

# *Surface Ship Combat Systems Outlook*

**Captain Nevin P. Carr**

**OPNAV N86F**



**SLAAD Annual Symposium**  
**“The Navy’s Role in the 21<sup>st</sup> Century”**  
**25 April 06**



# *Agenda*

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- **NDIA / OPNAV Relationship**
- **CNO Priorities for the 21<sup>st</sup> Century**
- **Surface Combat Systems SITREP**
- **Fiscal Environment**
- **Parting Shots**



# Surface Warfare Division

**N86**

**Director of Surface Warfare**  
**RADM Barry McCullough**

**N86B**

**Deputy of Surface Warfare**  
**RDML Mark Buzby**

**Total**

Billets: 138 (63, 22, 53)

**Key:**

Billets: Total # (Mil, Civ, Cont)

**N861**

**SW Strategy & Alignment**  
**CAPT(s) Rudy Laco**  
Billets: 13 (8, 0, 5)

**N86 Front Office**

**Exec. Asst**  
**CAPT Gerard Hueber**  
Billets: 8 (4, 1, 3)

**N86E**

**Deputy of Surface Ships**  
**CAPT Rob Taylor**

**N860**

**Financial**  
**CAPT Scott Robinson**  
Billets: 1 (1, 0, 0)

**N86F**

**Deputy of Combat Systems**  
**RDML(s) Nevin Carr**

**N86E1**

**Asst. Deputy**  
Billets: 4 (1, 1, 2)

**N86FA**

**Exec. Asst**  
Billets: 2 (1, 0, 1)

**N86E2**

**Mnpwr & Log**  
**CDR Paul Godek**  
Billets: 6 (1, 1, 4)

**N862**

**Current Ships**  
**CAPT Walt Towns**  
Billets: 10 (4, 2, 4)

**N863**

**Future Ships**  
**CAPT Tony Dropp**  
Billets: 20 (10, 4, 6)

**N864**

**Warfare Systems**  
**CAPT Glenn Flanagan**  
Billets: 21 (8, 6, 7)

**N865**

**TAMD**  
**CAPT Scott Anhalt**  
Billets: 23 (10, 4, 9)

**N866**

**Network Systems /Integration**  
**CAPT Eric Sweigard**  
Billets: 14 (5, 2, 7)

**N867**

**AT/FP**  
**CAPT Dan Renwick**  
Billets: 12 (6, 1, 5)

# N86 Programs



## Current Ships

- CG / DDG Modernization
- FFG Modernization / Command Ships / PCs
- Fleet Support and Modernization
- Force Structure and Survivability
- SHIPMAIN

## Network Systems

### Integrated Combat Systems

- Open Architecture
- Aegis
- Ship Self Defense System (SSDS)
- Advanced Combat Direction Systems (ACDS)

### Integrated Air and Missile Defense (IAMD)

- Single Integrated Air Picture (SIAP)
- Naval Integrated Fire Control - Counter Air (NIFC-CA)
- Cooperative Engagement Capability (CEC)
- FACT

- Combat ID (Elements of)
- Distributed Engineering Plan (DEP) / Joint DEP (JEDP)

### Ship Systems/Training

- Battle Force Tactical Training (BFTT)/ Target Selection and Tracking Console (TSTC)
- SMARTSHIP / NAV/ECDIS-N

## Future Ships

- LCS
- DD(X)
- CG(X)
- Advanced Communications Package (ACP) - FY07
- Ship Concepts Advanced Design (SCAD)

## Maritime Warfare

### ASW

- MH-60R RDTEN and integration
- AN/SQQ-89 A(V)15 & SIPS
- Surface Ship Torpedo Defense
- MK54 Lightweight Torpedo

### Tomahawk

- Tomahawk Blk III and Blk V (TACTOM)
- Tactical Tomahawk Weapons Control System
- Advanced Tomahawk Weapons Control System
- Theater Mission Planning Center
  - Cruise Missile Support Activity / APS

### SUW

- Harpoon III, MK38 Chain Gun
- 5"/54 & 5"/62 Guns and Ammo
- Small Arms Weapons and Ammo

## CBD/ATFP

### Afloat ATFP

- EMIO-VBSS & ATFP AEL
- Biometrics

### Chem-Bio Defense

- CBR-RIP program
- *JOINT programs as the NAVY's EA*
  - Biological Agent Identification and Diagnostic System (JBAIDS)
  - Service Lightweight Integrated Suit Technology (JSLIST)
  - Service General Purpose Mask (JSGPM)
  - Collective Protection Equipment (JCPE)
  - Service Personnel/skin Decontamination Systems (JSPDS)
  - Biological Point Detection System (JBPDS)

## Air & Missile Defense

### Area & Ship Self Defense

- SM-2 IIIB / SM-6
- Radar & Sensor Systems
- CIWS 1B / RAM / NSSMS / ESSM / SeaRAM
- SEWIP / NULKA
- Directed Energy
- Army-CIWS (C-RAM)

### Ballistic Missile Defense

- Aegis BMD / SM-3 (Block IV transition in FY08)
- NTSBT SM-2 Blk IV
- SBT Demo

### ATFP

- SPS / Acoustic Hailing Devices (AHDs)
- CIWS 1B (Ship Self Defense)



# *NDIA Studies for OPNAV*

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## Past

- *Joint Fires Deconfliction - Phase I & II*
- *Surface Warfare - Phase I*
- *3<sup>rd</sup> World Missile Threats*

## 2005

- *Joint Integrated Air and Missile Defense (JIAMD)*
- *Surface Warfare – Phase II*

## Future

- *Surface Warfare in 2020 - Phase III*
- *(MDA / GWOT / Open Architecture / Netted Force ?)*

*Strong and Fruitful Partnership*

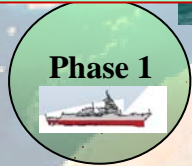


# NDIA Surface Warfare Studies

1999	2000	2001	2003	2004	2005	2006 -2007
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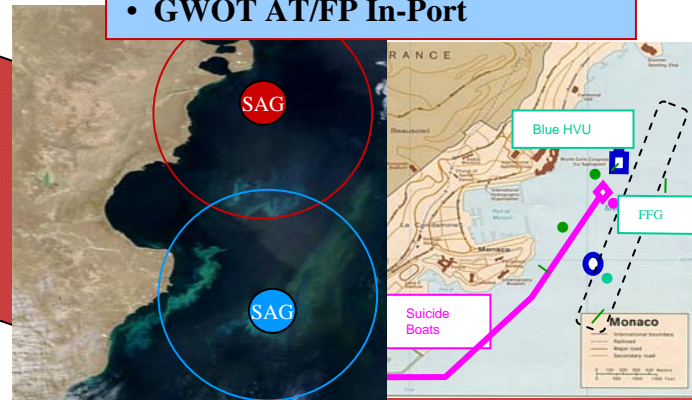
## Phase 1 SUW Study 1999-2001

- Own Ship (Organic Assets)
- SWARM SB Threat



## Phase 2 SUW Study 2003-2005

- Red SAG // /Blue SAG – OTH
- GWOT AT/FP In-Port



## Phase 3 SUW Study 2006- 2007 Littoral Operations GWOT



**Phase 2**  
OTH {+ Own Ship}

Phase 1

Phase 3





# SUW Phase III Study Will Focus on GWOT / Asymmetric SUW Threats



**Attack on USS Cole Oct 2000**

**Cole Attack Mastermind Escapes Feb 2006**



**Attack on USS Ashland & USS Kearsarge Aug 2005**



U.S. and Pakistani sailors prepare to conduct boardings in 2003 of a vessel suspected of supporting an sophisticated black market network.

**Increased MIO with Allies & USCG -2003 to Present**



A Visit, Board, Search and Seizure team, consisting of U.S. Navy and U.S. Coast Guard sailors, approaches



**Pirates Attack Cruise liner Nov 2005**  
**1st Non-Lethal (Acoustic) LRAD Weapon Use**



**USS Winston Churchill (DDG-81)**  
**Seizes Pirate Ship – Jan 2006**  
**(Dhow – Pirate mother ship)**

**An Increasingly Important Part of the Spectrum of Surface Warfare**



# *CNO's Priorities*

- Sustain Readiness
- Build the fleet of the future
- Develop 21<sup>st</sup> century leaders





Today's  
Capability



USCG WHEC



FFG



CG



DDG

# Today's Fight...

NCW/NSW  
MK5/RHIBs



PC



SSN



Riverine



LPD 17



CVN

Building Toward



LHA(R) FLT 1

# Tomorrow's Fight...

UAVs  
UUVs  
USVs



LCS



DD(X)



CG Mod



DDG Mod

Future  
Capability



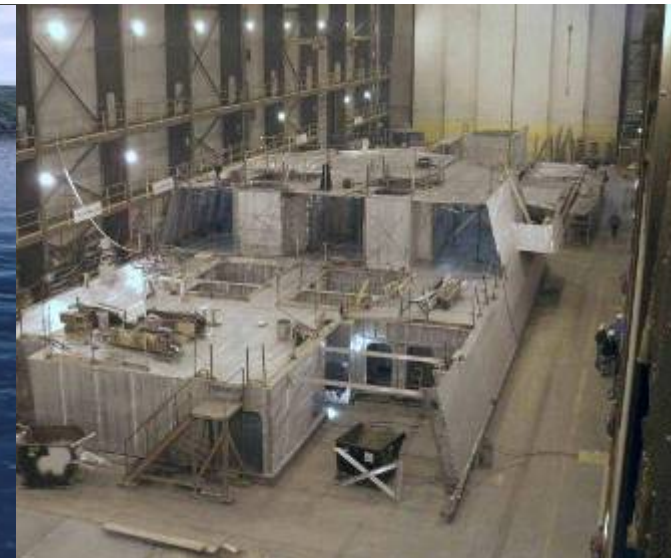
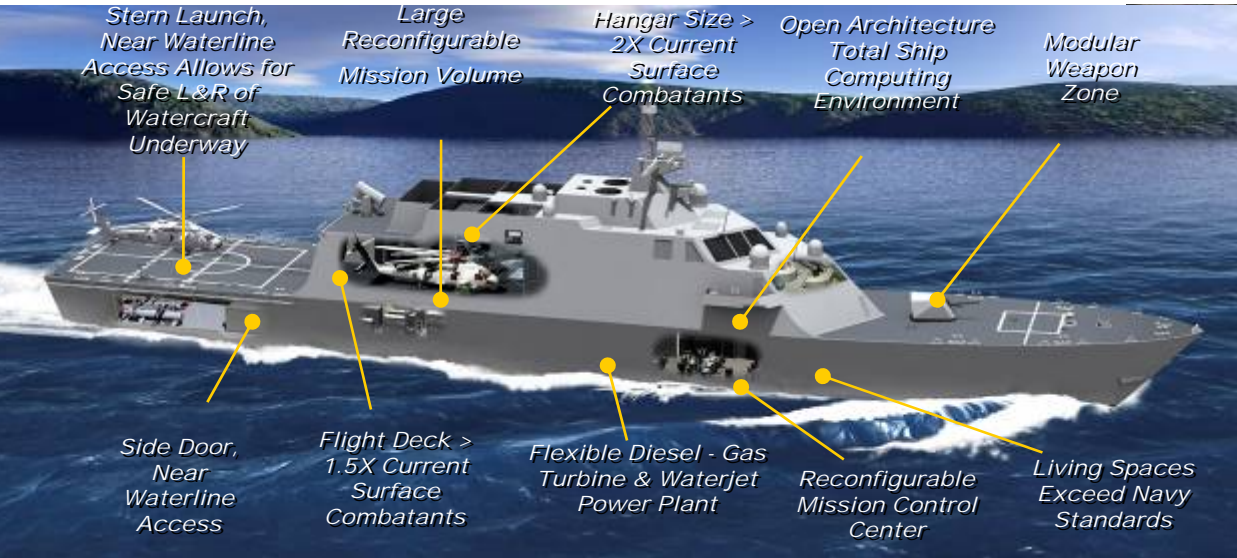
CG (X)

12'

200'



# Moving Forward - LM LCS Design

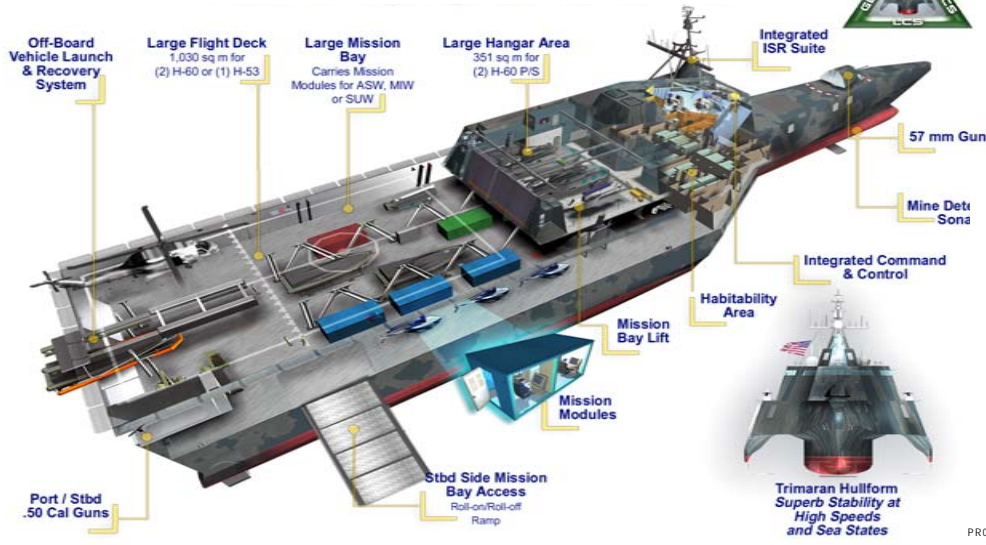






# Moving Forward - GD LCS Design

**GENERAL DYNAMICS**  
Littoral Combat Ship





# LCS as a System of Systems







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# *Warfare Areas*



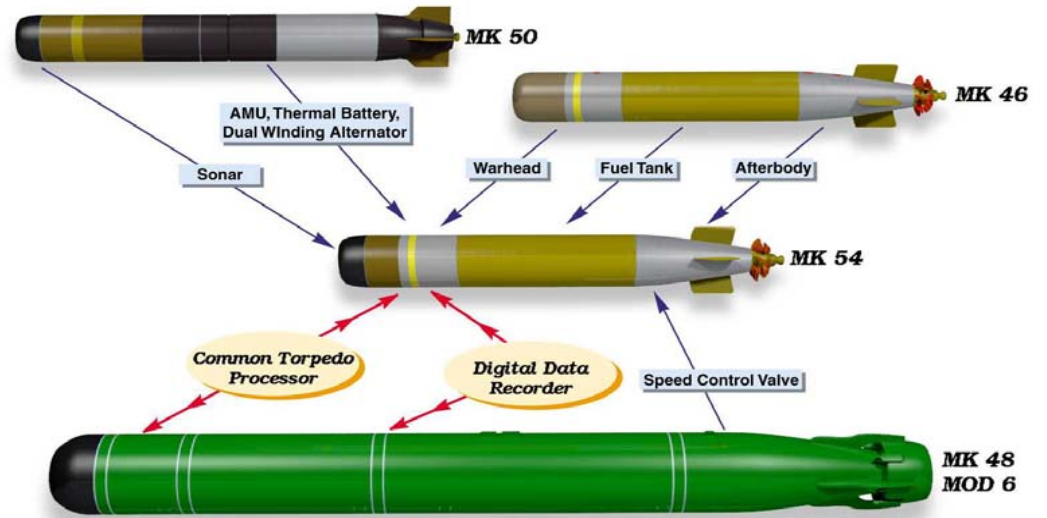


# *Strike / Land Attack*





# ASW





# *Anti-Surface Warfare*





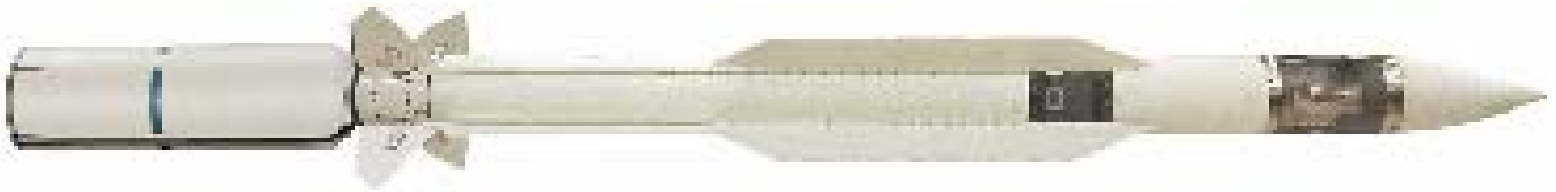


# *AT / FP & GWOT*





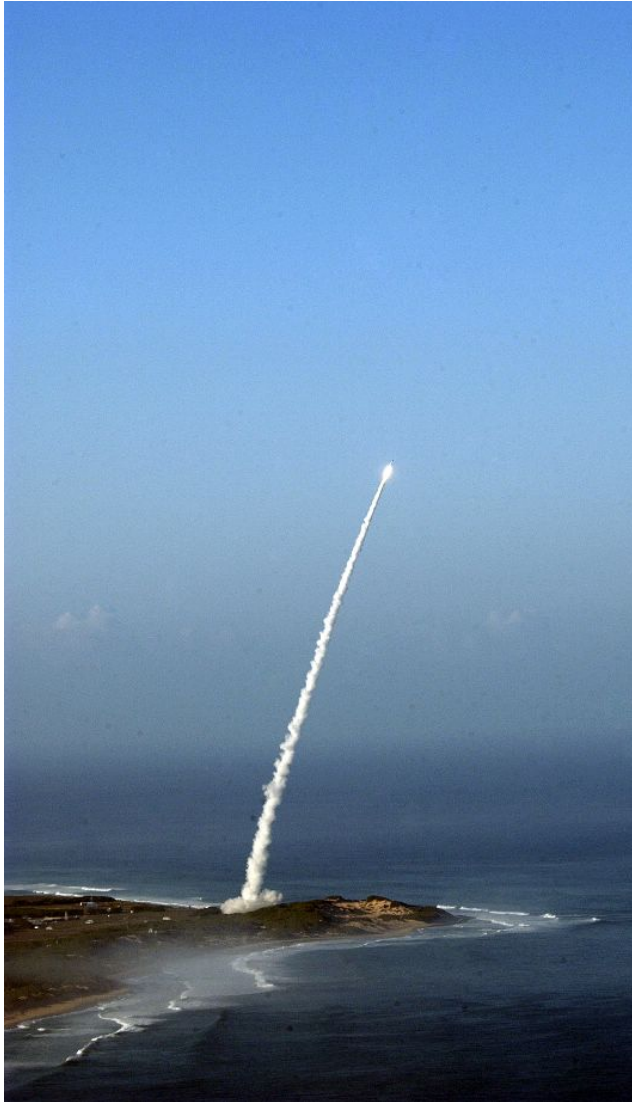
# Missile Defense







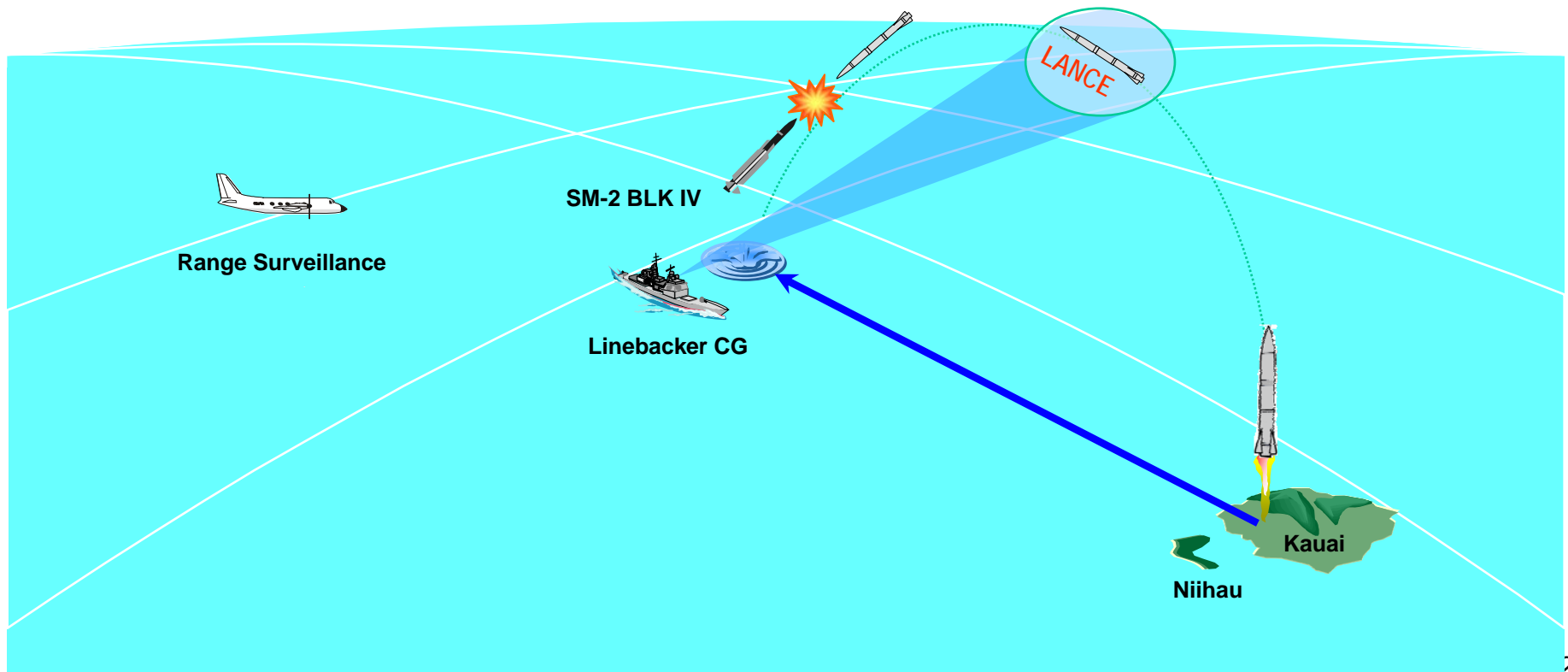
# *Ballistic Missile Defense*





# *Pacific Phoenix Objectives*

- **Primary** - Demonstrate the ability of the LINEBACKER CP (5.L.X) and a modified SM-2 BLK IV to intercept a SRBM during its terminal phase.
- **Secondary** - Collect data to calibrate and validate the models used to predict Linebacker and SM-2 BLK IV performance.



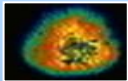
# Building on a History of Success



FM-2



FM-3



FM-4



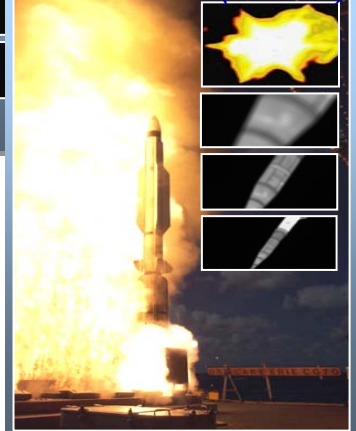
FM-5



FM-6



FTM 04-1 (FM-7)

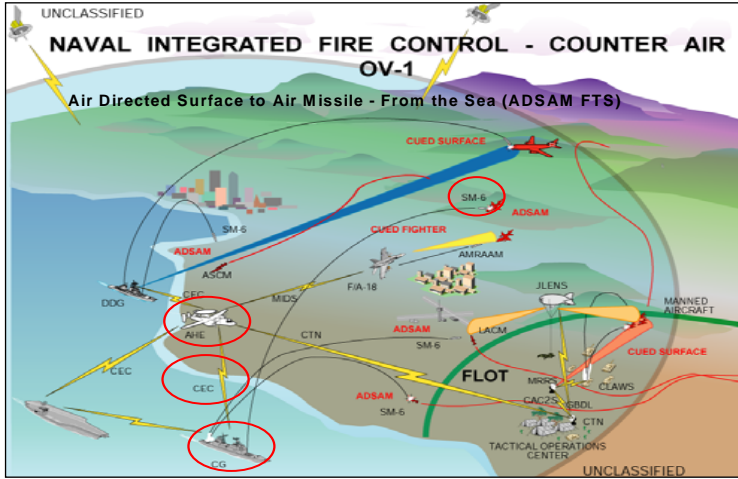


FM-8

**6 Kills in 7 Shots**



# NIFC-CA: The Next Quantum Leap



## E-2D Advanced Hawkeye



## CEC



## SM-6

*Networked - Detect - to - Engage*



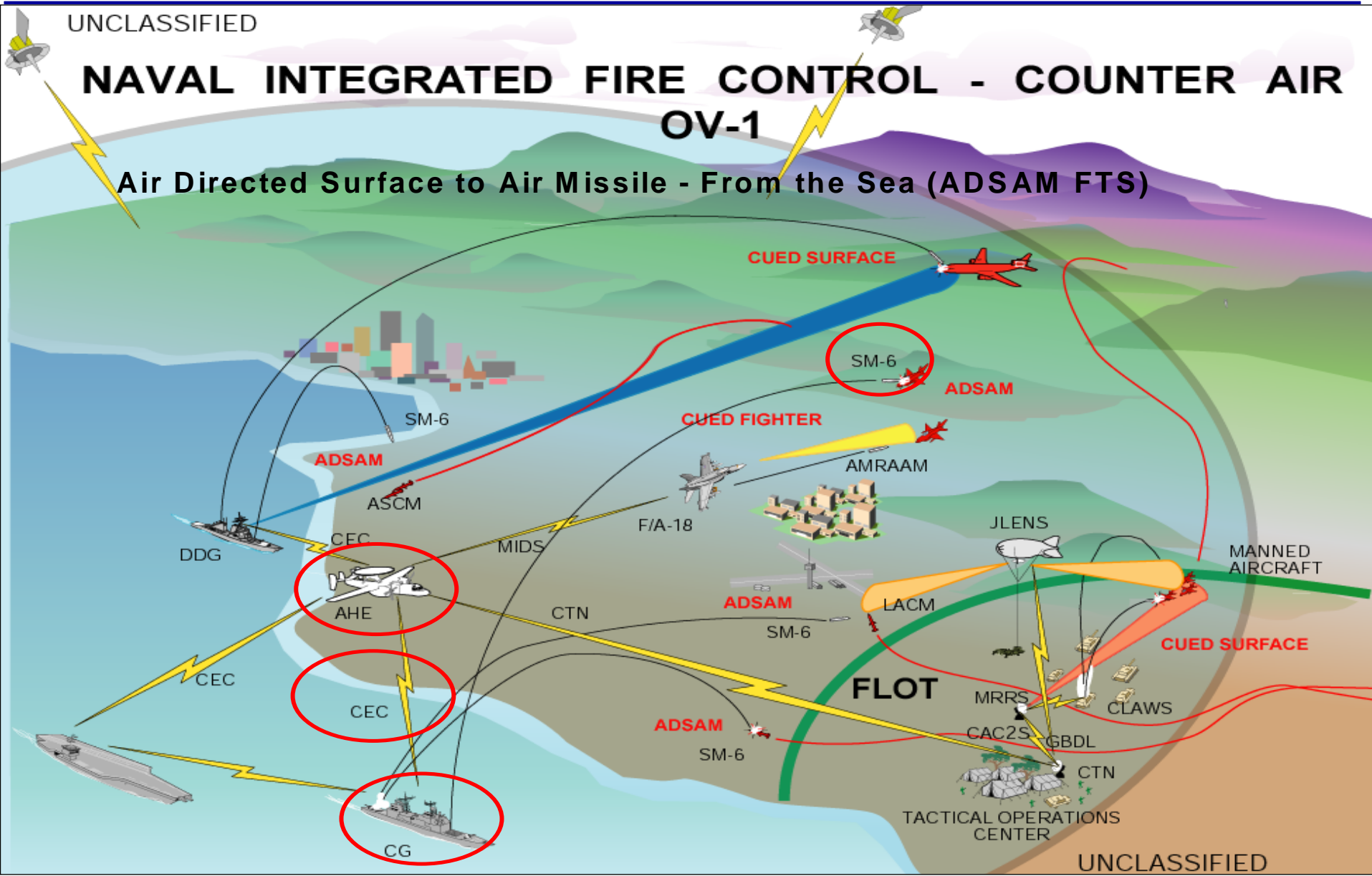


# NIFC-CA

UNCLASSIFIED

## NAVAL INTEGRATED FIRE CONTROL - COUNTER AIR OV-1

### Air Directed Surface to Air Missile - From the Sea (ADSAM FTS)



UNCLASSIFIED





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# *Fiscal Environment*



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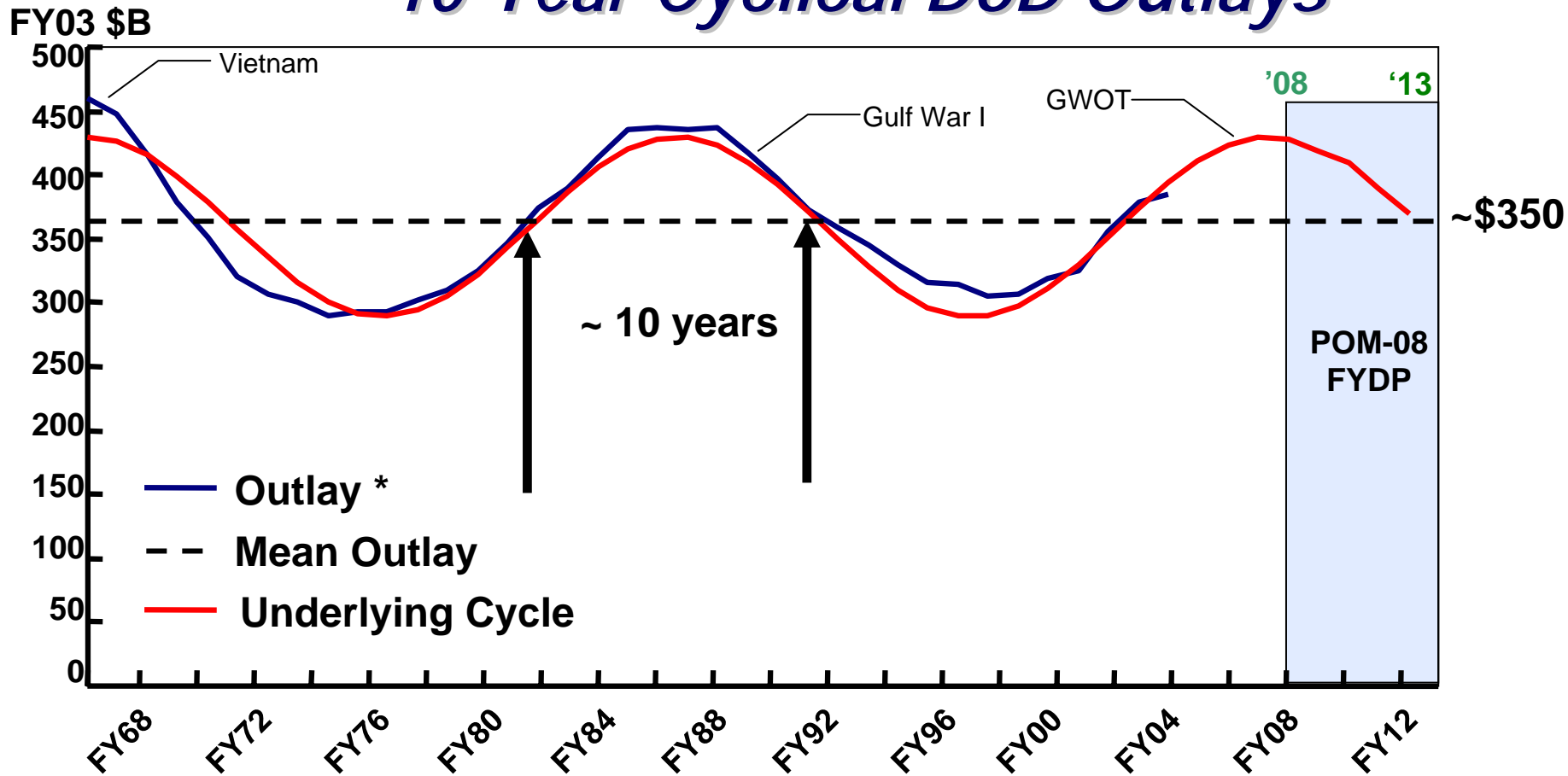
# *Fiscal Environment*





# Fiscal Reality

## 10-Year Cyclical DoD Outlays



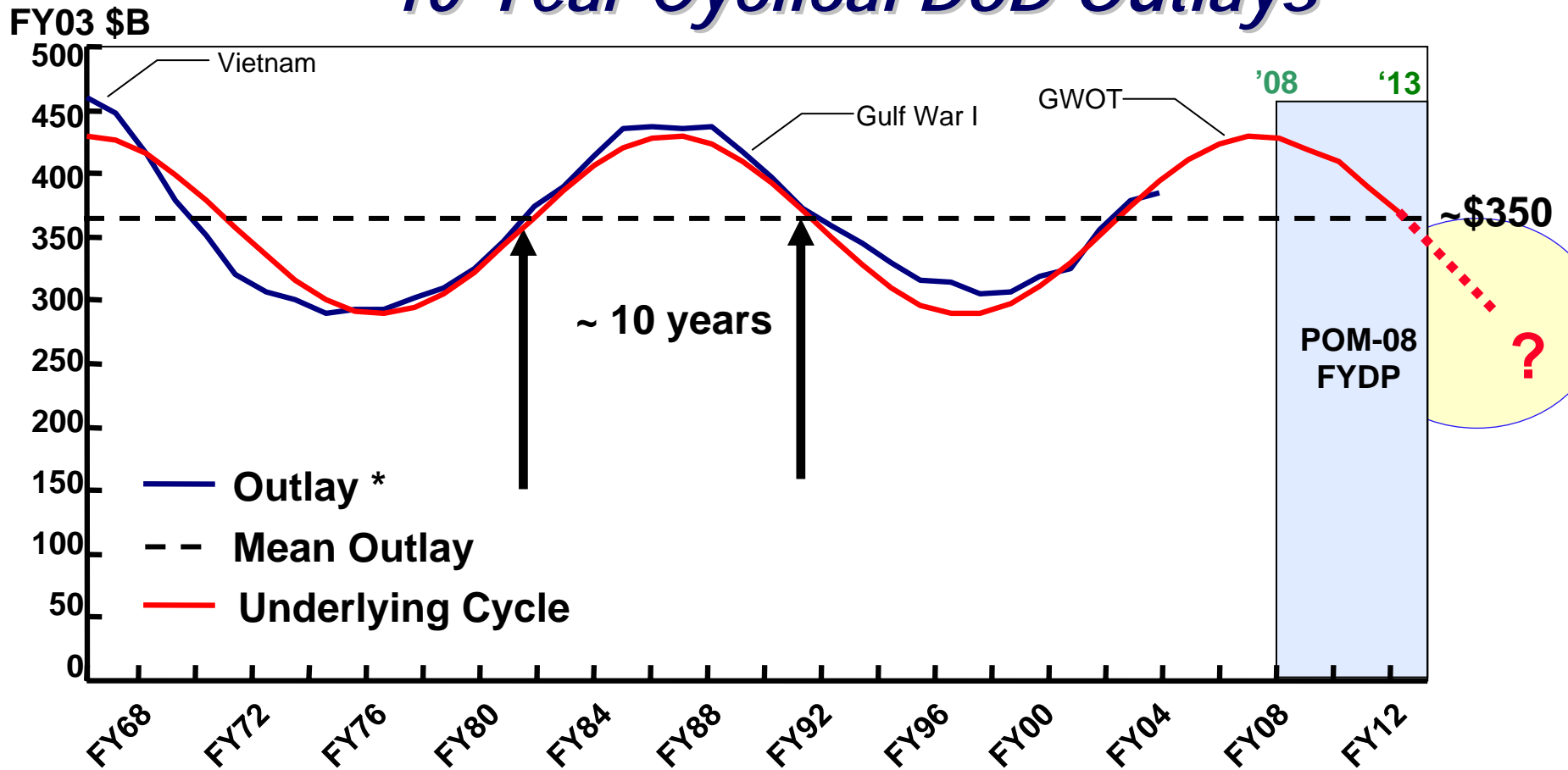
Source: CSBA and RAND

\* Does not include Supplemental Outlays



# Downward Pressure

## 10-Year Cyclical DoD Outlays

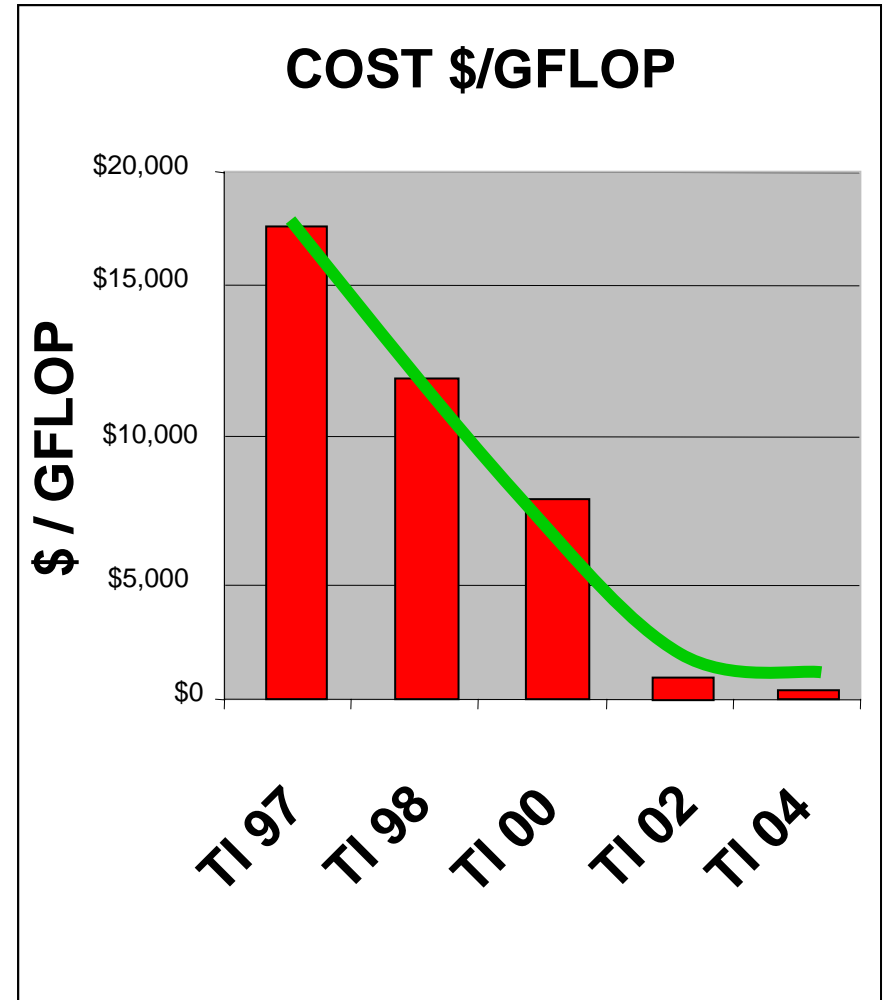
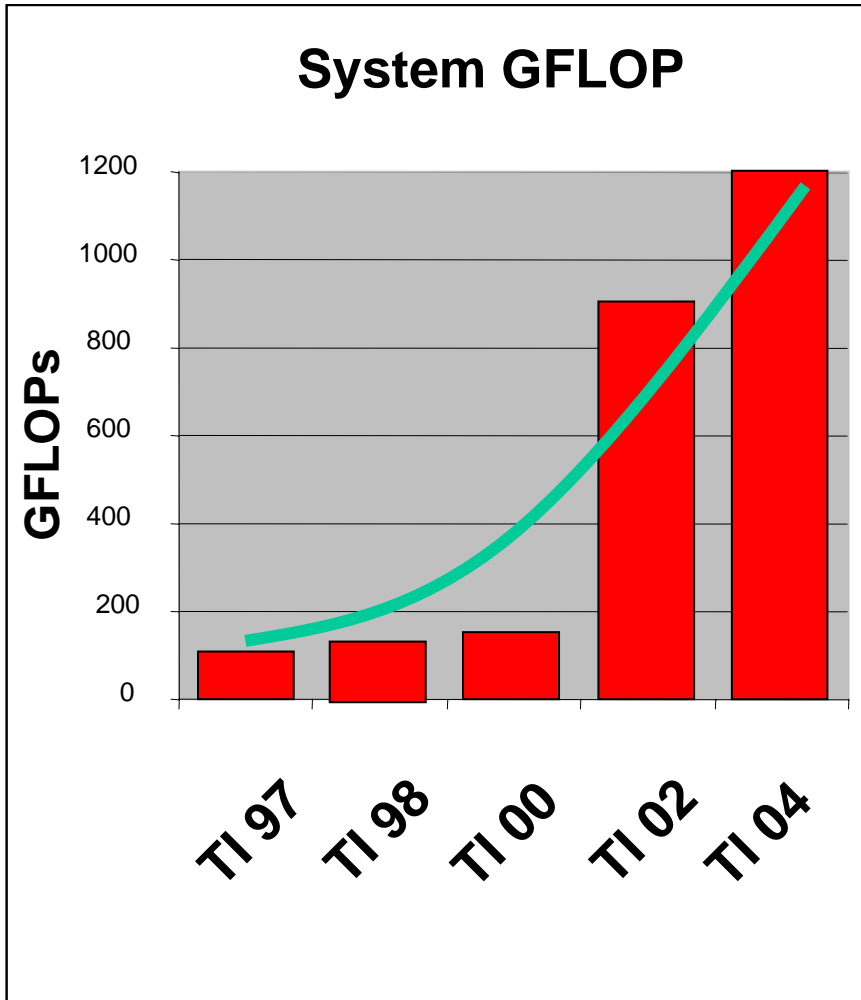


Source: CSBA and RAND

\* Does not include Supplemental Outlays



# Moore's Law In Action







# Evolutionary States of OA

## Surface Domain OA Definition

Non-OA

Category 3

Category 4

## Enterprise Definition

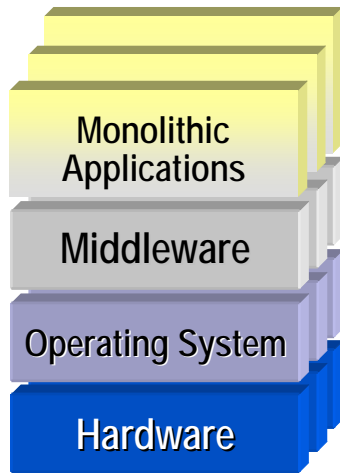
"Closed"

"Layered"

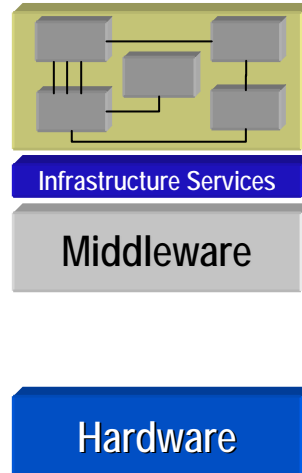
"Layered & Open"

"Common"

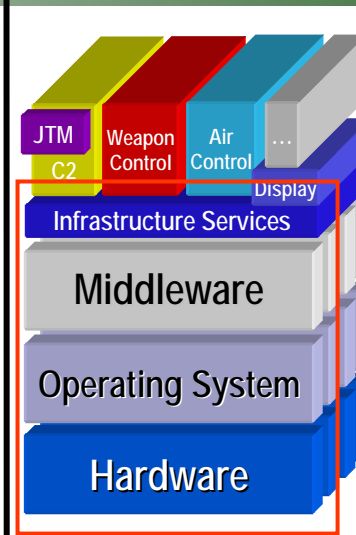
"Enterprise / Joint"



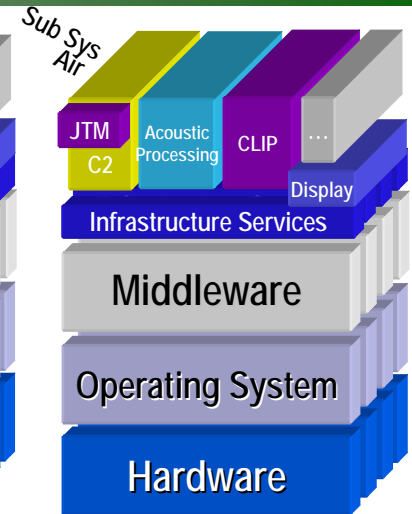
- ◆ "Unglue the Stack"
- ◆ H/W & Software Isolation



- ◆ Modular Applications
- ◆ Opens Up Vendor Base
- ◆ Platform Arch CCB



- ◆ Cross-Program Apps
- ◆ Mixed Developer Base
- ◆ Domain Arch CCB



- ◆ Cross-Domain Apps
- ◆ Mixed Developer Base
- ◆ Enterprise/Joint Arch CCB

### OA RETURNS

- ◆ COTS Refresh Cost Avoidance

- ◆ Ease of Warfighting Upgrades
- ◆ Enables Competition

- ◆ Reduce Development & Maintenance Costs

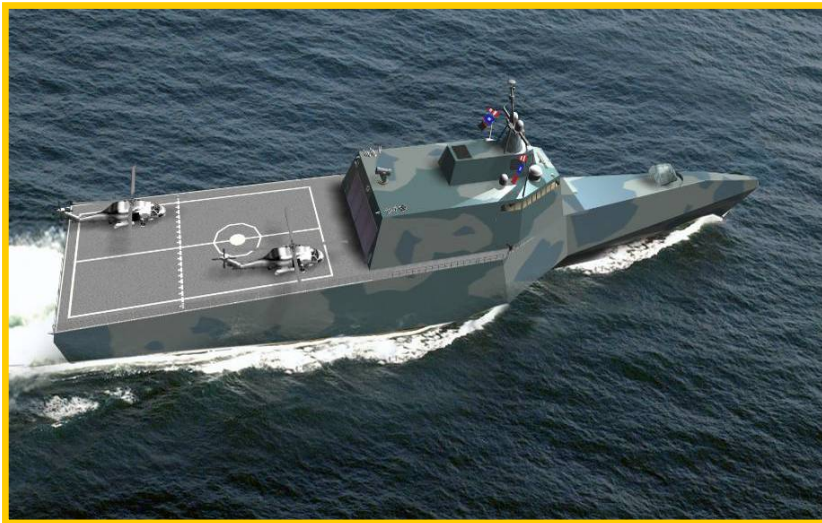
- ◆ Reduce Development
- ◆ Enables Interoperability

← Program Manager Control →

← Cross-PM Coordination Required →



# *Managing Affordability*



“I cannot afford to build all of my systems to objective...”

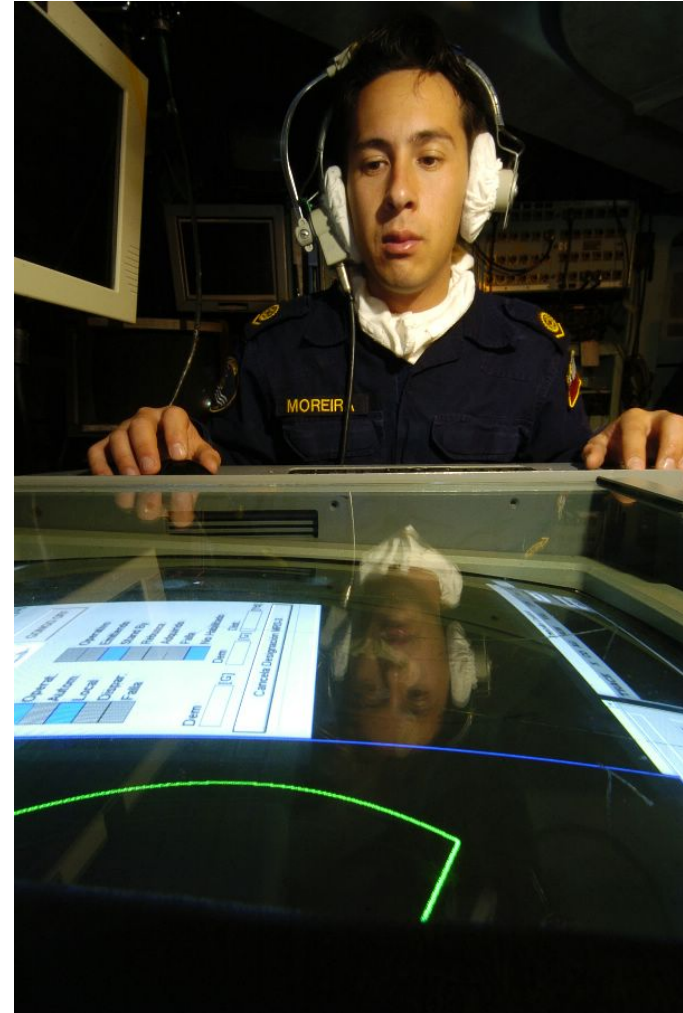
“My very steady approach on this will be to buy to threshold...”

-- ADM Mike Mullen





# *A word about the "1,000-ship Navy"*





# *It all comes down to our Sailors*







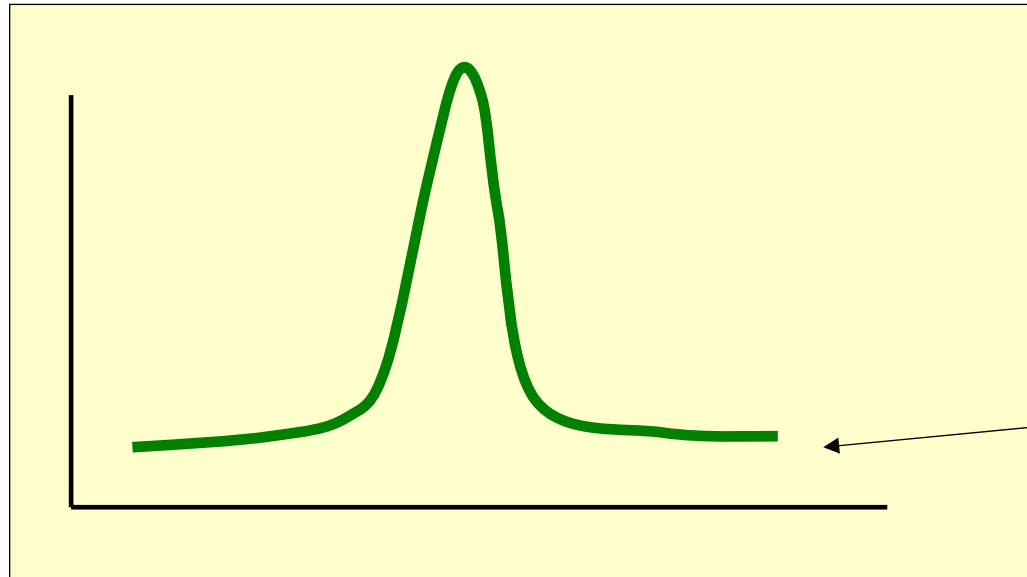
# Parting Shots

- ***Relentless downward pressure on budget***
- ***We must embrace modern business models in addition to modern warfighting systems***
- ***The power of OA***





# *Changing Threat*

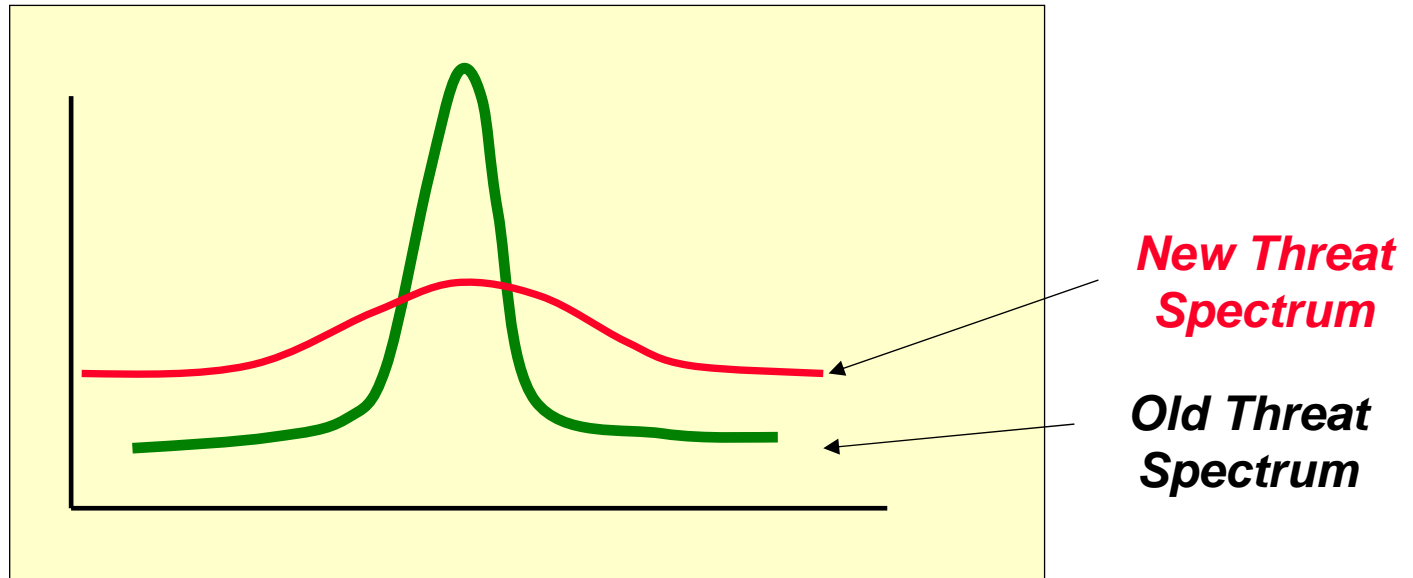


***Old Threat  
Spectrum***

- ***Threat Spectrum is increasing & proliferating***
- ***Weapon Cost is increasing***
- ***We need affordable system solutions to “keep pace”***



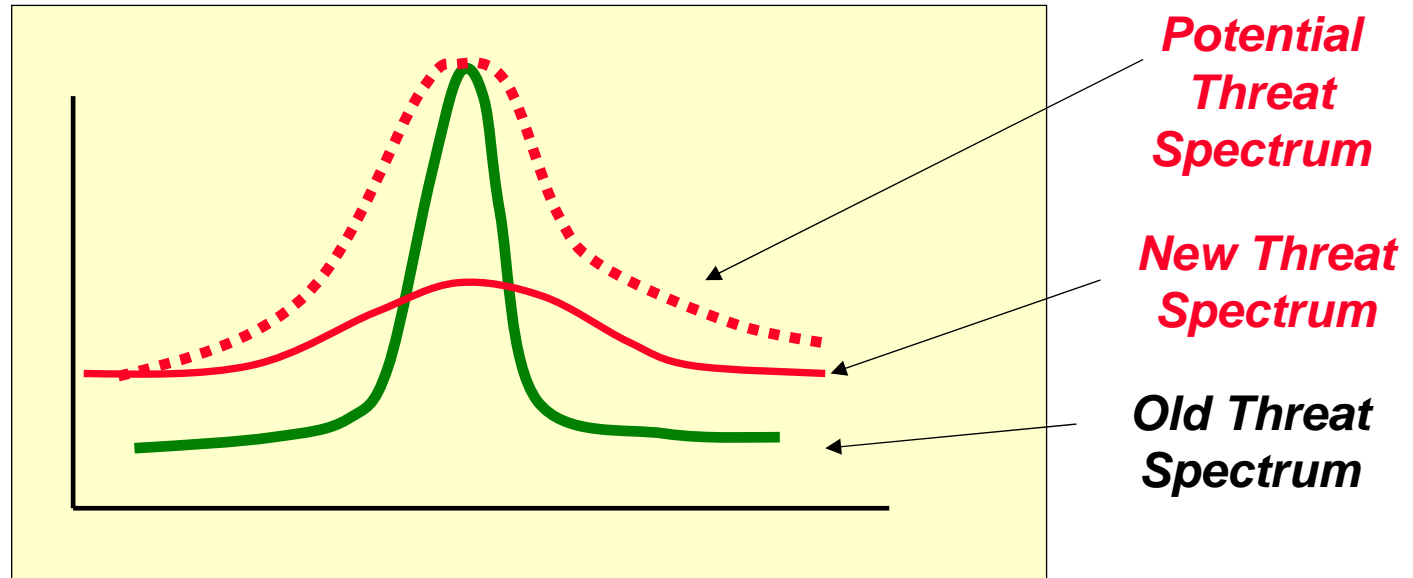
# *Changing Threat*



- ***Threat Spectrum is increasing & proliferating***
- ***Weapon Cost is increasing***
- ***We need affordable system solutions to “keep pace”***



# Changing Threat



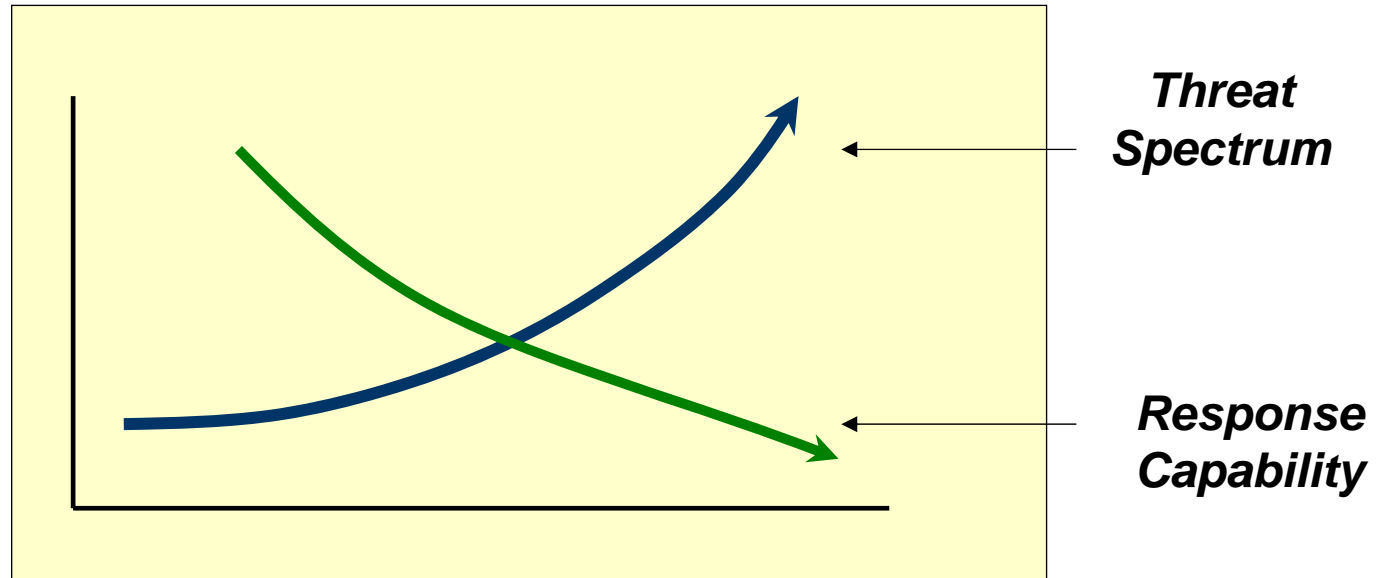
- ***Threat Spectrum is increasing & proliferating***
- ***Weapon Cost is increasing***
- ***We need affordable system solutions to “keep pace”***

***Affordability***





# Changing World



- ***Threat Spectrum is increasing & proliferating***
- ***Weapon Cost is increasing***
- ***We need affordable system solutions to “keep pace”***



# *The Navy's 21<sup>st</sup> Century Flight Demonstration Team*

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***Thank You for  
Your Contribution***





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## *Back-up Slides*



# LCS Flight 0 Mission Packages (Spiral Alpha)

Baseline 4.0  
10/19/05  
PR-07

MIW Modules	QTY
USV with Influence Sweep System	1 1
VTUAV with COBRA	1 set (3 VTUAVs) 2
MH-60S with OASIS ALMDS AQS-20A RAMICS AMNS	1 2 2 2 2 2
AN/WLD-1 RMV with AQS-20A	2 2
EOD Det	1
BPAUV	1 set (2 BPAUVs)
NSCT-1 with SCULPIN (set)	1

ASW Modules	QTY
USV with UTAS Array Dipping Sonar (UDS) Multi-Static Off-Board Source	2 1 1 1
VTUAV	1 set (3 VTUAVs)
MH-60R with MK54 Torpedo ALFS Sonobuoy Family	1 set set set
AN/WLD-1 RMV with MFTA RTAS	2 1 1
ADS	1

SUW Modules	QTY
VTUAV with EO/IR	1 set (3 VTUAVs)
MH-60 with EO/IR GAU 16 - 50 cal. Gun Hellfire	1 1 set set
* NLOS-LS	4
30 mm Gun Module	2

\* A single NLOS-LS C/LU consists of 1 launcher and 15 missiles. Four NLOS-LS equal 60 missiles total.

Program of Record

ACTD

Developmental (Lab Technology)

ACES – Active Capable Expendable Surveillance  
 ADS – Advanced Deployable System  
 ALFS – Airborne Low Frequency Sonar  
 ASW - AntiSubmarine Warfare  
 ALMDS – Airborne Laser Mine Detection System  
 AMNS – Airborne Mine Neutralization System  
 AQS-20A – Minehunting Sonar  
 BPAUV – Battlespace Prep Autonomous Underwater Vehicle  
 C/LU – Container/launch unit

COBRA – Coastal Battlefield Reconnaissance & Analysis  
 EOD Det - Explosives Ordnance Disposal Detachment  
 EO/IR - Electro-Optic / Infra Red  
 Hellfire – Air to ground missile system  
 MFTA – Multi-Function Towed Array  
 MSOBS – Multi-Static Off-Board Source  
 NLOS-LS – Non Line-Of-Sight Launch System  
 NSCT1 – Naval Special Clearance Team-One  
 OASIS - Organic Airborne & Surface Influence Sweep  
 RAMICS - Rapid Airborne Mine Clearance System

RMV - Remote Minehunting Vehicle  
 RTAS - Remotely Towed Active Source  
 SCULPIN - Autonomous Bottom Mapping UUV system  
 UDS – Unmanned Dipper System  
 USV - Unmanned Surface Vehicle  
 UTAS – USV Towed Array System  
 VTUAV - Vertical Take-off Unmanned Aerial Vehicle





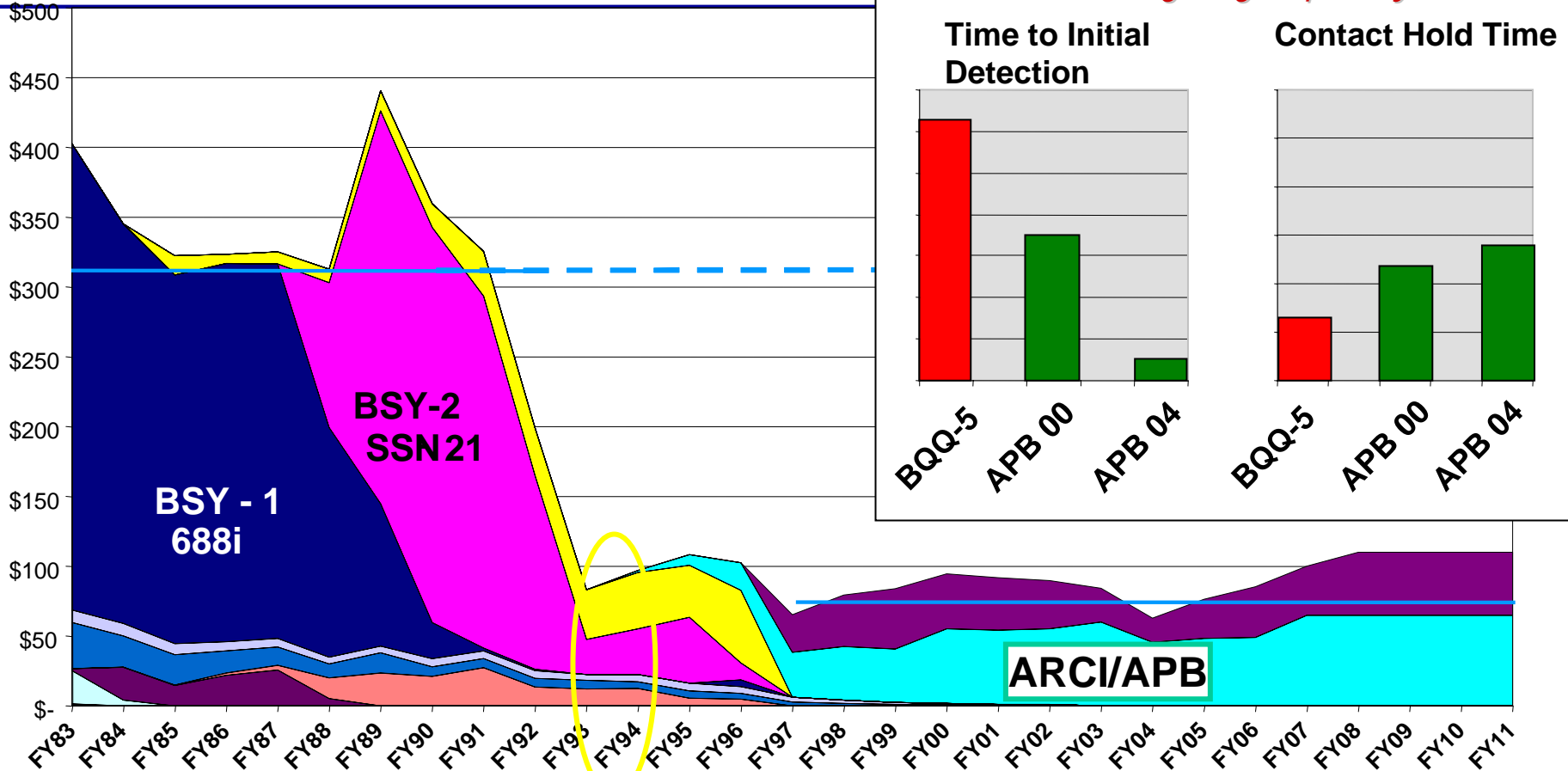
# *LCS – Mission Modules*





# One Example: ARCI/APB Experience

*Warfighting Capability*



Upgrade Cycle: 12 Years

Upgrade Cycle:

SW Every 1 Year  
HW Every 2 Years

**Major funding cut drove change in Acquisition Business Model**