DEEPWATER



# Technology Insertion

8 March 2005

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# U. S. Coast Guard Missions

## Maritime Safety

- Search and Rescue
- International Ice Patrol

## Maritime Mobility

- Lightering Zone Enforcement
- Foreign Vessel Inspection

## Maritime Security

- Drug Interdiction
- General Enforcement of Laws and Treaties
- Alien Migrant Interdiction

## National Defense

- Homeland Security
- General Defense Operations
- Maritime Interception Operations
- Military Environmental Defense Operations
- Port Operations, Security, & Defense
- Peacetime Military Engagement
- Coastal Sea Control

## Protection of Natural Resources

- Marine Pollution Enforcement & Response
- Living Marine Resource Enforcement

# *Integrated Deepwater System (IDS) Acquisition Program*

- ***System of Systems*** **Procurement – Goal: Optimize Operational Effectiveness (OE) and Total Ownership Cost (TOC)**
- **Awarded in June '02 to *Integrated Coast Guard Systems* (Joint Venture – Lockheed Martin and Northrop Grumman)**
- **Four *Domains***
  - *** Surface * Air**
  - *** C4ISR * Logistics**
- **Multiple *Assets* (e.g. Cutters, Aircraft, Small Boats, Shore Facilities) deployed over 25 years**
- **Focus on COTS/CANDI**

# System Solution – Assets

Maritime Patrol Aircraft (MPA)
35

High Altitude Endurance UAV
7

HC-130
6

VTOL Unmanned Air Vehicle (UAV)
69

VTOL Recovery and Surveillance Aircraft
34

Multi-Mission Cutter Helicopter
93

Maritime Security Cutter Medium (WMSM)
25


Maritime Security Cutter Large (WMSL)
8

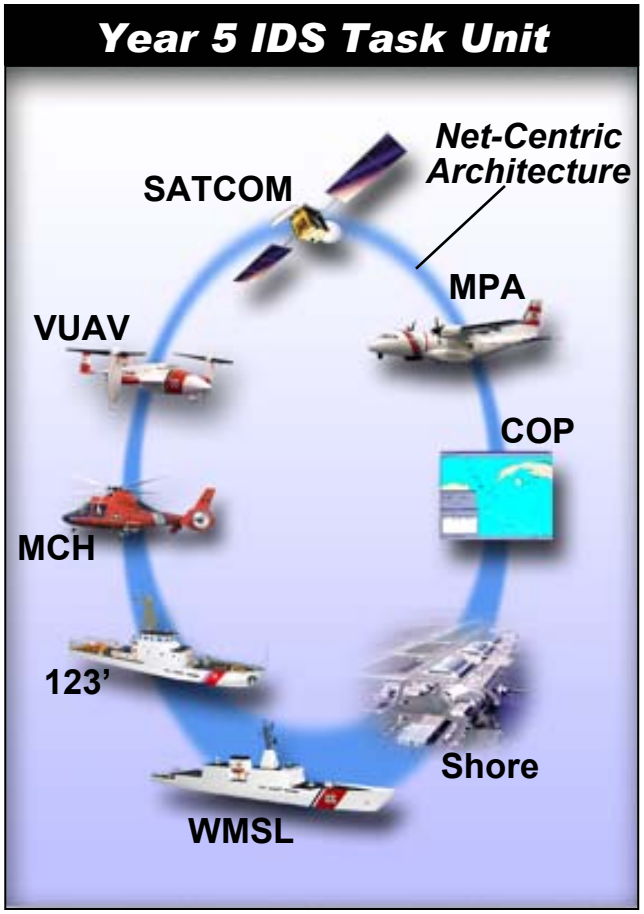

Modified 123' Patrol Boat
49

Fast Response Cutter (FRC)
58

Short Range Prosecutor
82

Long Range Interceptor
42

# System of Systems at Year 5


- **Fully Interoperable C4ISR Network-Centric Architecture**
- **Low Risk Transition to Full Capability**

# The Surface Assets


## Capability Improvements

- New Cutters Designed With Mission and Capability Growth
- Provisions for Interchangeable Mission Modules to Enhance Flexibility Tailored to Missions
- Stern Ramps on All Cutters and Upgraded Patrol Boats Enhance Small Boat Launch and Recovery Operations With Less Crew
- Dramatically Improved Habitability Features Include 2/4 Person Staterooms, Fitness Centers, Lounges, and Learning Centers


49 123' Patrol Boats


8 National Security Cutters


25 Offshore Patrol Cutters


58 Fast Response Cutters


42 Long Range Interceptors


82 Short Range Prosecutors

# Surface Capabilities

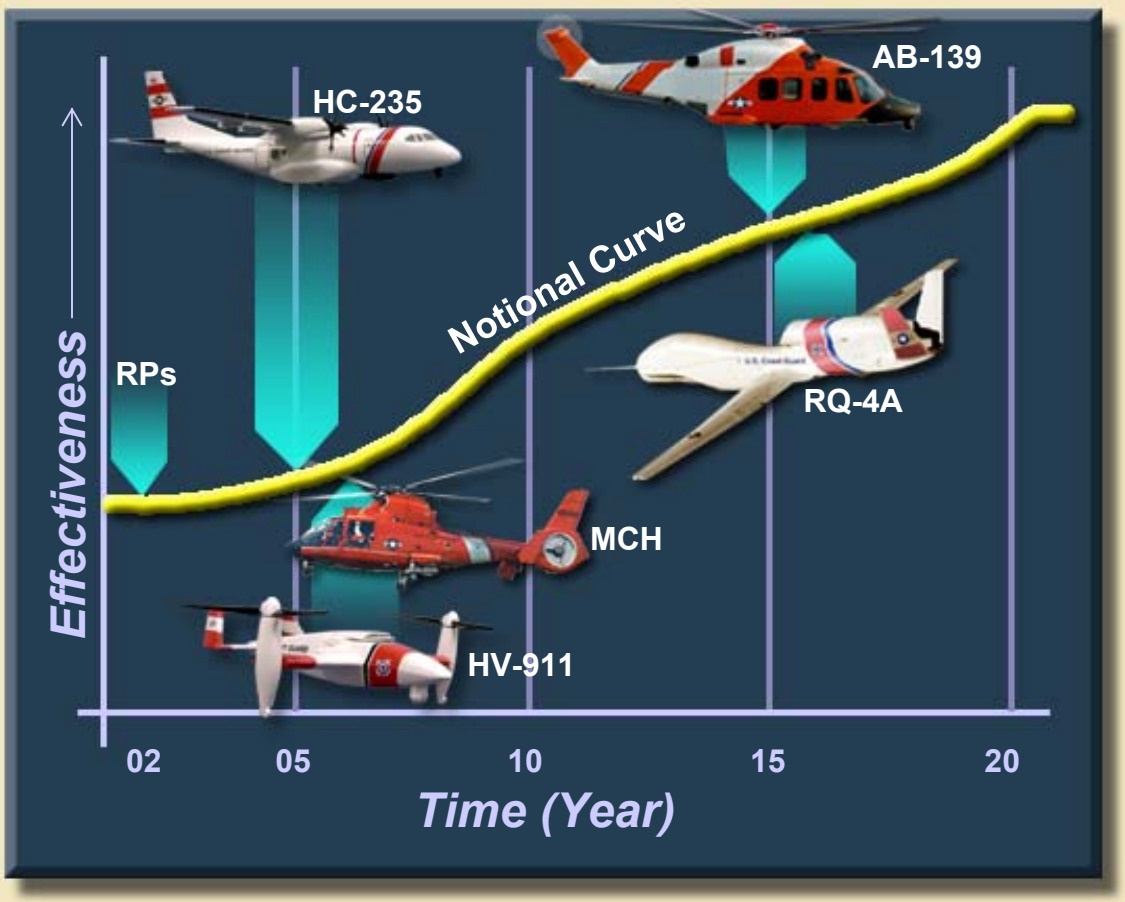
### Communications
- Automated Comms Systems
- Software Radios (Combine HF/VHF/UHF)
- Military SATCOM
- Enhanced Dual INMARSAT-B (256 kbps)
- Wireless Internal Comms
- Data Links
- SIPRNET/CGDN+
- Cryptological Devices

### Sensors
- Air Search Radar 3D-Air Search
- SPS-73 Surface/Nav Radar
- Fire Control Radar
- IFF
- Electronic Surveillance Measures
- Electro Optic/Infrared

### Weapons
- 57mm Gun
- 30mm Gun
- 50cal Guns
- Decoy System

### Integrated C2
- Integrated Bridge System
- Common C2 System
- Multi-Operational Consoles
- C2 Local Area Network
- Local Tactical Picture
- Common Tactical Picture
- Common Operational Picture (COP)

# The Aviation Story




## Capability Improvements

- All Aviation Assets Include Night/All-weather Capability With Radar and EO/IR Sensors
- Increased Communications and Common Operating Picture Capability
- MPA and VUAV Introduced in First Five Years Support Early Retirement of High-Cost-to-Operate Legacy Aircraft


6 Long Range Surveillance


35 Maritime Patrol Aircraft


7 High Altitude Endurance


93 Multi-mission Cutter Helicopter


34 VTOL Recovery and Surveillance Aircraft


69 VTOL Unmanned Air Vehicle

# Aviation Capabilities

## Communications
- Military SATCOM
- INMARSAT-B
- COMSATCOM
- HF/VHF/UHF radios
- Tactical Data Links
- SIPRNET & CGDN+
- Crypto Devices

## Sensors
- Surface/Air/Weather/ ISAR radars
- (Near Future - Multi-Mode Radar)
- Radio Direction Finding
- Electro-Optical / Infrared
- Night Vision Goggles

## Integrated C2
- Common C2 System
- Multi-Operational Consoles
- Local Tactical Picture
- Common Tactical Picture

New C2 and Sensors on MCH are Common With The VRS

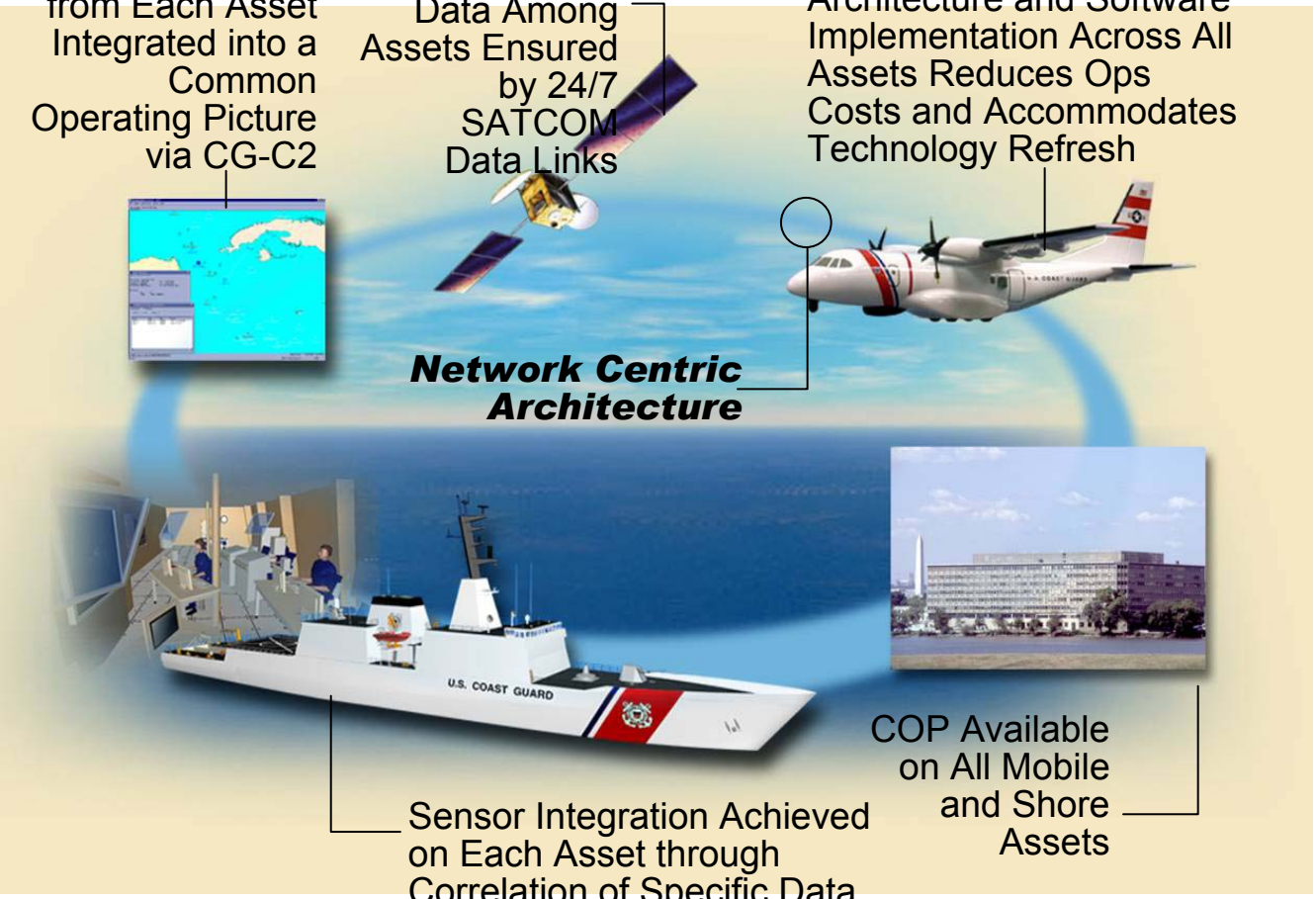
Range Endurance Allows Operation from Only 2 Sites


MPA Features a Palletized Fully Integrated Tactical System

VRS is Shipboard Deployable on The NSC, OPC, and Major Legacy Cutters

Each NSC or OPC Carries Up to 4 VUAVs

# The C4ISR Capability

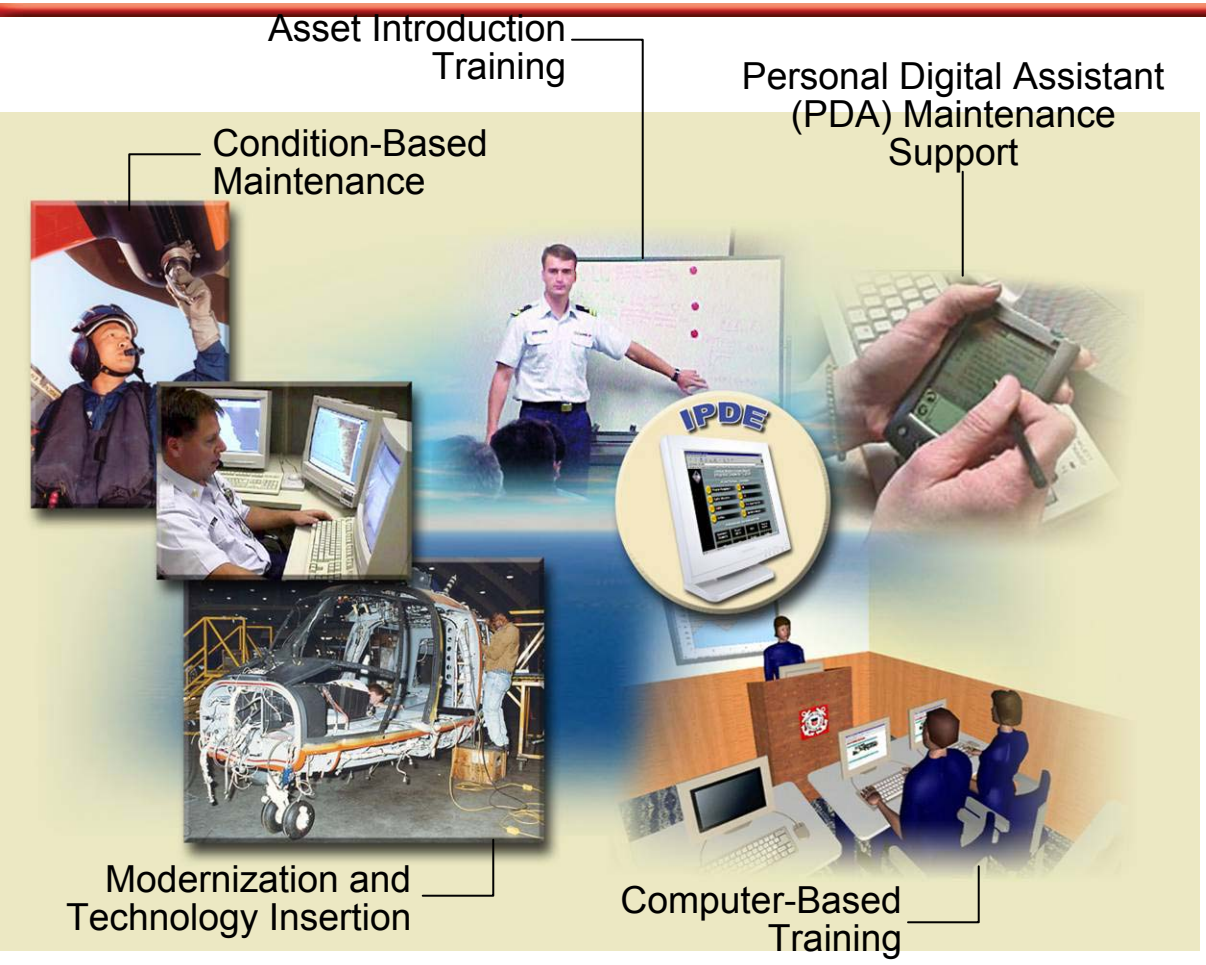



## Capability Improvements

- **Common Command and Control Systems is Fully Integrated With All Sensors, Communications, and Legacy Interfaces**
- **Interoperability and Maritime Domain Awareness Established by IDS Assets and National Sources**
- **Imbedded Technical Refresh to Obviate Future Obsolescence**

***Early Increased Situational Awareness, Surveillance, and Command is Provided through a Common Operating Picture to Answer Homeland Security Requirements***

# Manpower and ILS Enhancements

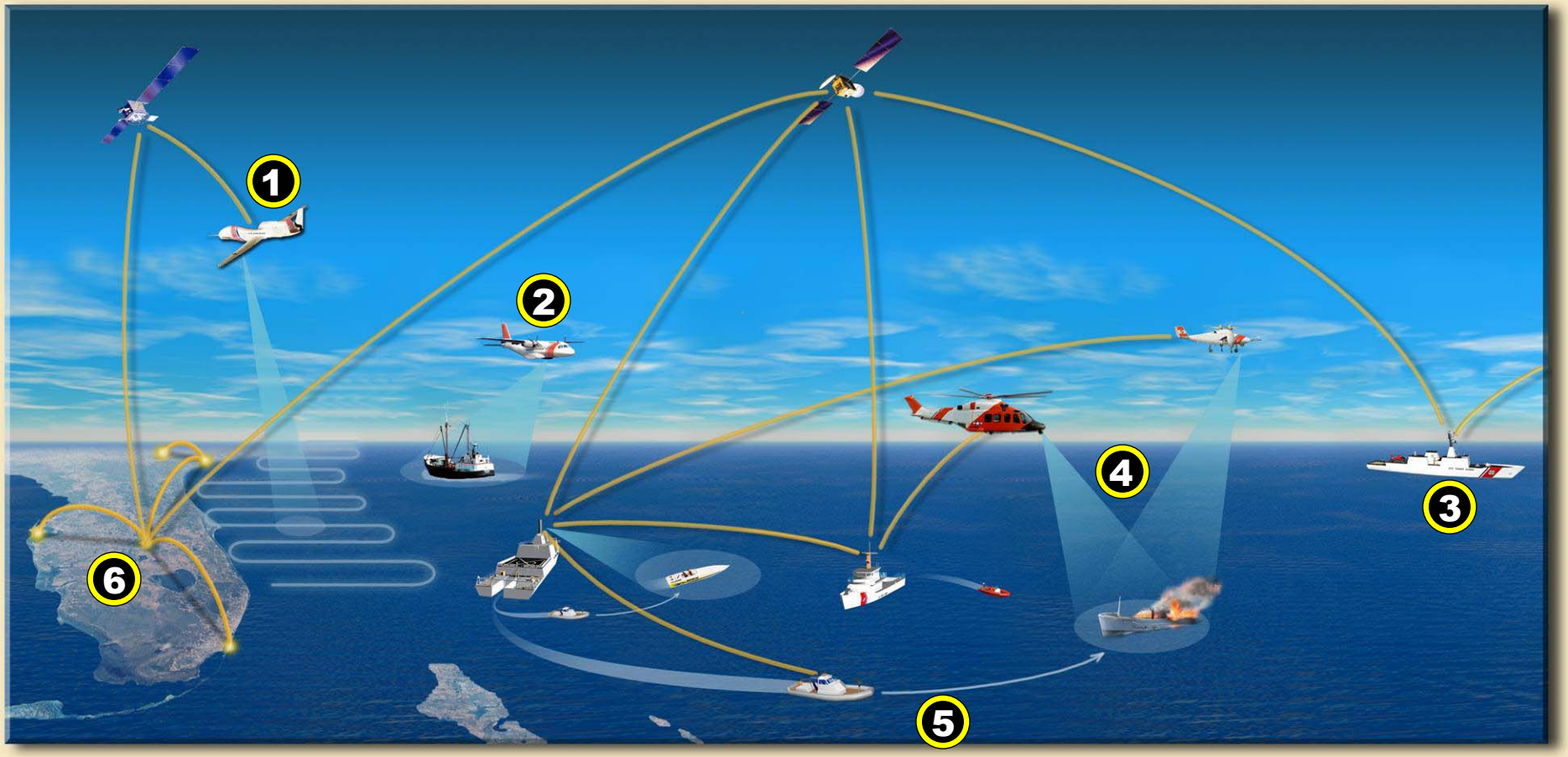



## Capability Improvements

- Increased Automation Reducing Operator Workload, Training Requirements, and Enables Condition-based Monitoring
- Integrated Product Data Environment (IPDE) Maintains a Single, Authoritative Data Set Program-wide for Program Performance and Metrics
- Equipment Selection, Sparing, and Training Based on RMA Improves Readiness, Availability, and Supports System Response Reducing Operating Expenses

***Increased Automation and State-of-the-Art Technology, Decreased Manpower Requirements and Reduced Total Ownership Cost***

# CONOPS Summary

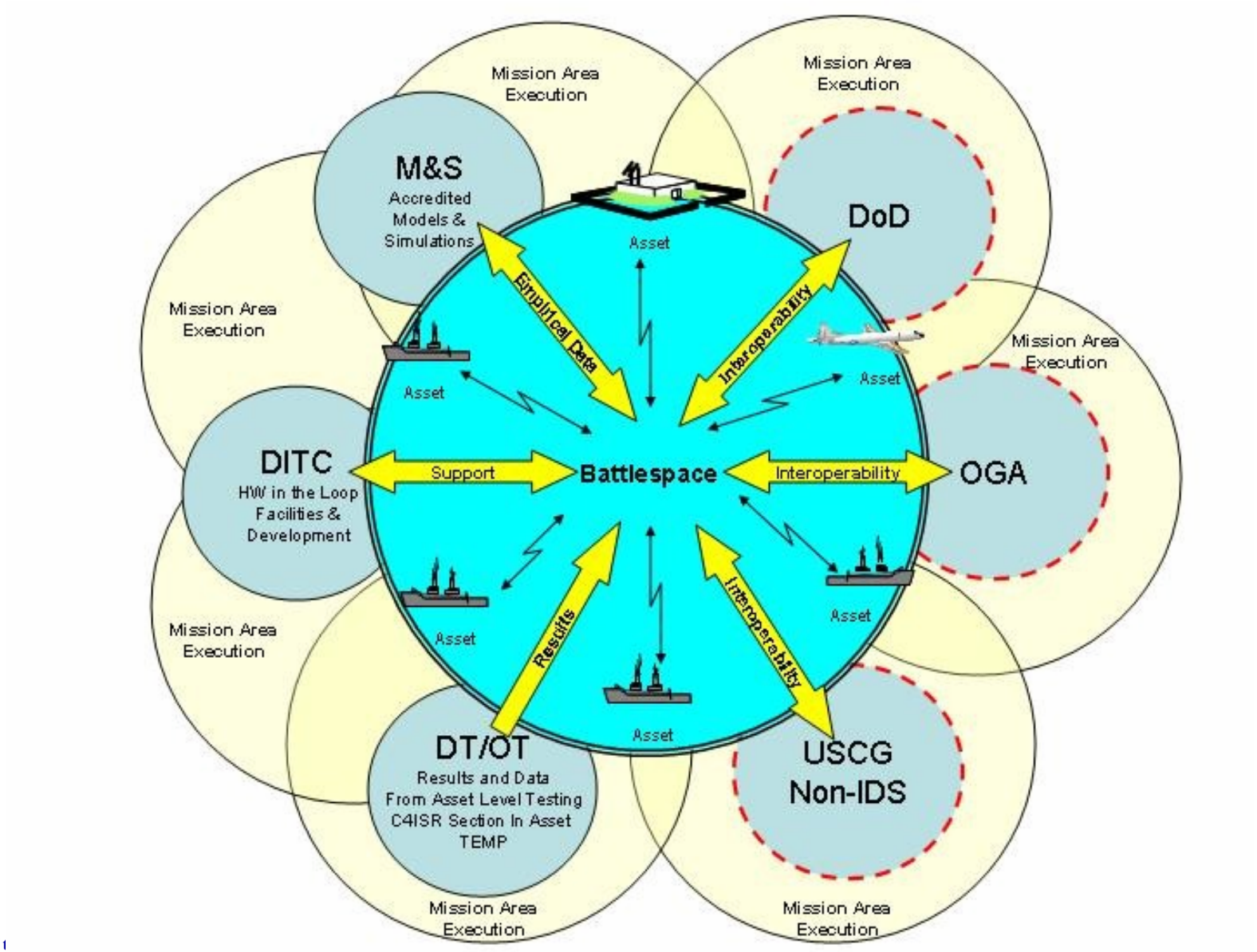



**1** HAEUAV Wide Area Surveillance
**2** MPA Prosecution
**3** NSC Interoperability
**4** Multi Asset Operation
**5** Over-the-Horizon Operations
**6** Shore-based Command Center

# Test Methodology

- Incremental blocks from the bottom up
- Common testing architecture and integration of test efforts
- Capitalize on other sources and pre-existing data
- Extensive use of M&S
- Mission/capabilities based testing (operationally relevant DT)

# Operational and Test Environment



# Challenges

- **Resource and schedule constraints**
  - Access to assets
  - Expense of real world testing
  - Training of users
  - Trade-offs
- **Data for M&S**
  - More
  - Better
- **Translation of COTS manuals and manufacturing data into usable products**
- **Phased implementation**
- **Stovepiping**
- **Complex C4ISR integration issues**

# Current Developments and Lessons Learned

- Slight lag to technology curve not all bad!
- Assumption of risk is inevitable, take educated risk
- Look to other sources for test data
  - QA
  - Certification
  - Production
- Technology Refreshment Plan
- Force structure and testing must be capability based
- Technology isn't limited to equipment

# Conclusion

- Proven technology may be preferable to leading edge technology where test and training dollars are both precious and scarce
- Operational environment will change quicker than we think in ways we don't expect – our focus must be to field effective capabilities/assets to operate within it. Good M&S programs can greatly aid our decision processes.
- M&S is a multi-dimensional tool which supports:
  - Battlespace Operations
  - Acquisition Decisions
  - Mission Effectiveness Measures
- A common and integrated testing architecture is required
- POC: Mr. Walt Dickey, Director, T&E (G-DPM-1) for any questions : (571) 218-3287; wdickey@comdt.uscg.mil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