



Convegno Tecnologie abilitanti per 4.0

Industry 4.0 nei processi interni e nei prodotti

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Comau Global Solution Development

March 24th, 2017

Made in Comau

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- **Company Overview**
- Innovation

Vision and Mission

Vision

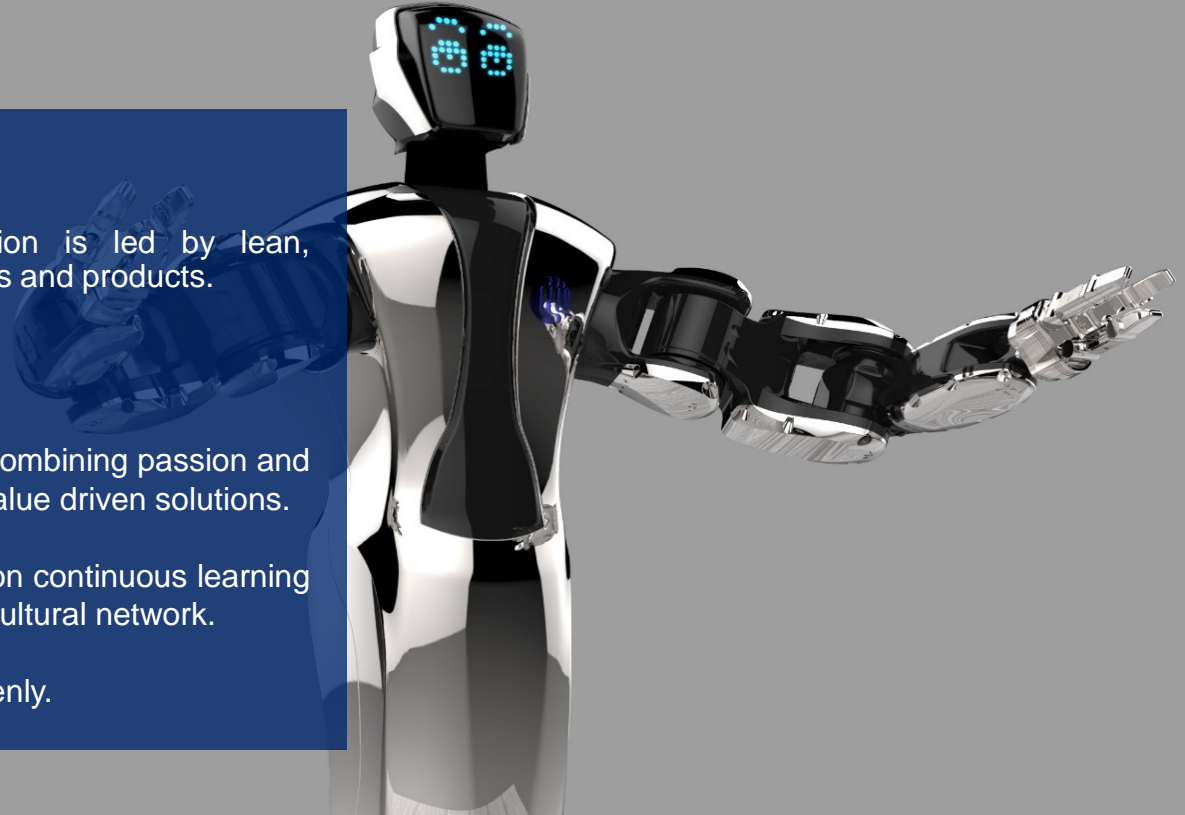
The future of production automation is led by lean, collaborative and sustainable solutions and products.

Mission

Maximize our culture of automation, combining passion and innovation, to offer easy-to-use and value driven solutions.

Attract a talented workforce focused on continuous learning and problem-solving in a global multicultural network.

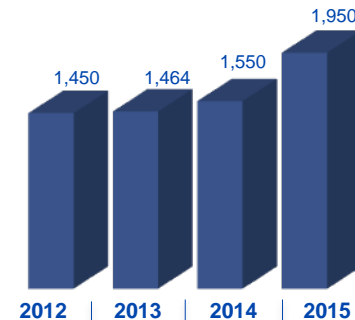
Act responsibly and communicate openly.



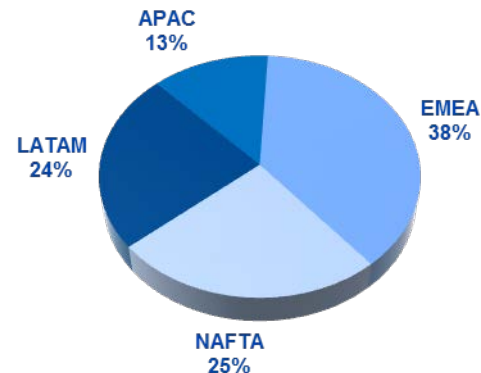
Key Figures



2012-15 Revenues (M/€)



2015 Turnover per area (%)



Our Competencies

- Spot, Laser & Arc-welding
 - Sealing, Drilling & Riveting
 - Machining, Assembly & Test
 - Monitoring & Control
 - Handling & Logistics
-
- Maintenance Services
 - Consultancy in Manufacturing Process
 - Project Management
 - Training & Education



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- Company Overview
- **Innovation**

Innovation Pillars for the Factory of the Future



EASY TO USE SOLUTIONS

- Intuitive, easy to understand and easy to use solutions that keep automation simple
- «Plug & Play»: all our new products and solutions inherit an open architecture concept



ADDED VALUE MANUFACTURING SOLUTIONS

- Manufacturing technologies and innovative processes that facilitate flexibility, the use of advanced materials, the achievement of high product performance
- Legacy systems independence

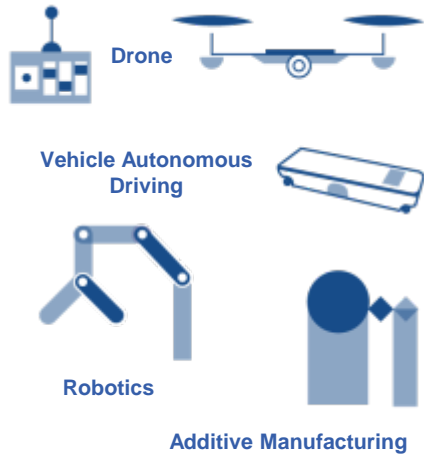


HUMAN ROBOT COLLABORATION

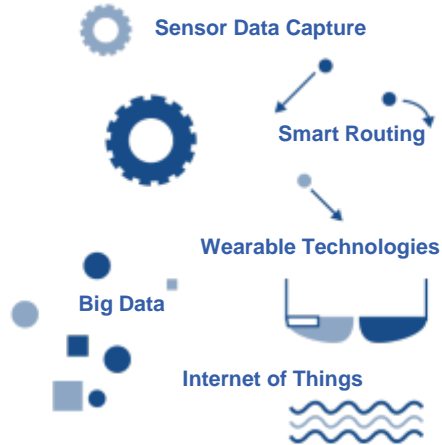
- Symbiotic human-machine relations, which seek a deeper understanding of human behavior and go beyond conventional approaches

Factory Transformation Backbone

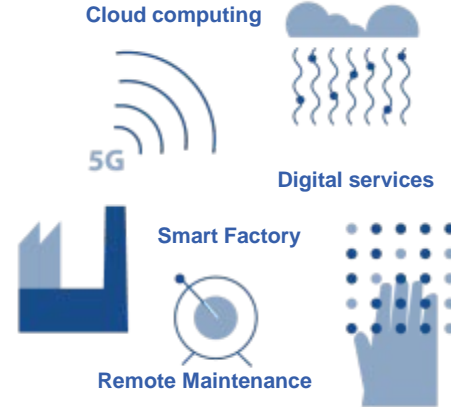
AUTOMATION



DIGITALIZATION



CONNECTIVITY



ANALYTICS



Digital Factory & Internet of Things

COMAU Industry 4.0

COMAU Industry 4.0 Strategy

To Internal Customers

- Manufacturing methods and services
- Special workplace
- New skills



To External Customers

- Collaborative Automation
- Innovative solutions for robot programming and use
- Integrated Product-Process

COMAU Industry 4.0

COMAU Industry 4.0 Strategy

System integrator

- Work on projects
- High variability
- Consolidated knowledge



Product developer

- Work on products
- Product portfolio generation
- Product development platform creation
- Integrated Product-Process
- Data Management
- New skills

To COMAU - Innovative manufacturing methods

Manufacturing Methods and Services



- **Product connected services**
 - After sales
 - Remote assistance
 - Manufacturing and maintenance data management
 - Independent cloud data collection
- **Quality increase and Cost reduction**
 - Drawings and assembly instruction
 - Easy access
 - Mistakes reduction
 - Information diffusion
- **New skills**
 - New competences needed
 - Leaner organizations
 - Development platforms

To COMAU - Human Machine Collaboration & Interaction

Special Workplace Organization – Augmented Reality



- **Product connected services**
 - Guided operations
 - Part identification
 - Manufacturing and maintenance data management
 - Full integrated device
- **Quality increase and Cost reduction**
 - Quality inspection
 - Error proofing
 - Mistakes reduction
 - Information magement
- **New skills**
 - New competences needed
 - Leaner organizations
 - Development platforms

To COMAU – New skills

From General to High Specialized Resources

New professional challenges:

Focus on young talents: high skilled personnel selection and continuous improvement

Cooperation with Universities: participation to the future research projects

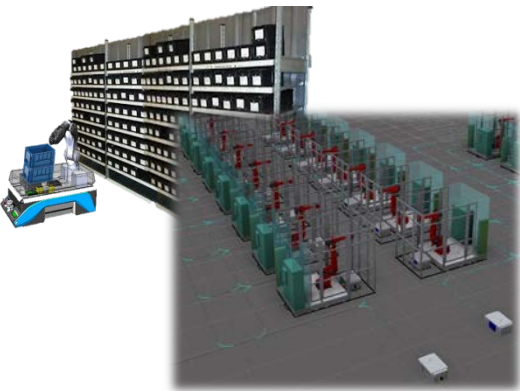
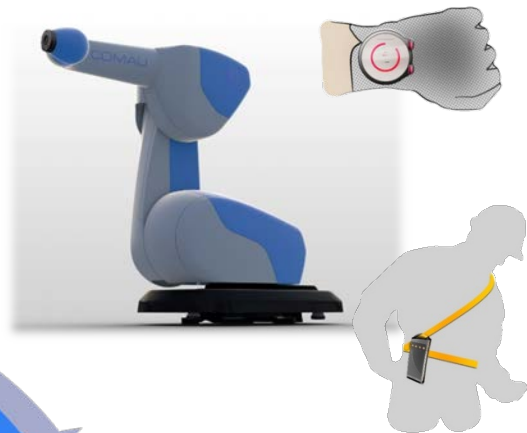
Development of centers of competences: highly focused structures on innovation

Start – Up vision: to speed up the processes out of the common industrial contest

Product platform: new organization asset



To Customers - Products



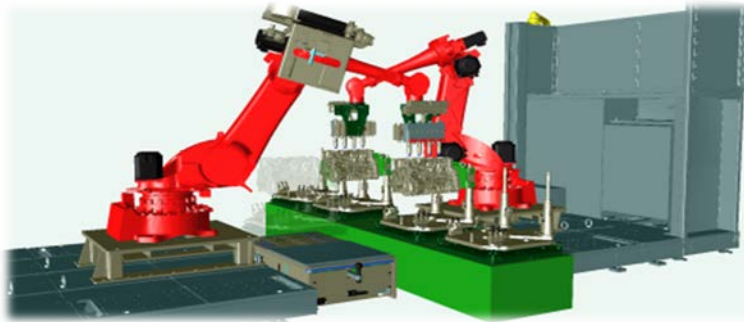
Human Machine Collaboration & Interaction



- **Collaborative Robotics**
 - 5 safety stacks
 - contact avoidance and detection
- **Innovative solutions for robot programming and use**
 - Hybrid collaborative robot solution
 - Robot programming by human demonstration
 - Intelligent and highly reconfigurable end-effectors
- **Integrated Product-Process**
 - Enhanced virtual commissioning

Intelligent Transportation Systems

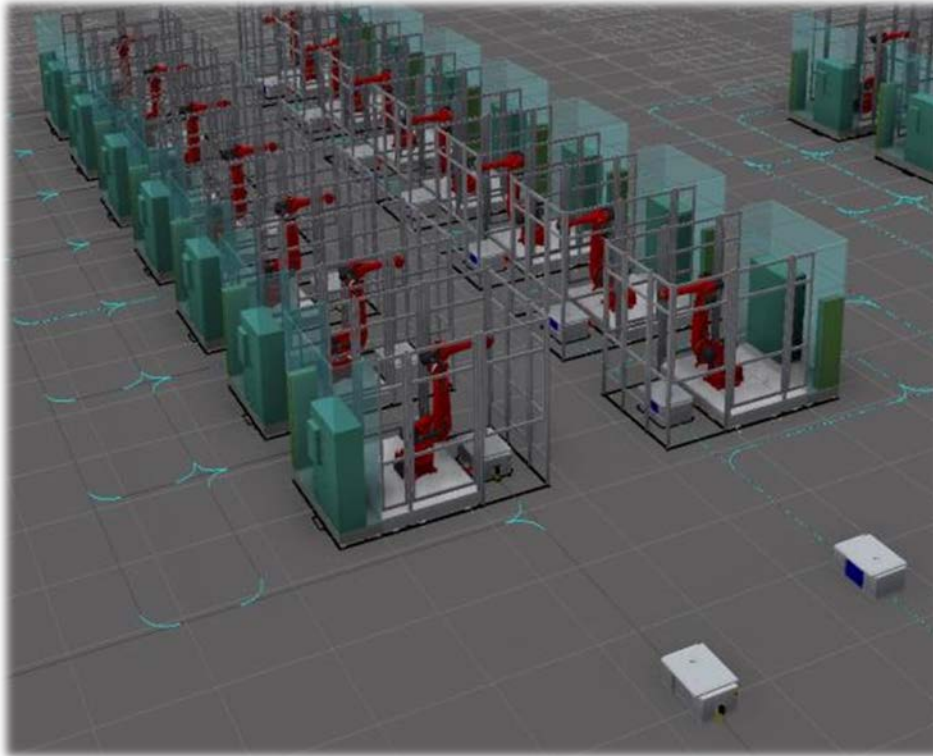
Responsive & Flexible Logistics



- Respond more quickly and efficiently to the needs of material management
 - Minimize NVAA
 - Minimize Implementation Time
 - Minimize Path per Kitting
 - Minimize Man Hours/kitting
- High Density Automation for High Volume production
 - Maximize transportation modules reuse
 - Collaborative robot solution
- Investment Optimizations
 - Non Model Specific Logistics infrastructure
 - Increase speed of delivery
 - Transform or expand without having to start from scratch

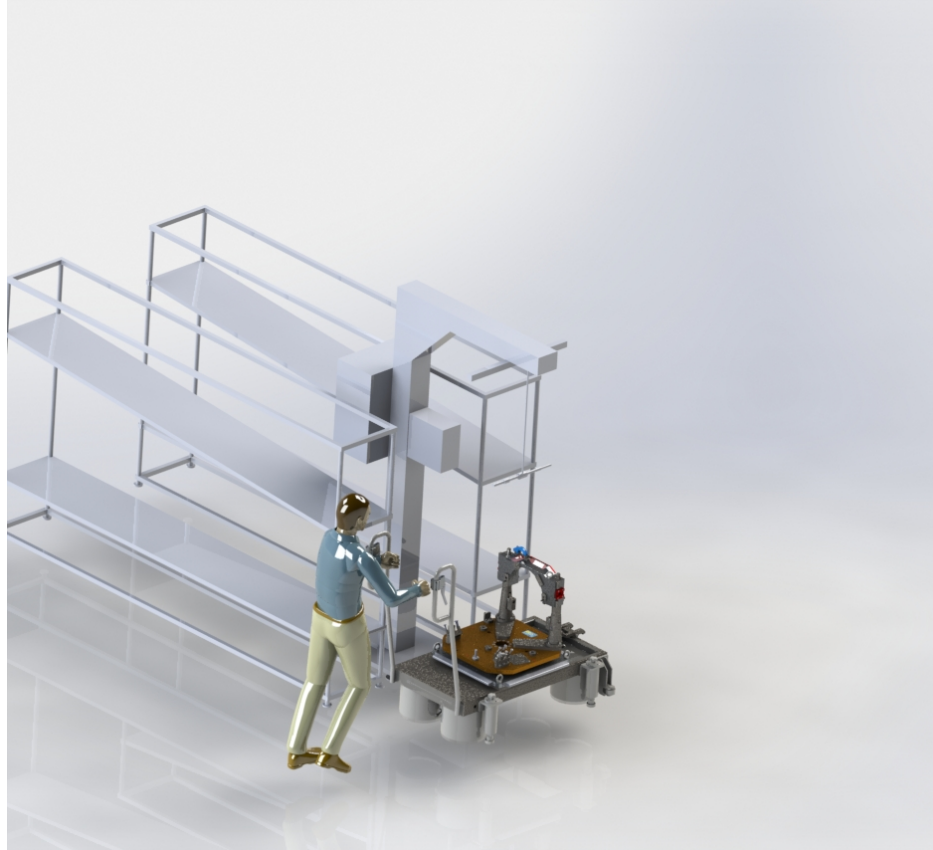
Comau assembly flex-line

Modular Cyber-Physical System Integrated in the COMAU Flex Line

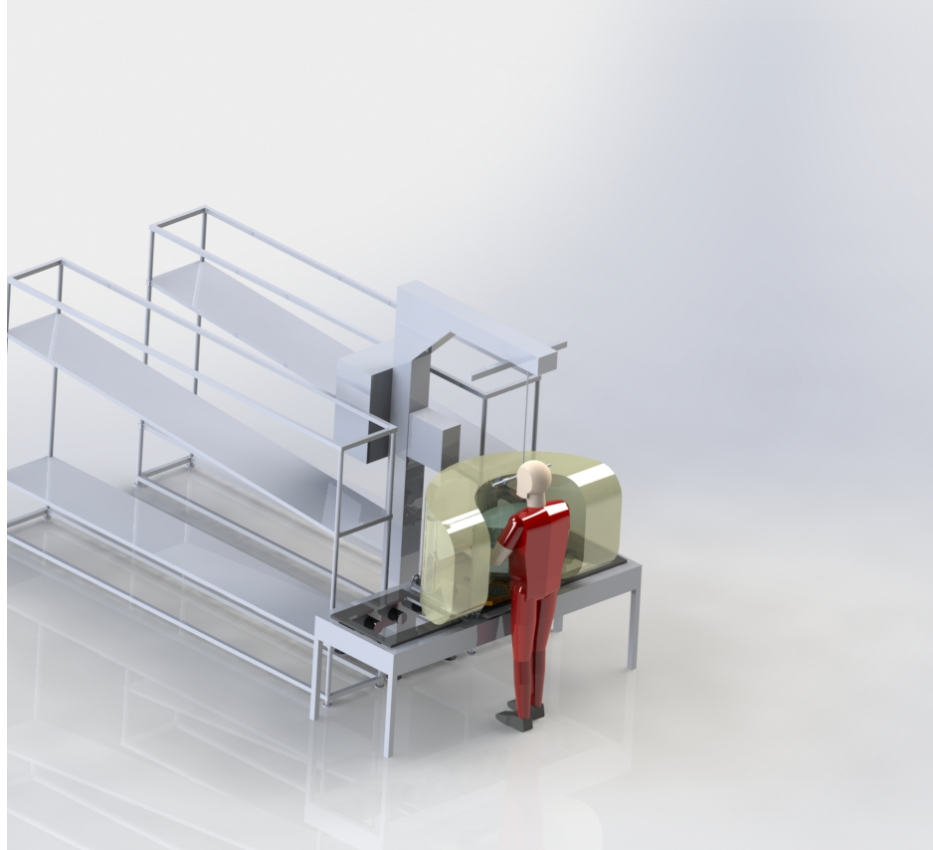


- **NMS stations**
 - Every selected module can perform a list of NMS processes (i.e. pressing, tightening, measuring, ...)
- **Conveying modules**
 - Different payloads available
 - Different dimensions available
 - Different pallets available
 - Traditional or AGVs
- **Logistics Modules**
 - Feeding systems
 - Intralogistics

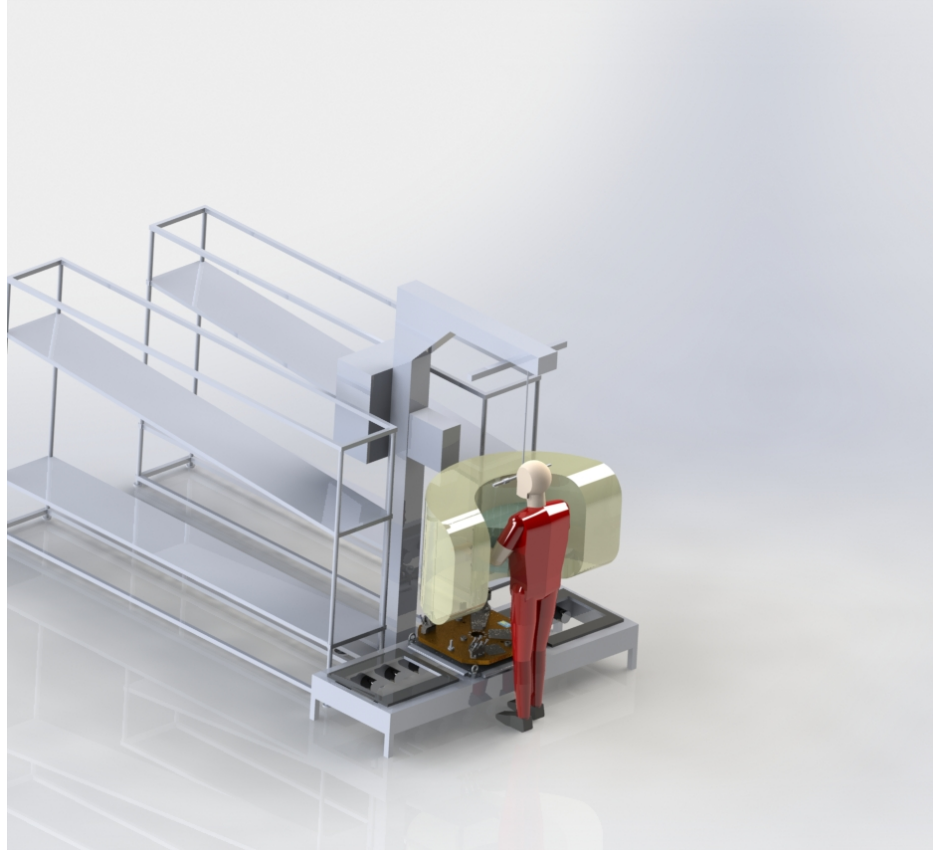
SmartMan low volumes and pilot



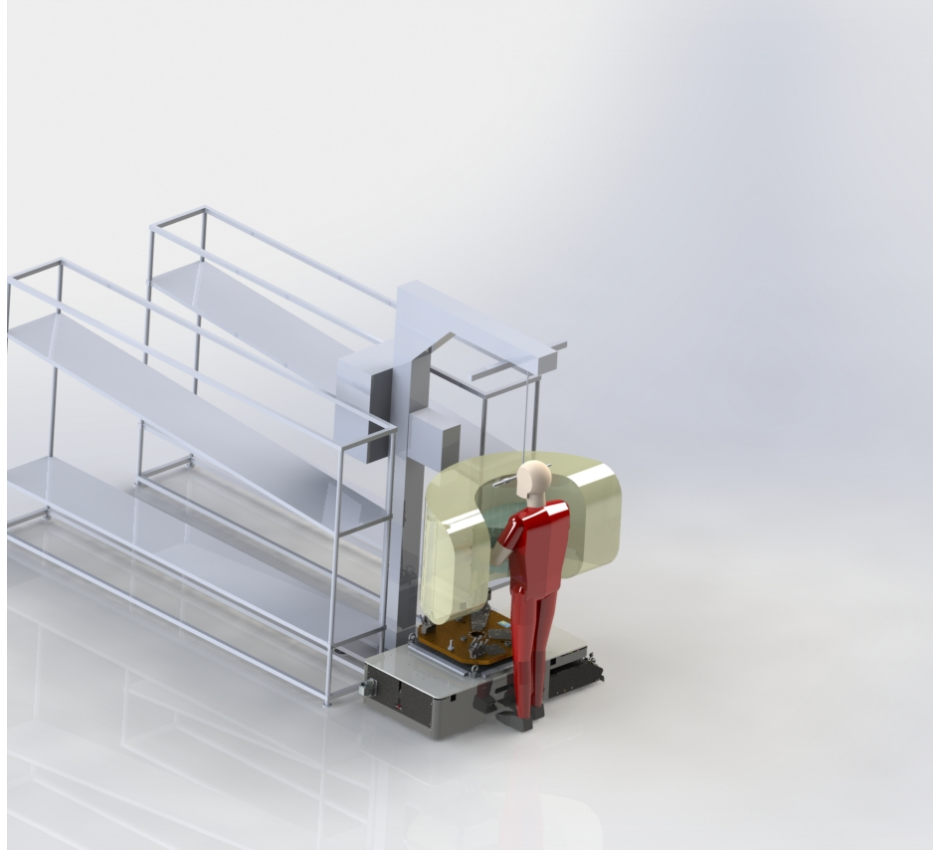
SmartMan with conveyor



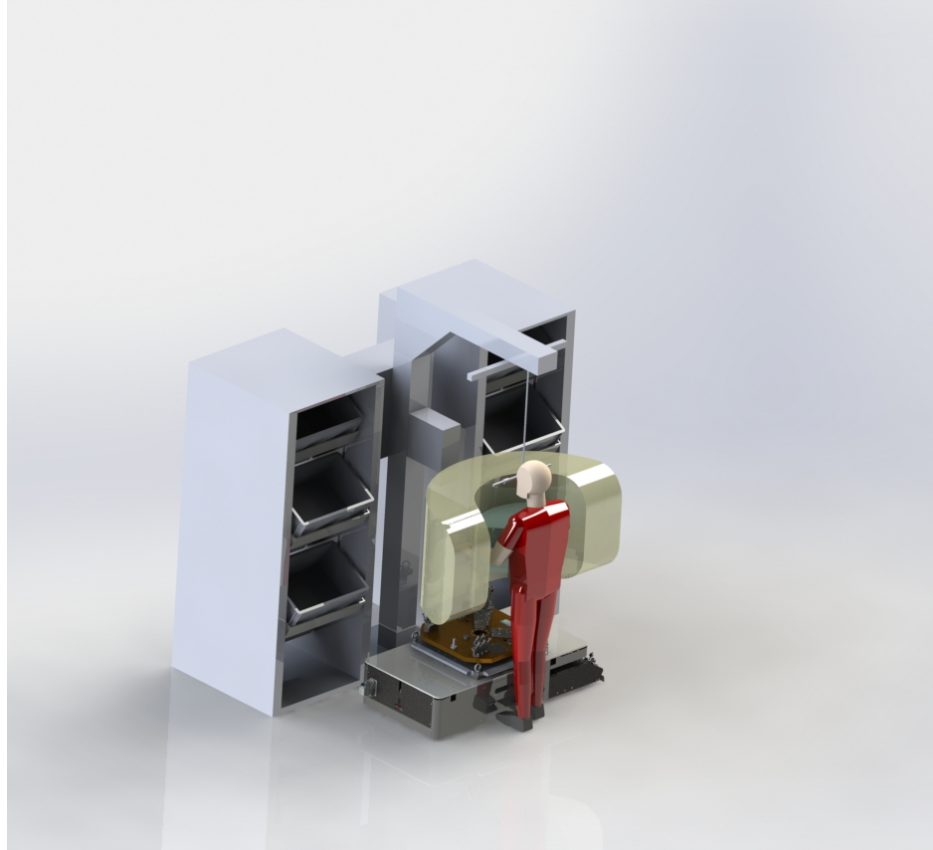
SmartMan with low height conveyor



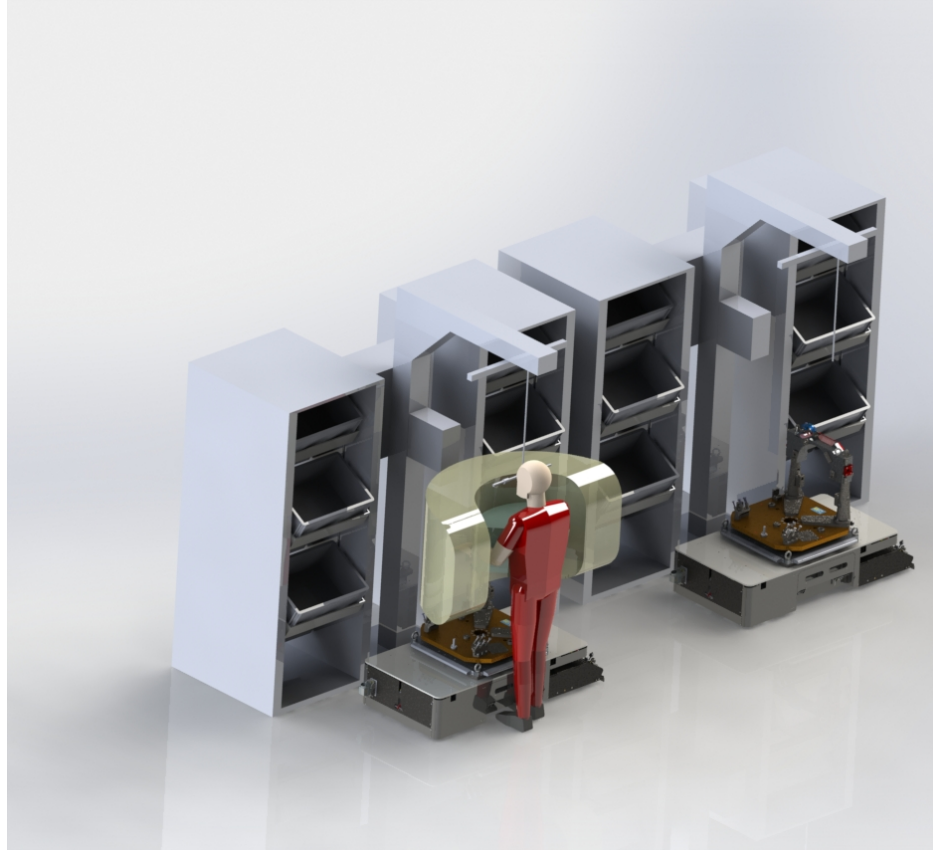
SmartMan with AGV front feeding



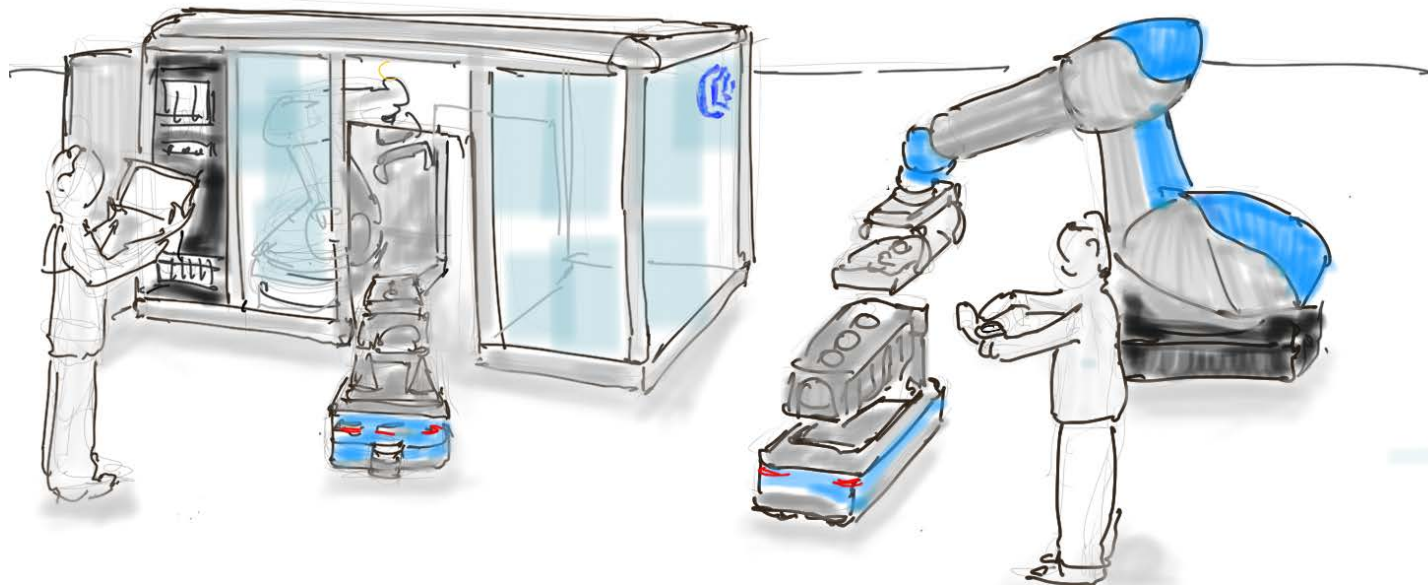
SmartMan with collaborative organizer



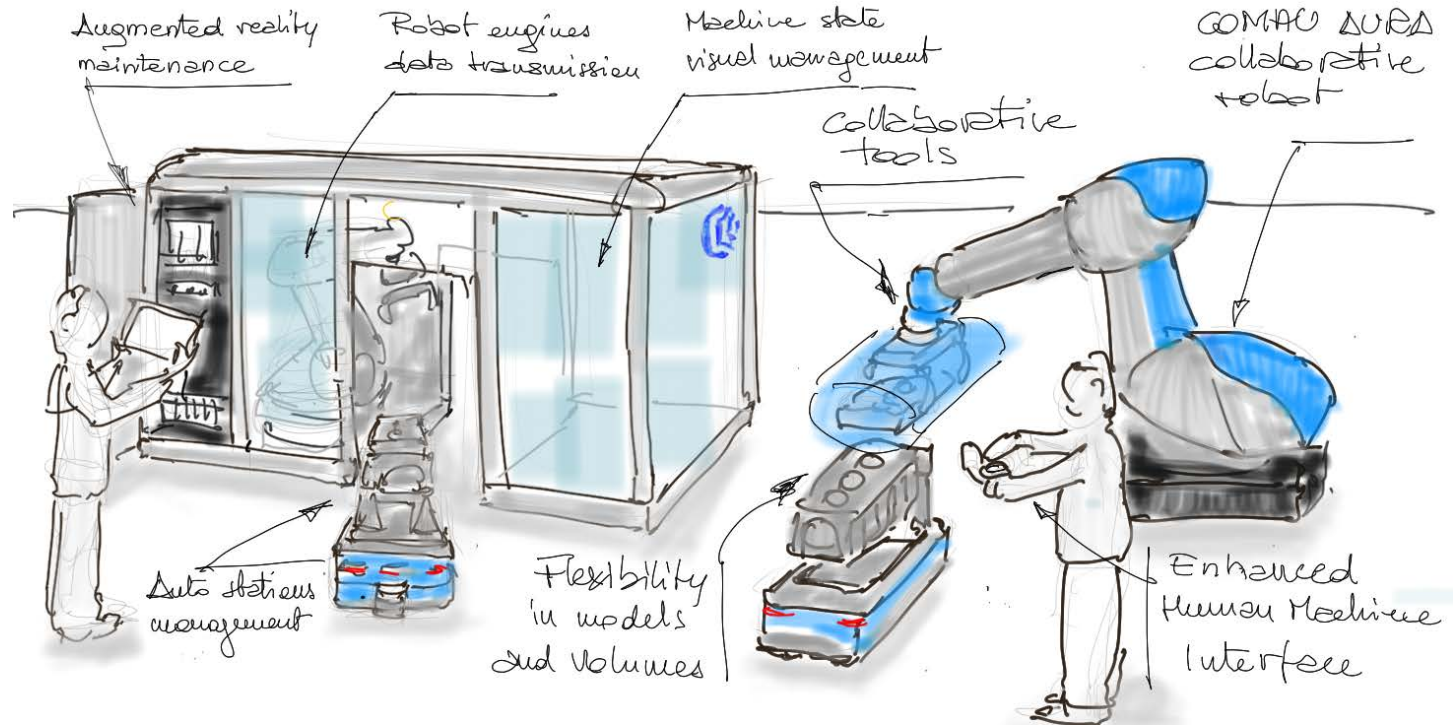
SmartMan continuous moving



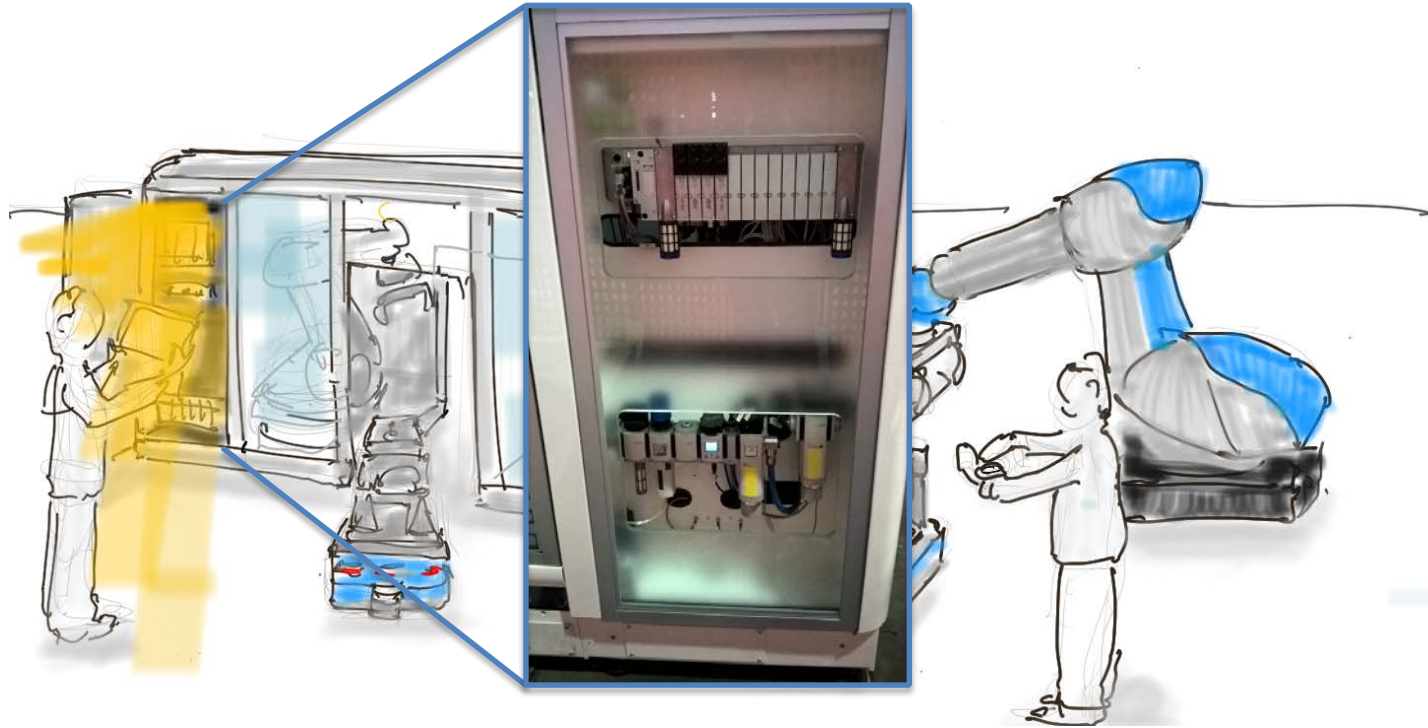
Products implementation



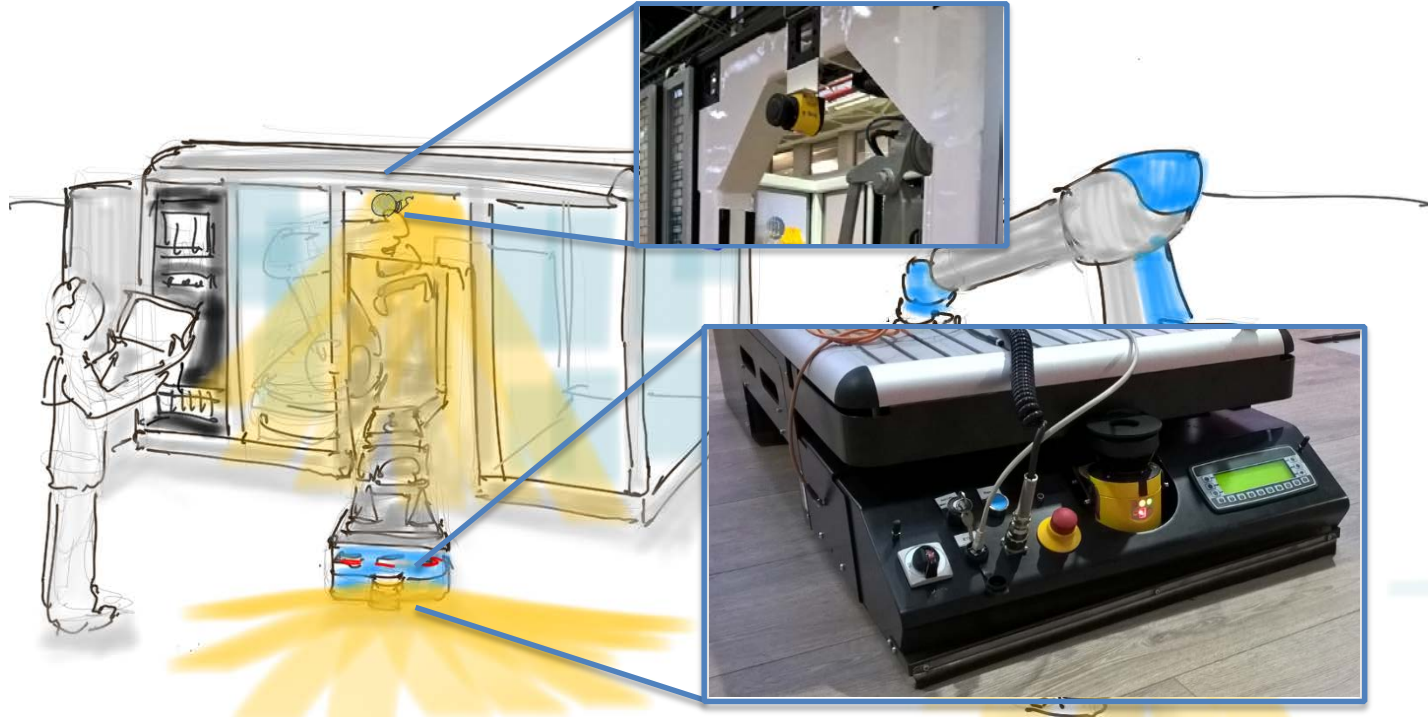
Enablers implementation

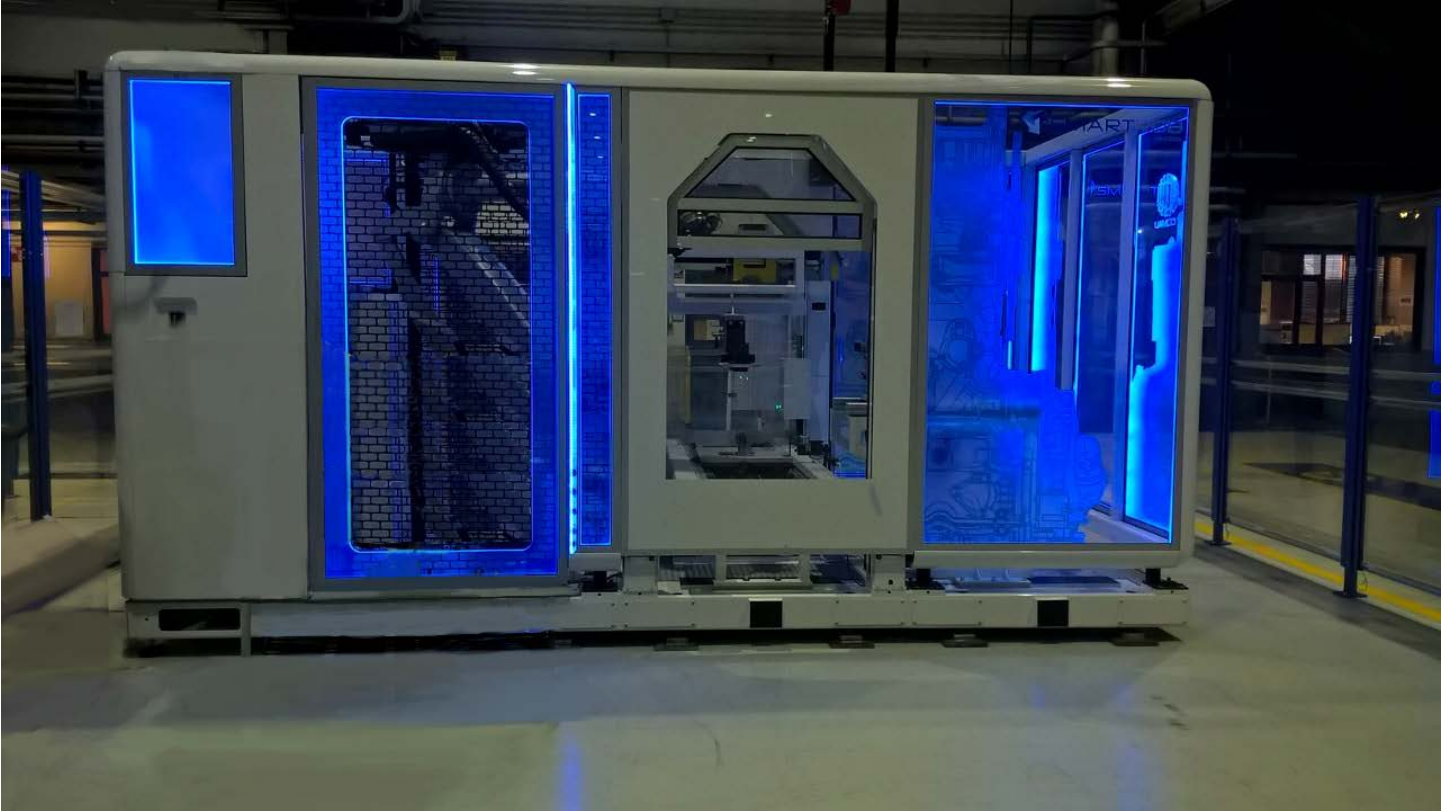


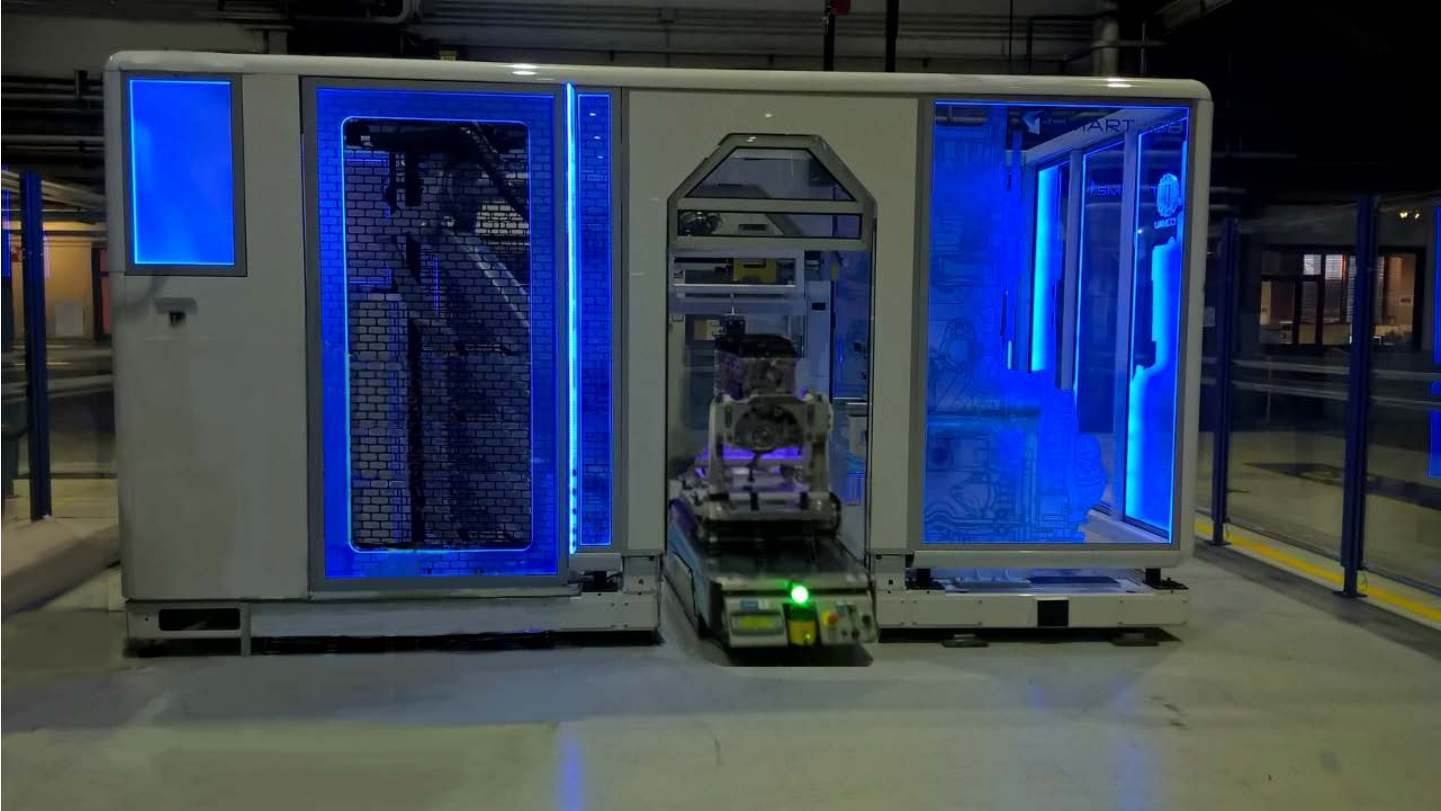
COMAU - FESTO implementation



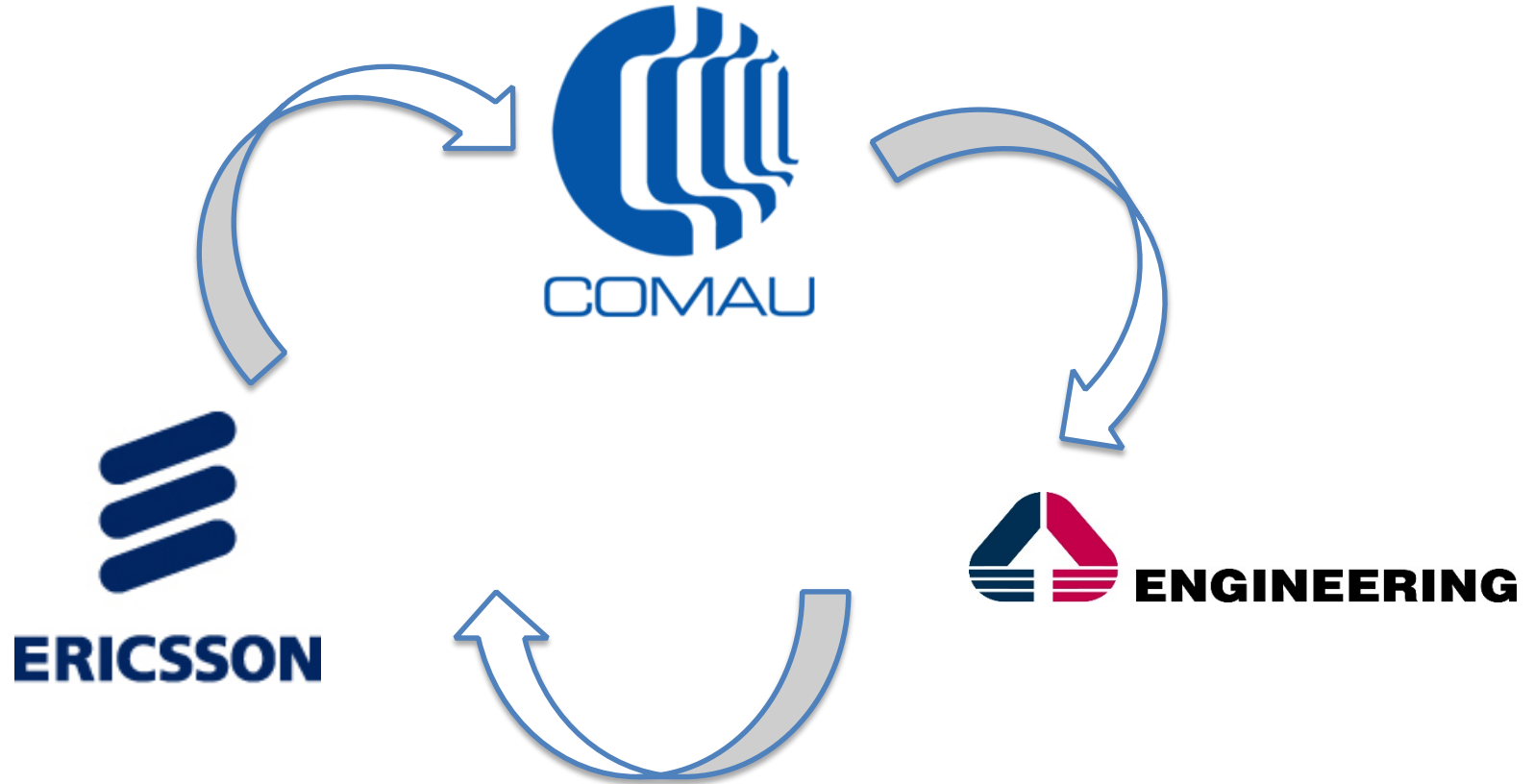
COMAU - SICK implementation







Industry 4.0 partners



Thank you

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