

About HORSE

HORSE brings a leap forward in the manufacturing industry proposing a new flexible model of smart factory for the collaboration of humans, robots, AGV's and machinery to realize industrial tasks in an efficient manner. **HORSE** fosters technology deployment towards SMEs including:

- Methodological and technical framework for easy adaptation of robotic technologies.
- Centers of Competence that promote **HORSE** framework in regional robotic market players (both factories and suppliers).

Framework and infrastructure will be driven and validated by leading manufacturing organisations (Pilot Experiments) in three countries.

The suitability and transferability to further applications will be validated with seven factories recruited by an Open Call.

Project Consortium



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**Smart Integrated Robotics System for SMEs
controlled by Internet of Things based on Dynamic
Manufacturing Processes**



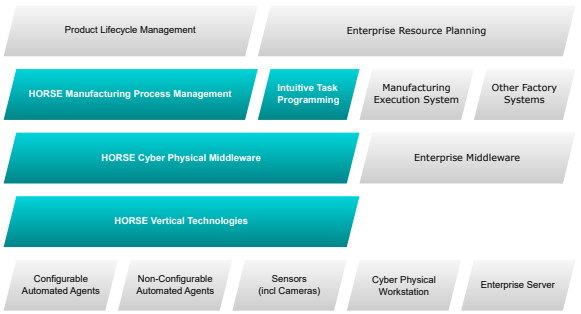
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The HORSE Framework

The **HORSE** Framework consists of a skeleton, used in every **HORSE** deployment scenario. It consists of the Manufacturing Process Management System describing and controlling the manufacturing process, the Hybrid Task Supervisor coordinating human operators and robots in the workcell, as well as the **HORSE** OSGi-based middleware providing standardized means of communication between the components. This software skeleton is then tailored to the application needs by adding reusable, easy to adopt, case-specific components such as the robot control, augmented reality instructions, safety modules etc.



Our **HORSE** framework follows IEC62264 standard which presents a functional hierarchy for manufacturing control, classifying the various types of control found in modern factories.

HORSE Competence Centers

The four Competence Centers (CCs) in **HORSE** are physical locations providing expertise, equipment, service and advice in robotics technologies and applications in manufacturing. CCs offer expert support on deployment and fast assessment of robotics solutions in manufacturing. Competence Centres become one-stop shops for manufacturing industries interested in robotics automation. They have a regional scope.

They aim at capturing the industrial ecosystem in each region. Services that **HORSE** CCs provide include:

- General information about **HORSE** technologies and ecosystem
- Physical and/or virtual demonstration (**HORSE** scenarios)
- Access to **HORSE** framework for demonstration and/or experimentation
- Technical and business consulting
- Business (re-)engineering services and competencies development
- Contact with other stakeholder



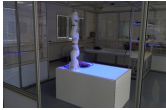
HORSE Outcomes

HORSE enables flexible and versatile production lines and customization to large variety of applications. It provides flexibility for fast configuration and take-up, improvement of quality and safety of the operator. It serves the entire value chain and proposes concepts for robotics systems servitisation and product operation. This is demonstrated in the pilots:

Thomas Regout International use case demonstrates flexible collaborative assembly.



Robert Bosch España Fábrica de Castellet demonstrates human-robot co-manipulation and robotic based visual inspection.



Odlewnie Polskie Joint Stock Company a ser-vice foundry demonstrates human robot co-working with programming by demonstration.



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