

Impacts



The application of the MAYA multidisciplinary simulation tools will bring to increased productivity in design and ramp-up

• **20% faster ramp-up**

Diverse simulation results composition and engines integration, empowered by the MAYA behavioural models, will foster unprecedented reliability and speed

• **time to manufacturing system optimization (through simulation) down of 20%**

MAYA reliable modelling of production flows and value streams will lead to a better understanding of the system. Together with the possibility to implement decision rules and control logics in the simulated environment, reliable modelling will improve resource optimization and efficiency, reducing the time to acquire such results

• **time to production down of 20%**

MAYA framework ensures that data are maintained and enriched in each manufacturing stage (digital continuity) and the CPS-based approach guarantees that a global state monitoring can be achieved flawlessly

• **achievement of common semantic understanding**

• **definition of open interfaces, data formats and protocols**

Consortium



SUPSI

SIEMENS



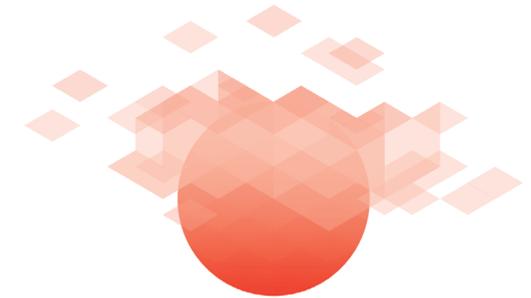
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THE FUTURE OF MANUFACTURING

MAYA



MULTI-DISCIPLINARY INTEGRATED
SIMULATION AND FORECASTING TOOLS,
EMPOWERED BY DIGITAL CONTINUITY AND
CONTINUOUS REAL-WORLD SYNCHRONIZATION

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The context



Europe is a world-leader in ICT for manufacturing and has a **leadership position in the field of simulation and forecasting technologies**.

The use of simulation for manufacturing is widespread in several sectors and **holds the potential to generate bigger return on productivity growth** than most other forms of capital investment.

The ground is indeed mature enough to **further rely on ICT advancements coupled with the CPS paradigm**, as a lever to increase productivity and competitiveness towards a reduction of “time to production” and “time to optimization”.

MAYA vision



MAYA aims at developing **integrated simulation methodologies and multidisciplinary tools** for the design, engineering and management of **CPS-based (Cyber Physical Systems) Factories**, in order to strategically **support production-related activities during all the phases of the factory life-cycle**, from the integrated design of the product - process - production system, through the optimization of the running factory, till the dismissal/reconfiguration phase.

MAYA finds complete validation in one of the most competitive, advanced and complex industrial sector in Europe, the **automotive industry**, where continuous simulation, for instance of flexible components or component forming, merges seamlessly with discrete processes.

Main Objectives



MAYA for Digital Continuity

To empower the ability to maintain the digital info available all along the factory life-cycle, despite changes in purpose and tools, allowing data to be enriched and used as needed in that specific phase.

MAYA for the Synchronization of the Digital and Real Factory

To support the convergence of physical world and virtual world, where the latter must closely mirror the first and where the former generates an unprecedented volume of data to be handled by the digital representation of the factory.

MAYA for Multidisciplinary integrated simulation and modelling

To empower the effective virtual validation of manufacturing equipment and systems prior to actual manufacturing, thanks to integration of models and simulation results from different domains.

Expected Results



- New semantic meta-data model for CPS-based factory representation
- Common language specification for behavioural simulation models

- Middleware devices for data acquisition and *in loco* processing integrated with MAYA CPS framework
- Standardized API for communication driver development
- NoSQL database system deployment for the storage of MAYA simulation models

- MAYA Simulation Framework for the real-time synchronization of multidisciplinary simulation engines
- High end tools
- SME-oriented tools

