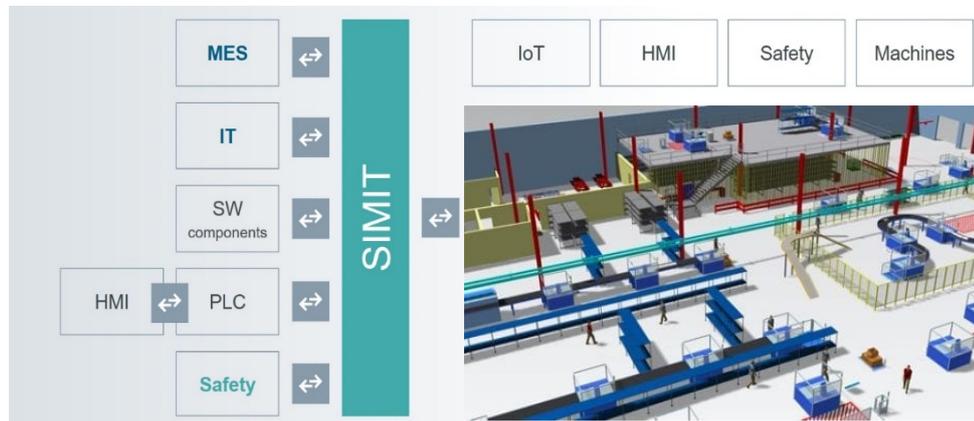


Master Thesis Project at AFRY



Title: Enabling digitalization with DES



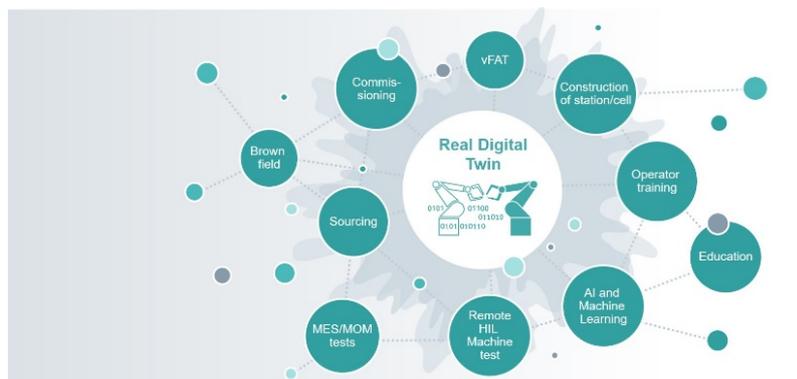
RDT is the digitalization key enabler for Discrete Manufacturing Industry.

Background

Virtual Commissioning is a rapidly growing field in manufacturing industry. The main issues are finding the right detail level and the life cycle management of simulation models.

AFRY's "Real-Digital-Twin" Framework combines several Siemens Digital Enterprise tools to create an emulated environment for seamless PLC programming within industrial Automation.

Siemens have developed industrial simulation and emulation software enabling the full emulation of the industrial control system and simulation of production flows.



Previous Chalmers master theses at AFRY and Siemens PLM have researched Plant Simulation as a tool for Virtual Commissioning, with the conclusion that a real time simulation platform and a new way of simulation modelling is necessary to take advantage of DES software for Virtual Commissioning.



Objective

The following thesis aims to investigate how Siemens Plant Simulation, a powerful tool for production engineering, fits within the framework of AFRY's "Real-Digital-Twin".

<https://afry.com/en/competence/real-digital-twin>

The practical part of the project will consist of creating a single simulation model with dual functionality, both real time RDT, and in a discrete event mode. The real time mode should be integrated with an existing RDT of a production line made by AFRY.

By combining DES and real-time emulation in one model it is possible to test the plant in all stages of a project process, from pre-planning, commissioning and production control!

Deliverables

- Simulation/Emulation of a production line in Plant Simulation.
- Verification of functionality of digital twin using PLC.
- Description of Modelling structure.

Prerequisites

- The project must be performed by two students.
- Both Students must have experience with Discrete Event Simulation.
- Both Students must have experience with PLC.
- Both students must have knowledge and interest in programming, preferably in C, C++ or C#
- The thesis will be performed at AFRY.

Contact

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Master Program: Production engineering, Systems Control and Mechatronics



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