

## ELECTRA REX

### A Researcher Exchange Programme for Smart Grids

European Liaison on Electricity Committed Towards long-term Research Activity Integrated Research Programme

# HOLISTIC MODELING OF WEB OF CELLS USING SGAM AND USE CASES

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Within the first exchange of OFFIS and DTU, one particular aspect was on the **coordination of the individual vocabularies from automation, ICT, control systems and electrotechnology**. Even though different basic modeling techniques existed before the project, one issue is the applicability of the existing tools like SGAM from the M/490 mandate for the modeling of SG solutions and the IEC 62559 intelligrid template for use cases to the green field approach of ELECTRA. Basically, those methods were defined to properly model solutions for the energy transition to be derived from the existing power system and its control structure. Based on the greenfield approach by ELECTRA, where control strategies for a highly distributed web of cells approach are being developed, the granularity has to be refined as well as the applicability of the solutions must be taken care of. **The existing methods were not pre-determined to be used in ELECTRA at proposal time**. Therefore, individual methods and tools have been used in the work packages. **Currently, use cases are being developed in accordance with the 62559 and a customized template which has been developed in the first exchange**. This led to new labels and tables in the template. In addition, **actors lists and glossaries were defined for the new customized Use Case Management Repository (UCMR) in ELECTRA**. Therefore, the first step of a holistic application of the requirements elicitation chain for based on standards could be transferred to ELECTRA. **The text descriptions to model controller conflicts and control loops were defined**.

The next step for ELECTRA has to deal with **an evaluation of the suitability of SGAM** as a high level reference designation model **for the very low-level use cases of distribution automation** in order to **find out of**

**the granularity** of the axis etc has to be changed or adopted. In addition to the **controller conflict analysis, overall reliability of the web of cells architecture must also be examined with a special focus not only on safety, but also on ICT security** as defined in the WP 4 of ELECTRA.

In the first review meeting, the overall deliverables were accepted by the reviewers but lacked proper use cases and the security analysis was deemed to be "shallow". Based on the new use cases documented in 62559, we want to enhance the the existing deliverable with a security analysis conducted on the use cases transferred into the SGAM. In addition, a deliverable from OFFIS in a later stage will built upon this in order to find out if a **holistic use case /SGAM method would also fit the TOGAF ADM cycle**. OFFIS has extensive knowledge about the **NISTIR 7628 for SG security analysis**. Within the exchange, we are going to **apply this method to ELECTRA use cases** in the WP 4 led by VTT. In addition, we can coordinate the WP 4 step T4.2.3 on **modeling the information and function layer** in SGAM for ELECTRA.

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