



Undergraduate Project 2017-2018

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Project title: Manufacturing Process Modelling and Simulations

Background

Manufacturing is a key part of the economy. To remain competitive or become even more so, automation that supports innovation is also essential for the manufacturing sector. Advanced ICT supported manufacturing is currently gaining a lot of traction with initiatives such as Industry 4.0 in Germany, Factory of the Future in Italy, the High Value Manufacturing Catapult the UK etc. Part of this development is advanced coordination of manufacturing allowing for increased flexibility and reduced costs.

EU H2020 “vF Interoperation suppoRting buSiness innovaTion” (FIRST, <https://www.h2020first.eu/first/bin/view/Main/>) aims to provide new technology and methodologies to describe manufacturing assets; to compose and integrate existing services into collaborative virtual manufacturing processes; and to deal with evolution of changes. Under EU H2020 FIRST project, we propose a final year project, which is to model an existing manufacturing process as it-is, to design a new manufacturing process with smart devices included as to-be, and simulating both as-is as well to-be processes.

Project description

The project is in the area of process modelling. You need to identify manufacturing processes from the provided manufacturing process cases. You are required to use BPMN as process modelling language and Bizagi as a process modelling and simulation tool to provide the process models as well as the results of the process simulation. The final thesis includes forming research questions, providing analysis and modelling manufacturing process, reporting business simulation results, and reflecting the learning.

Project aims

- Mastering BPMN to model manufacturing processes
- Using business process modeller Bizagi business process modeller (<https://www.bizagi.com/en/products/bpm-suite/modeler>) for process modelling and process simulation
- Using a process simulation tool to show manufacturing process improvement

Artefact

- BPMN process models
- Manufacturing process simulation results
- Analysis of manufacturing process improvement

Evaluation

- Simulation results

References:

- [1] White, S.A., 2008. BPMN modeling and reference guide: understanding and using BPMN. Future Strategies Inc.
- [2] Bizagi. <https://www.bizagi.com/en/products/bpm-suite/modeler>