

## User-centric solutions for a flexible and modular manufacturing in small and medium-sized shipyards

## Overview

Mari4\_YARD is an EU funded project that leverages the potential of Internet of Things (IoT), mobile and ubiquitous ICT tools, and robotics to develop user-centric solutions for flexible and modular manufacturing and thus implement a novel connected shipyard.

### Real-scale demonstrators

Full-scale industrial demonstration (TRL7) in shipbuilding and retrofitting/repairing applications in steelwork production, pre-fabrication and outfitting stages.

### Pan-european network of didactic factories

and showrooms providing to EU shipyard workforce training and skills, enabling the transition towards digital manufacturing concepts (Industry4.0).

### MARI4\_YARD Community

building strategy supported by the deployment of an online innovation and matchmaking platform and the involvement of supportive partners (e.g. maritime clusters and associations).

### Training Courses

Through the Didactic Factories RTOs will provide training on the developed solutions to operators (upskilling). Moreover, dedicated training will be offered to raise awareness among shipbuilding companies at EU level.

# Concept and methodology

Mari4\_YARD addresses the implementation of a portfolio of **worker-centric solutions**, by relying on novel **collaborative robotics** and **ubiquitous portable solutions**, enabling modular, flexible, reconfigurable and usable solutions targeting the execution of key labour-intensive tasks by preserving industry-specific workers' knowledge, skills and biomechanics health status.

It adopts a twofold strategy: technology-driven and barrier-driven methodologies.

SCENARIOS	SHIPBUILDING		RETROFITTING REPAIRING
	MARI4_YARD	<b>SAFETY</b> Ergonomics Hazardous works avoidance	<b>QUALITY</b> Improve precision Fatigue error avoidance
SOLUTIONS	Esoskeletons Portable robots	AR/VR tools Industrial robots 3D Modelling	Projection systems Mobile robots

## Objectives

To develop intuitive human-robot collaborative solutions allowing symbiotically integration of operators' skills and dexterity into flexible and reconfigurable solutions in shared workspaces.

To develop handheld and portable AR/MR tools for assisting shipyard workers.

To develop AI-assisted exoskeletons for reducing fatigue and physical stress.

To implement a portfolio of worker-centric tools assisting in the execution of the labour-intensive tasks by preserving industry-specific workers' knowledge and skills.

To demonstrate Mari4\_YARD approach at real-scale targeting both shipbuilding and retrofitting in SME-shipyards, fostering results exploitation and enabling EU wide manufacturing adoption.

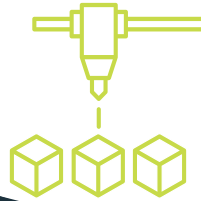
## Contacts

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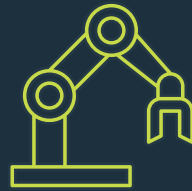


## Project Pillars



### Pillar #01

Digital solutions for 3D modelling supporting retrofitting/repairing of vessels.



### Pillar #02

Safe robot-based solutions for shared workspace shipyard workers.



### Pillar #03

AR/VR tools assisting in shipbuilding.



### Pillar #04

AI-enhanced exoskeletons.



### Pillar #05

Dataflow and data sharing for developing flexible, modular and reconfigurable solutions.

## Consortium



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