Department of Defense Field Activities as Enablers of the Defense Industrial Base for the Acquisition of Surface Navy Combat Systems
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Introduction

- The Department of Defense (DoD) Industrial Base Includes Government Agencies, Shipyards, and Industry Consortiums
- DoD Field Activities Provide Unbiased, Technical Leadership in Key Acquisition Decisions
- Field Activities Conduct Combat Systems Engineering to Support Acquisition and Development
Roles of Government Agencies

- Office of the Chief of Naval Operations (OPNAV)
  - Provide Warfighter Requirements
    - Capability Definition
  - Provide Resources to Program Executive Office (PEO)
- PEO / NAVSEA
  - Implements Warfighter Requirements
    - Government-Defined System Requirements and Architecture Applied Across Platforms
  - Manage and Certify Execution of Programs
- Field Activities
  - Lead Development of Combat System Architecture and Requirements
  - Provide Technical Oversight of Combat System Development and Integration
  - Execute Risk Identification and Assessment, System Safety, Test and Evaluation, System Certification
Roles of Industry Consortiums and Shipyards

- **Industry**
  - Support System Requirements and Architecture Analysis
  - Design, Develop and Test Combat System Elements
  - Integrate Combat System Elements
  - Conduct Integration Testing

- **Shipyards**
  - Install, Field, and Maintain Combat Systems
DoD Naval Field Activities

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Enabling

• Field Activities Enable Government
  – Define Combat System Limitations and Capabilities
  – Perform Component Commonality Studies
  – Development and Analyze System Requirements
  – Oversee Combat System Architecture Analysis and Development
  – Provide Roadmap Development
  – Solicit Independent Cost Analysis and Estimation

• Field Activities Enable Industry
  – Define Bounded Technical Work Packages for Detailed Design
  – Provide Focus on Development and Integration of Capability Upgrades with Multiple Platforms Applicability
Combat System Roadmap

• Captures Combat System Fielding Plans Across Surface Navy Platforms
  – Analysis of Operational Effectiveness Reveals Capability Gaps
  – Multi-Platform Mission Thread Analysis Identifies Shared Operational Needs Across Platforms and Evaluates Common Solutions
  – Develop Time-Phased Plan to Introduce Additional Capabilities or Upgrades
    • Align Particular Capabilities to Targeted Host Combat System(s)
    • Align Science and Technology Efforts to Satisfy Capability Definition
  – Identify Dependencies Between Capabilities
    • Understand Cross-Platform Application and Implementation
  – Funding Profiles Related to the Additional Capabilities or Upgrades
Combat System Requirements

- Decomposing Force Requirements to Combat System Level Requirements Through Mission Area Analysis
- Map Requirements to System Level Functions Identified with Architecture Analysis
- Identifying Common Functional Requirements Across Elements

Warfighter Requirements  
Mission Area Analysis  
New / Upgraded Capabilities  
Identify Common Functionality  
Full Integration of Multiple Elements

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Field Activities Develop Combat System Architecture

- Common Framework for Development
- Long Term Vision Reducing Uncertainty
- At System Level, Provides Detailed Understanding of Functionality and Interfaces
- Output is a Partitioned Set of Requirements, Allocated Appropriately Across the Platforms
- Objective is to Move to Common Components Across Platforms

**Functional Architecture**

* Defines System Boundary

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Combat System Execution

• Execution Represents the Combat System Design, Development and Fielding Phase in the New Acquisition Approach
  • Industry is Responsible for the Detailed Design, Development, Integration and Delivery of a Fully Functional Combat System
    – Requirements are Satisfied from System Requirements Review
• Government Oversees Development and Conducts Certification
  – Field Activities are the Life-Cycle Systems Engineering Agent and In-Service Engineering Agent for the Government
    • Lead System Requirements Review
    • Support Element Definition for the Combat System Design
    • Ensure Combat System Configuration Management, System Safety, Information Assurance
    • Conduct Testing and Installation of Combat System Computer Programs
    • Certify Fully Functional Combat System
    • Maintain In-Service Support of Combat System for Operational Use
New Acquisition Approach

OPNAV Warfighting Requirements and Resources

PEO IWS Combat System Scoping, Definition & System Engineering Requirements

Capability Roadmaps
Mission Based Common Functionality
Product Line SE

Cross-Platform System Requirements Review

Technical Work Package

Government Defined Requirements and Architecture

Industry Developed Platform Specific Combat Systems

Unique Aegis
Common

Unique SSDS
Common

Unique Future Ship
Common

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Notional Enabling Example

ICD Mission Area

New System Development (CDD)

Contract Award

Development Complete

CS Developer Competition

Contract Award

SRR

SFR

PDR

CS Development (CDD)

Gov

Gov/Ctr

Gov

Gov/Ctr

OV and SV Analysis

- Mission Thread Analysis
- Performance Analysis
- Commonality Analysis

- System Requirements Synthesis - SRD
- System Architecture Definition - SSDD

Bounded Work Package
- CS Detailed Design
- Ship Design Modifications
Conclusion

• Primary Areas for Field Activities in the New Acquisition Approach to Focus the Efforts of the Industrial Base
  – Roadmap and Combat System Definition
  – Requirements and Architecture for Work Package Definition
  – Combat System Execution

• Field Activities Translate Operational Requirements From Government Activities to Design Requirements for Shipyards and Industry Consortiums

• Drive Towards More Affordable Combat System Acquisition