

Real-time data for smart electric mobility

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The ELISE electronic system supplies vehicle data in real time and in a wireless manner. Credit: KIT/e-mobil BW

Information is the basis of smart mobility. Information technology can support the car driver in safe, inexpensive, and sustainable driving or organize reliable exchange of information among electric mobility users, cars, charging poles, fleet operators, workshops, and service providers. KIT's BMBF-funded ELISE project now presents an electronic system that acquires data in real time and exchanges them across borders of systems in a standardized manner.

"We have now developed a component to make electric vehicles more reliable and economically efficient and to establish [electric mobility](#) on the market," Albert Albers, Head of the KIT Institute of Product Engineering (IPEK), explains. "On this basis, innovative applications can be developed for e-mobility, such as cars acting as interim storage

systems of regenerative energies."

The [electronic system](#) of the ELISE project is a configurable control unit in the vehicle with a telematics interface. It makes available measurement and diagnosis data of the electric vehicle anywhere and anytime. These data are then used in applications and services. Under ELISE, data protection-compliant concepts for vehicle-bound data release were developed. In this way, the user of the vehicle will always be in full control of all data, but also be able to enjoy the advantages of internal and external services.

The autonomous charging unit of the ELISE project can adjust the charging parameters to various charging infrastructures and, hence, be used together with all existing systems. In addition, the electric vehicle may even turn into an energy supplier and feed the stored energy back into the grid, e.g. when the demand in the grid increases or other vehicles require an extension of their range.

First, communication concepts and standards were developed under the ELISE project. In a next step, these were incorporated in an electronic system with an appropriate software control. The demonstrators were then used successfully to receive datasets from [electric vehicles](#) and to input and output energy. Subsequently, the systems were investigated under close-to-reality conditions using field data in driving tests and on test rigs. ELISE was designed as a flexibly configurable and modular platform. On this basis, products can be developed and adapted to future applications.

ELISE stands for "Autonomous Charging Unit and System-integrated Data Gateway for Electric Vehicles". At KIT, model-based, interdisciplinary system development and validation on high-performance vehicle test rigs took place. The Federal Ministry of

Education and Research (BMBF) funded the ELISE project with EUR 680,000 from 2012 to 2015. Partners of the interdisciplinary project were Karlsruhe Institute of Technology (KIT) and the companies RA Consulting GmbH and CarMediaLab GmbH, which are both located in Karlsruhe Technology Region. ELISE is part of the Leading-edge Cluster Electric Mobility South-West and contributes to reaching the strategic objectives of "networked mobility", "handling and comfort", and "market and costs".

With about 100 actors from industry and science, the Leading-edge Cluster Electric Mobility South-West is one of the most important regional clusters in the field of electric mobility. The cluster coordinated by the State Agency for Electric Mobility and Fuel Cell Technology (e-mobil BW GmbH) is aimed at pushing industrialization of electric mobility in Germany and at making Baden-Württemberg a major supplier of electromobile solutions. In the four innovation fields of vehicle, energy, information and communication technologies, and production, renowned large, medium-sized, and small enterprises cooperate with each other and with local research institutes, in particular in the region of Karlsruhe, Mannheim, Stuttgart, and Ulm.

More information: More information on ELISE: www.emobil-sw.de/de/aktivitaet...r-daten-gateway.html

Provided by Karlsruhe Institute of Technology

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