Panel Chair Update

Business Technologies Panel

Jamie Breakfield, Panel Chair

HII – Ingalls Shipbuilding

NSRP
NATIONAL SHIPBUILDING RESEARCH PROGRAM™
Taking Shipbuilding and Repair to the Next Level

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

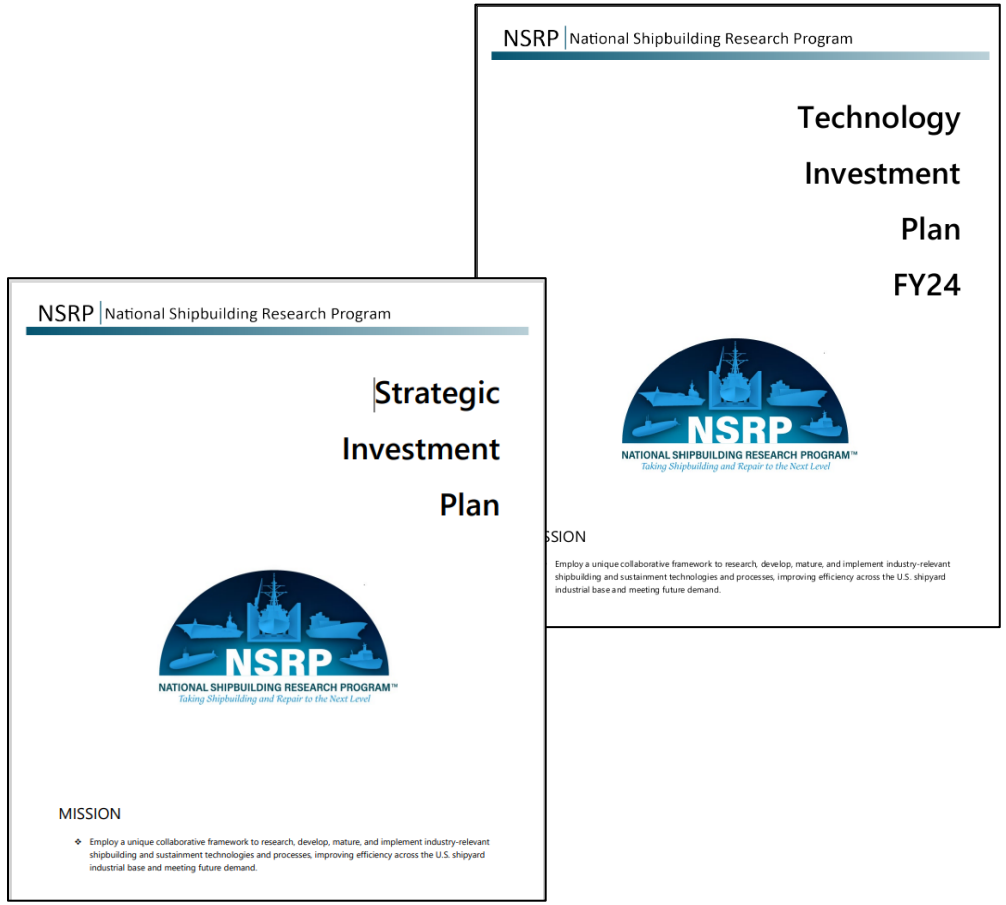
Business Technologies

Surface Preparation & Coatings

Welding Technology

Information, Design, & Integration Major Initiative

- The SIP and TIP identify high priority issues and current industry challenges where research proposals would be of particular interest.
- Information Design & Integration Sub Initiatives:
  1. Reduce time for qualification and application of systems, materials, components and manufacturing technologies
  2. Advance and leverage digital shipbuilding
  3. Identify and implement flexibility, modularity, and scalability across platforms
  4. Investigate and apply solutions and best practices to support enterprise business processes and information management
  5. Develop design guidance to support, maintain, and sustain unmanned platforms
  6. Advance design, materials and processes that reduce sustainment/modernization costs and schedule
  7. Incorporate autonomy in design processes and decision support tools
  8. Define, integrate and implement innovative approaches to cybersecurity compliance, solutions, education & awareness



https://www.nsrp.org/resource-library/

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

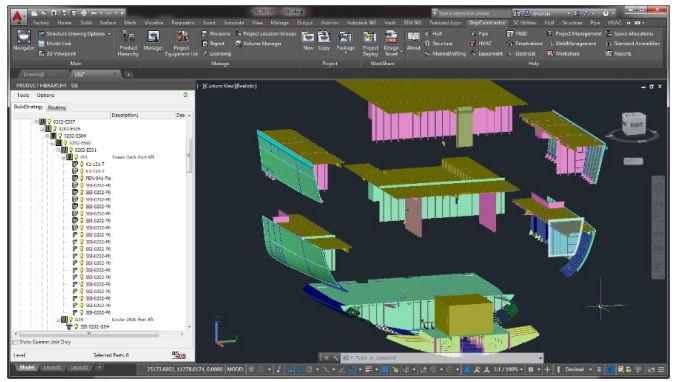
Business Technologies Targeted Initiatives

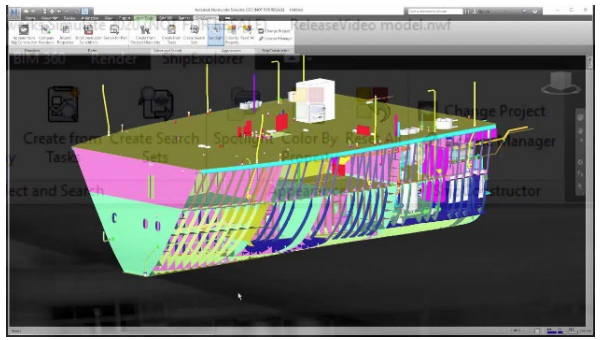
1. Advance and Leverage Digital Shipbuilding/MB(x)
2. Solutions and best practices to support enterprise business processes and information management
3. Incorporate autonomy in design processes and decision support tools
4. Cybersecurity Compliance, Solutions, Education & Awareness

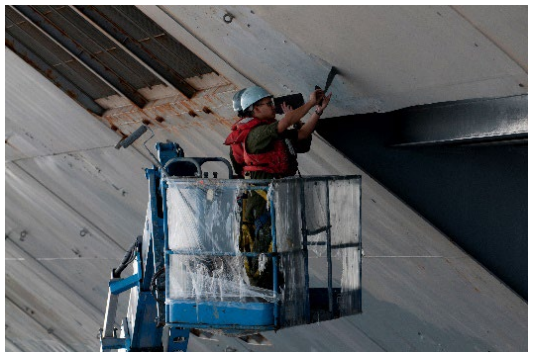
Panel Projects

2021 Panel Projects

- Automated Detailed Planning and Instant Earned Value Control
  - Benefit: Automate the detail planning process coordinated with the project plan through a direct integration with engineering data allowing for automated sequencing, budgeting, scheduling, resource allocation, and Earned Value Management System (EVMS) control.
- Utilizing Ship Product Model Information for Corrosion Control and Coatings
  - Benefit: Better coupling of product model to paint schedule; leverage product model to assist with paint schedule creation and automate calculation of design variables.

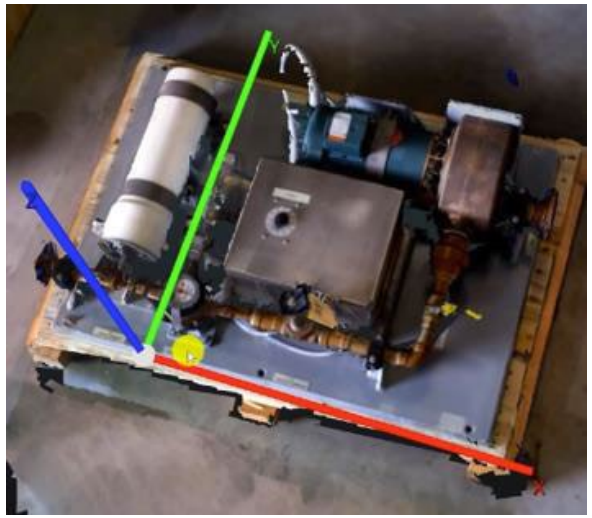


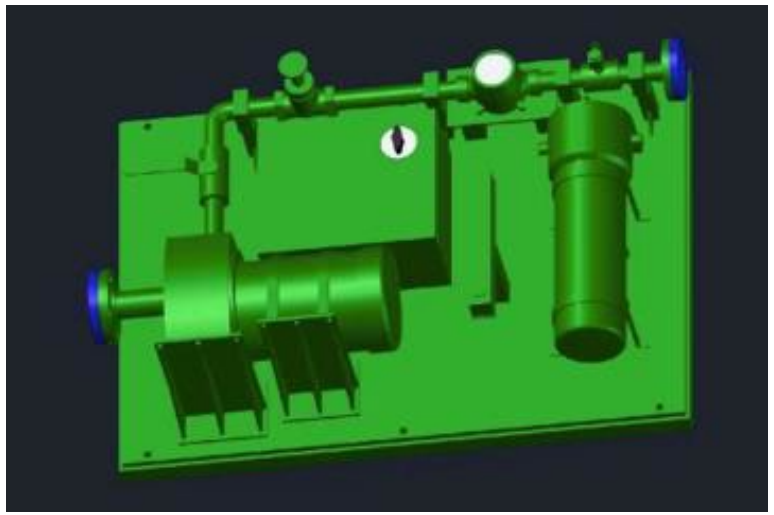


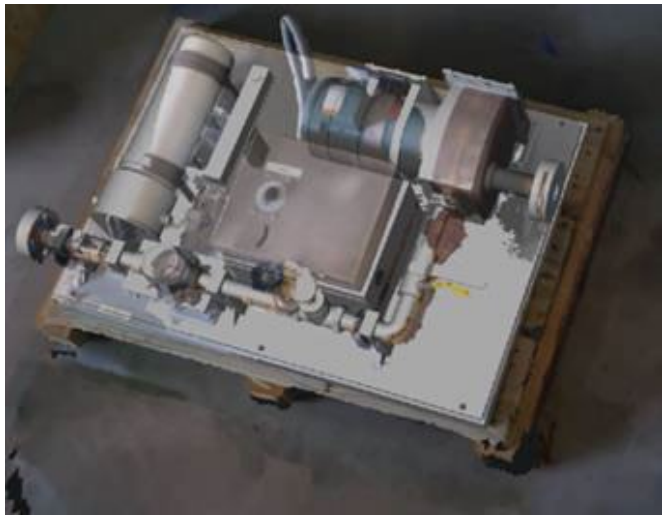


2022 Panel Project

- Equipment Validation Through Scanning
  - Benefit: Provide an efficient process using a COTS handheld 3D scanner to digitally compare items at receiving to the 3D model for verification of form/fit.







2023 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.

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 to support rapid and efficient development, construction, sustainment, and disposal.

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/sdmt-panel/

Current SDMT Panel Projects

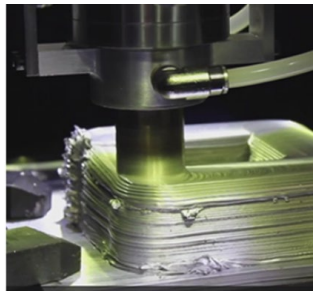
- Navy Standard Bookend Fixtures for Shock Testing
  - Lead: Gibbs and Cox
  - Project Participants: Ingalls, NAVSEA 05P1
- Industry Recommended Framework and Implementation Roadmap for Delivering Cyber-Ready Ships
  - Lead: ABS
  - Project Participants: GD BIW, GD NASSCO, NAVSEA 05D, USCG CG-9, NOAA
- Data-Centric Detail Design and Drafting Process Improvements
  - Lead: Hawk Technologies
  - Project Participants: Fincantieri Marinette Marine, Ingalls Shipbuilding

Past SDMT Panel Projects

Using MELD to Additively Manufacture Flight Deck Tie Downs

- Hepburn and Sons
- MELD Manufacturing
- Ingalls Shipbuilding
- NSWC Carderock
- NSWC Philadelphia

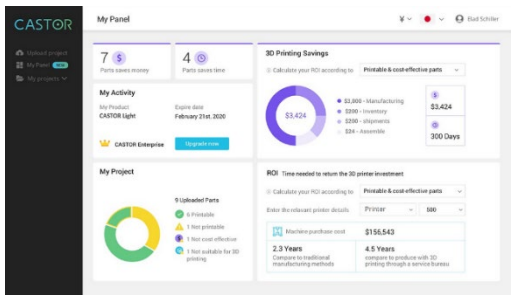
- **Objective:** Use MELD's additive friction stir deposition (AFSD) technology to additively manufacture (AM) the tie downs and test them to ensure they match the performance of conventionally manufactured tie downs. It is proposed to print a universal tie down that can easily be adapted with the addition of a collar that matches the ship deck material structure. An advantage of the AFSD process is its ability to print different metals together.

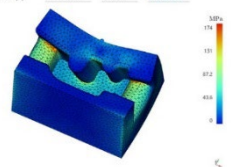


3D Printing of Supply Sensitive Parts

- NASSCO
- Electric Boat
- Additive Manufacturing Tech Warrant Holder,
- Submarine Industrial Base Director,
- PEO SSBN

- **Objective:** The goal is to conduct research into parts which currently are not sufficiently meeting NAVY's production yield requirements. The objective is to evaluate and recommend part candidates which are best suited for the AM process. This will be achieved through partnering with an AM software company. Further research will be done to find commonalities and AM printers will be proposed which apply to broadest number of parts.



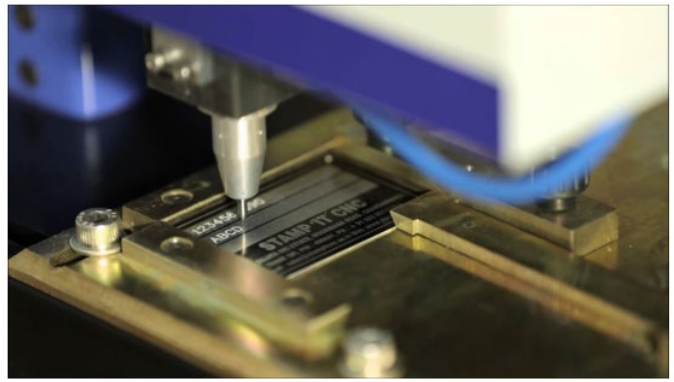


Past SDMT Panel Projects

Automated Label Plate Generation

- **Project Lead:** Rob Parker, SSI
- **Shipyards:** Austal, Conrad, Fincantieri Marinette Marine

Goal: To develop a process to reuse existing data already contained within the 3D design model for label plates. This project will provide a process for passing digital data in a usable format label plate data directly to the supplier through purchasing, provide the label pate digital information to planning, QA, and production, and can be used to develop the Label Plate drawing.



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

Dry Stores
2 – 10 – 1 – A

AUSTAL

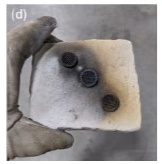
CONRAD SHIPYARD

FINCANTIERI MARINETTE MARINE

Development of an AM Capability for CuNi

- **Project Lead:** Scott Kasen, ElectraWatch
- **Shipyards:** Austal, Electric Boat, Metallum 3D
- **NAVY:** NAVSEA 05T, Dr. Justin Rettaliata

Goal: To enable a new generation of CuNi components, the project proposes to employ a first-of-its-kind hybrid manufacturing process. The approach uses the innovative combination of sand 3D printing and microwave heating. The use of this new hybrid process – which does not rely on intense local melting or a powder bed – overcomes the challenges of a Laser Powder Bed Fusion metal 3D printing processes.



ELECTRAWATCH AN AUSTAL USA COMPANY

METALLUM 3D

AUSTAL

GENERAL DYNAMICS Electric Boat

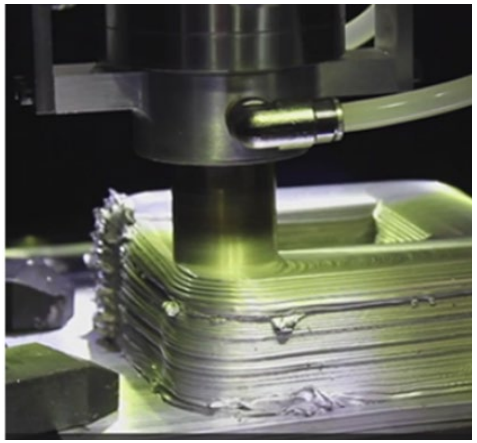
Past SDMT Panel Projects

Standardization of Watertight Hatches and Scuttles (Ingalls)

Standardization of hatches and scuttles, cuts cost of multiple variants.

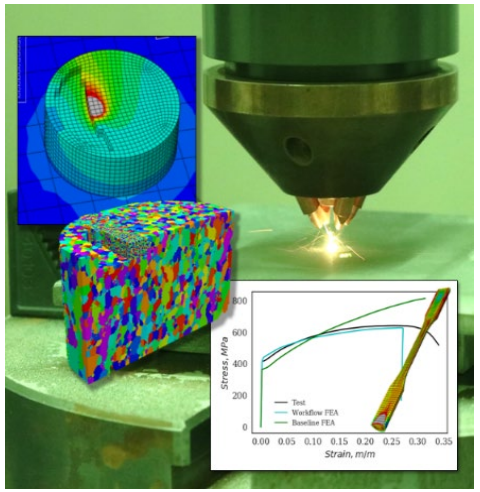
Scaling Up of 3D Printed Castings (NASSCO)

Development of a cost saving, US-sourced, AM alternative to casting manufacturing



Simulation Workflow Development for AM (ATA)

Prediction of AM part performance for faster design and potential for accelerated, model-supported qualification.



ASTM F1387 Testing for Mech. Attached Fittings (BIW)

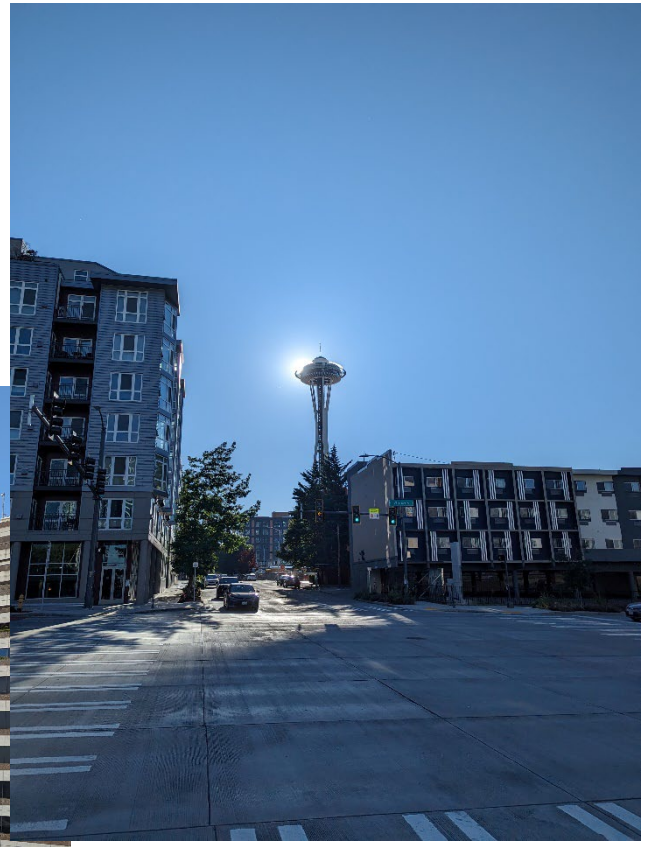
Testing and approving a new type of fittings that significantly cuts installation cost by eliminating welding, getting implemented on DDG51.

Panel Activities
Past, Current, and Future

BT/SDMT Joint Panel Meeting Seattle, WA

July 2023

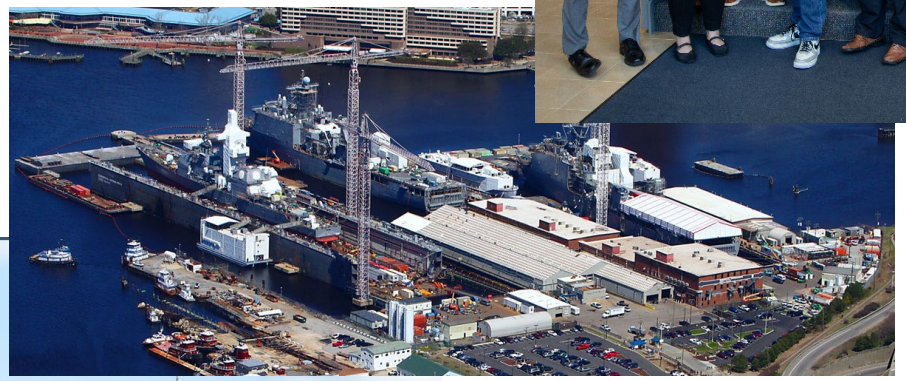
- 84 Attendees Total (45 in person + 39 virtual)
- Tour of NUWC Keyport Division
  - AR/VR Lab and AM Facility
- 2.5 days
  - 20 Presentations



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



Panel Project Solicitation

- Panel Project Ideas Open Discussion – Thursday morning 8/22 11:15 PT
- Solicitation resources may be found at https://www.nsrp.org
- **Participation by one U.S. shipyard is required**. Participation by multiple shipyards, including ECB shipyards, is preferable.

- Panel Project Deadlines
  - 4:00 pm ET on August 26, 2024 – Offerors to submit White Papers through BIDS

  Please ensure compliance with Panel Project Guide prior to submittal!

  - Other important dates are included in the solicitation
    - 4:00 PM ET, September 27, 2024 – Panel Chairs submit up to three White Papers and one joint White Paper to ATI (Selected via Panel voting)
    - 4:00 PM ET, October 02, 2024 – Top Project selection Cost Proposal Data Table due (Offerors will be notified by Panel leadership if their project was in the top three voted by the Panel)

Future Activities

- NSRP All-Panel Meeting
  - February 25-27, 2025 – Charleston, SC

- BT/SDMT/(Sustainment?) Joint Panel Meeting Planning
  - Summer 2025 – Honolulu, HI
  - Working towards tours

Questions?

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