

DHS Human Systems Integration Process applied to USCG Surface Asset Acquisitions

Bonnie Novak
DoD HFE TAG
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Human Systems Integration for Acquisitions Division CG-1B3



Overview

- DHS HSI acquisition process
- USCG HSI Technical Authority
- DHS HSI processes applied to USCG acquisitions



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DHS HSI Process

- Objectives:
 - Develop and implement a formalized, standardized process for applying HSI to the development, evaluation and fielding of DHS technology and systems;
 - HSI process is directly linked to the processes, activities, milestones and products of the:
 - DHS Acquisition Review Process (ARP)
 - Systems Engineering Life Cycle (SELC)
 - DHS S&T Framework processes.
 - Process includes HSI Best Practices.



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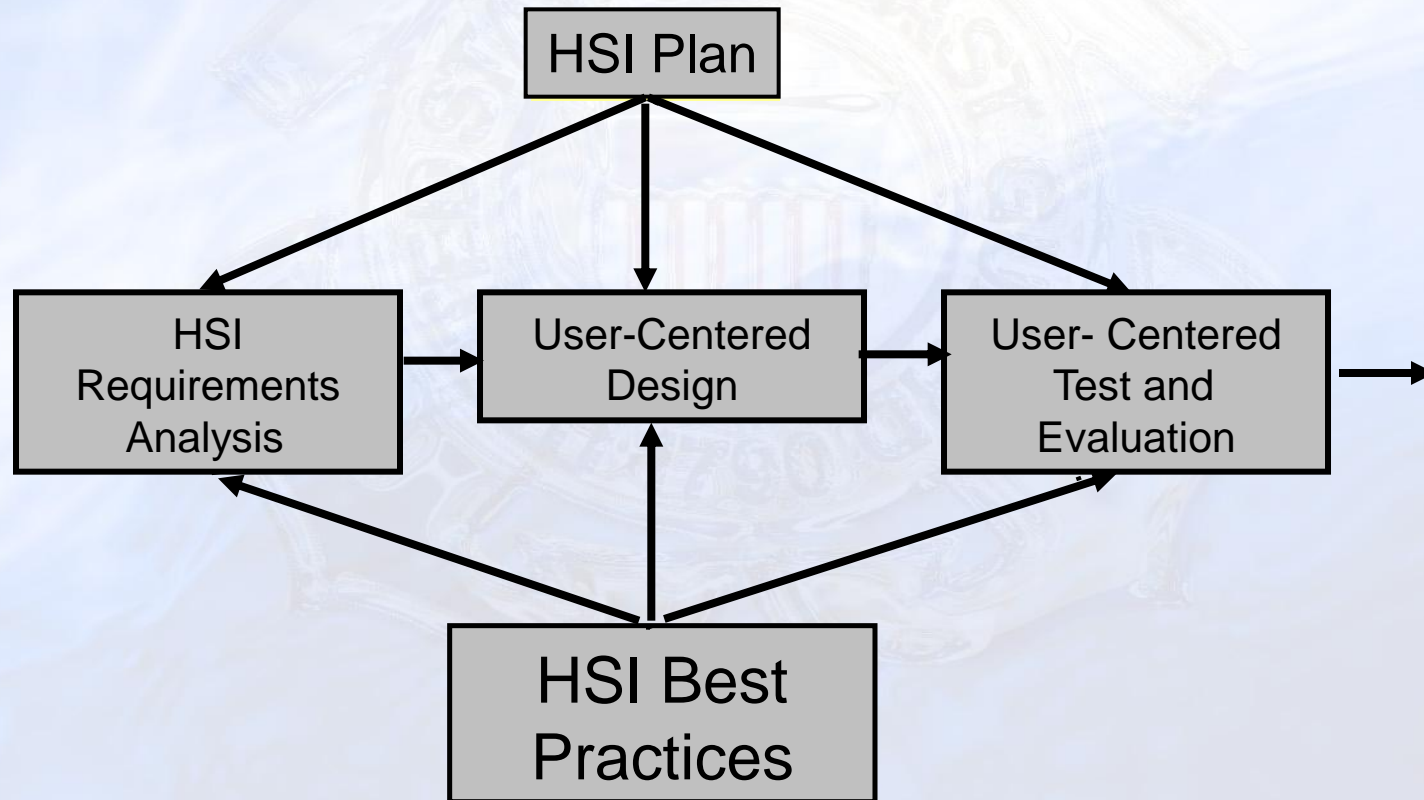
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DHS HSI Process

- Major elements of the process:



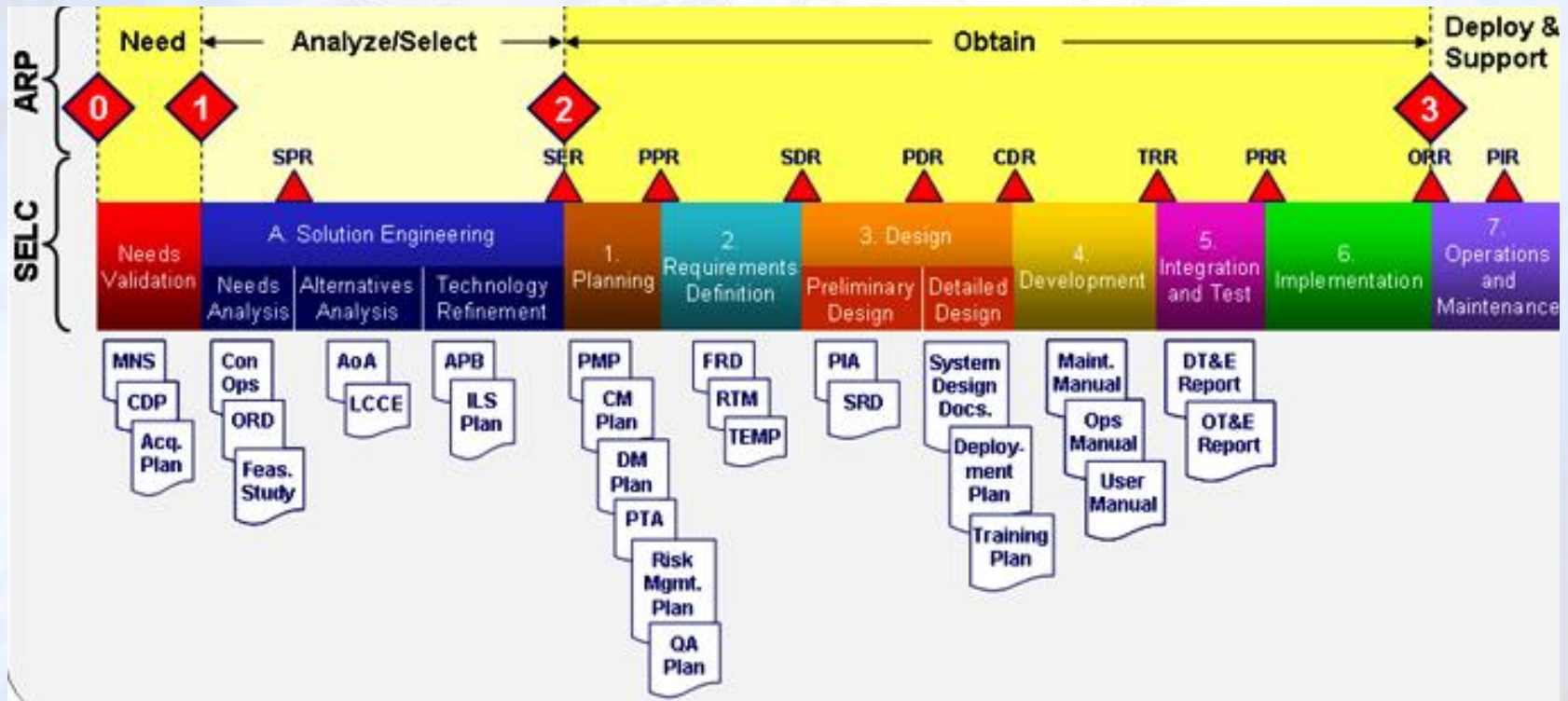
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DHS Acquisition Framework



HSI elements are addressed throughout the acquisition process...



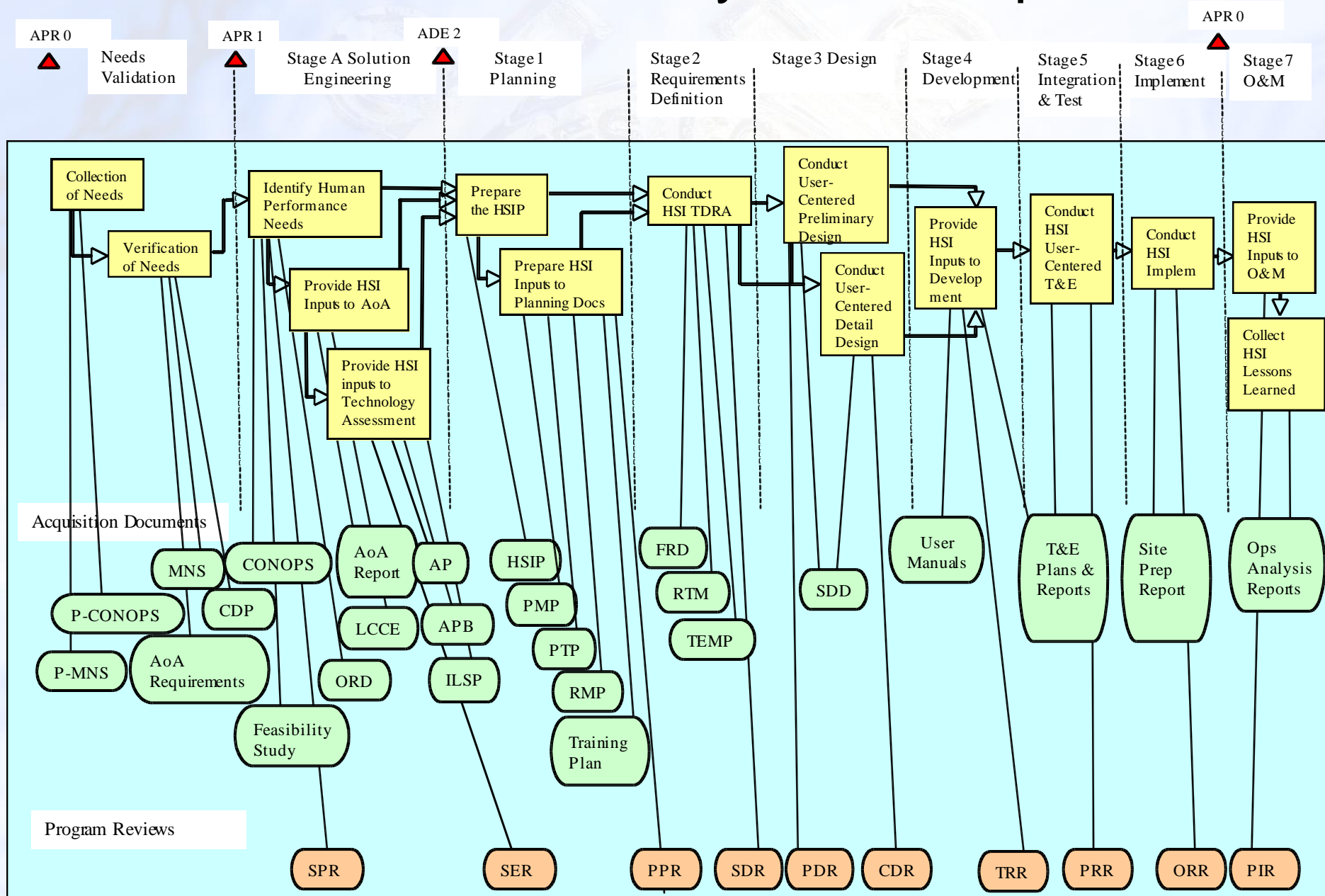
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DHS HSI Process in Systems Acquisition



DHS HSI Standard Process - Best Practices

1. HSI Planning
2. Top Down Requirements Analysis
3. HSI inputs to CONOPS
4. HSI inputs to Mission Needs Statement (MNS)
5. HSI inputs to Operational Requirements Document (ORD)
6. HSI inputs to Analysis of Alternatives (AoA)
7. HSI inputs to Project Management Plan (PMP)
8. HSI inputs to the Acquisition Plan (AP)
9. HSI inputs to technology development and assessment
10. HSI inputs to the Integrated Logistic Support Plan (ILSP)
11. HSI inputs to the Test and Evaluation Master Plan (TEMP)
12. HSI inputs to the Risk Management Plan
13. HSI test and Evaluation
14. HSI modeling and simulation
15. User Interface design
16. HSI maintainability design
17. Personnel and training
18. Health, safety and survivability
19. Design for habitability
20. HSI inputs to procurement documents
21. HSI inputs to the system performance specifications
22. HSI inputs to the system design specifications
23. HSI inputs to installation criteria
24. HSI inputs to COTS/NDI acquisition
25. HSI lessons learned
26. HSI Inputs to System Design Document
27. HSI metrics
28. HSI inputs to the Project Tailoring Plan (PTP)
29. HSI inputs to the Functional Requirements Document (FRD)



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USCG HSI Technical Authority

- HSI addresses the human component of the system design process and ensures systems are designed, produced, supported, fielded, and modernized through a complete and careful integration of the human within the total system.
- This includes:
 - Manpower
 - Personnel / Workforce Management
 - Training / Performance Support
 - Human factors engineering (HFE)
 - System Safety and Occupational health
 - Habitability
 - Personnel survivability
- The HSI Technical Authority ensures best value systems engineering and technical products are delivered to systems acquirers to achieve best total system performance within total ownership cost constraints.



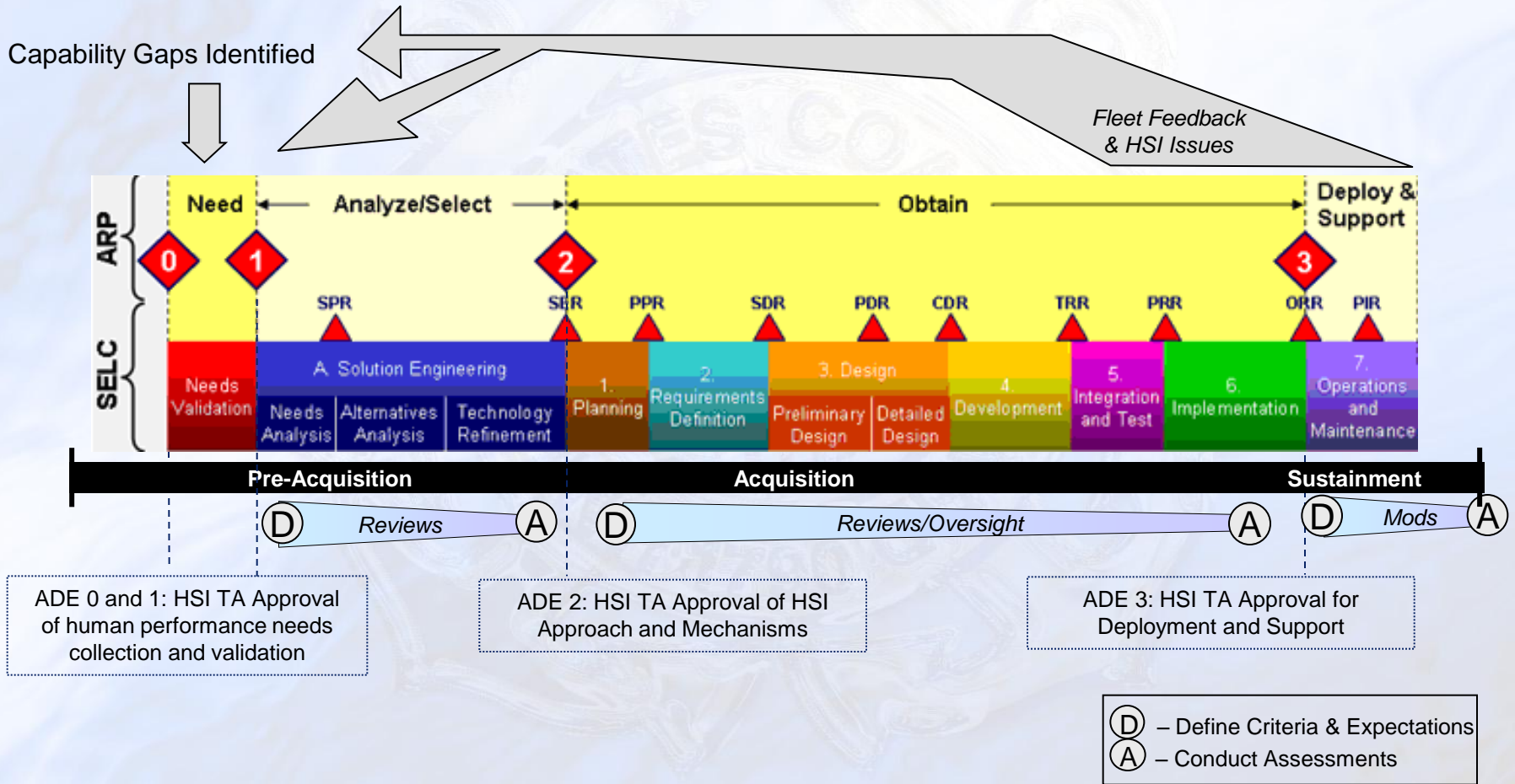
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HSI Technical Authority vision within the DHS SELC



Exercise of technical authority throughout all phases of system lifecycle ensures understanding of implications / risks of HSI design trades



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HSI in current USCG Surface Projects

- CG-1B3 is implementing HSI in the following projects
 - Fast Response Cutter (FRC)
 - Offshore Patrol Cutter (OPC)
 - Cutter Boats (MK II, MK IV, and Large)
 - Response Boat-Medium
 - Response Boat-Small
 - Others in C4ISR and Aviation domains



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HSI in the FRC Project

SENTINEL Class Patrol Boat

- Contributed requirements to RFP for crew size of 22 and limit of 2 enlisted watchstanders on bridge (threshold = 1, objective = no engineering watch).
- Active participants in PDR/CDR reviews in 2009 – to review work by Shipbuilder
- CDRL reviews and participation in detailed design include review and approval of:
 - Program Management Plan
 - Systems Engineering Management Plan
 - Human Engineering Program Plan
 - Habitability design drawings & general arrangement drawings
 - T&E Program Plan
 - System Safety Program Plan
 - Closed Loop Hazard Tracking Database
 - Training Development and Support Plan (TDSP)
 - Training Needs Assessment and Analysis
 - Cutter Boat Handling and Launch & Recovery Analysis



- Participation in detailed design through meetings, regular discussions with the PM and staff, and meetings with the PRO and Shipbuilder
- CDR mock-up design review for pilothouse and galley to validate design concepts
 - Detailed report of findings and recommendations provided to PM
- Actively working on getting FRC project WSESRB approval in Summer 2010.



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HSI in the OPC Project

- Active member of the ORD IPT, ILSMT, and Document Mgmt WG
- Prepared, conducted and provided analysis report for initial human performance requirements based on lessons learned and legacy Cutter (270') review
- Provided Manpower Estimate Report
- Provided HSI section of ORD (using analyses from HFE report) and provided Manpower KPP – ORD signed Oct 09
- Providing iterative review and comment on the ILSP, TEMP, PMP, and Acquisition planning documents
- Generating System Safety IPT and identifying project needs for WSESRB preparation
- Drafting input to the RFP – due for initial review Summer 2010
- Drafting system design specifications as key team member on Ship Design Team



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HSI in the OPC Project

- KPP #3: Operational Sustainment and Workforce Allocations
 - The WMSM shall be operated, maintained, and supported underway by an assigned crew complement (excluding detachments) of 104 (threshold) /90 (objective) and allocated in accordance with Coast Guard staffing standards and compatible with the most demanding underway, operational environment consistent with the CONOPS.
- Human Systems Integration Section included in ORD Sustainment Requirements. Samples include:
 - Manning thresholds and objectives
 - *“The WMSM systems shall be designed for human task completion, including while wearing personal protective equipment, within required performance standards and conditions.”*
 - *“The WMSM shall incorporate common display formats, symbology, operating procedures, and interaction modes wherever possible to produce a common look and feel and consistent protocols for system operation.”*
 - *“The WMSM shall be designed for usability and eliminate system characteristics that require extensive training or workload-intensive tasks, or that result in mission-critical errors or produce safety or health hazards.”*



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Conclusion

- DHS HSRE team is developing HSI processes and best practices for systems acquisitions.
- USCG HSI Technical Authority is providing input to those processes and working to implement throughout surface acquisitions.



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Contact info

Chris Kijora, Human Engineering Team Lead

christian.a.kijora@uscg.mil

202.475.5092

Bonnie Novak, HFE Lead Surface Assets

bonnie.b.novak@uscg.mil

202.475.5102



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