



About FELICE

The main objective of this project is to combine adaptive workspaces, collaborative robotics, human factors, AI, IoT, machine learning, process optimization and Ergonomics to deliver a modular platform in order to increase the agility and productivity of cyber-physical production systems, ensure the safety and improve the physical and mental well-being of working person

What: FELICE targets the application priority area of agile production and proposes the coordinated interaction and combination of human and mobile robot skills.

Why: FELICE aspires to design the next generation assembly processes in which mobile robots operate safely and ergonomically alongside humans.

How: FELICE combines adaptive workspaces, a cognitive robot collaborating with workers and a digital twin orchestrating assembly operations.

Main Developments



Advancing human-robot collaboration, enabling robots to operate safely and ergonomically alongside humans



Implementing perception and cognition capabilities based on many heterogeneous sensors in the shop floor, which will allow the system to build context-awareness.



Realizing manufacturing digital twin, i.e. a virtual representation tightly coupled with production assets and the assembly process.

Solutions for sectors:



Robotics



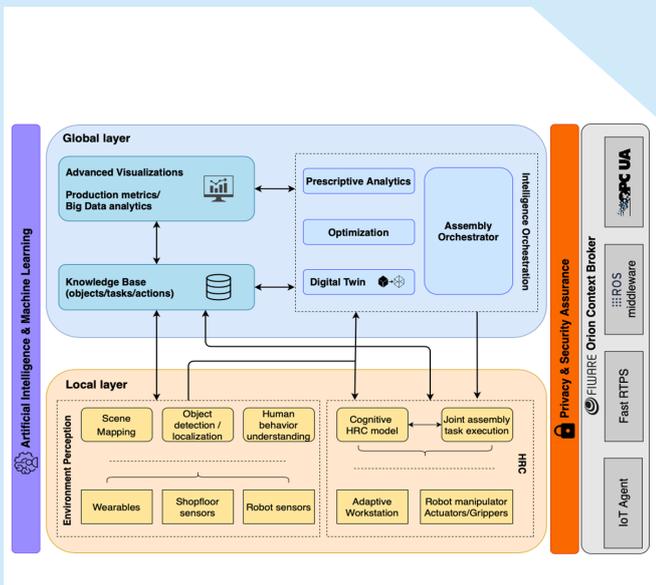
Automotive

Highlighted Technologies

Concept

FELICE unites multidisciplinary research in collaborative robotics, AI, computer vision, IoT, machine learning, data analytics, cyber-physical systems, process optimization and ergonomics to deliver a modular platform that integrates and harmonizes an array of autonomous and cognitive technologies in automotive assembly.

[Read more](#)



Architecture

The Architecture comprises two layers: a local layer in support of synergetic task execution including adaptive workstations and a mobile collaborative robot and immersive environment perception.

A global layer for the intelligent orchestration of the assembly line, containing digital replica of the physical assembly line.

[Read more](#)

Phase 1 Robotic Hardware and workstation

Key aspects and functions of the robot and adaptive workstation architecture have been physically realised at ACC and TUD laboratories.

Both robot and workstation were presented at the plenary meeting as well as the special session at ISM 2021.

[See conference video](#)



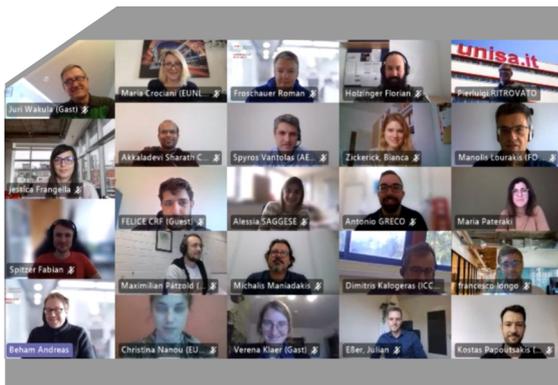
Events and Meetings

Special session at ISM 2021

The ISM 2021 has been performed online from 17 till 19 November and represented a platform for knowledge exchange, the review and discussion of theoretical advances, research results, and industrial experiences, among scientists, researchers, decision makers, practitioners and students dealing with the topics of Industry 4.0 and Smart Manufacturing. Organizers were: Upper Austria University of Applied Sciences (FHOÖ, Austria), University of Calabria (Italy) and CALTEK (Italy). The FELICE Special Session at Conference held on 17th November and includes presentations prepared by FORTH, CRF, FHOOE, ACCREA, CALTEK and PROFACTOR. The session focuses on the main aspects of the FELICE project .



[Click here for more information](#)



15.11.2021-17.11.2021

Plenary Meeting

The first Felice Plenary meeting took place between the 15.11.2021 and the 17.11.2021. All Partners presented their work and results from the first six month of the project.



15.09.2021-17.09.2021

18th International Multidisciplinary Modelling & Simulation Multiconference (I3M 2021)

The FELICE Special Session at I3M International Conference held on 16. September and includes four presentations related to FELICE project

[Click here for more information](#)

[Click here for session video](#)

PUBLICATIONS

SCIENTIFIC PUBLICATIONS

Akkaladevi S.C. et al. (2021) *Programming-Free Approaches for Human-Robot Collaboration in Assembly Tasks*. In: Wang L., Wang X.V., Váncza J., Kemény Z. (eds) *Advanced Human-Robot Collaboration in Manufacturing*. Springer, Cham.

DOI: https://doi.org/10.1007/978-3-030-69178-3_12

Link: https://link.springer.com/chapter/10.1007%2F978-3-030-69178-3_12

M. Lourakis and G. Terzakis, (2021) "A Globally Optimal Method for the PnP Problem with MRP Rotation Parameterization," *2020 25th International Conference on Pattern Recognition (ICPR)*

DOI: <https://doi.org/10.1109/ICPR48806.2021.9412405>

Link: <https://ieeexplore.ieee.org/document/9412405>

CONFERENCE CONTRIBUTIONS

Session: Human Robot Collaboration in Assembly Systems –The FELICE EU Project

Manolis Lourakis: *Overview of the FELICE project*

Felice Tauro and Roman Froschauer: *Use cases in Industry and Education: the CRF and the FHODE Usecases*

Bartłomiej Stanczyk: *The FELICE-Robot*

Francesco Longo: *THE FELICE Digital Twin*

Andreas Beham and Sarath Chandra Akkaladevi: *FELICE Orchestration and control of the global Layer: about orchestration and Robot Task execution*

[Click here for session video](#)

International Multidisciplinary Modelling & Simulation Multiconference (I3M 2021)

Felice special session including four presentations:

Manolis Lourakis: *The FELICE EU Project*

Felice Tauro: *The use case at FIAT Research Center (CRF use case)*

Antonio Padovano: *FELICE: Design of a Data Driven Digital Twin*

Florian Holzinger: *Orchestration of Human-Robot Collaboration*

[Click here for session video](#)

Co organisation Human-Robot Collaboration & AI for Sustainable Production

This workshop focuses on the aspect of collaborative robots for developing sustainable production mainly dealing with topics related to remanufacturing, recycling, true robot collaboration to ease workload on human workers.

[Click here for more information](#)

DELIVERABLES

Public FELICE deliverables released under the work plan are accessible on our website

[Click here for more information](#)



FELICE



<https://twitter.com/FeliceH2020>



<https://www.linkedin.com/company/h2020feliceproject/>



Coming soon



<https://www.felice-project.eu/>



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