NSRP RA Project 2019-483-011

Automated Detail Planning and Integrated Shipyard Operation with Engineering Data

ATI Project Manager: Nick Laney

Program Technical Representative: Dan Sfiligoi (NASSCO)

PPPF Panel Meeting July 23, 2025



Project Team











Lead:

SSI

Patrick Roberts, VP of Sales & Operations Rob Parker, Professional Services Manager Darren Guillory, Technical Solutions Specialist Craig Price, PLM Implementation Specialist

HII Ingalls Shipbuilding

Tim Warren, Manager

Fincantieri Marinette Marine

Rodney Klann, Methods Engineer

GD Bath Iron Works

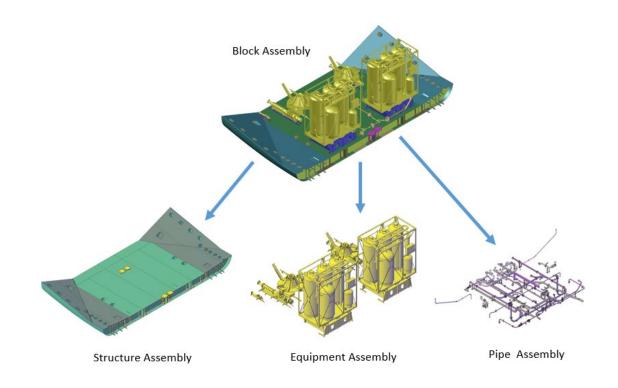
Griffin Day, Planning

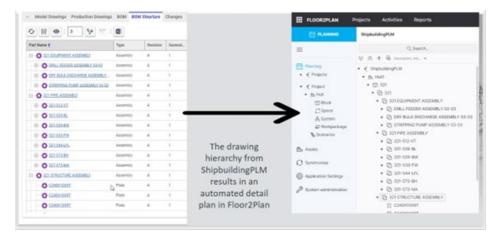
Floorganise

Ronald de Vries, Managing Director

Problem Statement

 Integrate all operational processes and information requirements with available engineering data and shipyard specific value streams to reduce costs and improve schedule adherence.





Project Objective

 Stand up a pilot program of Floor2Plan at each participating shipyard to research how to improve the shipyard efficiencies for higher levels of competitiveness (cost-price and lead-time) through digitization in engineering, organizational, and physical shipbuilding processes using an integrated Shipyard Manufacturing Execution System (MES) platform

Phase 1 Overview

- SSI and Floorganise conducted value stream mapping of information at each of the participating shipyards
- Captured business processes and data requirements of each participant
- Targeted groups at the shipyards included: <u>Engineering, Production, IT, Planning and Project Control Processes</u>
- Floorganise and SSI defined the data available to export from ShipbuildingPLM™ to the Floor2Plan Tool
- Floorganise and SSI held a workshop for project team members to demonstrate the workflow using SSI commercial ship data





Project Status

- Phase 1 activities completed
- Phase 2 status:
 - Requested and received a 60 day no-cost extension
 - Standing up pilot environments at HII and FMM
 - Execute pilot program at each shipyard with ship data of their choice (still pending HII and FMM)
 - Conducted industry workshop in Mobile, AL, July 8-9, 2025
 - Conclude pilots at shipyards
 - Prepare and submit the final report

Project Benefits

- Understand relationships within operational processes prior to completion of the engineering model
- Use need by dates and actuals from production to determine priorities for the engineering team
- Automation of manual planning processes
- Direct progressing to support better project control

>15% overall hour savings per project

35% reduction in planning hours

Platform Roles

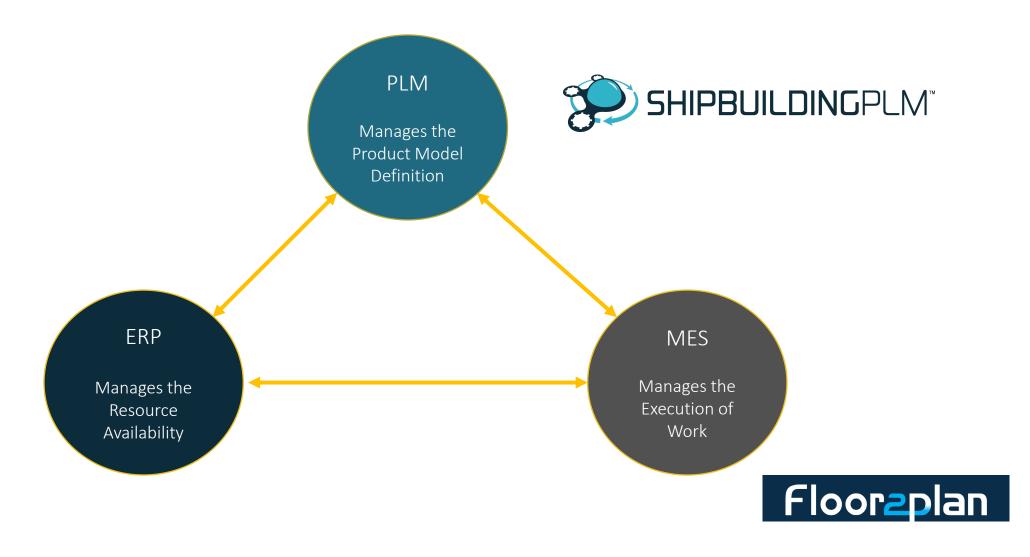
• PLM

- PLM is the configured enterprise source of truth for the product model definition and the origin of the Model Based Enterprise (MBE), Part-Centric Digital Thread: What will be manufactured, How it will be manufactured and tested, and What materials are needed to manufacture it.
- PLM configuration controls the product model definition through design iteration and change management, communicating the impact of change to downstream stakeholders.

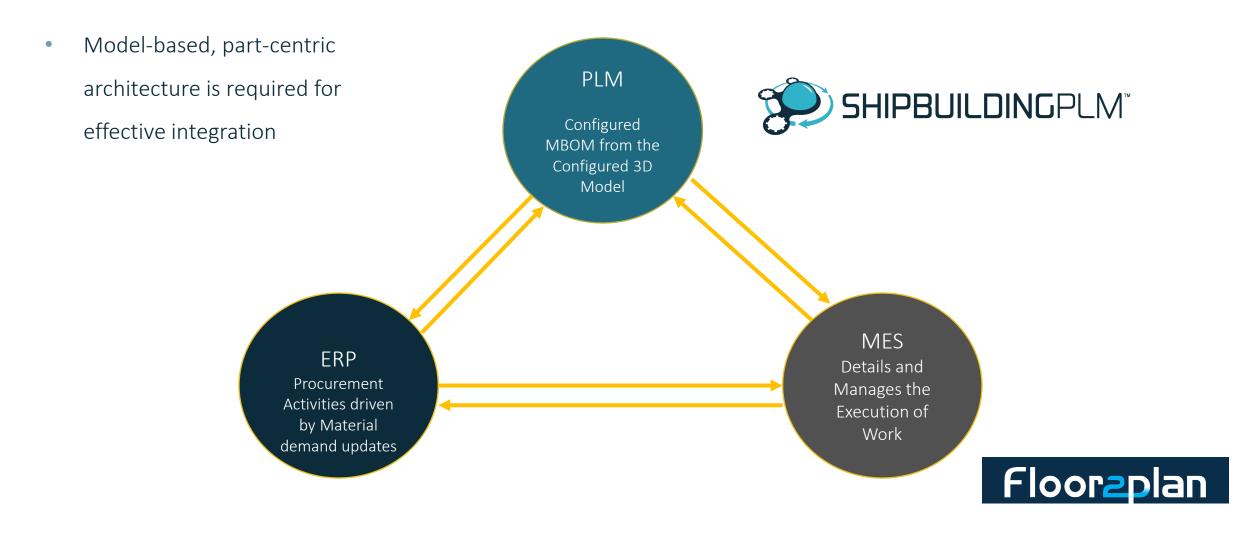
MES

- MES defines the detailed work activities and oversight of the execution of manufacturing work (human and automated) to create a physical product, based on the configured product model definition.
- MES tracks work completion and what resources (materials, time/hours) have been consumed to complete the work.

PLM/ERP/MES Roles in an integrated shipyard architecture



Model Based MBOM Workflows



What is Floor2Plan?







Time & attendance

Hours on jobs, hrs on site holidays, qualifications, personal shifts



Production planning & scheduling

Make-ready and last planner methods



Shop floor control

Digital work packs, change-, management + workflows + progressing..



Project control

Integral planning / scheduling, scenario planning, QC reporting,



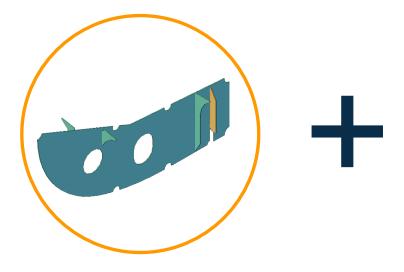
Miscellaneous

Asset man, EVMS, CPI/SPI, 3D kitting, resource loading



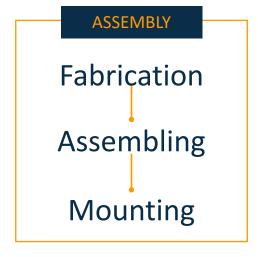
Methodology

ENGINEERING MODEL



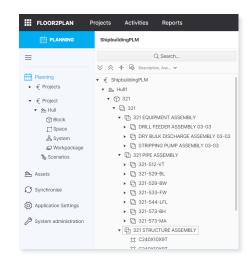
We use the metadata from the drawings as input to drive automated templating

TEMPLATES



Floor2Plan then turns the engineering model metadata into a detailed planning

DETAIL PLANNING



More detail in operations planning fosters more control

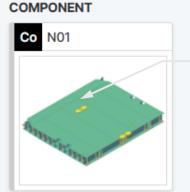




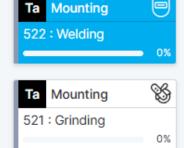
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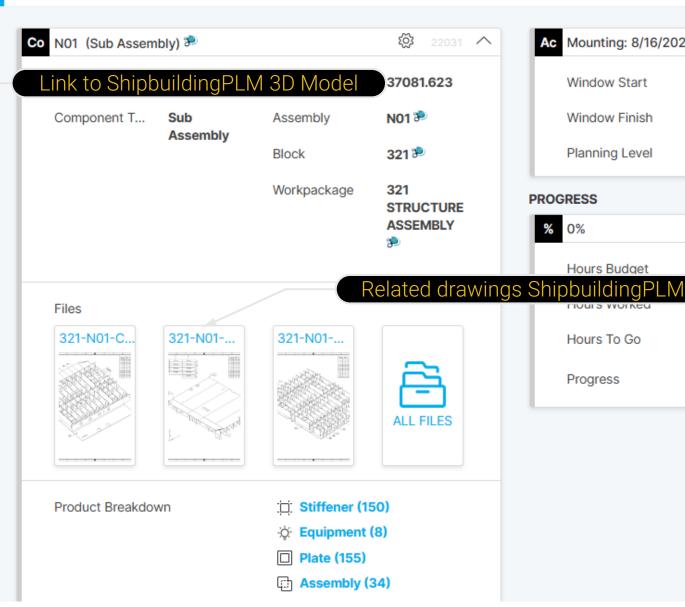


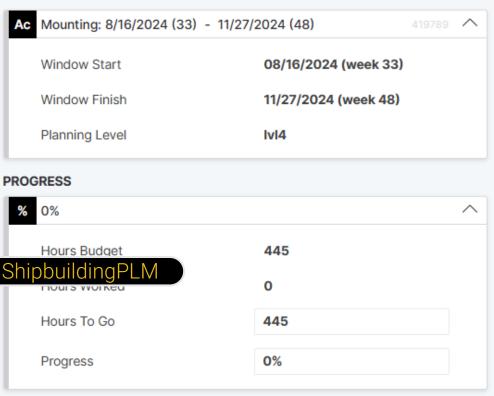




TASKS







Connect to MES Platforms



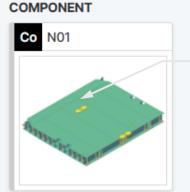




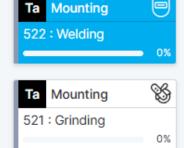
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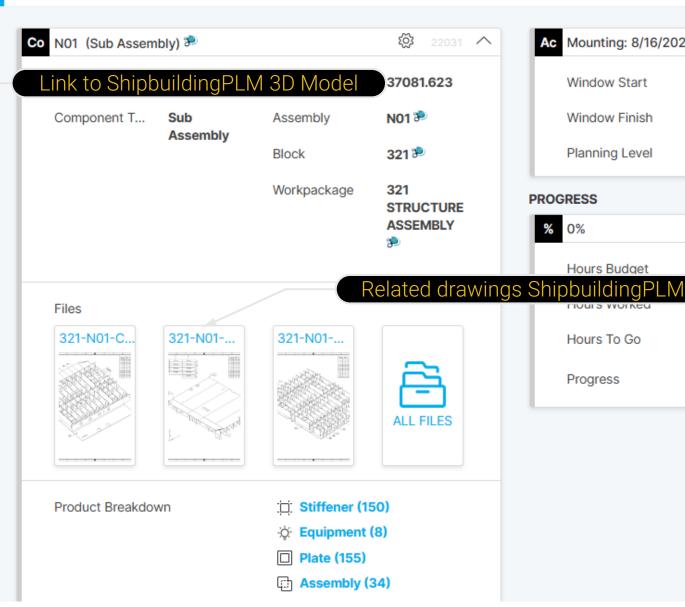


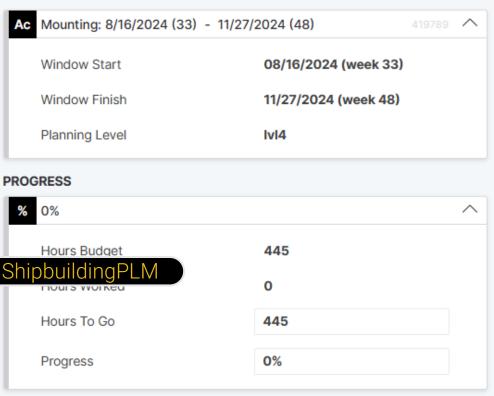




TASKS

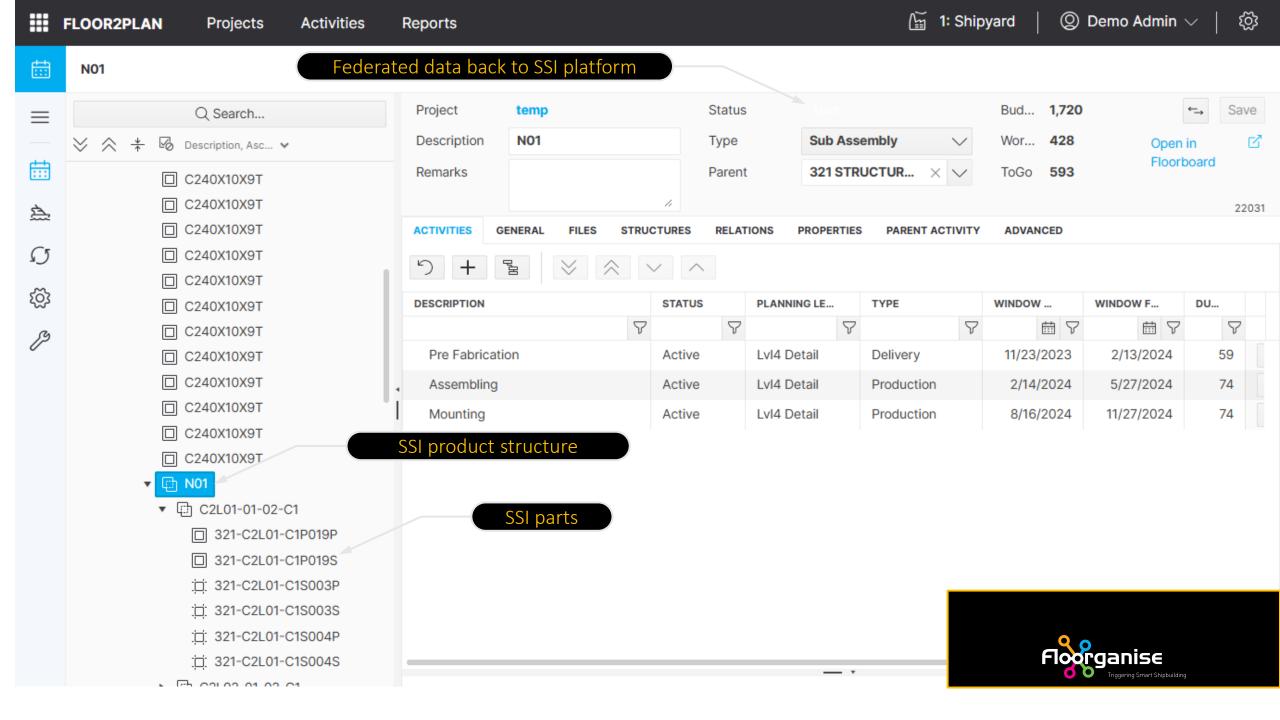






Connect to MES Platforms



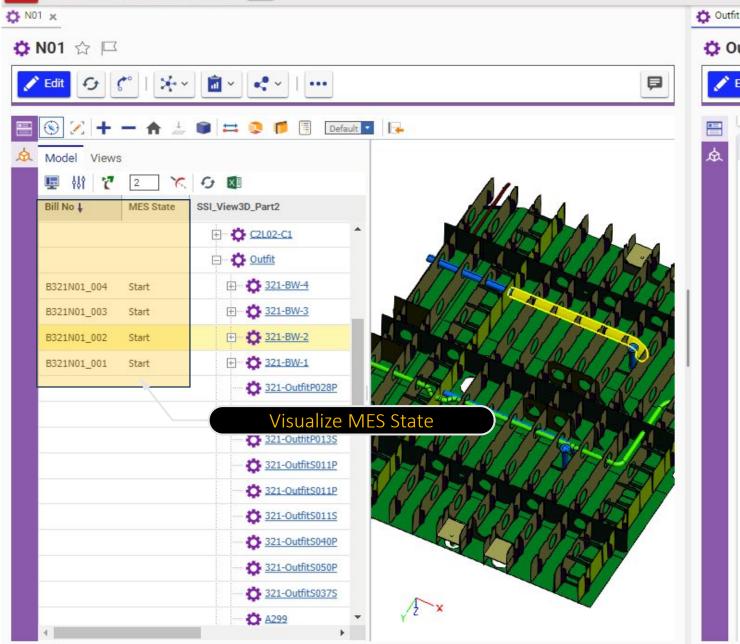


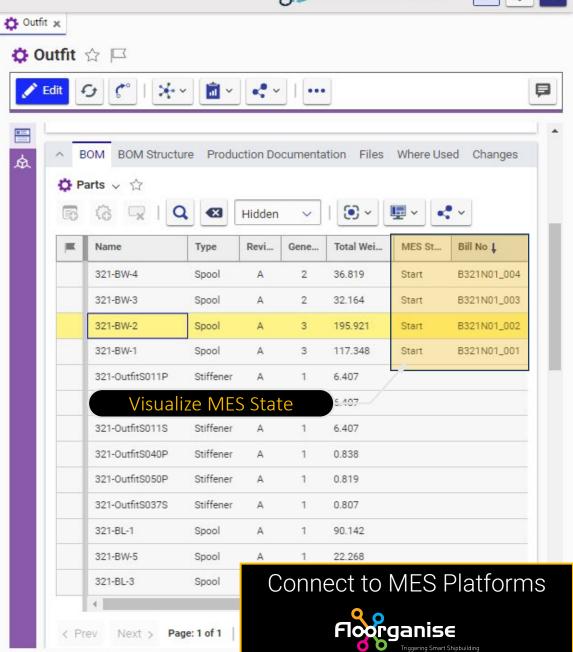






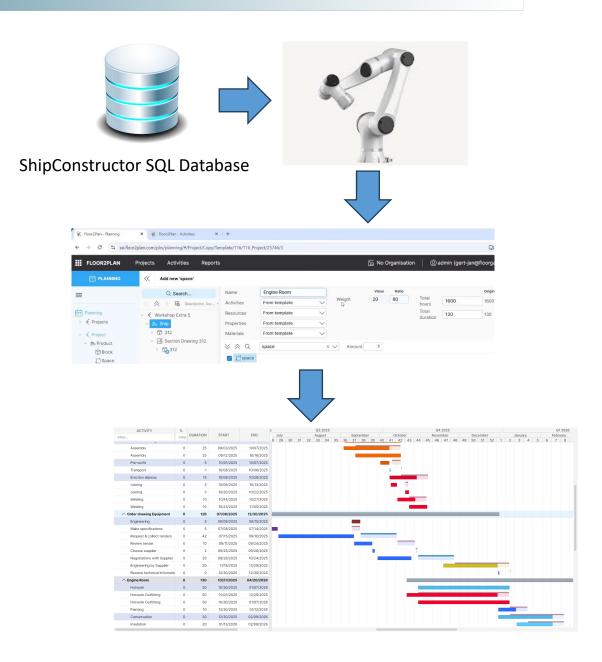






Replanning for Cobots

- Identify assemblies to weld with cobots from ShipConstructor
- Develop process templates reflecting the cobot process
- Apply those templates to the selected assemblies
- Replan the work based on the new process



Pilot Status

- HII Status
 - ShipbuildingPLM and Floor2Plan stood up in HII environment
 - Using 2 Grand Blocks from LHA-9
- FMM Status
 - ShipbuildingPLM stood up at FMM
 - Waiting on confirmation on Floor2Plan
 - Grand blocks from FFG-63
- Final Report Out Scheduled for July 30, 2025

Next Steps

- PPPF meeting presentation
- Conclude pilots at shipyards
- Final group meeting July 30, 2025
- Final report
- Final invoices
- Automated Change Planning Panel Project proposal
- Post pilot implementation planning

Automated Change Planning Project Lead Organization: SSIUSA

Project Team members: Floorganise, Austal

Concept/Idea

Problem Statement: In modern shipbuilding, managing changes across projects is a significant challenge due to the intricate interplay of engineering, planning, and production processes. Lack of appropriate change planning can cause disruptions to current operations.

Inefficient change management often stems from disconnected systems, manual workflows, and siloed data—leading to rework, delays, and cost overruns. Existing planning tools lack the integration and detail required to respond dynamically to operational changes, especially when aligning production activities with evolving engineering data.

Project Approach

Proposed Solution: This project aims to address these challenges by leveraging SSI's ShipbuildingPLM as a centralized data hub and Floorganise's Floor2Plan for granular production control to develop an Automated Change Planning capability.

Building on the integration developed in the Automated Detailed Planning RA project, this initiative will enhance shipyard efficiency, reduce rework, and improve project predictability by automating change identification, impact analysis, and implementation across the shipbuilding lifecycle.

Benefits/Justification

Benefits of the project

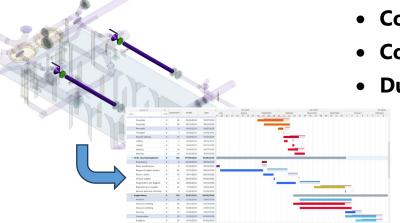
- Improved Efficiency: Streamlines change management by leveraging RA project's existing ShipbuildingPLM and Floor2Plan integration, reducing manual effort and accelerating change implementation.
- Reduced Rework: Ensures data consistency across engineering and production using current tools, minimizing errors and costly rework/waste.
- **Cost Savings:** Reduces disruptions and inefficiencies, minimizes project cost impacts.
- Scalable Solution: Builds on the prior RA's framework, ensuring immediate applicability and adaptability for future shipbuilding projects.

Cost/Images/Relevant Information

• **Cost**: \$200k

• Cost Share: \$50k

Duration: 12 months





Thank You!

