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DISCOVER ODIN

The challenge

While robots have proven their flexibility and efficiency in mass production and are recognized as the future production resource, their adoption in lower volume, the diverse environment is heavily constrained. The main reason for this is the high integration and deployment complexity that overshadows the performance benefits of this technology.

If robots are to become well accepted across the whole spectra of production industries, real evidence is needed that they can operate in an open, modular and scalable way.



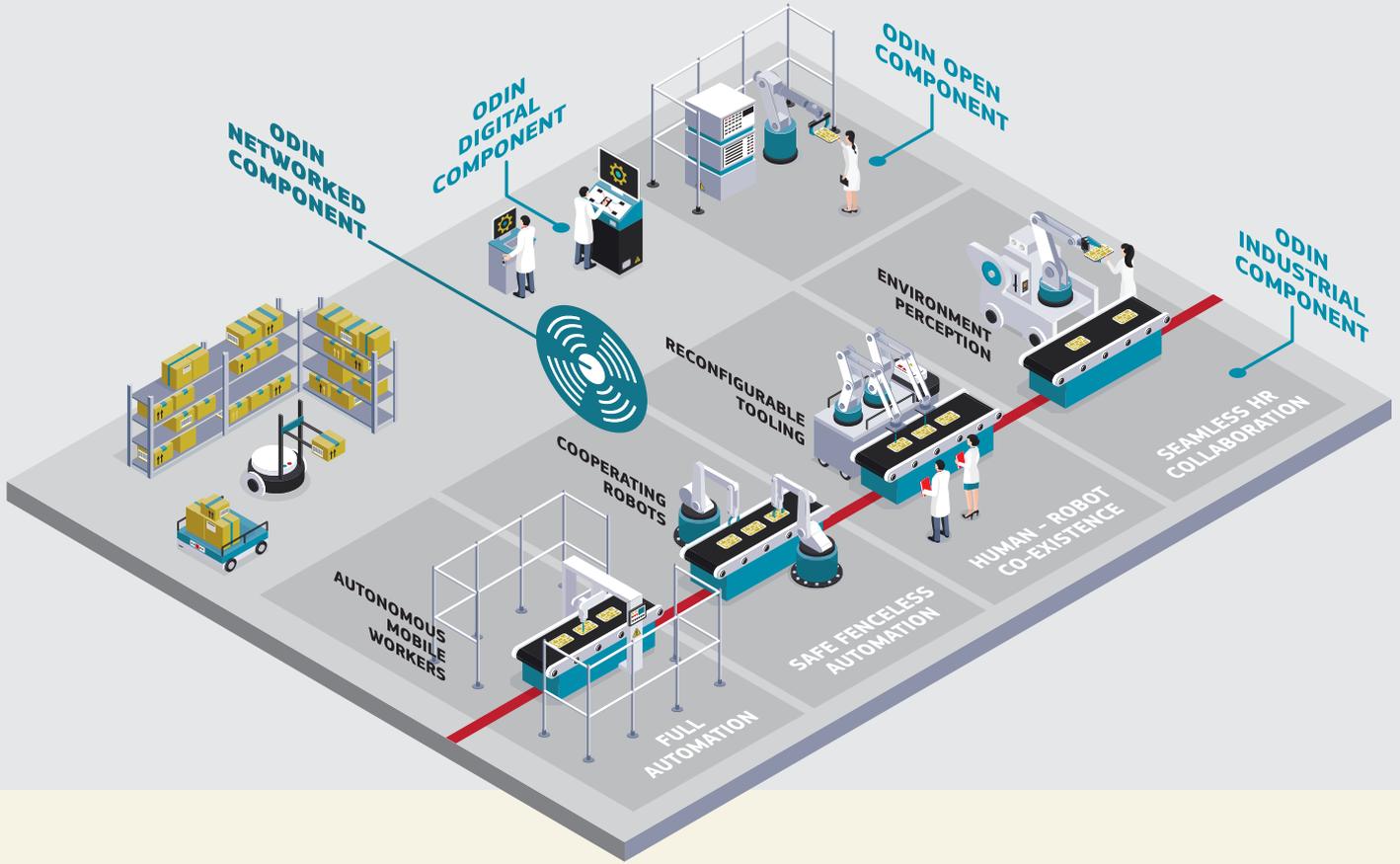
Project Overview

ODIN will bring technology from the latest ground-breaking research in the fields of:

- collaborating robots and human-robot collaborative workplaces
- autonomous robotics and AI-based task planning
- mobile robots and reconfigurable tooling
- Digital Twins and Virtual Commissioning and
- Service-Oriented Robotics Integration and Communication Architectures.

To strengthen the EU production companies' trust in utilizing advanced robotics, the vision of ODIN is:

“to demonstrate that novel robot-based production systems are not only technically feasible but also efficient and sustainable for immediate introduction at the shopfloor”.



ODIN OBJECTIVES

OBJECTIVE

Enabling the introduction of mobile, autonomous, environmentally aware and collaborative robotics in industrial settings.

INDUSTRIAL REQUIREMENTS

White goods: Ability to reprogram/reconfigure a robot for a new product variant: a) integrating new processes b) teaching new interaction schemes with humans and c) replicating the solution to similar cases with minimum cost/effort.



Aeronautics: Ability to easily reprogram/reconfigure a robot for new tasks that may combine autonomous mobility, manipulation or a combination of both.



Automotive: Mobility of robots –being able to move between stations and perform different types of processes. Assisting humans in high payload manipulation.

INDUSTRIAL REQUIREMENTS

 **White goods:** Existence of digital tools with simulation capabilities that not only consider the fixed programming part, but also the dynamic behavior of an autonomous system. It is allowing execution of non-sequential/non-pre-programmed tasks.

 **Aeronautics:** Ability to extend the system functionality predictably, allowing both reusability/improvement of existing components. Ability to integrate third-party developments

 **Automotive:** Ability to reconfigure different types of robots stationary/mobile/cobots) to execute a standard process plan including also common tasks (collaboration)



OBJECTIVE

Creating digital validation tools for these robotic systems to allow scalability with minimum complexity and integration risks.

INDUSTRIAL REQUIREMENTS

OBJECTIVE

Commercializing an advanced robotics integration platform able to link the robotics design and development stage with the normal production conditions.

 **White goods:** Current setup provides low integration into the overall factory digital infrastructure and the IoT concept. Inability to monitor and control the robotic application's working parameters, ensuring preventive and predictive maintenance actions.

 **Aeronautics:** Make robots "first-class citizens" in the Industry 4.0 approach, benefitting of interoperability and connectivity: improved maintenance and reliable system monitoring.

 **Automotive:** Quality control over processes that can be carried out by different resources is crucial for sustainability. In mobile and autonomous robots, the need for a platform to convey all operating parameters and sensor data is sought.

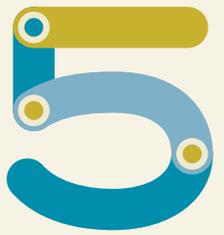
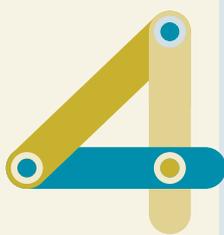


OBJECTIVE

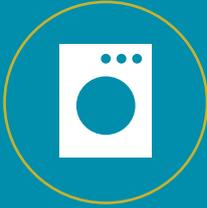
Deploying full-scale demonstrators in different production sectors to serve as a token of the industrial-grade performance of the ODIN production systems.

OBJECTIVE

Create an innovation ecosystem to enable the sustainability of open Pilot Lines - involving robotic application stakeholders and inspiring further deployment.



USE CASES



WHITE GOODS

Ability to reprogram/reconfigure a robot for a new product variant:

- a) integrating new processes
- b) teaching new interaction schemes with humans and
- c) replicating the solution to similar cases with minimum cost/effort.



AERONAUTICS

Ability to easily reprogram / reconfigure a robot for new tasks that may combine autonomous mobility, manipulation or a combination of both.



AUTOMOTIVE

Mobility of robots –being able to move between stations and perform different types of processes.

Assisting humans in high payload manipulation.

EVENTS

The ODIN project has kicked off!



ODIN project has kicked off virtually in January 2021 where first project steps were identified. The project aims to strengthen the EU production companies' trust in utilizing advanced robotics. This is a 4-year project funded from the European Union's Horizon 2020 research and Innovation Programme.

ODIN will bring technology from the latest groundbreaking research in the fields of: collaborating robots and human-robot collaborative workplaces, autonomous robotics and AI-based task planning, mobile robots and reconfigurable tooling, Digital Twins and Virtual Commissioning and Service-Oriented Robotics Integration and Communication Architectures.

The ODIN team is thrilled to have this project started – stay tuned!

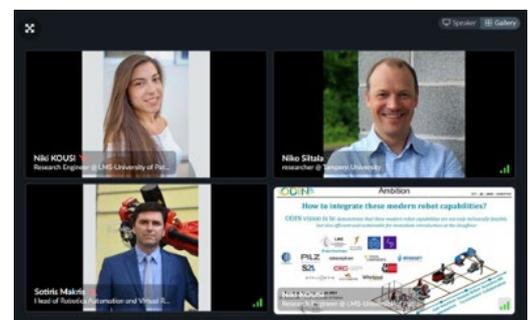
ODIN @ the European Robotics Forum 2021

The [European Robotics Forum 2021 \(ERF 2021\)](#) which is an annual meeting point for the robotics community across Europe and beyond, went virtual on 13-15 April 2021. The ERF2021 covered all aspects including current themes as well as the latest trends and breakthroughs related to the field of robotics bringing together Researchers, the industry community, policy makers and public funding officers from all over Europe.

ODIN has actively participated in the following workshops/sessions which took place during the first two days of the Forum:

- Robotics FSTP funding, any good for SME's? - TRINITY experiences,
- New Horizon projects,
- 8th Workshop on Hybrid production systems (HPS),
- Towards applied AI in agile production, logistics & lab automation workshops.

ODIN has been represented by the [Laboratory for Manufacturing Systems & Automation \(LMS\)](#) from University of Patras who presented the objectives and expected outcomes of the project while the participants had the chance to ask questions and discuss on related aspects. During the "New Horizon projects" session, ODIN shared its vision through a video presentation.



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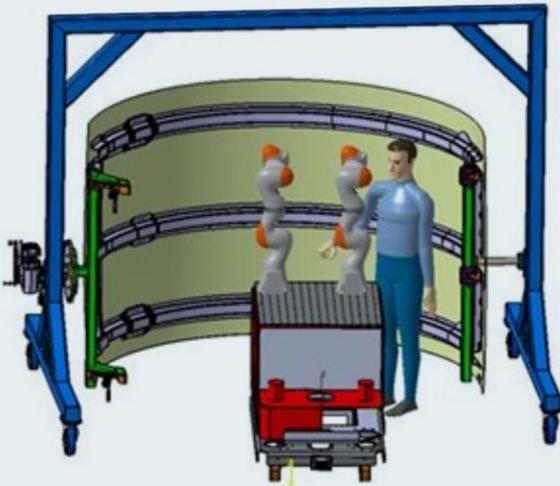
A new paradigm in collaborative robotics

Comau introduces to the market in March 2021 its Racer-5 COBOT, a new paradigm in collaborative robotics which meets the growing demand for fast, cost-effective cobots that can be used in restricted spaces and in different application areas. Countering the belief that collaborative robots are slow, Racer-5 COBOT is a 6-axis articulated robot that can work at industrial speed up to 6 m/s.

[Read more](#)



On-site interactive skill programming of flexible robots



Vacuum cleaning domestic robots became very popular in our homes. One of the key reasons of their success is that they are extremely easy to use, but they can only do one task: cleaning. Industrial robots are conquering our factories, they are extremely versatile but high expertise is required to program and deploy them.

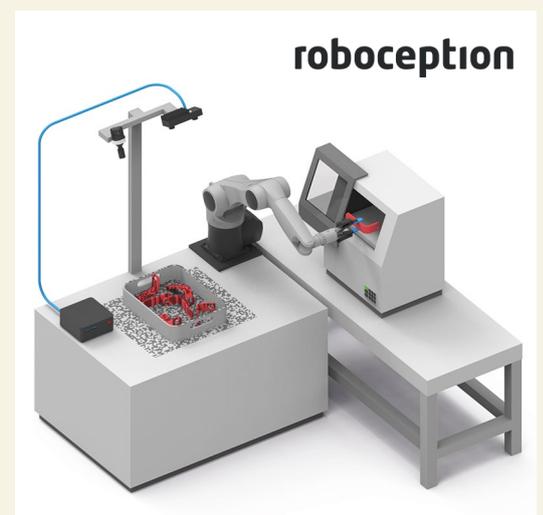
Is it possible to develop a multipurpose tool/robot that could be deployed by common field operators to automate many of the factory processes? Can we create an easy to use swiss army knife for automation?

[Read more](#)

How your Robot can Pick Objects from Chaotic Bins, Independent of Orientation

Rooboception offers innovative 3D vision hardware and software solutions that enable any robotic system to reliably perceive its environment in real-time. Robot vision is the key to a more flexible use of robotic systems: If a robot is able to perceive its environment and workspace reliably, its tasks, workpieces or requirements can be changed and adapted rapidly.

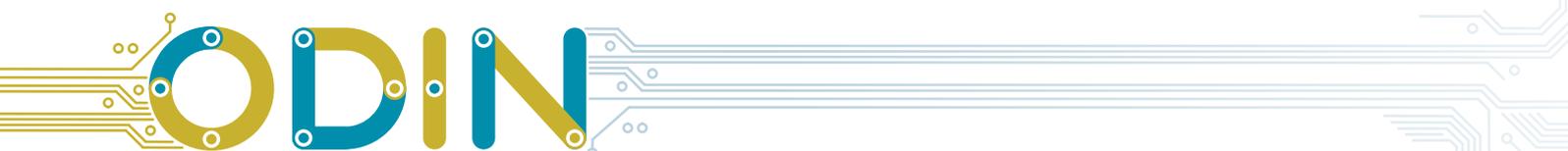
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Open-Digital-Industrial and Networking pilot lines using modular components for scalable production



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