

AIT Austrian Institute of Technology

your ingenious partner

Sim Tech Labor and the EU NoE DER Lab

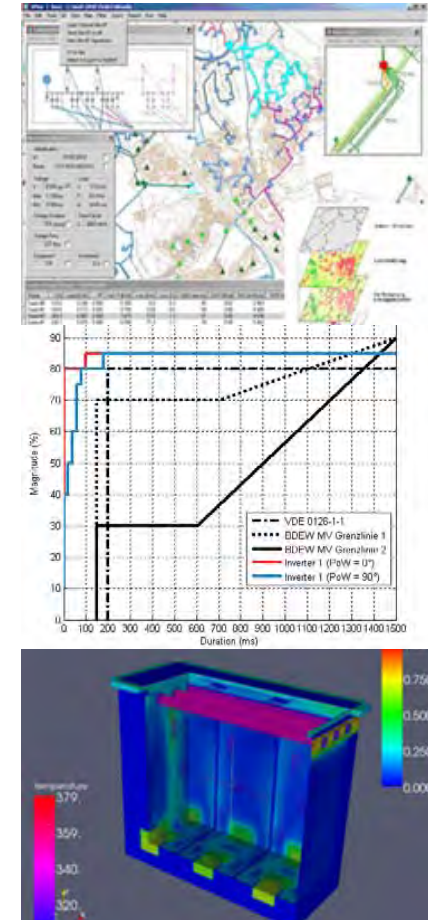
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AIT Energy Department

smart grids reserach @ AIT Energy Department

- Numerical simulation of the electricity networks on a *Power System* level for analysis, operation, management and planning of both distribution and transmission networks.
- Real-time simulation for the *interaction* between the Power System and selected network components using power-hardware-in-the-loop methods.
- Development of simulation-based development tools for rapid-prototyping and model-based diagnosis of network *components*.



European Laboratories for Distributed Energy Resources (DER)

EU Network of Excellence:



- 11 networked EU state-of-the-art Laboratories for Testing & Verification of Concepts
- Quality management leading to new EU standards & certification



Distributed Energy Resources Research Infrastructure DERri (EU FP7)

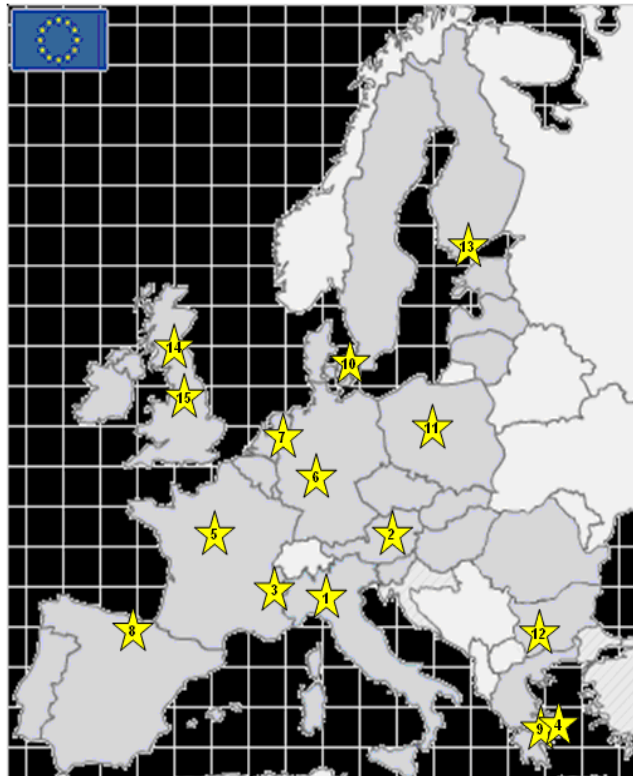
- Project goals:
 - Three Joint Research Activities:
 - Joint Test Facility for Smart Energy Networks with Distributed Energy Resources (JaNDER)
 - Filling the gaps in testing and characterization methods for DER power components
 - Real time simulation environment and parameter identification for power systems
 - User Access to a unique portfolio of important European Laboratories in the field of DER, focusing on integration of different types of DG equipments and their control, storage technologies, Demand Side Management etc.

Distributed Energy Resources Research Infrastructure



DERri

Next Call for User Access: June 1st – Sept. 30th, 2010



Get access for testing, training and research at the infrastructures of the following DERri partners:

- EDF France
- KEMA Netherlands
- Labein Spain
- NTUA Greece
- IWES Germany
- ERSE Italy
- CRES Greece
- AIT Austria
- RISOE DTU Denmark
- VTT Finland
- TUS-RDS Bulgaria
- CEA France
- USTRAT UK

Distributed Energy Resources Research Infrastructure

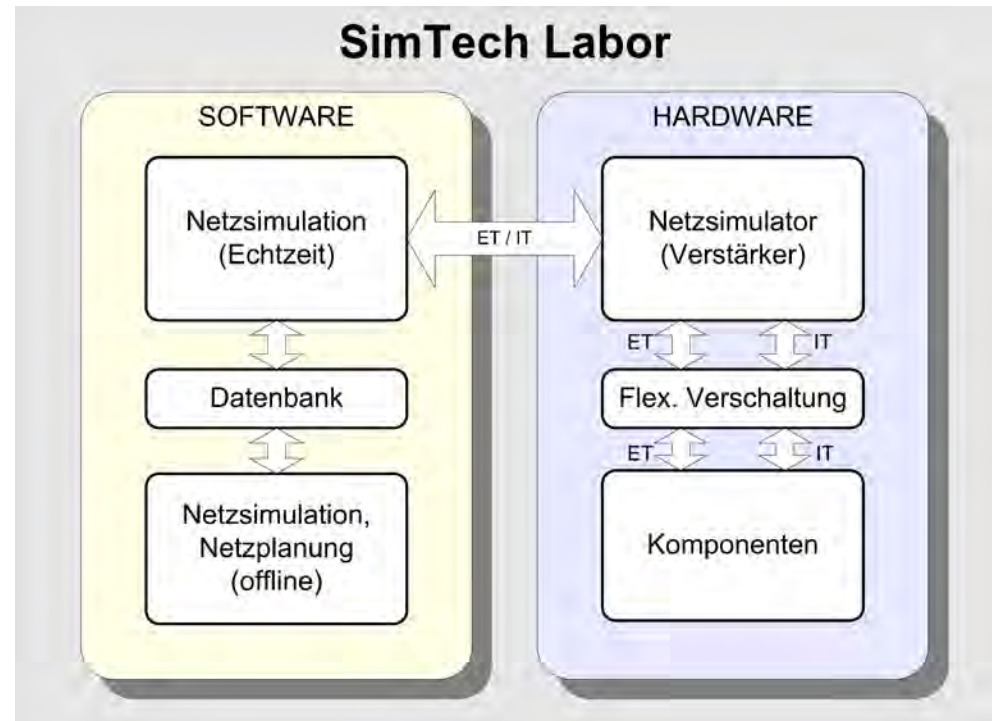


why HIL for active electric distribution grids?

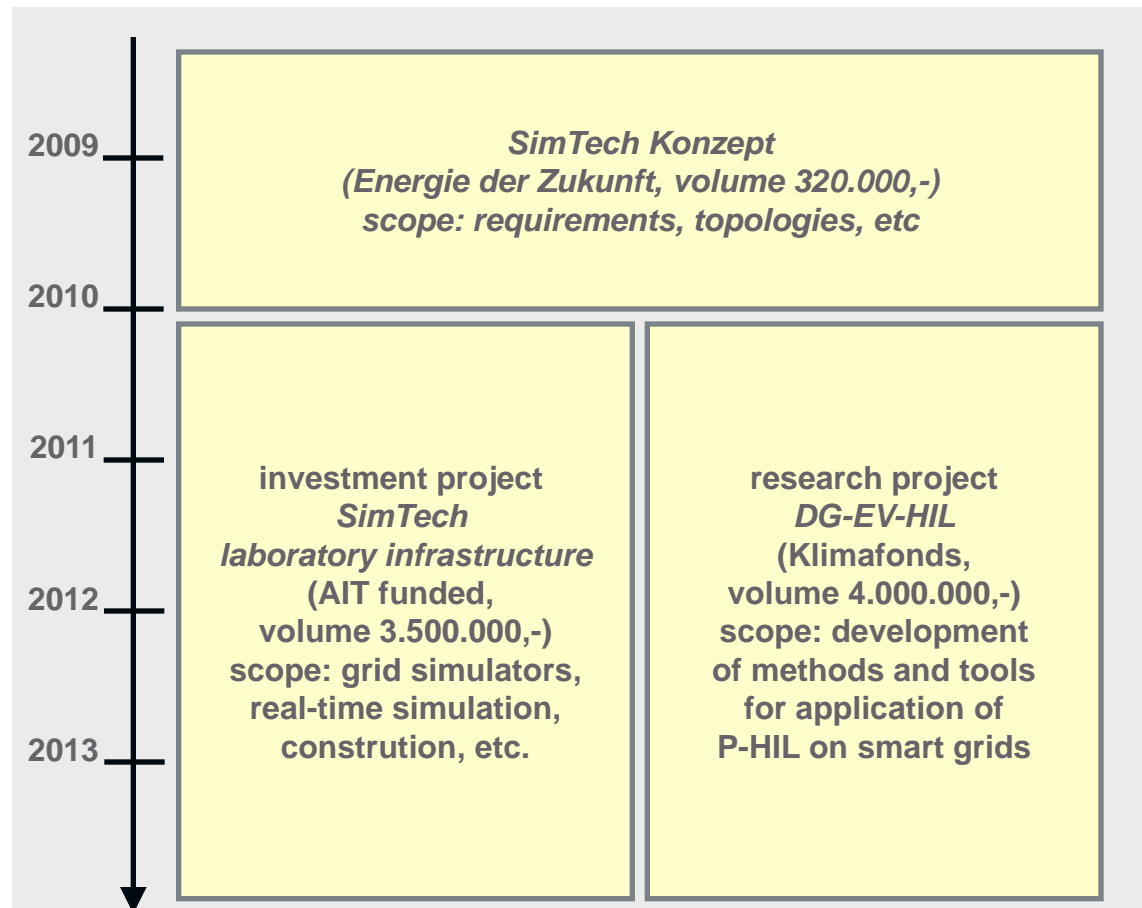
	<i>passive grids</i>	<i>active grids</i>
<i>known behaviour of network components</i>	numerical simulation, experimental investigation	numerical simulation
<i>unknown behaviour of network components</i>	experimental investigation	P-HIL

scope of the SimTech Labor

- off-line network simulations
- component tests
- system studies:
 - interaction of a specific components with a simulated grid (P-HIL)
 - interaction of a control or protection device on a simulated grid (C-HIL)
 - identification of simulation model for off-line simulations



smart-grids P-HIL @ AIT



research infrastructure to be installed (AIT tech-base)

- grid simulator (amplifier) capable of real-time operation for AC (0–480 V, 0.7 MVA, 5 kHz bandwidth)
- arbitrary I-U curve DC source
- computer cluster for real-time simulation
- co-simulation of communication, control and protection tasks
- climatic controlled test chamber
- instrumentation, sensors, SCADA system
- energy supply und distribution, constructional integration in existing 120 MVA high-power laboratory

impact on international positioning of AIT Energy Department

- unique research infrastructure
- strengthening of the industrial location Austria
- participation in mayor international research projects related to smart grids
- gaining attractiveness as a employer for high-level scientists
- mayor contribution to scientific excellence