RWTH AACHEN UNIVERSITY

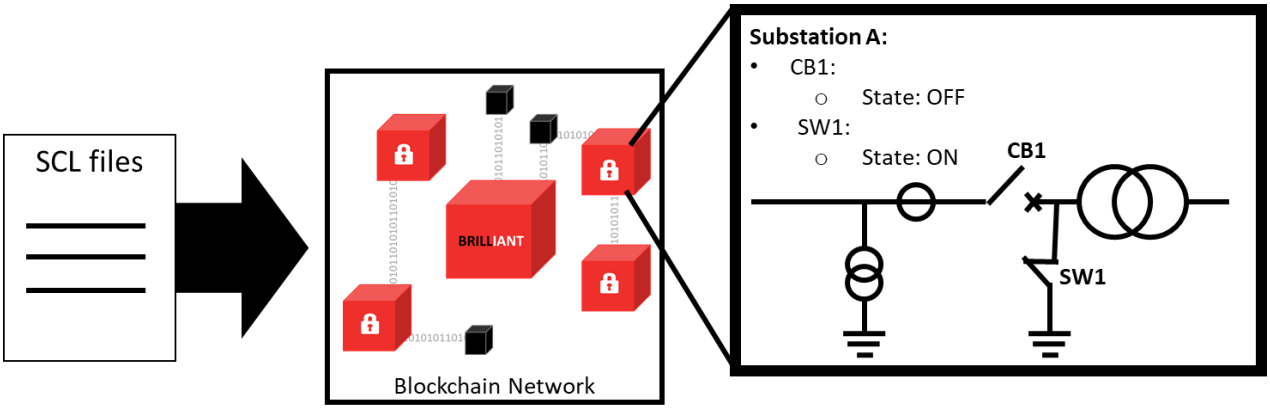
E.ON Energy Research Center
ACS | Institute for Automation of Complex Power Systems

Master-Thesis:

Automatic network construction and real time device states tracking based on Blockchain and IEC6150

Context:

The project consist in the development of a file processing and management system for the construction of a virtual model of the network, upload parameter settings by making use of IEC 61850 SCL substation virtualization files. The idea is to feed the blockchain with IEC61850 Goose and MMS messages, so, by following the transactions evolution within the blockchain, we expect to use this information to update the network topology model in a real-time basis. The security and information access will be managed with Smart Contracts.



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 reading the information present within the SCL files provided by the user. Finally, the development has to be tested within a simulated environment. IEC61850 communications transactions is out of the scope of the thesis, nevertheless, the model should be enabled to update the information regarding the state of its components.

On this project, you expect to find:

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

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