

## Master-Thesis

### Prov. Aufgabenstellung

Titel:	<b>Analysis and optimization of a data acquisition tool for the VAT Smart Valve project</b>
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### Overview

In the Smart Valve Project VAT is enabling products (transfer valve, pinlifter, control valves, ...) with sensor capabilities. These sensor values allow for the development of added value services such as predictive maintenance, valve degradation information, process optimized product handling, etc.

Typical sensor sampling rates are not faster than 1Hz – 10Hz. For detailed analysis on valve elements this is far too slow. VAT is trying for a new approach and introduces  $\geq 1000\text{Hz}$  sampling rates which would allow advanced transient and vibration analysis. Thus the proposed data acquisition system has to be highly optimized in respect to edge computing and “pre-math”, employed IoT protocols and first level message broker setup, and the corresponding database setup

### Issues

- What minimum requirements does such a system need on OSI layer 2-4?
- A comparison of layer 4 protocol types, in particular IoT related ones.
- Which parameters in the whole setup, in particular the protocol type and its data structure, has the most impact on the system?
- How is the throughput rate influenced by introducing data compression or encryption?

### Goals

- A simulation tool that allows forecasts on expected sampling rates, protocol type related data package setup and necessary throughput rate of the whole system.
- The influence of edge computing on the throughput rate.
- The influence of data compression and encryption on the data transfer.
- A simulation based on the Smart Valve and the evaluation of an optimal system setup.

## Termine

- 7.12.2018 Abgabe definitive Aufgabenstellung
- 9.8.2019 Abgabe Master Thesis
- 19.-24.8.2019 Prüfung / Präsentation

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