

## **HiWi/WiHi/Master/Bachelor Thesis:**

### Optimization of libiec61850, an open source implementation of IEC61850

#### **Context:**

Nowadays more and more communication and control is done via Ethernet. This trend is even present in substation control where communication is standardized by IEC61850. Since centralization often, yields in an optimization of needed resources, communication that was processed in the substation will, in the future, be processed in a cloud. This changes the requirements to the software implementations of the protocol stack. Bottlenecks, which were irrelevant when communication was in a substation will become essential when the same protocol stack is used in combination with cloud services.

The topic of this thesis is to optimize an open source implementation (libiec61850) of IEC 61850. The focus is on optimization of the data flow inside libiec61850, with respect to minimal changes to libiec61850. The outcome should be a merge of the modified libiec61850 into the official GitHub repository. The results should be evaluated with respect to the original implementation but also a third party implementation which is available at the institute.

#### **Your tasks:**

The major tasks involved in the thesis are as tabulated below.

- Optimize libiec61850 with respect to speed and processor allocation
- Define suitable benchmarking scenarios
- Setup a reference implementation of IEC61850
- Compare the results for the different optimizations

#### **Profile:**

We are looking for students with strong programming skills in C\C++. Basic knowledge of Linux is an advantage (OSI layers).

#### **Contact:**

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