Mobility2.0: Co-operative ITS Systems for Enhanced Electric Vehicle Mobility

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Mobility2.0 will develop and test an in-vehicle commuting assistant for FEV mobility, resulting in more reliable and energy-efficient electro-mobility. In order to achieve a maximum impact, Mobility2.0 takes an integrated approach of addressing the main bottlenecks of urban FEV mobility: range anxiety related to the limited FEV range, scarcity of parking spaces with public recharging spots, and the congestion of urban roads. Our integrated approach means the application developed by Mobility2.0 will utilise co-operative systems to simultaneously consider these bottlenecks, so that such an optimisation can be achieved which still guarantees reliable transportation for each FEV owner. Mobility2.0 will focus on assisting the daily urban commute, which represents the bulk of urban mobility. Mobility2.0 outcomes will be the following:

- an FEV-specific multi-modal urban guidance application implemented for prolific smartphone platforms; this application will include the integrated reservation of a suitable FEV recharging spot, while also prioritising FEVs with low battery levels for the reservation, and making optimal use of the available public transportation along the journey;
- the above application will include the capability to allow municipal/utility control over the temporal and spatial aspects of recharging; the corresponding tools will be dynamic electricity pricing and a map analysis framework;
- the project will specify the scalable broadcasting of FEV recharging spot notification over 5.9 GHz networks;
- the project will specify and contribute to standardisation the technology which enables plugged-in FEVs to act as 5.9 GHz road-side units, maintaining infrastructure connectivity via the V2G interface.

Besides FEV manufacturing, FEVs may also be produced by the conversion of traditional vehicles into FEVs. Mobility2.0 shall ensure that its results are applicable to both FEV types. The Mobility2.0 proposal name is meant to express that the co-operative electromobility technology targeted by this project is a next level concept for personal mobility. One of the partners in Mobility2.0 is the University of Twente (UT). UT’s focus in the project is on Vehicular Networks. These networks allow cars to communicate between themselves and with roadside infrastructure to make road traffic safer, more efficient, and greener. Within the Mobility 2.0 project, the University of Twente will research, design, and implement protocols for wireless communications between fully electrical vehicles, nomadic devices, and roadside infrastructure to exchange information
regarding a.o. vehicle battery status and charging sport availability. Especially, extensions to the ITS-G5 standard, which can be considered as a variant to wireless LAN, optimized for vehicular networking, need to be defined. The results of the work will be integrated in a prototype system that will be tested at test sites in Barcelona and Reggio Emilia.