

NSRP | National Shipbuilding Research Program

Ship Knowledge Management

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Agenda

- Project Team
- Project Goals
- Statement of Work
- Accomplishments/Current Status
- Next Steps
- Additional Project Details
- Questions



Project Team

GENERAL DYNAMICS
Electric Boat



**Newport News
Shipbuilding**

**Product
Data
Services
Corporation**

SIEMENS PLM SOFTWARE
SIEMENS



Project Goals / Objectives

- Provide the technical authority data required to define form, fit, and function of the as-designed ship
- Visualization of hull specific, configuration managed 3D product models
- 3D product model will be the interface to logistics data/documentation
- A friendly, intuitive interface for ship's force
- A process to communicate onboard configuration changes to the cognizant Design Agent.



Statement of Work

- Phase 1: Gather Requirements
 - Go/No-Go decision leading to Phase 2
 - Complete August 2015
- Phase 2: Develop the software tools and applications
 - Go/No-Go decision leading to Phase 3
 - COTS vs Open Architecture parallel investigation begins
 - Complete August 2016
- Phase 3: Implement and demonstrate a pilot SKM system
- Publish a final report



Accomplishments/Current Status

- Phase 1
 - Developed and refined a list of system requirements
 - Develop initial CM design



Accomplishments/Current Status

- Phase 2
 - Developed an extensive set of detailed use-cases
 - Developed the user profiles
 - Implemented a prototype to demonstrate SKM capabilities
 - Performed a multi-phase usability study with ship force volunteers



Accomplishments/Current Status

- Phase 3
 - Technical Data Package (TDP)
 - Smart Diagrams
 - Develop a robust Visualizer that will demonstrate the SKM capabilities using Columbia's Propulsion Lube Oil (PLO) prototype data
 - Define a feedback loop process



Next Steps

- Prototype Demo
- Final Report



Status of Implementation Plan


- Verify TDP solution
- Load to ATIS (or ATIS replacement) (Pier-side updates)
 - Technical Data Package
 - Technical Data Variances
 - Diagrams
 - Plan for refresh/updates
- S/w qualification
 - Visualizer (FX pdf)
 - Acrobat
 - JT2Go
- Tablet
- Security
- Network



SKM Major Components

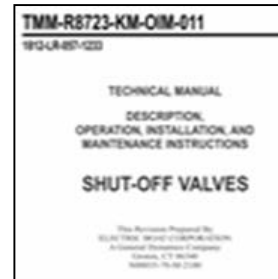
SKM software

ATIS (or equivalent)

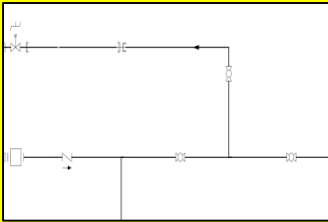



Full Ship Visualizer

Navy Systems



Logistics Technical Data

Smart Diagram

Technical Data Package



Technical Data Package

- Replacement for scanned engineering drawings
- PDF+VFZ
 - Also used for VA, CITIS, Vendor Collaboration
 - For disconnected systems
- MIL-STD 31000A Compliant
 - 3D (exact)
 - Validation



Smart Diagrams

- Hotspot Links on Maintainable Items
 - Stencil to/from table
 - Off page references
 - 2D to 3D links
 - Electrical: connected components
 - Logistical Technical Documents



Full Ship Visualization

- New capability
- Corrective maintenance use case
- Usability Input
 - Sailors from 4 ships
 - Submarine Learning Center
- Top requirement
 - Ease of use (for a casual user)
 - Response time
 - Meets functional requirements



Configuration Management

- Occurrence Management Database (OMDB)
 - 3D Geometry
 - Teamcenter Occurrence ID
 - Extraction Date
- Smart Diagrams
 - Teamcenter ID (LSYSxxxxxxxx)
 - Hull
 - Extraction Date
- Technical Data Packages
 - Stored in a repository
 - EB CM Group procedures followed for Disclosures



Visualization Options

- Open Solution
- Siemens COTS:
 - Service Lifecycle Management
 - Active Workspace
 - Teamcenter Reporting and Analytics



Questions?

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