• PEO LCS responsibilities
  – First 32 Littoral Combat Ships and Mission Packages
  – Mine Warfare beyond Mission Packages
  – Unmanned Maritime Systems
  – Frigates
  – ONR and PEO LCS
• PEO LCS S&T functions
• Key S&T objectives
• S&T Strategic Coordination
The Littoral Combat Ships

- Modular open systems architecture
  - Flexible system for dynamic battle space
  - Advanced unmanned air, surface, and underwater vehicles
  - Onboard sensors, weapons, command & control
  - Mission modules interchangeable
  - Maximizing interchangeable components within modules

- Optimized for warfighting in the littoral
  - Unique designs for unique environment
  - Fast, maneuverable, shallow draft

- Targeted at critical capability gaps
  - Reconfigurable single mission focus
  - Mines, small fast surface craft, diesel submarines

- Joint Force multiplier
  - Fully networked with battle force
The Main Business of PEO LCS

LCS Warships

PMS 501
Seaframe Construction

Accelerating Innovation through Open Systems Architecture!

Fleet Introduction

PMS 505
Fleet Introduction/ Sustainment

Mission Modules

PMS 420 Mission Module Integration

PMS 495
ALMDS, COBRA, AMNS

PMS 406
UISS, Knifefish

PMS 403
Remote Minehunting System

IWS 8.0
Combat Systems
Mine Countermeasure (MCM) Mission Package Systems

PEO LCS is a key player in Mine Warfare beyond the Mine Countermeasures Mission Package.
Other Sources of Ship and Mission Package Essentials

- PEO Integrated Warfare Systems (IWS)
  - Sensors, systems, algorithms for Ships, ASW, SUW
  - IWS 8.0 dedicated to LCS combat systems

- Naval Aviation Systems Command (NAVAIR)
  - MH-60R Seahawk multi-mission helicopter
  - MQ-8B Fire Scout unmanned vertical take-off aerial vehicle
  - Crews for helicopter and operators for Fire Scout
  - Used for ASW and MCM Mission Packages

- Naval Space and Warfare Systems Command (SPAWAR)
  - Supports ship / off-board vehicle communication
Mine Warfare Beyond the Mission Package

- MCM Avenger Ship Class Combat System Modernization Program
- In-service MCM equipment for MH-53E Airborne Mine Countermeasure Systems
- Mines program
  - Quickstrike air-delivered bottom mines
  - Exercise and training mine shapes
Unmanned Maritime Systems
Beyond the Mission Packages

Knifefish: Hunting for Volume and Bottomed / Buried Mines in High Clutter Environment

Persistent Littoral Undersea Surveillance (PLUS): Anti-Submarine Warfare (ASW)

Large Displacement Unmanned Undersea Vehicle (LDUUV): Intelligence Surveillance Reconnaissance (ISR), ASW, IPOE and Deployable Payload

Mine Hunting Unmanned Surface Vehicles (MHU): Mine Hunting

USV Flight 1 (UISS): Mine Sweeping

USV Flight 2: Mine Hunting

Acquiring the Navy’s Future Unmanned Fleet

IPOE = Intelligence Preparation of the Operating Environment
UISS = Unmanned Influence Sweep System
UUV = Unmanned Undersea Vehicle
USV = Unmanned Surface Vehicle
Modified Littoral Combat Ships

Frigates

• Modified Littoral Combat Ships (Small Surface Combatants) to be multi-mission focused with expanded SUW and ASW capabilities
• Will be based upon existing LCS designs modified to incorporate additional capabilities
• Will retain certain aspects of modularity but maintain a baseline of surface and subsurface warfare capabilities
• Will provide lethality, survivability, and multi-mission capabilities in accordance with fleet priorities
• Requirements based on estimated theater threat environment for the 2025 timeframe
• Will fulfill the remaining 20 ships of the Navy’s 52 small surface combatant requirement

FY14 S&T Investments Benefitting PEO LCS

* ONR managed investments comprised 94% of the PEO LCS S&T portfolio
The Warfare Center Connection

• PEO LCS S&T linked closely to the NAVSEA Warfare Center Enterprise

• Mission Area Leads from four divisions on S&T staff
  – Ship/Multi-mission (NSWC Carderock)
    • Also Lead for Strategic Coordination
  – MIW (NSWC Panama City)
    • Also supports PMS495 Technical Director
  – SUW (NSWC Dahlgren)
  – ASW (NUWC Newport)

• Deputy S&T Director from Warfare Center
  – Present Deputy (NUWC Newport)
  – Incoming Deputy (NSWC Philadelphia)

• Support smart S&T investment decisions to meet operational needs, regardless of the technology source
Key S&T Objectives

• Keep the venues strong
  – SBIR, RIF, TIPS: Our near and mid-term bread and butter
  – FNCs: Our long-term meat and potatoes
  – Refine Rapid Technology Insertion contracting process

• Use Strategic Analysis as the backbone for smart decisions
  – Threat analysis
  – Gap analysis across the kill chain
  – Technology analysis (cost/performance over life cycle)
  – Transition analysis

• Work closely with ONR, DARPA, and industry
• Establish “good transition partner” reputation
DRAFT: Strategic Coordination Overview

2015

Program Of Record:
- Current Requirements
- Existing Kill Chains
- Ongoing Development
- Current Budgets
  - 6.4 RDT&E, OPN, OMN, SCN

2020

“Mission Area Vision” -> Drivers

Threat Analysis
- N81
- ONR

Future Needs/Requirements

Future Kill Chain
- Sensors
- Killer
- Vehicles

Future Funding Constraints
- Future Procurement
- Life cycle costs

P3I/Evolutionary

Transformational

2025

Far Future Needs/Requirements

Annual Calls for S&T Venues

S&T (6.1 -6.3)
- SBIR
- FNC
- RIF
- TIPS
- NSRP

Other S&T Venues

Ongoing projects
S&T Strategic Coordination Objectives

• Achieve consensus across the Fleet, OPNAV resource sponsors, and acquisition offices

• Agree on top FYDP operational gaps across LCS mission areas
  – Recommended technology investments to meet gaps

• Agree on long term vision and big ticket technology investments in areas of
  – Unmanned maritime systems
  – Mine warfare
  – Modularity/flexible ships
Potential Mission Modules
and, in future, broader Navy ship modularity

TODAY
- MCM
- ASW
- SUW

OPPORTUNITIES
- Maritime Security Module
- Information Module
- EOD Mission Module
- Humanitarian Mission Module
- Maritime Dominance Module
- PLUS Mission Module
- Irregular Warfare Module
- Special Operations Force Module
- UAV Mission Module
- LDUUV Mission Module
- Search and Rescue Module
- Other modules
Conclusion

- PEO LCS provides exciting opportunities to achieve the Naval S&T Strategy

“To discover, develop, and deliver decisive naval capabilities, near- to long-term, by investing in a balanced portfolio of breakthrough research, innovative technology, and talented people.”

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