

# NSRP All Panel Meeting 2025 General Session Day 1

25 February 2025  
Charleston, SC



# Welcome & Introductions

Host: NSRP Executive Director, Mark Smitherman  
MC: NSRP Technical Manager, Steve Gaschler

# Logistics

- Fire/Emergency Procedures
- There is Conference Wifi
- Breakfast and Lunch is provided
- Reception this evening 5-7PM
  
- If you need assistance find an ATI NSRP Member (orange bands)

# Anti-Trust Rules

- Regarding your company's and/or your competitor's **product & services**:
  - Do not discuss current or future prices.
  - Do not discuss any increase or decrease in price.
  - Do not discuss pricing procedures.
  - Do not discuss standardizing or stabilizing prices.
  - Do not discuss controlling sales or allocating markets for any product.
  - Do not discuss future design or marketing strategies.



# Anti-Trust Rules

- Regarding your company's and/or your competitors' selection of their **supplier companies**:
  - Do not discuss refusing to deal with a company because of its pricing or distribution practices.
  - Do not discuss strategies or plans to award business to remove business from a specific company.
- Regarding your company's and/or competitors' **trade secrets**:
  - Do not discuss trade secrets or confidential information of your company or any other participant.

# Agenda Available Online

Scan QR codes  
with phone.  
Click link to  
Event Page.  
Select Agenda  
to view or  
download.



# FY25 TIP and Upcoming Solicitations

NSRP | National Shipbuilding Research Program

## Technology Investment Plan FY25



### MISSION

- ❖ Employ a unique collaborative framework to research, develop, mature, and implement industry-relevant shipbuilding and sustainment technologies and processes, improving efficiency across the U.S. shipyard industrial base and meeting future demand.

NSRP | National Shipbuilding Research Program

### Announcement for Upcoming NSRP R&D Project Solicitations

*The mission of NSRP is to employ a unique framework to research, develop, mature, and implement industry-relevant shipbuilding and sustainment technologies and processes, improving efficiency across the U.S. shipyard industrial base and meeting future demand.*

The NSRP Executive Control Board (ECB) plans to issue both Research Announcement (RA) and Panel Project Solicitations for proposals that address the Program's mission. NSRP's research objectives and initiatives are documented in the [Strategic Investment Plan](#) and topics are identified in the newly-updated 2025 [Technology Investment Plan](#).

#### Idea Submission Form

All NSRP projects require at least one U.S. Shipyard participant. The online [form](#) to facilitate early communication between potential Offerors and ECB member shipyards is available on [NSRP.org](#). The form will be available for submission of R&D ideas to all NSRP shipyards and Panel Officers year-round, and for both project types. To maximize the chances for successful development, ideas should be submitted as early as possible, including prior to solicitation release. Ideas submitted within the final two weeks of the solicitation have a limited chance of success.

#### Research Announcement (RA) Projects

- As with the prior year's RA solicitation, the 50% cost share goal for RA26 will be relaxed for certain participants. The cost share expectation for matching Program-funded participation of the following three organization types is waived for RA26:
  - Small Businesses (per NAICs 541715)
  - Non-Profits
  - Academia
- Cost share contributions from these organizations will still be accepted. These organizations should consider the project's value to their business and consider providing at least some cost share as part of their project to make it more attractive during the ECB final selections. The ECB will take cost share into consideration in determining the project's overall value compared to other projects when selecting projects for award.
- The 50% cost share goal remains unchanged for participation of company types not listed above.

#### Panel Projects

- Program funding ceiling for panel projects is limited to \$200K
- Shipyard participation is required, and can be met by any US shipyard, either privately held or Public shipyards (including the USCG Shipyard). Participation by multiple shipyards, including ECB member shipyards, is preferable.

#### Panel Meetings

NSRP panel meetings serve an important role within the Program by providing a public forum for potential collaboration, project teaming, and transferring R&D technology across the industry. Participation in one of the nine Panels is highly encouraged and a great way to get involved with the Program. Multiple meetings around the country (and virtually) are already scheduled with more to follow. Meetings are always free and open to the public. The NSRP All Panel Meeting (25-27 February 2025) is an **ideal** event for engagement in the proposal process. Visit the [NSRP Event Calendar](#) for the latest information and registration, and [subscribe to a panel](#) email list for direct notification of upcoming events and announcements.

#### Important Dates

RA26 Estimated Timeline
March 2025 – Solicitation Released
Mid-July 2025 – Summary Proposals Due
Late July/Early August 2025 – Technical Evaluation
September 2025 – Virtual Presentations and ECB Selection

FY26 Panel Project Estimated Timeline
April 2025 – Solicitation Released
Late August 2025 – White Papers Due
Late September 2025 – Panel Voting and Down-Select
November 2025 – Panel Officer Presentations and ECB Selection

The RA and Panel Project solicitations will be announced on [SAM.gov](#) and posted on [NSRP.org](#) upon release.

# Idea Submission Form

**Have a potential project idea?  
Looking to contact shipyards for  
participation?**

The NSRP's [Collaboration](#) of 8 member shipyards wants  
to hear from you!

Complete the form below to submit your idea for an R&D effort in support of the NSRP [Mission](#). Program staff will review submissions and provide to the 8 NSRP Shipyard Delegates and associated Panel Officers (if applicable) who will determine any interest in partnering on a project.



# NSRP Mission Statement

Employ a unique collaborative framework to research, develop, mature, and implement industry-relevant shipbuilding and sustainment technologies and processes, improving efficiency across the U.S. shipyard industrial base and meeting future demand.

# National Shipbuilding Research Program- NSRP

All Panel Meeting

25 FEB 2025

**Dave Bolcar, VP- Engineering & Design**  
**Newport News Shipbuilding**  
**NSRP Executive Control Board Chair**

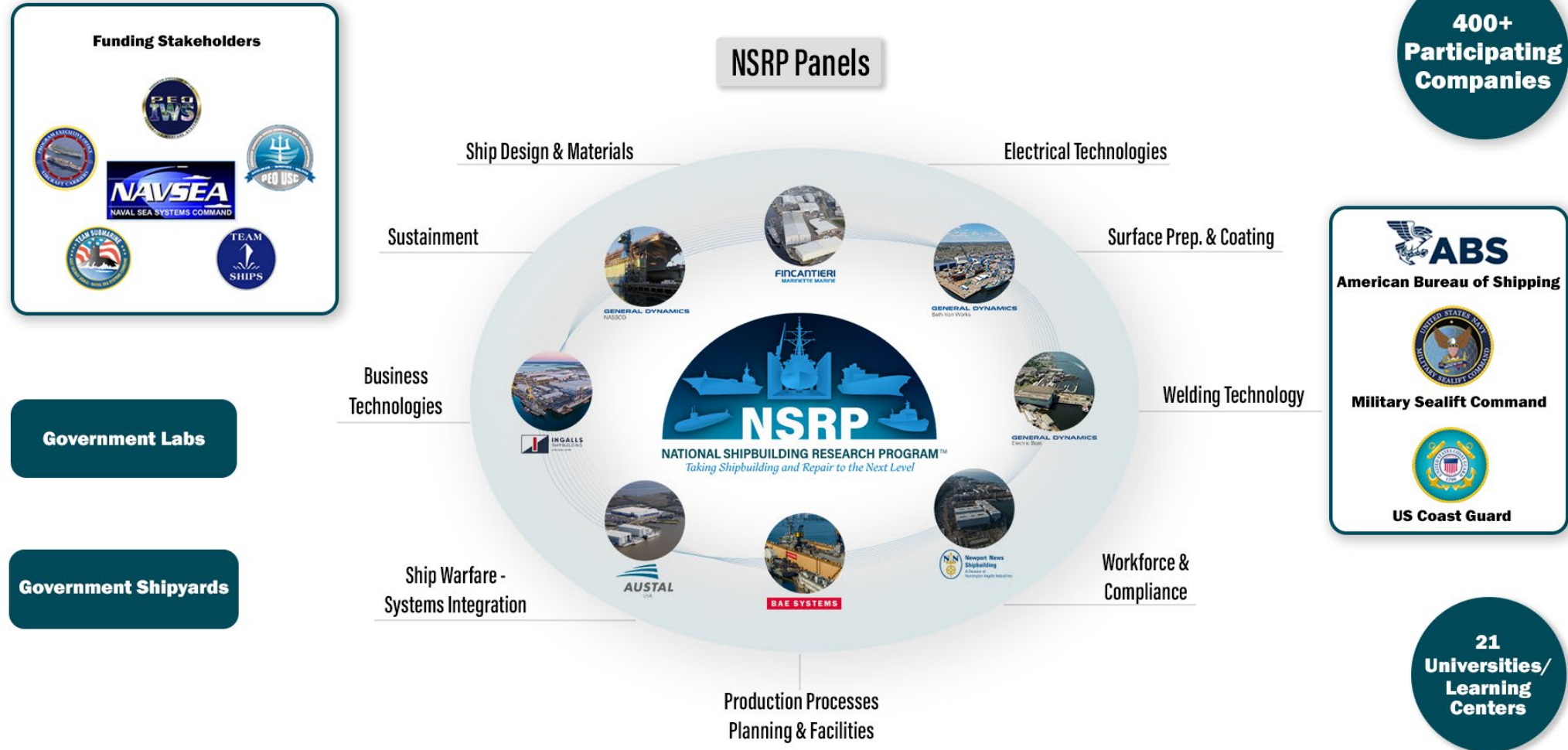
**Colin Dunlop, NAVSEA 05T2**  
**NAVSEA NSRP Program Manager**





Mission statement: “Employ a unique collaborative framework to research, develop, mature, and implement industry-relevant shipbuilding and sustainment technologies and processes, improving efficiency across the U.S. shipyard industrial base and meeting future demand.”

# NSRP Collaboration

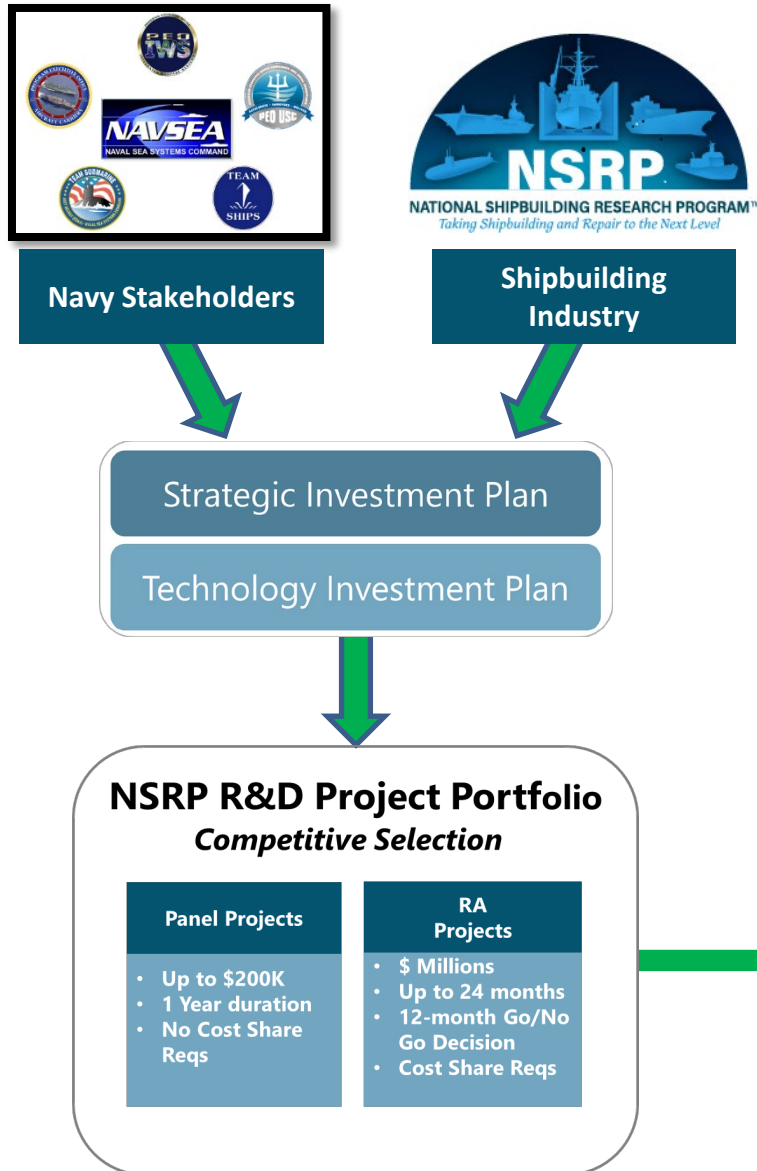


# Expanding the Reach

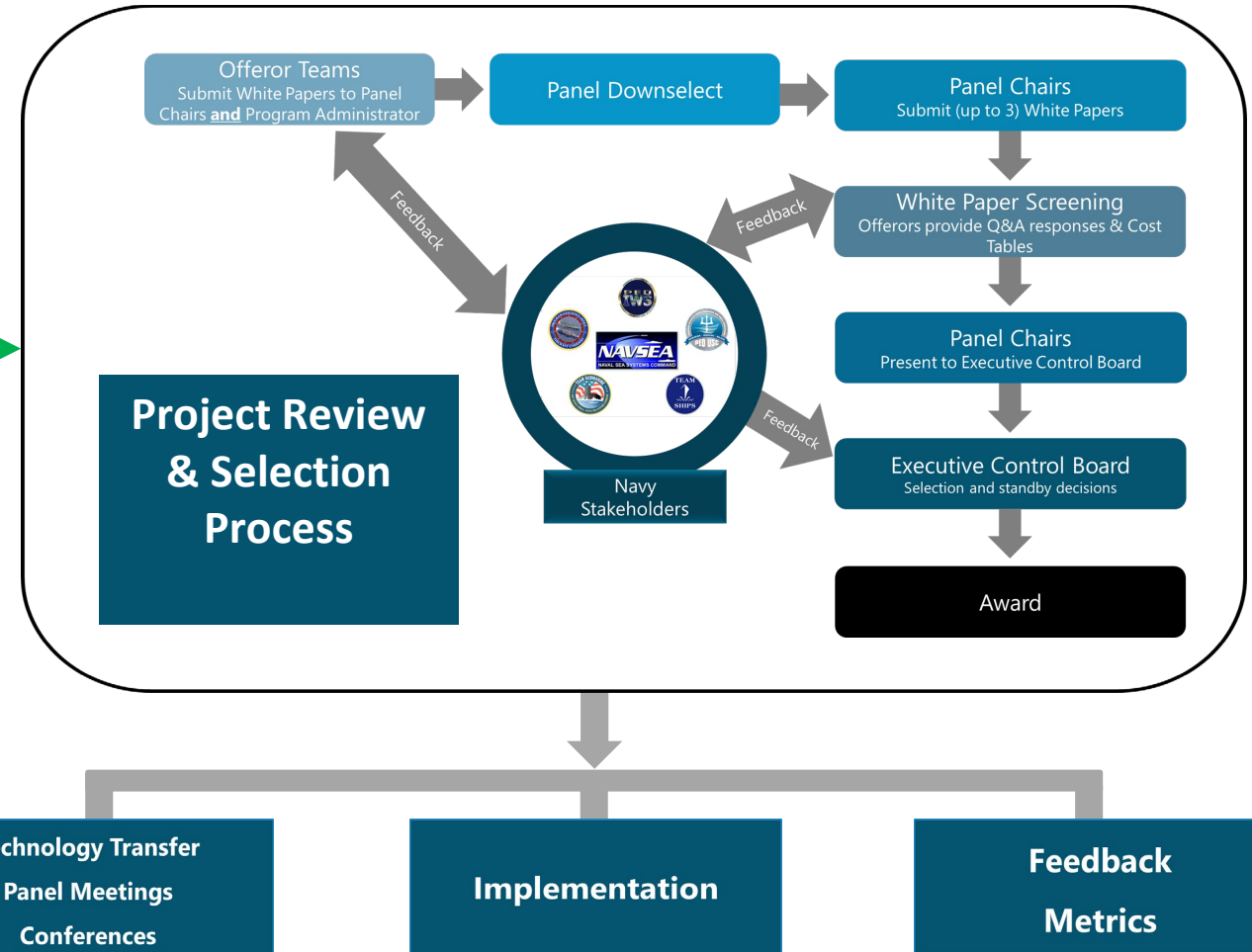


Public yards can now endorse NSRP projects increasing both engagement and transition opportunities into the organic industrial base





# NSRP Operating Model

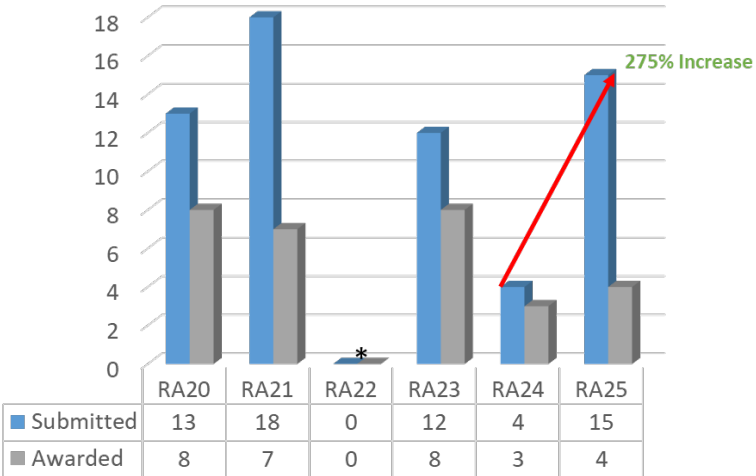


# Improvements to Solicitation Process

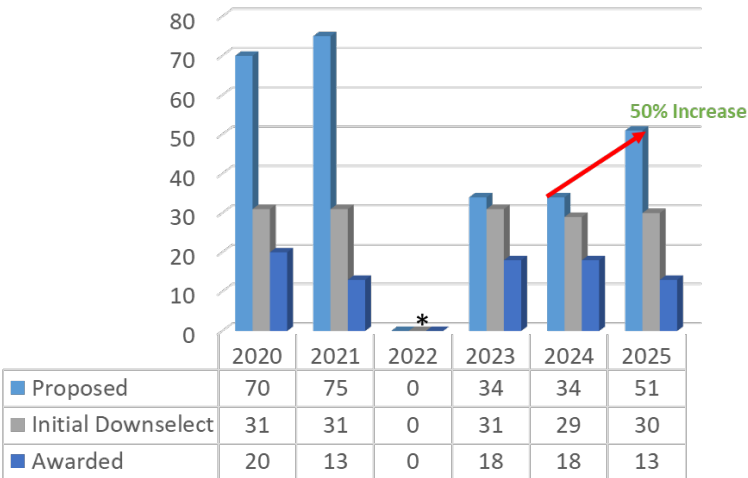
- December 2023 survey sent to enterprise looking to identify improvements to the solicitation process
- Implemented several enhancements:
  - Earlier and wider outreach for solicitations, including through Panel meetings and SBIR events
  - Relaxed initial cost share requirement for small businesses, non-profits, and academia
  - Launched ‘Project Idea Submission Forms’ via website; routed 35 ideas through member shipyards; 10 have become proposals
  - Raised the Panel Project ceiling (est. 2011) from \$150K to \$200K
- The Results: 15 RA proposals and 51 panel projects received last year

Thanks for your input – we listened!

Research Announcement (RA) Projects



Panel Project Submissions and Award



# NSRP is delivering value to the Navy and Industry

- Continued coordination with PEOs
  - NSRP's Technology Investment Plan, the list of targeted solution needs, covers 96% of the PEO's list of priority interests (gap list)
  - Developed a standard process for review and execution of Navy-initiated funding projects
- NSRP has a solid success rate on R&D investment
  - Of 109 projects completed on current JFA, 38% implemented, 53% planned, and 9% not implemented
- Implemented projects have a ROM 5-year benefit of **\$66M**
  - Rough ROI of these projects is **5.26**
  - 'Planned' projects when implemented will further increase ROI
- NSRP enhances performance of other Industrial programs
  - NSRP preceded or supported 16 recent **ONR ManTech** projects with 5-year ROM benefits totaling **\$221M**

# Unique Collaboration for Problem-Solving

## NSRP is vital for a strong industrial base

- Multiple venues for Government organizational and technical leaders (TWHs) to engage industry directly, and vice versa
- Industry is demonstrating shared commitment to the program
  - Time and talent, as well as project cost share, to address common needs



The 2023 NSRP All Panel Meeting brought over 400 participants from industry, academia, and government together to collaboratively address issues in shipbuilding and ship repair

## Research investments engage a broad band of the industrial base

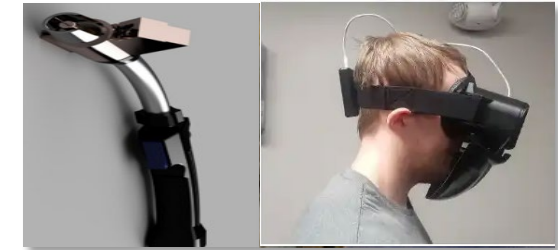
- **40%** of projects were awarded to Small Business (as an OTA, there are no SB goals for the program)
- NSRP offers an enhanced transition path for SBIR/STTR awardees; several SBIR awardees have proposed or been awarded NSRP projects

**High-quality collaborations with no contract documents or solicitations to impede sharing**

# Where the Navy will be tomorrow...

...depends on what we do today to drive towards:

- Improved capability and capacity of the workforce
- Improved speed at which we construct, assess, overhaul, repair, upgrade, etc. every platform
- Reduced time each platform is unavailable for mission tasking  
Reduced cost to build and sustain platforms through their life cycle



CAMERA "IN THE TORCH WELDING"  
(ELIMINATES MIRRORED WELDING)  
(2020-302-003)

**Measurable outcomes and transparent communication is key**

SHIPBUILDING APPRENTICESHIP  
QUALITATIVE ANALYSIS  
(2018-447-017)



TELE-WELDING – TELE-WELDING SHIPYARD  
PROTOTYPE FOR WELDING (2019-375-006)



VIRTUAL SPRAY PAINT TRAINING SYSTEM  
(2018-454-006)

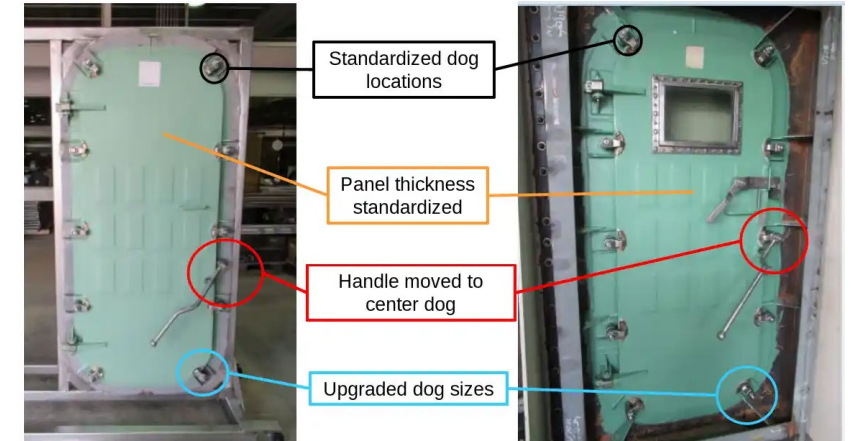
NSRP continues to support the Navy of today and tomorrow



# NSRP Projects on Platforms Today

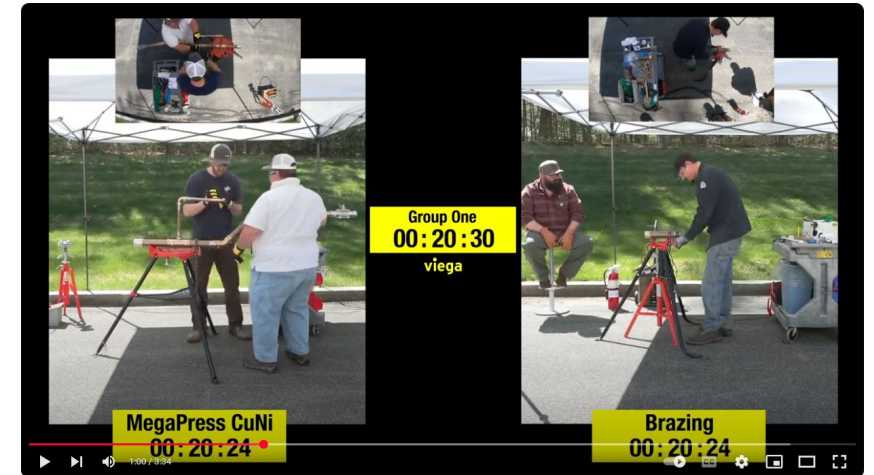
## Standardization of Watertight Closures (2016-437)

- Standardized and qualified a family of 6 door sizes and 2 arrangements which cover the vast majority of doors used in new construction
  - Replaces 32 different panel and 36 frame variations
- Reduces design, qualification, logistics, procurement, and rework costs
- Implemented/planned to be implemented



## ASTM F1387 Testing for Mechanically Attached Fittings (Press Fittings) (2018-447-016, 2018-447-012, 2005-337A-05)

- Copper and CuNi fittings
- Eliminates hot work fire hazard, especially in fully-outfitted spaces
  - Substantially faster installation time
  - Eliminates need for fire watch labor, and for cleaning/flushing
  - Low defect rate on installation
- Implemented by several yards
- Seeking additional applications for new construction and repair, and in other sizes and materials



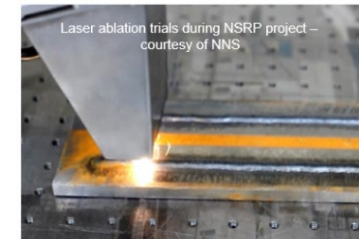
# ManTech Engagement

## ManTech

- ManTech & NSRP leverages each other's efforts
- ManTech/NSRP active in SHIPTECH and NSRP Panel Meetings for technology transfer
- Since 2020, 16 NSRP and ManTech projects leveraged projects completed by the other
- **Three ManTech projects to be briefed at All Panel leverage past NSRP projects:**
  - ❑ Active S2904 Multi-Function Shipbuilding Robot is using HMMR chassis developed NSRP RA project 2020-303-001 'High Mobility Manufacturing Robot'
  - ❑ S2944 Thermal Insulating Coatings is leveraging 2018 Panel Project 2005-340-036
  - ❑ S2823 Laser Ablation of PCP from HSLA Steel leverages both ManTech and NSRP project (2018-482-003)
- NSRP/ManTech projects complement each other, yielding greater benefit for all participants
  - ❑ NSRP RA "Enterprise-Wide Accuracy Control" (2018-455-032) expands on ManTech's Digital Accuracy Control Management System (S2844)
  - ❑ NSRP Alternative False Deck (2018-455-022) and MCI Alternative Deck Tile Qualification (2018-455-036) implements/leverages the new deck panel developed in ManTech projects S2723 False Deck Panel Improvement



Advanced Development & Implementation of the High Mobility Manufacturing Robot (HMMR) (2020-303-001)



Identify, Evaluating and Mitigation of Ocular Hazards (2018-482-003)



Thermal Insulating Coatings for Achieving R Value (2005-340-036)

NSRP continues to support and leverage ManTech Research

# SBIR/STTR Engagement



## Unique pathway for technology transition for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Projects

NSRP Panels meeting provide:

- Network introductions/Teaming opportunities on projects
- Provides a forum for SBIR/STTR awardees to showcase innovative technologies with potential customers (Shipyards/Large Vendors)
- SBIR exhibited at 2023 NSRP All-Panel Meeting





Example SBIR/STTR Awardee: TDA Research is on two FY24 PP projects for Welders Cooling Clothing:

- Evaluation of Newly-Developed Cooling Suit for Improved Worker Efficiency
- Body Cooling Technology Study

## SBIR/STTR Coordination

NSRP PM attends NAVSEA SBIR/STTR technology reviews to identify potential NSRP partnerships

- Provides NSRP awareness of innovative small business aligned to NSRP Mission
- Attended NAVSEA SBIR Innovation Forum to encourage SB participation in Panels and solicitations

Suit				
Company	TDA	Ocean IT	Nanomics	Nanomics
Type	Forced Air Evaporative	Pump+ice	Thermoelectric Active Cooling	Cooled air for respirators

NSRP is aligned to support and leverage SBIR/STTR Transitions



# Engagement in NSRP

**There is an NSRP panel for every discipline of shipbuilding and ship repair**

**NSRP panels are excellent opportunities to discuss topics with industry as a group**

- Attend panel meetings
- Seeking additional panel members

**Engagement helps improve shipyard industrial base capabilities**

- Identify technical needs
- Review proposals for technical fit and Navy interest
- Submit proposals (RA and Panel) as active participant
- Identify the technical requirements for success
- Monitor project progress

**Stay informed**

- Regular panel meetings 2-3 times per year
- Articles in The Observer, competency newsletters and LinkedIn
- [www.NSRP.org](http://www.NSRP.org)
- Email [NSRP@ati.org](mailto:NSRP@ati.org) to get on NSRP Send out List (Panels and General)

**NSRP panels and projects help address Navy shipbuilding needs**

## DRPM Maritime Industrial Base

**Larissa Smith**

Deputy Director

Advanced Manufacturing Technology

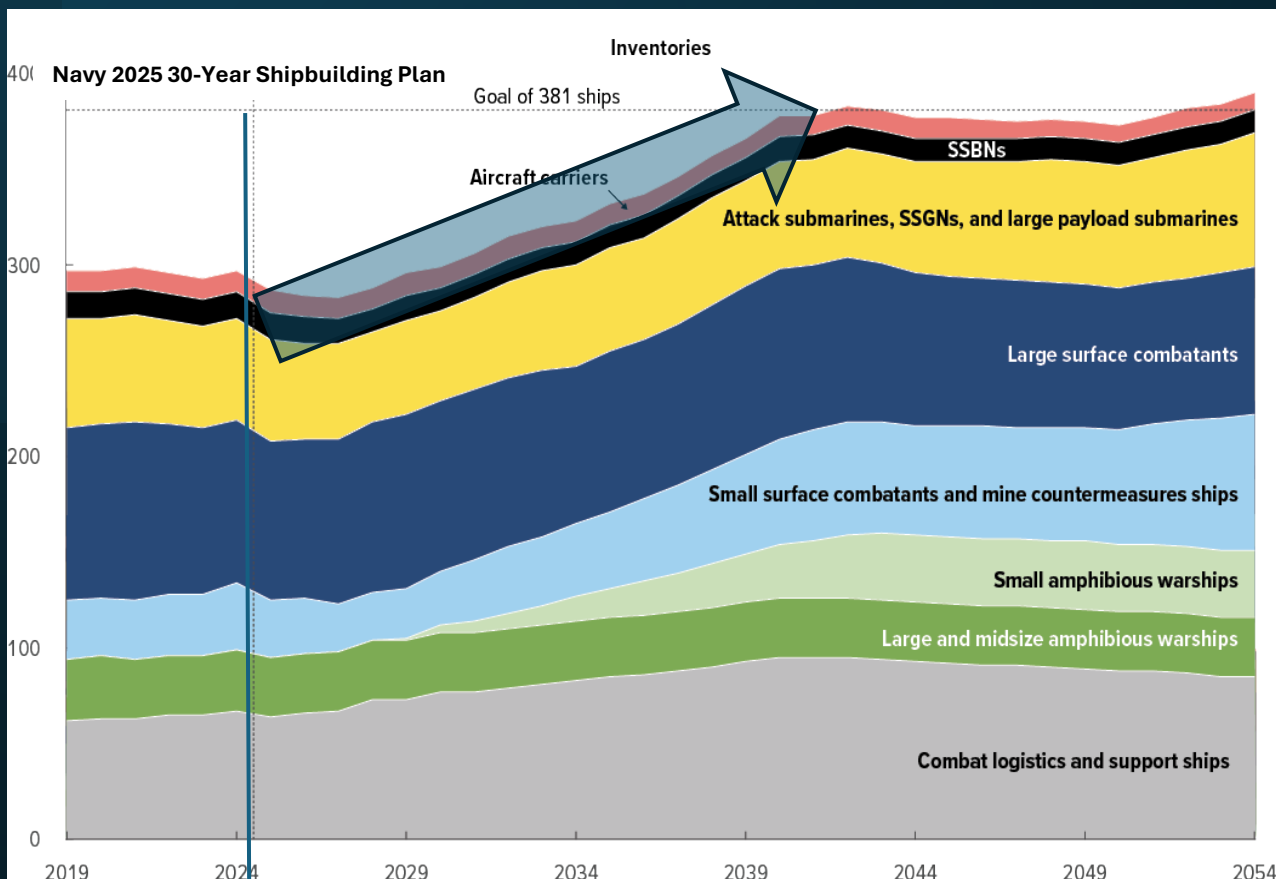
# United States Navy Maritime Industrial Base Program Office NSRP 2025



DISTRIBUTION STATEMENT A. Approved for  
public release. Distribution is unlimited.

January 2025

# The Challenge



- Navy's 2023 Battle Force Ship Assessment and Requirement report calls for 381 Battle Force Ships
- U.S. Navy currently has 296 Battle Force Ships
- Over half of U.S. Navy ships are more than 20 years old
- The Navy's 45-Day Shipbuilding Study highlighted significant industrial base challenges in building ships
- The Navy's shipbuilding programs must accelerate to support U.S. Maritime Security objectives

## Generational Demand on Maritime Industrial Base

# DRPM-MIB Charter



**Single, accountable Program Manager to assess, develop, integrate, and manage enterprise maritime industrial base efforts for the Department of the Navy**



## Tasking

- **Refine the Navy's approach to industrial base improvements in infrastructure, strategic outsourcing, supplier development, advanced manufacturing, and workforce development**
- **Accelerate the Navy's trajectory toward delivering submarines and surface ships in accordance with current and future Navy shipbuilding acquisition and sustainment plans**



# DRPM-MIB

## Lines of Effort

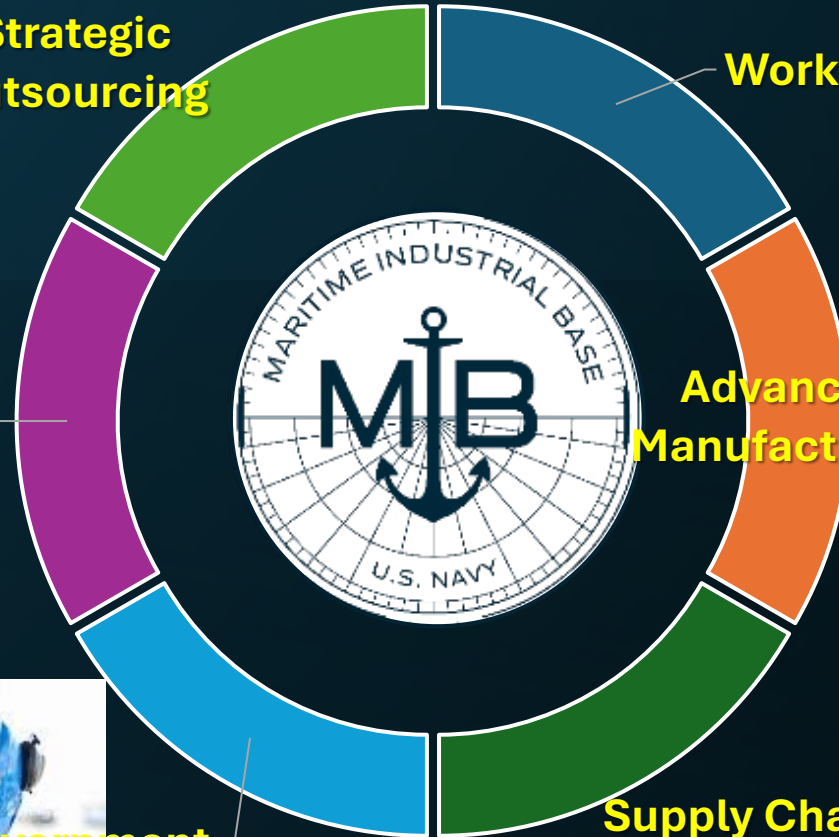
Strategic  
Outsourcing

Workforce

Advanced  
Manufacturing

Supply Chain

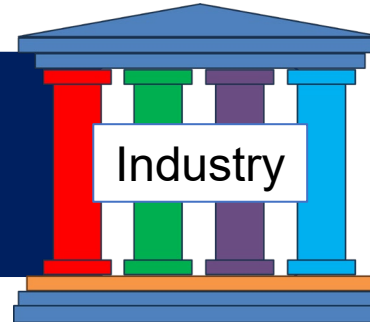
Government  
Oversight



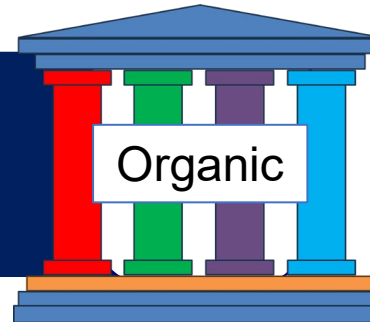
# Department of the Navy Advanced Manufacturing (DoN AdvM) Strategy

## 3 Lines of Effort

**Harness Cutting-Edge Commercial Capabilities for Strategic Advancement**



**Modernize Organic Depots and Strengthen Intermediate Capabilities**



**Strengthen Warfighter Capacity and Self-Sufficiency for Mission Success**



## 5 CROSS-CUTTING ENABLERS

*Governance*

*Manufacturing Technology Maturity*

*Standards*

*Digital Architecture*

*Workforce Development*



# Coordinated Approach – Operationalizing Advanced Manufacturing



DRPM MIB Approach leverages Operational Enablers to Operationalize Advanced Manufacturing across all DON LOEs





# DRPM-MIB

## Our Partnerships



### OSD and Navy Stakeholders



### Inter-Agency



### Federal, State and Local Govts



### International



### Industry/Industry Groups



### Academia to include K-12





# DRPM-MIB

## Additive Manufacturing – Already Making an Impact!

### Urgent Fleet Need



### U.S. Navy Additive Manufacturing Center of Excellence Danville, VA



USS Halsey (DDG-97)  
Heko Hanger Bracket



USS Michigan (SSGN 727)  
Trim and Drain Valves



USS Wasp (LHD-1)  
Aircraft Elevator High Pressure Air Reducing Manifold



- Printed 184+ submarine/ship parts
- Qualified Alloy and built modality combinations to scale AM across industrial base
- Qualified 4 x AM Industry Partners – scaling to qualify additional partners
- Leveraging new AM technology to produce “Moon shot” components for HSLA and HY steels
- Close coordination with Naval Reactors and NAVSA technical warrant holders to qualify parts for installation

**Material properties have shown to meet or exceed casting/forging baseline**



# Supporting the Development of the Maritime Workforce

- MIB requires ~250K skilled maritime trades personnel over next decade
- To meet workforce demand, Navy MIB has:
  - Established a world class Accelerated Training in Defense Manufacturing Course of Instruction in Danville, VA
    - 16-Week COI focused on Welding, NDT, Additive MFG, Quality Control (Metrology), and CNC Machining
  - Partnering with Universities and Colleges to reinvigorate Naval Architecture and Manufacturing Engineering degrees
  - Established 7 Regional and 1 National Talent Pipeline Program
    - Collaboration with Industry, State/Local Governments, and Academia
  - Supporting National advertising campaign focused on attracting the next generation Maritime workforce



# DRPM-MIB

## How Can You Help Us?



### **Communicate Issues & Ideas**

Engage with MIB to identify and resolve problems, discuss workload issues and opportunities, propose investments to add capability/capacity, and/or suggest improvements early on.

### **Collaborate through MIB programs**

Participate in MIB's workforce development programs, send workers to ATDM to be upskilled, partner on additive manufacturing, pilot other manufacturing technology initiatives, illuminate supply chain concerns.

### **Retain workers through career paths, engagement, and trust**

Offer competitive career opportunities, foster employee engagement, and build trust to help MIB accelerate the vital maritime industrial base.

By communicating, collaborating, and retaining a skilled workforce, manufacturers will play a crucial role in strengthening the submarine industrial base in the interest of our global stability.

**Contact MIB Leadership at [MIB-Inbox@us.navy.mil](mailto:MIB-Inbox@us.navy.mil)**



# National Shipbuilding Research Program 2025 All Panel Meeting

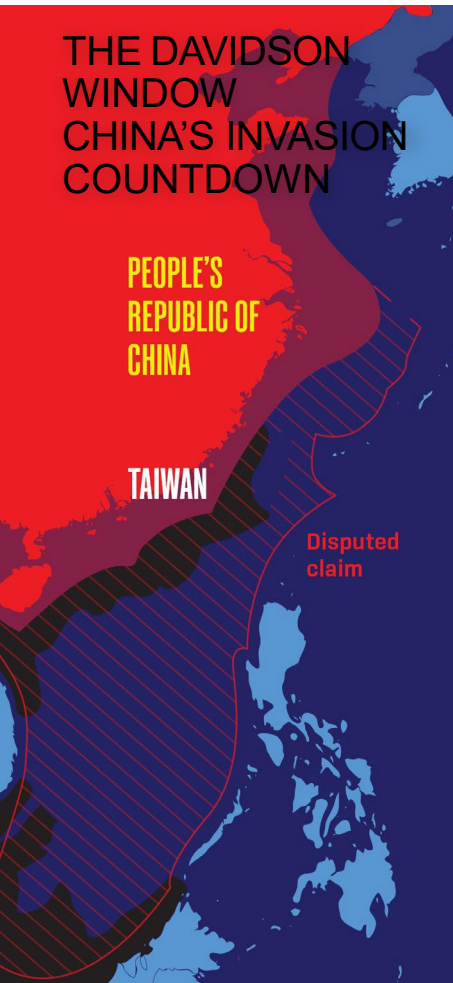
**Tim Barnard**

**NAVSEA DEPUTY CHIEF TECHNOLOGY OFFICER  
NAVAL SYSTEMS ENGINEERING DIRECTORATE TECHNOLOGY OFFICE (NAVSEA 05T)**

**February 2025**

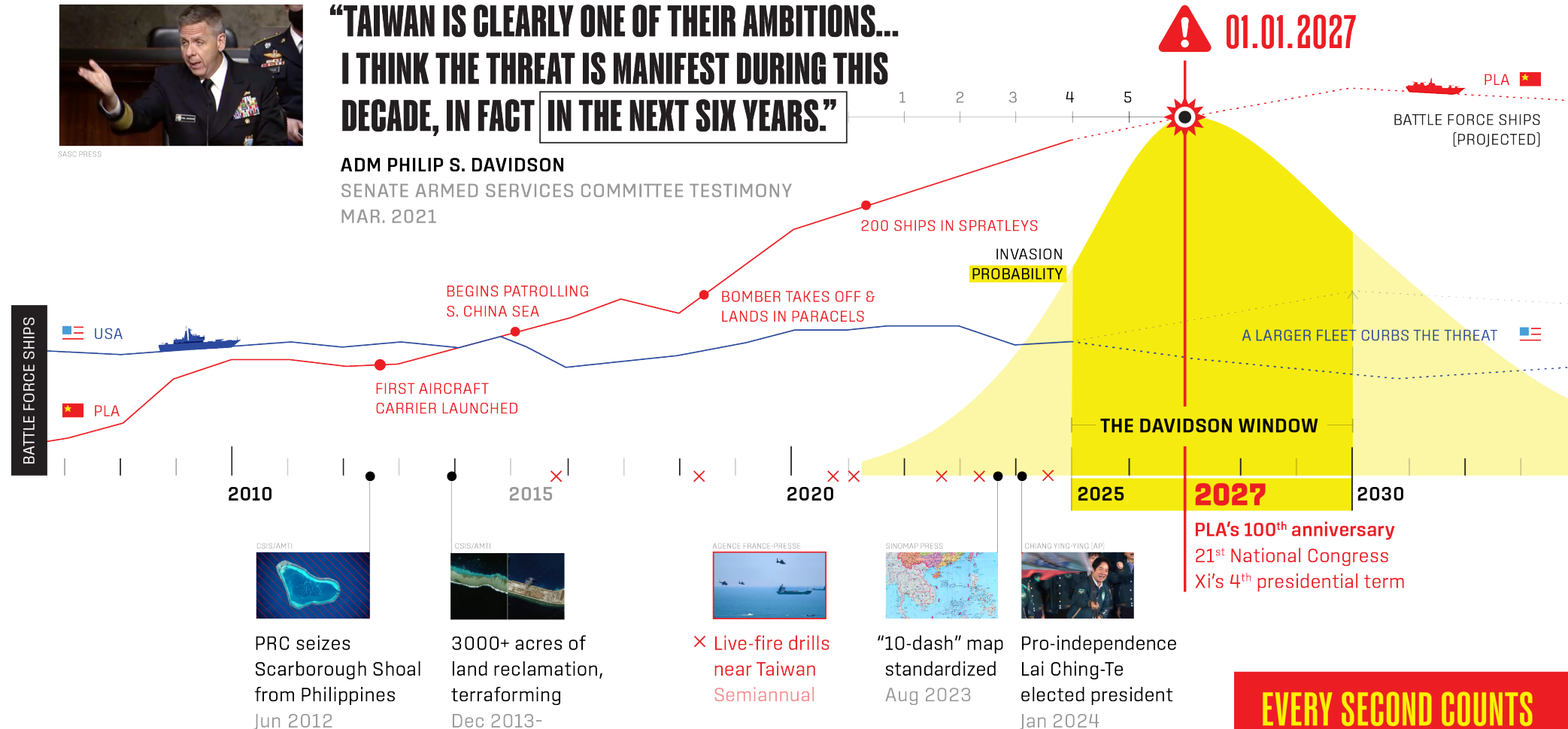


# Today's strategic competition



**"TAIWAN IS CLEARLY ONE OF THEIR AMBITIONS...  
I THINK THE THREAT IS MANIFEST DURING THIS  
DECADE, IN FACT IN THE NEXT SIX YEARS."**

ADM PHILIP S. DAVIDSON  
SENATE ARMED SERVICES COMMITTEE TESTIMONY  
MAR. 2021







Janes

## US Navy focuses on faster rearming of surface ships in wake of Red Sea combat

As US Navy (USN) surface warships defend allies, the open sea lanes, and themselves in the Red Sea region from missile and unmanned system...

1 day ago



AP AP News

## Lessons from Red Sea and Ukraine's Black Sea fight help prep Navy for possible conflict with China

The Navy is taking lessons from its combat in the Red Sea and from what Ukraine has done to hold off the Russians in the Black Sea,...

1 month ago



Defense Daily

## CNO: Navy Learning From Red Sea Ops Against Houthi Weapons

The Navy's top officer said naval operations in the Red Sea against Houthi weapons launches from Yemen has helped the service quickly adapt...

22 hours ago



New York Post

## Navy intercepts Houthi barrage of missiles, drones launched at three US warships in the Red Sea

The US Navy intercepted a barrage of Houthi missiles and drones launched at three of its warships in the Red Sea on Thursday, US defense...

3 weeks ago



Newsweek

## US Navy Warships Targeted in 'Complex Attack' on Red Sea

The Houthis of Yemen have attacked U.S. warships and commercial vessels in the Red Sea since the start of the Israel-Hamas war.

3 weeks ago



Business Insider

## US Navy warships fought off a 'complex' missile and drone attack in the Red Sea

A Pentagon spokesperson said no US warships were damaged or hit by the Houthi munitions, and no American personnel were injured.

3 weeks ago



USNI News

## Red Sea Lessons Informing Fleet Forces' Combat Surge Model, Says Admiral

The short-notice surge of US warships from the East Coast to take on missile and drone threats in the Eastern Mediterranean and the Red Sea is informing a model

1 month ago



United States Navy (.mil)

## U.S., Egyptian Naval Forces Conducts Inaugural Eagle Defender Exercise in Red Sea

US Navy, Marine Corps and Coast Guard forces joined the Egyptian Naval Force in executing Exercise Eagle Defender in Safaga, Egypt, and in the Red Sea, Sept. 8...

3 weeks ago



Business Insider

## The US Navy is battling 'the best Iranian technology' in the Red Sea and changing how it fights to beat it, admiral says

US forces in the Red Sea have been intercepting missiles and drones launched by the



USNI News

## Navy Conducts First Successful Tests Reloading Missiles and Rearming Warships At Sea

NAVAL AIR STATION NORTH ISLAND, Calif. – With an eye toward ongoing missile commercial shipping the Navy is moving





# NAVSEA Enterprise Strategy





# Collaborative Value Proposition

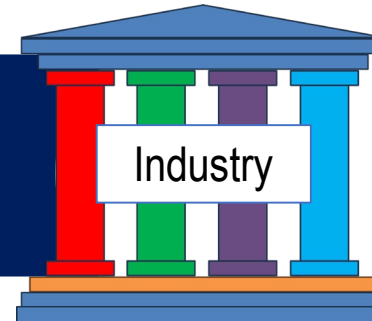
- Adversaries are building capabilities faster, cheaper, and in large quantities
- Traditional acquisition process struggle to keep up with the rate of technology change
- **Requires: Rapid and significant increases to warfighting capabilities**



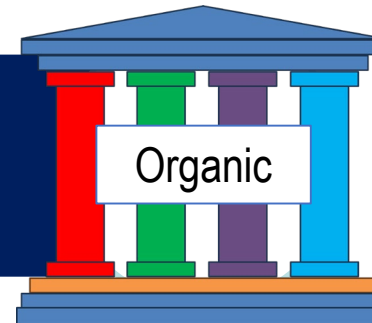
- Collaborate to rapidly identify and demonstrate solutions to defeat emergent adversary capabilities
- Utilize traditional and non-traditional acquisition processes for urgent operational needs and long-term sustainment
- **Action: Be innovative, agile, and receptive to diverse solutions**

# AM Lines of Effort

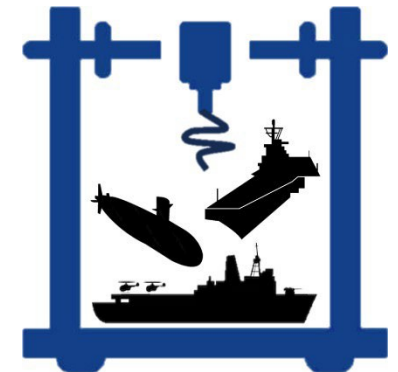
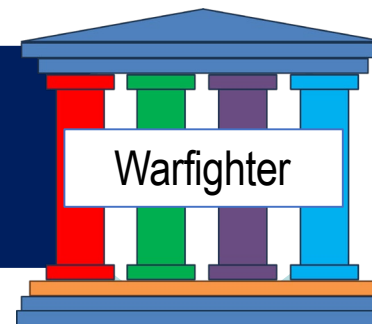
**Harness Cutting-Edge Commercial Capabilities for Strategic Advancement**



**Modernize Organic Depots and Strengthen Intermediate Capabilities**

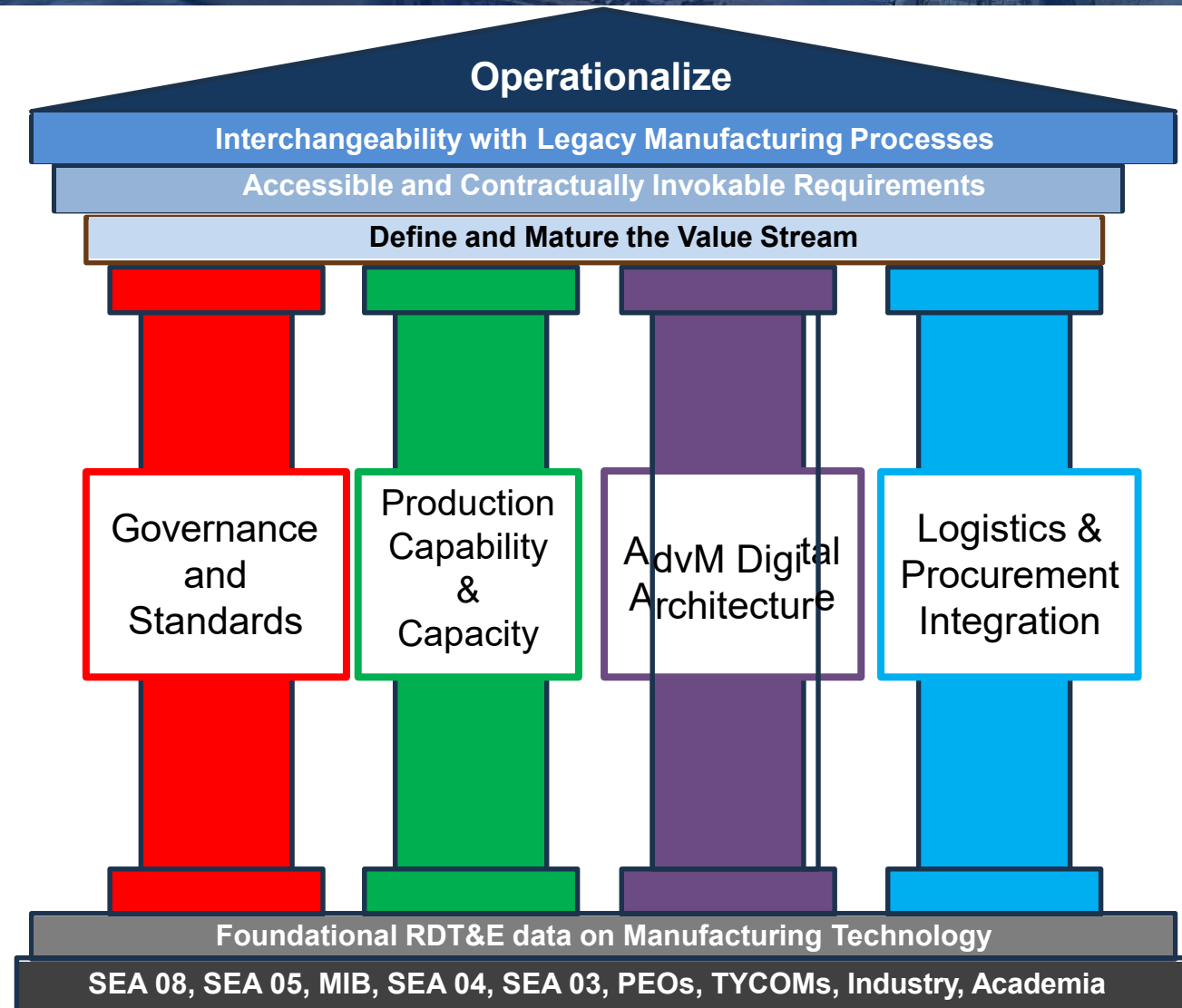


**Strengthen Warfighter Capacity and Self-Sufficiency for Mission Success**



**Operationalized  
Additive  
Manufacturing**

# AM Strategy



***Cross-cutting enablers key to successful AM scaling***

## Governance and Standards

**Goal:** Clear, pragmatic Navy requirements to make AM procurable and accessible.

## Production Capability & Capacity

**Goal:** Navy production capacity within uniformed, public, and private industrial bases to meet Navy needs.

## AdvM Digital Architecture

**Goal:** Securely store, send, retrieve, and freely collaborate across network boundaries on large data files with accessible databasing infrastructure.

## Logistics and Procurement Integration

**Goal:** Exercise upstream and downstream processes required to identify, create, install, and requisition an acceptable component made via Advanced Manufacturing (AdvM).



# VLS At-Sea Reloading – TRAM Demonstration

- **Transferrable Reload At-sea Method (TRAM) device**
  - UNREP based concept to rearm MK 41 Vertical Launch System at sea
- **Refurbishment, Analysis, Testing and Modifications**
- **Ships**
  - USS CHOSIN (CG-65)
  - USNS WASHINGTON CHAMBERS (T-AKE-11)
- **Demonstration**
  - Land Based Demonstration successfully completed 08-12 JUL 2024
  - At-Sea Demonstration successfully completed 9 – 11 OCT 2024



JOHNS HOPKINS  
APPLIED PHYSICS LABORATORY



THE  
**ENTWISTLE**  
COMPANY



PRISM MARITIME

**AOC**  
Engineering Solutions

GENERAL DYNAMICS  
Applied Physical Sciences



# Sustainment and Repair

**Problem Statement:** Future fleet size, infrastructure limitations, increased operational tempo and near peer environment require maintenance, sustainment and repair actions to occur concurrent to mission

## Align Maintenance & Sustainment technology with Expeditionary Maintenance and Battle Damage Repair:

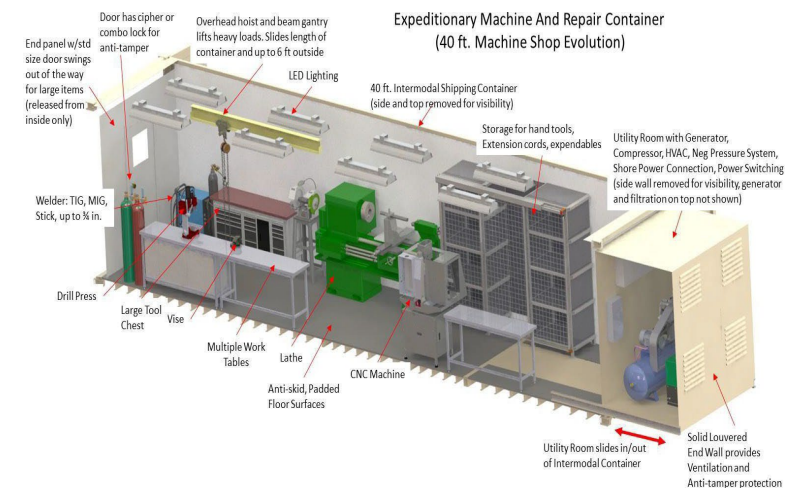
- Shop in a box (EMARC)
- Cold Spray Pop Up Cell
- Cold Spray mobile expeditionary equipment

## Expeditionary Technology Portfolio:

- Rapid Digitization - Topside Drone Scanning
- Mobile Infrastructure - Expeditionary Repair units
- Underwater inspection - Robotic snake/drone
- Surface Restoration - Multi-purpose end effector

## Battle Damage Repair:

- War game potential solutions
- Test in live expeditionary scenarios to aid technical decision making
- Develop acquisition, training and fielding plans





# Real World Outcomes



## 231019 - N-GF955-1113 RED SEA

October 19, 2023

The Arleigh Burke-class guided-missile destroyer USS Carney (DDG 64) defeats a combination of Houthi missiles and unmanned aerial vehicles in the Red Sea, Oct. 19. Carney is deployed to the U.S. 5th Fleet area of operations to help ensure maritime security and stability in the Middle East region.

*U.S. Navy photo by Mass Communication Specialist 2ndClass Aaron Lau*



## MAYPORT, FL

May 19, 2024

The Arleigh Burke-class guided-missile destroyer USS Carney (DDG 64) returned to Naval Station Mayport, Florida, May 19, after being deployed for more than seven months to the U.S. Naval Forces Europe – Africa and U.S. Naval Forces Central Command areas of operation.



Break

## **State of the Panel** Electrical Technologies Panel

Jason Farmer, Panel Chair

*Huntington Ingalls Industries, Ingalls Shipbuilding*

# Electrical Technologies Panel

## Purpose

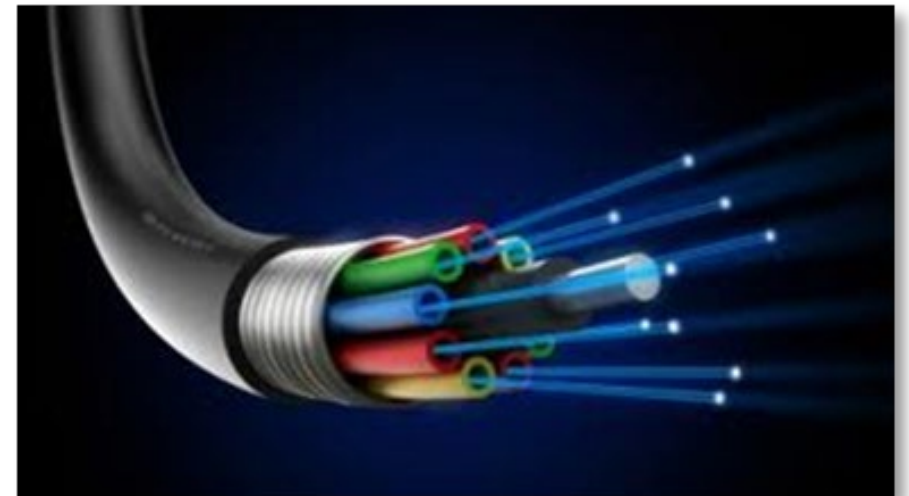
- Evaluate & transition improved electrical system technologies, installation processes, and electrical system specifications.
- Facilitate collaboration with the Navy and industry to identify & implement electrical technologies, processes, and best practices.

## Goal

- The goal of the Electrical Technologies Panel is to improve shipboard electrical systems and installation processes to achieve reduced cost, improved performance, and improved safety.

**Focus Areas:** The panel's focus is to identify and implement technologies and processes that improve:

- Total Ownership Cost
- Energy Efficiency
- Electrical System Performance
- Safety of Workforce and Ship's Crew



# Electrical Technologies Panel Overview

- Typically hold 3 meetings/year
  - Collaboration with other Panels
  - Technology Area Meeting focus
  - Facility Tours where available
- Areas of Interest
  - Electrical Installation & Testing
  - Fiber Optics
  - Solid State Lighting
  - Switchgear Inspection
- 2024 Panel Meeting Recap
  - Spring Meeting
    - April 3-4, 2024
    - Philadelphia, PA
    - Tour: NSWC Philadelphia
  - Summer Meeting
    - Joint Meeting with Welding Technology Panel
    - Sept 17-18, 2024
    - Charlotte, NC
    - Tour: Electric Power Research Institute (EPRI)
  - Winter Meeting
    - December 16, 2024
    - Virtual Format



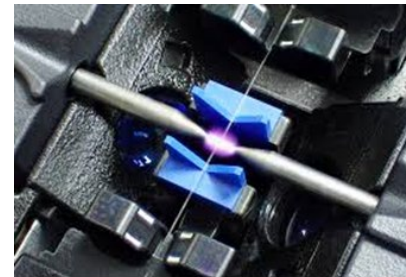
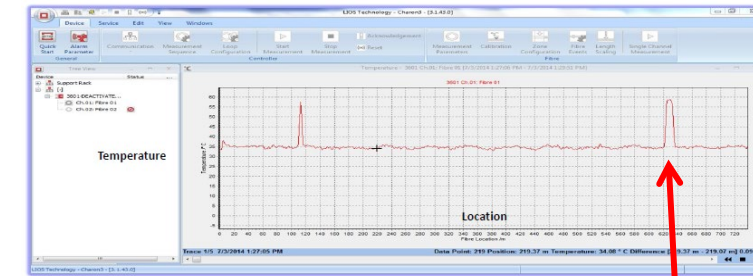
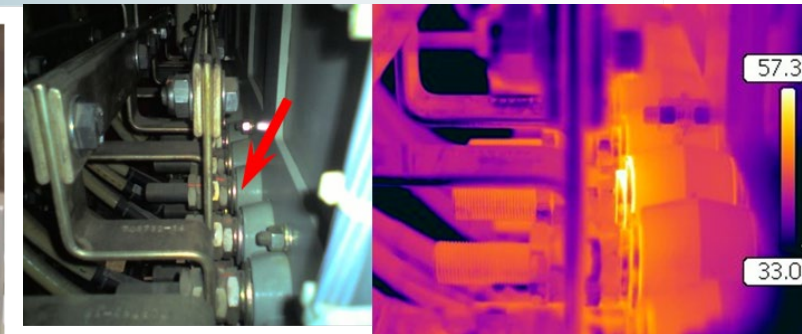
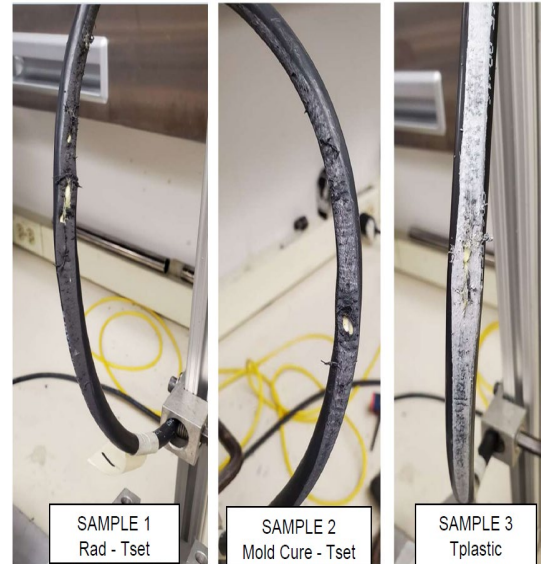
# Panel Activities

- **Panel Projects:** ETP Projects address many areas of shipboard electrical systems
  - Electrical Connections & Testing Methods
  - Cableways and Cable Installation
  - Fiber Optic Networks
  - Lighting Systems
- **Industry Events:** Panel members participate in industry events in support of Technology Transfer
  - NSRP Panel Meetings
  - MFPT Annual Meeting
  - NAVSEA Working Groups
  - ShipTech

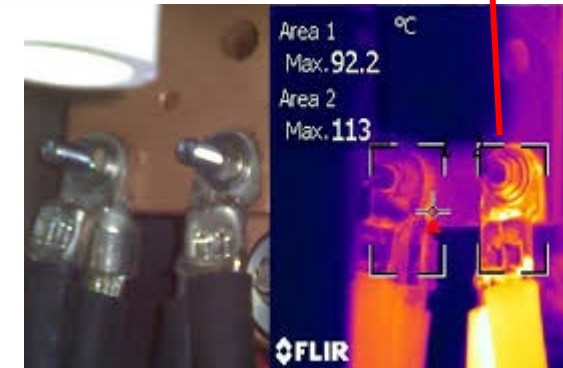


# Panel Projects

- Recent Panel Projects
  - DTS Integration Into Ship Electrical Plant Monitoring & Controls
  - Shipboard Fiber Optic Cables Design Enhancements
  - High-Density Ribbon Fiber Optic Cable & Tooling



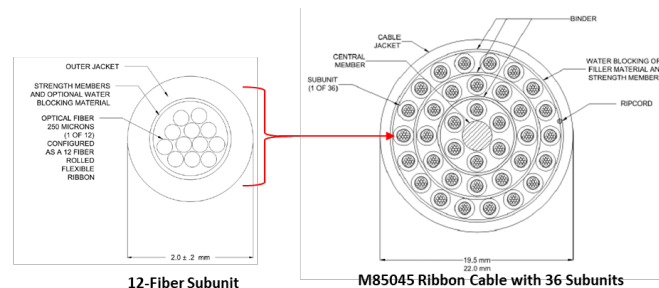
Fusion Splicer  
Individual Fiber



Fusion Splicer  
Ribbon Fiber



Standard M85045  
Cable Example





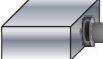









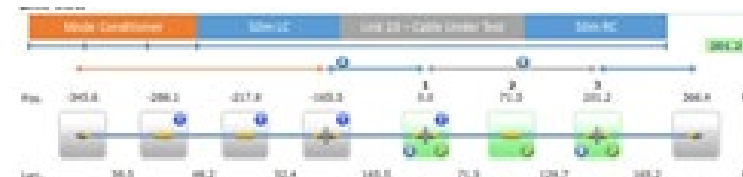
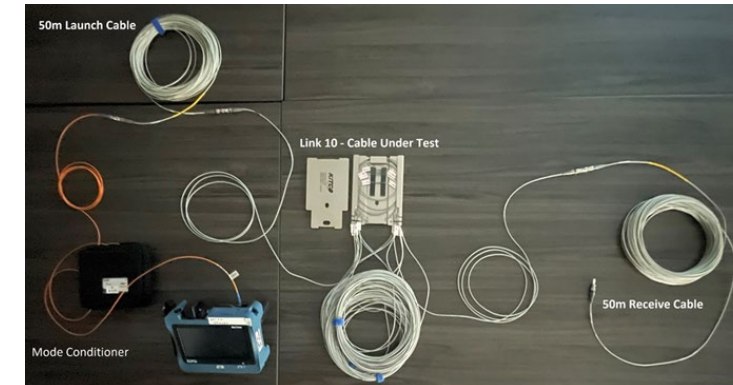
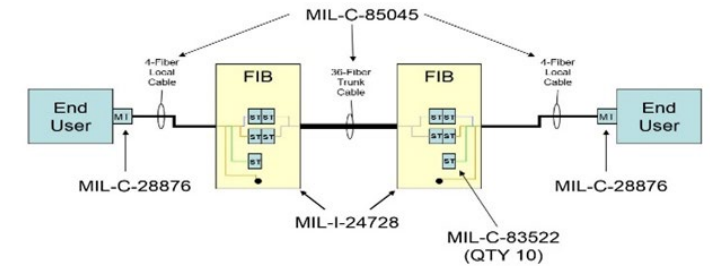
M85045 Ribbon Cable Example



# Panel Projects

- Fiber Optic Testing Enhancement for Cost Reduction
- DOD-HDBK-289 Modernization Support
- 15kV MIL-SPEC Cable Development for U.S. Navy Ships\*

Source Launching Conditions	Source Type	Input Beam	Fiber	Output Beam
Overfilled (LED)				
Slightly under-filled (ideal conditions)				
Under-filled (VCSEL)				

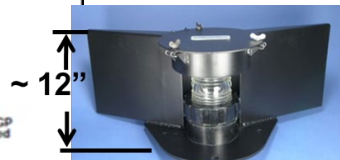


## MILITARY HANDBOOK

### LIGHTING ON NAVAL SHIPS (METRIC)



**METRIC**  
DOD-HDBK-289(SH)  
26 November 1986  
SUPERSEDED  
NAVSEA 0964-000-2000  
15 July 1974



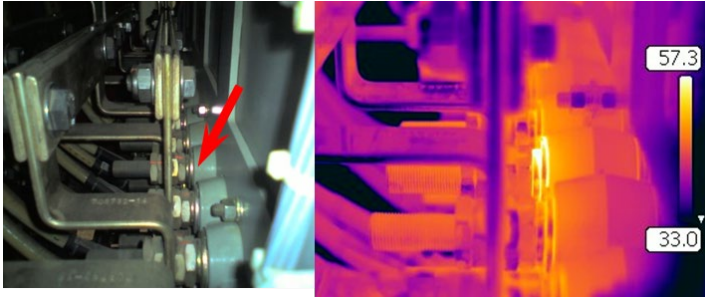
Vs.



AMSC N/A  
DISTRIBUTION STATEMENT A Approved for public release, distribution unlimited

FSC 62CP

# Project Benefits (*Some highlights*)



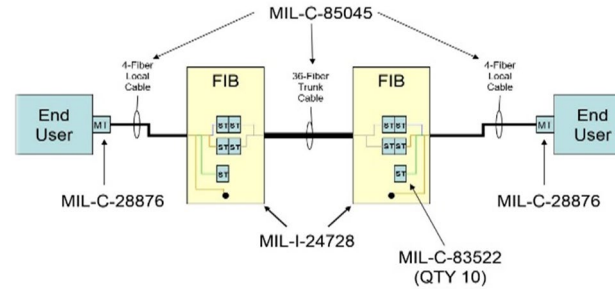
## **Electrical Switchgear Inspection**

- ✓ Improved Safety
- ✓ New Methods Implemented in MIL-DTL-32483
- ✓ New Technologies Identified & being implemented in current NSRP tech development efforts
- ✓ Significant time savings for inspections



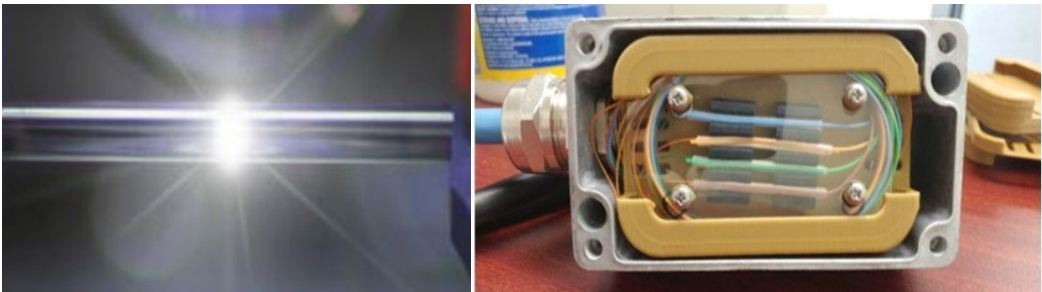
## **Improved Fiber Optic Testing Processes**

- ✓ Decreased Test Time
- ✓ Increased Data to Technician
- ✓ Improved Efficiency (>40k MHRS saved)



## **Advanced Lighting Concepts**

- ✓ New Technologies Identified & Evaluated – Multiple Ship Classes
- ✓ Addresses Maintenance Issues
- ✓ >25% ROI Identified



## **Fiber Optic Connections**

- ✓ Installation Efficiency
- ✓ Acquisition Savings
- ✓ >70% Improvement



## **Shipboard Cableways**

- ✓ New Hardware Evaluated
- ✓ Improved Efficiency
- ✓ >10% Improvement Target



## **Flexible Test Adapters – Circuit Testing**

- ✓ 3D Printed Designs
- ✓ Significant Cost & Schedule Improvements
- ✓ >75% Reduction in connectors

# Near Term Activities

- Electrical Technologies Panel Break-Out Meeting
  - Thursday, February 27, 2025
  - 8:00 am – 4:30 pm
  - Crystal Ballroom C/D
- Planning underway for Summer Panel Meeting

# **Panel Chair Update**

## Ship Design and Material Technologies Panel

Monika Skowronska, Panel Chair



# NSRP SDMT Leadership

Extended Team		
Major Initiatives		
Information, Design, & Integration	Ship Production Technologies	Infrastructure, Logistics, & Sustainment
Panels		
Ship Design & Material Technologies	Electrical Technologies	Workforce & Compliance
Ship Warfare Systems Integration	Planning, Production Processes & Facilities	Sustainment
Business Technologies	Surface Preparation & Coatings	
	Welding Technology	

## Ship Design & Material Technologies Panel

Chair: **Monika Skowronska** (NASSCO)  
Vice Chair: **Victoria Dlugokecki**  
(Naval Consultant)



# Ship Design and Material Technologies Panel's Mission



The SDMT Panel focuses on providing increased capabilities and cost reduction initiatives across the complete spectrum of design processes and the identification of materials **and technologies** to support rapid and efficient development, construction, sustainment, and disposal **of ships and their components.**

\* 2025 Technology Investment Plan updates

# SDMT Specific Focus Areas

- Improving technologies in early ship design.
- Improving integration of all shipboard systems and undefined mission systems during design.
- Improvement of design technologies, including design and analysis tools, to reduce costs in production engineering and construction.
- Investigate material technologies to improve material performance, standardization, and overall material processes while reducing part count and total ownership costs during all phases of ship design and construction.
- Reduction of re-work in all areas of ship design and construction.
- Improving specifications and standards and investigating new technologies that can be incorporated into Rules or technical requirements documents for both commercial and naval shipbuilding programs.
- Collaborate and partner with other NSRP panels on topics and initiatives that encompass the other panel focus areas.

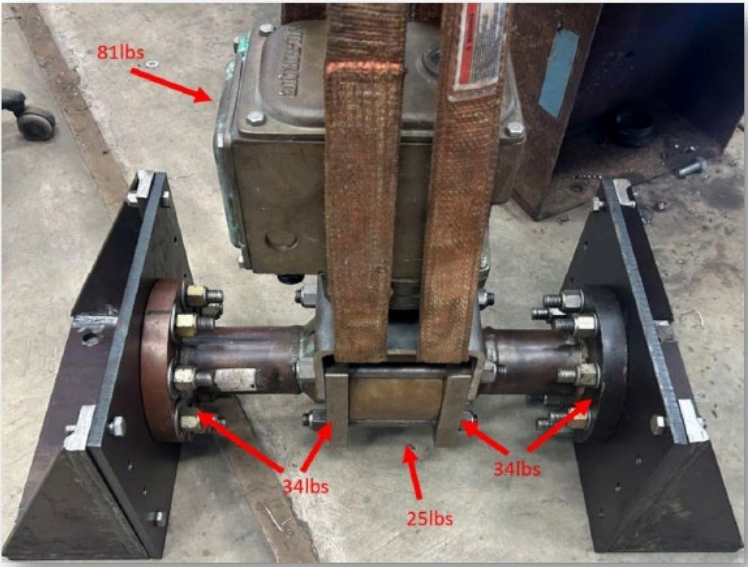
<https://www.nsrp.org/panels/sdmt-panel/>

# Current SDMT Panel Projects

## Navy Standard Bookend Fixtures for Shock Testing

Lead: Gibbs and Cox

Project Participants: Ingalls,  
NAVSEA 05P1

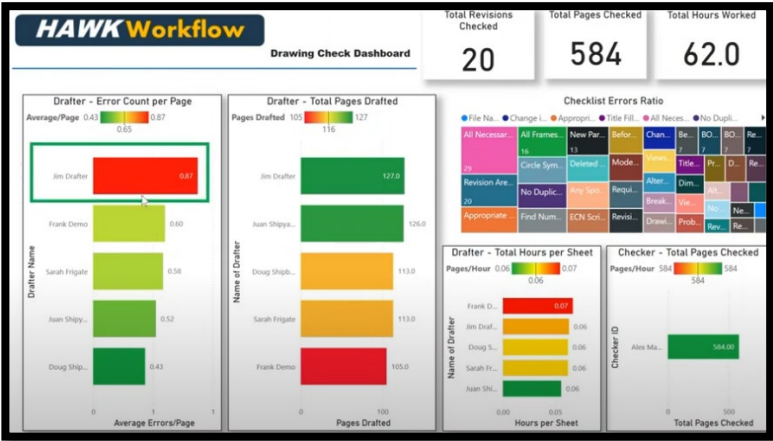


Wed, Room C/D, 1:15pm

## Data-Centric Detail Design and Drafting Process Improvements

Lead: Hawk Technologies

Project Participants: Fincantieri  
Marinette Marine, Ingalls  
Shipbuilding

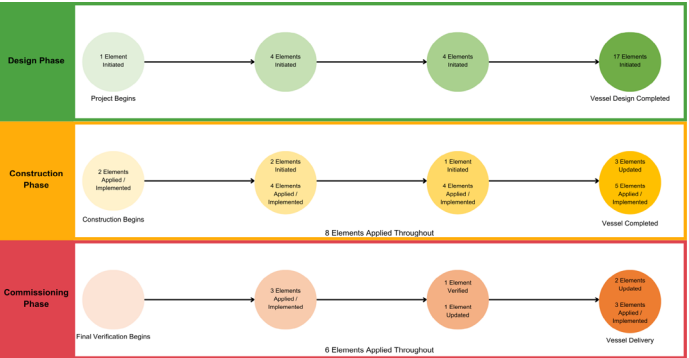


Wed, Room C/D, 1:45pm

## Industry Recommended Framework and Implementation Roadmap for Delivering Cyber-Ready Ships

Lead: ABS

Project Participants: GD BIW, GD  
NASSCO, NAVSEA 05D, USCG CG-  
9, NOAA



Wed, Room C/D, 2:15pm



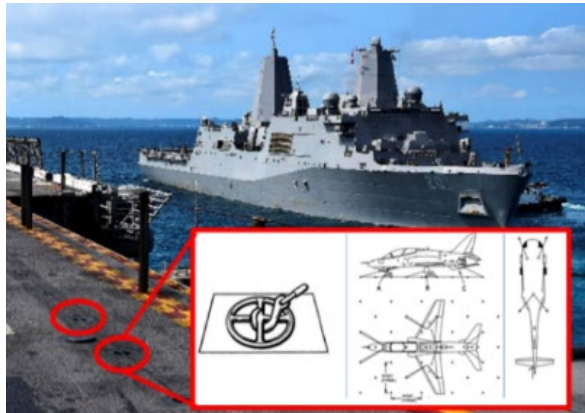
# Past SDMT Panel Projects

## Using MELD to AM Flight Deck Tie Downs

**Lead:** Hepburn and Sons

### Project Participants:

- MELD Manufacturing
- Ingalls Shipbuilding
- NSW Carderock
- NSW Philadelphia



## 3D Printing of Supply Sensitive Parts

**Lead:** NASSCO

### Project Participants:

- Electric Boat
- NAVSEA 05T, Dr. Justin Rettaliata
- PEO SSBN

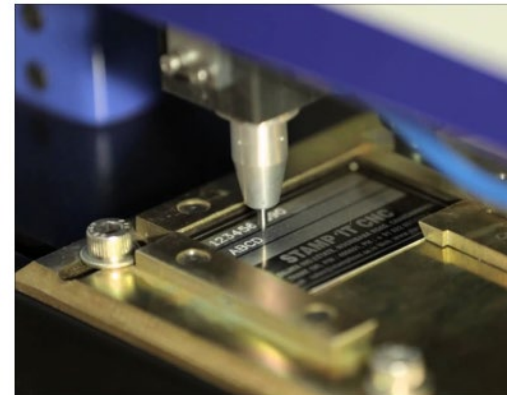


## Automated Label Plate Generation

**Lead:** SSI

### Project Participants:

- Austal
- Conrad
- Fincantieri Marinette Marine

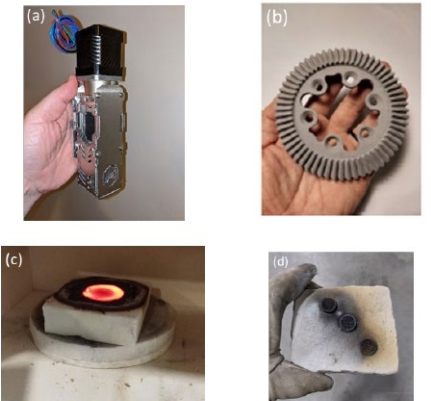


## Development of an AM Capability for CuNi

**Lead:** ElectraWatch

### Project Participants:

- Austal
- Electric Boat
- Metallum 3D
- NAVSEA 05T





# Past SDMT Panel Projects

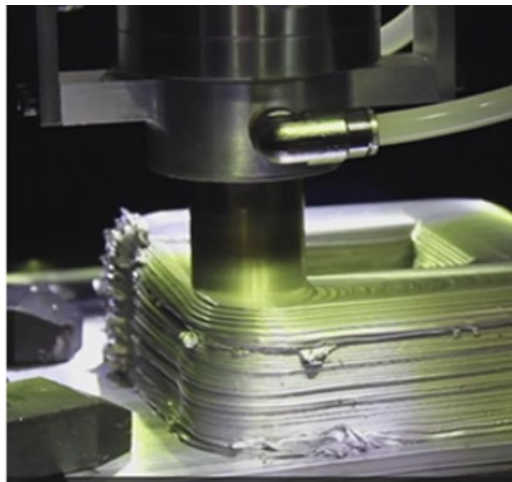
## Standardization of Watertight Hatches and Scuttles

**Lead:** Ingalls  
Standardization of hatches and scuttles, cuts cost of multiple variants.



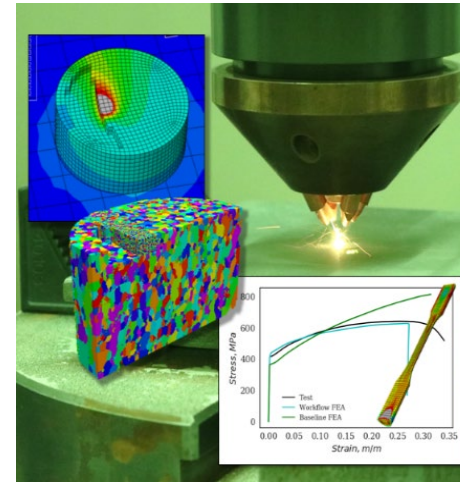
## Scaling Up of 3D Printed Castings

**Lead:** NASSCO  
Development of a cost saving, US-sourced, AM alternative to casting manufacturing



## Simulation Workflow Development for AM

**Lead:** ATA  
Prediction of AM part performance for faster design and potential for accelerated, model-supported qualification



## ASTM F1387 Testing for MA Fittings

**Lead:** BIW  
Testing and approving a new type of fittings that significantly cuts installation cost by eliminating welding, implemented on DDG51



# Projects Submitted in 2024: 16 Projects Total

No.	Panel Project	Submitted by
1	Potential for Applying Artificial Intelligence (AI) in Shipyards Processes	Newport News
2	AI-Driven Ship Design Optimization	Fincantieri Marinette
3	Combat Systems Standard Foundations Expansion	Newport News
4	Integrate MAESTRO Ship Structural Design Software with Femap/Nastran Software	Maestro
5	Utilizing Virtual Reality in Ship Design	Nassco
6	Navy PLM Data Requirements	SSI
7	Rapid Qualification of Additively Manufactured Parts	ABS
8	Alternative Fuels Study	Nassco
9	Shock Waveguide Implementation for Ship Foundation Design	Ingalls
10	Label Plate Management	SSI
11	Alternate Hardwood Materials for Dry Dock Blocks	Dry Dock Training
12	Guidance for Large Scale Additive Manufacturing	ABS
13	Alternative Methods for Joining Dissimilar Metals	Hepburn & Son
14	Removable Weld-Less Padeyes for Thin Plate Assemblies	Nassco
15	Marinization of Firefly Reliable Power Generation for LUSV	Hepburn & Son
16	DSSM Latch Adjustment Mechanism	Newport News

# Project Down Select by Panel Member Vote

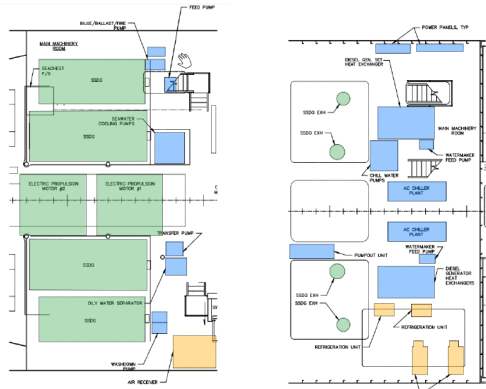
## AI-Driven Ship Design Optimization

Fincantieri Marinette Marine, ShipConstructor, Altair Engineering

**Tier 1**  
Propulsion Engines  
Ship Service Generators  
Combining/Reduction Gears  
Steering Gear & Tiller

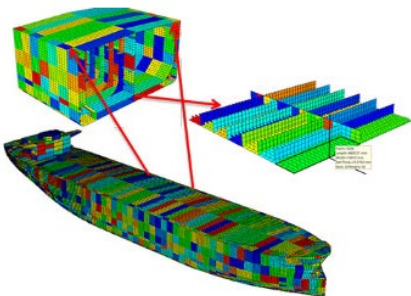
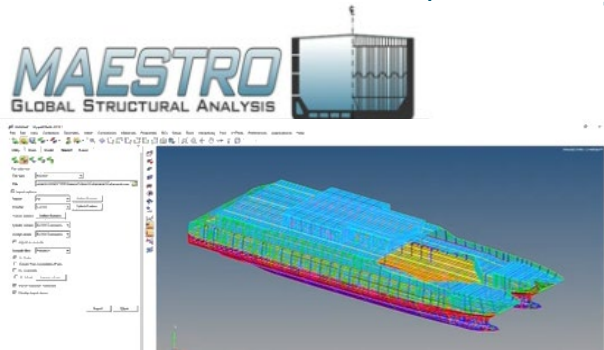
**Tier 2**  
Fuel Service & Conditioning Skids  
Lube Oil Service & Conditioning Skids  
Desalination Plant  
Propulsion Shafting & Bearings  
Seawater Cooling Pumps  
Fire-main Pumps  
Hydraulic Power Units

**Tier 3**  
Air Compressors  
Switchboards & Transformers  
Sewage treatment plant  
Shop Machinery (Lathes, Drill Presses, etc.)  
Fan Coils  
Water Heaters



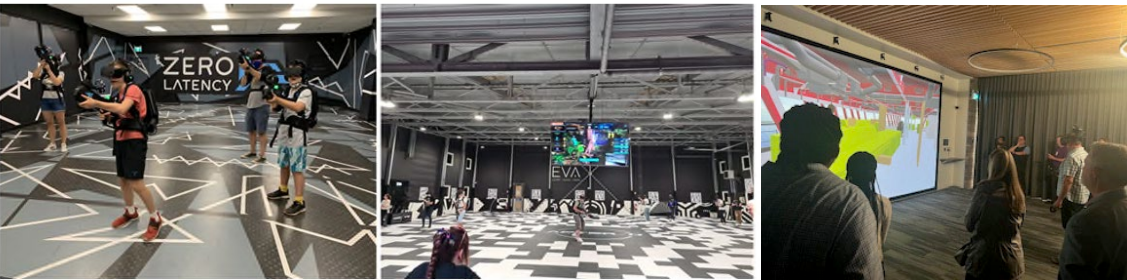
## Integrate MAESTRO Ship Structural Design Software with Femap/Nastran Software

MAESTRO Marine LLC, HII – Ingalls Shipbuilding, Siemens



## Utilizing Virtual Reality in Ship Design

GD-NASSCO

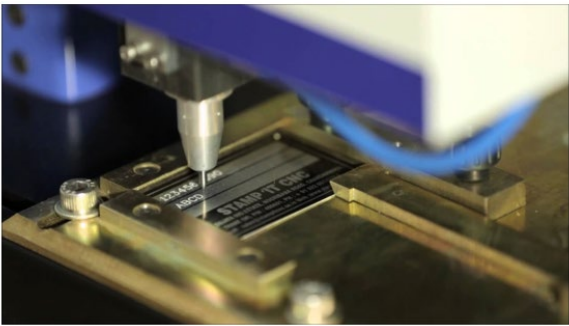


## Label Plate Management

ShipConstructor, Fincantieri Marinette Marine, Bancroft Enterprises, GD – NASSCO, SEASpan

Reusing the digital data from the 3D Model to the Label Plate Manufacturer / Supplier

Dry Stores  
2 – 10 – 1 – A





# Project Down Select by ECB for funding

## AI-Driven Ship Design Optimization

Fincantieri Marinette Marine, ShipConstructor, Altair Engineering

- Tier 1**

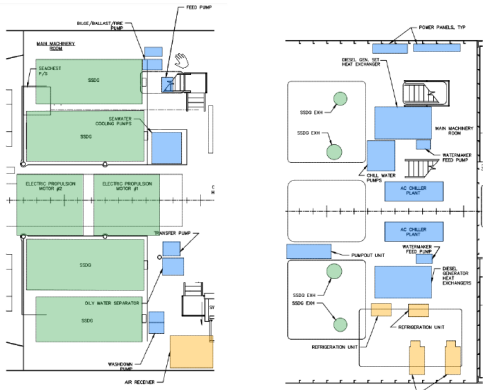
  - Propulsion Engines
  - Ship Service Generators
  - Combining/Reduction Gears
  - Steering Gear & Tiller

**Tier 2**

  - Fuel Service & Conditioning Skids
  - Lube Oil Service & Conditioning Skids
  - Desalination Plant
  - Propulsion Shafting & Bearings
  - Seawater Cooling Pumps
  - Fire-main Pumps
  - Hydraulic Power Units

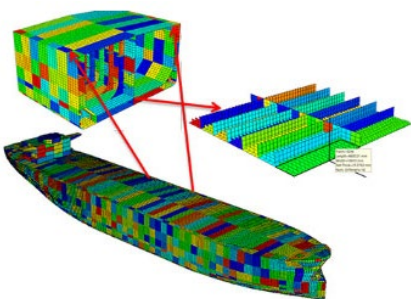
- Tier 3**

  - Air Compressors
  - Switchboards & Transformers
  - Sewage treatment plant
  - Shop Machinery (Lathes, Drill Presses, etc.)
  - Fan Coils
  - Water Heaters



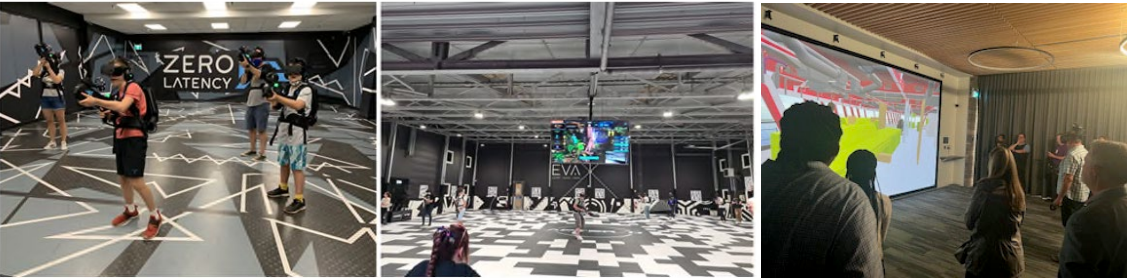
## Integrate MAESTRO Ship Structural Design Software with Femap/Nastran Software

MAESTRO Marine LLC, HII – Ingalls Shipbuilding, Siemens



## Utilizing Virtual Reality in Ship Design

GD-NASSCO

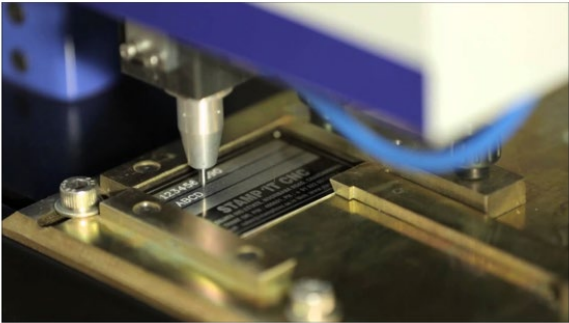


## Label Plate Management

ShipConstructor, Fincantieri Marinette Marine, Bancroft Enterprises, GD – NASSCO, SEASPAN

Reusing the digital data from the 3D Model to the Label Plate Manufacturer / Supplier

Dry Stores  
2 – 10 – 1 – A



# Project Down Select by ECB as standby

## AI-Driven Ship Design Optimization

Fincantieri Marinette Marine, ShipConstructor, Altair Engineering

**Tier 1**

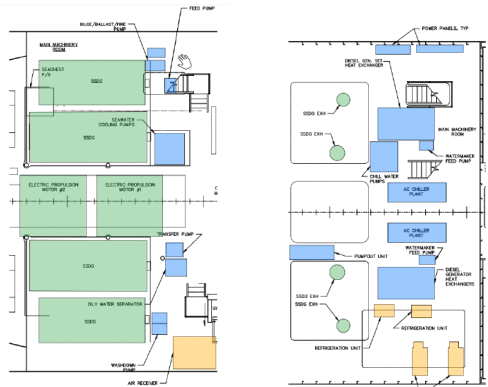
- Propulsion Engines
- Ship Service Generators
- Combining/Reduction Gears
- Steering Gear & Tiller

**Tier 2**

- Fuel Service & Conditioning Skids
- Lube Oil Service & Conditioning Skids
- Desalination Plant
- Propulsion Shafting & Bearings
- Seawater Cooling Pumps
- Fire-main Pumps
- Hydraulic Power Units

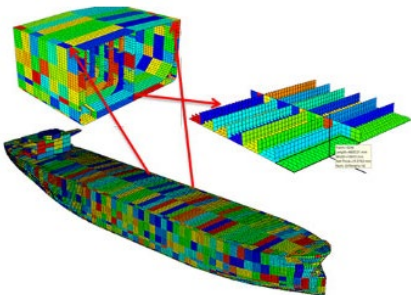
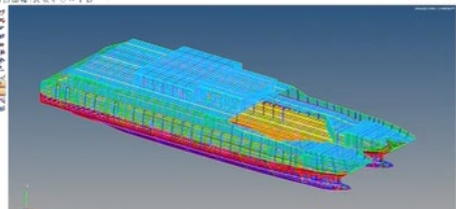
**Tier 3**

- Air Compressors
- Switchboards & Transformers
- Sewage treatment plant
- Shop Machinery (Lathes, Drill Presses, etc.)
- Fan Coils
- Water Heaters



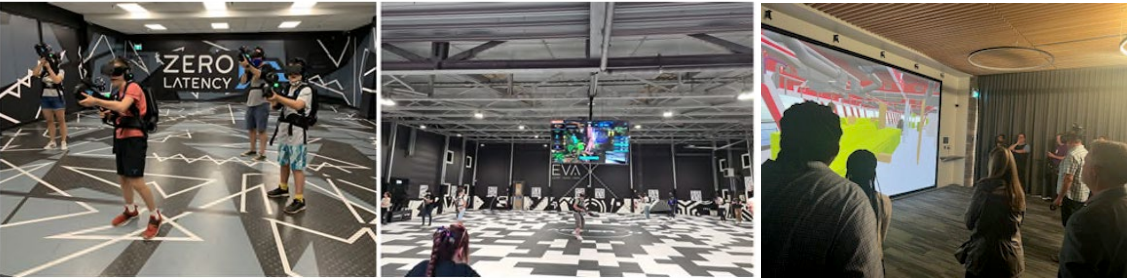
## Integrate MAESTRO Ship Structural Design Software with Femap/Nastran Software

MAESTRO Marine LLC, HII – Ingalls Shipbuilding, Siemens



## Utilizing Virtual Reality in Ship Design

GD-NASSCO

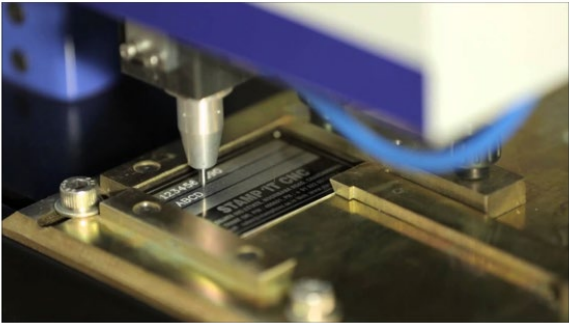


## Label Plate Management

ShipConstructor, Fincantieri Marinette Marine, Bancroft Enterprises, GD – NASSCO, SEASPAN

Reusing the digital data from the 3D Model to the Label Plate Manufacturer / Supplier

Dry Stores  
2 – 10 – 1 – A





# Past SDMT Panel Meetings: Vancouver

- Joint Panel Meeting with BT: August 20th -22nd, 2024





# Future Activities: Summer Meeting

- **BT/SDMT/Sustainment Joint Panel Meeting**
  - June 24<sup>th</sup> - 26<sup>th</sup>, 2025 – Honolulu, HI
- **Agenda items we are working towards:**
  - Pearl Harbor Shipyard (iLab)
  - Pacific Shipyard International
  - University of Hawaii
  - Local Hawaiian Shipbuilding and Ship Design Companies: PacMar, Makai, Oceanit



## State of the Panel Sustainment

Kirsten Walkup, Panel Chair

*General Dynamics-Bath Iron Works*



Executive Control Board

Program Administrator

Extended Team

Major Initiatives

Information, Design,  
& Integration

Ship Production  
Technologies

Infrastructure,  
Logistics, &  
Sustainment

Panels

Ship Design &  
Material Technologies

Electrical Technologies

Workforce &  
Compliance

Ship Warfare Systems  
Integration

Planning, Production  
Processes & Facilities

Sustainment

Business Technologies

Surface Preparation &  
Coatings

Welding Technology

**Vice chair – Kaipo Crowell**  
**Chair – Kirsten Walkup**



# Sustainment Panel - Mission

*"The Sustainment Panel has the mission of reducing the cost of ship logistics and sustainment activities to include repair, maintenance and modernization while increasing operational availability for manned and unmanned vessels. Panel focus will be placed on advancing technologies, materials, processes and procedures that realize greater efficiencies in lifecycle sustainment. The Panel also includes researching and evaluating opportunities for implementation of digital tools, new technology, and processes to increase fleet readiness."*

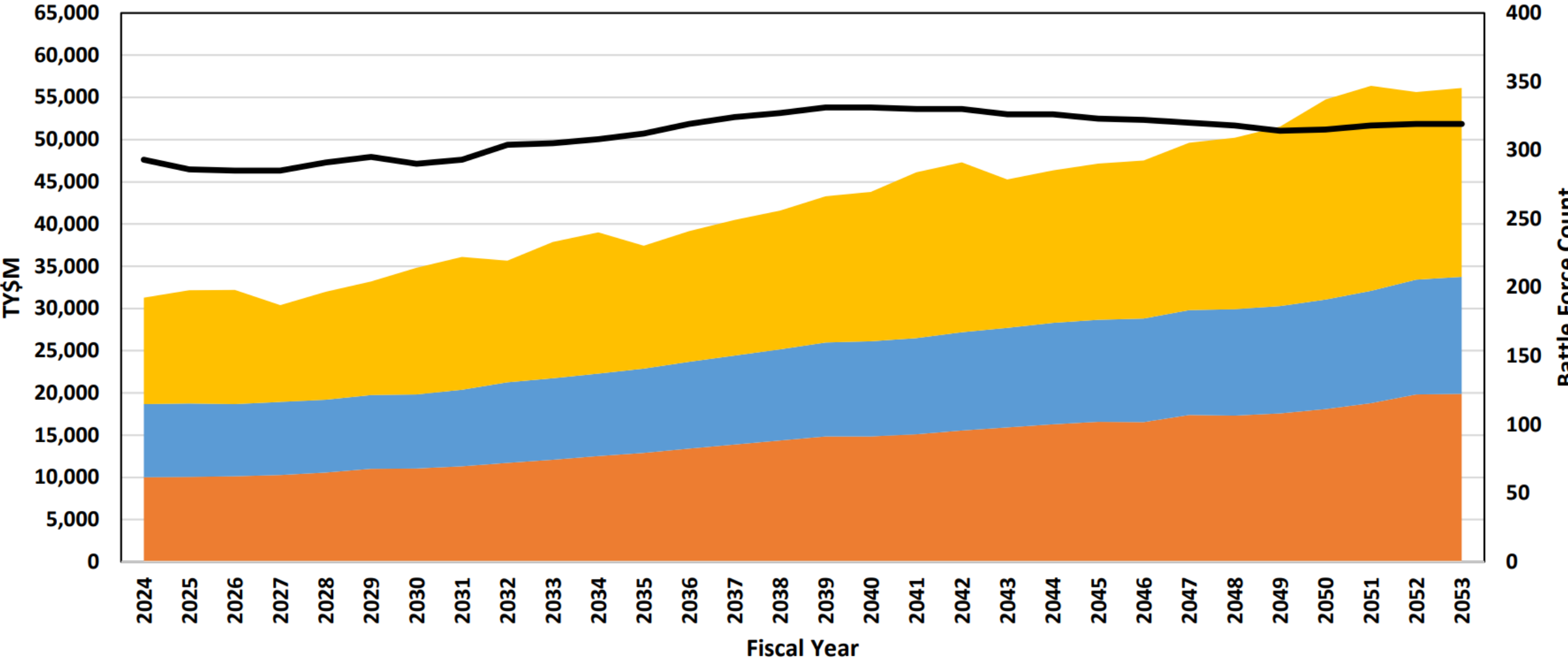
# Sustainment Panel - Focus

- Explore opportunities to leverage artificial intelligence/machine learning (AI/ML), and emerging technology for shipyard planning, operations, and execution
- Incorporate sustainment considerations in the design phase of vessels and components to support ship maintenance and modernization of hull, mechanical, and electrical as well as mission system infrastructure
- Implement new inspection and maintenance processes to support minimal time in availabilities
- Explore, develop, and implement processes to address supply chain limitations
- Improve early condition assessments and prognostic monitoring tools to support condition-based maintenance and structural health
- Develop and implement life cycle cost modeling for flexible adaptable systems as compared to traditional shipbuilding practices

# Sustainment Panel - Benefits

- The Sustainment Panel's focus is directed toward reducing cost and schedule impacts on maintenance and modernization availabilities.
- The Panel seeks to leverage advancing technologies against increasingly complex schedule, cost, materials, and logistical challenges faced by the waterfront.
- Together with current panel projects, the Sustainment Panel will pursue and promote impactful initiatives with strong benefit demonstrated through reduced costs and schedule, and increased capability.

Figure A3-1. PB2024 Annual Funding for Sustainment (FY2024-2053)<sup>1</sup>



Manpower      Operations      Ship Maintenance      Total Naval Force Inventory



# Sustainment Panel Projects - 2023

## 2023 Panel Projects

- Alternate Blocking Materials – DM Consulting
  - Team Members: Austal USA, Naval Station San Diego
- Equipment Sight/Site Validation Tool – HII, Ingalls Shipbuilding
  - Team Members: General Dynamics – Bath Iron Works
- MELD Additive Manufacturing– Hepburn & Sons
  - Team Members: HII – Ingalls Shipbuilding, NSWCC Carderock, NSWCC Philadelphia

# Sustainment Panel Projects - 2024

## 2024 Panel Projects

- Enhanced 3D Mapping & High-Bandwidth Mesh Radio Projects – Cleo Robotics
  - Team Members: GD – Bath Iron Works
- Fire Protection Shipboard/Intumescent Coatings – Hepburn & Sons
  - Team Members: Hepburn and Sons, Fincantieri Marinette Marine, STI, NSWCCarderoock, Southwest Research Institute
- Body Cooling Technology Study – HII - Ingalls Shipbuilding
  - Team Members: HII - Newport News, GD – Bath Iron Works

# Sustainment Panel Projects – 2025 Selected

## 2025 Panel Projects

- Defect Characterization of Navy Ship Structures with Active UMI – Antech
  - Team Members: Norfolk Naval Ship Yard
- Evaluation of Digital Twin Technologies for In-Situ Ballast Tank Inspection – Southwest Research Institute
  - Team Members: HII – Ingalls Shipbuilding, HII – Newport News Shipbuilding, BAE - Jacksonville

# Upcoming Activities

- Sustainment Panel Breakout Session
  - All-Panel Meeting – February 25<sup>th</sup>, Room E
- BT/SDMT/Sustainment Joint Panel Meeting
  - June 24-26, Honolulu, HI



# Sustainment Panel Meeting Agenda

**Tuesday, 2/25/2025**

	Presentation	Speaker
1:00 pm	<b>Welcome</b>	Kirsten Walkup Sustainment Panel Chair
1:30 pm	Project Presentation – Building Failure Data and Prediction Models for Ship Sustainment	Mark Debbink HII - Newport News Subrat Nanda - ABS
2:00 pm	Project Update – Body Cooling Technology	Karen Cassidy HII – Ingalls Shipbuilding
2:30 pm	Project Update - Digital Twin Technologies for In-Situ Ballast Tank Inspection	Cody Porter - SwRI
3:00 pm	Project Update - Defect Characterization of Navy Ship Structures with Active Ultrasonic Mode Imaging	Gerald Addison – Antech
3:30 pm	Presentation – Drydocking Technology	Alex Stiglich DM Consulting
4:00 pm	Project Update – Intumescent Fire Protection	Stan Bovid – Hepburn & Sons
4:30 pm	<b>Wrap-up &amp; Adjourn</b>	

# **State of the Panel** Planning, Production Processes, and Facilities Panel

**Peter Radzicki**

*Panel Chair*

*General Dynamics NASSCO*

# Planning, Production Processes, and Facilities Panel's Mission:

Discover and disseminate best practices focused on the principal manufacturing processes, equipment, planning, and facilities required to support the fabrication, assembly, and testing phases of ship production, repair and maintenance.

# Panel's Purpose:

1. Develop and implement Manufacturing Processes for construction, fabrication and assembly
2. Develop and implement Manufacturing Processes for outfitting, installation and testing
3. Improve shipyard sub-tier supplier performance with respect to quality, cost and schedule
4. Develop and implement Automation, Robotics and Mechanization in manufacturing processes
5. Increase knowledge and proficiency of overall workforce
6. Develop and qualify emerging technologies



# Panel's Purpose, Cont.

7. Develop and implement digital shipbuilding tools for improved construction and sustainment activities
8. Investigate improvements to standardization, commonality and modularity
9. Improve quality, level of detail, and automation of job planning and work instructions
10. Develop and implement Additive Manufacturing (AM) into shipbuilding and repair
11. Develop solutions to improve installation, maintenance and efficiency of shipboard networks
12. Develop warehousing and logistics improvements to facilitate equipment delivery.

# Benefit to the Navy

Value - Projects research, develop, mature, and implement industry-relevant shipbuilding and sustainment technologies and processes

Implementation - Projects have varying degrees of implementation. Many recent projects study processes (e.g. AM, lifting and handling) or aid in implementation where Navy approval is a hurdle (i.e. robotic welding)

ROI - Various degrees of ROI. Studies tend to yield follow on projects, whereas others are adopted by the shipyard upon completion

# Vice Chair Selection

- Nominations period for the Planning Production Processes & Facilities Vice Chair position, closed on Friday, February 21<sup>st</sup>
- Vice Chair nomination requirements are as follows:
  - It is preferred that the Panel Vice-Chair be an employee of a U.S. private sector shipyard, but if that is not viable a qualified non-shipyard person may be elected as Panel Vice-Chair.
  - Must be a member of the panel, in good standing.
  - Must have sufficient time available to support panel activities
  - Term of office shall be from date of election through 30 September 2025 (2-year term expirations are tied to the position and not the individual) with no limitation on the number of terms for Panel Officers.
- Vote and selection to be made in coming month

# Upcoming Project

Completion of an Incline Experiment Without Use of Pendulum

Project Team:

- **Issy Brown, GD NASSCO**
- Shawn Wilber, Austal USA

NSRP INVESTMENT: \$150K

Objective:

- ASTM F1321-21 regulations have been modified to allow for the use of digital measuring devices alongside pendulums, but this option is rarely exercised.
- This projects object is to validate the ASTM F132-21 regulation can be achieved by a variant of digital measuring devices; a digital inclinometer, an Inertial Measurement Unit (IMU) sensor, and a smartphone in combination with the SCRAM app.



# Current RA Project

Establishment and Operation of a Shipbuilding CoBot Training and Development Center (24-02)

Project Team:

- **Patrick Cahill, Cahill Consulting, LLC**
- Fincantieri Marinette Marine (FMM)
- Newport News Shipbuilding
- Master Boatbuilders
- Pacific Shipyards

Objective:

- Establish a pipeline for personnel training and qualification, application development, and CoBot qualification for Navy Work
- Research and Development to improve CoBot functionality and versatility in ship construction and repair applications



# Current Project

Fast Docking System Study (2023-402-003)

Project Team:

- **Alex Stiglich, DM Consulting**
- Fincantieri Marinette Marine (FMM)
- Naval Base San Diego Graving Dock

NSRP INVESTMENT: \$150K

Objective:

- The project's objective is to analyze the effectiveness of a modern drydocking technology; Syncrolift's Fast Docking systems. These systems are hydraulically operated ship supports that replace side blocks.
- This project will provide a comprehensive analysis of these systems along with pragmatic recommendations that hold potential for implementation in shipyards throughout the United States, catering to both commercial and government vessels.



# Current Project

Plug and Play Cobotics (2019-375-014)

Project Team:

- **EWI**
- Ingalls Shipbuilding
- Robotic Technologies of Tennessee
- NSWCCD

NSRP INVESTMENT: \$138K

Objective:

- The project goal is to demonstrate the use of a cobot as a general-purpose motion tool that is flexible enough to work with a variety of welding, cutting, and other metalworking equipment that is currently on site and used at shipyards.

# Recent Project

Dry Dock Block Contact Indicator (2023-402-001)

Project Team:

- **Alex Stiglich, DM Consulting**
- Austal USA
- Naval Base San Diego Graving Dock

NSRP ASE INVESTMENT: \$88K

Objective:

- The purpose of this project is to design and test a block contact detection system.
- Use of the system is intended to reduce or eliminate the need for divers to verify contact between the blocks and the vessel being lifted during touch down.





# Upcoming Panel Meeting

- Timing: Summer 2025
- Location: Norfolk, VA
- Tentative Agenda:
  - Repair Shipyard Tour
  - Cobot Alliance Training Center Tour
  - Weld Coupon Test Facility Tour
  - Project Presentations
  - Idea Pitches



## **State of the Panel** Surface Preparation & Coatings Panel

Conlan Hsu, Panel Chair

Newport News Shipbuilding

# Purpose

## **“Specs to Decks” Approach**

- Engage specifiers, suppliers, industry experts, and applicators of coating systems
- Develop new technologies and processes in surface prep, coatings, corrosion control, and inspection that reduce cost and improve quality in shipbuilding new construction and maintenance
- Coordinate panel meetings, facilities tours, and demonstrations to address issues and opportunities within the industry
- Leverage best practices from within the community

# Benefits

- Implementation of projects have led to new standards, processes, multi yard adoption, and labor/material savings
- Address emerging issues within the industry
- Showcase new technologies to the shipbuilding coatings community
- Provide feedback on new ideas from technical authority and end users
- Create a collaborative community within a group that would normally be considered competitors



# SPC Panel Projects

## Current Projects

- ❖ *Testing and Analysis of Anti-Biofouling Coatings*
- ❖ *Enhanced Primers for Welding Operations*
- ❖ *The Effects of Blast Media on Production and Coating Performance*

2024

## Completed Projects

- ✓ *Cleanable Nonskid Deck Covering*
- ✓ *Ultra Heat Resistant Primer*
- ✓ *Zinc-Rich Coatings Over High Strength Steel*
- ✓ *Transition of Power Tool Optimization - RAP*
- ✓ ***Implementation of SP-18 in Construction – RAP***
- ✓ *Optimize Power Tools Surface Preparation*
- ✓ *Survey of Surface Prep & Coatings Automation*
- ✓ *Standardization and Digitization of Visual Inspection for Shipbuilding & Repair*

2023

2023

2020

2019

## Completed Projects (continued)

- ✓ ***Primers with Extended AF Overcoat Window***
- ✓ *Certification Program – Shipbuilding Industry Surface Prep & Coatings Training*
- ✓ *Virtual Spray Paint Training System*
- ✓ *Thermal Insulating Aerogel Filled Coatings*
- ✓ ***Evaluation of Plasma Coating Removal & Surface Preparation***
- ✓ ***Partial Blast of UHS Coated Tanks II***
- ✓ ***Retention of Type VI Epoxy under Ultra High Solids***
- ✓ *Boomlift Carried Environmental Enclosure*
- ✓ ***Implementation of Paperless Paint***
- ✓ *Universal Primer & Surface Prep Process*
- ✓ ***Partial Blast of UHS Coated Tanks***
- ✓ *Technical Guide for Inaccessible Void Coatings & Treatments*

2019

2018

2017

2016

2015

# Previous SPC Panel Projects

## **Retention of Type VI Epoxy under Ultra High Solids (2017)**

- Approved the use of high solids epoxy under ultra high solids epoxy as a final coating system in tanks & critical spaces
- Test plan used as a model for future NUWC studies
- Deployed across multiple shipyards

## **Partial Blast of UHS Coated Tanks I (2015) & II (2018)**

## **Implementation of SP-18 in Construction (2023 RAP)**

- Allowed the retention of strongly adhered existing coating under the final coating system in tanks & critical spaces
- Led to the development of AMPP SP-18 standard
- Deployed across multiple shipyards & other industries

# Current SPC Panel Projects

## **Testing and Analysis of Anti-Biofouling Coatings**

- Evaluate 3 novel non-ablative antifouling coatings through NRL testing to develop data towards product qualification

## **Enhanced Primers for Welding Operations**

- Identify weld through primer coatings suitable for shipyard operations

## **The Effects of Blast Media on Production and Coating Performance**

- Generate data evaluating the production and consumption rate of different abrasives on a variety of surfaces

# 2025 Funded SPC Panel Projects

## **Extended Recoat Windows for Non-Critical Zones**

- Evaluate the effects of different surface preparation methods on interior non-critical surfaces (bulkheads and overheads)
- Determine production rate and adhesion performance of various surface prep methods

## **Pulsed-Laser Comparison Tool** (Joint)

- Approval for one laser system & parameters does not translate to a different laser
- Develop a comparison map to equate one laser to another based on energy density and resulting material properties to reduce the cost and test requirements for qualification



# **State of the Panel**

## **Business Technologies Panel**

Jamie Breakfield, Panel Chair

*Hill Ingalls Shipbuilding*

# Organization



Executive Control Board

Program Administrator

Extended Team

Major Initiatives

Information, Design, & Integration	Ship Production Technologies	Infrastructure, Logistics, & Sustainment
------------------------------------	------------------------------	--

Panels

Ship Design & Material Technologies	Electrical Technologies	Workforce & Compliance
Ship Warfare Systems Integration	Planning, Production Processes & Facilities	Sustainment
Business Technologies	Surface Preparation & Coatings	
	Welding Technology	



# Business Technologies Panel Leadership

Panel Chair: Jamie Breakfield, Ingalls Shipbuilding

Panel Vice-Chair: Patrick Roberts, SSI-USA

# Business Technologies Panel's Mission

- Focus on emerging digital capabilities, blending process and information to develop advanced solutions that support product lifecycles from concept to disposal.





# Panel's Purpose

- Strategically align with US Navy Initiatives

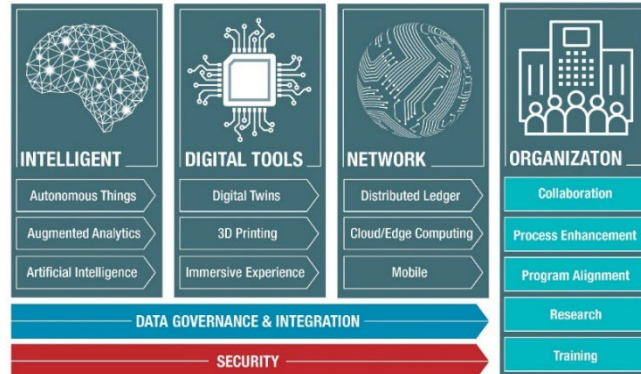


## Business Technologies Targeted Initiatives

1. Advance and Leverage Digital Shipbuilding/MB(x)
2. Solutions and best practices to support enterprise business processes and information management
3. Incorporate autonomy in design processes and decision support tools
4. Cybersecurity Compliance, Solutions, Education & Awareness

# NSRP BT Panel – Benefit to Navy & Industry

- Forum for collaboration of industry/Navy/vendors
- Navy and industry are in the midst of digital transformation
- BT Panel focus on initiatives that benefit both the Navy and the shipbuilding and ship repair industries
- Seek exposure to and understanding of common problems and vision towards providing solutions



# Recent Panel Projects

# 2024 Panel Project

- Optimized Weld Records Phase Two
  - This project builds on the Optimized Weld Project 2021-481-001 by expanding the functionality of the software to include gauge integration, WPS form and others, welder qualification tracking and flagging, possible path to NMD integration and management by exception for business intelligence.





# 2025 Panel Project

- Potential for applying Artificial Intelligence (AI) in Shipyards Processes
  - This project will focus on identifying opportunities that AI can provide for Shipbuilders to drive efficiency throughout the business value stream. Some areas to be investigated are:
    - Engineering and design processes
    - Digital products for manufacturing data
    - Management of in-service data and sustainment products



# Panel Activities

## Past, Current, and Future

# BT/SDMT Joint Panel Meeting Suffolk, VA

## April 2024

- Tour of ODU Office of Enterprise Research and Innovation (OERI)
- Tour of NASSCO Norfolk Shipyard
- 2.5 days
  - 17 Presentations

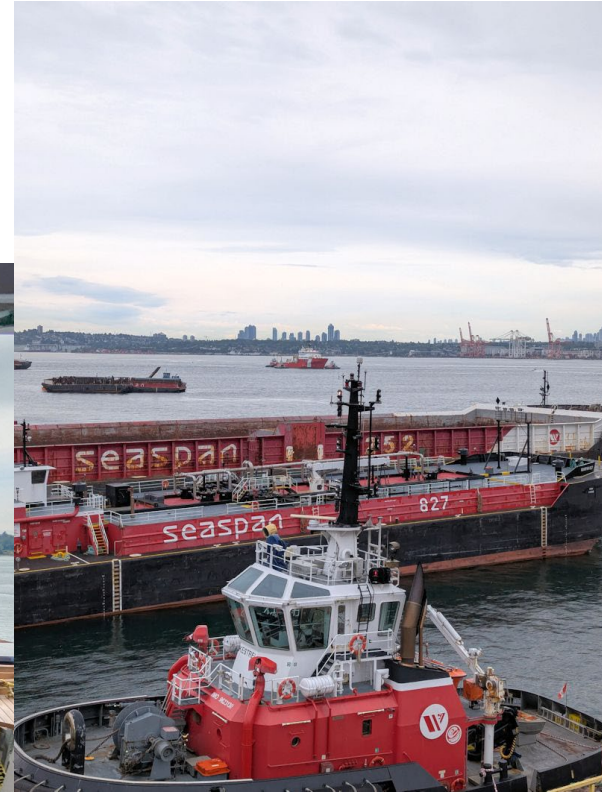




# BT/SDMT Joint Panel Meeting Vancouver, BC

## August 2024

- Hosted by SEASPAN
- Tours of SEASPAN Shipyard
- 2.5 days
  - 23 Presentations





# Future Activities

- Business Technologies Panel Breakout Session
  - All-Panel Meeting – February 25<sup>th</sup>, Room B
- BT/SDMT/Sustainment Joint Panel Meeting
  - June 24-26, Honolulu, HI

# Thank you!



## State of the Panel Workforce & Compliance Panel

Ean M. Greene, Panel Chair

Huntington Ingalls Industries-Newport News Shipbuilding Division

Maurissa D'Angelo, Vice-Panel Chair

*D'Angelo Technologies, LLC*

# Workforce & Compliance Panel

## Panel's Purpose

- Improve workforce development and recruitment ecosystem
- Maximize training efficiency and effectiveness
- Develop technologies to solve workforce challenges, environmental challenges, and safety challenges
- Research, develop and sustain current and emerging environmental and health and safety issues
- Promote and improve health, safety and wellness
- Improve environmental stewardship of industry communities



# Panel's Purpose

1. Recruit, retain and continually develop a skilled and motivated workforce
2. Develop and improve pathways for critical skill development in response to industry needs
3. Improve the effectiveness of training content and delivery to reduce the training time for knowledge capture, training transfer, and quality outcomes
4. Develop new and leverage existing technologies to enhance occupational health, safety, and environmental factors and/or reduce costs associated with compliance

## **Why:**

- Aging workforce
- Lack of technically skilled workers
- Lack of defined skill sets
- Increased competition among industrial and manufacturing sectors
- Missed opportunities to leverage existing external educational infrastructure and resources
- Unaligned efforts and a need to accomplish our mission more efficiently
- Importance of focus on health and safety
- Environmental rules and regulations and changing requirements

# Benefit to the Navy

- Opportunity to improve collaboration and
  - Prevent future costs
  - Reduce schedule risks
  - Improve workmanship quality
  - Reduce liability risks
  - Improve environmental capabilities
- Implementation – Workforce and Compliance is key to successful operations
- Nearly every W&C project leads to at least one shipyard implementation
  - Training program/class
  - Resources to improve recruiting or training processes
  - Technology and analyses to improve health and safety, comply with environmental standard
- Huge ROI Potential
  - Implementation leads to 8-hour reduction in training for 50,000 workers = ~\$20 mil overhead savings
  - Implementation leads to 40-hour reduction in training for 50,000 workers = ~\$100 mil overhead savings
  - Environmental and Safety cost avoidance

# Assistance to the state of the shipbuilding and ship repair industry

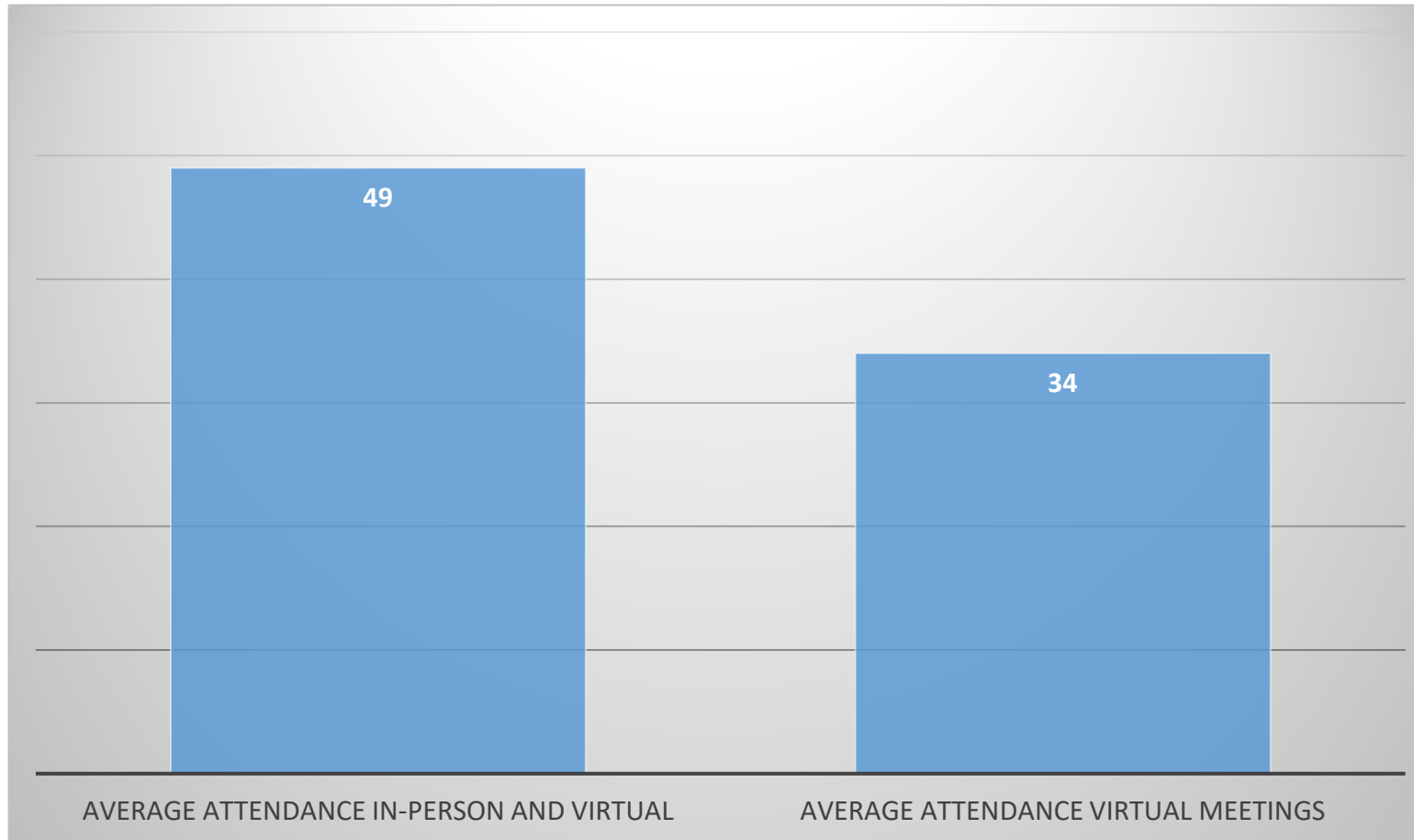
- Improving shipbuilding's workforce development ecosystem
- Maximizing training efficiency and effectiveness
- R&D technologies and best practices to improve health and safety and environmental compliance
- Synergy and collaboration around a shared vision
- Ideas are actioned and resourced
- Enhanced and improved recruiting, retention, and training

# Past and Current Projects

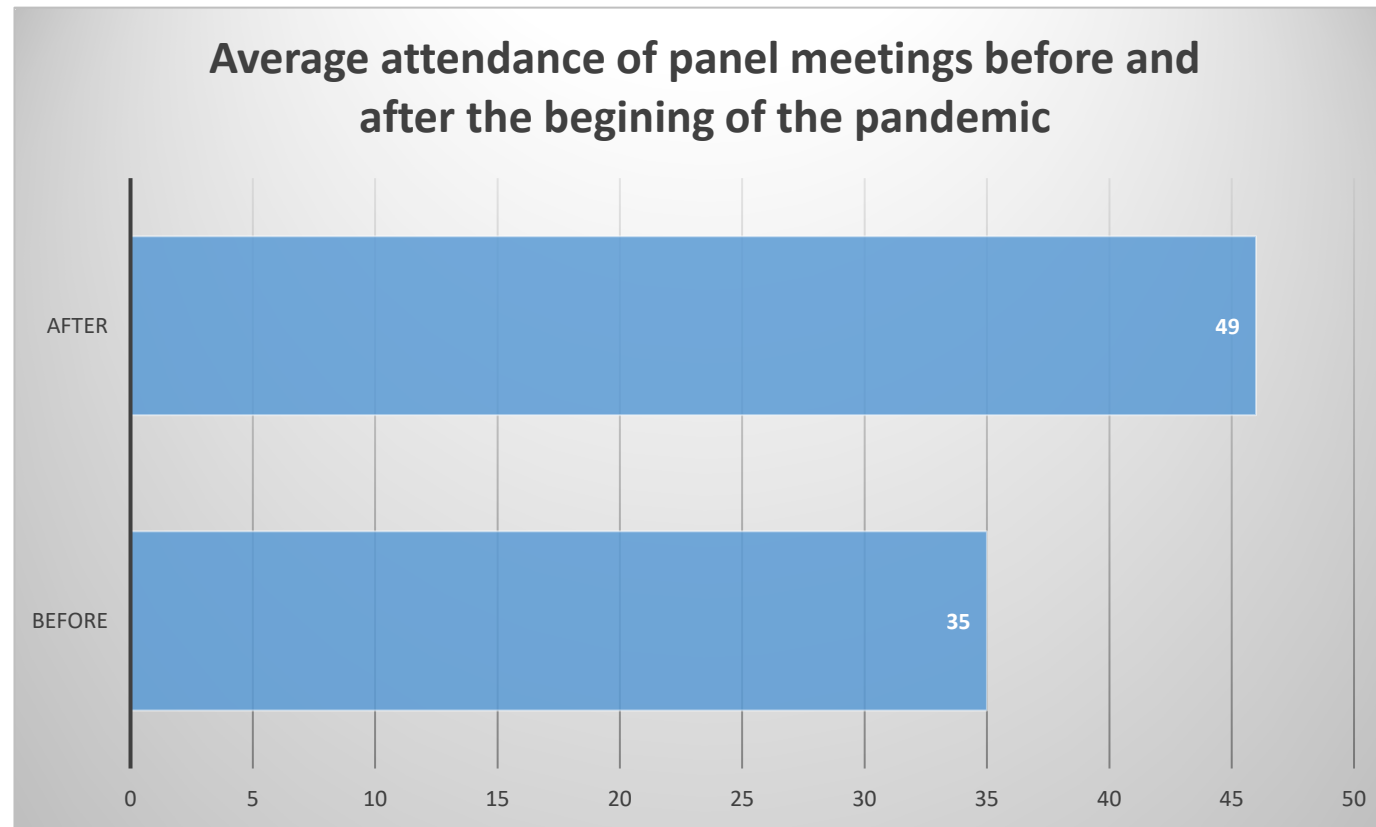
- Body Cooling Technology Study for Shipyard Worker Safety and Performance
- Evaluation of Newly Developed Cooling Suits for Improved Worker Efficiency
- Past Project highlights
  - Women in Welding
  - Advanced Knowledge Provisioning Using Artificial Intelligence and Augmented Reality for Ship Repair
  - On-Board Ship 3D Environment
  - Shipbuilding Apprenticeship: A Qualitative Analysis
  - Feasibility of Standardized Frontline Management Safety Training
  - Implementation of Press Connect Fittings in Construction of US Navy Ships



# Workforce & Compliance Panel Meeting Attendance



# Overall Panel Meeting Attendance



# State of the Panel Ship Warfare Systems Integration Panel

Perry Haymon, Panel Chair

*Huntington Ingalls Industries, Ingalls Shipbuilding*

# Ship Warfare Systems Integration Panel's Purpose

- Reduce the costs of integration and test for warfare and communication systems in ship construction and maintenance/modernization.
- Facilitate communications among Navy programs, warfare system integrators, communication system integrators, ship designers, shipbuilders and other NSRP panels.



# Panel's Purpose

- What does the panel do?

- Promote standardization of physical interfaces between IWS and C5ISR GFE/CFE and shipboard spaces.
- Promote ship mission system infrastructure flexibility, modularity and scalability.

- Why?

- SWSI is working to be the bridge between C5ISR and IWS and the shipbuilders

- How?

- The panel focuses on commonality
- Works to identify opportunities to support the "Flexible Warship" concept
- Works to increase involvement between the shipbuilder, C5ISR and IWS and the OEMs
- Continually evaluate and share the results of SWSI Panel, RAs and specials projects and their benefits to the Navy, NSRP members and industry partners
- Work to increase collaboration with other panel

# Benefit to the Navy

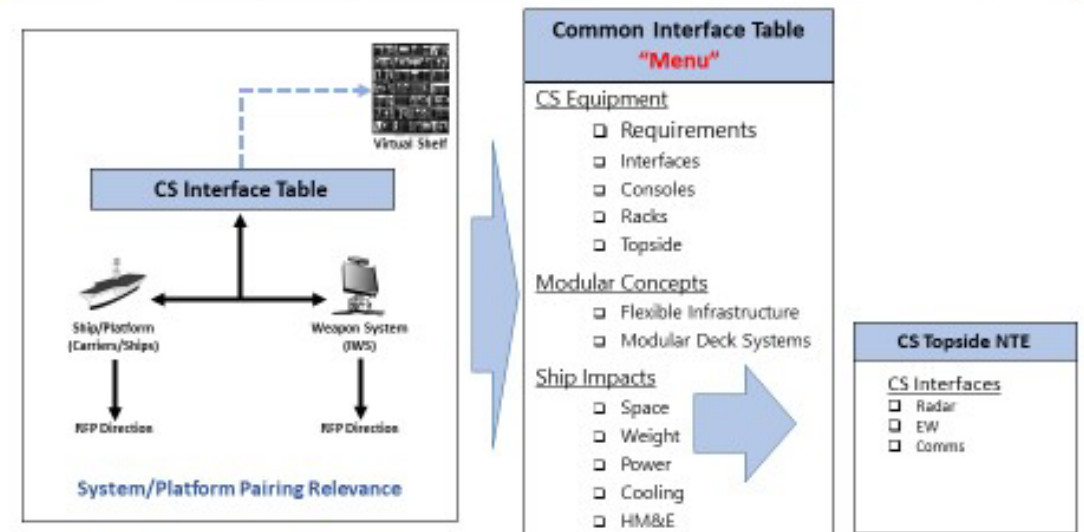
- NSRP and SWSI provides a unique opportunity to connect the shipbuilder and the OEMs for combat system equipment and C5ISR equipment. Where before this connection did not exist
- SWSI bring the opportunity for shipbuilders and the OEMs to share perspective and potentially identify how small changes early in the design could have large saving in the future
- SWSI has help to identify opportunities that existed on other platforms and transition them to new classes of ships.
- SWSI is focused on the future changing today is hard but if shipbuilders and OEMs start talking now and understand what drives each others cost the future savings for the Navy could be significant

# Provide assistance to the state of the shipbuilding and ship repair industry

- SWSI is preparing for the future of shipbuilding
- As Combat and C5ISR system become more dependent on ship services (high power and demand of pulsed loads) SWSI is building the path for both
- By building these relationships now a foundation is being laid, so as the dependencies continue increase, between shipbuilders and OEMs, the relationship standard that can grow stronger and more beneficial to the industry



## Example: Phase I - Combat Systems Interface Table



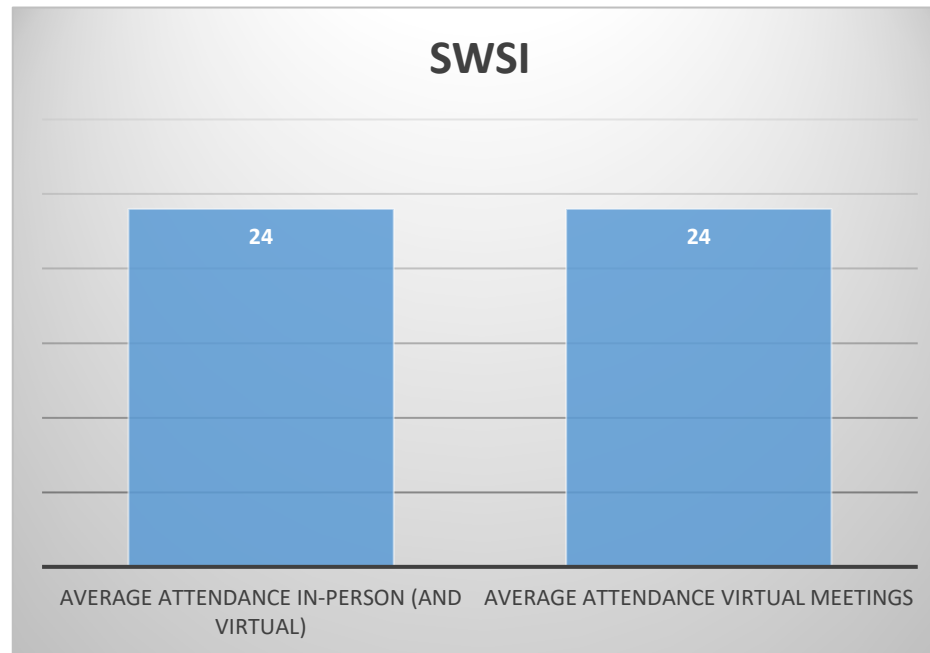
Focus on "lower hanging fruit" to support EASR CDR

# Past and Current Projects

- ~19 panels projects have been completed
- One Special Pilot Project – Common Interface Pilot Program (CIPP)
- The majority of the Project focused on physical Interfaces been equipment and ship structure
- These efforts helped transition technology found on the Ford Class to LHA 8 and LPD 29 and follow (Flexible Infrastructure)
- DSSM Latch Adjustment Mechanism
  - The overarching goal will be to improve the shock test fixture so that testing can extended to more platform's with one test.



# Ship Warfare Systems Integration Meeting Attendance



# **State of the Panel**

## **Welding Technology Panel**

**Kevin Roossinck, Panel Chair**

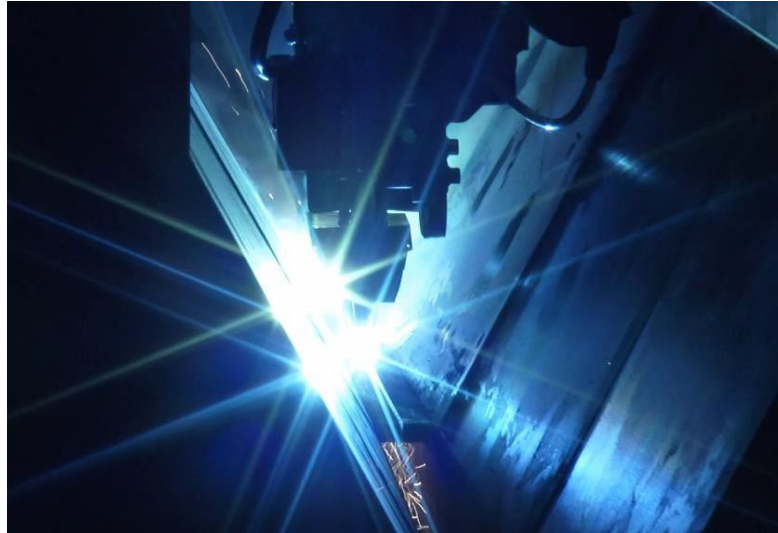
*Huntington Ingalls Industries, Ingalls Shipbuilding*

# Welding Technology Panel - Scope

To bring together technical expertise from across industry, aimed at improving the technology and efficiency associated with welding and allied processes:



Forming



Welding and Other  
Material Joining  
Technologies



Post Weld Heat Treatment

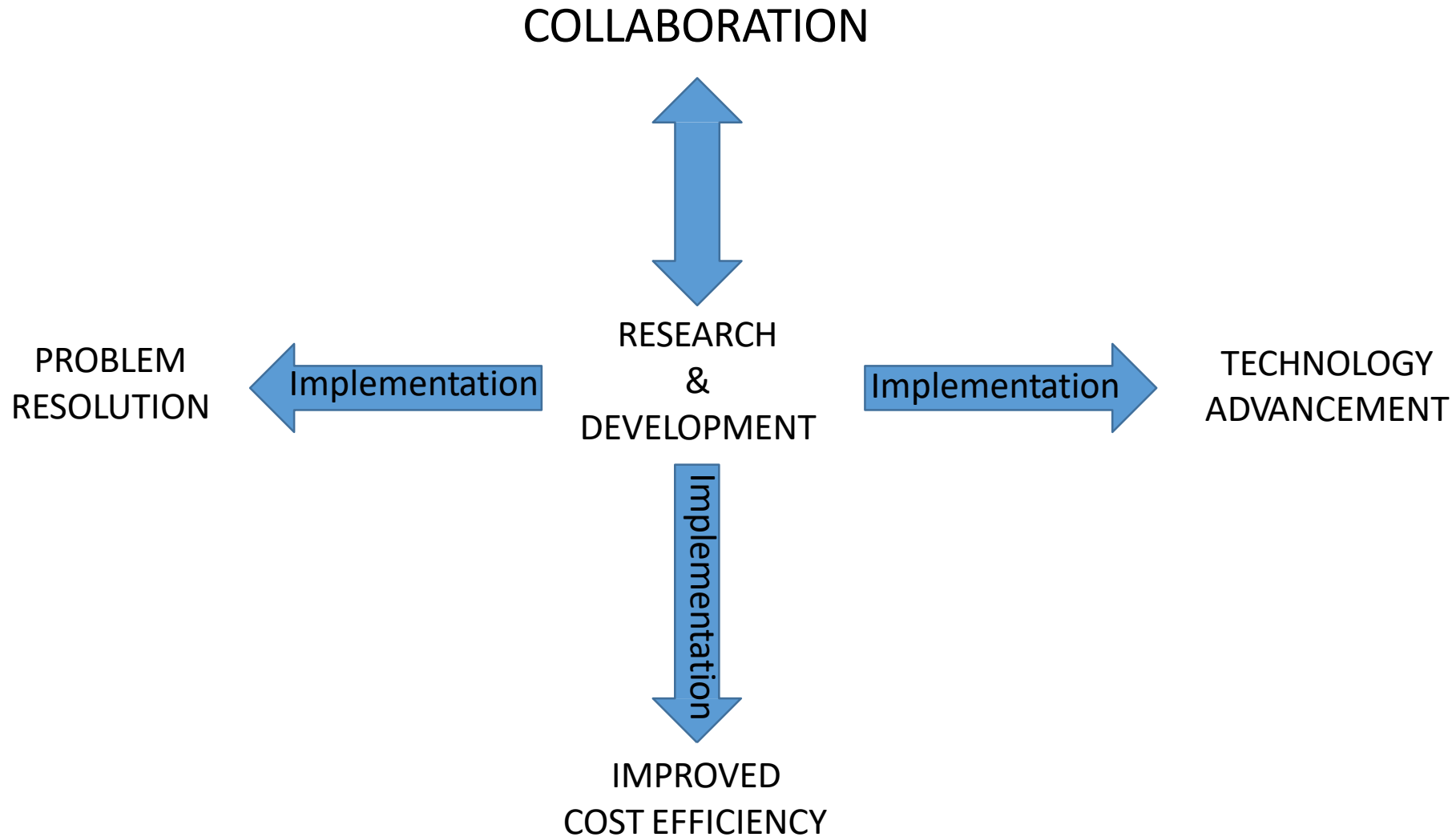


Weld Joint Preparation



Inspection Methods

# Welding Technology Panel - Purpose





# Welding Technology Panel - Projects

*Recently Complete:*

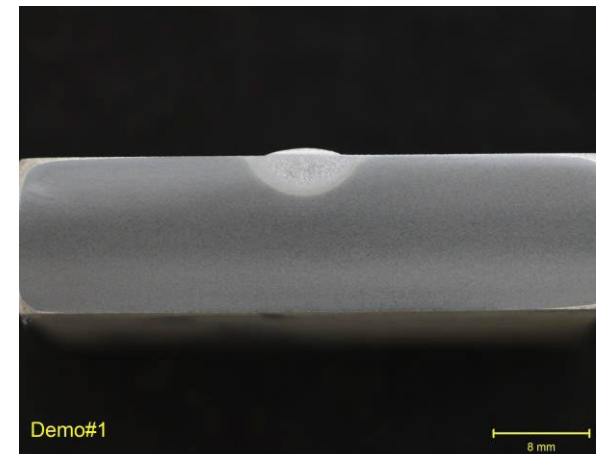
- **Handheld laser welding for cabinets and enclosures**

- **Description:** Develop handheld laser welding procedures for 5052-H32 aluminum capable of meeting the quality requirements of NAVSEA S9074-AQ-GIB-010/248
- **Benefits:**
  - Extremely fast welding speeds
  - Very short learning curve
  - Excellent visual quality



- **Simplified Precision Welding Technique**

- **Description:** Develop semi-automatic procedures for corrosion pit repair and tack welding
- **Benefits:**
  - Relatively quick repair of individual pits
  - Minimizing distortion and any post-repair cleaning
  - Single-button control for filling pit or generating tack weld



# Welding Technology Panel - Projects

*Working:*

- **Laser Hybrid Tack Welding of Structural Steel Fillet Weld Joints**
  - **Description:** Test the tack weldment and heat affected zone material properties of a handheld laser system to determine acceptability for Navy Tech Pub fabrication applications
  - **Benefits:**
    - Very fast tacking
    - Very small tack profile size, eliminating defects from welds passing over tacks
- **Semi-Automatic Stud Welding Gun for Capacitor Discharge (CD) Stud Welding**
  - **Description:** Develop a semi-automatic CD stud gun capable of housing and loading multiple studs without requiring manual intervention between discharges
  - **Benefits:**
    - Significantly improve productivity for insulation pin installation
    - Improve ergonomics of insulation pin installation
    - Improve cable management and safety
- **Training Modules for NAVSEA Tech Pub and Specs**
  - **Description:** Develop training modules for supply base to understand NAVSEA welding fabrication, qualification and inspection requirements
  - **Benefits:**
    - Improve welding specification knowledge throughout the supply base
    - Enable the supply base to improve their software and hardware associated with executing their purchase orders
    - Reduce the amount of tutoring and handholding that Prime Contractors currently must invest with their suppliers



S9074-AQ-GIB-010/248

REVISION 1

NAVSEA TECHNICAL PUBLICATION

REQUIREMENTS FOR WELDING AND BRAZING  
PROCEDURE AND PERFORMANCE QUALIFICATION



Supersedes Notice: This revision supersedes S9074-AQ-GIB-010/248 dated 1 August 1995.

DISTRIBUTION STATEMENT A. APPROVED FOR PUBLIC RELEASE.

PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND



12 NOVEMBER 2019

# Welding Technology Panel - Meetings

## **Welding Technology Panel typically meets twice each year:**

- Excellent technical agendas including welding, inspection, materials and processes
- Each meeting typically includes an industry tour

## **Recent Meetings:**

- May/2024– Menlo Park, CA – Hosted by Exponent
- Sept/2024 – Charlotte, NC – Hosted by EPRI

## **Future Meetings:**

- Tuesday, Feb 25 – 1:15 PM – 4:45 PM
  - 6 technical presentations/discussions
- Summer/2025
  - TBD

# Lunch