



Unmanned Maritime Systems Update for Sea-Air-Space

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PEO USC Portfolio

LCS delivers mission-focused capability to the Fleet



LCS 1 Variant

LCS 2 Variant

International Small Combatants



ASW Mission Pkg



MCM Mission Pkg



SUW Mission Pkg



Comms



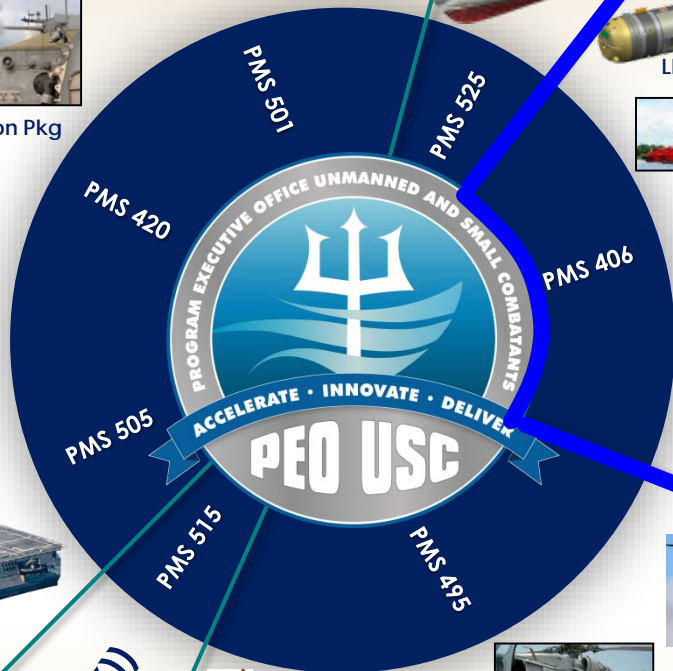
Fire Scout



MH-60 Helo



Software



KNIFEFISH

LUSV

XLUUV/AUP

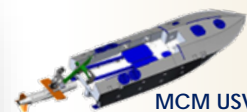
MUSV

LDUUV

RAZORBACK

GHOST FLEET

MHUS



MCM USV



UISS



AN/AQS-20

PEO USC SUMMARY
(ACAT or Equivalent)
3 - ACAT I
4 - ACAT II
3 - ACAT III
0 - ACAT IV
7 - Pre-ACAT
9 - Non-ACAT/Other



COBRA



ALMDS



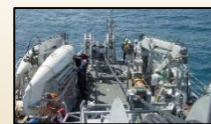
QUICKSTRIKE



MH-53 AMCM



AMNS



MCM 1 Ship Systems



BARRACUDA



MIW C2

Frigate (FFG(X))



Hammerhead



In-Service Support (Ships & Mission Packages)

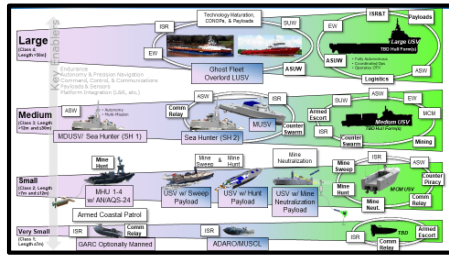


LCS Training

As of March 2019



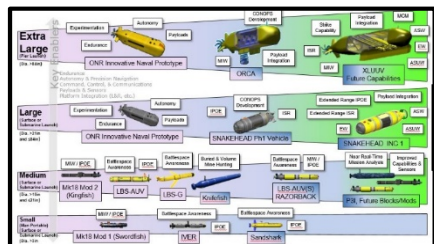
USV Vision Has Produced Stable Plans/Programs



- **Large USV (LUSV)**
 - Part of *Surface Capability Evolution Plan* and Future Surface Combatant Force
 - Provides distributed lethality and capacity
 - FY20 start. Deliver “ASAP”
- **Medium USV (MUSV)**
 - Part of *Surface Capability Evolution Plan* and Future Surface Combatant Force
 - Provides distributed sensing and communications relays
 - FY19 start
- **Mine Countermeasures USV (MCM USV)**
 - Modular USV to support Modular MCM Force from LCS or Vessel of Opportunity
 - Sweep, Hunt, Neutralize
 - LRIP in FY19



UUV Vision Has Produced Stable Plans/Programs



- **Orca XLUUV**

- Pier-launched large payload and range
- 5 XLUUVs deliver by 2022

- **Snakehead LDUUV**

- Submarine-launched large payload and range
- 1 operationally relevant prototype in 2021
- Industry RFP in FY20

- **Knifefish MCM UUV**

- Surface-launched buried mine hunting
- LRIP in FY19

- **Razorback UUV**

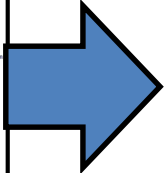
- Submarine launch and recovered battlespace sensing
- Dry Deck Shelter variant delivers in FY19
- Torpedo Tube variant starts in FY20



Core Technology Vision Has Produced Funded Products/Processes



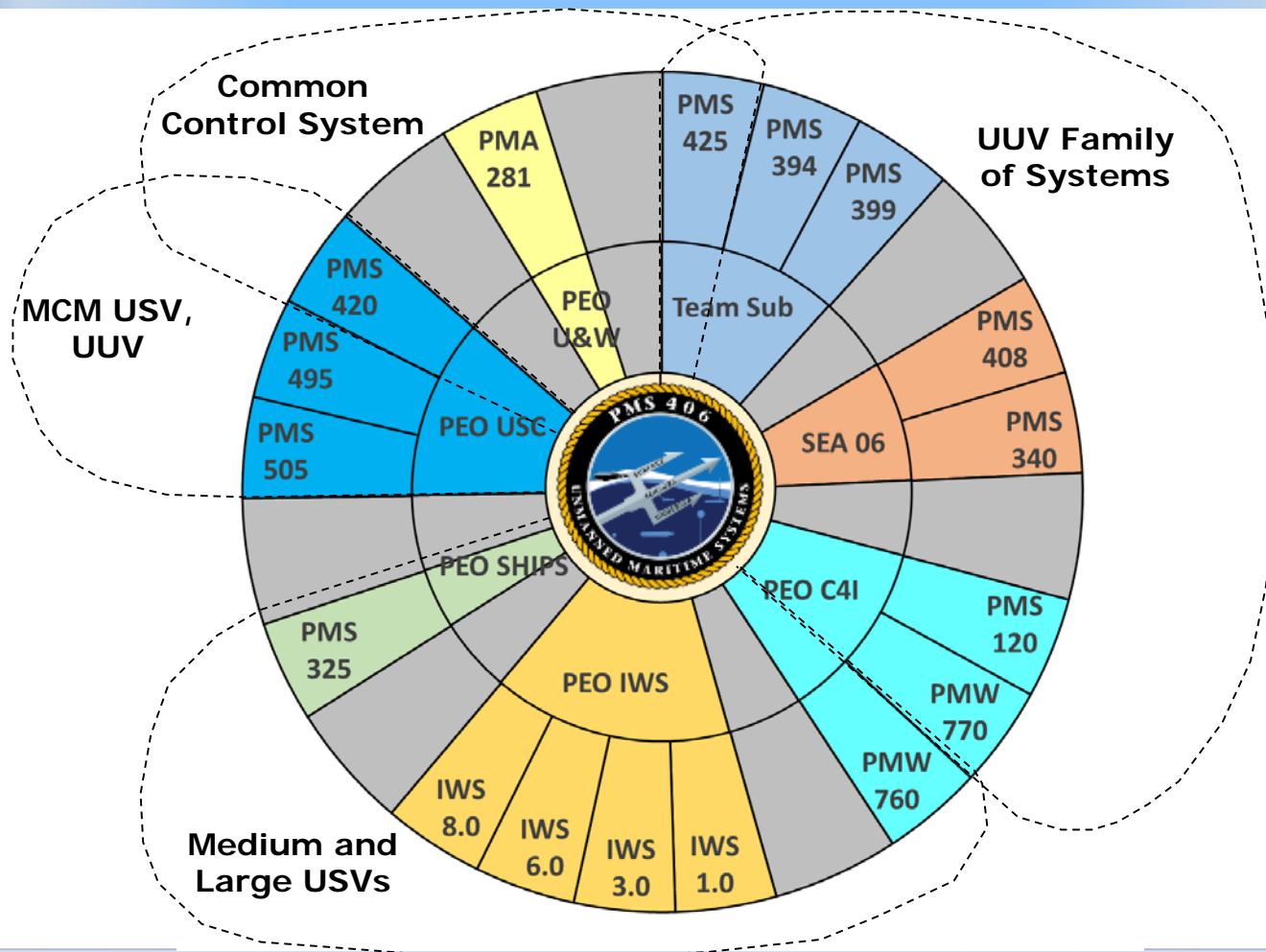
- **Endurance**
 - Improved reliability & safety
 - Increased endurance & range
 - Support additional & more capable sensors
- **Autonomy & Precision Navigation**
 - Increased levels of autonomy & decision making
 - Increased accuracy & reliability
- **Command, Control, and Communications**
 - Safely, autonomously & reliably launch and recover
 - Standard Command, Control, and Communications
- **Payloads & Sensors**
 - Increased capacity for sensors and payloads
 - Increased capability
- **Platform Integration**
 - Increased capability to launch and recover
 - Increased coordination with host platforms



- **Endurance**
 - Li-Ion Certification Process
 - Propagation Resistant Li-Ion Architecture
 - Transition of fuel cell technology
- **Autonomy**
 - Unmanned Maritime Autonomy Architecture
 - Autonomy Lab
- **Command, Control, & Comms**
 - Common Control System for UxV
 - UUV Communications Assessment
- **Payloads**
 - Payload Interface Group
 - ONR/DARPA payload transition



Corporate Unmanned Approach



Developing collaborative relationships to deliver better capability faster



Collaborative and Comprehensive Unmanned Support Structure



▲ Naval Warfare Center

▲ UxV Squadron

▲ University Affiliated Research Center (UARC)

▲ LCS /Other

Keyport, WA ▲
Seattle, WA ▲
Bayview, ID ▲



Newport, RI ▲
State College, PA ▲
Columbia, MD ▲
Carderock, MD ▲
Dahlgren, VA ▲
Norfolk, VA ▲
Little Creek, VA ▲
Wallops Island, VA ▲

Port Hueneme, CA ▲
San Diego, CA ▲

Hancock County, MS ▲
Austin, TX ▲
Panama City, FL ▲
Mayport, FL ▲
Ft Lauderdale, FL ▲

The Navy is aligning facilities and capabilities to the portfolio.



Work to do



- Where will we base the fleet(s) of UxVs?
- What infrastructure is needed?
- How/where will we forward deploy them?
- What transportation infrastructure is needed?
- What is the Unmanned manning scheme?
- How/where will we test them?
- How do you test endurance, reliability and autonomy?
- What policy is needed?
- How will we support them?
- What training infrastructure is required?

**Unmanned is coming.
Requires broad Navy planning and programming.**