



LCS

Mission Modules Program

Training Strategy

Increasing Modularity for Maximum Adaptability



Brief for ImplementationFest 2010

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- Objectives
- LCS Mission Modules Program
- Sustainment Approach
- Training Approach
- Data Management Approach





Objectives



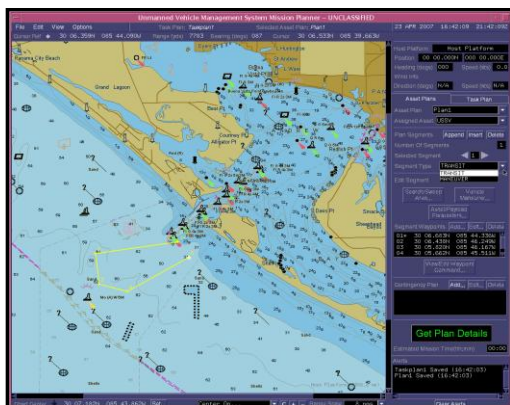
- **Link program life-cycle management and training courseware management**
 - *(Principle of modularity)*
- **Link Mission Module design and training courseware design**
 - *(Courseware as a Life Cycle item)*
- **Use acquisition to reach open business model for technical data management**
 - *(Key to 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**



ICD: Initial Capabilities Document
CDD: Capability Development Document

Statement A: Approved for Public Release, Distribution is unlimited

UNCLASSIFIED



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



$$\left\{ \begin{array}{l} \text{Mission} \\ \text{Systems} \end{array} \right\} + \text{Support Equipment} = \text{Mission Modules} + \text{Crew \& Support Aircraft} =$$

Mission Package

Vehicles

RMMV



USV



Weapons

30mm Gun



AMNS



SSMM



Sensors

ALMDS



AQS-20A



COBRA



UDS



Support Containers
Support Equipment
Standard Interfaces

MPCE Software



MPCE Hardware

VTUAV

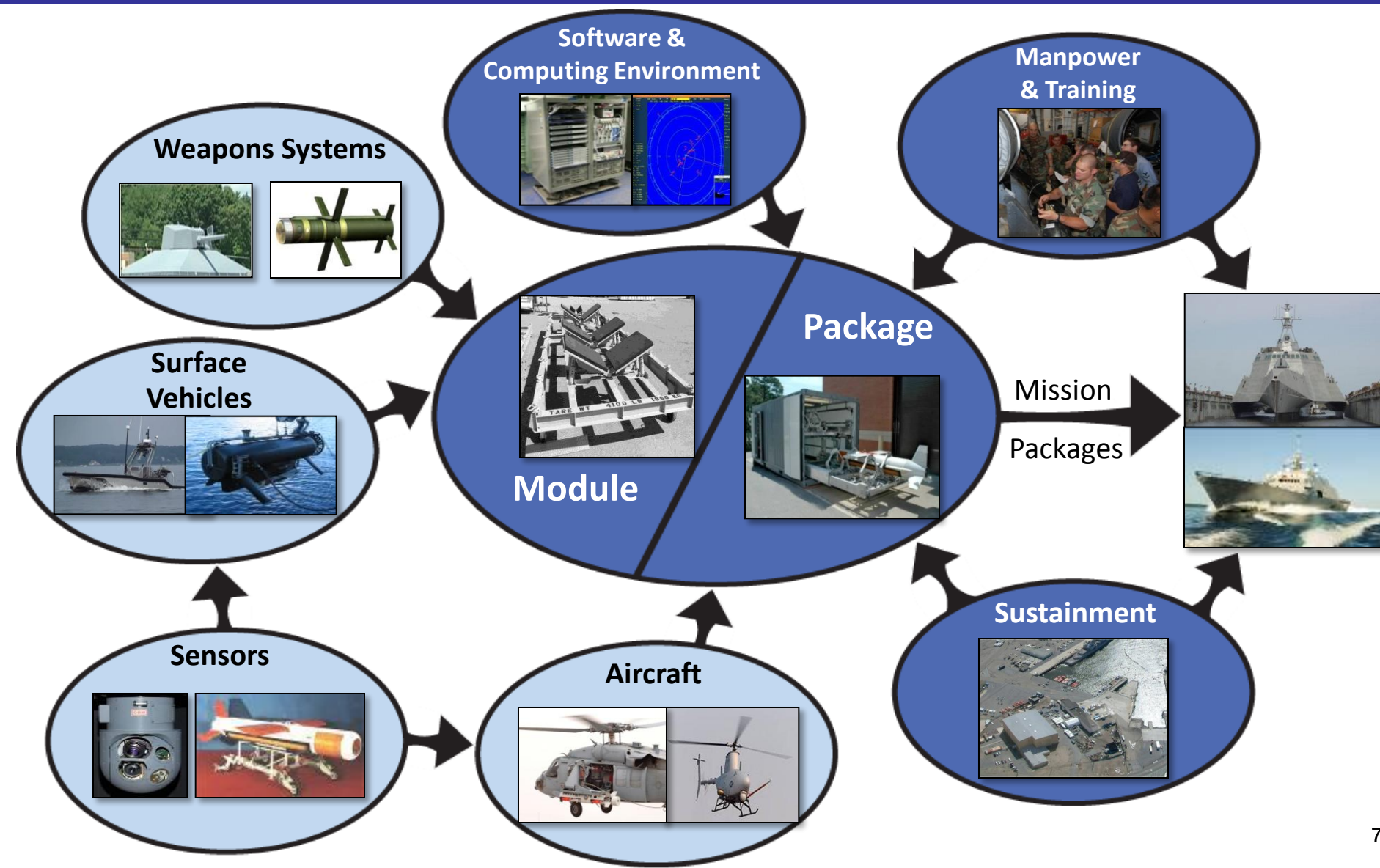


Crew Detachments
- Mission Modules
- Aviation

H-60



Mission Modules Complexity





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 -or- Container for land transportation



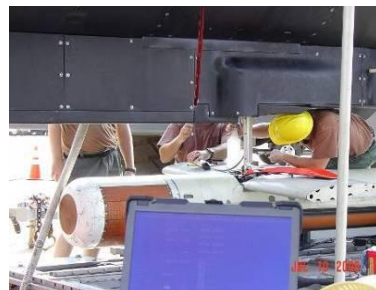
Mission Module Support Container loaded on C5 for air transportation



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



Specified Training Requirement



Capability Development Document (CDD) for LCS Flight 0+

Train to Qualify (T2Q)

Process of training, in an off-ship training environment, an individual in the knowledge, skills, and abilities required to competently perform tasks, at a basic level associated with a designated (specific) shipboard watch station or position.

Train to Certify (T2C)

Process of training, in an off-ship training environment, a watch team in the knowledge, skills, and abilities required to competently perform tasks, at an advanced level associated with a designated (specific) shipboard watch stations or positions.

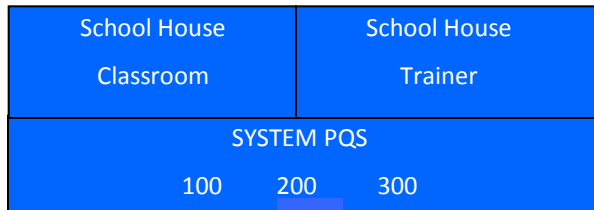
CDD Requirement	Threshold	Objective
Mission Modules Crew	T2C	



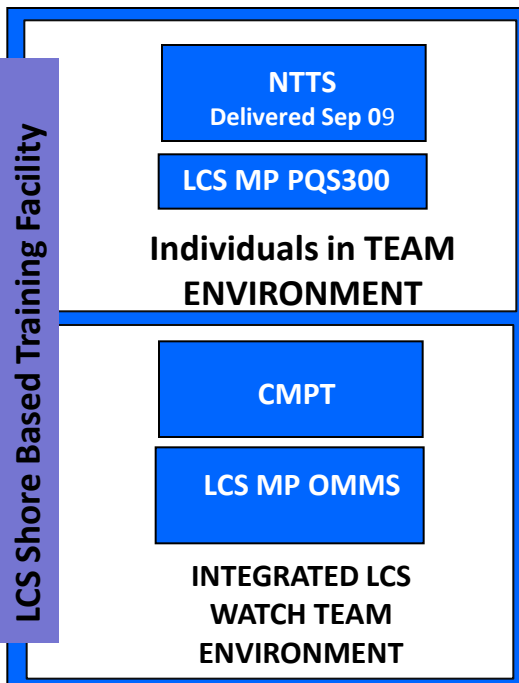
Training Strategy



Individuals Training (System/Subsystem)



Team Training (Mission Package)



FLEET

TYCOM General
Training
3M/DC/FF
Inport Watch
AT/FP
GMT
Collateral Duties

Program Office

Seaframe
Integration
Training
i.e., Mission
Bay Movement
and Launch &
Recovery
Trainer

- **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.**

FLEET

Unit Level
Training

TYCOM
CERTIFICATION



USS FREEDOM



USS INDEPENDENCE



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)

SYSTEM OPERATIONS & MAINTENANCE TRAINING

ASSIGNMENT TO SPECIFIC DETACHMENT

ULT: DETACHMENT TRAINING AND CERTIFICATION

NUMBERED FLEET CERTIFICATION FOR DEPLOYMENT

SEAFRAME / MP / AV EMBARK INTEGRATION ACTIVITIES



Requirements, Strategies & Mapping



LCS Requirements

Train to Qualify
Train to Certify



Competencies

Knowledge
Skills
Abilities

LCS Strategy

Individual Training
Team Training



Objectives

Training
Learning
Performance

LCS Course Mapping

Mission Package Intro
LCS Capstone
Tactics and Warfighting



Courseware

ILT
CBT
M&S

Data Requires Life Cycle Management



LCS Mission Modules RTOC* Effort



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

*** 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.

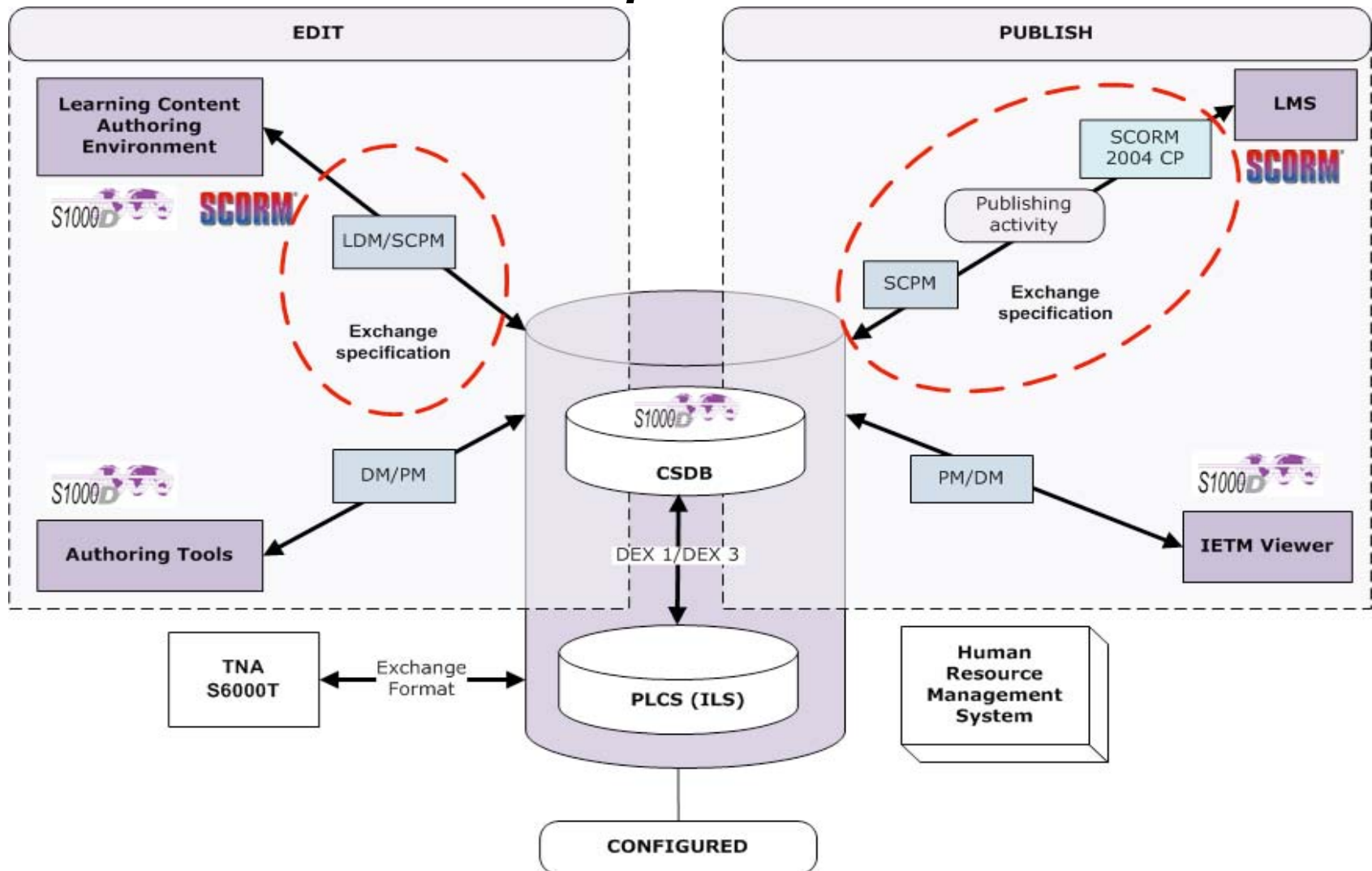
Task: Development of web service to search common source database for data modules to review based on ECP.



Courseware & Tech Data Together



Conceptual View



- 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!

Link Design to Training

SCO:
Mid-
Sectional

SCO:
Wing
Assembly

SCO:
Forward
Looking
Assembly

SCO:
Tail
Assembly

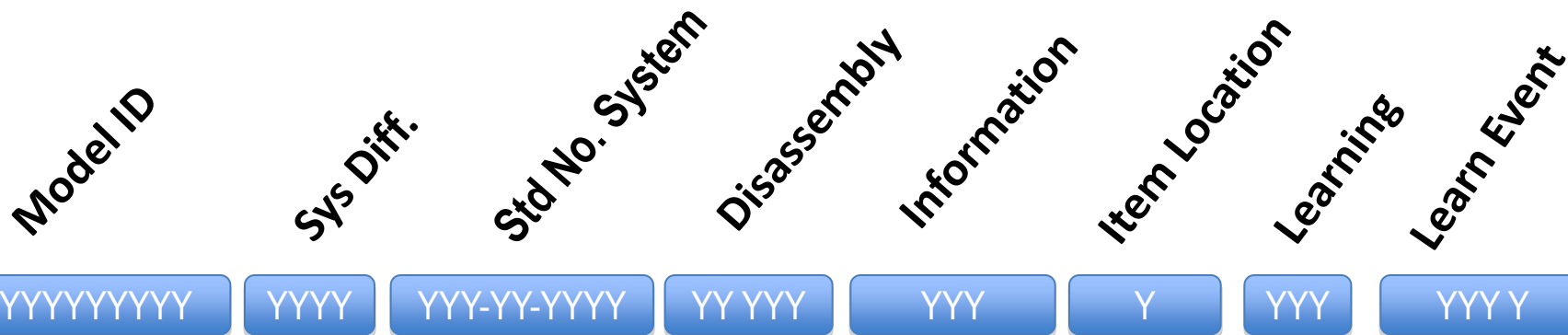


Mission Module Sensor

**Key Life Cycle Challenge: Shareable Content Objects (SCOs)
as Design and Technical Data Change**



Standardization Allows Modularization



Codes

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



CSDB - Naval Education Training Command Pilot



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