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Based on the German National Electromobility Development Plan, the federal government aims to have one million e-cars on German streets by 2020. Do you expect that number will be exceeded?

I think that number is realistic. There are different enablers for the wide-spread use of e-cars: urban environmental protection programs for major cities will be one important enabler for new mobility strategies. We at Siemens are talking about an intermodal traffic system, which integrates different transportation systems – railway and bus, as well as individual transportation vehicles like cars and bicycles.

Different incentive systems – besides direct promotion – will be crucial to convince customers to change habits in their mobility behavior. If e-car drivers get free parking zones or can drive on bus lines, it will definitely support the acceptance of e-cars.

In your opinion, what advantages do strictly plug-in e-cars have over hybrids or hydrogen fuel cell vehicles?

With strictly plug-in cars you are definitely more environmentally friendly – especially as renewable energies are integrated more and more. The e-car – this is one of our scenarios – can store energy and return it to the smart grid. On the other hand, hybrids can serve as a bridging technology until batteries are more developed and allow for larger cruising ranges.

What is the biggest challenge of smart grid implementation within the e-mobility infrastructure?

The biggest challenge in Europe at the moment is the integration of local renewable energy sources. Twenty years ago, there were only 1,000 power plants feeding electricity to the German power grid - nowadays we have more than a million, including about 850,000 photovoltaics. E-Mobility will provide a kind of relief, as it allows us to use wind or solar power surpluses. E-Mobility will help to stabilize and balance the grid. The only challenge is to implement infrastructure with smart grid functionality, i.e. charging stations capabilities for operation center communication, remote load control and load shedding.

Siemens is the lead company in the European Commission's Green eMotion research consortium. What is the role of industrial standards in this newly launched initiative?

With 42 involved European industrial partners and 27 countries within the European Union, the danger of isolated applications is obvious. The goal of Green eMotion is to implement uniform technical standards. If you want to establish a broad acceptance of e-mobility on a European level you will need common standards regarding grids, networks,

charging infrastructure, vehicle technologies and ICT (information communications technology) solutions. This will contribute to the mass market development enormously.

Could the Green eMotion concept be applied in the U.S.?

A concept like Green eMotion could be applied to the U.S., but it would have to be adapted to regional needs. For example, in the U.S. the topic of DC (direct current) charging will be crucial for mass deployment of electromobility, as the AC (alternating current) distribution grids in the U.S. are weaker in power ratings, they are typically one-phased and you can't exceed a charging rating of 4 kW. To shorten charging times to less than one hour – what is possible in several European countries with normal low-voltage AC connections – you will have to access medium voltage levels in the U.S. Topics such as interstate traffic along with standardized and compatible charging and billing solutions will be a concern in the U.S., too. There's nothing to be said against the integration of different existing model regions sharing their experience and expertise.