13) IoTandCI - Energy Consumption Prediction Based on IoT and CI techniques; **PAUFEX Prešov, s.r.o,** Slovakia

EXPERIMENT DESCRIPTION

The aim of IoTandCI experiment was mainly concentrated on solutions of two problems:
1. To design and validate energy consumption prediction models with improved prediction accuracy.
2. To integrate monitored and predicted data into MIDIH Platform with access for researchers in the field of energy consumption optimization and also for end users in companies supplying heat.

The whole experiment in energy consumption prediction was based around the data obtained through the monitoring system of respective heat sources. This included a number of heat sources of various purpose the consumption profiles of which differ considerably (e.g. school, railway stations, apartment houses and so on). Of these, we were mainly interested in daily electrical energy and gas consumption with the possibility of prediction in horizon of several days (possibly a week).

TECHNICAL IMAPCT

The experiment was so far concentrated on the analysis of time series characterizing the gas consumption in three different types of non-residential buildings which were used as a starting point.

It has been increased the number of monitored processes, and the improved technical infrastructure of the company has allowed an increase in the number of monitored heating processes by at least 2 times, and by using a combination of advanced signal processing techniques and CI modelling approaches the prediction accuracy is improved by more than 5%.
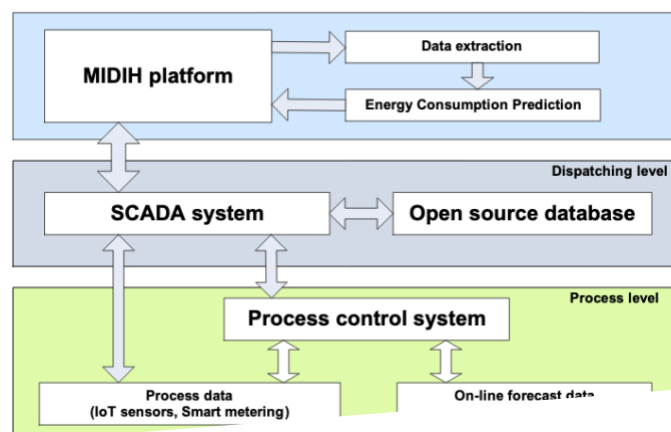
ECONOMICAL/BUSINESS IMPACT

The problem of energy consumption prediction in buildings has become a very important issue with regard to energy management and planning as well as to possible reduction of environmental impact. The essence of the experiment is designing and verification of the prediction model of energy consumption at different loads based on data obtained by on-line monitoring (using IoT devices) of the heat sources for heating different types of facilities (e.g. schools, public buildings).

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