

EEVC-2014

European Electric Vehicle Congress
Brussels, 2nd - 5th December 2014

Dr. Angelos Amditis
Research Director,
ICCS

FABRIC: “Feasibility analysis and development of on-road
charging solutions for future electric vehicles”



Facts

Full name: *Feasibility analysis and development of on-road charging solutions for future electric vehicles*

Project type: Collaborative project

Coordinator: Dr. Angelos Amditis, ICCS

Contact: a.amditis@iccs.gr

Budget/Funding: 9 M€/6.5M€

Start/End date: 1 January 2014 / 31 December 2017

Duration: 48 months

Website: www.fabric-project.eu



Supported by:



Vehicle Manufacturers



Energy operators



Road Managers



Technology suppliers



Research Institutes



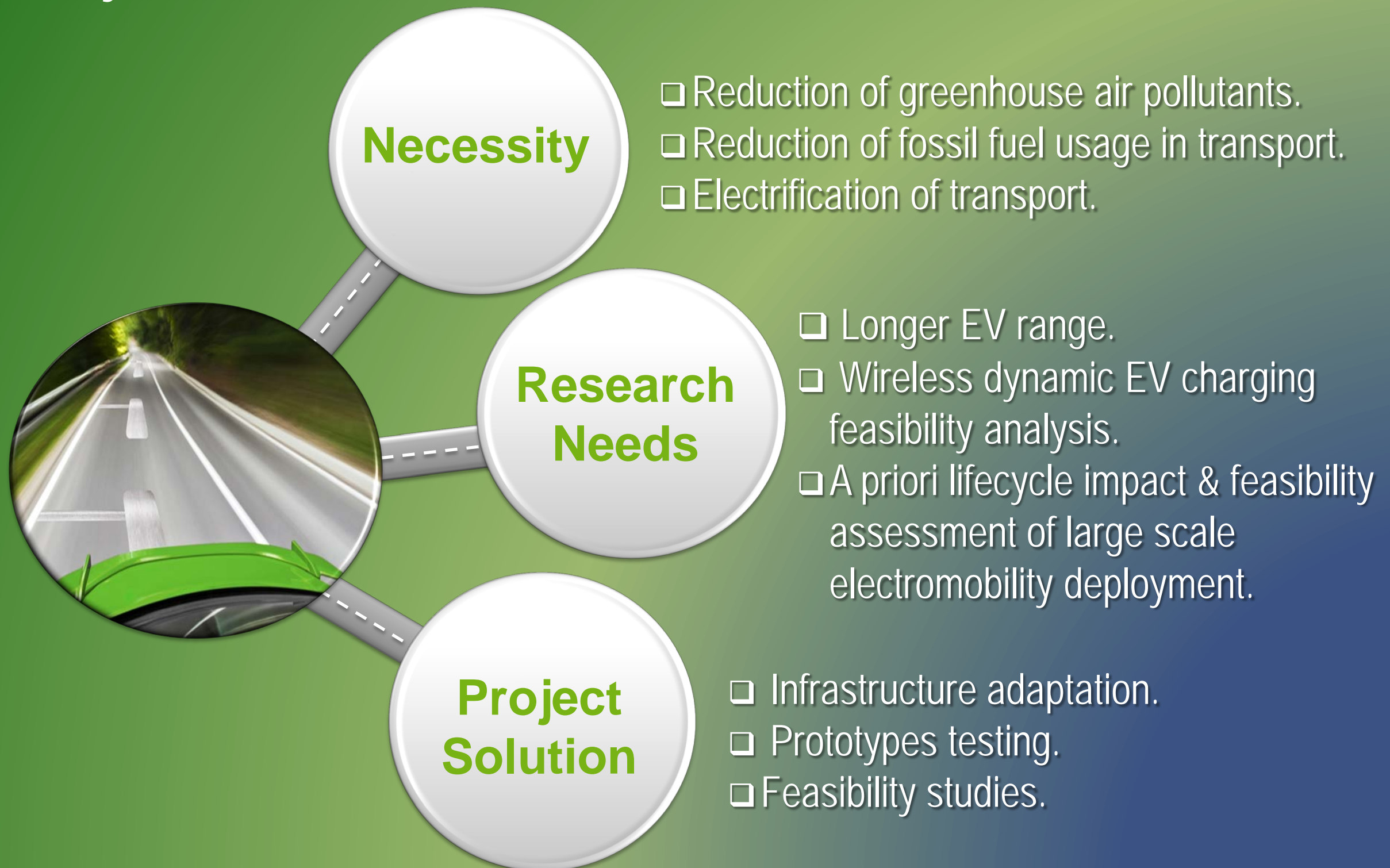
SMEs



Association



Project motivation



Vision

Large-scale adoption of pure **Electric Vehicles (EVs)** in future transportation systems through **Advanced on-road charging solutions** to improve:

- driving range and battery lifetime; energy efficiency and price of the Full Electric Vehicles (FEV), given the need for a smaller battery.



Objectives

- Fabric R&D objectives

**Development & testing of
advanced ICT & charging
solutions;**

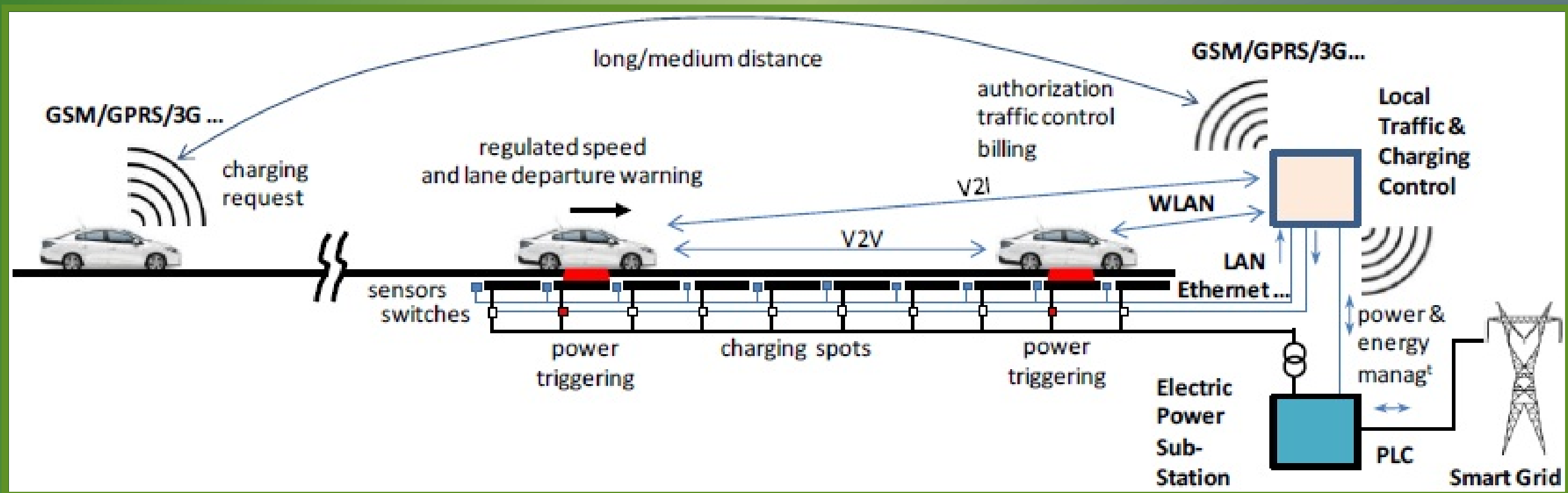


**Sustainable integration
with road & grid
infrastructures
specifications;**

**Long-term socioeconomic
impact & feasibility
studies for large scale
electromobility
implementation;**

Concept

- Assessment of wireless charging solution technological feasibility and market readiness at both component and system levels



Pilot activities: Italy

- Development of dynamic charging prototype no1 – Italy (POLITO, CRF)
 - 200m test track, 20m long coils, 20kW
- Development of dynamic charging prototype no2 – Italy (SAET)
- 50m, 10-150kHz load-resonant power frequency

Position 1

Vehicle detection & recharging system in stand-by



Position 2

Vehicle is charging by passing over the recharging pad and receiving transmitted power



Transmitted power depends upon:

- Speed
- Power unit
- Track length

Position 3

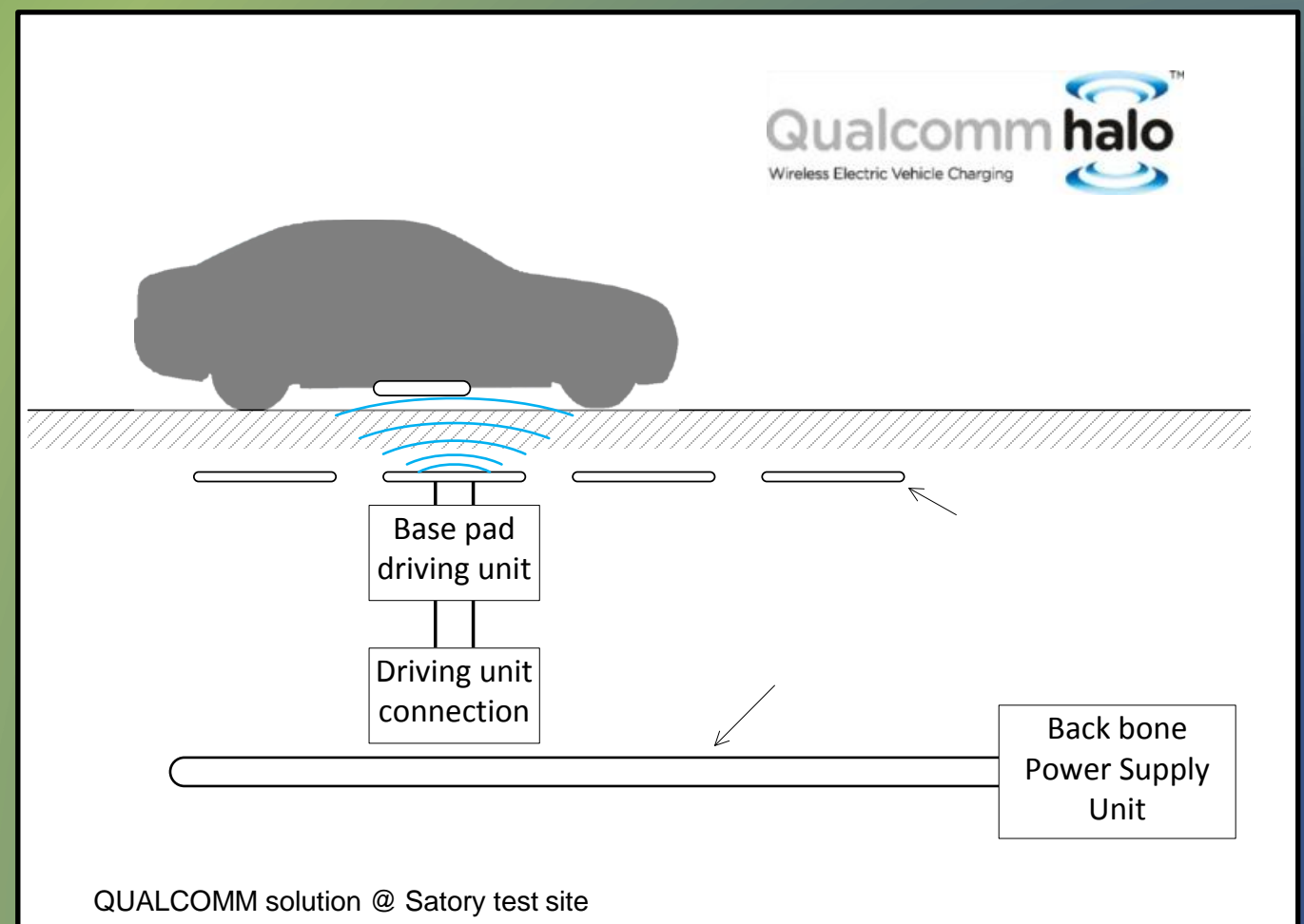
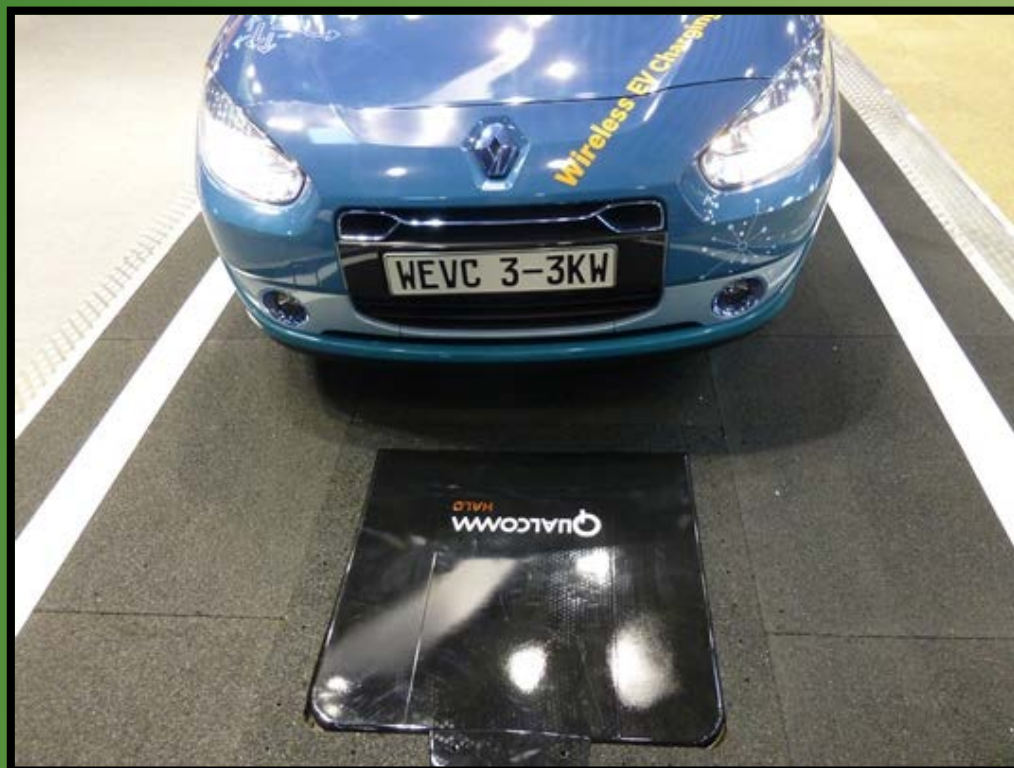
Vehicle has been automatically recharged while driving.



Source: SAET

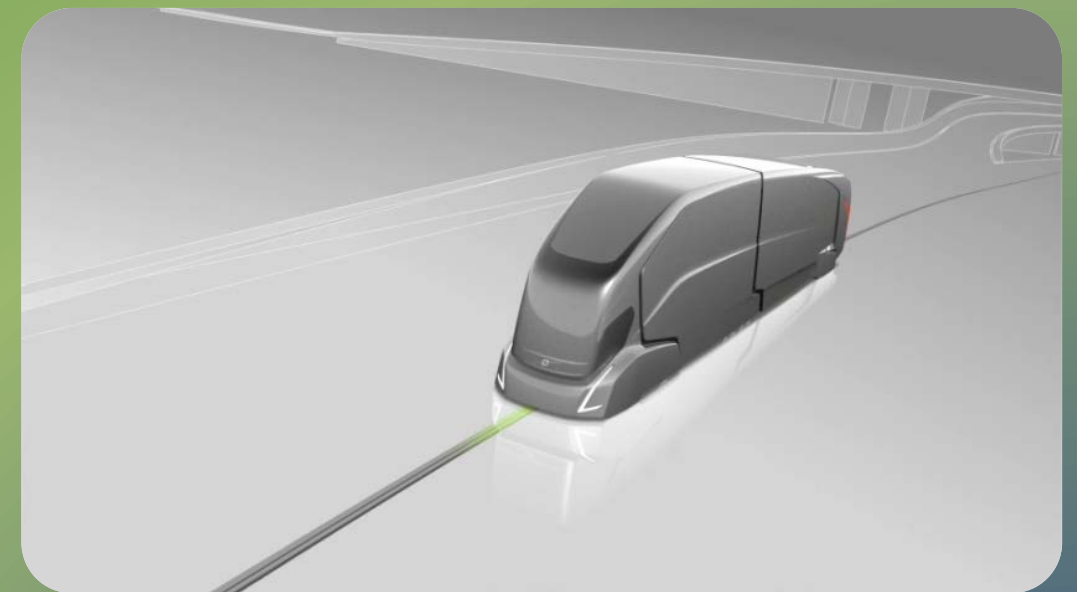
Pilot activities: France

- Development of dynamic charging prototype no3 – France (QUALCOMM, VEDECOM)
 - 100m test track, QUALCOMM charging pads in series, 85kHz, >20kW



Pilot activities: Sweden

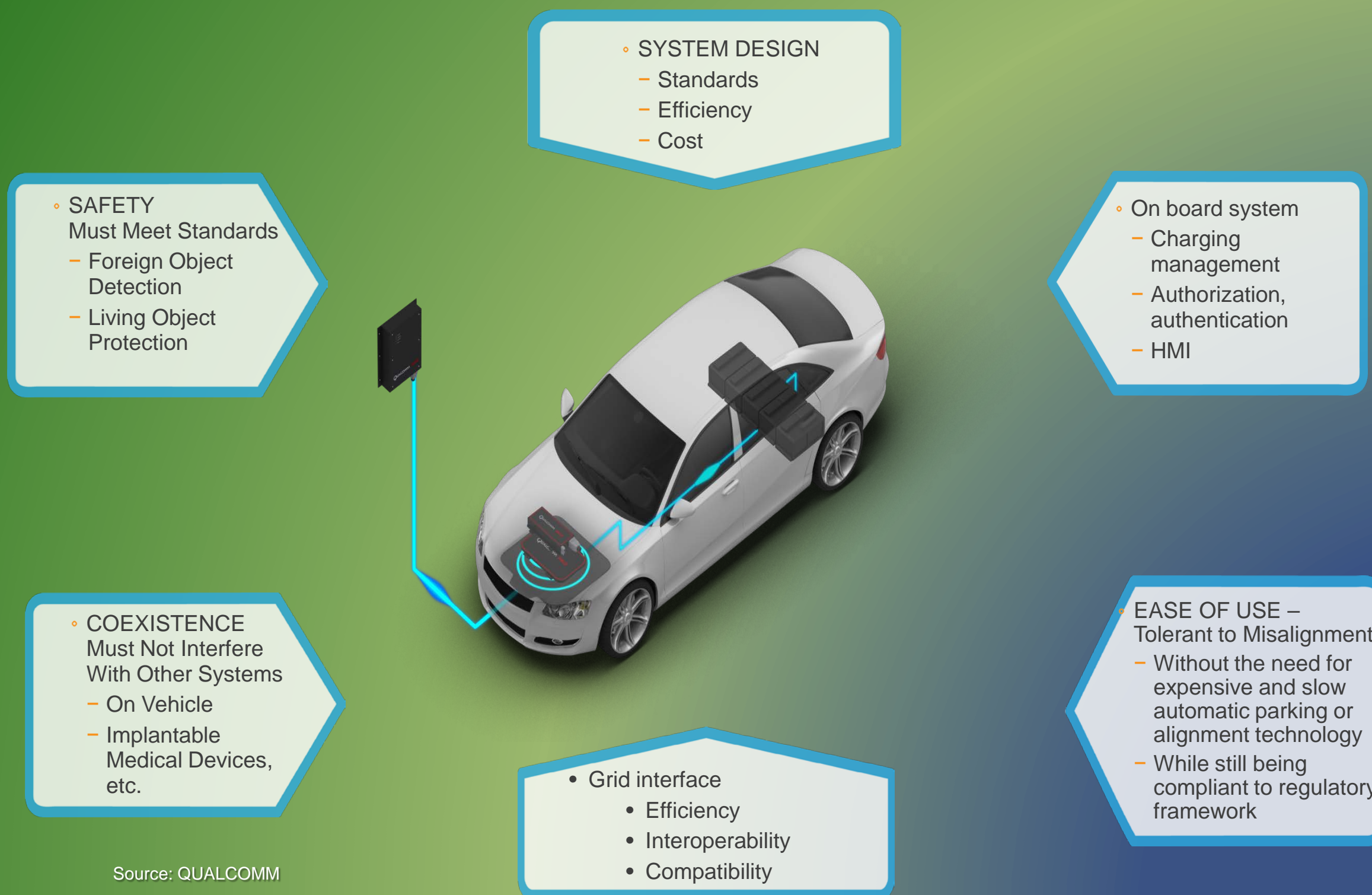
- Volvo test site in Hällered;
- Test track for conductive electrical road tests (DC 750V).
- Test track is 435m long, electrified part of the track is 275m.



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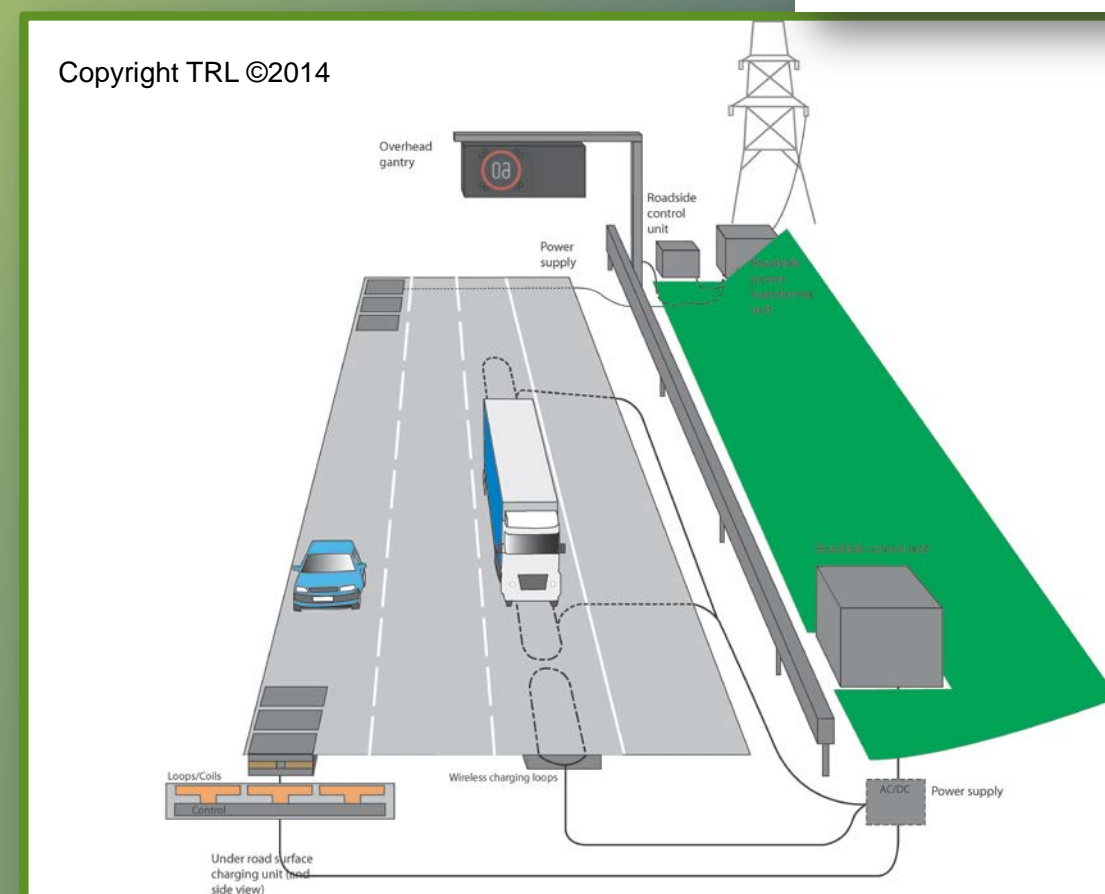
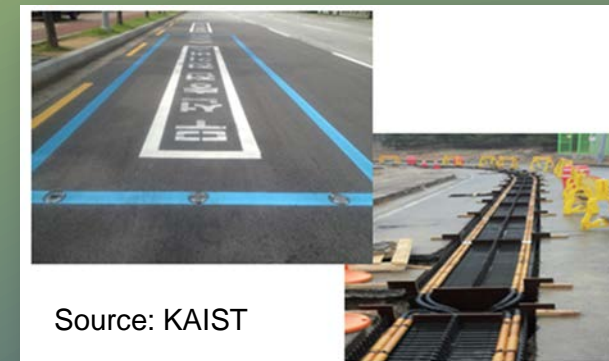


Focus on technology: Vehicle



Focus on technology: Infrastructure

- Road infrastructure adaptation for electrification;
- Electric grid integration;
- ICT technologies for:
 - Navigation, alignment;
 - Authentication, authorization;
 - Charging management, billing.



Expected outcome 1/2

- **ICT solutions**
 - Prototypes of on-board, off-board units for driver assistance, charging management, billing.
- **Charging solutions**
 - Assessment of various technologies and integration in an integrated wireless charging environment.
- **Road infrastructure**
 - Guidelines for installation and maintenance of e-roads.
- **Grid infrastructure**
 - Analysis of current infrastructure and guidelines for wireless charging schemes
- **Prototype vehicles**

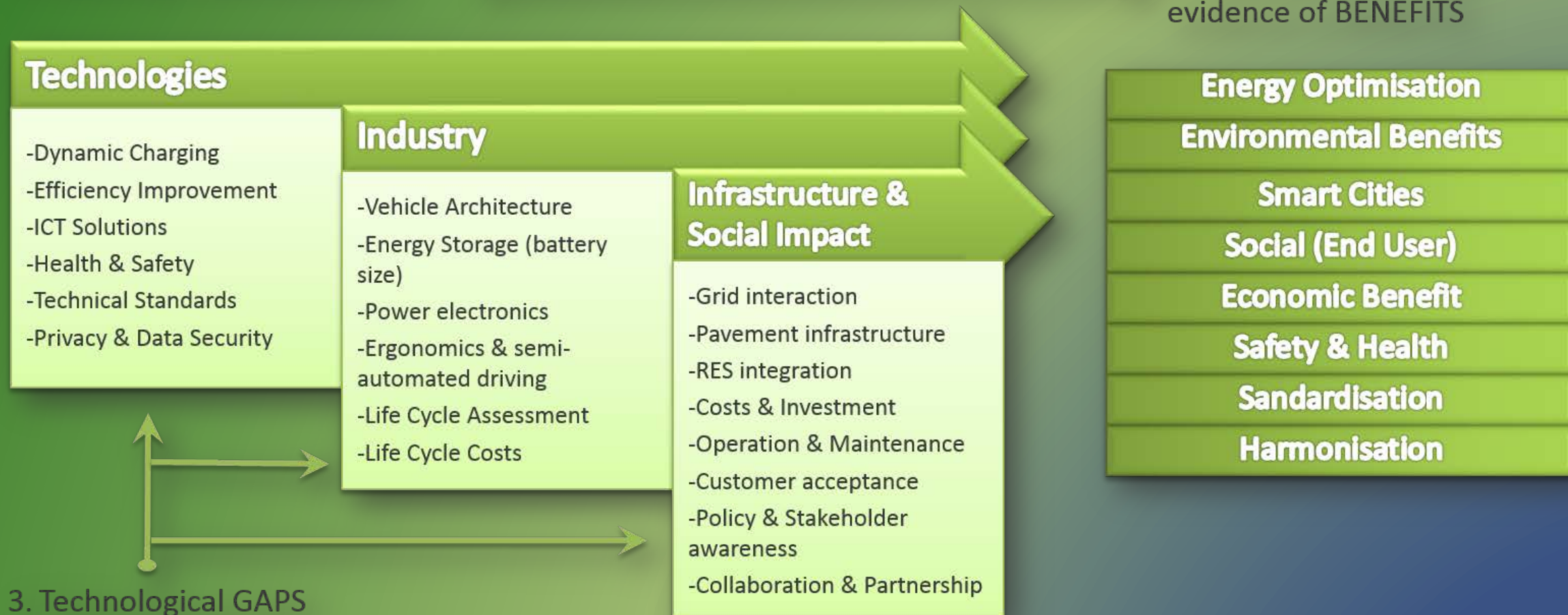
Expected outcome 2/2

- ✓ Global assessment;
- ✓ **Cost-benefit analysis and business models** of large-scale deployment of on-road charging;
- ✓ **Environmental life-cycle assessment and scenario analyses** for achieving environmental targets;
- ✓ **Contribution to standards;**
- ✓ **Feasibility study on societal perspectives** towards on road charging

Impact

1. Orienting future activities

2. Relevant Issues and evidence of BENEFITS



3. Technological GAPS

FABRIC Consortium & External Reference Group

- National and EU projects experience and Reinforcement of all value chain levels;
- Cooperation and coordination with projects related with NMP, Environment, ICT and Energy, joint with European Green Car initiative advisory;
- Provide EU common positioning in on-road charging.

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THANK YOU!
Any Questions?

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🖱 <http://i-sense.iccs.gr/>