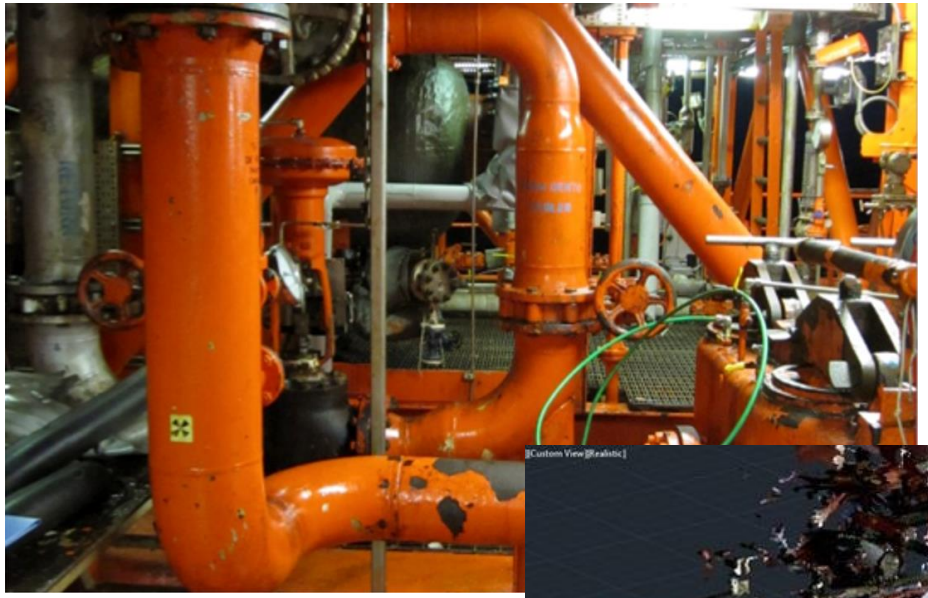
Business Technologies and Ship Design & Material Technologies Joint Panel Meeting
Seattle, WA

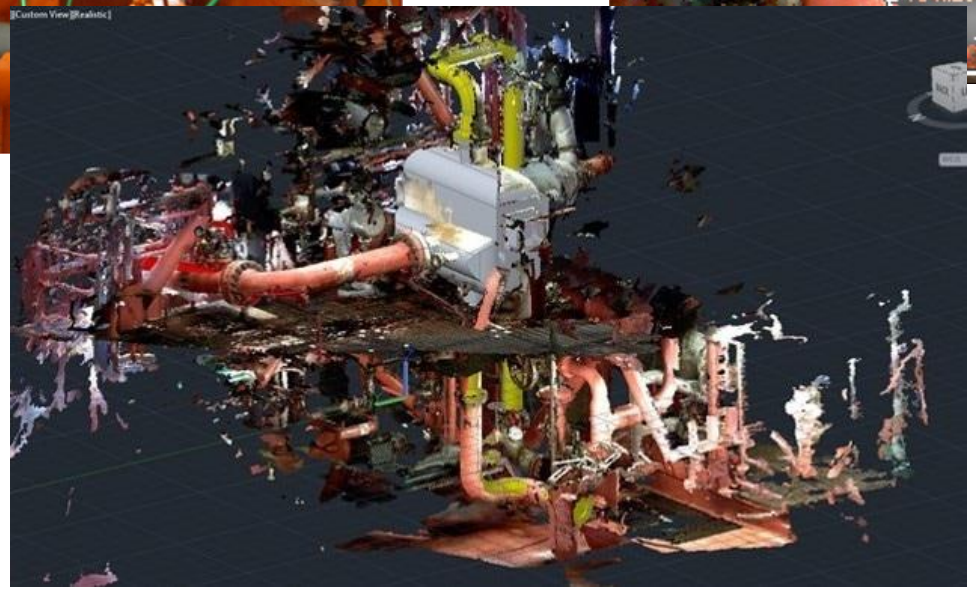
Panel Project

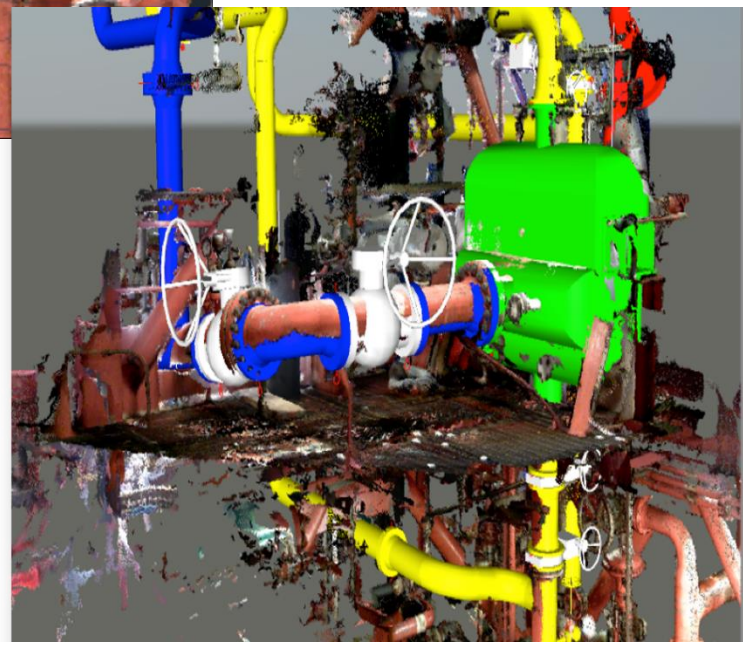
Equipment Validation Through Scanning

NSRP Panel Project
(2019-483-009)
13 July 2023

Project Overview
Equipment Validation Through Scanning







Project Team

Lead:

ShipConstructor Software USA

Patrick Roberts, VP of Sales & Operations
Rob Parker, Professional Services Manager
Darren Guillory, Technical Solutions Specialist
Peter Vihtelic, Technical Program Manager

Austal USA

Shawn Wilber, Advanced Ship Building Manager

Fincantieri Marinette Marine

Brock Jersey, Engineering Technician

DotProduct LLC

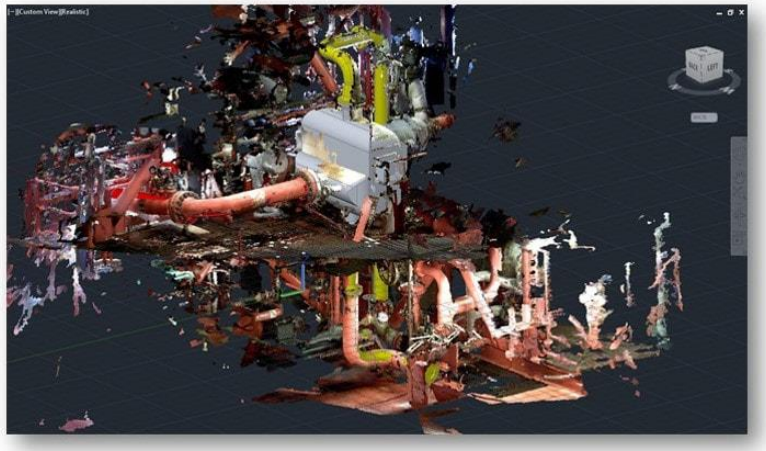
Brian Ahern, CEO

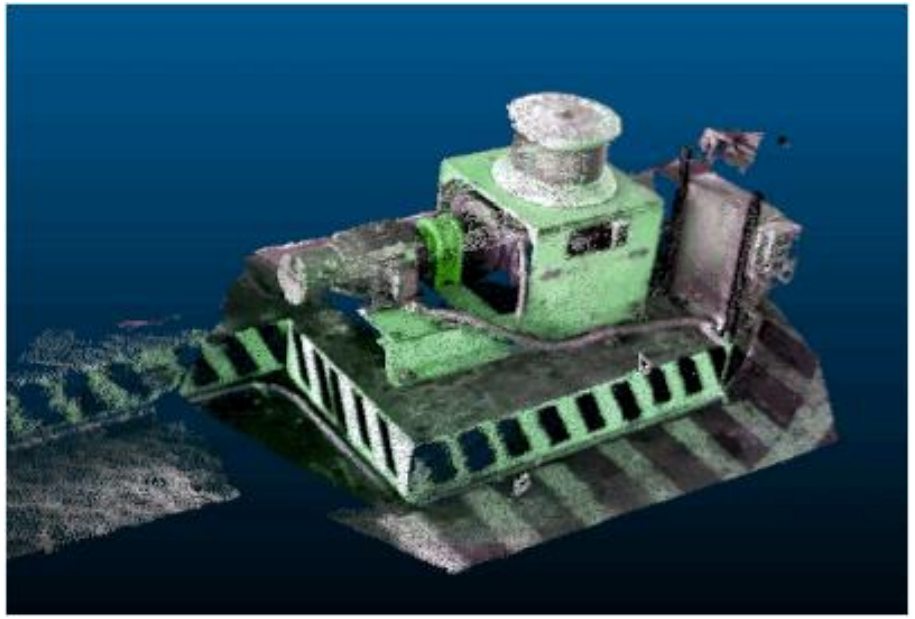
Project Problem

- Shipbuilding process requires continuously receiving a variety of different equipment, material, and components to keep up with production demand.
- Verification of this equipment is currently expensive and disruptive
  - Verification requires engineering personal to quickly respond at random times.
- Equipment not matching the specification required can result in costly re-work and/or delays.
- Technology exist to evaluate scan data with 3D models to verify accuracy of components.

Project Goals

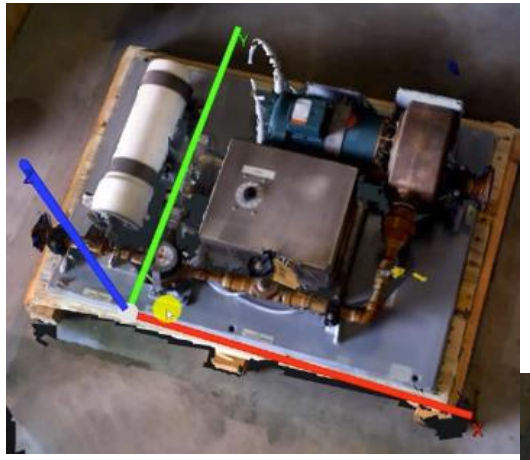
- Using existing technology develop methods for shipbuilders shipping and receiving personal to quickly evaluate equipment and components upon receipt.
- Using COTS handheld 3D scanner, scan components and compare them against SSI 3D model of the components to form/fit.
- Driving down the cost of the following
  - Less engineering Man-hours for equipment verification
  - Less disruption of the engineering department planning
  - Less storage of incorrect correct parts
  - Less rework cost.
  - Less schedule delays.

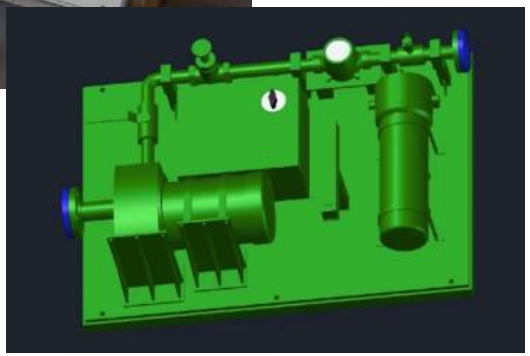




Project Benefits

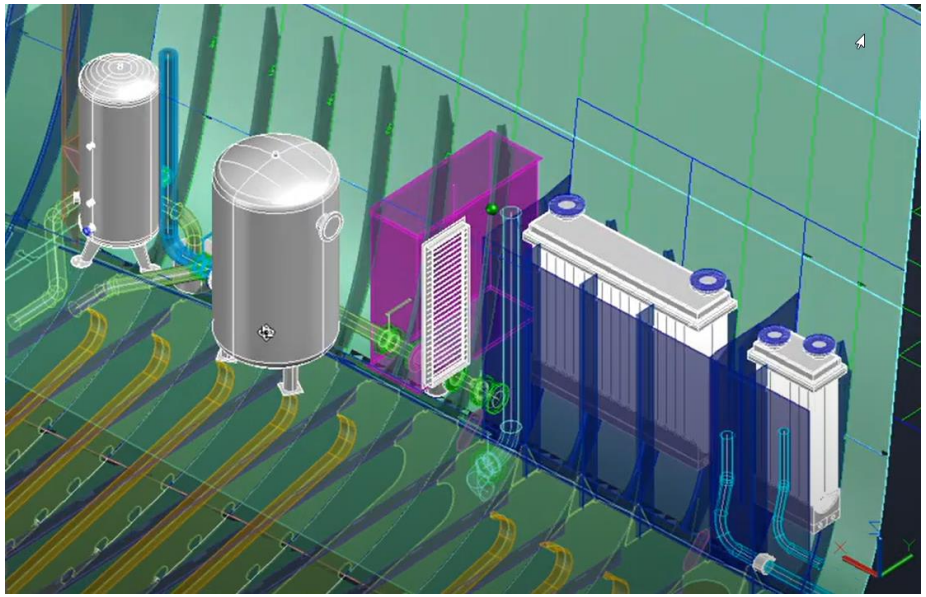
- Increased efficiency in shipbuilder shipping and receiving departments.
  - Less distribution to engineering personal and digital records
- Cost savings from successful project completion
  - Savings in personnel disruption
  - Avoiding rework
- Expected ROI
  - Engineering Inspection Receiving Inspection Duration 2-3 hours
  - Engineering Hourly cost ~$100/hr
  - 3D digital scanner cost ~$1000
  - Return expect around five(5) inspections
  - >> 5 inspections occur every week





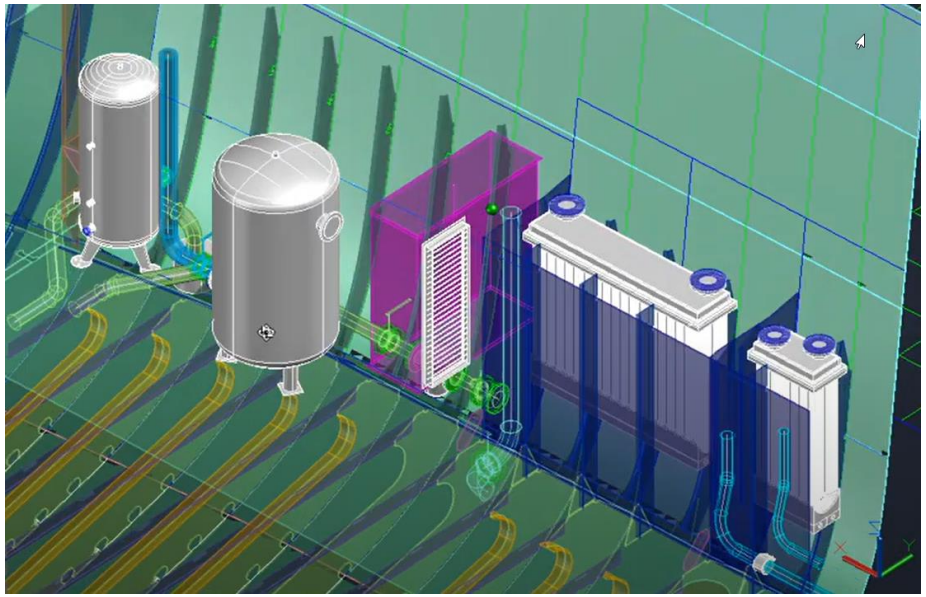
Major Tasks

- Team participation on the Kick-off meeting to identify roles, responsibilities, and requirements
- The Team shall identify use cases and review current business processes for receiving validation suitable for shipyards
- The Team shall identify types of scan candidate items, availability, and accessibility
- SSIUSA and DotProduct shall develop data exchange protocols between the scanner and the 3D Design Model (ShipConstructor)



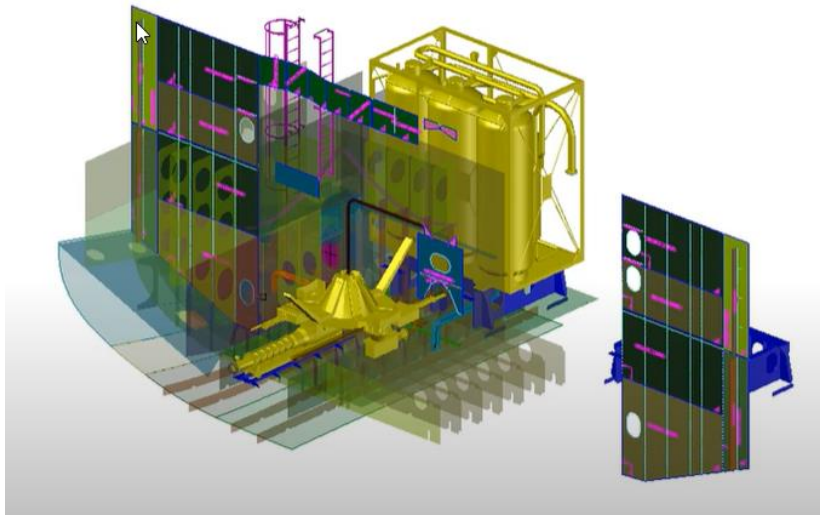
Major Tasks (cont'd)

- The shipyards shall scan items to commence test and evaluate on the Equipment Validation Through Scanning process
- Test and evaluate the process Proof of Concept
- Support the ATI Quarterly Reports
- Support the Final Report with implementation particulars at the Final Meeting - Demonstration
- Supporting Technology Transfer events, remote and in person



Project Key Deliverables

- Development of a scanning at receiving workflow process suitable for the shipbuilding and repair industry. This will be expanded in the appropriate Quarterly Report
- Data integration with 3D model and scanning process. This will be expanded in the appropriate Quarterly Report
- Kick-off Meeting Report
- Quarterly Reports
- Final Meeting; Workshop / Demonstration attendee list and any appropriate materials
- Final Project Report including Recommendations / Implementation (for Public Release)
- Supporting and participating in Technology Transfer events, noted in the corresponding Quarterly Reports



Milestones, Deliverables & Timeline

Milestones	Deliverable	Due Date
MS 01	Kick-off meeting with the team to identify roles, responsibilities, schedule, and requirements	**COMPLETE** **23 MAY 2023**
MS 02	Quarterly Report 1, All Participants	**COMPLETE** **20 June 2023**
MS 03	Quarterly Report 2, All Participants	20 September 2023
MS 04	Quarterly Report 3, All Participants	20 December 2023
MS 05	Final Meeting, All Participants	07 April 2024
MS 06	Quarterly Report 4, All Participants	20 March 2024
MS 07	Final Report with Recommendations & Implementations, All Participants	20 April 2024

Team Responsibilities

- **Reports** – *All Team Members*
  - SSIUSA will incorporate team's input and submit
- **Bi-Weekly Team Meeting** – *All Team Members*
  - Will need to establish a day and time
- **Technology Transfer Events** – *Open to All Team Members*
  - All those who wish to participate
- **Develop Use Cases, Record current Processes and Data Requirements** - *Shipyards*
  - Austal USA & FMM
- **Ensure Shipyards have Access to DotProduct Software and Scanner**
  - Dotproduct LLC
- **Test & Evaluation (T&E)** – *All Team Members*
  - Meeting at Austal USA
  - FMM performing T&E at FMM
- **Demonstration and Final Meeting** – *All Team Members*
  - Open to other NSRP Shipyard Representatives

Technology Transfer Events

Event	Target Audience	Activity	Date
SHIPTECH 2024	Shipbuilding & Repair Industry Professionals	Process- Results Documentation Workshop	March 2024
Final Report	Shipbuilding & Repair Industry Professionals	Technology Transfer	April 2024
NSRP Panel Meetings (BT, PPPF, SDMT)	Shipbuilding & Repair Industry Professionals	Panel Meetings	July 2023 July 2024 ** August 2024**
SNAME 2023 (SHIP PRODUCTION SYMPOSIUM)	Shipyard Professionals	Annual Meeting	September 2024** ** After Project Completes

Project Technical Status TODAY

- Project Kicked off at FMM
  - Shipyard Tour of Receiving Dept.
- Scanners have been distributed
- Shipyards are reviewing hardware
- Shipyards going through Scanning Training provided by DotProduct
- Began evaluating products to scan for test case