Developing Applications for the Internet of Things

Motivation

The *Internet of Things (IoT)* or *Internet of Everything* describes the development towards a more connected world. Various objects or "things" are being equipped with sensors or similar technologies and thereby enabled to send information about their current status. This information creates opportunities for completely new applications - from smart homes to the monitoring of complex machines.

For example, the continuous observation of sensors built into Formula 1 cars or airplanes allows it to detect anomalies early on, foresee undesired behavior, and thereby prevent failures. Other use cases for IoT can be found in the area of consumer products. The "quantified self", i.e. the continuous monitoring of your personal habits, or new types of smart devices like washing machines allow companies to build closer long-term relationships with their customers and provide personalized services on demand.
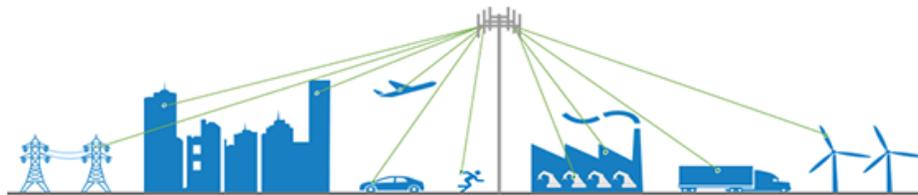
Consequently, IT systems have to handle and process multiple event streams coming from different sources. Furthermore, the large amounts of data that are generated and processed have to be stored efficiently and analyzed in a meaningful way.

Goal

During the project we will work on a realistic IoT scenario with various data streams. The project aims to develop and implement an application that will allow to extract relevant information from a

massively large set of recorded events. This may include the identification of important signals or the prediction of trends. Working on that objective includes collaborating with an industry partner and building a prototypical application using state-of-the-art technology within the area of data streaming - particularly SAP HANA.

Other interesting and challenging research areas might emerge while working on the project. These topics will be studied during the project and can be a starting point for future research.

External Partner

The project will be executed in cooperation with SAP SE and potentially further external partners. We expect a close collaboration and visits of partner sites.

Setting

The project team will work on newest server hardware with in-memory and multi-core technology provided by the Enterprise Application Architecture Laboratory. The laboratory builds the foundation for activities with in-memory databases and enterprise applications at our group. Additionally, the project will include working with data of real customers and massive amounts of data.

Skills

During the project you will learn the basics of data streaming systems and in-memory databases and how those concepts differ from traditional disk based systems. You will get insights into SAP technology and how businesses use their transactional data to support decision making. We do not expect you to have prior knowledge about databases or enterprise systems, although it could be helpful.

Group Structure and Project Start

The team will consist of 6-8 students. Project start will be October 2015.

Contact

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