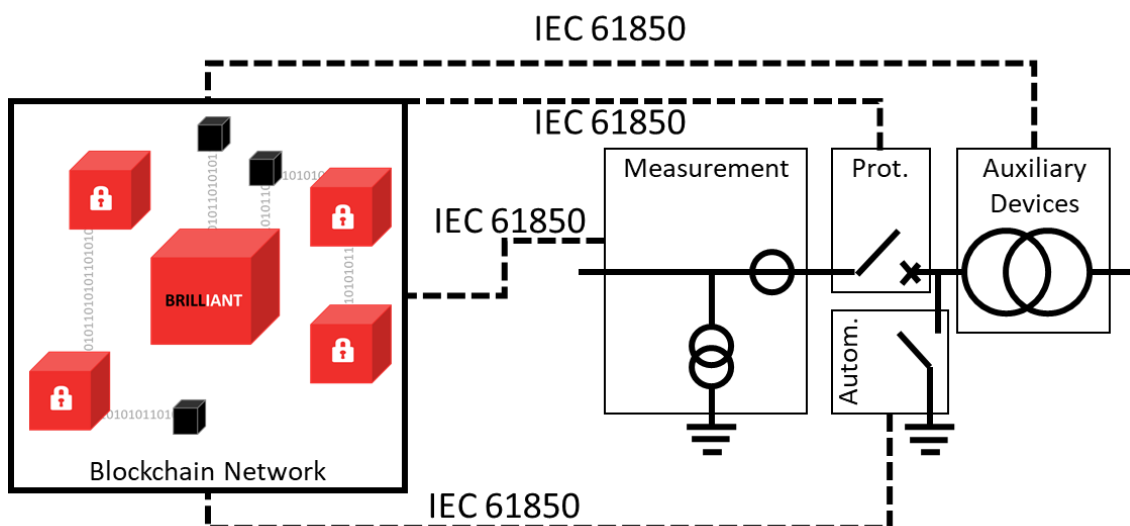


Master-Thesis:

IEC61850-enabled blockchain development for power system automation

Context:

The project consist in the development of a procedure to share monitoring, control and protection data through smart contracts on Blockchain in order to improve the security, interoperability, and enable power system specific applications running on Blockchain. The procedure is meant to communicate trusted peers (IEDs) in a distributed network to share power system information by making use of the IEC61850 standard in order to securely operate critical elements of the network, notarize critical operations and keep the track of the topological changes along the network by registering them into the blockchain. As a result we expect to remotely manage IEDs, transmit and process data within a Smart contract, and control some devices states by sending GOOSE/MMS commands to physical devices.



Your tasks:

The student is expected to work on a Virtual Box Linux environment where it should be developed a container application based on JavaScript (Node.js), which will be in charge of controlling the Blockchain network behavior, while in C or Python to manage the IEC61850

libraries for the communication with power system devices. Finally, the development has to be tested within a simulated environment.

On this project, you expect to find:

- Blockchain technology in new contexts
- Cryptographic algorithms
- Docker containers
- Distributed Computing
- Consensus Algorithms
- C,C++
- Python
- JavaScript
- IEC 61850 standard and libraries
- Programming and Automation concepts

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