Smart Campus data system and analysis

Schultz, Ole; Blaszczyk, Tomasz; Pedersen, Hakan Yurdakul; Yusuf, Abdirazak Mohamud

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Ole Schultz, osch@dtu.dk, Tomasz Blaszczyk tomb@dtu.dk, DTU Diplom, Section for Informatics, Center for Bachelor of Engineering Studies, Hakan Yurdakul Pedersen, Ms. Stud. hakan552_5@hotmail.com, Abdirazak Mohamud Yusuf, Ms. Stud., Abdirazak3@hotmail.com, DTU Computer Science

Introduction
Logging data as energy on sub-levels, indoor climate and weather can be the foundation for changing the daily process of operating buildings and processes more sustainable. Building management system samples a lot of data, but these are proprietary and access is not possible for students and researchers. Therefore the Campus facilities are equipped with low-cost IOT sensors. Here and at the conference we address these questions: How to utilize the energy data and indoor climate data in a Big Data analysis platform for improving a sustainable Campus? How can the small scale enterprises be involved together with students?

The system
Right now we are logging data from: Parking smart light, electrical meters, weather station, and indoor climate meters. At the conference we present the system shown in the figure below and examples on non-intrusive data loggers, some examples on analysis which can be done by zeppelin notebook[1] [2]

![Diagram of the system](image)

Last semester, three Bachelor of Eng. Students [3] configured the platform and developed the back-end and front-end and the sensor databases as well. The sensors were developed by the authors (osch, tomb).

This work and platform has a lot of potential and purpose for corporation with the industry and doing CDIO-projects. The system fits with the monitoring and check in energy management in ISO 150001 described in [4]. Currently, we are partner in Sustainable Production in WP41, funded by The Danish Industry Foundation, where the system is a part of the deliverables

References: