Prof. Dr. Jessica Rubart
Prof. Dr. Robert Mertens

Summer term 2023

Assignment

The assignment is to be worked on in groups of three students. In the assignment you will work on different steps of a software engineering process and produce different artifacts per step.
The assignment comprises all of the resulting artifacts in the context of a scientific document.
Please read all step descriptions before you start working as the selection of topics in each step influences further steps.

Step I

Select a business process you want to work on. Please try to select a domain close to the field of IoT. Before starting to work on any further steps consult with one of the professors. Then design the business process agreed upon and document it using BPMN as well as a textual description.

Step II

Derive two use cases and three user stories from the business process designed in step I. Write a use case specification for one of these uses cases based on the template used in the course. Write down two of the three user stories according to the INVEST principle.

Step III

As a research task, use ChatGPT as an alternative specification instrument in order to generate the second use case and the third user story of step II. Document the ChatGPT prompts/conversion you created.
Discuss chances and limitations of ChatGPT in this context.

Step IV

Design a domain model based on the identified use cases and user stories from step II. Please also take the business process from step I into account. Describe your main design decisions.

Step V

Design a system architecture of both software and hardware components. Iff appropriate, use (some of) the IoT patterns of the research article “Applying IoT Patterns to Smart Factory Systems” (see exercises folder in ILIAS) in your description. Describe your main design decisions.

Step VI

Based on the business process, use cases, user stories, domain model, and system architecture you have worked on in the steps above, choose a software development process model to develop the overall system and briefly discuss the reasons for your decision.

Last shipping date: September, 25th, 2023

Please upload your solution to our ILIAS workspace using the “Exam” folder.

Notes:

The tool *Enterprise Architect* (EA), which you might want to use for BPMN models, UML class or component diagrams:
You can install the tool locally from the .zip file in the ILIAS workspace (Exercises / Enterprise Architect / easetupfull152.zip). The following document in the ILIAS workspace describes how to install and license the tool:
https://www.th-owl.de/ecampus/goto_skim_ecampus_file_759716_download.html
You can also find videos and tutorials in the ILIAS workspace.