



KEY FACTS

Acronym: IMOCO4.E

Full name: Intelligent Motion Control under Industry4.E

Coordinating institution: Sioux Technologies B.V.

Project coordinator: Arend-Jan Beltman

GA No.: 101007311 - H2020-ECSEL-2020-2-RIA

Start date: 1st September 2021

Duration: 36 months

Consortium: 46 Partners from 13 countries

This issue concludes the project by providing final remarks from partners, along with relevant quotes.

The IMOCO4.E project has successfully concluded after three years of dedicated effort. WP3, WP4, and WP5 have been finalized recently, with the remaining work packages scheduled for closure by the end of August 2024.

Over the past three years, the IMOCO4.E project and its partners have demonstrated exceptional commitment and productivity. Through active participation in conferences, forums, and symposia, as well as the publication of numerous research articles, the project has made substantial contributions to the field. Moreover, effective communication and collaboration among partners have been instrumental to the project's overall success.

Project Summary and Achievements

ToC

Project Highlights: **P1**

Partners' closing words and
statements **P2-P5**

Trainings

Available online!!

We are excited to announce the release of the IMOCO4.E project's training sessions and webinars! While our social media channels continue to ⚡ buzz ⚡ with weekly updates, these trainings offer a deeper dive into various project-related technologies and topics.

Ready to learn more? Visit our YouTube Channel and check out the available sessions now:
<https://www.youtube.com/@imoco4.eproject80>
Alternatively, access them on the project website:
<https://www.imoco4e.eu/trainings/>

Partners' closing words and statements



"As a Coordinator, Sioux steered the IMOC04.E project to novel motion control concepts. Through strengthened partnerships, we fostered inspiration and progress on a European level."

"By building a robot demonstrator system for a pick-and-place task at a cosmetics factory, and by leading a work package and a building block dedicated to AI, EDI has developed new and exciting components for a smart robot system. Additionally, EDI had the opportunity to collaborate with amazing partners across Europe."



"EDILÁSIO was pleased to serve as Demonstrator 2 owner in the IMOC04.E project. We successfully developed smart plastic components that can measure and transmit real-time data, expanding the potential applications of our products."

"During the IMOC04.E European project, Evidence developed a Multi-OS system based on the Huawei's Atlas device able to handle AI hardware acceleration, real-time tasks, and low-latency communication via TSN protocol. Moreover, Evidence provided hardware acceleration capability for computer vision tasks that was integrated into IMOC04.E's Pilots."



"For FAGOR AOTEK, the IMOC04.E project has been a great opportunity to collaborate with high-tech partners, achieving significant advancements in robot control integration from the CNC in machine tools, as demonstrated in Use Case 2"

"IMST is proud that our radar technology has been brought to a higher level thanks to the challenges in this project."



"INL thanks IMOC04.E partners for the learnings and fruitful collaborations developed. It was gratifying to contribute to and act as owner of BB3 - Novel sensors, as well as having the sensors deployed in Demo 2 - Injection molding."

"ITML is proud to have served as the Project Dissemination Leader for IMOC04.E. We successfully ensured project visibility by creating communication materials, managing dissemination activities, and contributing real-time AI-powered analytics."





“SoC-e has spearheaded the coordination of developing new SoC, FPGA, and multi-many core platforms for AI and intelligent data processing. We have engineered a modular platform with cutting-edge communication and real-time processing capabilities, providing highly customizable functionalities across all these domains.”

“SEMI Europe was proud to have been a member of IMOCO4.E’s forward thinking consortium. We appreciated the opportunity to see advancements made by partners and utilize this in our work in Work Package 8.”



“The TU/e is proud to successfully contribute to the IMOCO4.E project objectives that resulted in data-driven innovative solutions for high-performance of systems, advanced methodologies, and high-quality research papers and presentations.”

“UGR has worked on modelling the dynamics of collaborative robots in IMOCO4.E towards applying smart control for optimizing the trade off between accuracy and safety in the framework of human-robot interaction in industry 4.0. We have shared our findings through journal publications and dissemination talks in different events for a wider outcome dissemination.”



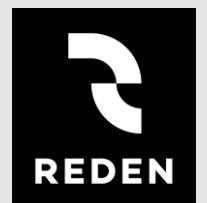
“The University of Brescia is proud to have contributed to the IMOCO4.E project, which focused on exploring AI and Digital Twin concepts and implementing advanced control and condition monitoring for lift drive systems.”

“VTT has successfully developed and demonstrated novel algorithms for motion planning, collision avoidance and visual servoing for robots and robotic machines. IMOCO4.E co-operation has strengthened VTT’s knowledge in robotics and digital twins. IMOCO4.E offers a solid route for follow-up research and commercialization.”



“WEG Automation Europe is proud to have collaborated on the IMOCO4.E project, where AI and Digital Twin concepts were explored, and advanced control and predictive maintenance for lift drive systems were implemented.”

“The IMOCO4.E project has enabled Reden to develop the knowledge and tooling to build Digital Twins for future clients.”





"We are thrilled to be part of the iMOCO4.E consortium, celebrating the successful conclusion of this groundbreaking project. Through our collaboration, we've developed three innovative products that will enrich our portfolio for years to come. Together, we've forged a path of excellence and set the stage for future achievements."

"At Fraunhofer IML, we are excited to have contributed to elevating intralogistics autonomy to the next level. By focusing on the intelligence of individual vehicles and tackling fleet coordination for future applications, we were delighted to collaborate within the consortium towards our common vision and demonstrator."



"Normet has had the opportunity to be at the vantage point leading the work package task focusing on development of digital twins in IMOCO4.E. From the pilot's owner's point of view, the consortium partners' research and development cooperation has played a key role in successfully integrating technological building blocks into a complete R&D pilot"

"IMOCO4.E has resulted in innovative model-based and data-driven methods for mechatronic development, allowing Philips to accelerate innovations in image-guided therapy and deliver the optimal customer experience"



"From SED we appreciate the opportunity to have participated in this project as leaders of BB1. We have contributed to the project by providing our deterministic communication technology to different pilots, bringing the industry closer to new, more advanced and promising methods."

"TEKNIKER is proud to be a key element of IMOCO4.E project through the leadership of the Smart Control Layer design and development (WP4). Additionally, IMOCO4.E provided the possibility to research in advanced control strategies for robotic applications as well as the Virtual Commissioning of complex system controllers through the application of Digital Twins"



"UNISS is honored to have participated in a project to extend visibility and apply the algorithms developed for predictive maintenance to real use cases. This involvement has been significant in enhancing our practical applications and showcasing our technological advancements."



“Tyndall along with Irish partners Analog Devices and Emdalo Technologies are honored to have participated on the IMOC04.E project.



The research, engineering, developments and results from the project will provide major advancements for partners and will also lead to significant benefits for industrial manufacturing in Ireland and beyond, well into the future.”

“Analog Devices is proud to have been involved in the understanding & development of key Building Blocks which will enable exploitation of sensor information to increase efficiencies of Industry 4.0.”



“We are thrilled to have collaborated in the IMOC04.E project, where cutting-edge AI technology meets sustainable manufacturing. This experience allowed us to implement AI-powered robotics into our processes to reduce manual, repetitive labor. We are proud to be at the forefront of sustainable and intelligent manufacturing.”

“Siemens Industry Software contributed to IMOC04.E through the development and implementation of advanced 1D and 3D software simulations, testing control algorithms via cloud communication, and creating a machine learning model for predictive maintenance. This project boosts our exploration potential of Virtual Reality and Digital Twin technologies, further pushing the boundaries of smart system design and real-time optimization”



netcompany

intrasoft

“In IMOC04.E, Netcompany-Intrasoft successfully led the project’s software components validation activities and contributed to the development of predictive analytics algorithms, suitable for forecasting maintenance- related parameters”

“UWB is thrilled with serving as a key partner in both proposal building and technical management of such large and ambitious project. Creative atmosphere allowed us to reach our R&D goals in model-based system engineering.”



“GNT’s active participation in developing and integrating cutting-edge data management and AI-driven analytics solutions through IMOC04.E has significantly enhanced our expertise on advanced smart industry technologies. The collaborative environment and shared innovation within the consortium have been invaluable, and we are proud of the impactful results we have achieved together.”

“Exertus is thrilled to have been at the forefront of developing cutting-edge motion control platforms as part of the IMOC04.E project. Our team has proudly contributed innovative solutions that push the boundaries of efficiency and intelligence in Industry 4.0 applications, driving forward a new era of smart machines with state-of-the-art technologies.”





“PCL is proud to have served as WP7 leader. Pilots and Demo’s have been developed, with collaborations between partners and using input from Building Blocks and other WP’s. PCL was owner of one of the Demo’s, where a digital twin has been developed together with partner Reden.”

“CRIT is proud to have gathered and coordinated a team of talented and friendly individuals, paving the way for future advancements in the automated machinery sector.”



“In IMOCO, TNO had the opportunity to successfully work on High-speed Vision-in-the-loop: image acquisition with real time and High-Performance Computing to achieve closed loop motion control up to high frequencies with a GPU that allows for massive acceleration.”

“It was a pleasure for Reexen to participate in IMOCC04.E.. We contributed extensively in most WPs covering multiple topics such as innovative sensors and path planning. On the platform of IMOCC04.E, Reexen has also made valuable connection with other partners for further cooperation.”



“Hahn-Schickard is proud to have advanced SLAM+LiDAR for precise localization and mapping, while achieving 3D reconstruction by fusing pretrained deep learning models with solid-state LiDAR. We also published AutoFLOW, an open-source project enabling automatic code generation for deploying pretrained models across various devices, from FPGAs to microcontrollers.”

“ITEC proudly spearheaded the WP2 on business requirements and reference framework and the Pilot 2 on semiconductor production, defining and advancing the reference framework and showcasing vision-in-the-loop and predictive maintenance using AI and digital twins within the semiconductor assembly line equipment”



iMOCO4.E



The project has received funding from the Electronic Component Systems for European Leadership Joint Undertaking, under Grant Agreement n°101007311. This Joint Undertaking receives support from the European Union’s Horizon 2020 research and innovation programme and Netherlands, Czech Republic, Spain, Greece, Ireland, Belgium, Latvia, Portugal, Germany, Finland, Switzerland.



www.imoco4e.eu



[@IMOCO4E](https://www.instagram.com/IMOCO4E)



[@IMOCO4E](https://www.tumblr.com/IMOCO4E)