



2011 Integrated Warfare Systems Conference

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

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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:

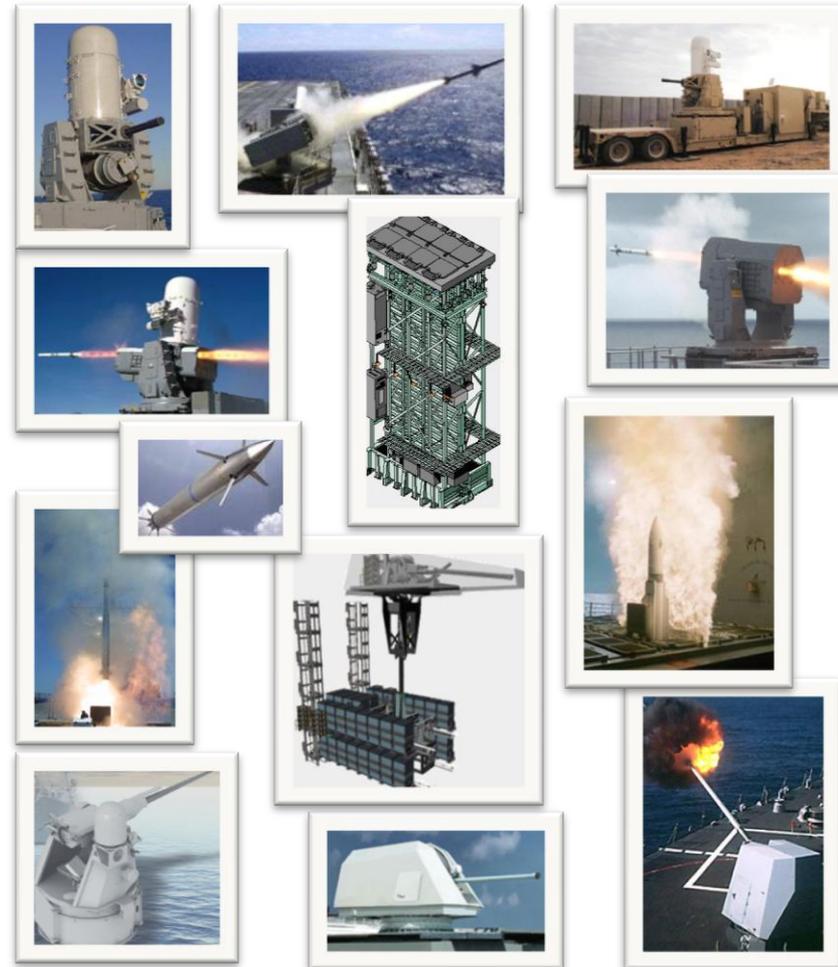
- Autonomous and/or integrated close-in weapons
- Lightweight, low cost, high firepower ASMD
- Medium range, all-weather, guided missiles
- Extended range surface-to-air missile
 - Compatible with joint integrated fire control
- Advanced Gun System / 155mm LRLAP
- Digital, joint-integrated, naval fires 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:

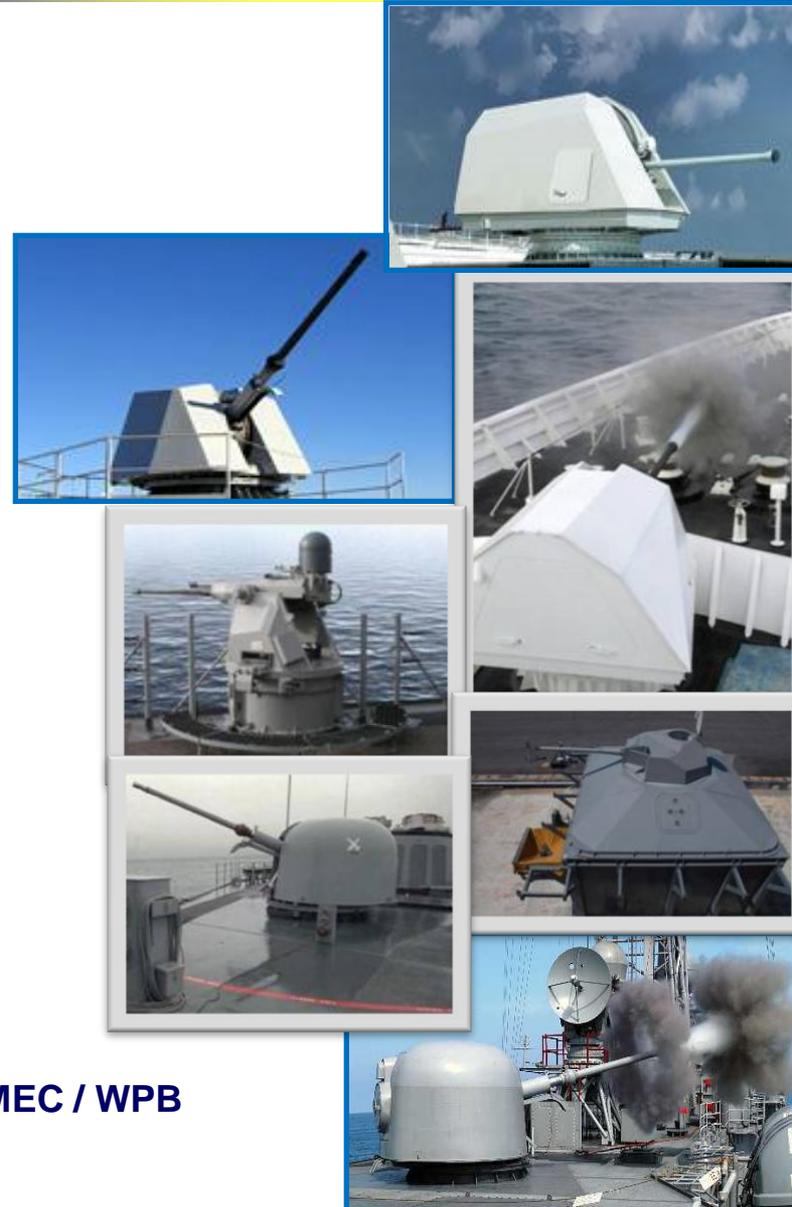
- Warning, disabling & destructive gun fire to respond anti-small boat asymmetric threats in support of Surface Warfare (SuW) and low, slow flyers
- Surface Warfare (SUW), Air Warfare (AW), Naval Surface Fire Support (NSFS), Anti-Surface Warfare, Anti-Terrorism, Force Protection

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:

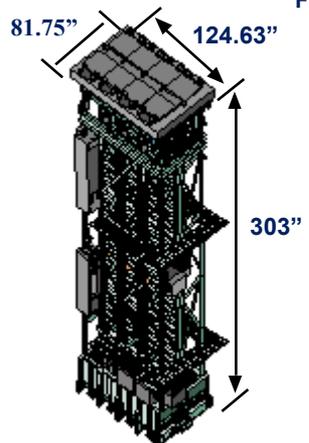
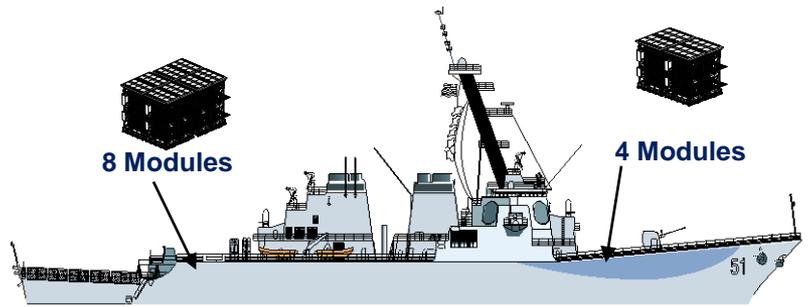
- Modular, Below Deck Missile Launcher
 - Gas Management System
 - Any Missile/Any Cell
 - Deluge System
 - Canister As Shipping Container

Platforms:

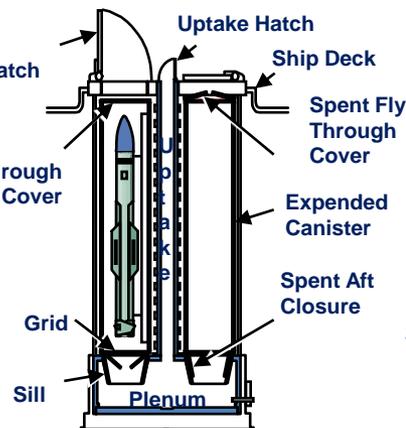
- DDG 51 Class (DDG 51 – 112)
- CG 47 Class (CG 52 – 73)
- DD 963 Class (Decommissioned)
- Eleven Allied Nations



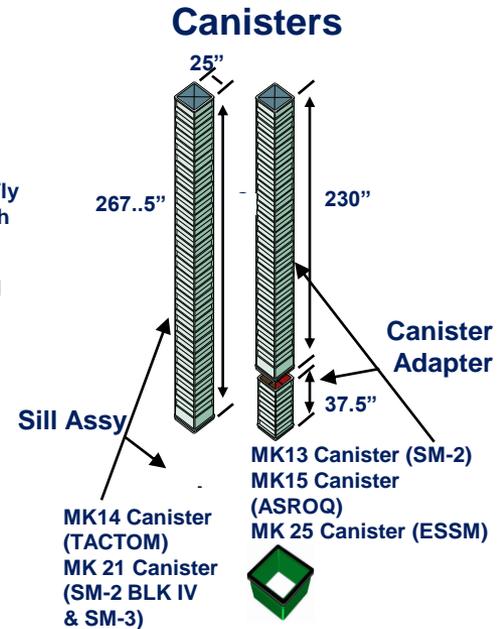
Two Redundant Launch Control Units



8 Cell Module



Module Structure & Gas Management System



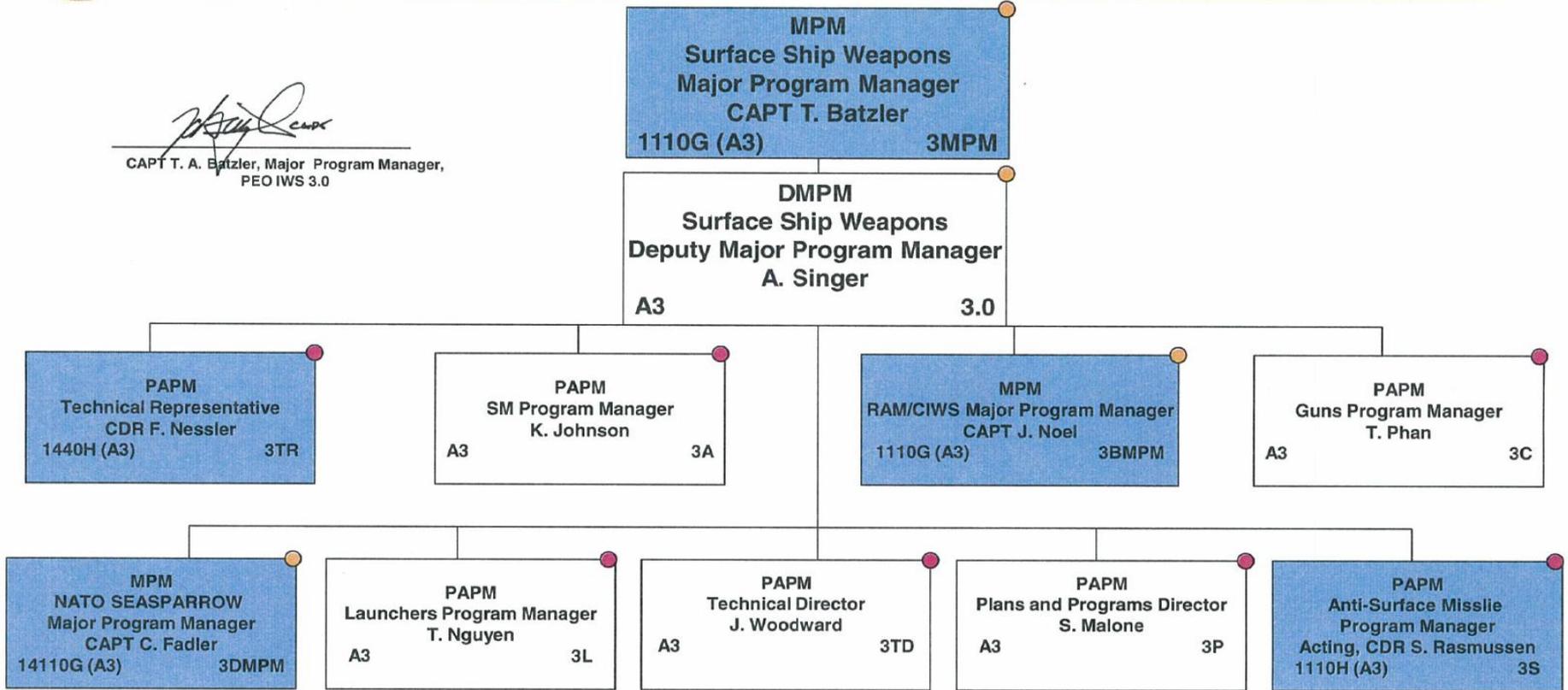
Shipping, Storage & Firing Container



PEO IWS 3.0

Surface Ship Weapons

[Signature]
 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**



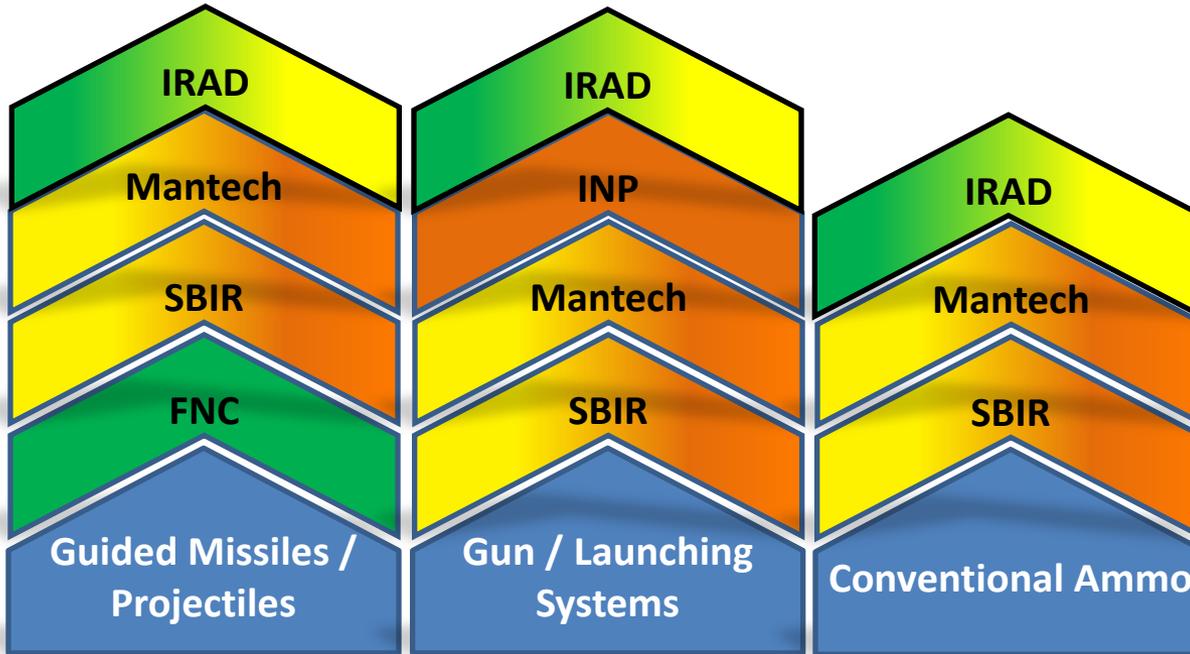
Technology Development Focus (Cont.)

Technologies

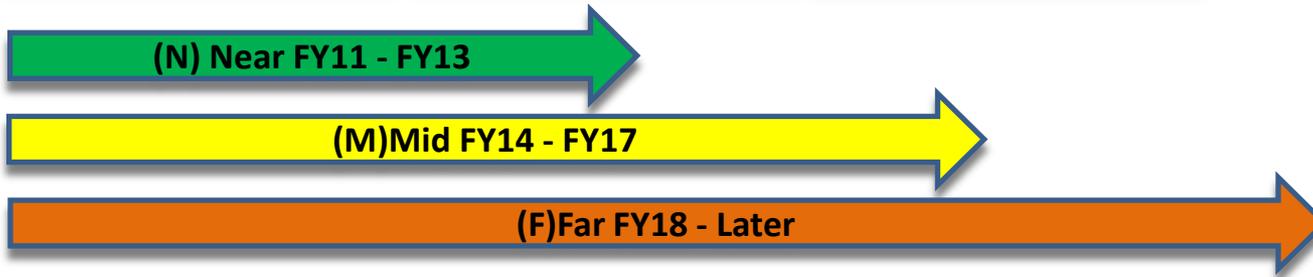
- **Energy Management**
 - **Improve Thermal Management**
 - **Extend battery life**
 - **Launch options**
 - **Alternatives to conventional launch energetics**
- **Manufacturing Process Improvements for Affordability**
 - **Improve reliability/performance**
 - **Improve efficiency/Improve production 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 →

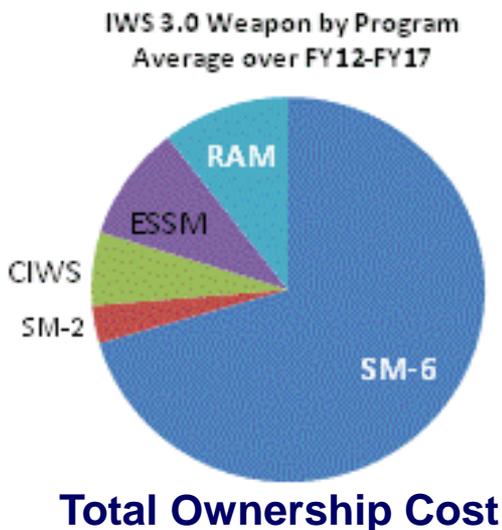
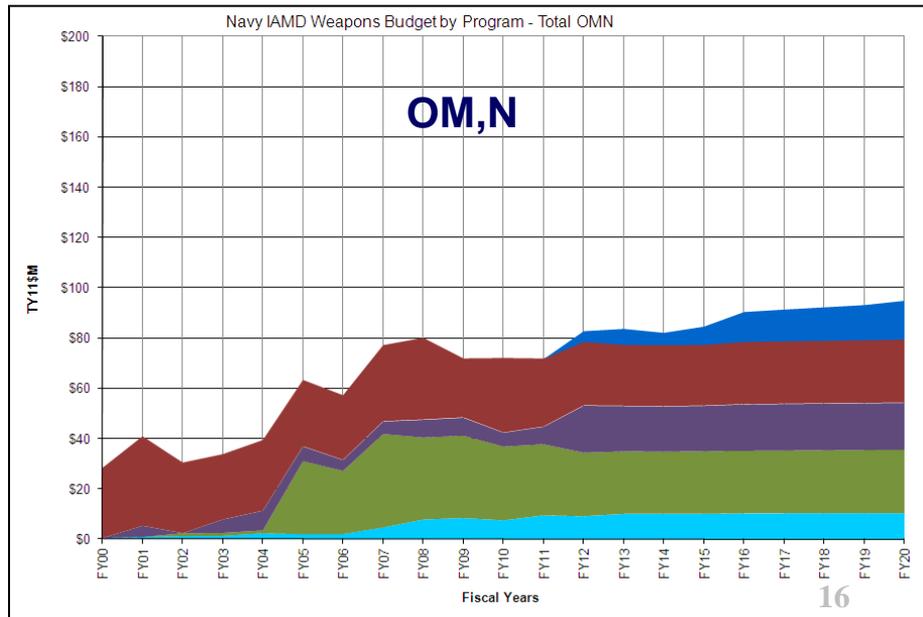
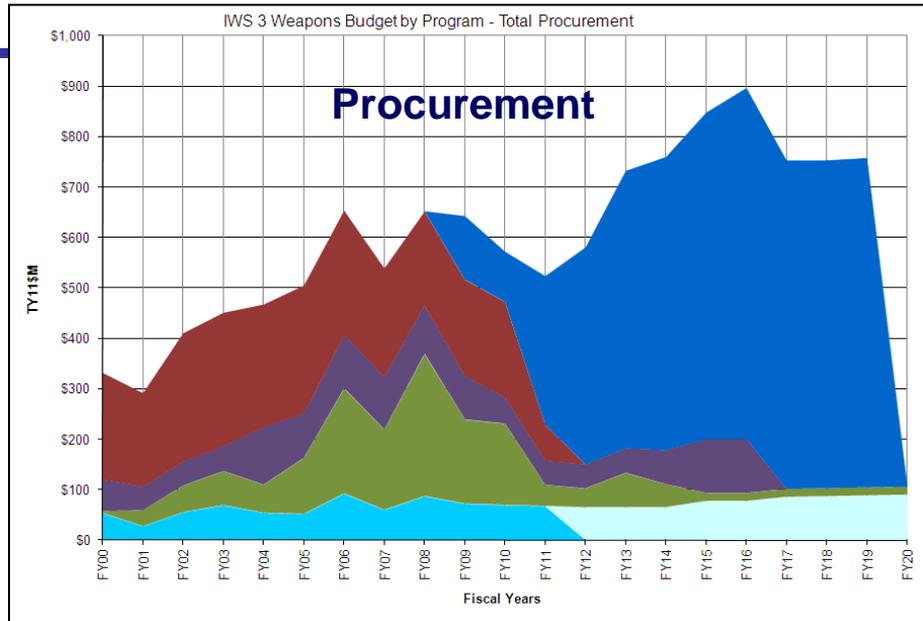
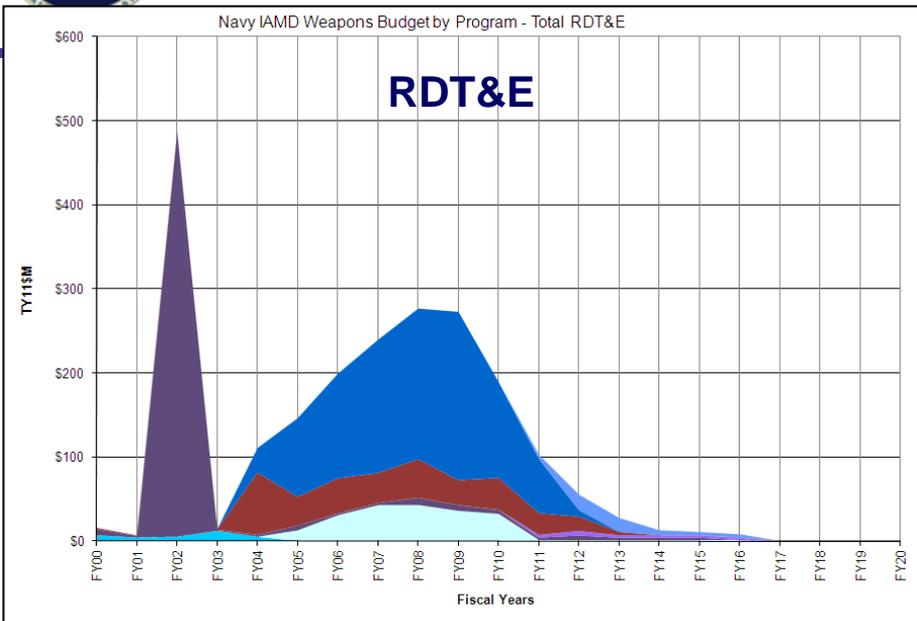
(M) Mid FY14 - FY17 →

(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



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

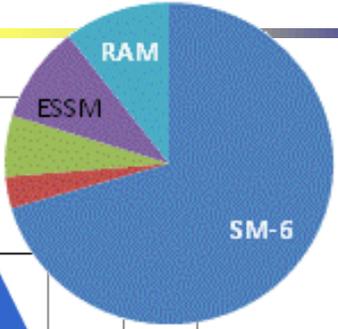
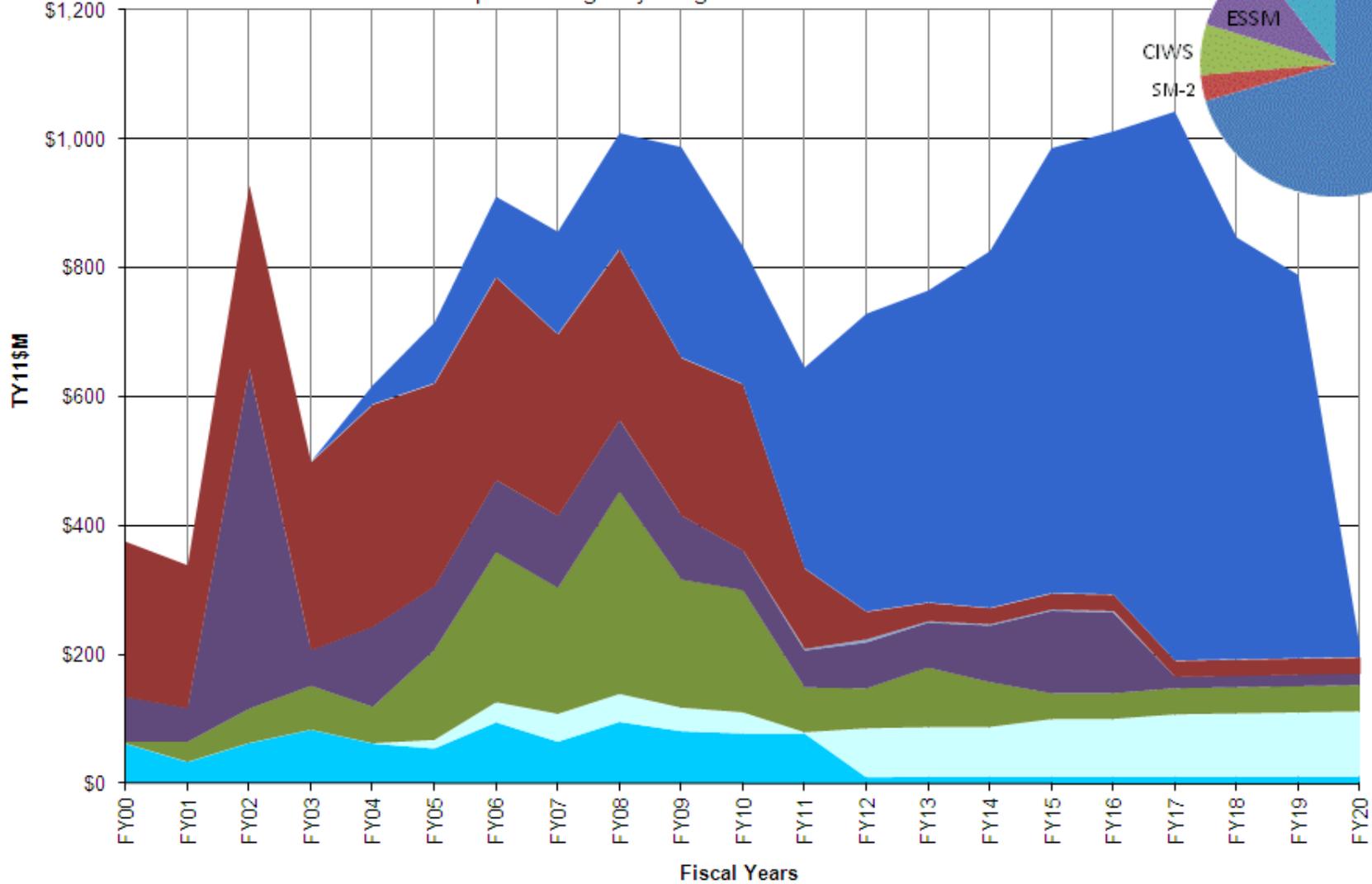


Understanding Cost Drivers Within IWS 3 Portfolio (PB12)

IWS 3.0 Weapon by Program
Average over FY12-FY17

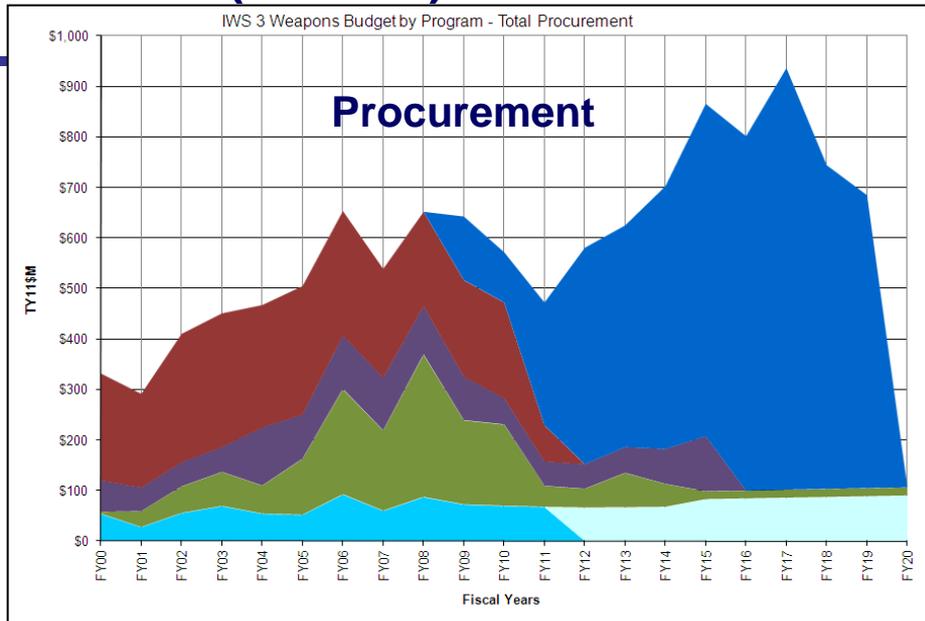
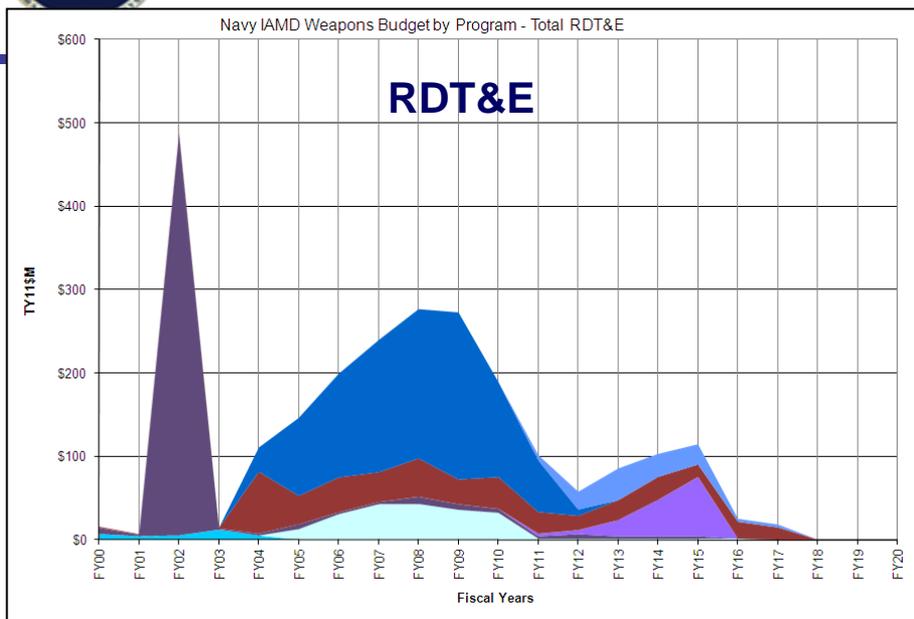
Total Ownership Cost

IWS3 Weapons Budget by Program - Total Investment

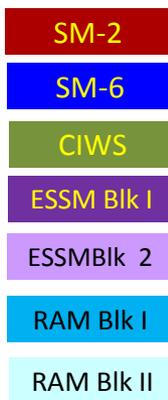
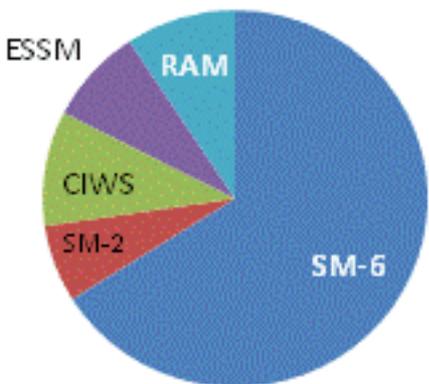




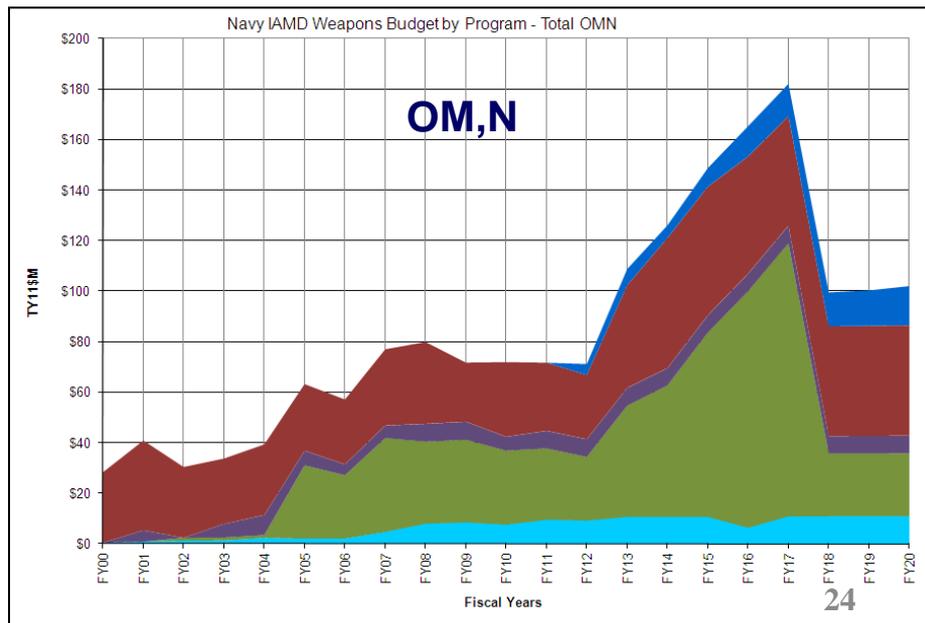
Understanding Cost Drivers Within The IWS 3 Portfolio (BES 13)



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

