

Smart Integrated Robotics System for SMEs controlled by IoTs based on Dynamic Manufacturing Processes

Start 1/11/2015 46 M

I4MS phase 2 Innovation Action



The Project - Objective

1

a new flexible framework of smart factory

involving collaboration of

2

humans, robots, AGV's and machinery

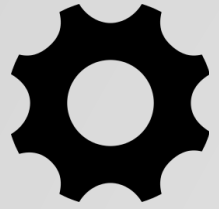
to realize industrial tasks in an efficient manner.

3

Robotics assistance will improve :

- **operators conditions of work,**
- **worker's safety**
- **quality and production effectiveness**





Technical Framework

- Integrated, **Process-oriented management** model for control of the production line and automatic resource allocation/dynamic reallocation (BPM)
- **OSGI based (IoT)** for remote control of production resources (humans, robots)
- Technologies to enable autonomous and effective cooperation between robots and humans with no barriers (**low inertia, collaborative robots**)
- **Multilayer safety** (from the robot to the system level)
- **Easy and flexible teaching** of new tasks to robots (by demonstration to robots/ immersive technologies to humans)



IoT elements in HORSE

- **Business Process Management tools** to monitor and control production process
- **OSGi** standard middleware
- **Manufacturing actors** incl. humans, robots, AGV's (Autonomous Guided Vehicles) and machinery are all centrally and remotely resources that can be dynamically allocated to tasks (new and varying)
- Humans and robots work close to each other with the **monitoring of sensors network** (on the robot and at the shopfloor)



IoT in practice

- IoT OSGi standard middleware :
 - automated remote access to all resources
 - flexibility to change and optimize production
 - multi-layered safety based on situation awareness software for
 - direct and immediate alert to human workers and inspectors
 - fast error communication and contingency planning

Integration of

- Production processes
- Resources and sensors

ENABLES



Future Perspectives

HORSE partners have already gone beyond with ideas for future

- **Integrating OPC-UA with OSGi**
to enable manufacturing machinery to get connected
- **Novel sensors (i.e 3D cameras)**
to feed navigation and object detection software for **real time planning of mobile robots**
- Integration of **robot based sensors and other devices for advanced object manipulation**

ENABLES

- smart and flexible factory **end-to-end**
- **analytics for prediction** /maintenance, etc.
- **Integrated perception and reasoning** of the scene and object manipulation
- **plug-and-play positioning** of robots in any harsh, dynamic production environment





Contact us



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