The Consortium

To continue the funding program “Information and Communication Technologies for Electric Mobility”, the Federal Ministry of Economics and Technology launched the new technology competition “Information and Communication Technologies for Electric Mobility II – Smart Car – Smart Grid – Smart Traffic” in spring 2011. The funding program of about EUR 77 million in total volume is based on previous results and extends the spectrum of topics covered by the “smart car” aspect.

The partners of the intelligent Zero Emission Urban System – iZEUS – project are ads-tec, Daimler, EnBW (coordinator), Fraunhofer, KIT, Opel, PTV, SAP, and TWT, the objectives being research, development, and practical demonstration in the areas of energy, vehicle, and traffic, the focus lying on smart traffic and smart grid.

KIT is represented by eleven chairs of three departments. Via this interdisciplinary approach, it contributes its competencies in applied and theoretical informatics, software design, law, energy technologies, electric energy systems and high-voltage technology, electrical engineering, telematics, and information management.

Supported by:

Federal Ministry of Economics and Technology

on the basis of a decision by the German Bundestag

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Issued by

Karlsruhe Institute of Technology (KIT)

University Sector

Kaiserstraße 12 | 76131 Karlsruhe | Germany

Status: April 2012

www.kit.edu

Karlsruhe Institute of Technology

ICT FOR ELECTROMOBILITY

Project: iZEUS

intelligent Zero Emmission Urban Systems

SMART GRID - SMART TRAFFIC
Services for Electric Mobility

The Project

Area-wide Electric Mobility

The supraregional concept Southwest represents the nucleus of future traffic routing and planning. It integrates electric mobility in private and urban commercial transport.

Value-added Services

Innovative value-added services give rise to a homogeneous, multi-modal smart traffic concept to be developed under the project and tested and demonstrated in a fleet test.

Network Services

Integration of traffic and energy systems by information and communication technologies will allow for roaming and innovative charging schemes under the smart grid concept to be developed. At the same time, integration of renewable energy sources will be enhanced and distribution networks will be stabilized by decentralized energy and charge management.

Standards

In parallel, the legal framework and standards will be further developed by political and normative recommendations of actions.

KIT in the Project

KIT studies smooth integration of electric mobility in the energy system without stressing the grid. Furthermore, it supports the fleet test by the development and supply of a services platform. In the field test, users can address various services. The joint e-mobility platform serves as an interface or data exchange system for various services to communicate with each other.

Fleet Test

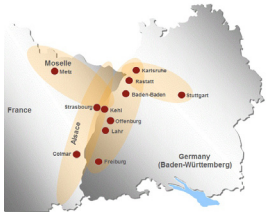
Development and supply of an open **e-mobility services platform** as an interface and data exchange system for the fleet test

Conceptual design and test of various **value-added mobility services**, such as **energy-efficient routing**, finding and **reservation** of nearest **charging stations** or **visualization of the remaining driving range**

Development of a **smart phone app** as an interface between users and the services platform for **interactive participation in the field test**

Technical and economic analysis of the energy system and sociological research into **customer acceptance and user behavior in the fleet test (the focus lying on commercial traffic)**

Analysis of legal and economic boundary conditions in terms of **data protection**, **calibration legislation**, and **law of evidence relating to the demand side management of electric vehicles** as well as derivation of **recommendations for action**



Stepwise integration of **other regional centers** beyond the key area of Stuttgart-Karlsruhe

Integration in **existing projects**, such as the Stuttgart Model Region or CROME project, as well as in the Cluster of Excellence on Electromobility Southwest

Energy Smart Home Lab

Intelligent **charge management** with an **electric vehicle capable of feeding electricity back into the grid** based on the new **ISO/IEC 15118** standard

Optimization of the load profile by an intelligent control of **electric/thermal household appliances** and an **electric vehicle** capable of feeding electricity back into the grid based on an adaptive **energy management system** (EMS)

Living phases to validate optimized and user-friendly EMS approaches, the focus lying on the exploitation of the user's **energy flexibility** and **acceptance studies**

Quick charging of electric vehicles without adversely affecting the grid using additional **stationary energy stores**

Development of a **charge current converter** to test the **compensation deformed power** and use of a **H-bridge** for **simulation of several (instable) grid situations**

Further development of **incentive concepts** for the optimum use of **renewable energies** in connection with **electric mobility**