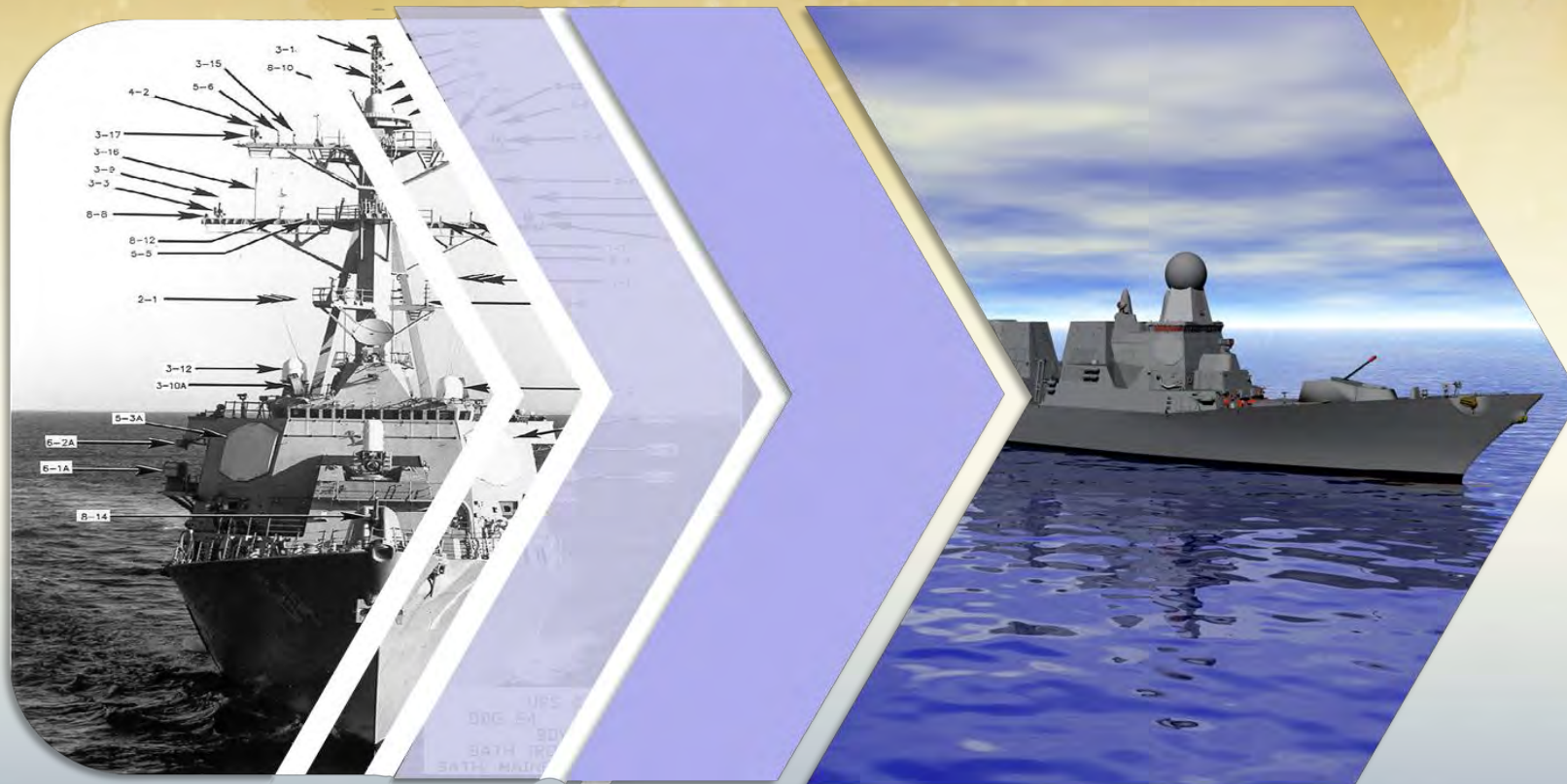


D&I Plan for Surface EW

Applied Research for Enhanced EW Capabilities

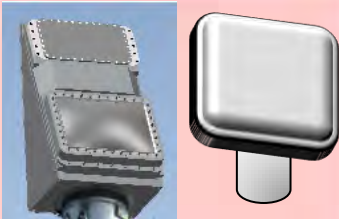


Code 31: C4ISR Integrated Topside (InTop) INP



Point of Contact:
Betsy DeLong, Code 31
betsy.delong@navy.mil

InTop Prototypes



Consolidated SatCom for Submarines and Ships

Primary functions:

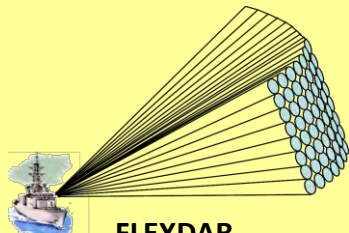
- All (ex. UHF) SatCom
- 4 to 8+ Simul. Links

Secondary Functions:

- IO / EW Support
- LOS Comm Augment

Sub SATCOM - TO 0002

7-22 GHz Rx main focus
TRL-6 goal FY-13
Transition to AdvHDR/
for all Submarines



FLEXDAR

Multi-Static Flexible Digital Array Radar

Primary functions:

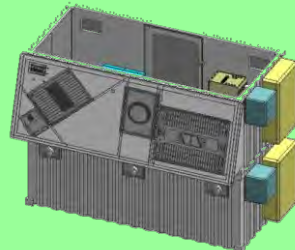
- S Band Radar
- Volume Search
- Precision Track
- Missile Data Link
- Air Traffic Control
- In-Band ES/EA/EP

Secondary Functions:

- Weather Surveillance
- Navigation
- IO/EW Support

FLEXDAR – TO 000X

TRL-6 goal FY-15/16



Multibeam EW/IO/Comm

Primary functions:

- X thru Ka band EA
- EA Support (Rx)
- Hawklink, CDL-S
- Network Links (HNW)
- SEI/ES Support
- IO Support

Secondary Functions:

- SATCOM Augment

EW/IO/Comms – TO 0003

TRL-6 goal FY-12
Transition to
SEWIP Block 3



MFEW ADM (complete)

Primary functions:

- HPOI Acq/PDF ESM
- ASMD
- Sit. Awareness
- SEI Support

Secondary Functions:

- EA Support
- IO Support

MFEW FNC TRL-6 FY-09

Transitioned to
SEWIP Block 2

Transitioned to
SEWIP Block 2



Consolidated Low Band IO/Comm/EW

Primary functions:

- VHF to C Band Comm
- IO / SSEE Support
- EW Support

Secondary Functions:

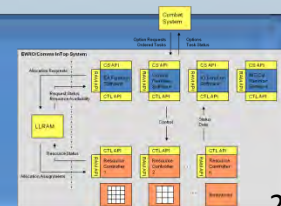
- AIS
- JTIDS
- Other Omni Comm

LB IO/Comms – TO 000X

TRL-6 goal FY-14/16

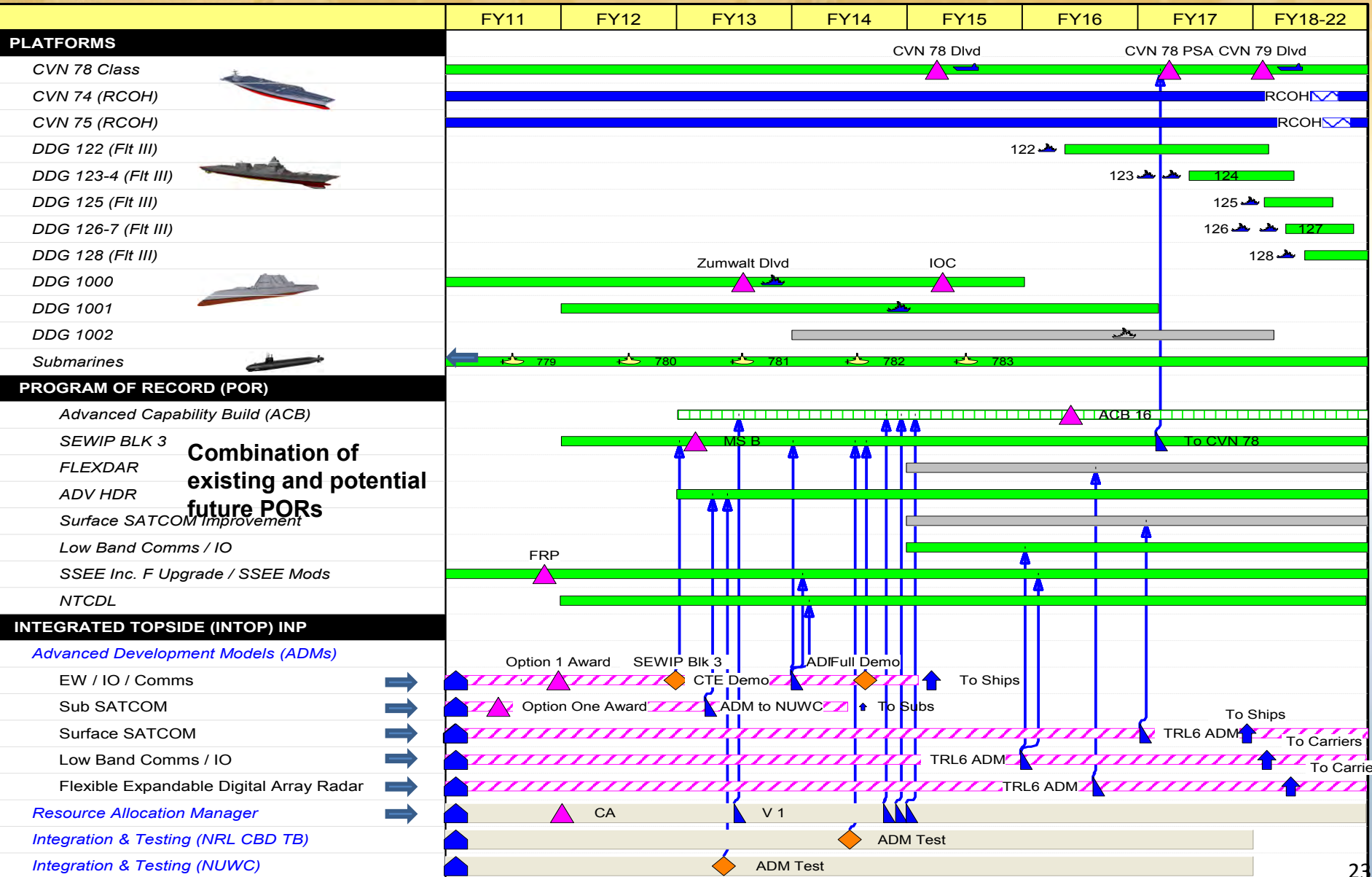
Resource Allocation Manager (RAM) TO 0004

Handles resource allocation, prioritization, BIT status (re-allocates in case of failures), calibration & frequency de-confliction to optimize platform and/or battlegroup RF performance



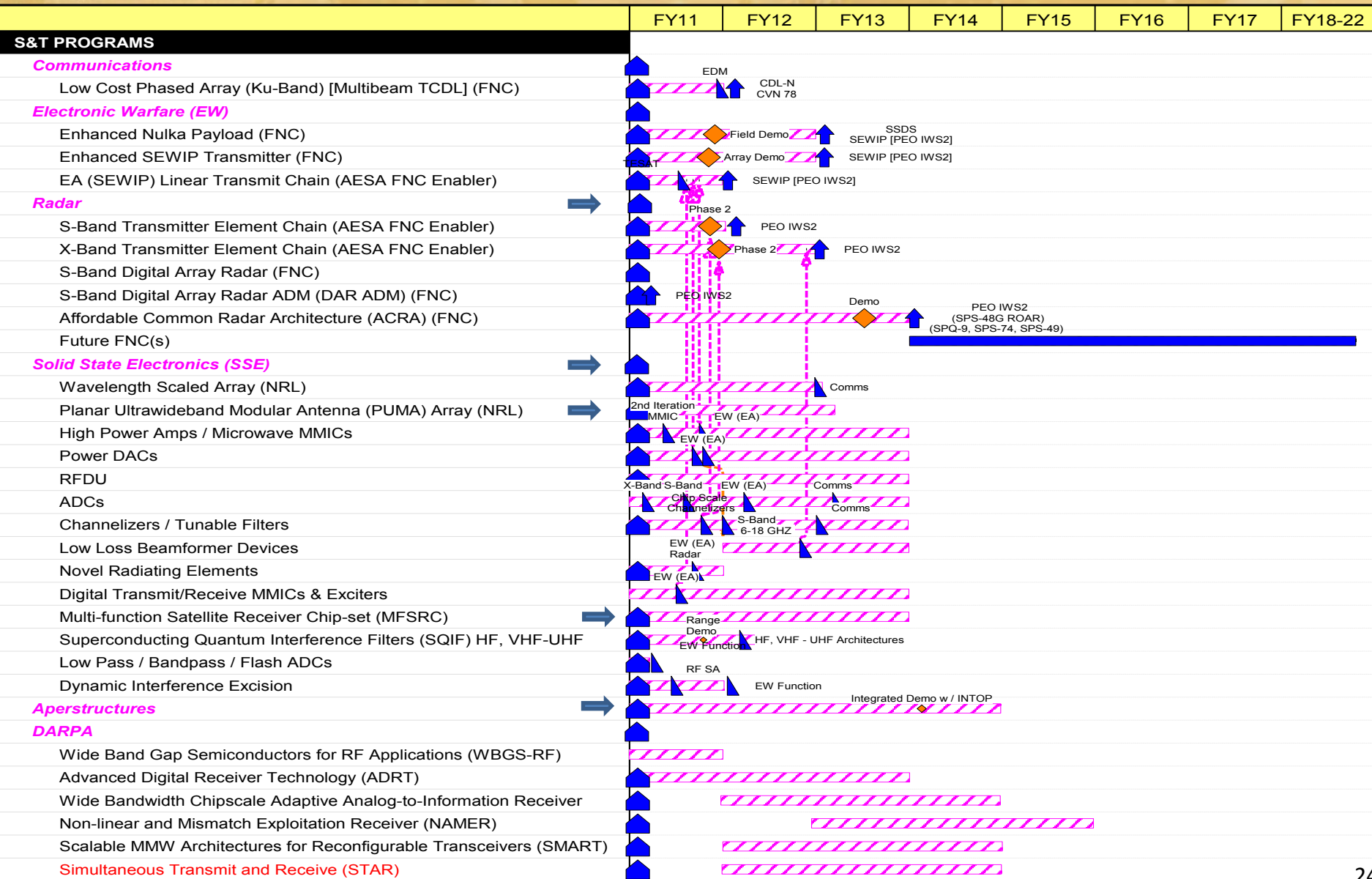
InTop S&T Roadmap

(Work in Progress)





InTop S&T Roadmap (Continually Updated)



Code 32: Ocean Battlespace Sensing ONR Asymmetric Warfare (ASW) S&T



ONR Points of Contact:

- **FNC Programs**

- LASW: Dr. Dave Johnson
 - dave.h.johnson@navy.mil

- **INP Programs**

- PLUS: Dr. Terri Paluszkiewicz
 - terri.paluszkiewicz@navy.mil
- LDUUV: Mr. Dan Deitz
 - daniel.deitz@navy.mil

- **D&I Programs**

- ASW: CDR Dan Eleuterio
 - daniel.eleuterio@navy.mil

ASW FNC Programs in Execution:

- **High Fidelity Sonar Operator Training**
 - SQQ-89 A(V)15 SAST program
- **High Fidelity ASW Commander Training**
 - CV/TSC program
- **Vector Sensor Towed Array**
 - TB-29 reliability/replacement program
- **Vector Sensor Towed Array Signal Processing**
 - BQQ-10 APB process
- **Active Sonar Automation Project**
 - SQQ-89 A(V)15 ACB process
- **Point of Contact**
 - Dr. David Johnson, Code 32ASW
 - dave.h.johnson@navy.mil

PEO IWS 5.0 (Undersea Systems) S&T Program Summary

S&T Initiatives			
	Near	Mid	Far
Theater-Wide Fusion/ Situational Awareness			
DCL/Signal Processing & Automation	<ul style="list-style-type: none"> • Active Sonar Automation Technology Project (EC) • On-going 6.1 and 6.2 Research (D and I) • Advanced Processing Applications for Vector Sensor Arrays • Ultra-Sensitive Energy Detection: Algorithms and Implementation on Advanced Multicore Processors • Multi-Scale Decision Modeling in Complex Systems 	<ul style="list-style-type: none"> • Next Generation Contact Management • Active Sonar Automation Technology Project (EC) • On-going 6.1 and 6.2 Research (D and I) • Distributed Optimal Control Approach to Managing Risk and Uncertainty in Multi-Agent Systems • Underwater Tracking 	<ul style="list-style-type: none"> • Passive & Active Sonar Automation Projects • DNS for ASW Surveillance • Next Generation Contact Management • On-going 6.1 and 6.2 Research (D and I)



PEO IWS 5.0 (Undersea Systems) S&T Program Summary

S&T Initiatives			
	Near	Mid	Far
Sensors	<ul style="list-style-type: none"> • Vector Sensor Towed Array Technology (EC) • Seaweb marine Sensor Networks • Glider Acoustic Data Collection System • Development of Vector Sensors for Towed Array Applications • ARAP • Compact Low Frequency Sound Sources • Endeavors (COSINE) • Non-Line-Of-Sight (NLOS) Underwater Optical Imaging • Non-Traditional Optical Sensor 	<ul style="list-style-type: none"> • Vector Sensor Towed Array Technology (EC) • Distributed Netted Systems • Fiber Optics Shape Sensing (FOSS) • Intrinsic Gradiometer, Spin Precession Laser Remote and Magnito-Electric Magnetometer Projects • Electroacoustic and Magnitostriptive Transducer Modeling, Development, Technologies and Applications • Domain Engineering: Galfenol and PMN-xPT • Opto-Acoustics 	<ul style="list-style-type: none"> • Distributed Netted Systems Project • Augmented Reliable Acoustic Path • Fabrication of New Biopolymer-Based Piezoelectric Films and Fibers • Biologically Inspired Autonomous Sensor Design with Smart Materials • Shear Transducer • Coherent Optical Sensing in Naval

PEO IWS 5.0 (Undersea Systems) S&T Program Summary

S&T Initiatives			
	Near	Mid	Far
Command Control & Communication & Displays	<ul style="list-style-type: none"> • Video Sensor Triage: Information Delivery Prospects • Seaweb 	<ul style="list-style-type: none"> • Adaptive, RobusT, and Sustainable Networking for Undersea Distributed Sensor Systems • Seaweb 	<ul style="list-style-type: none"> • ASW Mission Modules for LDUUV • Opto-Acoustic Comms • Long-Range Comms
Deployment Power Packaging, Flops and Data Recording	<ul style="list-style-type: none"> • Structural Magnetostrictive Alloys • Thermal Control of High Power Transducers and Arrays • CMX Hybrid Transducer/Amplifier 	<ul style="list-style-type: none"> • Small Magnetic Generator for Vibration Energy Harvesting • Optically Transparent Self-Cleaning Coatings 	<ul style="list-style-type: none"> • DNS for ASW Surveillance
Training	<ul style="list-style-type: none"> • HiFAST Command & HiFAST Operator Training 	<ul style="list-style-type: none"> • HiFAST Command & HiFAST Operator Training 	
Extended Range ASW Engagement	<ul style="list-style-type: none"> • Sensor and Communications Research for Undersea Warfare 	<ul style="list-style-type: none"> • Non-linear Modeling of Acoustic Propagation in the Ocean 	

Save the Date

- **Tuesday, December 13, 2011**
- **Distinguished Lecture Series featuring Rear Admiral Thomas J. Eccles**
- **“International Investigation into the Sinking of the Cheonan”**
- **ONR MIC (14th Floor)**
875 N. Randolph Road
Arlington, VA 22203
- **Pentagon/NCR Badge**

The OFFICE OF NAVAL RESEARCH presents:


Distinguished Lecture Series

featuring
NAVSEA Chief Engineer and
Deputy Commander for Naval Systems Engineering

Rear Admiral Thomas J. Eccles


“International Investigation into the Sinking of the Cheonan”

Tuesday, December 13, 2011
2:00 - 3:00pm, reception to follow,
Office of Naval Research, 14th Floor MIC



To attend please register for free:
<https://secure.onr.navy.mil/events>

For more info contact:
Dr. Chris Fall 703-696-4302
chris.fall@navy.mil



Thoughts

- Transition IS a contact sport
- We get graded everyday
- ONR is only as good as it's last engagement.
 - We are a people-centric organization for better or for worse
- How are we doing?

Contact Information

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Director of Innovation, ONR

larry.schuette@navy.mil

(703) 696-7118

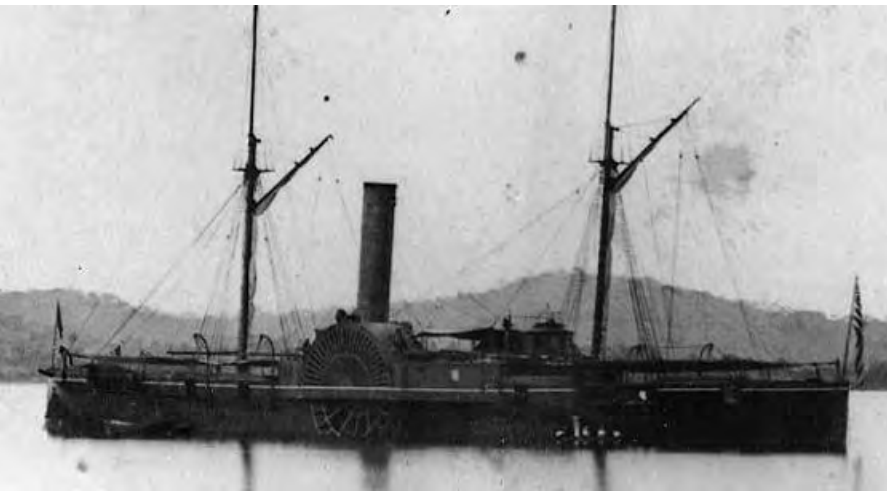


2011 Integrated Warfare Systems Conference

**Rear Admiral Jim Shannon
December 6, 2011**

Navy Post Bellum

- In 1865, the Navy owned 454 vessels.
- In 1866, the Navy owned 320 vessels.
 - Only 246 active. The others were being prepared for disposal.



- In 1885, the Navy owned 39 vessels.
- The number of ships did not significantly increase until the 1890's.

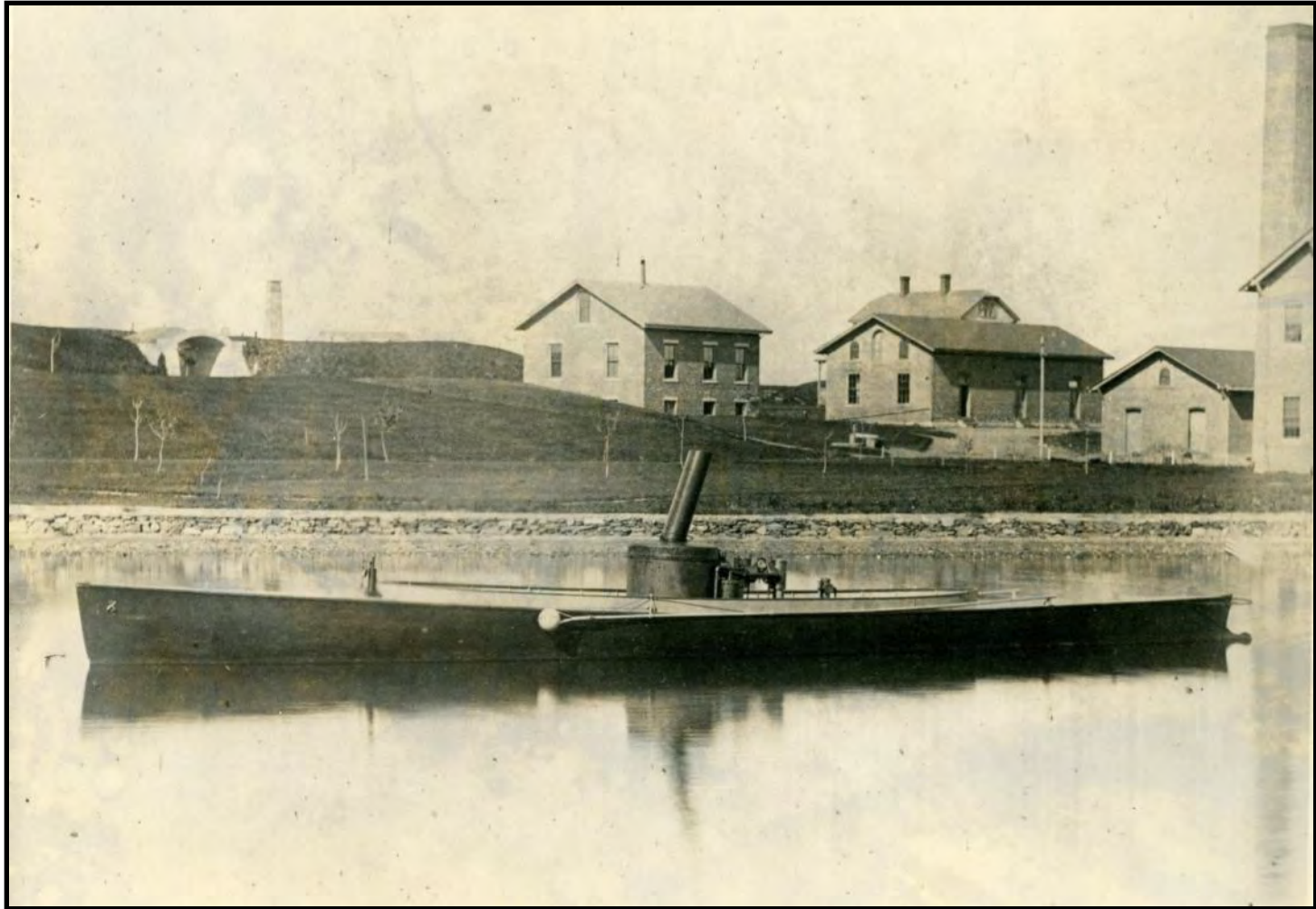
The only war that hasn't involved a major drawdown was the Korean War.

Naval Technocrats circa 1865



The bureaucratic structure of the Navy incentivized those with more traditional skills to stay in the Navy and those with engineering skills to leave.

Civil War Technology: LIGHTNING (c. 1869)



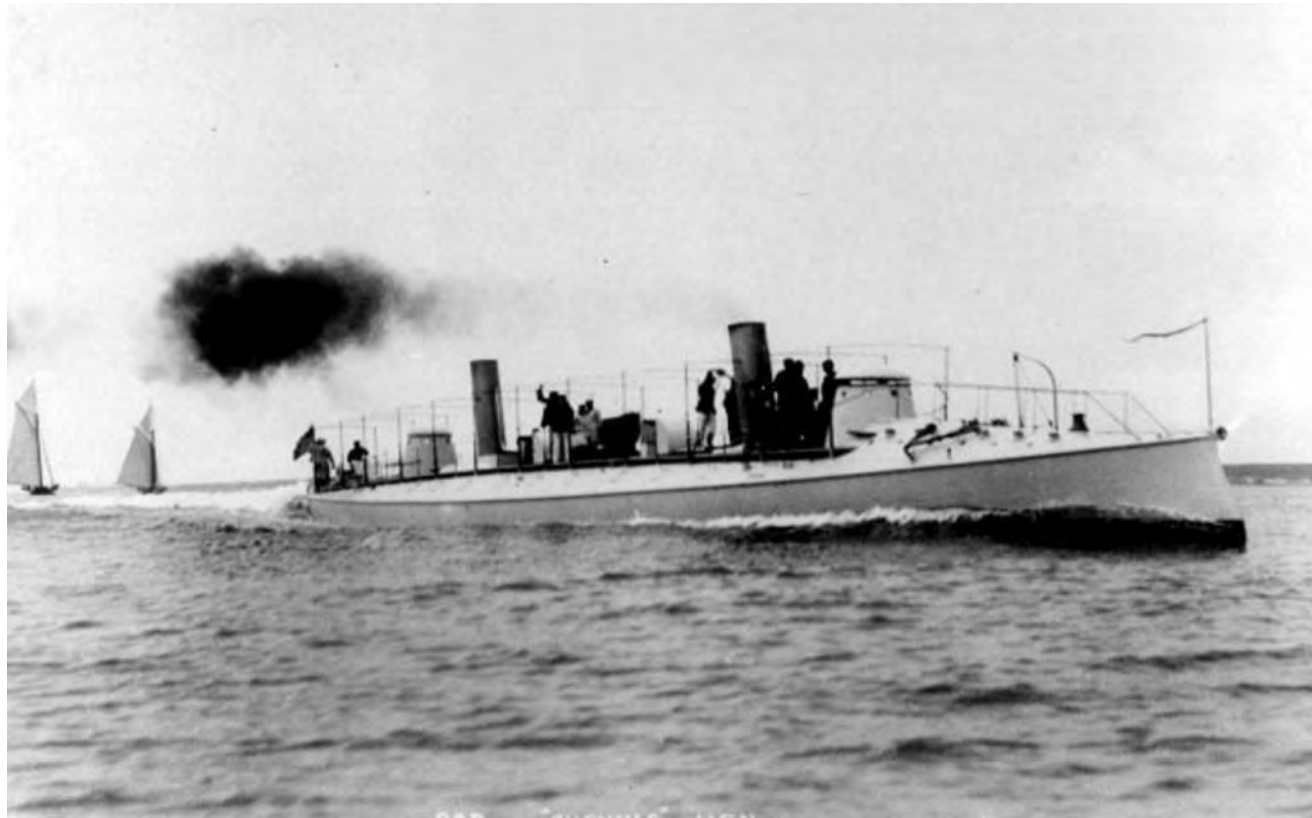
No further US Navy torpedo boat development until 1886.

Admiral David Porter



A return to the old customs

The Herreshoff Torpedo Boats



Innovators of the time

A Brother's Agreement:

- Borrow no money
- Best workers & material
- Build only to our designs
- Sell our designs to no one
- Products advertise themselves
- Contract only with those willing to pay the price

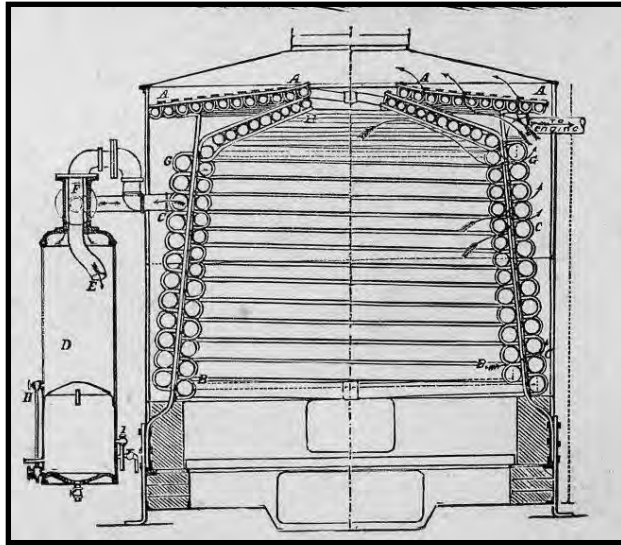


“SBIR” in a different time...

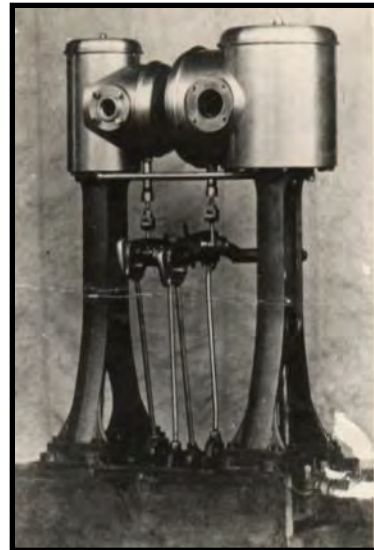
Herreshoff Manufacturing Co. 1868- 1887



The Technology



Coil Boiler



Compound Engine

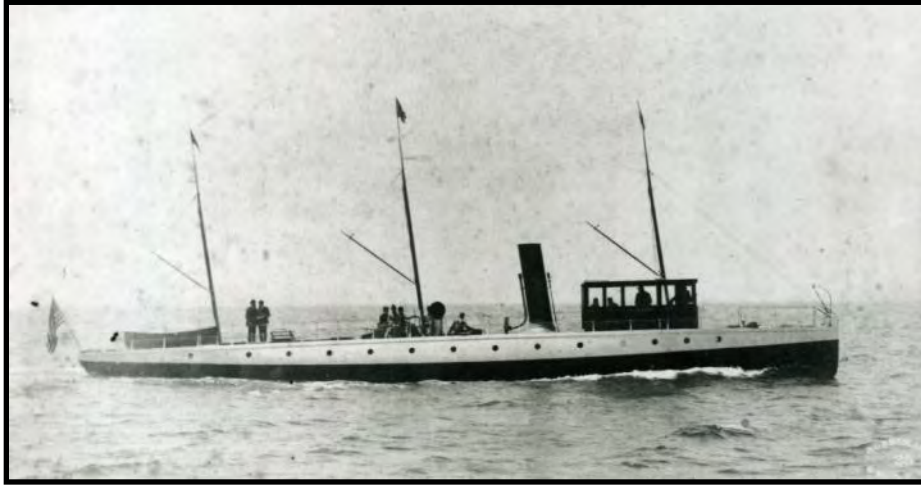
Boiler	Boilers with										Single Coils											
	Pressure	Capacity	Length of Coils	Thickness of Shell	Weight of Shell	Weight of Coils	Weight of Water	Weight of Steam	Weight of Fuel	Weight of Ash	Weight of Slag	Weight of Scale	Weight of Rust	Weight of Corrosion	Weight of Loss	Weight of Gain	Weight of Total	Weight of Net	Weight of Gross	Weight of Total	Weight of Net	Weight of Gross
A	20	22	16	18	6 x 9	25 x 9	3	6	91	2	10	10	10	10	10	10	10	10	10	10	10	10
B	23	24	19	18	6 x 9	25 x 9	3	6	91	2	10	10	10	10	10	10	10	10	10	10	10	10
C	26	27	22	18	7 x 10	25 x 9	3	6	91	2	10	10	10	10	10	10	10	10	10	10	10	10
D	30	30	25	18	7 x 10	25 x 9	3	6	91	2	10	10	10	10	10	10	10	10	10	10	10	10
E	34	33	29	2	8 x 11	11 x 12	3	5	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
F	38	36	32	14	8 x 11	11 x 12	3	5	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
G	42	39	36	12	9 x 12	12 x 12	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
H	46	43	39	13	9 x 12	12 x 12	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
I	51	47	45	2	10 x 14	14 x 14	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
J	56	52	49	2	10 x 14	14 x 14	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
K	61	57	54	2	11 x 16	16 x 16	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
L	67	64	61	2	11 x 16	16 x 16	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
M	73	69	66	2	12 x 17	17 x 17	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
N	79	75	72	2	12 x 17	17 x 17	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
O	85	81	78	2	14 x 20	20 x 20	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
P	91	87	84	2	14 x 20	20 x 20	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10
Q	108	110	93	2	16 x 22	22 x 22	3	6	50 x 7-9	3	10	10	10	10	10	10	10	10	10	10	10	10

Engineered Design Series



Model Testing

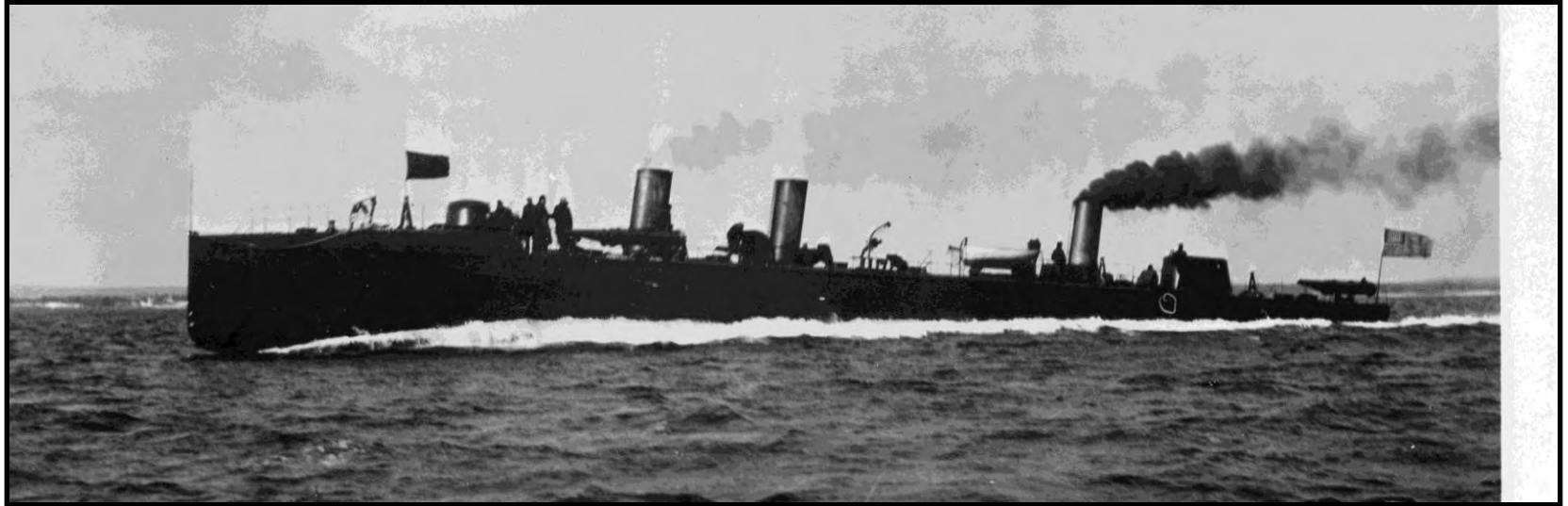
STILETTO 1885- 1887



- Attracted national publicity as a yacht
- Congress authorized \$25,000 for purchase in 1887 for “experimental purposes”
- First bow torpedo tube
- Newport Torpedo Station test vessel until 1911

Torpedo boat type - fitted as yacht

PORTER & DUPONT TB 6&7 *1895*



- **Congress authorizes 3 boats to be built to Navy specs**
- **HMCo wins 2 to be built per a “Confidential” letter**

Herreshoff Torpedo Boats

A Fitting Tribute



“Herreshoff is as much a master in boat building in general as Edison is in the field of electricity...it is only grief that Herreshoff does not build all our boats or that we do not copy his models and fittings.”

- Lieut. A. P. Niblack, USN; SNAME Transactions 1899

Mission

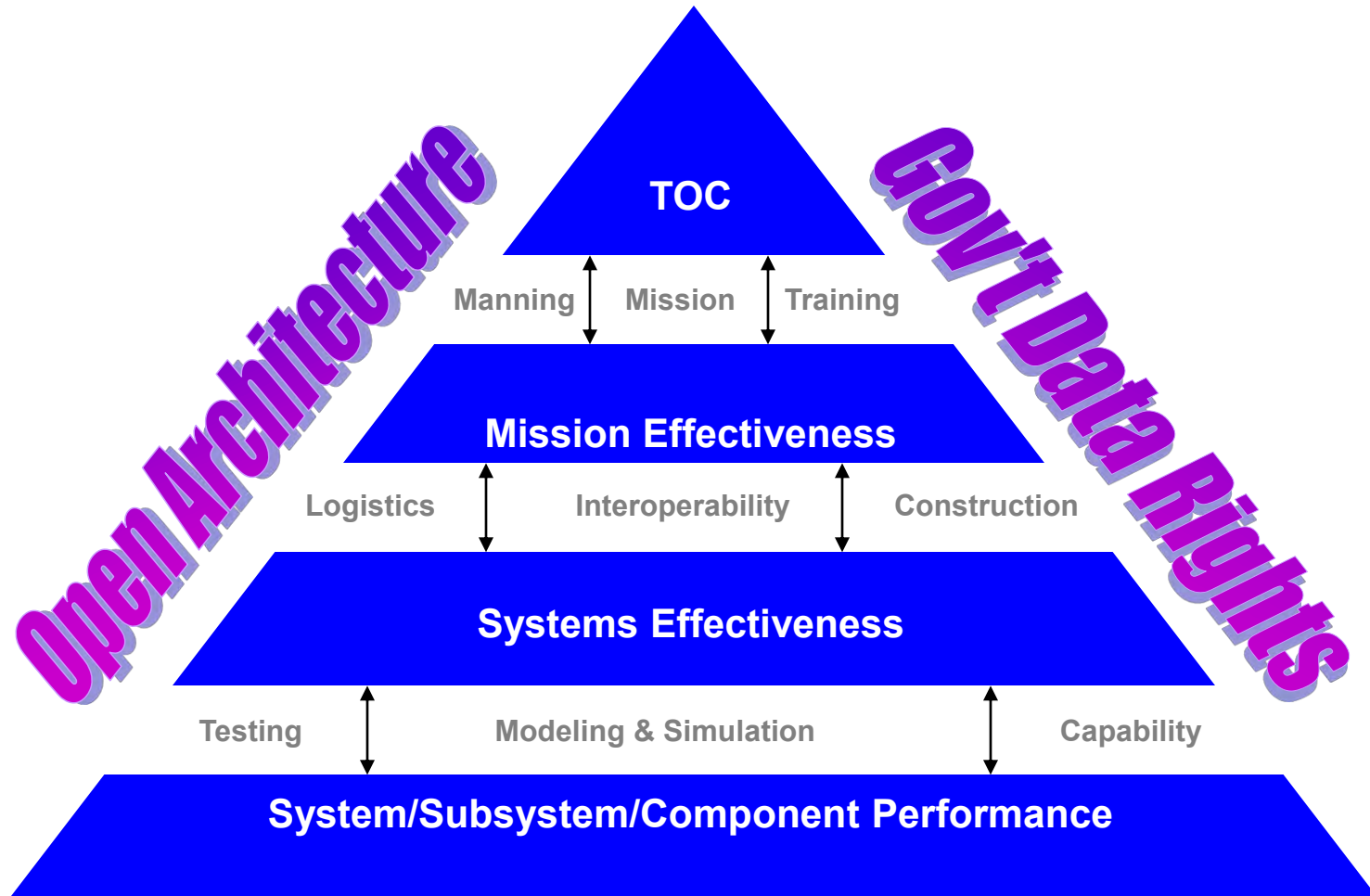
Assets

Threat

Environment

Speed

Mission



Modernization

Building Trust and Transparency is Critical

Assets



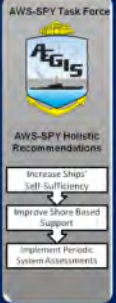
*Intellectual Capital of the Navy...
Yesterday... and Today...*

Threat

- **AWS-SPY Readiness Task Force: 48 actionable recommendations**
 - Improve training, restore ISEA support, SPY MER, sparing review
- **Aegis BMD Readiness Task Force: 41 actionable recommendations**
 - Run sparing model for BMD ships, several areas targeted for improvement
- **Navigation Readiness Task Force: 26 actionable recommendations**
 - Mapped to Navigation Vision 2025 and Tasking Letter Wholeness

AWS-SPY Readiness Task Force Status


- **Results: 48 Actionable Readiness Recommendations**
- **Initial FY10-11 Recommendation Implementation:**
 - Improved Training
 - Outfitted AEGIS Training and Readiness Center (ATRC) with additional equipment and training materials
 - Updated curricula to include COTS lessons learned
 - Initiated Self Assessment Groom Training (SAGT) to non-BMD ships
 - Restored ISEA support and started Periodic Assessments
 - Implemented AEGIS Light Off (ALO) and ILS Support at CNO Availabilities
 - Increased ISEA presence in RMCs
 - Improved Operational Readiness Test System Technical Assistance Remote Support (ORTSTARS)
 - Distributed long-line schematics
 - Completed a SPY Material Effectiveness Review (MER)
 - Reviewing Sparing requirements for DDGs
 - \$133M received via Aegis Wholeness plus \$20M FY11 EOY funds
- **Barriers:** Sustainment of assessments & MILCON.
- **Next Steps:** Monitor recommendation execution and measure performance improvements



The diagram shows a flow from 'AWS-SPY Task Force' to 'AWS-SPY Holistic Recommendations', which leads to 'Increase Ships' Self-Sufficiency', then 'Improve Shore Based Support', and finally 'Implement Periodic System Assessments'.

AEGIS BMD Readiness Task Force Status


- **Results: 41 Actionable Readiness Recommendations**
- Received \$3M End of Year funds to:
 - Run sparing model for BMD ships
 - Improve:
 - Reliability & maintainability of Aegis Cooling Skids
 - Sparing for 400Hz static frequency converters
 - Test equipment allowances
 - Reliability of EHF TDMA IP
 - Ship calibration using satellites (SCUS)
- **Barriers:** Funding across FYDP
- **Next Steps:** Monitor recommendation execution and measure performance improvements



The diagram shows a central 'AEGIS BMD Task Force' box with a 'AEGIS BMD Holistic Assessments' box below it, which is surrounded by several smaller boxes representing different assessment areas.

Navigation Readiness Task Force Status

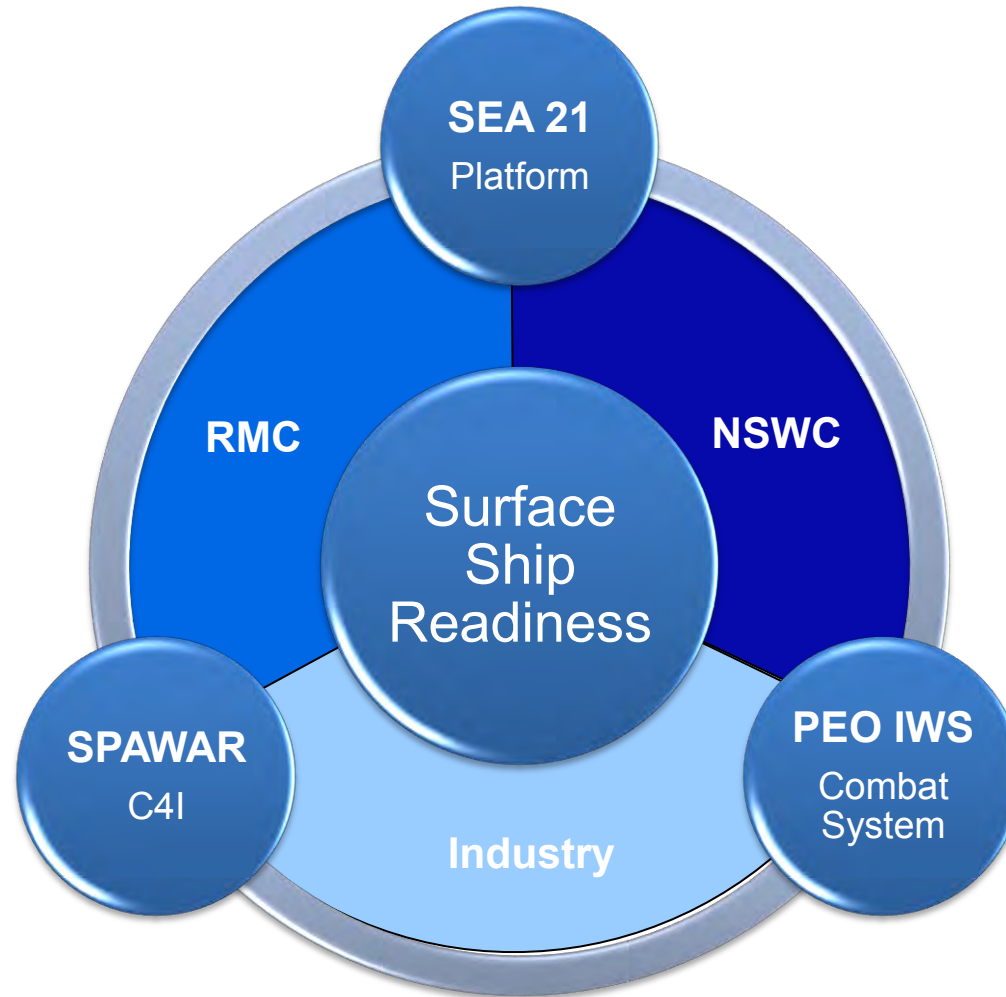
- **Significant Accomplishments to Date:**
 - Developed 26 Actionable Recommendations mapped to Navigation Vision 2025 and Tasking Letter Wholeness
 - Task Force-Wide Actionable Recommendation reviews
 - Worked to Program Managers to incorporate Task Force cost estimates into POM14 submissions
- **Next Steps:**
 - Complete Navigation Task Force Final Report
 - Brief Leadership
 - Create detailed plan of execution and track progress



The diagram shows a 'Navigation Task Force' box at the top, a 'Navigation 2025 Vision' box at the bottom, and a central box with several smaller boxes representing different vision areas.

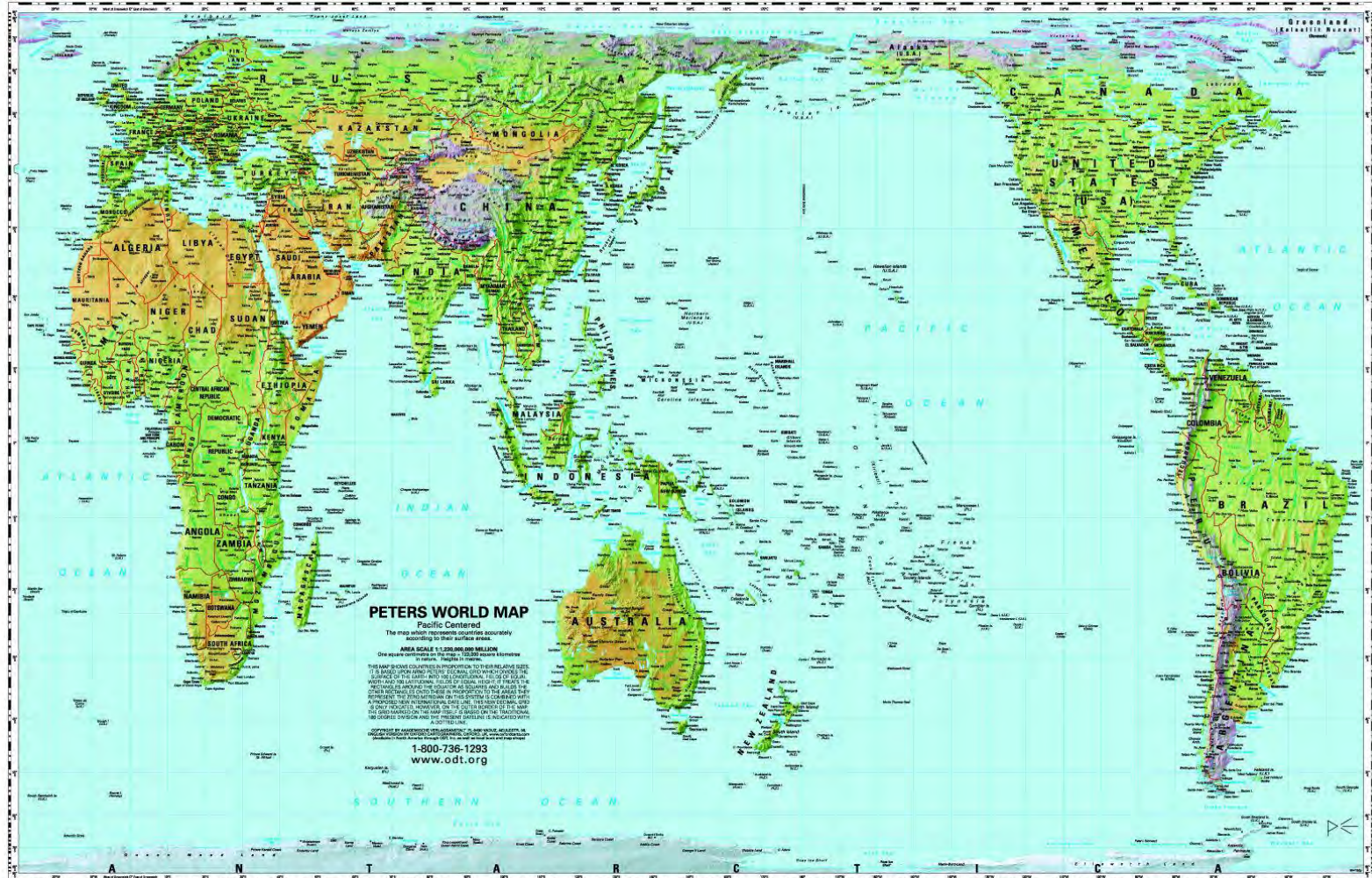
SEA-21 and PEO IWS collaborated to coordinate the myriad of priorities to sustain the Navy's surface ship capability

Environment



Lifecycle Management Works Across Multiple Organizations

Speed



The Pacific Ocean covers 46 % of the Earth's water surface

Key Take Aways

- Industry and government all have important roles to play...now and in the future.
- We have to improve the government-contractor relationship by making each party more accountable to the other.
- This is a team effort -- our doors are open



And we count on our Industry Partners to help us with the cost challenge

Total In-House Capacity					Outsourced Workload			
Core Capability = Gov't Role					Industry Role			
Work Government Must Do	Technical Pipeline	Work Industry Can't or Won't Do	Best Value	Economic Viability	Design & Build	Unique Skills/ Capabilities	Best Value	Economic Viability
<ul style="list-style-type: none"> • Technical Authority • Smart Buyer • Independent Assessment • Avoid technical surprise (innovation) • Directed by higher authority • Title 10 	<ul style="list-style-type: none"> • Hands-on work • Sustain Knowledge Areas 	<ul style="list-style-type: none"> • Last source • High risk • Not profitable • WFPP 	<ul style="list-style-type: none"> • Data Rights • Design Disclosure • No fees • Life Cycle Maint. • Cost • Schedule • Performance 	<ul style="list-style-type: none"> • Generate sufficient OH • Sustain affordable rates • All other technical work 	<ul style="list-style-type: none"> • Produce end products and services 	<ul style="list-style-type: none"> • Only source • No compelling reason for government source • Not available in govt & critical to successful task completion 	<ul style="list-style-type: none"> • Efficient Production • Commercial gains • Cost • Schedule • Performance 	<ul style="list-style-type: none"> • Work is needed to sustain critical assets that are fragile in the private sector
Total Force Requirement								

Finding the right balance to optimize Navy Fleet





Definitions

Criteria for In-House Performance	Criteria for Outsourcing
<p>Technical Authority: Is the work specifically required to establish technical standards, tools and processes; and to ensure adherence to those standards? Does the work require an independent evaluation and certification of suitability or effectiveness of warfighting solutions with respect to stated requirements?</p>	<p>Design and Build: Is the work appropriate for industry to perform; i.e., it involves support to the government decision making roles, it exceeds the level needed to right size the in-house technical capability, and meets the following conditions:</p> <ul style="list-style-type: none"> • Is a commercially available function/service • The commercial source has a good track record • The market is sustainable over time (sufficient workload and profit incentive for industry) • The work has a definable outcome or product and is measurable
<p>Smart Buyer: Does the work require delegated or derived authority and the resources to initiate actions or activities? Does this work involve selecting and authorizing a contractor/governmental entity to produce military products or services?</p>	
<p>Independent Assessment: Is the work needed based on the delegated or derived authority plus the ability to judge the absolute or relative worth, quality or value of an activity, product or process relative to national security requirements?</p>	
<p>Avoid Technical Surprise (Innovation): Is the work needed to advance a critical warfighting capability that is needed but does not exist today, and for which no private sector entity is willing to invest? Is the work needed to provide solutions to complex technical problems for which government must have a strong technical understanding and involvement? Does the work needed to anticipate and respond to current and future National needs?</p>	
<p>Technical Pipeline: Will this work provide “hands-on” engineering design and development experience necessary to grow future inherently governmental technical decision makers (smart buyers, honest brokers, technical authority warrant holders)? Will this work help to sustain knowledge areas critical to a needed in-house technical capability?</p>	<p>Unique Skills/Capabilities: Is Industry the only source for this work and is there no compelling reason to establish a government source as an insurance policy in the case of a national crisis? Does industry provide needed skills/capabilities that are critical to the successful completion of this task and are not available in government?</p>
<p>Last Source: Does the work require access to unique or national facilities that are not available in Industry (due to the associated facility maintenance and modernization costs)? Is industry not able to perform is work (due to issues of propriety, security, or special expertise only available in government)?</p>	
<p>High Risk: Is there a high risk of contractor default? Is there high risk to warfighting capability should the contractor default? Is industry unwilling to accept the work because they are unwilling to accept potential liabilities? Does the work ensure interoperability of warfare systems and integrated warfighting capability?</p>	
<p>Not profitable: Is the work not able to be performed by a private sector source due to profitability issues by the private sector</p>	
<p>Work For Private Party: Is the work within your mission area and being requested by a contractor because no similar capability exists in the private sector; and can be defined by a one-time product or service with a specific deliverable?</p>	
<p>Best Value: Can results be achieved soonest by employing the Government source while maintaining the least cost and delivering the greatest overall value?</p>	<p>Best Value: Is this work available in the private sector and is Industry the best value in terms of cost, schedule and performance?</p>
<p>Economic Viability: Will performing this work in-house help to sustain a needed, but fragile National asset, technical capability and/or Warfare Center Division.</p>	<p>Economic Viability: Is this work needed to sustain critical assets that fragile in the private sector.</p>



2011 Integrated Warfare Systems Conference

Above Water Sensors (IWS 2.0) *CAPT Doug Small*

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PEO IWS 2.0 Above Water Sensors Directorate

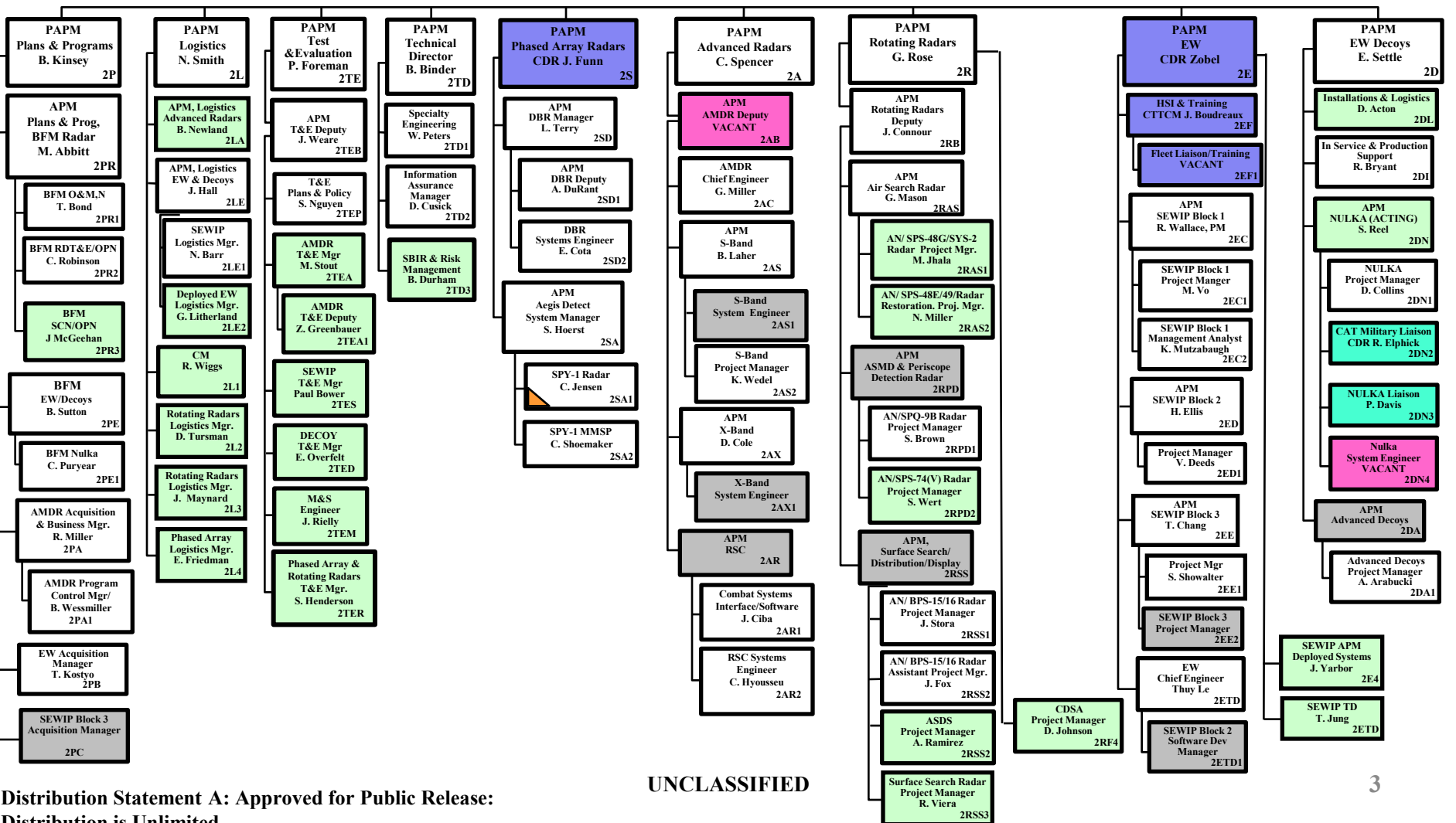




Above Water Sensors (IWS 2.0)



- Military
- Requirements
- Field Activity
- Vacancy
- BMD Reimbursable
- International Liaison



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Above Water Sensors (IWS 2.0)

FY12 New Start – SEWIP Block 3



- Provide upgraded Electronic Attack capability to the Fleet
 - Technique generation capable of addressing advanced threats
- 1 for 1 replacement of SLQ 32 (V) 3/4
 - CVN
 - DDG/CG
 - LHA/LHD
- Schedule
 - Pre Milestone B, ACAT II
 - Tech Dev FY10-12 (ONR InTop)
 - EMD FY13-16
 - Production/fielding FY17



Above Water Sensors (IWS 2.0)



FY12 New Start – Advanced Offboard EW (AOEW)

Objective:

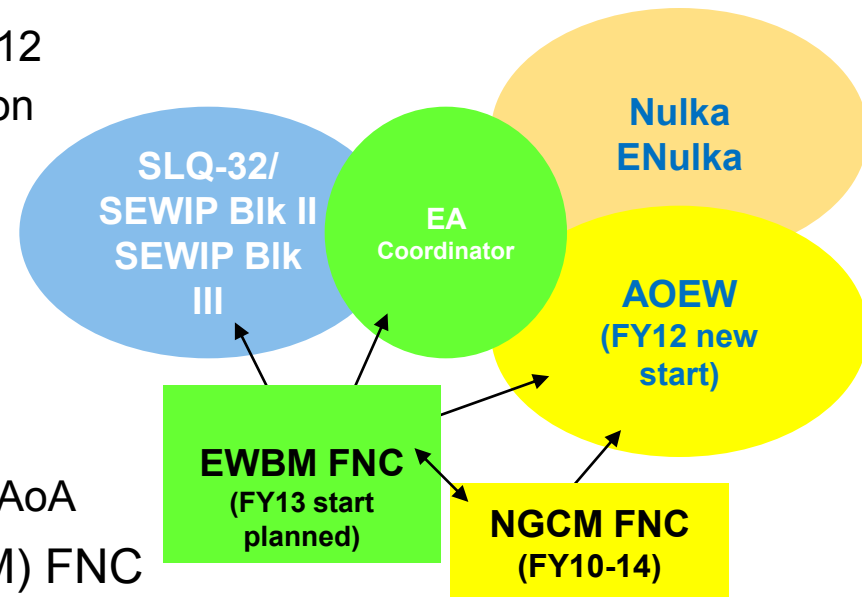
- Develop, procure and deploy multiple ship-launched, long duration platforms equipped with active or passive EW payloads for use in coordination with onboard EW systems to enhance battle group protection against current and future anti-ship missile (ASM) threats

Status:

- New Start Program of Record in FY12
 - Analysis of Alternatives (AoA) planned for FY12
 - Closely tied to SEWIP for onboard coordination

Supporting Efforts:

- RFI for Ship-launched Persistent Countermeasures for EW
 - RFI closed May 2011
 - Generated interest in the AOEW program
 - Focused on platform technologies to support AoA
- Next Generation Countermeasures (NGCM) FNC
 - FNC in progress – will transition to AOEW
 - Demo planned for FY14





Above Water Sensors (IWS 2.0)



Active Investment Strategies & SBIR Technologies

- IWS 2.0 actively participates in programs where risk reduction efforts and investments can be made for future radar technology and radar system development
 - ManTech
 - The ManTech role in the DoD acquisition process is to anticipate and close gaps in defense manufacturing capabilities and provide a link between technology invention and industrial applications—from system development through sustainment
 - Title III
 - A key objective of the Title III Program is to accelerate the transition of technologies from R&D to affordable production and insertion into defense systems
 - SBIR/STTR
 - Established by Congress with a statutory purpose to strengthen the role of innovative small business concerns in Federally-funded research and development



Above Water Sensors (IWS 2.0)

Title III



- Title III program has been identified as a linchpin in the AMDR development program
 - AMDR ADM identified high powered amplifiers (HPA) as a critical technology element for radar development, and requires the Navy to demonstrate acceptable risk at MS B
 - DUSD (AS&C) Title III Program and IWS 2.0 have partnered to establish the Gallium Nitride (GaN) on Silicon Carbide (SiC) Radar/EW Monolithic Microwave Integrated Circuit (MMIC) Production Capability Project (“GaN Producibility Program”)
 - Title III GaN Producibility contracts totaling \$39M were awarded to TriQuint and Cree in 4QCY10 to mature and refine the manufacturing processes needed to ensure this need is met
- Title III program is leveraging this work to apply to high powered amplifiers for future wide band Electronic Warfare systems



Above Water Sensors (IWS 2.0)

Priority SBIR/STTR Programs



AMDR	Sundew Technologies, Broomfield, CO	MMIC Coatings and Encapsulation for Non-Hermetic, Low Cost, Transmit/Receive (T/R) Modules	Phase II.5 SBIR (N04-058)
AMDR	Group4 Labs, Fremont CA	Innovative Power Amplifier Gate Thermal Mgmt for Active Radar Systems (GaN on Diamond)	Phase II SBIR (N08-170)
AMDR	GVD Corporation, Cambridge MA	Innovative Manufacturing Processes and Materials for Affordable Transmit/Receive (T/R) Module Production	Phase II SBIR (N093-187)
AMDR	MetaMagnetics, Sharon MA	Low Loss Self-Biased Ferrite Materials for Size and Weight Sensitive Circulator Applications Requiring High Power Handling and High Temperature Stability (Circular Ferrite Improvement)	Phase II SBIR (N093-200)
AMDR	Metal Matrix Cast Composites, LLC, Waltham MA	Manufacturing and Materials for Radar/EW Power System Stability	Phase I/II SBIR (N093-209)
AMDR	Nuvotronics, Radford VA	MMIC EMI Passivation Coating	Phase II SBIR (N93-212)
Legacy Radar Rework/Repair	Resodyn Corporation, Butte MT	Repair and Restore Polymer Thermal Spray Coating and Application System	Phase I/II SBIR (N102-146)
AMDR	Arkansas Power Electronics Int'l (APEI), Fayetteville, AR	High Power Density Supply for Next Generation Radar Applications Utilizing Emerging Wide-Band Semiconductor Devices	Phase I/II SBIR (N102-153)
AN/SPS-74	3 Phoenix, Chantilly, VA	Improved Clutter Management Techniques for High Resolution Radars	Phase II.5 SBIR (N07-213)
AMDR	MetaMagnetics, Sharon MA	Manufacturing and Materials for Radar/EW Power System Stability	Phase II SBIR (N093-209)
AMDR	3 Phoenix, Chantilly, VA	Advanced materials for Shipboard Radome Application	Phase II.5 SBIR (N07-213)
AMDR	Composite Technology Development, Lafayette, CO	Improved Clutter Management Techniques for High Resolution Radars	Phase I/II SBIR (N102-148)
AMDR	Nitronex, Durham, NC	Diamond on GaN Power Amplifier Processes	Phase I/II SBIR (N08-170)
AMDR	MaXentric Technologies LLC, Fort Lee NJ	High Performance Cost Effective Circulator/Isolators	Phase I SBIR (N111-035)
AMDR	TeraSys Technologies LLC Honolulu, HI	High Performance Cost Effective Circulator/Isolators	Phase I SBIR (N111-035)
AMDR	MPT Corp, Brea CA	High power monolithic microwave limiter	Phase I SBIR (N111-052)
AMDR	Nuvotronics, Radford VA	High power monolithic microwave limiter	Phase I SBIR (N111-052)
AMDR	Omega Micro, West Lafayette, IN	High Performance GaN Power Amplifier/ TR Module Packaging	Phase I SBIR (N111-034)
AMDR	Arkansas Power Electronics Int'l (APEI), Fayetteville, AR	High Performance GaN Power Amplifier/ TR Module Packaging	Phase I SBIR (N111-034)
AMDR	SI2 Technologies, North Billerica MA	Wide Bandwidth High Performance Cost Effective Antenna Elements	Phase I SBIR (N111-040)
AMDR	Wang Electro-Opto, Marietta, GA	Wide Bandwidth High Performance Cost Effective Antenna Elements	Phase I SBIR (N111-040)
AMDR	Active Spectrum, Foster City CA	Tunable Bandstop Filters for Suppression of Co-site Interference and Jamming Sources	Phase I STTR(N11A-T016)
AMDR	FreeForm Wave Technologies, Los Angeles CA	Tunable Bandstop Filters for Suppression of Co-site Interference and Jamming Sources	Phase I STTR(N11A-T016)
AMDR	Indiana Microelectronics, LLC West Lafayette IN	Tunable Bandstop Filters for Suppression of Co-site Interference and Jamming Sources	Phase I STTR(N11A-T016)

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Implementation of DOD Better Buying Power Initiatives

- Target Affordability and Control Cost Growth
 - Established Should Cost estimates for AMDR and SEWIP
 - Extending methodology to Sustainment systems
 - Aggressive configuration/change control
- Incentivize Productivity & Innovation in Industry
 - AMDR competition has stimulated \$100M+ in IRAD
 - SEWIP Block 2 Development stimulated IR&D in multiple suppliers which enabled a competitive selection process for EMD
 - Actively partnering small/medium businesses/products with prime contractors
- Promote Real Competition
 - AMDR competition for EMD, production
 - SEWIP Block 2 competed EMD effort, plan to compete production
 - SEWIP Block 3 will leverage competitive development of FNC effort (InTop), compete for EMD, compete production
 - Actively seeking means of inserting competition in ongoing developments
 - Actively working to compete existing production contracts
 - Aggressive on data rights, open architecture (technical and business)



Question & Answer Period

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Industry Panel Members

- **Orlando Carvalho**
- **Karen Conti**
- **Alan McCall**
- **Dick McNamara**
- **John O'Neill**

Stakeholder Panel Agenda

- 1) Achieving and Sustaining a Competitive Playing Field**
- 2) Developing RFPs to Stimulate Innovative Responses**
- 3) Sharing and Protecting Sensitive Information**
- 4) Making Timely Source Selection Decisions**
- 5) Sustaining Our Workforce through Challenging Budget Times**
- 6) Stimulating and Fostering Legal and Ethical Collaboration**
- 7) Soliciting Competition with Incentives for Industry**
- 8) Adapting Acquisition Strategies to Enable Win-Win Outcomes**

*Ms. Allison Stiller
Deputy Assistant Secretary of the Navy
(Ship Programs)*



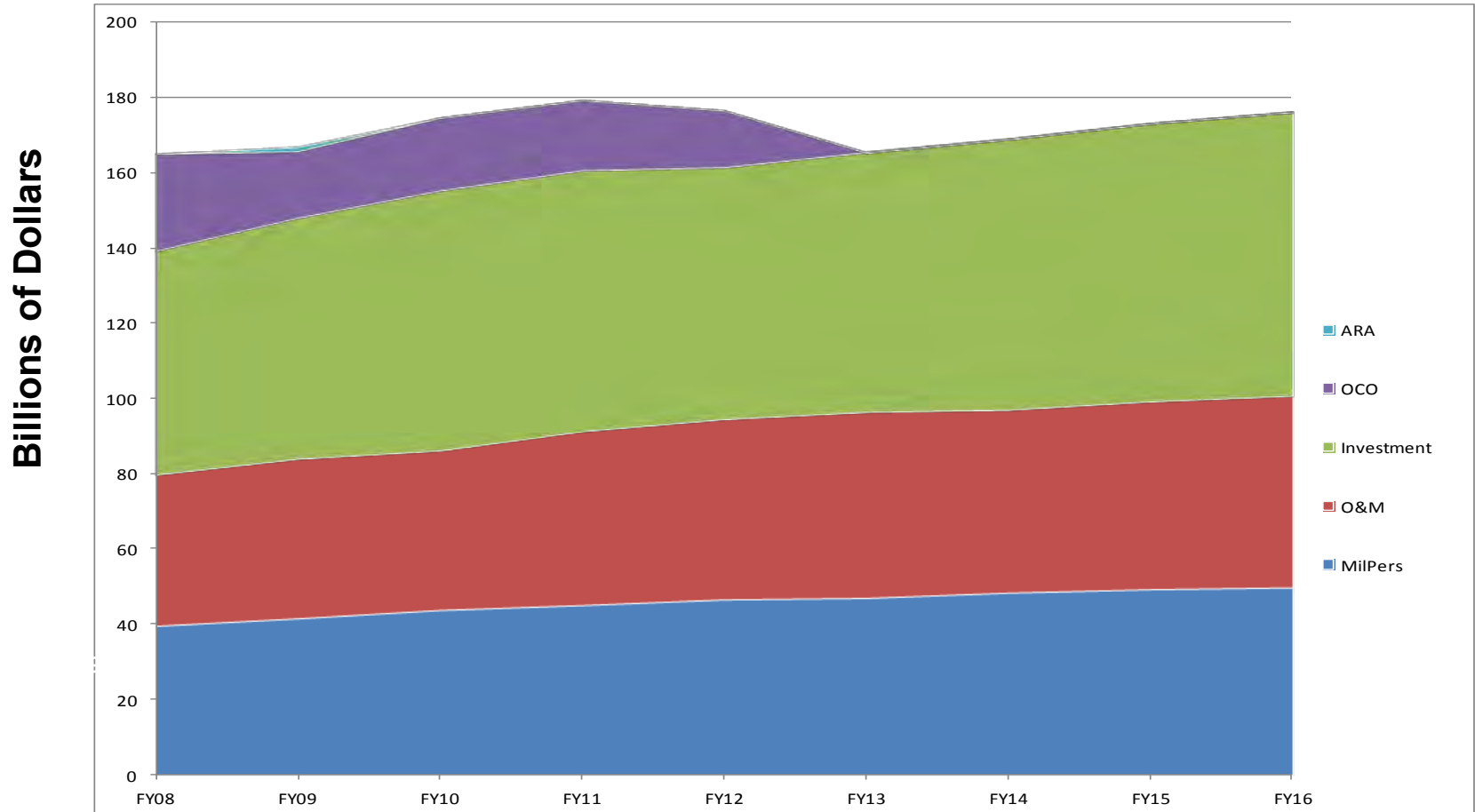
Innovating Acquisition

December 6, 2011

Department of the Navy Topline

FY2012 President's Budget Baseline Funding Request -- February 2011

	<u>FY08</u>	<u>FY09</u>	<u>FY10</u>	<u>FY11</u>	<u>FY12*</u>	<u>FY13</u>	<u>FY14</u>	<u>FY15</u>	<u>FY16</u>
Total Funding (\$B)	\$165.0	\$167.0	\$177.0	\$179.1	\$176.4				
Baseline Funding (\$B)	\$139.3	\$148.1	\$157.8	\$160.6	\$161.4	\$165.4	\$168.9	\$173.0	\$175.9



*FY2012 reflects President's Budget Request

Numbers may not add due to rounding

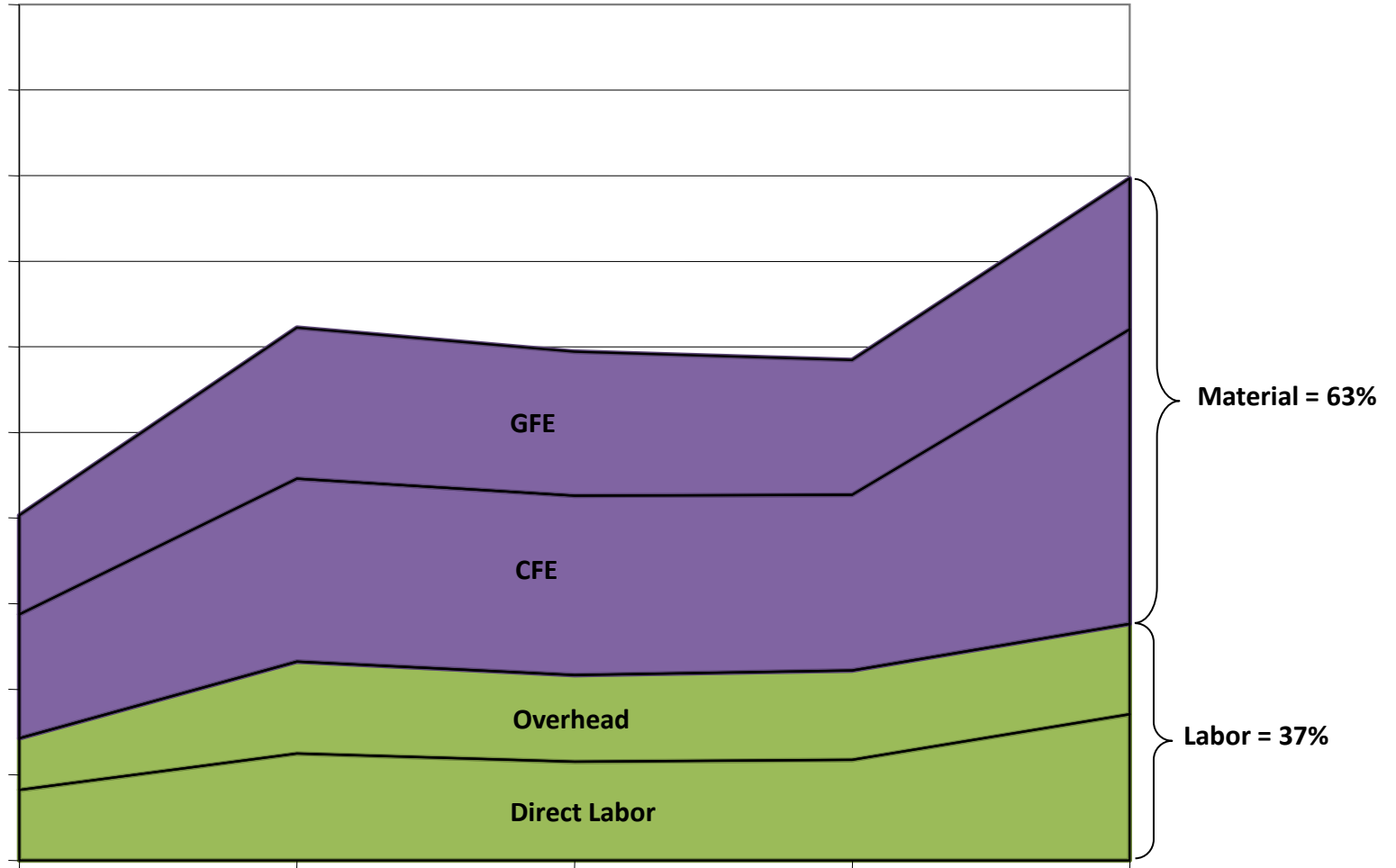
Shipbuilding Procurement

PB 11 to PB 12

	FY11	FY12	FY13	FY14	FY15	FY16	FYDP
CVN 21	0	0	1	0	0	0	1
SSN 774	2	2	2	2	2	2	10
DDG 1000	0	0	0	0	0	0	0
DDG 51	2	1	2	4 2	2	1	7 8
LCS	2	3 4	4	4	4	3	18 19
LPD 17	0	1	0	0	0	0	1
LHA	1	0	0	0	0	1	1
MLP	1	0 1	1	0	4 0	0	2
JHSV	1	1	2	2	2	2 1	9 8
T-AO(X)	0	0	0	0 1	0 1	0 1	0 3
T-AGOS	0	0	0 1	0	0	0	0 1
T-ATF(X)	0	0	0	0	1	0	1
Total	9	8 10	12 13	9 11	12 12	9 9	50 55
New Construction (\$ M)	FY11	FY12	FY13	FY14	FY15	FY16	FYDP
PB 11 New Construction	13,949	13,509	13,956	14,507	17,099		73,019
Total Changes	0	618	(314)	435	(92)		1,855
PB 12 New Construction	13,949	14,127	13,642	14,942	17,007	15,157	74,874

Shipbuilding Cost Breakout

Notional Labor and Material



Keys to Affordability

- Challenge Requirements
- Competition
- Common Parts/Processes
- Material Buy Leverage
- Facilities Investments
- Design Tools
- Productivity and Process Improvements
- Engineering/Production Ratios

Affordability Allows...

- Program Stability
- Multiyear Procurements/Block Buys
- Technology Investment

Questions ?

