Reference: TF-Var
Topic: Evaluation of Methods from Variabilitymangement and Softwarequalityassurance
Course-Type: Seminar, Bac-Thesis, Master-Thesis
Start: As soon as possible
End: To be defined
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Background:
Information Systems (IS) more and more shift from monolithic to service-oriented, or even micro-service oriented, architectures. In such systems, many times sub-systems, e.g., features represent the building blocks for user-centric functionality, which are a source for variability. For example, applications like Runtastic, depending on your subscription, can turn on or off optional features dynamically.

Handling the variability of such systems is a research field that is of growing interest in recent years [1]. Several approaches for Variability Modeling and Management exist today. E.g., the figure below shows a model of the functionality of a cell phone.

However, Cyber-physical (Production) Systems, which combine modern communication and computation technologies with smart physical devices building ubiquitous environments, introduce additional complexity to Variability Modeling due to their heterogeneous nature [2]. E.g., in CP(PS the variability of products, the processes manufacturing these products and resources, like robots, used in these processes, needs to be modeled.

In the context of a conceptualization and development of a method for modeling the often heterogeneous variability in CP(PS this topic aims at the development of a concept and implementation of a prototype for a product configurator.
Tasks (depending on type of seminar/thesis):

- Identification and evaluation of literature and methods from variability management and modeling
- Identification and evaluation of literature and methods from Cyber Physical Production Systems
- Implementation of prototypes
- Evaluation of concepts and prototypes

Expertise:

For this topic a set of skills is recommended.

- Good skills in English (mandatory)
- Good programming skills
- Interested in Variability Modeling
- Interested in Cyber Physical (Production) Systems
