

sm@rtCEM

The road to Smart Connected Electro-Mobility



Introduction

Electric vehicles hold the promise of reducing the negative impact that road transport has on the environment. However their uptake is currently relatively low due to existing limitations – e.g.: lack of users' confidence and high purchase costs. The smartCEM consortium is committed to removing some of these barriers through the introduction of information and communication technologies (ICT). Aspects such as range anxiety will be reduced while more users will be able to utilise electrical vehicles through EV sharing services.

Through smartCEM, four cities and regions (Barcelona, Gipuzkoa-San Sebastian, Newcastle and Reggio Emilia) have come together to pilot five ICT services optimised for electrical vehicles: navigation, efficient driving, trip management, charging station management and vehicle sharing management.

New innovation such as open sharing of electrical scooters, where users have possibilities to pick-up and drop-off electrical scooters wherever they want, will pave the way to new, clean mobility solutions, contributing to a more sustainable future for all of us.

Find out more about our work!

Short facts

Start date : January 2012

End date : December 2014

Contact details of the coordinator:

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Overall Budget: 4.920.000€

Co-funding from the Commission : 2.460.000 €

Services

smartCEM optimises five traditional ICT services for the needs of electrical vehicle drivers. EV Navigation adds real-time information such as charging points and estimation of battery range. EV Efficient Driving provides the driver advice on how to change his driving style thus extending the driving range and becoming more efficient. EV Trip Management extends the users travel options, while EV Vehicle Sharing Management gives possibilities to a wider group of users to experience electrical vehicles. Finally, EV Charging Management gathers up and presents a consistent, unified structure for the identification and localization data of all charging stations available in smartCEM pilot sites



EV-navigation

Mr Z drives an EV with smartCEM equipment. An onboard unit allows Mr Z to programme his destination; the unit will display the entire route, based on eco-navigation principles and calculated to suit the needs of the EV. The device will also show the location of Points of Interest (POIs) like charging stations, showing real time availability of stations and include a battery management system showing which charging point is available based on Mr Z's vehicle state of charge or Mr Z's driving style. The EV-Navigation service will make charging as flexible, secure and convenient as possible for Mr Z.



EV-efficient driving

Ms V drives an EV with a smartCEM system which evaluates her driving style taking into account the EV requirements. This service will provide Ms V with the necessary information she needs to maximise her driving efficiency and eco-driving-style. The service will monitor Miss V's driving style and vehicle usage.

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Learn more about smartCEM
www.smartcem-project.eu



EV-trip management

Mr Z plans to use public transportation to go from location A to location B. He is using a WEB journey planning system which shows the best multimodal public transport combination for a given journey. This tool provides car-sharing or scooter-sharing transport as part of the public transport offer, and will allow Mr Z to book and pay such an EV from the system. This service builds from existing journey planning systems including real-time information for bus, rail, and metro services, ensuring that EVs are fully integrated to the public transportation offer.



EV-vehicle sharing management

Mr Y wants to go from A to B and finds it very convenient to use a shared vehicle for this purpose, even more because it is smart and electric. He books a car / electric scooter from his smartphone or web portal; the EV-sharing back office system assigns a vehicle to the user at the agreed time and location with more than enough battery State-of-Charge; the user gets to the vehicle at the start time and unlocks it by means of a smartcard or through his smartphone app. User driving style is remotely monitored Real-Time and recommendations on EV-efficient driving are generated and shown to the user on-trip (for electric cars) and post-trip (for electric scooters). These are shown whether on the On-Board Unit, the smartphone app or the web portal.



EV-charging station management

Mrs X is already driving an electric vehicle. In order to extend its range, she wants to see which charging stations are within her reach. This service provides the identification and localisation details of the charging stations. The data is also made available to the other four smartCEM services, the EV-navigation being the most prominent consumer.

SmartCEM is supported by the European Commission under the ICT CIP Programme (Competitiveness and Innovation Programme)





Barcelona

Barcelona is characterised by a large number of motorcycles and scooters, with around 300,000 Powered Two Wheelers registered in 2010. Barriers for the deployment and wider acceptance of electrical vehicles are easier to overcome when considering electric scooters in an urban environment (price; range; operating costs). The Barcelona pilot site in the smartCEM project will thus be based on electric scooters and run an advanced open sharing service for this kind of vehicles.



This open electric scooters sharing service will propose some additional features on top of all features proposed by a vehicle sharing scheme (users management, booking, online monitoring and fleet control, access to the vehicles). These additional features include price incentives (dynamic pricing) to users for slight trip modifications: booking time and pick-up/drop-off locations. These modifications, once accepted by the user, will improve the fleet distribution across the city in order to optimise the service availability and usage rate.



Short facts

Available vehicles: 45 electric scooters

Available charging locations: 141

(Up-to-date information available at:

www.livebarcelona.cat)

The smartCEM Consortium is composed of the following partners:

Asociación Clúster de Movilidad y Logística de Euskadi, MLC ITS Euskadi ■

European Road Transport Telematics Implementation Coordination Organisation s.c.r.l., ERTICO ■ Ajuntament de Barcelona ■

Ayuntamiento de Donostia-San Sebastián Municipality ■ Città di Torino ■ Pluservice srl ■ University of Newcastle Upon Tyne ■



Gipuzkoa - San Sebastian

The city of San Sebastian is a compact coastal city, with an important reliance on public transport and interurban connections with neighbouring towns.

Gipuzkoa – the site of the San Sebastian pilot project will use several bus routes in San Sebastian and a Lion city hybrid bus in order to contribute to electromobility in urban areas. This site will also pilot an EV sharing application: considering the mobility patterns of the area car-sharing services represent an efficient solution to reducing the number of cars in the streets and making private mobility greener.



Short facts

Available vehicles: 1 hybrid bus, 30 electric cars

Available charging points: 33



Newcastle

Newcastle will be a key pilot project on where to implement smartCEM services. This is important considering that by 2013, the North East region will be home to over 1,000 charging points, at key locations on streets, in car parks, at residential and commercial locations such as retail and leisure facilities. This pilot site will implement the eco-driving driver interface of smartCEM into Newcastle's existing electric car fleet.

The Newcastle pilot site in smartCEM will involve compact urban electric cars, and implement the eco-driving driver interface of smartCEM into these vehicles. This will allow the services provided in smartCEM to be tested and evaluated on a sizable fleet of electric vehicles which are at an advanced level of technological maturity.



Short facts

Available vehicles: 44 electric cars

Available charging points: 535



Reggio Emilia

The Reggio Emilia pilot will provide, within smartCEM, the possibility to evaluate the potential of transportation provided to Municipality employees by means of a fleet of electric vehicles. The measures of limitation of the traffic adopted by the Reggio Emilia Council in recent years stated that in the Environmental "ZTL" (Limited Traffic Zone), vehicles are not allowed to unless they meet specific criteria. In particular FEVs have no restriction whatsoever in entering the "ZTL", thus representing an optimal choice for the municipality employees' needs in performing their daily activities. These services are especially important in the more protected areas of the city, for example the historic city centre or highly pedestrianized zones.

The Reggio Emilia pilot within the smartCEM will provide the opportunity to evaluate the potential of light electric vehicles' integration in an administration car-sharing fleet. SmartCEM services and functionalities about Navigation, Efficient Driving style and Vehicle Sharing will be evaluated. The Reggio Emilia pilot will focus on electric cars integrated in the Municipality EV services and their eventual improvement. In Reggio Emilia, the municipality EV service counts about 30 vehicles - 10 of which will be used in the pilot - and about 30 users.



Short facts

Available vehicles: 10 (electric cars and van for light goods transportation)

Available charging points: 14 (more under construction)