

SINERGIEN Research Project (Simulation neuer Energienetze [Simulation of New Energy Networks])

GEFÖRDERT VOM



Bundesministerium
für Bildung
und Forschung

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Partners:

- ProCom GmbH (Aachen), Coordinator
- E.ON Research Center ACS (RWTH Aachen University; Aachen)
- E.ON Research Center FCN (RWTH Aachen University)
- Department of Theoretical Information Technology (RWTH Aachen University)
- regionetz GmbH (Eschweiler), associated partner
- Westnetz GmbH (Dortmund), associated partner

Title:

Design and development of a specialized interface for integrating commercially available simulation tools for the Smart Grid Architecture Model (SGAM). Creation of a platform for computing cross-SGAM simulations of operational and investment scenarios.

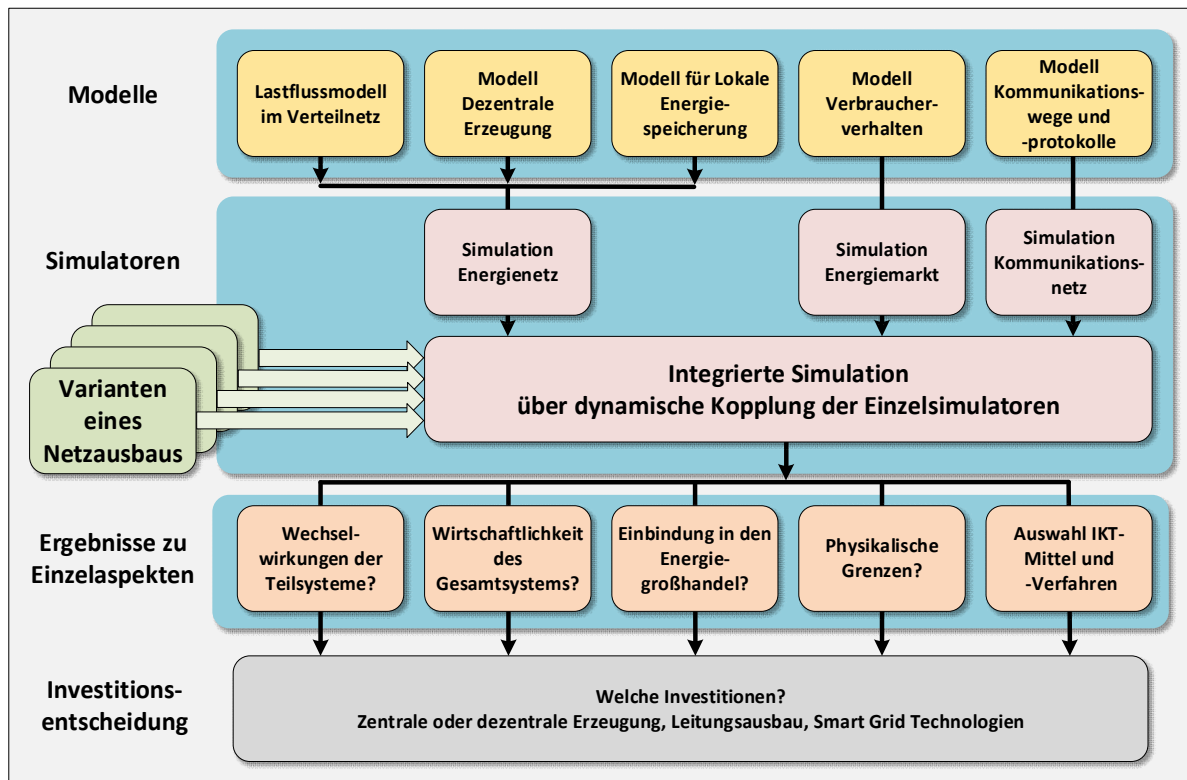


Fig. 1: Elements of the simulation environment

Project objectives:

The objective of SINERGIEN is to design a simulation platform that can map coherent, quantitative models of sustainable smart grids at the distribution-network level. This would provide a tool with which the entire value chain of generation, trading, distribution and consumption could be modeled, and the technical and economic relationships could be shown across all levels. Using such a simulation environment, it would be possible to identify economic and technical risks early in the design and review stage when planning investment in smart grids.

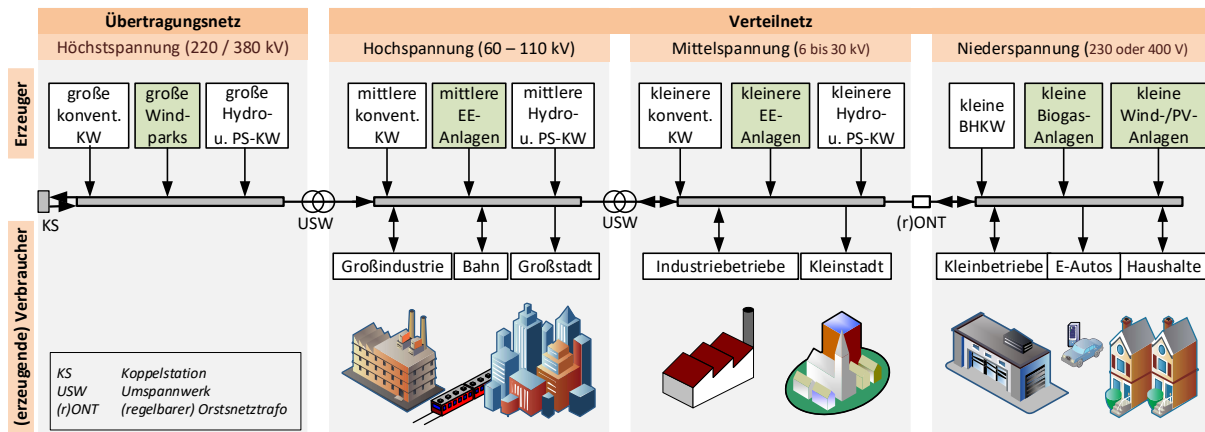


Fig. 2: Elements of the distribution-network level

The SINERGIEN research project is in principle based on the layer model of the Smart Grid Architecture Model (SGAM). Existing tools for modeling and simulating energy networks, energy markets and communication systems are linked through a common interface. The currently available simulators for power networks make it possible to examine individual aspects of network planning or network operational management in an isolated manner. However, they do not take into account the constraints set by adjacent or higher/lower-level contexts, such as market regulations or restrictions in communications systems. With the integrated perspective of SINERGIEN, the transparency obtained should make it possible to reduce any existing barriers to investment, and ultimately simplify and accelerate the conversion to smart grids.

Objectives of ProCom GmbH:

Since the BoFiT integration platform available from ProCom GmbH in principle allows for the inclusion of additional processes, it can be used as a unifying element for the advanced approaches and methods in this project. The standardization of the modeling language required for this will be based on the existing standards (e.g., CIM). An essential subgoal for ProCom GmbH is to map this overarching modeling language in a correspondingly massively extended ontology. Following on from the research project, there will be a gain in expertise that will put ProCom GmbH in a position to create software solutions of a significantly broader scope for distribution network operators based on the extended BoFiT ontology. At the same time, a proof of concept will be investigated using the additionally planned integration of the project partners' computing cores, while the direct involvement of distribution network operators will ensure that the issues are guided by specific application cases.