Novel technologies to boost the shipyard industry

RESURGAM - Robotic Survey, Repair and Agile Manufacture

Sara Varão Fernandes - EWF

ORGANIZED BY THE EU HORIZON 2020 PROJECTS:

FIBRE4YARDS SHIPYARD FOR THE FUTURE

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MARI4YARD MARI4ALLIANCE

30th and 31st May 2023, RTD Innovation Dock, Rotterdam

These projects have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreements n° 101006860 (FIBRE4YARDS), n° 101007005 (RESURGAM), and n° 101006798 (Mari4_YARD).

Robotic Survey, Repair and Agile Manufacture

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Project Manager, EWF

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Project Overview

- Partners
- Challenges
- Objectives
- Outcomes
- Impact
-
- Q&A

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Partners

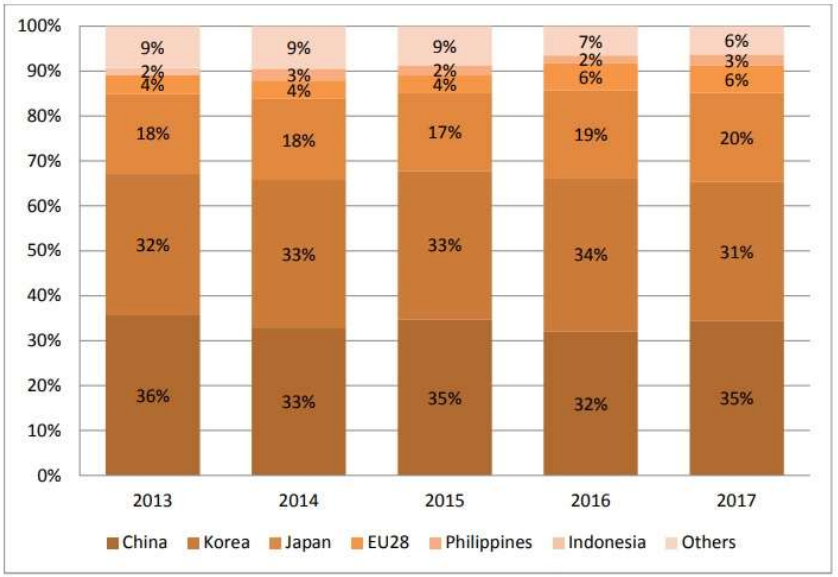
Shipbuilding and maintenance stakeholders

Research Organisations

Specialist Industrial SMEs

Challenges

- Ongoing competition from shipyards in Asia
- Limited investment capabilities from smaller Europea
- Shipyard repair processes are still:
- Expensive
- Require highly qualified personnel
- High-risk procedures
- Often inefficient and time-consuming



Source: OECD, 2018, Market shares by shipbuilding economies

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Challenges

Conventional welding requires highly skilled workers, is dangerous and low productivity

Repair of ship hull damage requires very expensive manual divers or dry docking

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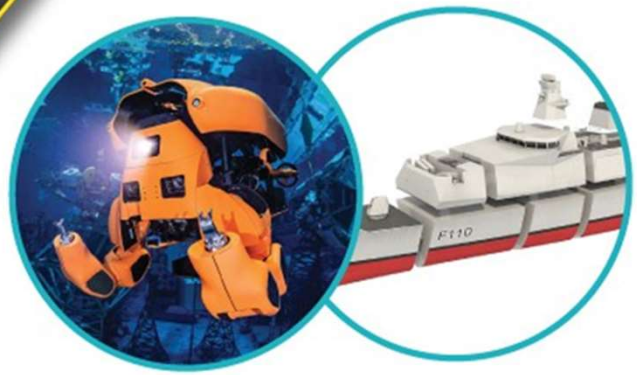
Will introduce high productivity Friction Stir Welding of steel to European shipyards.

Friction Stir Welding is mechanised, low-distortion, safer welding solution; applicable to (modular) fabrication and underwater repair



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Key Objectives

Enable

Enable the use of Friction Stir Welding (FSW) for underwater and under oil welding of steel;

Deliver

Deliver a prototype underwater (U-FSW) head capable of robotic deployment;

Deliver

Deliver AI-enabled robotic UFSW system capable of performing inspection and FSW underwater and in confined spaces

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Key Objectives

Deliver

Deliver in-yard FSW fabrication capabilities for modular build, modifications and retrofitting

Enable

Improve inter-connectivity and collaboration across the European value-chain of key ship manufacturing stakeholders

Develop

Development of tailored business model for sustainability and commercialisation of RESURGAM outputs

Outcomes

FSW/UFSW:

Adapting FSW to new medium (liquid) and materials (steel)

Industry 4.0 & Digital Solutions:

Adapting FSW to new medium (liquid) and materials (steel)

Advanced Robotics Solutions:

New autonomous ROV

System Integration & Demonstration:

New autonomous ROV

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Our developments …so far

I. FSW and UFSW solution: Adapting FSW to new medium (liquid) and materials (steel)

II. Industry 4.0 & Digital Solutions: Digital Platform

III. Advanced Robotics Solutions: New autonomous ROV

IV. System Integration & Demonstration: Development of new FSW head

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FSW and UFSW solution

Adapting FSW to new medium (liquid) and materials (steel)

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II Industry 4.0 & Digital Solutions

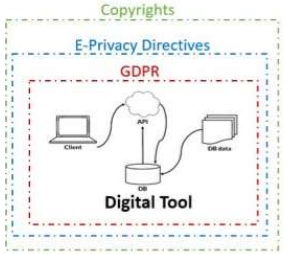
Digital Platform

European Commission | Horizon 2020 European Union funding for Research & Innovation

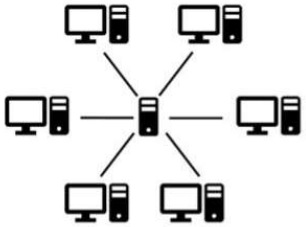
Digital Platform

Task 2.6 – Previous Development

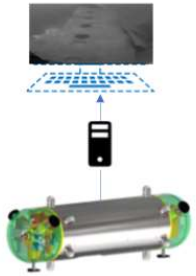
GDPR Compliant Platform Design



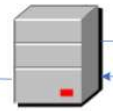
Communication and Data Share



Live Video Data



Integrity and Confidentiality



Server

HTTP GET Request

TeamViewer Secure Connection

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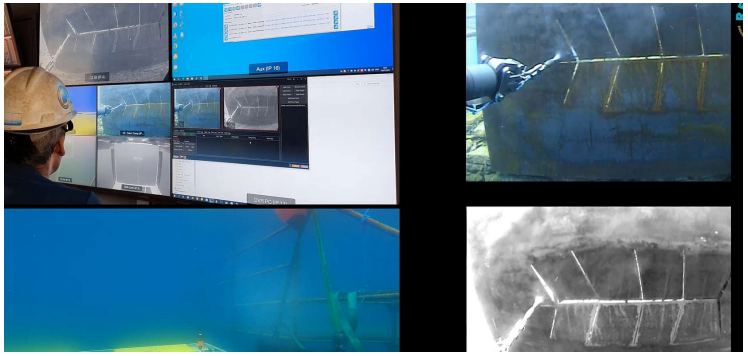
III Advanced Robotics Solutions

New autonomous ROV



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UNIVERSITY OF LIMERICK
OLLSCOIL LUIMNIGH

CRIS Centre for Robotics & Intelligent Systems

DEMO Underwater Inspection
Deliverable 3.2

Portroe Quarry, July 2022

This project has received funding from the European Union's Horizon 2020 research and innovationprogramme under grant agreement No 101007005
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NED PROJECT · Lancaster University · stirweld · ESi · GISBIR IRISH SHIPBUILDERS' ASSOCIATION · EWF · TUDelft · elementSIX · AISTER · FORTH · ACLUNAGA · TWI · UNIVERSITY OF LIMERICK

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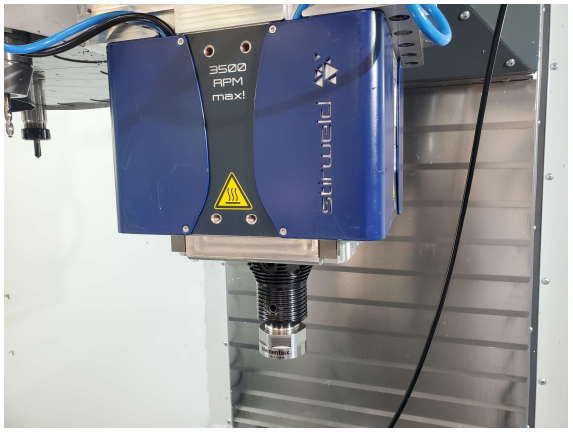
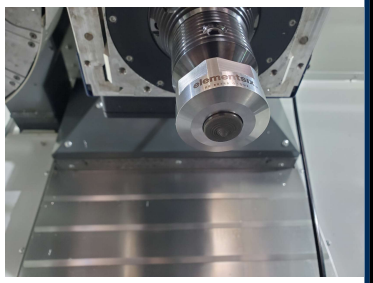
IV System Integration & Demonstration:

Development of new FSW head





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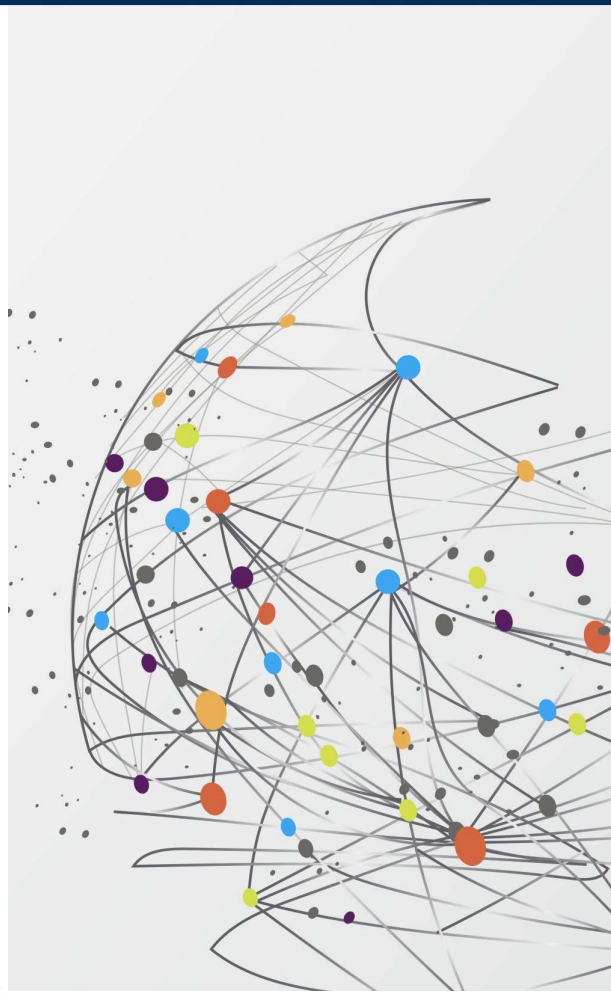
Expected Impact

- Increased competitiveness of small/medium size European shipyards and shipbuilders
- Reinforcing European employment and competitiveness based on skills development for innovative production processes
- Improving environmental performance of shipyards and shipbuilders
- Support multiplication effect within Europe beyond core consortium
- Gains in the modular construction and maintenance of new ships
- Economic benefits of in-water/underwater maintenance to wider European ship maintenance sector



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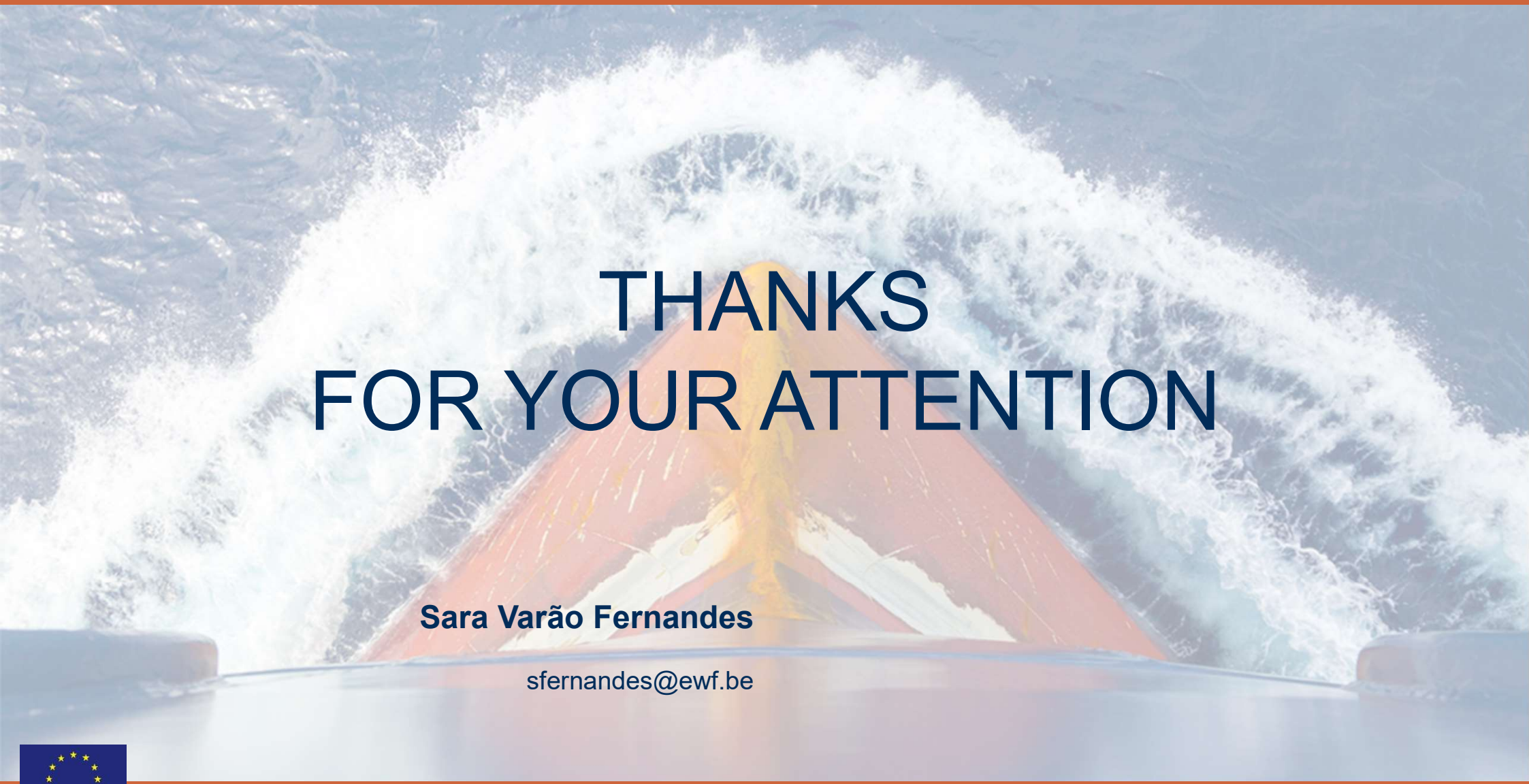

THANKS FOR YOUR ATTENTION

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