

# NSRP | National Shipbuilding Research Program



LITTORAL COMBAT SHIP

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News &  
Information

February 2018

## Research Announcement (RA) 16-01 Projects Awarded

The Executive Control Board of the [National Shipbuilding Research Program](#) (NSRP) has selected a new round of R&D projects for award, as part of the Program's continuing mission to reduce costs associated with U. S. shipbuilding and ship repair.

These new projects, valued at over \$13.3M, including cost share, were among those proposed in response to Research Announcement 16-01, issued in July 2017.

- Integration of Scanning & Laser Peening Activity
- SMART: Shipyard Mobile Applications in Real Time
- Computer Aided Robotics-Welding (CAR-W) Support for Multipass Welding & Extension of CAD System Support
- Integration of Outfitting and Structural Details on Swaged Bulkheads
- LiftShip
- Knowledge Provisioning to Improve First Time Quality of Ship Design
- Land Based Case Study of Insulated Bus Pipe (IBP) for Ship Design

View the [DECEMBER 2017 PRESS RELEASE](#) for more detailed project information.

### New Executive Director takes the helm for NSRP



The National Shipbuilding Research Program (NSRP) is pleased to announce that Mr. Stephen Duca has taken over as Executive Director of the collaboration. As Executive Director, Mr. Duca is the primary interface to the industry's NSRP Executive Control Board and the NAVSEA Program Manager. He also serves as the point of contact for external entities for the NSRP Program.

Prior to joining ATI, Mr. Duca worked as a consultant providing depot maintenance and modernization to the U. S. Coast Guard and the Naval Sea Systems Command. As an officer in the U. S. Coast Guard for over 27 years, he served in a variety of leadership and management positions in naval engineering and operations afloat. His service included program management positions in ship construction, maintenance, logistics, and repair. He completed three seagoing tours. Mr. Duca was the 38th Commanding Officer of the U. S. Coast Guard shipyard in Baltimore, Maryland. He was awarded a Bachelor of Science degree in Marine Engineering from the U.S. Coast Guard Academy and two Master of Science degrees in Naval Architecture and Marine Engineering and in Mechanical Engineering from the Massachusetts Institute of Technology. He is a member of the Society of Naval Architects and Marine Engineers and the American Society of Naval Engineers.

The NSRP is a \$10-15M per year joint shipbuilding/ship repair and government consortium that consists of eleven industry participant shipyards and NAVSEA 06 as the government Program Manager. The program goals and objectives are to manage and focus research and development funding on technologies that will reduce the cost of building and maintaining ships to the U.S. Navy and other National Security customers and improve U.S. shipbuilding technical and business practices and processes.

# NSRP

Project News

February 2018

The “**Development and Application of Standard Hull, Mechanical, & Electrical (HM&E) Modules to Increase Flexibility in Ship Design Using DFA (Design for Affordability) Principles**” Research Announcement project team held their Final Project Demonstration via web conference on 14 December 2017.

The demonstration included the presentation of an initial set of ‘Standard Ship Design Modules’ and a proven methodology for the industry to

work together to produce future design modules that are Navy/ABS compliant, based on Design for Affordability (DFA) and Human Factors Engineering (HFE) Principles. Representatives from the US shipbuilding industry and government stakeholders attended the online demonstration.



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The “**Foundational Technology for Scanning and Laser Peening in Shipyards**” Research Announcement project team will hold their Final Project Demonstration at LSP Technologies in Dublin, OH on 22 February 2018. For more information or to register for the event, please go to the [Event](#) on the program website.

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The NSRP Laser Peening Research Announcement project team had an article published in [Industrial Heating](#) magazine. The article focuses on how laser peening is actively being transitioned into the maritime industry through the National Shipbuilding Research Program. Click the link to read more about the project.

## Upcoming Events

Foundational Technology For Scanning & Laser Peening Demo | February 22 | Dublin, OH | [REGISTER](#)

Surface Prep & Coatings, Electrical Technologies Joint Panel Mtg | March 29-30 | Charleston, SC

Ship Warfare Systems Integration Panel Meeting | March 29 | Charleston, SC

### **spARky - Reducing Wiring Costs using 3D Model and Augmented Reality**

Last summer saw completion of the “spARky” project, an NSRP- and industry-funded effort to reduce the cost of making wiring connections within and into shipboard electrical components using Augmented Reality (AR), and a 3D model instead of 2D paper schematics.

The basic problem addressed is that the wiring inside or into a shipboard electrical component can comprise large numbers of wires and connectors at various locations on the component. The primary challenge is to find the correct physical connector for every wire. Secondary challenges include the need to reduce the risk of electromagnetic interference issues, and the fact that, since wires are so pliable, wiring can be more of an art than science.

The project objective was to address the problem of making these wiring connections, and reduce the wiring installation time, through adoption of a new process in which wiring design would be captured as part of the 3D model rather than a 2D schematic.

This was accomplished utilizing Augmented Reality technology to allow the live view of the component to be superimposed with a virtual wire diagram highlighting the connectors associated with the wire being connected.

[Continued...](#)

Augmented Reality technologies completely immerse a user inside a synthetic, or virtual, world. While immersed, the user cannot see the real world around him. In contrast, AR is taking digital or computer generated information (images, audio, video, or touch) and overlaying them over real-time environments.

The spARky project clearly demonstrated return on investment by reducing installation times using AR technology to guide the wiring of electrical cabinets. In addition, the spARky application facilitated consistent wiring practices and knowledge transfer to newer installers. The AR work begun under the spARky project continues with the NSRP project ARGOS, which expands the work from the spARky project and moves the use case to a larger scale. With the provided application code plus the user and architecture guides, other shipyards will be able to utilize the spARky application with minimal customization. Electric Boat is currently planning the integration of the spARky technology into the manufacturing process.

### RECENTLY COMPLETED PROJECTS:

- [Lifecycle Integrated Data Environment](#)
- [Development of HiDep Welding Process for Butt and T-Fillet Joints](#)
- [Computer Aided Robotic Welding](#)
- [Ice Welding Procedures for Thick Plate](#)
- [Advance Composite False Deck Systems](#)
- [3D Vision for Welder Training and Production Welding](#)
- [Improved Methods for Bonding and Welding](#)

Click on the name to view the project page on the NSRP website and to request final reports once available

### ShipTech 2018 | March 27-28, 2018 | Charleston, SC

NSRP will have the following presentations and posters:

#### **Presentations:**

- Advanced Manufacturing Technology for Weld Operations Applied to Deck Plate and Ship Compartments (HMMR)
- High Deposition Out of Position Mechanized GMAW-Pulse
- Digital Deadweight Survey Project
- 3 Views to 3D: How Hybrid Models are Moving Legacy Programs into a Model-based Enterprise
- Distributed Temperature Sensing for Inspection of Electrical Panels on Navy Ships
- Mechanical Property and Fabrication Cost Comparison of Purchased HFRW Structural Shapes vs GMAW Fabricated Structural Shapes
- Knowledge Provisioning to Improve First Time Quality of Ship Design
- Requirements Framework for the Fabrication and Inspection of Naval Parts Using Additive Manufacturing (AM)
- Using Laser Peening to Improve Shipbuilding and Material Life in Maritime Industry
- Improving Workforce Development Initiatives Using Augmented Reality Technology: An Instructional Design Perspective
- ShipScan – Low-cost, High-availability Ship Scanning and Procedures
- ARgos: The Use of Augmented and Virtual Reality Technologies to Optimize Cable Installation
- Computer Aided Robotics-Welding (CAR-W): Leveraging Robots to Drive Fleet Affordability

#### **Posters:**

- Implementation of a Low-cost, High-speed Welding Process for Zero Distortion Welding for Shipbuilding (NSRP Project 2016-436)
- Use of Modeling in the Development of the HiDep Distortion-Free Welding
- Insulated Bus Pipe, Revolutionary Alternative to Cables for Shipboard Power Distribution

# NSRP

## NSRP Extended Teams

February 2018

### Major Initiative Team Leads

The NSRP Extended Team is comprised of individuals who are either from a U.S. shipyard or a related industry and have both relevant technical experience and interest in a Major Initiative and/or panel.

Ship Design & Material Technologies	Ship Production Technologies	Business Processes & Information Technologies	Infrastructure & Support	MITL-at-large
<b>Lead:</b> David Rice (NNS) <b>Asst Lead:</b> Dan Sfiligoi (NASSCO)	<b>Lead:</b> Gary Zimak (NNS) <b>Asst Lead:</b> Kirk Daniels (EB)	<b>Lead:</b> Mark Debbink (NNS) <b>Asst Lead:</b> Jeff Schaedig (NASSCO)	<b>Lead:</b> Denny Moore (EB) <b>Asst Lead:</b> Ryan Lee (Austal)	Barry Fallon (NNS) Steve Cogswell (BAE) John Walks (Ingalls) Paul Friedman (BIW) Mimi Vymola (EB)

Current Major Initiative Team Leads

Structure	
Team Lead	Asst Team Lead
From NSRP member yard	
Relevant shipbuilding experience	

Responsibilities
Provide technical oversight on projects aligned with Major Initiative
Engage in technology transfer activities
Provide input/feedback on Program documents
Stay abreast of shipyard/industry current issues

### NSRP Shipyard Delegates

NSRP Shipyard Delegates (NSD) serve as a primary point of contact for NSRP-related information flowing into and out of their shipyards. For those ECB shipyards who are not represented on the MITL slate, a qualified individual is appointed by the ECB representative from that shipyard to serve as NSD.

Newport News	NASSCO	Bollinger	Austal	Bath Iron Works
Alicia D'Aurora	Jeff Schaedig	Dennis Fanguy	Shawn Wilber	Sarah Bramson
Electric Boat	Ingalls	Marinette Marine	BAE Systems SE	Conrad
Mimi Vymola	John Walks	Greg Abbs	Steve Cogswell	Joe Browning

# NSRP

## NSRP Extended Teams

February 2018

### Panel Chairs

The eleven panels are aligned with the four NSRP Major Initiatives and focus areas of the Strategic Investment Plan, and are the working groups of NSRP.

Ship Design & Material Technologies	
<b>Chair:</b> Alicia D'Aurora (NNS)	<b>Vice Chair:</b> John Malone (Consultant)

Ship Warfare Systems Integration	
<b>Chair:</b> Perry Haymon (Ingalls)	<b>Vice Chair:</b> Vince Stammetti (Alion)

Electrical Technologies	
<b>Chair:</b> Jason Farmer (Ingalls)	<b>Vice Chair:</b> Walter Skalniak (Panduit Corp)

Planning, Production Processes & Facilities	
<b>Chair:</b> Ken Fast (EB)	<b>Vice Chair:</b> Bob Watkins (FMM)

Surface Preparation & Coatings	
<b>Chair:</b> Arcino Quiero (NNS)	<b>Vice Chair:</b> Robert Cloutier (BIW)

Welding Technology	
<b>Chair:</b> Lee Kvidahl (Ingalls)	<b>Vice Chair:</b> Mike Sullivan (NASSCO)

Business Technologies	
<b>Chair:</b> Virgel Smith (Ingalls)	<b>Vice Chair:</b> Patrick Roberts (ShipConstructor)
<b>Digital Shipbuilding Committee Chair:</b> Jamie Breakfield (Ingalls)	

Environmental	
<b>Chair:</b> Kyle Hopf (HII-TS)	<b>Vice Chair:</b> Brian McVey (Ingalls)

Risk Management	
<b>Chair:</b> Thresa Nelson (NNS)	<b>Vice Chair:</b> Yaniv Zagagi (Golder)
<b>Workers Comp Committee Chair:</b> Lauren Seals (EB)	<b>Safety &amp; Health Committee Chair:</b> Frederick Davis (EB)

Workforce Development	
<b>Chair:</b> Anna Bourdais (Ingalls)	<b>Vice Chair:</b> Ann Franz (NWTC)

Structure
<b>Chair</b>
<ul style="list-style-type: none"> <li>From U.S. Shipyard</li> <li>Relevant industry experience</li> </ul>
<b>Vice-Chair</b>
<ul style="list-style-type: none"> <li>Relevant technical and industry experience</li> <li>Preferably from a U.S. Shipyard</li> </ul>
<b>Members</b>
Industry and Navy stakeholders

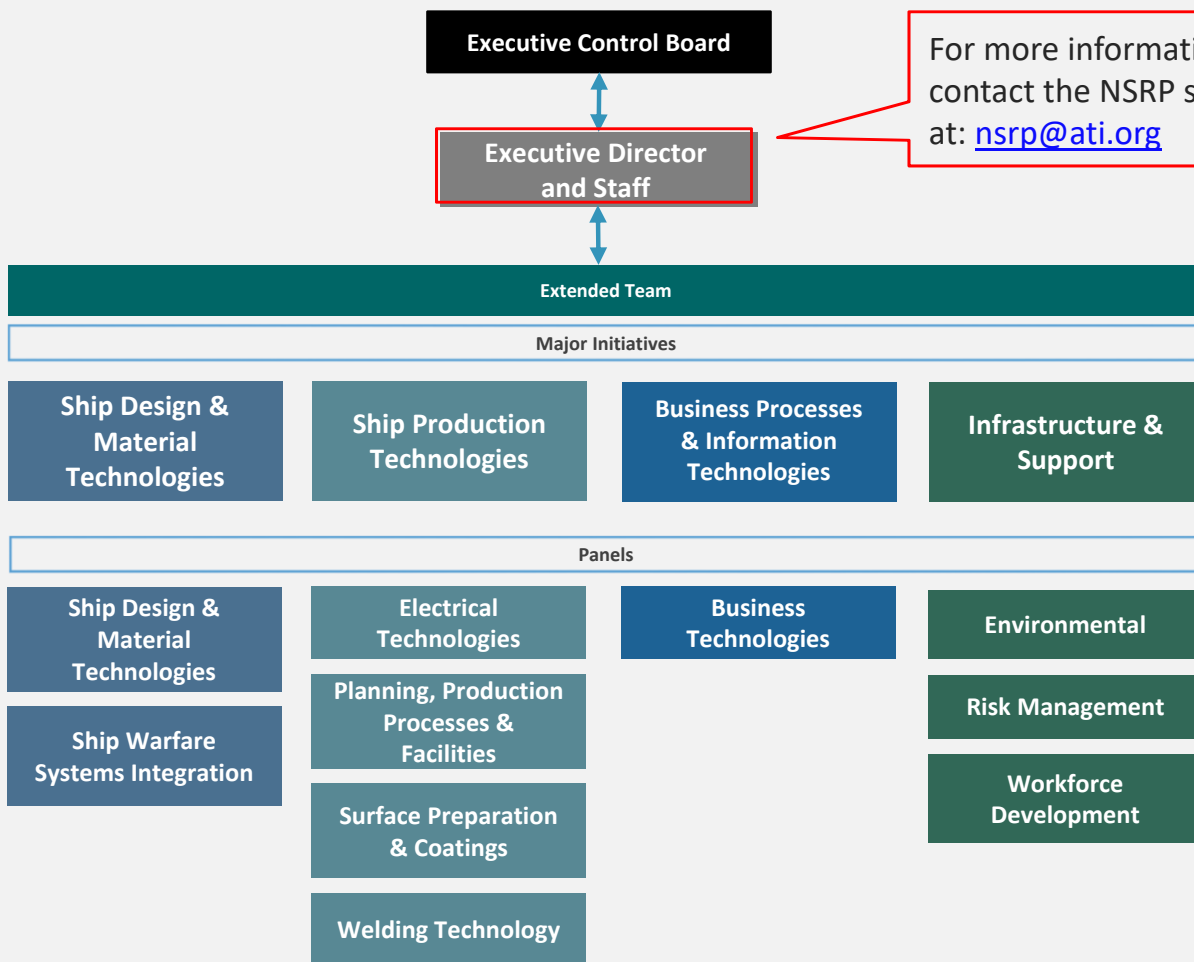
Responsibilities
Oversee panel meetings
Provide technical oversight on panel projects
Assist in the execution of panel project solicitations
Participate in other technology transfer activities
Provide input/feedback on Program documents
Stay abreast of shipyard/industry current issues



# NSRP

Contact Us

February 2018



For more information, contact the NSRP staff at: [nsrp@ati.org](mailto:nsrp@ati.org)

## NSRP MISSION

Manage and focus national shipbuilding and ship repair research and development funding on technologies and processes that will reduce the total ownership cost of ships for the U.S. Navy, other national security customers and the commercial sector and develop and leverage best commercial and naval practices to improve the efficiency of the U.S. shipbuilding and ship repair industry.

Provide a collaborative framework to improve shipbuilding-related technical and business processes.