



MULTI-MODAL AND MULTI-ASPECT HOLISTIC HUMAN- ROBOT INTERACTION

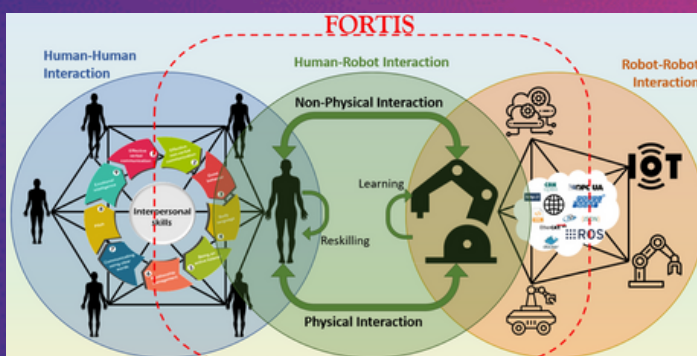
FORTIS OBJECTIVES & VISION

FORTIS aims to provide a solution that enables robots to interact with humans in a human-like way for long periods. Therefore, the main objectives are i) develop, integrate, and provide a humancentric solution; ii) develop and provide a flexible and agile multi-robotic-centric solution interacting with humans, iii) integrate and provide the FORTIS solution where a safe and trustworthy Human-Robot interaction is guaranteed and provides optimized operations for both humans and robots and demonstrate the solution for industrial pilots.

WHAT IS FORTIS?

- Creation of a comprehensive interaction between humans and robots, encompassing both physical and non-physical communication.
- Studying how humans interact with each other.
- Enabling continuous reskilling for humans and re-adaptation for robots for seamless interaction and communication between humans and robots may occur through different modes.

FORTIS consortium consists of 12 partners from 7 countries around Europe. The project kicked off in January 2024 and runs for 4 years. [FOR FUTHER INFORMATION CLICK HERE](#)



FORTIS'S KICK-OFF IN TECNALIA (BILBAO, SPAIN)



A group of professionals specializing in human-centric solutions from several European companies, universities, and research centers have launched the FORTIS project. The main objective of this project is to meet the requirements of both humans and robots, enabling them to work together seamlessly and securely.

The consortium aims to develop a solution that focuses on human-centric, robot-centric and Human-Robot Interaction approaches, to achieve this goal over an extended period (4 years) through industrial pilots in construction, infrastructure services and manufacturing.

The project is expected to contribute not only to the 4th cluster of the HE Programme but also to other clusters in the programme, such as Health, Culture, Creativity, Inclusive Society, Civil Security for Society, Climate, Energy, and Mobility, and Food, Bioeconomy, Natural Resources, Agriculture, and Environment.

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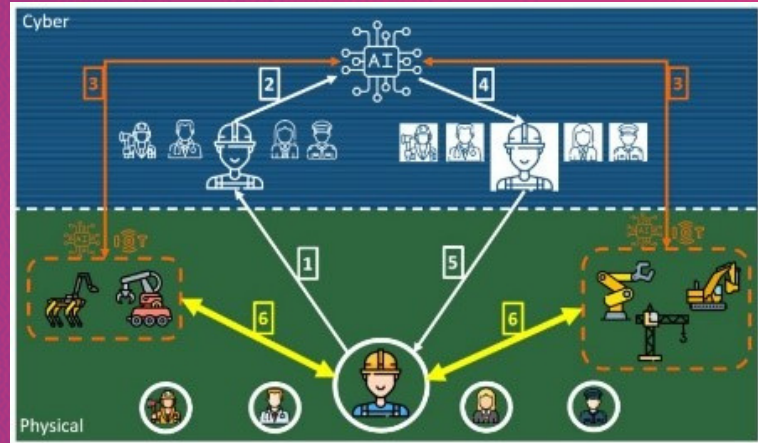
FORTIS TECHNOLOGY & TOOLKITS

The Tangible Expected Outcomes (TEOs) related to the objectives of the FORTIS project will be:

TEO 1: FORTIS Human-Centric Toolkits (related to O1).

Toolkits for modelling the human's status.

- FORTIS Human-Centred Data Collection Toolkit.
- FORTIS AI-based Human Cognition Toolkit.
- FORTIS Human-Robot Interaction Context Toolkit.
- FORTIS Multi-modal Adaptive Human-Robot Communication Toolkit



TEO 2: FORTIS Robot-Centric Toolkits (related to O2).

Toolkits for building a multi-robotics solution that can interact with humans.

- FORTIS Robotic Intelligibility Toolkit.
- FORTIS Multi-Robot Dynamic Reconfigurability Toolkit.

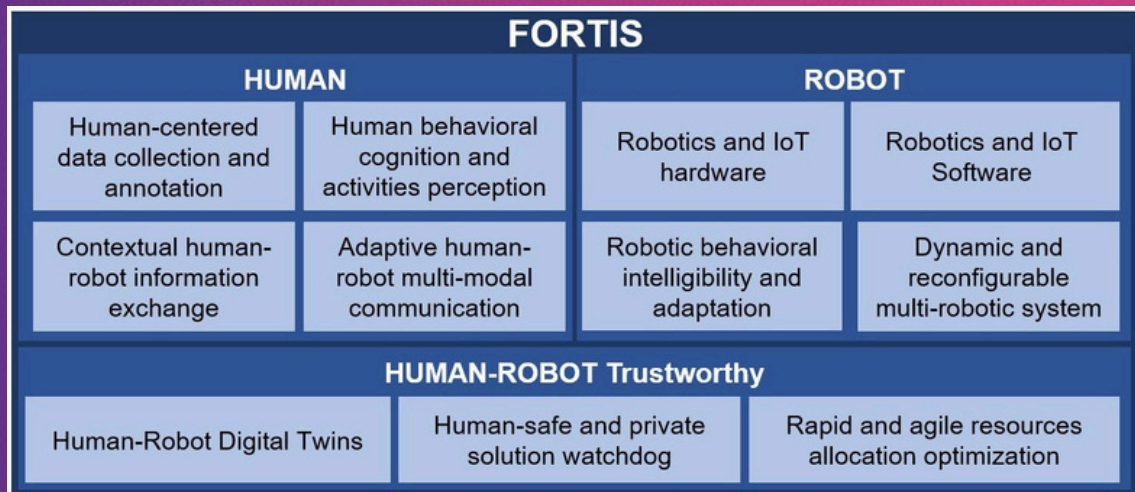
TEO 3: FORTIS Human-Robot Trustworthy Interaction (related O3).

The Holistic solution of the FORTIS project.

- FORTIS HRI Digital Twin.
- FORTIS resource allocation and optimization toolkit.

Use case	Sector	Communication mode	Interaction aspect	Demonstration Goal
Sandwich Panel Assembly	Construction	Verbal, haptic	Physical, non-physical (cultural, social, psychological)	Demonstrate the multi human-robot interaction in an outdoor controlled environment where construction machine is robotised.
Material transportation		Visual	Non-physical (social, psychological, well-being)	
Maintenance of the fixtures of the rail ways	Infrastructure Services	Verbal, visual	Non-physical (social, psychological, well-being)	Demonstrating the multi-human-robot interaction in a remote outdoor and uncontrolled environment with high risk and high noise.
Maintenance of the rails ways		Verbal, visual	Non-physical (social, psychological, well-being)	
Smart AGV Fleet with Collaborative Cargo Robots	Manufacturing	Verbal, vocal haptic	Physical, non-physical (cultural, social, psychological, well-being)	Demonstrating the FORTIS solution in an indoor and controlled environment.

[FOR FURTHER INFORMATION CLICK HERE](#)



01

The HRI solution is constructing the digital world of FORTIS through the use of digital twin technology.

02

The solution aims to monitor human safety without compromising privacy.

03

Optimizing the interaction between humans and robots by improving their operational efficiency.



FORTIS PILOTS

These pilots will provide **5 use cases** where the **Human-Robot Interaction** will be demonstrated:

Pilot 1. Construction:

- Sandwich Panel Assembly. A telehandler will be equipped with the FORTIS solution.
- Material transportation on site. A hybrid collaborative fleet of robots will be used for internal material transportation on-site, to reduce accidents, material waste, and environmental impact.

Pilot 2. Infrastructure services:

- Maintenance of the fixtures of the railways. FORTIS is expected to implement fluid and coordinated movements and operations with humans and robots.
- Maintenance of the railways. FORTIS enables direct interaction between humans and machines, leading to an improvement in work quality and worker safety.

Pilot 3. Manufacturing:

- Smart AGV Fleet with Collaborative Cargo Robots. To enable robots to work alongside humans and physically interact with them, FORTIS will install sensors and a collaborative robot on the AGV.

[FOR FUTHER INFORMATION CLICK HERE](#)

SECOND PLENARY MEETING IN ANKARA, TURKEY

The second Plenary Meeting of the project was held at the Dishwasher plant of Beko Global facilities in Ankara, Turkey on July 9-10, 2024, with over 20 participants. The meeting aimed to bring all the partners together and promote collaboration between them. It was the first, apart of the kick-off project, of the planned biannual plenary meetings throughout the project.

The meeting was also held online to ensure maximum interactivity while updating all partners about the project's activities and outputs achieved so far. Several activities were conducted, including work packages and task presentations, as well as workshops in breakout rooms.

[VIEW ALL INFORMATION ABOUT THE PLENARY MEETING ON OUR WEBSITE](#)



FORTIS CONSORTIUM VISITS TO THE PILOTS

During the last six months, the beginning of the cycle of visits to different pilots within the [FORTIS Project](#) was marked.

During this time, the consortium had analyzed and discussed the necessary steps to apply the FORTIS solution in sectors such as construction, infrastructure services, and manufacturing.

[READ MORE: Pilot #1 Construction](#)



[READ MORE: Pilot # 2 Infrastructure services](#)



[READ MORE: Pilot #3 Manufacturing](#)




FORTIS

FORTIS OPEN CALLS

The FORTIS project is set to launch two rounds of Open Calls. The project invites SMEs and startups, including robotic developers, technology providers, and robotic end-users, among others, to propose new solutions for HRI (human-robot interaction) that incorporate multi-modality in terms of human-robot communication, as well as multi-aspect in terms of human-robot non-physical interaction. The first Open Call is scheduled to launch in 2025 and the second Open Call, will be launched in 2027.

The engagement and mobilisation of industry actors in the two Open Calls require an intensive and extended period of awareness-raising activities.

The Open Calls will be published and run from the F6S platform with communication and promotion activities focused on channelling potential applicants to the platform.

Several events, including online webinars and local face-to-face events across Europe, are expected to be implemented within the framework of the two Open Calls, at least two months before the launch of the Open Calls.

Funding will be provided to projects led by small consortia (third parties) and targeting innovative concepts. Each project is expected to define its own project objectives while adhering to the larger objectives and vision of the FORTIS project.

FORTIS will support the third parties' activities throughout the project duration, including those related to project management, product/service development, tests and demonstrators, and business development/internationalisation activities.

A total of €5M has been budgeted for the FORTIS Open Calls. In principle, €2M for the 1st and €3M for the 2nd Open Call (divided into two topics).

More information can be found on FORTIS [WEBSITE](#).

DISCLAIMER

This project has received funding from the European Union's Horizon Europe Research and Innovation Programme under Grant Agreement 101135707



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