Feasibility analysis and development of on-road charging solutions for future electric vehicles

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# PRESS RELEASE

## Outcomes of feasibility studies for on-road wireless charging solutions for future Electric Vehicles.

**The FABRIC EU-funded research project, working on the deployment and assessment of dynamic wireless charging for Electric vehicles, demonstrates its findings**

Turin, Italy, 21 June 2018: Today, the European research project FABRIC presents its findings through a dedicated conference and exhibition organised in Turin, Italy.

FABRIC addressed the technological feasibility, economic viability and social and environmental impact of dynamic on-road charging of electric vehicles. The main project objectives were to evaluate the performance of on-road wireless prototypes in real driving conditions; assess the impact on the transport infrastructure and on the electricity network from the wide introduction of such systems; assess the impact on the vehicle supply chain and on the environment; and derive recommendations for large-scale deployment.

To achieve its objectives, the FABRIC project consortium, which consists of 24 partners from 9 EU countries, developed three prototype wireless charging solutions and respective supporting ICT solutions which have been demonstrated in France and Italy.

The first was an industrial prototype of a Wireless Power Transfer solution based on a market available static wireless charging system, which was modified to meet the requirements of dynamic on-road charging. Several Base Area Network units were installed in a trench at the French test site, located in Satory near Versailles, and two vehicles were equipped with the corresponding vehicle pads.

The other more research-oriented Wireless Power Transfer solutions were developed and demonstrated at the Italian test site of the project, located in Susa near Turin. A series of 50 multi-winding transmitter coils were installed on a 100m road segment and 25 simple single turn transmitter coils were installed on a 50m road segment. Support applications were also developed to optimise driving behaviour and system performance, which included an on-board unit to provide information about the charging process to the driver,

an application to support the driver in keeping a steady position above the primary charging unit on the road, and an application to control the energy flow taking into consideration the energy availability. All three solutions were extensively tested under different operating conditions.

In addition, feasibility studies were conducted into future Electric Road Systems (ERS), taking also into consideration the information and data collected from two additional ERS designs intended for Swedish highway traffic, capable of delivering power for heavy-duty traffic. One was a conductive ERS developed by Volvo-Alstom and the other one was a Bombardier-Scania Primove inductive power transfer solution. The project assessment activities led to the following conclusions:

- Dynamic wireless power transfer appears feasible ERS in the medium-term for urban deployment of buses and long-distance freight corridors. Saving battery weight for heavy vehicles could offset the monetary and environmental costs of the infrastructure required. Final cost-benefit assessments as well as feasibility for other scenarios will be dependent on other technological developments in electro-mobility.
- Implementation of ERS is technically feasible in current road design and with currently available materials. Selection of the appropriate construction method should be made considering the existing infrastructure, the preferences of the road owner, the contextual use estimations, and the future maintenance and whole lifecycle costs.
- Careful planning and gradual ERS deployment is needed. ERS construction procedures must meet current highway design and construction specifications. Any departures from these standards should clearly demonstrate that the structural integrity and service life of the road remains unaffected.
- Travel patterns may change due to ERS, and this is highly dependent on the regional context. For urban buses and long-distance freight corridors, this is not expected to lead to significant issues.

"*Having in mind all these valuable outcomes of the project, which were successfully presented today, we can say that the FABRIC consortium delivered all its promises and met the high expectations of such an innovative endeavour. It is essential to mention that, although FABRIC's main focus was on the assessment of on-road wireless charging technologies with respect to their viability and feasibility, today we are proud to present in addition some impressive technological achievements. I'm pretty sure these will be considered as best practices for future developments."* says Dr. Angelos Amditis, FABRIC Project Coordinator.

**ENIDE**, as expert in Information and Communication Technologies (ICT), has participated in FABRIC in the assessment of the technical feasibility of ICT and charging solutions as well as the link with FP7 UNPLUGGED project. ENIDE is an SME specialized in creating and combining innovative solutions and technologies, especially applied to logistics and personal mobility, as well as research support services contributing to improve their clients' wide competences and competitiveness. ENIDE is based in Barcelona, Spain.

***This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 605405. The content of this press release reflects only the authors' view and the European Commission is not responsible for any use that may be made of the information it contains".***

## Editor notes

**Duration:** 1 January 2014 - 30 June 2018
**Total cost:** 9.000.580,64€
**EC contribution:** 6.495.000,00€.

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**Coordinator:** Institute of Communication and Computer Systems, (ICCS), Dr. Angelos Amditis

**Partners:** The 24 project partners are:
**ICCS** (https://i-sense.iccs.gr/), **AMET** (www.amet.it), **CEA** (www.cea.fr), **CIRCE** (www.fcirce.es), **CRF** (www.crf.it), **ENIDE** (www.enide.eu), **ERTICO** (www.ertico.com), **FKA** (www.fka.de), **IREN** (www.irenenergia.it), **KTH** (www.kth.se), **MECT** (www.mect.it), **POLITO** (http://www.polito.it), **TECNOSITAF** (www.tecnositaf.it), **TNO** (www.tno.nl), **TRL**(www.trl.co.uk), **VOLVO** (www.volvogroup.com), **UNIGE-DITEN** (www.diten.unige.it), **SCANIA** (www.scania.com/), **VEDECOM** (www.vedecom.fr), **Sanef** (www.sanef.com), **QIE** (www.qieurope.com), **SAET** (www.saetemmedi.com/), **TUB** (http://www.dai-labor.de/en/), **HITACHI** (http://www.hitachi.eu/en)

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