The purpose of the Smart Grid LAB is to test active control processes in the smart grid and all required functionalities under real-world conditions.

The scenarios serve to provide the basis for deriving answers to a wide range of questions:

- ? How can the power grid be stably controlled on days with low electricity generation when large numbers of customers want to charge an electric vehicle?
- ? How can the grid be stabilised when there are outages of dynamic elements (e.g. storage system)?
- ? To what extent can dynamic grid elements compensate for peaks and continuous loads?
- ? What happens when key measurement and control systems are disrupted?
- ? How can cyber resilience be guaranteed?

Contact partners

Darmstadt University of Applied Sciences, EIT Department
Prof. Ingo Jeromin
ingo.jeromin@h-da.de
+49 6151 16-30053

Ingenieurbüro Pfeffer GmbH
Matthias Pfeffer
matthias.pfeffer@ipi-online.de
+49 6074 8759-20

JEAN MÜLLER GmbH
Robert Rohde
r.rohde@jeanmueller.de
+49 6123 604-210

QGroup GmbH
Ulfilas Schröder
u.schroeder@qgroup.de
+49 69 175363-040

Tractebel Engineering GmbH
Brandi Gunn
brandi.gunn@tractebel.engie.com
+49 6101 55-1916

House of Energy e. V.
Anja Schaldach
a.schaldach@house-of-energy.org
+49 561 51005-336

SMART GRID LAB

Smart Grid LAB Hessen

EUROPEAN UNION
Investing in your future
European Regional Development Fund

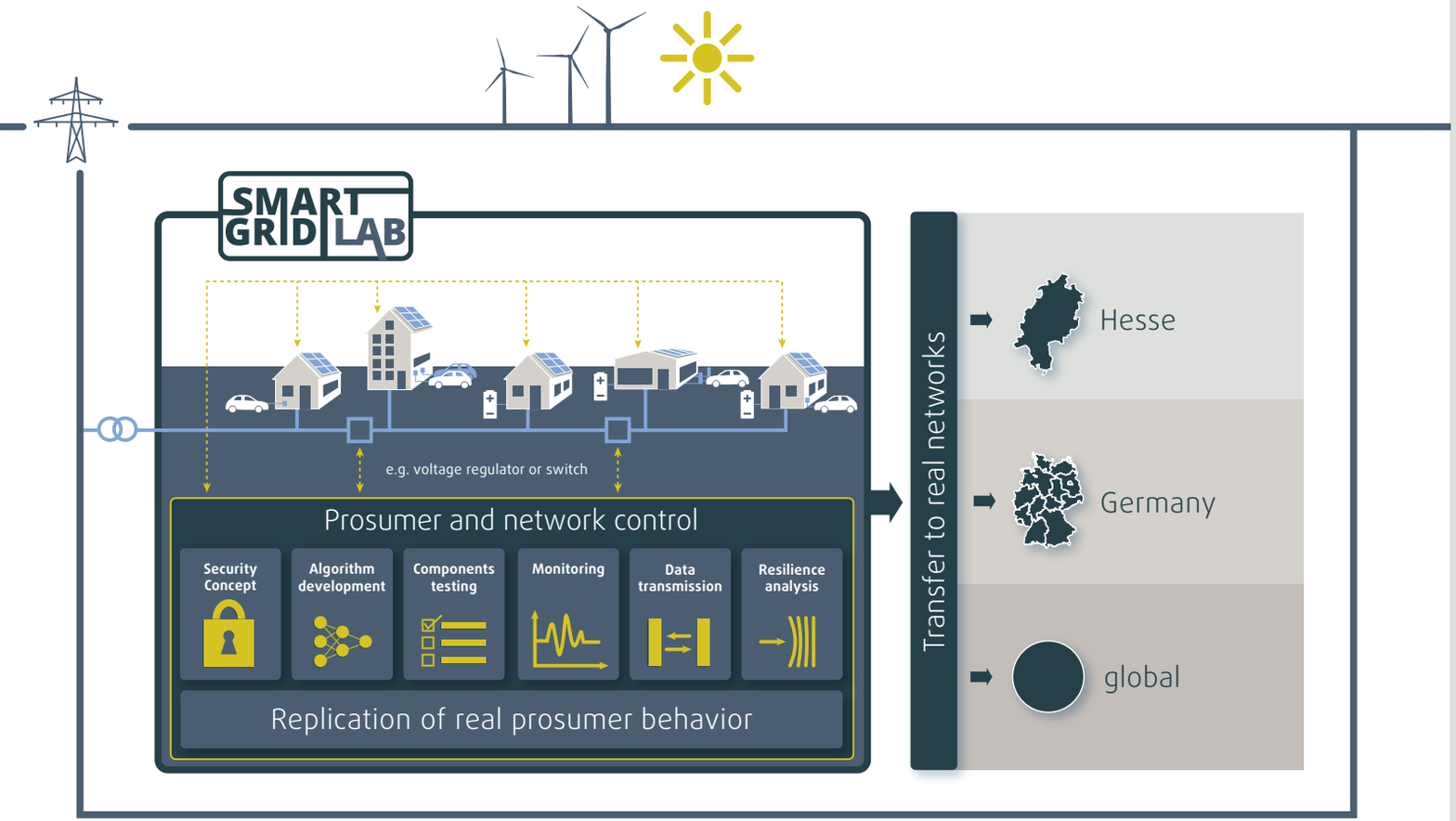
HESSEN
Ministry for Economic Affairs, Energy, Transport and Housing
State of Hessen

The Smart Grid LAB Hessen is being set up at Ingenieurbüro Pfeffer in Rödermark under the direction of the Darmstadt University of Applied Sciences. In the laboratory, which simulates real world grid conditions, the smart grid of the future is examined holistically from different perspectives. The power grid (circuit) of the lab has access to the public network through a distribution transformer.

All energy sources and consumer behaviour are simulations of real-world examples. This lets us simulate challenging network situations without danger.

Various scenarios are developed under which the Smart Grid LAB is operated. These include:

- the growth of distributed renewable energy generation
- higher electricity demand, e.g. due to increased electromobility and heat pumps
- expansion of prosumers with and without storage



Hessen experts from the areas of research, engineering, IT security and the manufacture of electro-technical switching and measuring components form an inter-disciplinary cooperation to optimise the smart grid's economic, dynamic and safety aspects:

The **Darmstadt University of Applied Sciences** develops future consumption and generation scenarios and uses the findings for the real Hessen distribution grid.

Ingenieurbüro Pfeffer is responsible for the construction of the laboratory and also provides its own infrastructure for this purpose. It develops solutions for processing data from intelligent local network stations and integrating them into control rooms and cloud solutions.

JEAN MÜLLER develops and manufactures connected LV fuse switch disconnectors for the smart grid infra-structure.

Multilevel security manufacturer **QGroup** scrutiises resilience to limit risks from cyberattacks by examining segregation requirements with regard to the IT/OT test positions, the operating resources used, and their net-working and control across security boundaries.

The project partner **Tractebel** brings experience from international energy infrastructure projects and ensures project transferability to the national and international context.

The **House of Energy** establishes a scientific and technical advisory board to advise the project partners. Company representatives from the fields of energy supply and grid operation, technical monitoring and certification, personal safety and energy law will participate on this board.