# NSRP USCG Product Lifecycle Management Data Requirements Interface Mapping

Joint Panel Meeting

October 20-21, 2026

# Agenda

- Background and Challenges
- NSRP Project Objectives
- Phase 1 Accomplishments
- CDRL Mappings Across Programs & Templating
- Initial Software Interface Development (Tasks 4 & 5)
- CDRL & RTVM Alignment with ShipConstructor & SPLM
- Phase 2 Activity
- Next Steps
- Summary and Value Proposition for the USCG

# Background

- Maintenance, Repair and Overhaul (MRO) activities are a major cost driver for Navies and Coast Guards
- Personnel supporting MRO activities need accurate engineering data to perform their job functions
- The information (such as it is) often resides in multiple formats and legacy systems with limited or no connectivity, making it harder to find the needed data









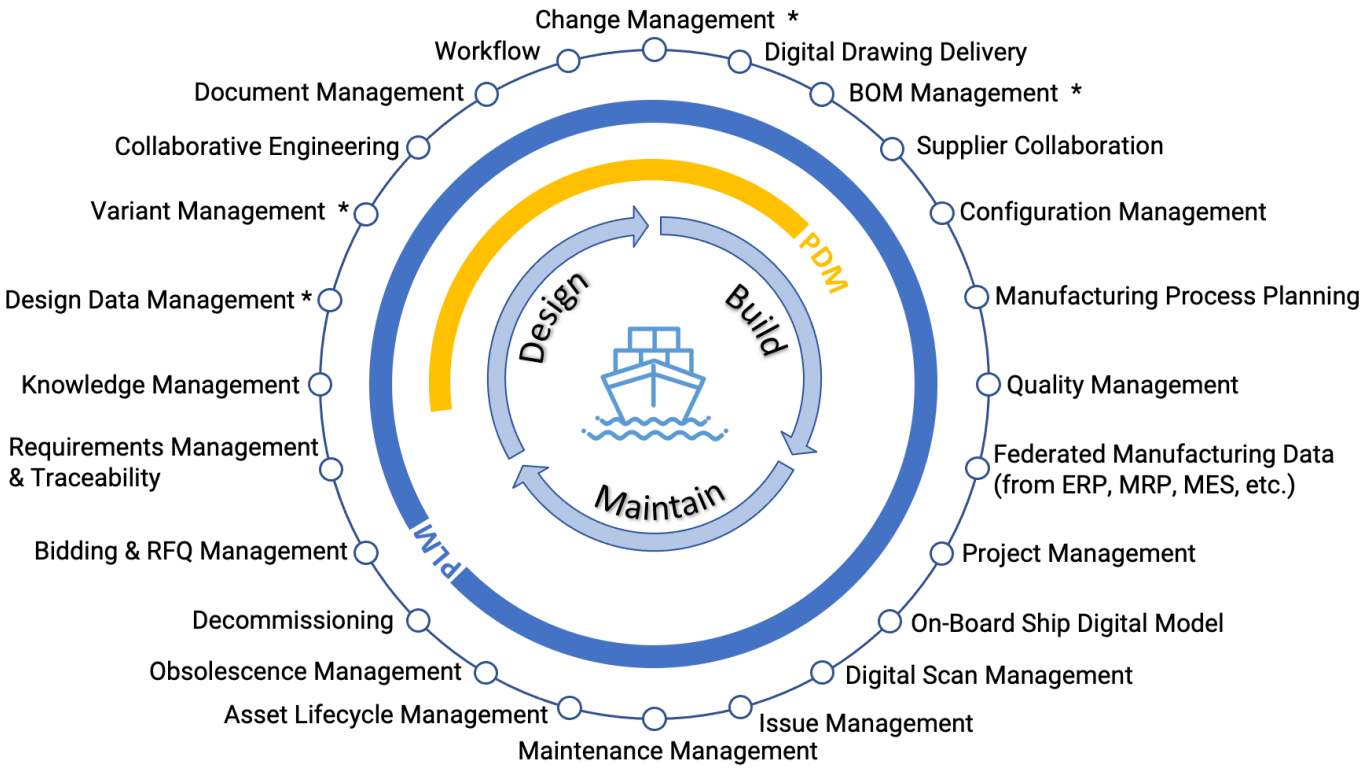



# USCG Sustainment Challenges

- USCG Surface Forces Logistics Center (SFLC) has five product lines
  - Long Range Enforcer
  - Medium Endurance Cutter
  - Patrol Boat
  - Icebreaker / Buoy and Construction Tender
  - Small Boat
- USCG SFLC Engineering Services Division (ESD) serves as the design agent for MRO for all cutter and boat classes
  - 221 cutters across 6 classes
  - 2 icebreaker classes
  - 1,337 boats of many classes

# USCG Sustainment Challenges (Cont.)

- Digital MRO Shift: Moving toward digital maintenance, repair, and overhaul by leveraging shipyard 3D models and PLM data via new interfaces
- Over 80% of depot maintenance is contracted out
- Scattered configuration data across multiple systems
- Growing parts obsolescence as the fleet ages

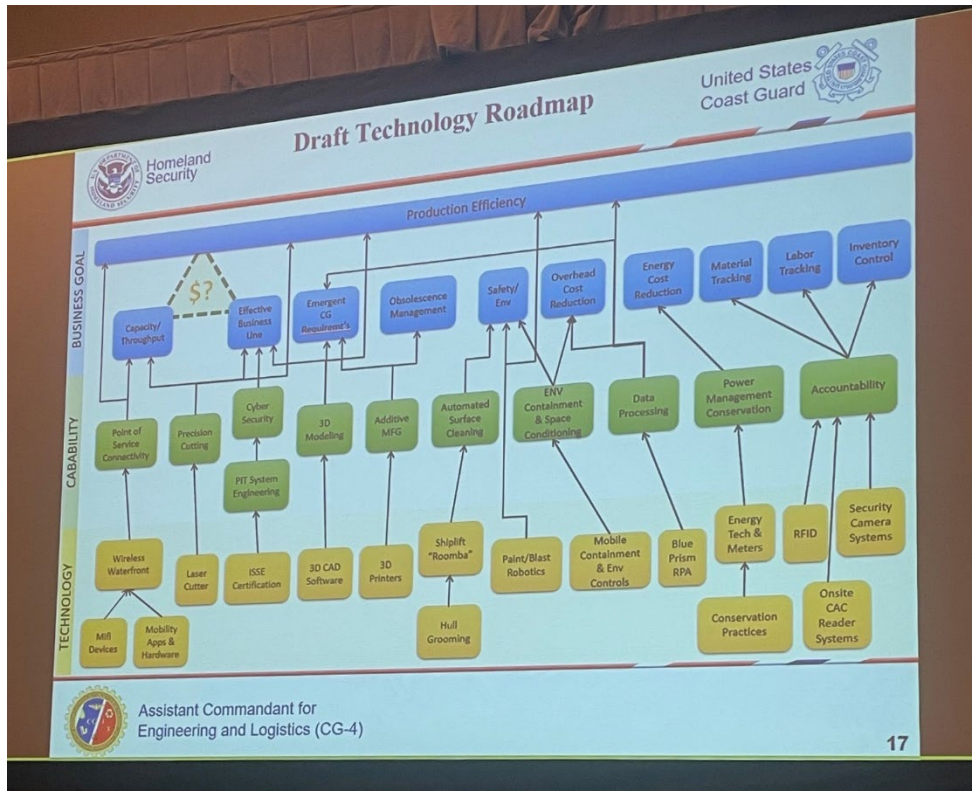


# NSRP All Panel Meeting 2023



**CAPT Emily L. Tharp, U.S. Coast Guard**
**Commanding Officer USCG Yard (Current)**



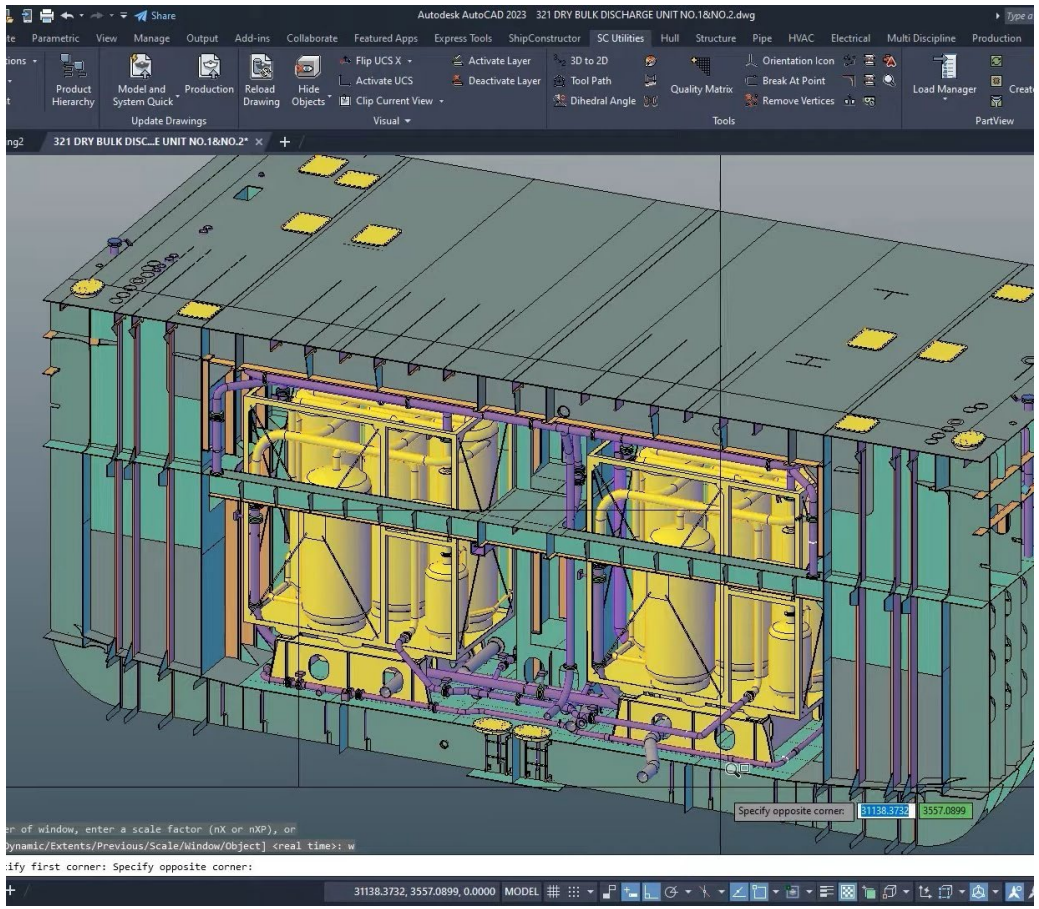

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# USCG Sustainment Potential Way Forward

- Much of the needed data for MRO can be found in the new construction shipyard's 3D product model and product lifecycle management (PLM) system
- A PLM system can also host relevant data from other sources to support MRO efforts
- Data transfer from shipyard PLM systems to a Navy or Coast Guard PLM system will improve data availability for personnel supporting MRO activities
- The PLM Solution will create a single authoritative source of truth with full metadata and will enable a federated transition from legacy systems

# NSRP USCG PLM Data Requirements Project

- NSRP USCG PLM Data Requirements Interface Mapping
  - Two-year program submitted in response to Research Announcement 25
  - Awarded in March 2025
- Project objectives:
  - Harvest sustainment data from 3D build models
  - Map USCG ShipbuildingPLM (SPLM) needs to interfaces/connectors
  - Develop/test software for shipyard SPLM → USCG SPLM data flow



# Project Team Members

Lead Member

USCG Baltimore Shipyard, Surface Asset Logistics Center (SALC), Surface Forces Logistics Center (SFLC)

Heritage Class Offshore Patrol Cutter (OPC) Stage 1

Heritage Class Offshore Patrol Cutter (OPC) Stage 2

Waterways Commerce Cutter (WCC) 2 Variants

# Phase 1 Project Objectives

- “Crawl, walk, run”
- Learn what the USCG needs for sustainment data
- Learn what new construction shipyards provide
- Map USCG PLM needs to interfaces/connectors
- Simulated simple use cases for shipyard PLM → USCG PLM data flow

# USCG Sustainment Systems Overview

## Key Systems Receiving Shipyard Data Via CDRL requirements

EAL – Electronic Asset Logbook (asset status & readiness)

FLS – Fleet Logistics System (maintenance & configuration)

NESSS – Supply Support System (parts & inventory)

FLS-MAM – Mobile Asset Manager (field/unit-level maintenance)

CWD – Contract Workbook Database (project & contract management)

## CDRLs (Contract Data Requirements Lists) Shipyard provided data

3D models, drawings, and HM&E data

Equipment lists and BOMs

Configuration data and maintenance task definitions

Parts / allowance lists

Test & inspection records

Build status and change data

J-4 Documents (CDRLs): Section J of the USCG contract that specifies exactly what data and documents the shipyard must deliver to support the vessel's sustainment and lifecycle.

# Findings from Discussions with Project Participants

## Phase 1 Accomplishments

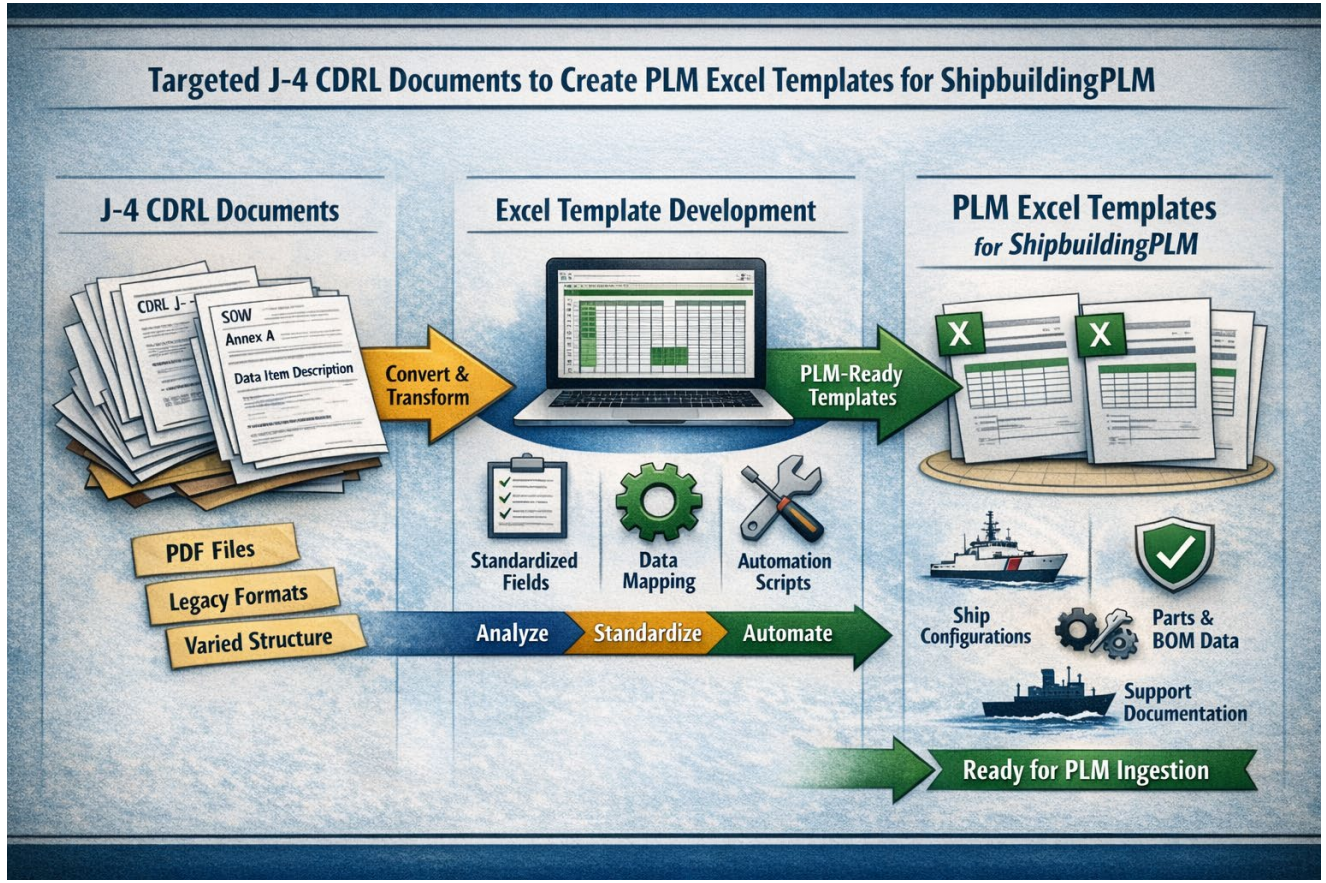
- ~800 MB of USCG datasets processed
- Developed PLM Data Requirements Matrix by mapping shipyard workflows and J-4 CDRL deliverables to USCG sustainment systems
- Completed detailed workflows/CDRL maps for Eastern (OPC), Austal (OPC), and Birdon (WCC)
- Tasks 1-5 completed (Project Initiation, Data Transfer Requirements, Gap Analysis, Initial SPLM Configuration, and Configuration Evaluation)



# CDRL Mappings Across Programs & Templating

## Phase 1 Accomplishments

- Developed from shipyard engagement sessions (Aug–Sep 2025)
- WCC (Birdon): Detailed mapping of ~90 deliverables (e.g., Management Plans → IDE/CWD; Equipment Lists → FLS/EAL)
- OPC (Austal & Eastern): Aligned design reports, analyses, and BOMs to FLS/NESSS
- Created templating framework that maps each CDRL deliverable's format, submission timing, and target PLM objects
- Sets the stage for automated ingestion into ShipbuildingPLM while preserving metadata



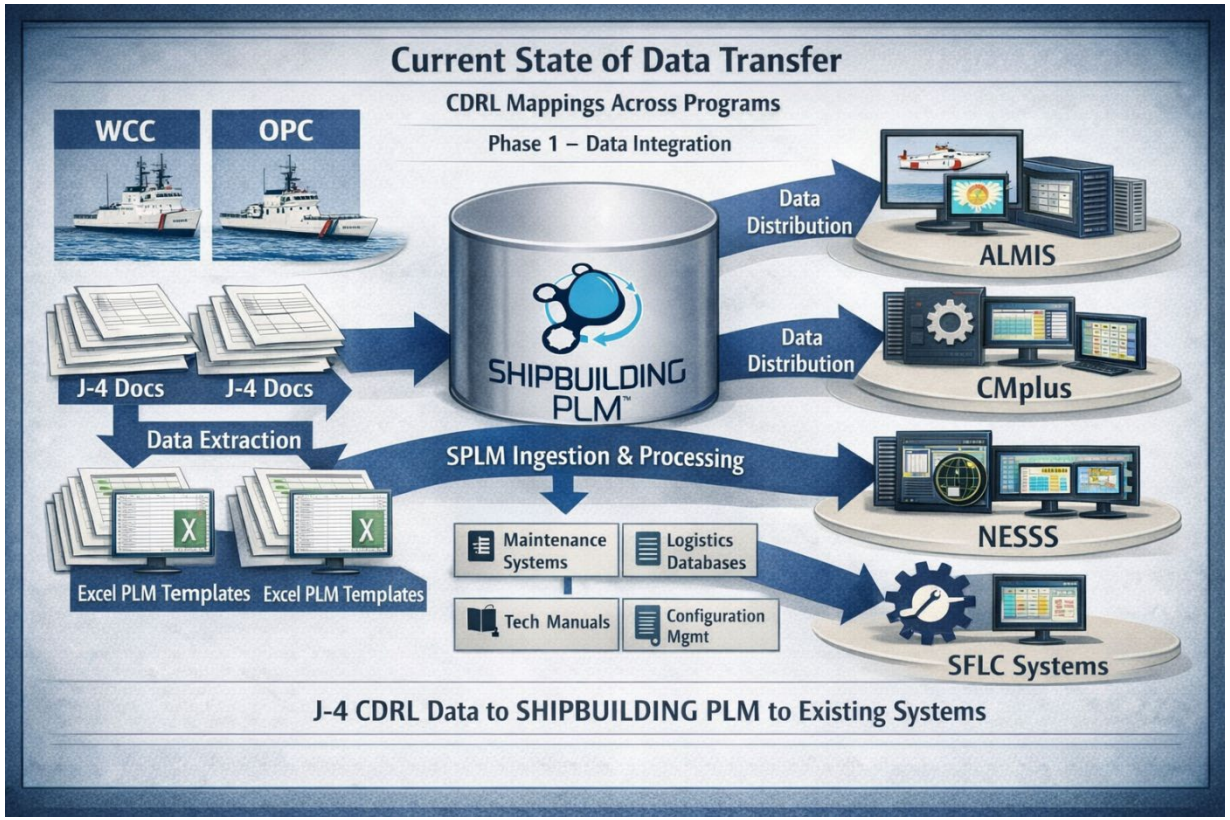
# Initial Software Interface Development

- Reviewed USCG and shipyard interviews to identify data transfer requirements and gaps for current and future MRO needs
- Developed Entity Relationship Diagrams for data flow (ShipbuildingPLM → future USCG PLM + legacy systems)
- Configured a PSV 3D model as a non-ITAR test case (dummy ship model used in place of live OPC or WCC data)
- Added item types and maintenance metadata to represent Coast Guard sustainment needs
- Established an SPLM instance on an in-house server at SSI's Mobile, AL facility to simulate the USCG environment (avoids production system approvals)

# Initial Software Interface Dev. (cont.)

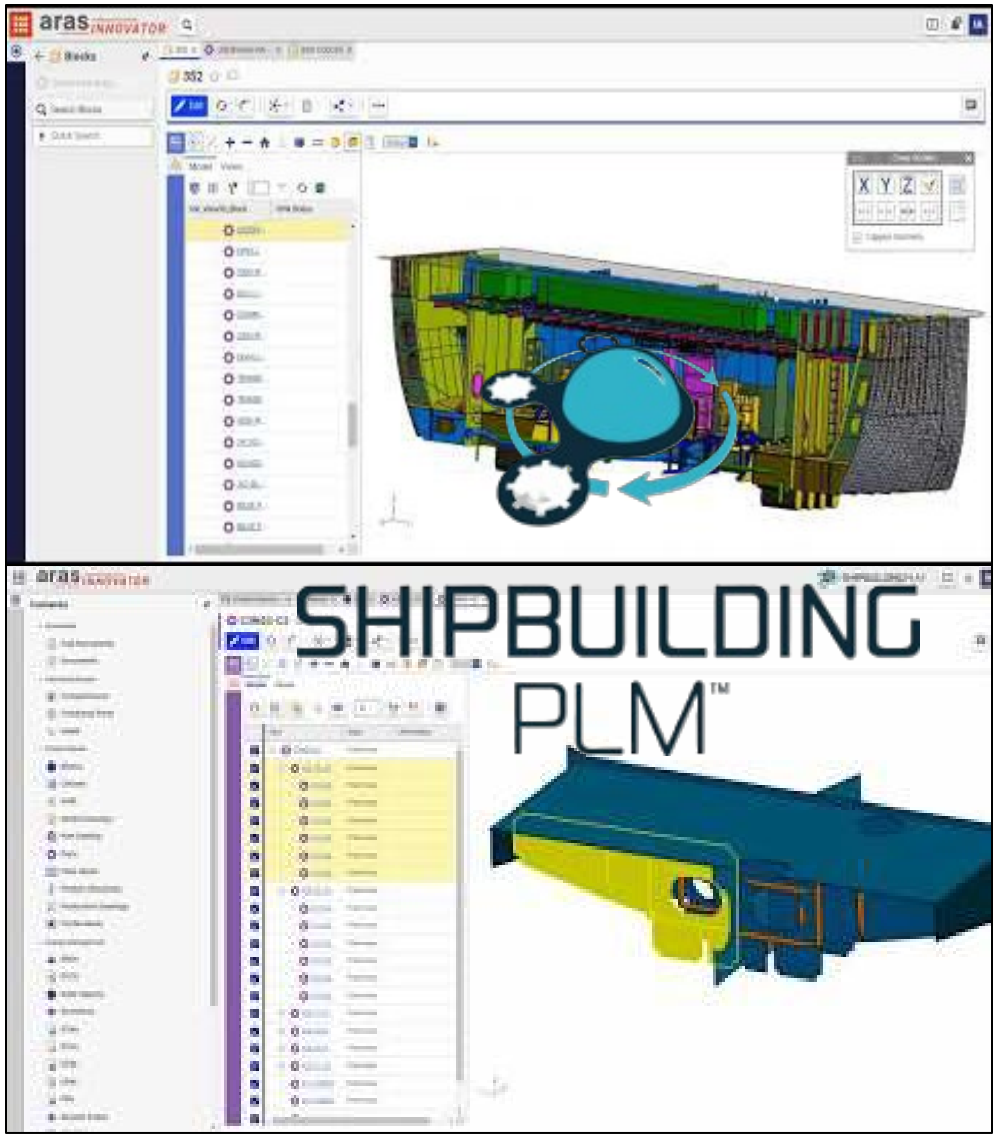
## Key Assumptions & Benefits

- Key Assumption: Federated approach — support existing legacy systems with no interruption to fleet operations; legacy systems will be phased out over time
- Benefits: Enables improvements to contractual deliverables during construction while also enabling efficient MRO data extraction and use

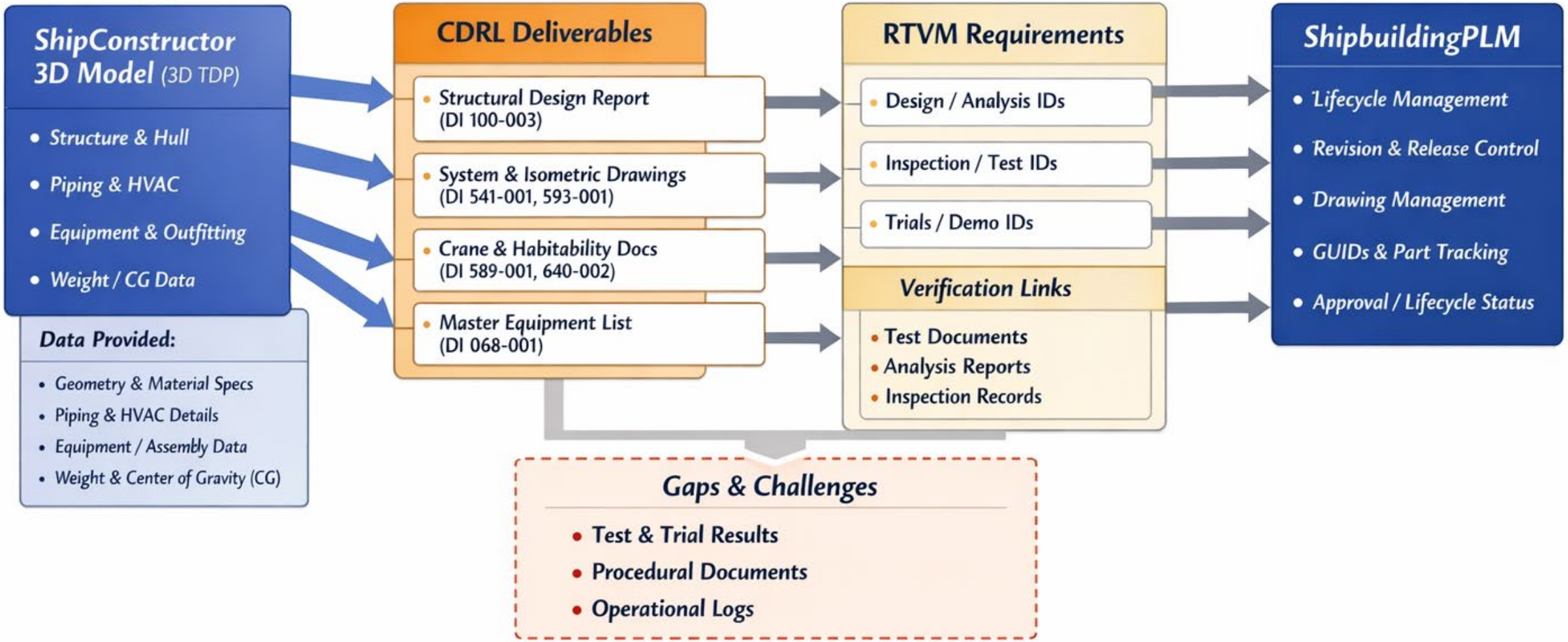


# Initial Software Evaluation

- Reconfigured and loaded data from SSI's PSV training model into ShipbuildingPLM to support demonstration and evaluation of simple use cases
- Incorporated the Requirements Traceability and Verification Matrix (RVTM) — the Coast Guard's checklist used to review and approve incoming CDRL deliverables — as a core data requirement
- Conducted a full project team demonstration of the developed process within the ShipbuildingPLM tool (with all participants present) as part of the successful Phase 1 Review and Workshop on 26 March 2026



# CDRL & RTVM Alignment with SC & SPLM



# Hands-On Training Event for USCG

- Followed up on Phase I Review and Workshop with an in-person, hands-on workshop/training session with USCG SFLC personnel
  - Held in conjunction with NSRP Business Technologies Panel Meeting on 25 June 2026
  - Strong PLM use cases for MRO identified
  - Useful feedback provided for Phase 2 software interface enhancements

# USCG PLM for MRO Use Cases

- Obsolescence Management
  - Original component dimensions and metadata are co-located within PLM
  - Evaluation of potential material alternatives is faster and more accurate
- Budget Reviews for Design Changes
  - PLM has more accurate configuration data
  - Faster determination of target cutters for a design change in an upcoming FY and required budget allocation
- Identification and tracking of problematic parts/components
  - Part-level configuration control within PLM
  - Scoping of remedial action is much faster

# Next Steps

- Incorporate feedback from the March and June workshops into targeted workflows and training using ShipbuildingPLM
- Perform onsite workshops at each participating shipyard (Eastern, Austal, and Birdon)
- Continue software development and interface enhancements between ShipbuildingPLM and USCG systems
- January 2027 Phase 2 Software Evaluation
- March 2027 Final Industry Workshop and Final Report



# Summary

- USCG sustainment data can be received via transfer between PLM systems, consolidated, and re-used for MRO activities
- The USCG can implement the PLM for sustainment in a phased manner
- The use of a PLM system to support MRO can support more efficient data searches for engineering and maintenance efforts
- The project team is laying the foundation for a PLM system configuration that meets the USCG needs

# Value Proposition for USCG

- Authoritative sustainment data from new construction yards with full traceability and reuse
- Reduced Navy/DoW dependence for CDRLs
- Improved configuration accounting, obsolescence handling, and readiness analytics
- Quantified benefit: 60–75% reduction in data retrieval/validation time (from project metrics)



# Questions


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