



combining infrastructures for efficient electric mobility



IEEE International Electric Vehicle Conference 2014

Florence, Italy • December 17-19, 2014

„Europe Meets IEVC“ Workshop

eCo-FEV : an ICT solution for electric vehicle charging

POLITO WPT solution provider Leader, Paolo Guglielmi

Firenze, 19. December, 2014

This project is co-funded
by the European Union



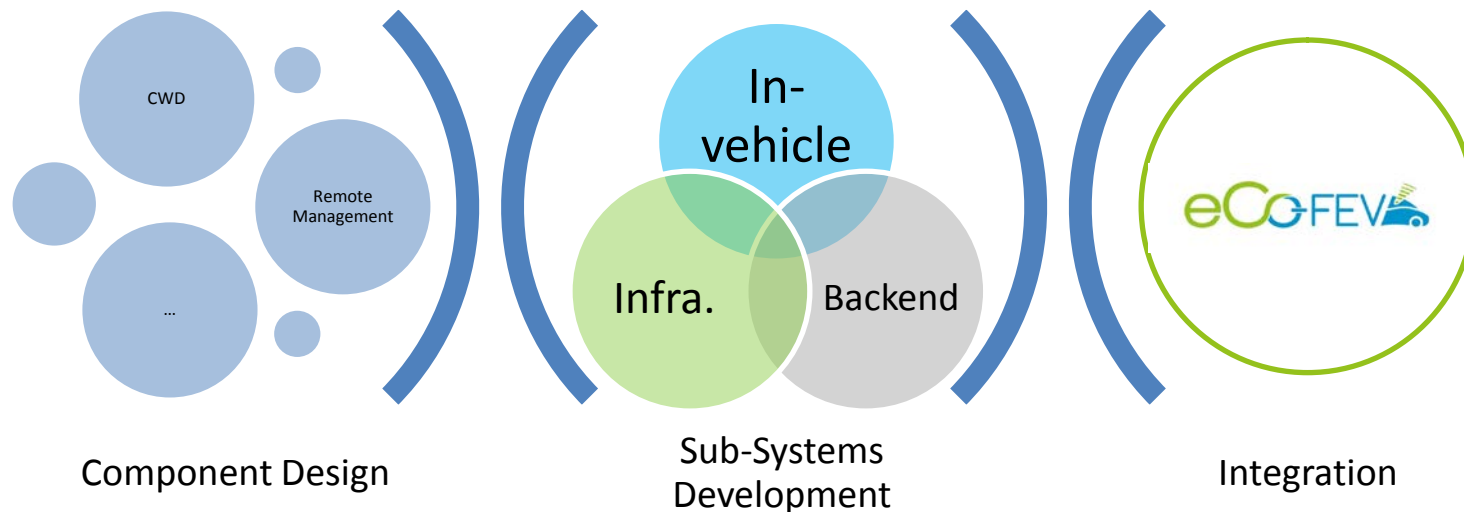
1. The eCo-FEV project
2. Goal
3. Design in real time
4. CWD and SCP
5. Test sites
6. WPT in POLITO
7. Conclusion and Next steps

1. The eCo-FEV project is a FP7 project

- Car-Makers
- Technical research institutes and centers
- Business consultant
- Energy provider
- Highway management society

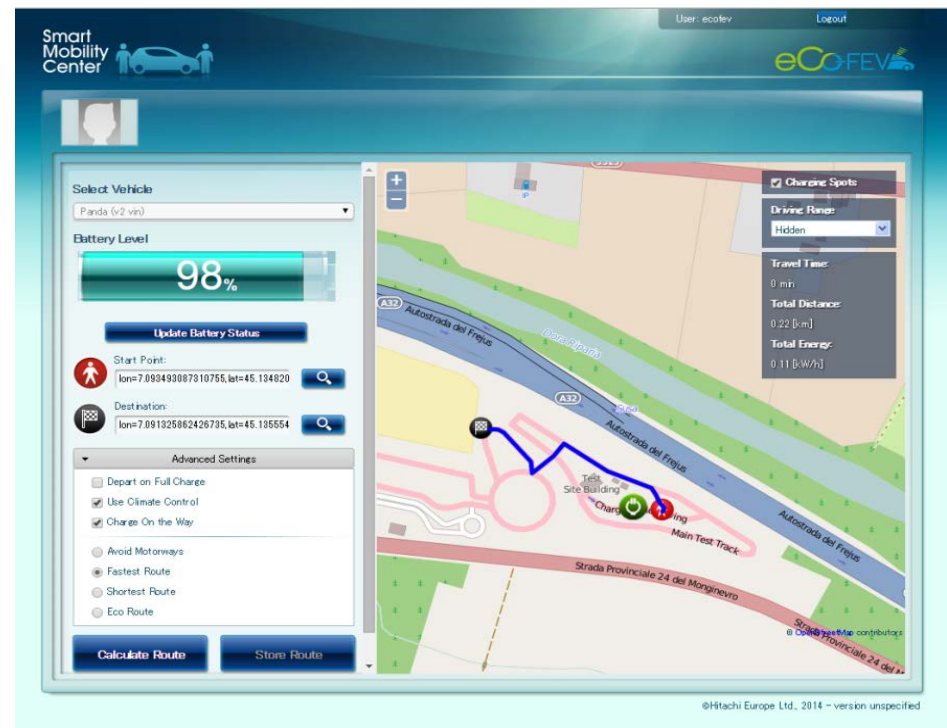
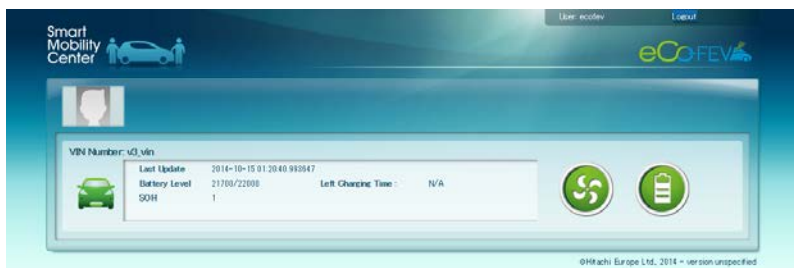


1. Create a cooperative ICT network among all the different Actors that needs to interact in the Electric Vehicles for private users in the actual and future transportation environment.
2. Management of the electric sources in order to remove the user anxiety for SoC in the EV drivers.



Design in real time

„Europe Meets IEVC“ Workshop



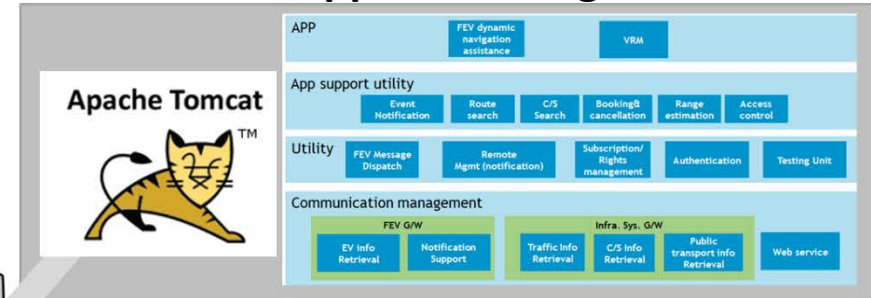
1. Design more than planning a trip for an EV is the key point of the assistance that the eCo-FEV project aims to give to the user of his network.



Data Management



Application Logic



PostgreSQL

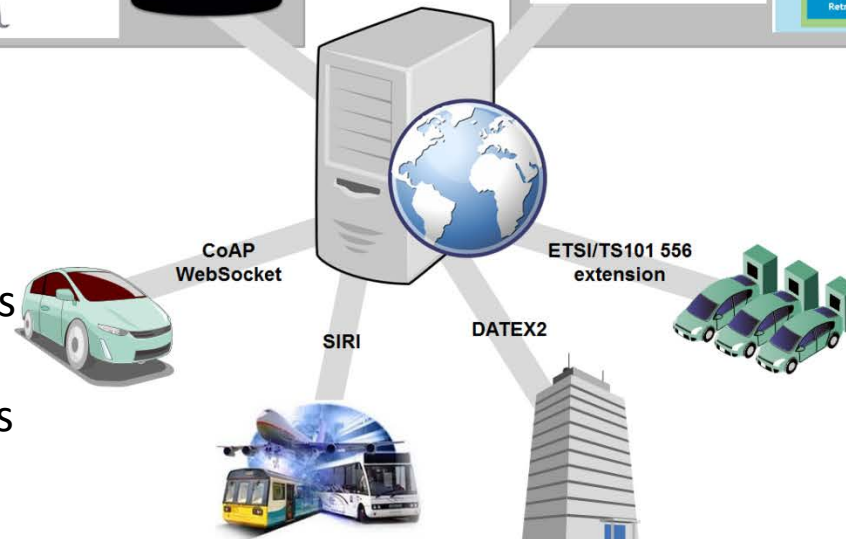
- Open Source platform
- Well documented
- Extensible with plugins

PostGIS

- Support for OSM maps

pgRouting

- Fast prototyping of routing algorithms



Apache Tomcat

- Open Source platform
- Well documented
- Extensible with plugins

Spring Framework

- Fast development with Java J2EE
- Extensive support for security aspects

Velocity Framework

- Fast GUI development

COAP Californium

- Validated platform for COAP data exchange

1. All possible sources will be considered, the more classical one like private and public charge points together with the more exotic and futuristic wireless charging both static or "while driving".
2. Two test sites have been created
 - France in Grenoble
 - Intermodal parking for private car
 - Renault Zoe
 - Italy in Susa
 - Experimental Test site for CWD tests for Light Vans
 - FIAT Ducato



Road traffic and public transport management center

Localization in a place with major traffic issues



EXPRESS BUS LINES



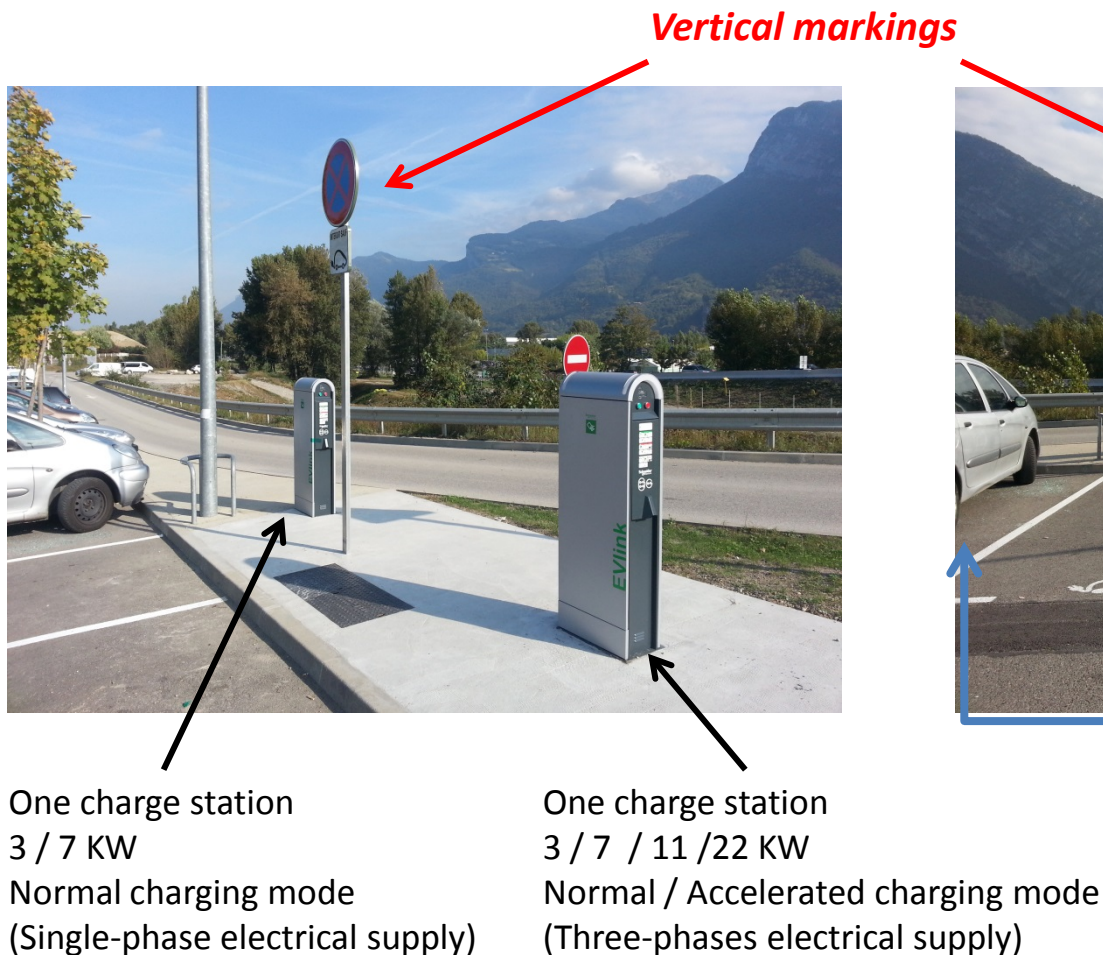
Bike ride



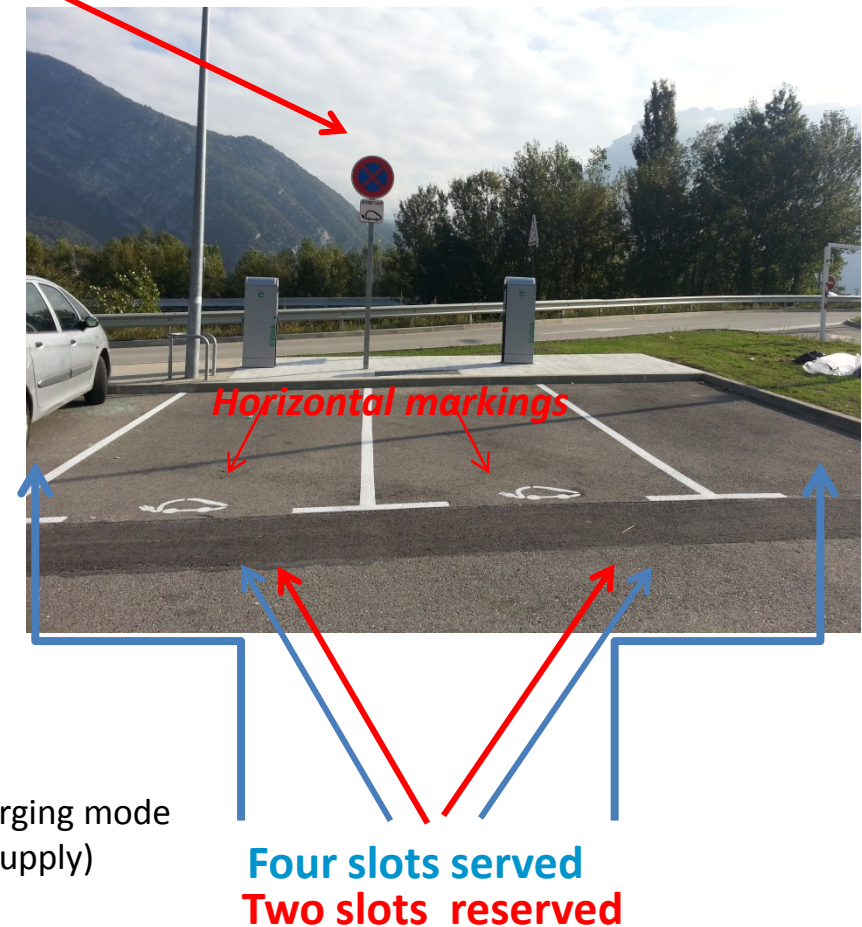
Sportive hobbies



Car sharing

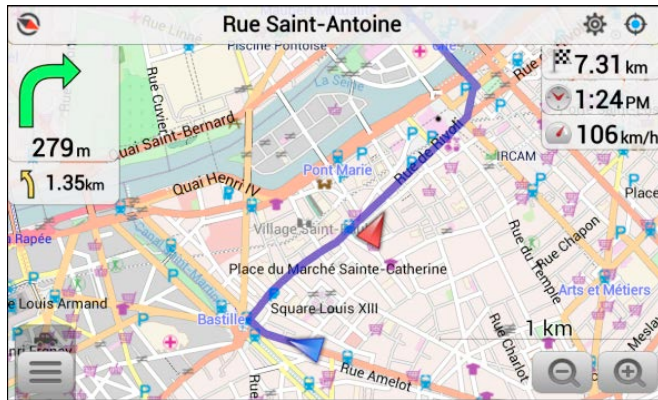


**Two charging stations
Four (2x2) charging points**



eCo-FEV cloud

1. Route calculation : eCo-FEV back-end
2. Navigation and local rerouting : OsmAnd (on tablet)
3. Route monitoring and adjusting : eCo-FEV back-end



CHARGING DEVICES INSTALLATION



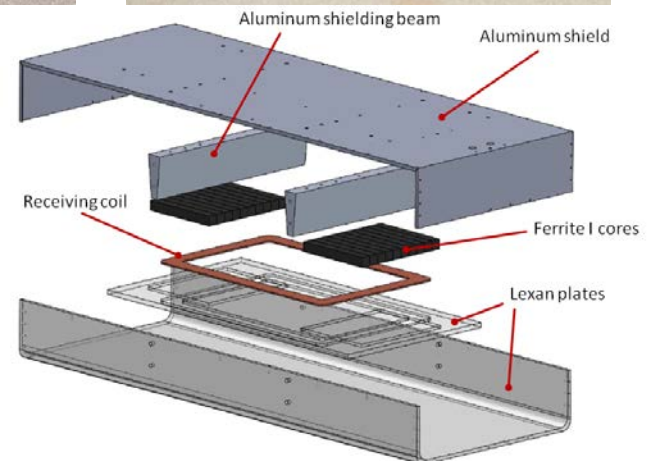
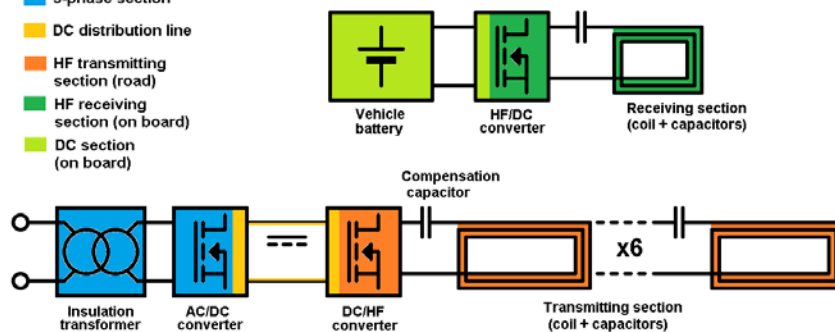
- Test Site track
- Control and power room location including office area and cabin area (details on next 2 slides)
- 5 x charging primary coils (each coil is 2m length)
- 2 x cabinet (mini-shelter including power electronics, measurements and ECUs)
- ANPR camera for vehicle identification

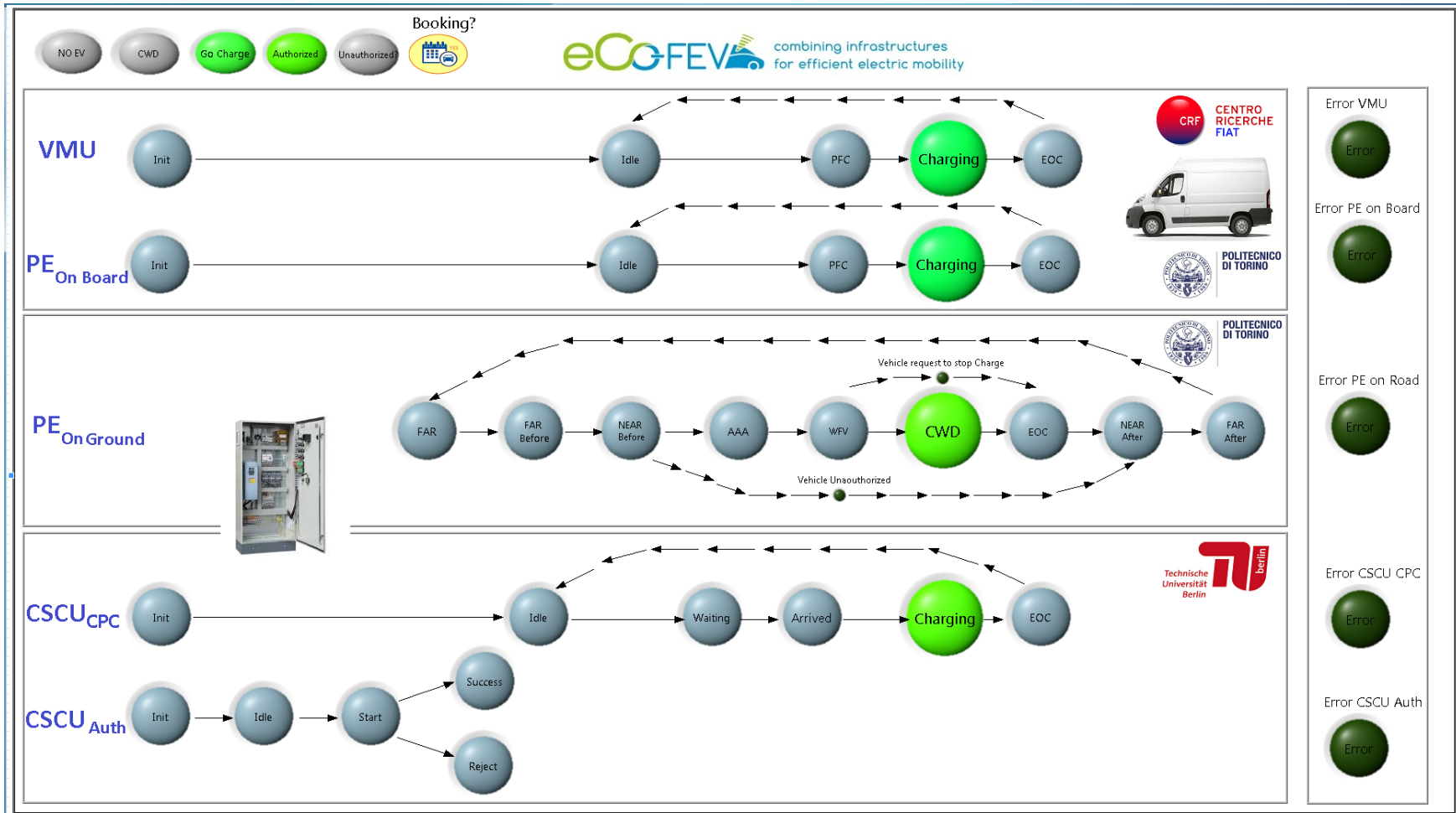
The vehicle HMI device is represented by a tablet that hosts an Android app (*EcoFevDroid*). Its look-and-feel is based on several pages and it is easily usable by means of big buttons on the top of the screen.





- 3-phase section
- DC distribution line
- HF transmitting section (road)
- HF receiving section (on board)
- DC section (on board)





1. Complete Management Platform for the Electric Vehicle charge control has been developed in order to reduce the user anxiety for his SoC.
2. Communication system has been settled up to:
 - Manage the routing
 - Manage the charging
3. Test sites has been completely developed to start the assessment of the technology

Next Steps

1. Increase the Test site capability to reach a full dynamic recharge with different technologies

Thank you.

„Europe Meets IEVC“ Workshop

Paolo Guglielmi

Politecnico di Torino

C.So Duca degli Abruzzi 24

10129 Torino, Italy

phone +39 011 090 7150

e-Mail paolo.guglielmi@polito.it

www.eco-fev.eu



combining infrastructures for efficient electric mobility