



VOLKSWAGEN

AKTIENGESELLSCHAFT



Interdisciplinary Project (IDP)

Creating a Use Case Database System, an information and management tool

Background:

The Volkswagen Data:Lab is a future oriented, data-driven innovation hotspot for the Volkswagen Group brands, markets and business departments. It is building Use Cases across the whole automotive value chain in the areas of Big Data Analytics, Artificial Intelligence, Machine Learning, Connectivity and Internet of Things. As a technology scout and think tank it showcases what may be possible. The goal is to leverage the value of Big Data, Data Analytics and Machine Learning for Volkswagen Group through innovative prototyping. An experienced internal team of specialized Data Scientists closely collaborates with external partners. The extensive innovation network consists of Group internal teams, experts from leading technology providers, research facilities and universities as well as carefully selected technology start-up companies from all over the world.

We are offering:

- Insights into the workplace of innovative and future-oriented technologies of tomorrow's automobile industry
- Fair remuneration for the statutory minimum wage
- Relaxed and open start up atmosphere (Literature, kicker, relaxing rooms, fruits and smoothies)

Project description:

Due to an increasing number of projects in the Volkswagen Data:Lab and advanced requirements of the Volkswagen Group board the need of a software and management tool has arose. The task is to build up a database (Use Case Database System) and a related front-end. Based on this Use Case Database System the board of the Volkswagen Data:Lab is able to get access to core information of every project. Further they can create their own reports regarding to their individual needs via Qlik Sense or Tableau. By now the standard reports have to be created manually on a weekly basis, this should be fully automated during the project. For the implementation of this project we plan to work in a team with students that fulfill different skill sets (you only have to fit into one role):

- Implementing and building up the database
 - ❖ Advanced skills in database languages (e.g. SQL)
 - ❖ Oracle RDBMS is planned

- Designing and creating the graphical user interfaces
 - ❖ Advanced skills in web design (e.g. frameworks like: angular.js, bootstrap, react.js)
 - ❖ JavaScript will definitely be required

Project should occur as an agile software development based on Scrum, which is an iterative and incremental agile software development framework for managing product development. It defines a flexible, holistic product development strategy where a development team works as a unit to reach common goals, challenges assumptions of the traditional, sequential approach to product development, and enables teams to self-organize by encouraging physical co-location or close online collaboration of all team members, as well as daily face-to-face communication among all team members and disciplines involved. The lecture “Complex Scheduling in Manufacturing and Services; Models, Methods and Applications” (0000001890) serves additionally, as there will be taught advanced techniques of project planning. The focus of the lecture lies on scheduling project activities. These techniques will be used within the IDP.

Project Timeline:

The following timeline is meant to provide a guideline for keeping track of the projects progress:

- **Phase 1** (CW 14):
Get familiar with Volkswagen Data:Lab, internal processes, IT infrastructure, relevant data and reporting needs.
- **Phase 2.1** (CW 15): Define a conceptual design for the front-end that includes features for a better management of the project resources (students have the opportunity to include their own thoughts and visions).
- **Phase 2.2** (CW 15): Define a conceptual design for the back-end that is compatible with the existing IT-infrastructure of the Volkswagen Data:Lab.
- **Phase 3** (CW 16 – CW 22): Creation and implementation of the conceptual design as defined in Phase 2.
- **Phase 4** (CW 22 – CW 24): Testing of the developed Use Case Database System as defined in Phase 3 and implementing the already existing data to go live.
- **Phase 5** (CW 25): Documentation of the changes for further development.
- **Phase 6** (CW 26 – CW 28): Creation and implementation of a dashboard for analytics and reporting issues based on the built up Use Case Database System (only if time phases 1-5 are in time, otherwise phase 6 as a buffer).
- **Phase 7** (CW 29 – CW 30): Preparation and exam on course “*Complex Scheduling in Manufacturing and Services: Models, Methods and Applications (WI000541, WI200541)*”.

In case we have aroused your interest, please provide us with meaningful documents.

Contact person TUM:

Alexander Döge

Email: alexander.doege@tum.de

Telefon: 089 / 289 25 163

Contact person Volkswagen Data:Lab:

Robert Willi

Email: robert.willi@volkswagen.de

Telefon: 0152 / 229 951 69