

REGION (COUNTRY): Emilia Romagna (Italy)

GOAL: The goal of SMILE project is to create a technological transfer between academia and industry, by supporting companies to **change business models** thanks to the **digitalization** of their operations and the implementation of **INNOVATIVE LEAN BASED PRINCIPLES** supported by **smart technologies**

<http://smile.italian-dih.eu>

📍 Campus of the University of Parma
Parma (Italy), 181/A G.P. Usberti St.

☎ +39.0521.905861

✉ smile-dih@upi.pr.it

TECHNOLOGY: Our focus will be on **Sensors, Cyber-Physical Systems (CPS)** and **Internet of Things (IoT)** technologies as a way to enhance manufacturing automation and **operation excellence**

ECOSYSTEM: Manufacturing firms operating in Emilia Romagna. The main focus is on **Make To Order SMEs of the mechanical and mechatronic district**

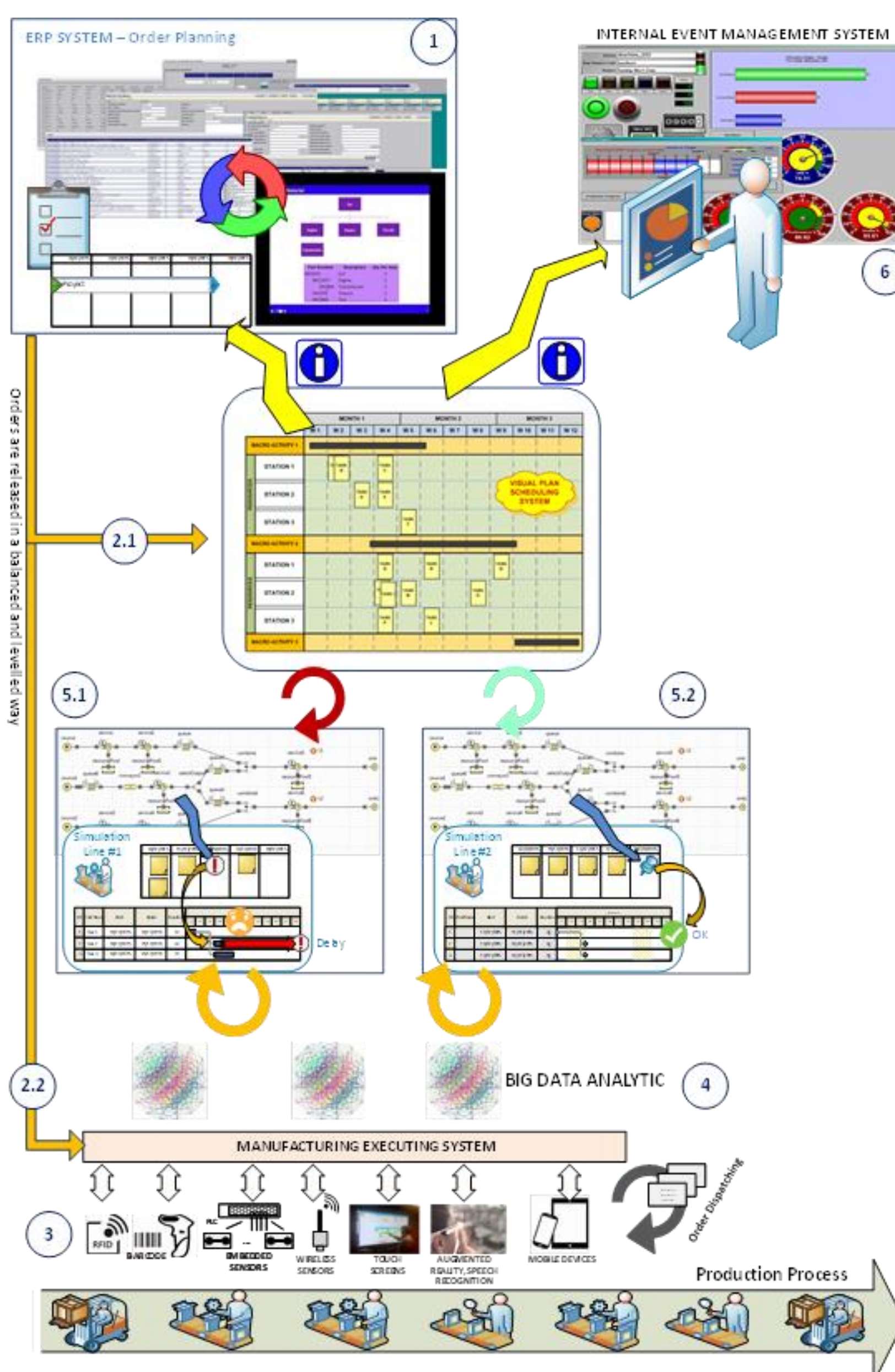
PROBLEMS: Level of product innovation is fairly good; yet **process innovation is low and operational efficiency is not satisfactory**. Also, investment in IT and the level of informatization is low.

VISION:

The achievement of waste free **Lean and Smart factories**, where the digital and the physical words are completely connected, data are always available and performance deviations can be monitored in real time and addressed immediately. In this **cyber-physical system**, people do not waste their time, but can devote themselves, completely, to **high-value stimulating activities**, delegating calculations and routine tasks to robots and computers.

MISSION:

- ✓ Show the importance of ICT to carry on product and process innovation;
- ✓ Support SMEs toward an Industry 4.0 status;
- ✓ Develop a fully integrated **Digitally Enabled Lean Toolkit** for operational excellence and performance optimisation.

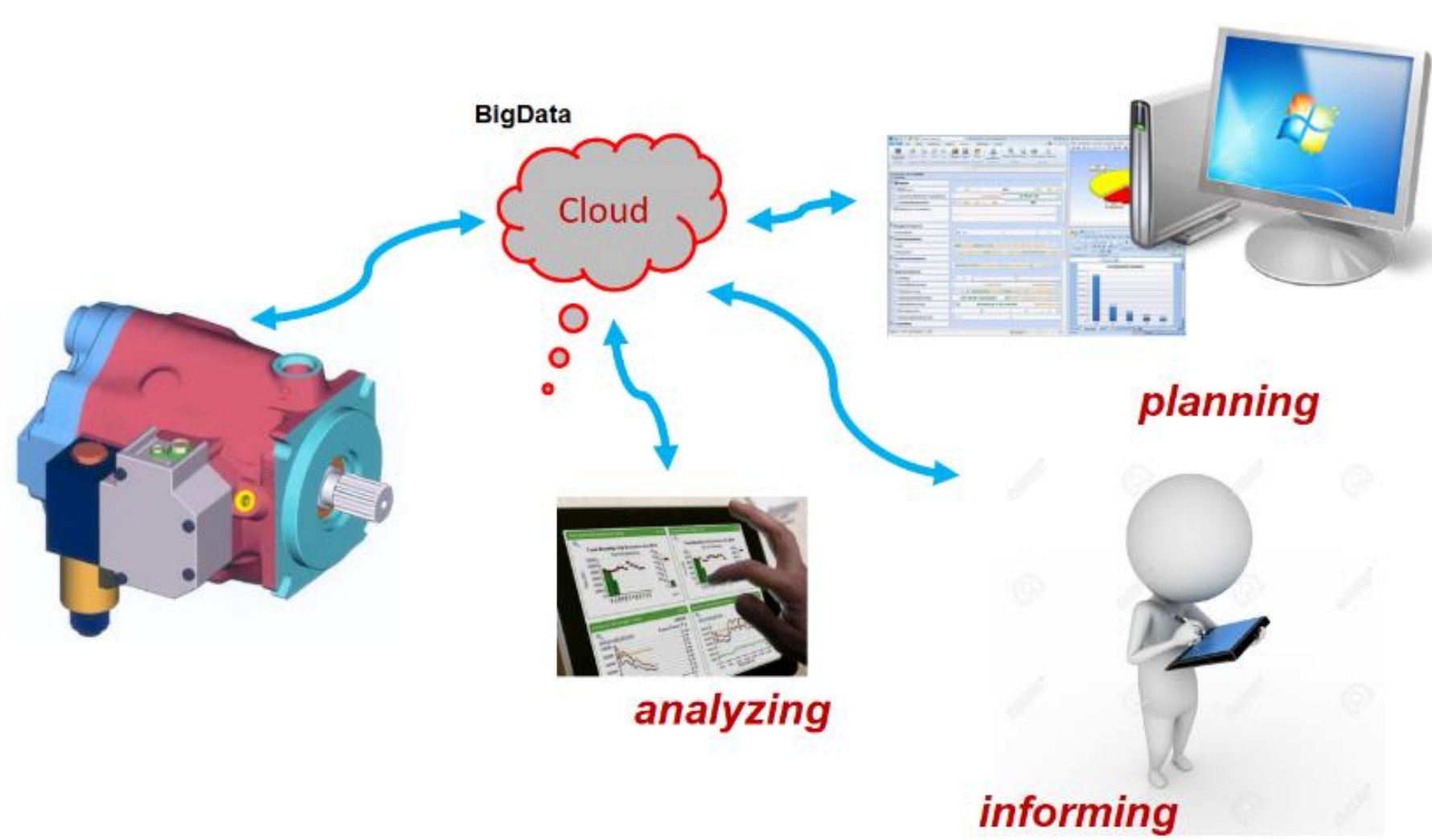


UNIQUE SELLING PROPOSITION:

Products and process innovation must go hand in hand; ICT technologies are fundamental but, if implemented alone, they may provide, at most, benefits in the short-medium term.

To get a long lasting competitive edge, ICT technologies must be combined with effective business models.

Lean Manufacturing may be a solution, provided that its implementation breaks away from traditional paper and pencil based techniques and relies on state of the art ICT solutions. **Digitally enabled lean is what we offer, a fully integrated «paper-less» paradigm for operation excellence in Industry 4.0 Companies.**



SERVICES:

- ✓ Observatory on key enabling technologies (KET);
- ✓ Observatory on industry 4.0 use cases;
- ✓ Collaborative & individual research on Digital Enabled Lean Toolkit;
- ✓ Digital Maturity Index (i.e. assessment of informatization level of the company) and digital roadmap development;
- ✓ Training, coaching and mentoring

USE CASES:

✓ **Smart Identification and Location Systems for Maintenance Activities (SISMA)**

Two smart prototype will be available:

1. the first for the **real-time location of maintenance operators** to safely manage all the maintenance activities (in particular the restart phases);
2. the second for the **real-time location of the working equipment** able to guide the maintenance activities allow to follow the correct sequence of operations and to check the use of correct maintenance equipment's.

✓ **Smart pumps for next generation hydraulic systems (SMART PUMPS)**

A smart pump will incorporate feedback of both displacement and pressure and features an on-board electronics (Smart Control Unit) and integrated sensors by means of miniaturized solutions, and innovative sensor technologies.

✓ **Total Just-In-Time: Lean in Eto companies (TJITLE)**

1. Development of an innovative Visual Planning Scheduling System (VPSS);
2. Scrumban boards for workload coordination and material flows synchronization;
3. Lean Toolkit Development and Integration.

✓ **Lean principles into Manufacturing Execution Systems (LEMESY)**

Development of a lean oriented innovative shop-floor vertical solutions for manufacturing companies that integrates:

- Traditional Material Requirements Planning;
- Lean-based Capacity Requirements Planning;
- Smart Manufacturing Execution System.