

# Function-oriented Specification and Simulation in the Early Phases of Factory Planning

Keywords: functional requirements, factory planning, process planning, simulation

## Abstract

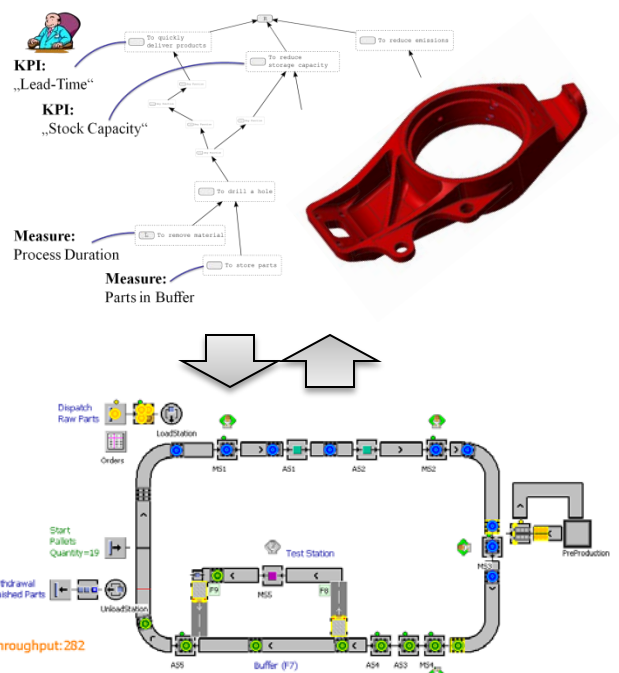
In this work, functional requirements shall be derived and formalized from a company's strategy and a product to be produced in a future factory. In a next step, solutions and corresponding simulation models shall be created and evaluated against the collected functional requirements and their degree of fulfilment.

## Background Information

In the context of designing the factory of the future, it is important to efficiently capture and manage the requirements as early as possible in the design process. This should be done in a way, so that suitable indicators for the assessing the fulfilment of the requirements may be assigned. In a next step, feasible solutions for their fulfilment have to be found and a corresponding simulation model for each solution may be created.

Simulation then helps to evaluate the solutions against the collected functional requirements and their degree of fulfilment. Therefore specific performance indicators have to be assigned to each functional requirement and then be calculated for each solution from the simulation results.

Based on the results, specification decisions may be taken i.e. a specific solution may be rejected revised or confirmed. In general, this work aims at setting up an exemplary case that shows the above principle.



## Workpackages

- get familiar with related literature
- collect functional requirements from a company's strategy and from a sample product in order to set up a function-oriented requirements specification
- create at least two different solutions which aim at the fulfilment of the functional requirements (i.e. the solutions shall be related to the manufacturing process of the sample product)
- evaluate the best solution with the help of suitable performance indicators and discuss the impact of the results on the requirements specification
- master thesis: elaborate a guideline how a specific solution may be modeled in Plant Simulation
- documentation, mid-term and final presentation

## Informationen & Administration

Daniel Politze, CLA F 21.2 – [politze@iwf.mavt.ethz.ch](mailto:politze@iwf.mavt.ethz.ch)

Noëlle Jufer, CLA G 19.2 – [jufer@iwf.mavt.ethz.ch](mailto:jufer@iwf.mavt.ethz.ch)

Jens Bathelt, CLA G 19.2 – [bathelt@iwf.mavt.ethz.ch](mailto:bathelt@iwf.mavt.ethz.ch)