Consortium

Partners from Industry and Science

The project consortium comprises six partners: ABB, EnBW, IBM, SAP, Systemplan as well as the Karlsruhe Institute of Technology (KIT).

The KIT is represented by five institutes:

The **Institute of Applied Informatics and Formal Description Methods (AIFB)** develops control strategies for distributed resources as well as for load management.

The analysis of energy systems for the assessment of strategic questions and environmentally relevant problems is the task of the **Institute for Industrial Production (IIP)**.

The **Institute for Information and Economic Law (IIWR)** focuses on legal issues raised by the digitalization and global networking of the international information society.

The task of the **Institute of Information Systems and Management (IISM)** is the analysis and design of trading platforms and market mechanisms.

The **Institute of Telematics (ITM)** deals with the communication infrastructure where aspects of security are of particular importance.



on the basis of a decision by the German Bundestag





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Minimum Emission Regions



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www.kit.edu

MeRegio

Concept

The objective of the research project MeRegio is to meet the demand for efficient, decentralized power generation by integrating advanced information and communication technologies (ICT) into all stages of the electricity supply chain and thus to make a considerable contribution to higher energy efficiency. The project is divided into four major parts:



The focus of the participating partners from industry lies on the field test; the KIT is mainly responsible for the certification, evaluation, simulations as well as analysis and development of concepts for the different thematic topics.

MeRegio-Certification

Achieving Comparability

An integral component of the project is the creation of a certificate for Minimum Emission Regi-



ons which will be developed and exemplarily tested by the KIT in a model region. This energy certificate will rate energy efficiency and environmental compatibility of different regions in order to contribute to an increased energy awareness in the minds of the people as well as within the scope of (regional) politics. It gives regions the opportunity to compare their energy efficiency and can function as an attractor for enterprises and labor market.

Simulations

Testing and Optimization

As a part of the MeRegio project, the KIT will develop and apply simulation components in order to be able to closely examine the various characteristics of MeRegio concepts. For this purpose, both online and offline simulations will be implemented.

Online simulations will provide an opportunity to test different approaches, such as market mechanisms, network control concepts, and business mo-

dels, as well as to implement different generation and consumption scenarios using real data from the field test. These simulations have a direct impact on the participants as they might, for example, change energy prices on the market. In this way, particular events and situations can be tested in reality or within a milieu closely resembling reality.

Offline simulations, pure computer simulations, are necessary for experiments that should be avoided in a real environment, such as power outages or consequences of extreme weather conditions. In such a way, alternative approaches will be analyzed based on appropriate models of the power system and various strategies and scenarios will be investigated regardless of the prototypical field test components and their implementation status. Market models, market mechanisms, ICT-system as well as load management strategies will be thoroughly studied and optimized already in advance of the field test.

Evaluation

Analysis and Assessment

As a part of the evaluation process, the developed concepts will be analyzed and assessed in terms of three goals of energy policy: efficiency, environmental compatibility, and security of supply. The point here is to generally assess the implemented concepts as well as to identify issues that arise from the operation of the prototypical components.