LCS
Mission Modules Program

Training Strategy
Increasing Modularity for Maximum Adaptability

Brief for ImplementationFest 2010

10 August 2010

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Statement A: Approved for Public Release, Distribution is unlimited
LCS Mission Modules Program: Training Strategy Increasing Modularity for Maximum Adaptability

Naval Surface Warfare Center, PMS 420L, Washington Navy Yard, DC, 20376-7101

Implementation Fest 2010, 10-12 Aug 2010

Implementation Fest 2010, 10-12 Aug 2010

Implementation Fest 2010, 10-12 Aug 2010

Modification Fest 2010, 10-12 Aug 2010
Agenda

• Objectives

• LCS Mission Modules Program

• Sustainment Approach

• Training Approach

• Data Management Approach
Objectives

• Link program life-cycle management and training courseware management
  – *(Principle of modularity)*

• Link Mission Module design and training courseware design
  – *(Courseware as a Life Cycle item)*

• Use acquisition to reach open business model for technical data management
  – *(Key to re-use of technical data for the government)*
Overarching Need

- Warfighting Capability Gaps have been identified in JROC-approved ICDs
  - Assured Maritime Access in the Littorals ICD
  - Joint Undersea Superiority Capabilities Based Assessment / MCM ICD
- Mine Warfare
  - Shortfall of needed MCM capability to meet operational timelines
- Surface Warfare
  - Moderate capability against small boats with a layered defense approach
- Anti-Submarine Warfare
  - Insufficient capability to support fixed area and transit protection in high threat areas
- JROC-validated and -approved the LCS Flight 0 CDD in May 2004
  - JROC approval of LCS Flight 0+ CDD in June 2008

Mission Packages

Provide:
Flexible,
Scalable,
Modular Warfighting Capability
LCS Mission Modules

**Mission:**
The LCS MPs will provide the Combatant Commanders a modular, focused mission capability to provide assured access against littoral mine, submarine and surface threats. Incremental acquisition of Mission Systems as they reach a level of maturity necessary for fielding. These systems provide a warfighting capability that will continuously improve through an evolutionary acquisition development process.

**Platform:**
Littoral Combat Ship

**Employment:**
LCS Mission Packages provide sufficient flexibility for the at-sea commander to successfully achieve assured access for evolving mission requirements.
Mission Package Defined

{ Mission Systems } + Support Equipment = Mission Modules } + Crew & Support Aircraft = Mission Package

Vehicles
- RMMV
- USV

Weapons
- 30mm Gun
- AMNS
- SSMM
- ALMDS

Sensors
- AQS-20A
- COBRA
- UDS

Support Containers
Support Equipment
Standard Interfaces
MPCE Software
MPCE Hardware

VTUAV
Crew Detachments
- Mission Modules
- Aviation H-60

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Mission Modules Complexity

Weapons Systems

Software & Computing Environment

Manpower & Training

Surface Vehicles

Mission Packages

Sensors

Module

Sustainment

Aircraft

Package

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Mission Package Support Facility

Mission…
- O, I&D level maintenance management
- Distance Support for deployed MMs
- Configure certified Deployable Assets
- Troubleshooting and repair
- System Operability Tests
- Inventory management / visibility
- Validate ready-for-use status of MP
- PHS&T
- Shelf life material
- Authorized spares are on-board
- Replenish spares and consumables
- Expedite parts requests as required
- Arrange transportation of MMs
- Arrange embark and debark services

Hub for all In-service Mission Modules
Employment Concept

Preparation: Mission Modules checkout at MPSF - Weapon Pwr Panel and diesel cooling system

Loading the Mission System in Support Container

Preparing Mission Module Support Container for land transportation

Mission Module Support Container loaded on C5 for air transportation

Mission Modules embarked aboard Seaframe (30mm GMM shown)

Mission Bay preparation to deploy system for operations

Mission System mounted on Vehicle

Mission Vehicle launched from Seaframe

Mission Operations

On-board maintenance

Packing up, preparing for debarkation at the end of deployment

Return to MPSF for required maintenance / modernization
## Capability Development Document (CDD) for LCS Flight 0+

<table>
<thead>
<tr>
<th>Train to Qualify (T2Q)</th>
<th>Train to Certify (T2C)</th>
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<tbody>
<tr>
<td>Process of training, in an off-ship training environment, an <strong>individual</strong> in the knowledge, skills, and abilities required to competently perform tasks, at a <strong>basic</strong> level associated with a designated (specific) shipboard watch station or position.</td>
<td>Process of training, in an off-ship training environment, a <strong>watch team</strong> in the knowledge, skills, and abilities required to competently perform tasks, at an <strong>advanced</strong> level associated with a designated (specific) shipboard watch stations or positions.</td>
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<thead>
<tr>
<th>CDD Requirement</th>
<th>Threshold</th>
<th>Objective</th>
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<tbody>
<tr>
<td>Mission Modules Crew</td>
<td>T2C</td>
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Training Strategy

<table>
<thead>
<tr>
<th>Individuals Training (System/Subsystem)</th>
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<tbody>
<tr>
<td>School House</td>
</tr>
<tr>
<td>Classroom</td>
</tr>
<tr>
<td>School House</td>
</tr>
<tr>
<td>Trainer</td>
</tr>
<tr>
<td>SYSTEM PQS</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>200</td>
</tr>
<tr>
<td>300</td>
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**Team Training (Mission Package)**

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<tr>
<th>FLEET</th>
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<tr>
<td>TYCOM General Training</td>
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<tr>
<td>3M/DC/FF</td>
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<tr>
<td>Inport Watch</td>
</tr>
<tr>
<td>AT/FP</td>
</tr>
<tr>
<td>GMT</td>
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<tr>
<td>Collateral Duties</td>
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| NTTS |
| Delivered Sep 09 |
| LCS MP PQS300 |

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<tr>
<th>LCS Shore Based Training Facility</th>
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<tbody>
<tr>
<td>CMPT</td>
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<td>LCS MP OMMS</td>
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<th>INTEGRATED LCS WATCH TEAM ENVIRONMENT</th>
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<td>i.e., Mission Bay Movement and Launch &amp; Recovery Trainer</td>
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</table>

- **Sailor Ordered to TYCOM via pipeline training.**
  - “Individual Training” for assigned watch station/billet. Includes:
    - System Operations and Maintenance
    - “Tool” operation (i.e., MEDAL and NALCOMIS)
  - Schoolhouse training must support T2C (PQS 100, 200, & 300 series) and T2Q (Outcomes, Measures, Metrics, & Standards {OMMS}).

- **Sailor Reports to TYCOM for LCS MMs Training.**
  - Individuals training placed in LCS Context using emulation products and T2Q training achieved.
  - Training in Integrated Watch Team environment using Tactical Hardware/Software with Sim/Stim and T2C training achieved.

- **LCS ACADEMY rounds out remaining required training normally received while onboard.**

- **Specialized Seaframe Integration Training required to ensure safe operation at sea.**

- **Unit Level Training ashore integrates new sailors into LCS team**

- **ISIC conducts ‘Certification’ events.**
Course of Instruction Mapping

TEAM & TACTICAL TRAINING

LCS Mission Package Introduction
4-5 weeks shore side (66% lab / 33% class)
Training Goals
LCS Environment (COTS Emulation)
- ICC2/MCC
MPCE
Electronic Tools
Mission Planning
Watchstation(s)
Console Proficiency
- Mission Bay
Support Containers
System Maintenance
Spares & Special Tools
System Movement
Launch & Recovery
- Weapon Zone
- Mission Area Tracks
MCM
SUW
ASW

LCS CAPSTONE (T2Q achieved)
4-5 weeks shore side (66% lab / 33% classroom)
Training Goals (Scenario based training)
- MP Team Integration
- MP/Seaframe Integration
- Tactical Stand Alone & Integrated Trainer

LCS MCM Specific Tactics & Mission
3 Weeks Shoreside
Training Goals
- Minefield Theory, Practice & Tactics
- Environment
  Acoustic
  Optical
  Bottom & Clutter
  Mine Location & Condition
  Unique Situation
- MCM System Capabilities & Limitations
- Planning Considerations
- Tools (MEDAL/BSMT)
- Scenarios (Practical Exercises)
Data Requires Life Cycle Management

- LCS Requirements
  - Train to Qualify
  - Train to Certify

- LCS Strategy
  - Individual Training
  - Team Training

- LCS Course Mapping
  - Mission Package Intro
  - LCS Capstone
  - Tactics and Warfighting

- Competencies
  - Knowledge
  - Skills
  - Abilities

- Objectives
  - Training
  - Learning
  - Performance

- Courseware
  - ILT
  - CBT
  - M&S
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<tr>
<th>Sponsor</th>
<th>Vision Statement</th>
<th>Cost Benefit Analysis</th>
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<tr>
<td>OSD/AT&amp;L - Reduction in Total Ownership Costs Program 2008</td>
<td>Learning courseware and technical publications are developed and maintained based on consistent Integrated Logistics Support data.</td>
<td>Joint Institute for Defense Analyses/ADL Report - <strong>Tenets:</strong> Common Data Format Common Source DB API Linking Editors to CSDBs ECP Web Service 10 Year Cost Benefit Analysis 5.5% - 11.6% (74M – 146M)</td>
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<td>PMS 420 – Program Management</td>
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* Reduction in Total Ownership Cost (RTOC)*
RTOC Statements and Tasks

Technical data and human performance requirements are not consistently factored into product acquisition or product life cycle support.

**TASK:** Training Needs Analysis in the Systems Acquisition Process Study

Technical data is managed and produced in a variety of formats, not linked together, and not simultaneously managed.

**Task:** Conversion of Q-20 and MK30 50MM learning content to S1000D

Learning content development tools are not integrated into life-cycle-managed technical databases.

**Task:** Development and implementation of API to integrate learning content development tools with common source databases.

Technical information managers cannot efficiently identify what product support content may be impacted by an engineering change proposal.

**Task:** Development of web service to search common source database for data modules to review based on ECP.
Life Cycle Management & Training

- Technical Standards are key to advancing modularity

**Shared Content Object (SCO):**

Forward Looking Assembly

To link learning data to equipment, *and* to reuse learning data in related courseware, *use a standard that describes the courseware and the system!*
Key Life Cycle Challenge: Shareable Content Objects (SCOs) as Design and Technical Data Change
The Basic Unit of S1000D: *The Data Module*

The Data Module File Name: *A Data Module Code*

*A Data Module Code Describes the Courseware and the System*
Challenges

• Acquisition
  – Procure weapon systems using an open business model
    • Use of Open Architecture Guidelines
  – Procure weapon systems whose technical data is reusable
    • Procure source data in S1000D; procure courseware in SCORM
  – Legacy systems

• Training Strategy
  – Know training requirements before writing training contracts
  – Know how to chunk courseware (training modularity)
  – Know how to chunk courseware into Learning Data Modules

Challenge is Enterprise Wide
Summary

• Link approach to life cycle sustainment and training courseware management.
  – *(Principle of modularity – Use of standards)*

• Link approach to LCS equipment design and courseware design.
  – *(Courseware as a Life Cycle item – Use of S1000D)*

• Use acquisition to reach modular data strategy.
  – *(Acquisition as key to courseware configuration – Know your requirements)*
Why?
THEY **FIGHT** for US

WE **WORK** for THEM
BACKUP
Navy Enterprise Technical Learning Content Management

A Pilot:
Learning Content Identification, Analysis, and Migration

Leveraging Navy Enterprise Technical Data Infrastructure in Support of Learning Content Management and Production