ELECTROMOBILITY SOLUTION FOR CITIES AND REGIONS

Alexandra David & Dr. Rolf Reiner / ELMOs project

Electromobility Solutions for Cities and Regions

Funded by CAPACITIES

Overall Goal

ELMO^S overall goal:

to promote more sustainable transport through the development of electromobility solutions for cities and regions.

A Regions of Knowledge project under FP7

Project Objectives

I. Paradigm Shift: From Ownership to Usage

Development of concepts for future business models able to create new mobility patterns in urban environments.

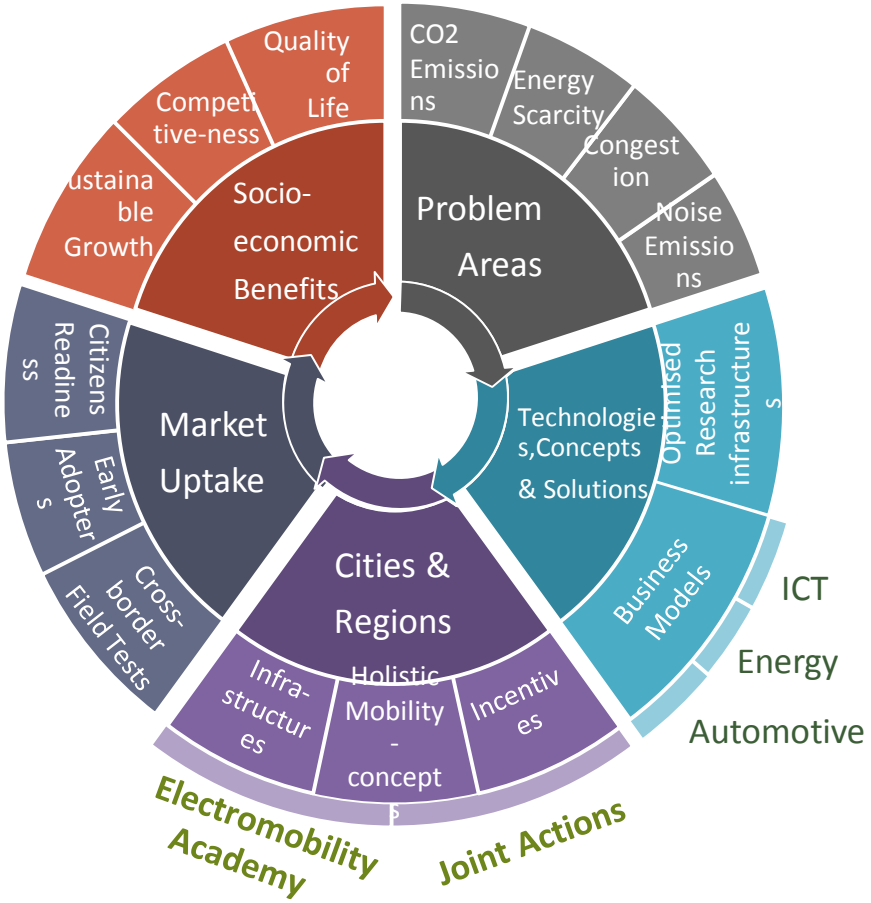
II. Cross-border Field Tests

Design of cross-border field tests to demonstrate state-of-the-art in technology and infrastructure, to identify further research needs and to analyse acceptance by users.

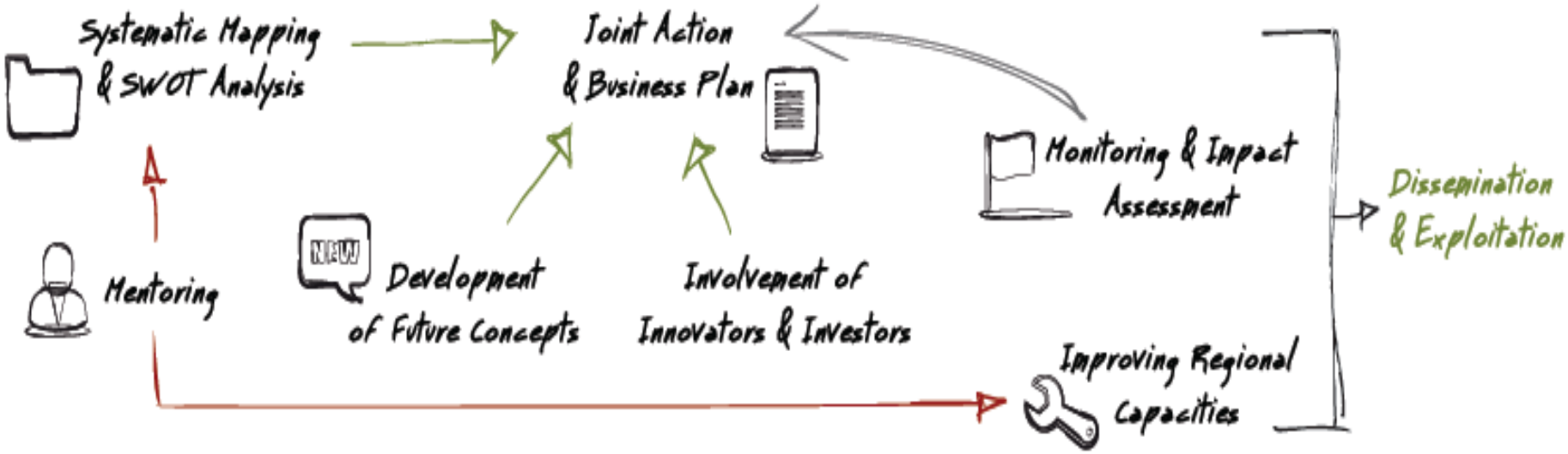
III. Joint Action Plan

Elaboration and adoption of a cross-border action plan to strengthen the research and knowledge base and contributing to competitiveness of European «mobility industries».

ELMOS Concept – Social Economic Benefits



ELMO^S Workplan



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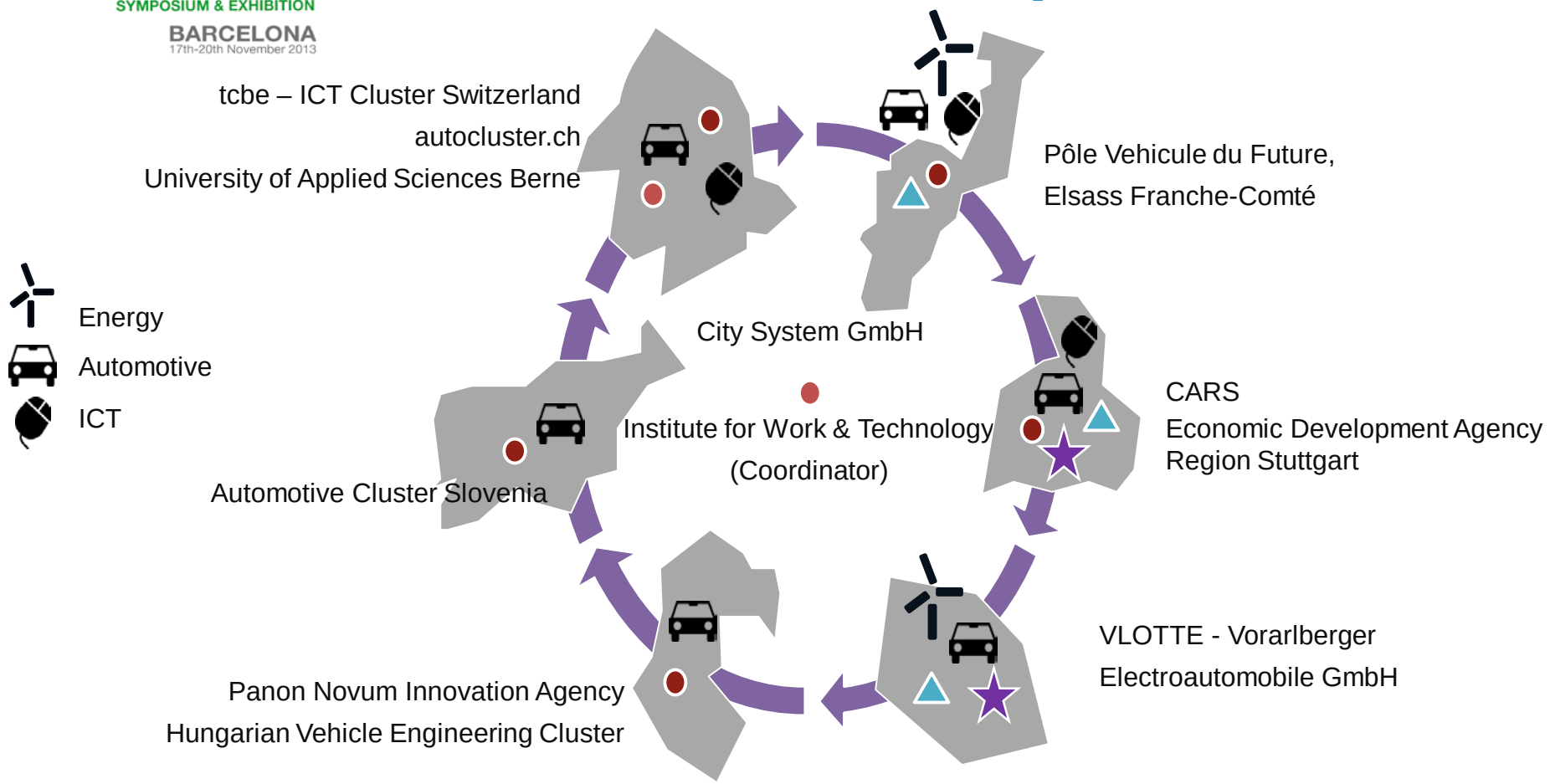
The 27th INTERNATIONAL ELECTRIC VEHICLE SYMPOSIUM & EXHIBITION

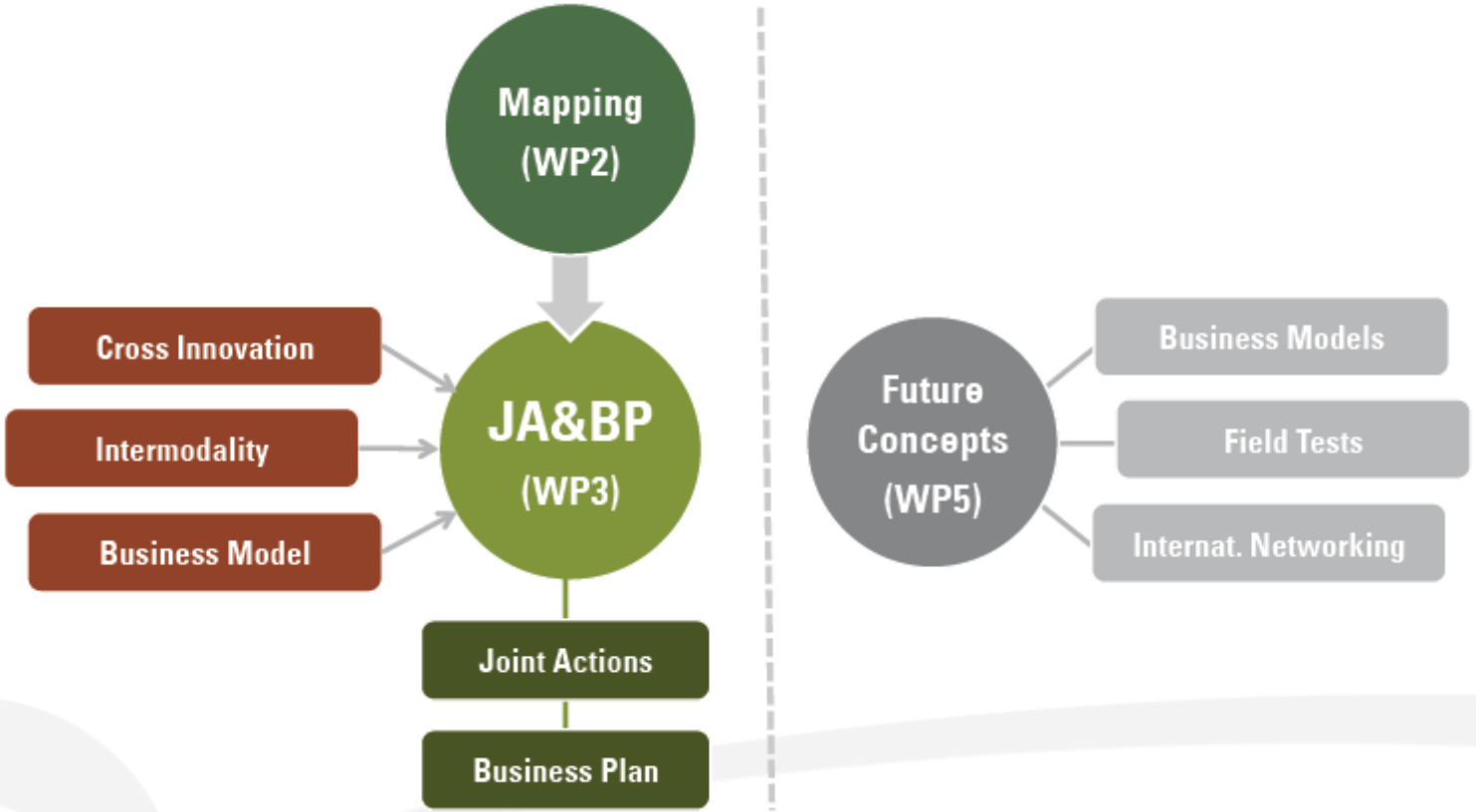
BARCELONA
17th-20th November 2013

Electromobility Solutions for Cities and Regions

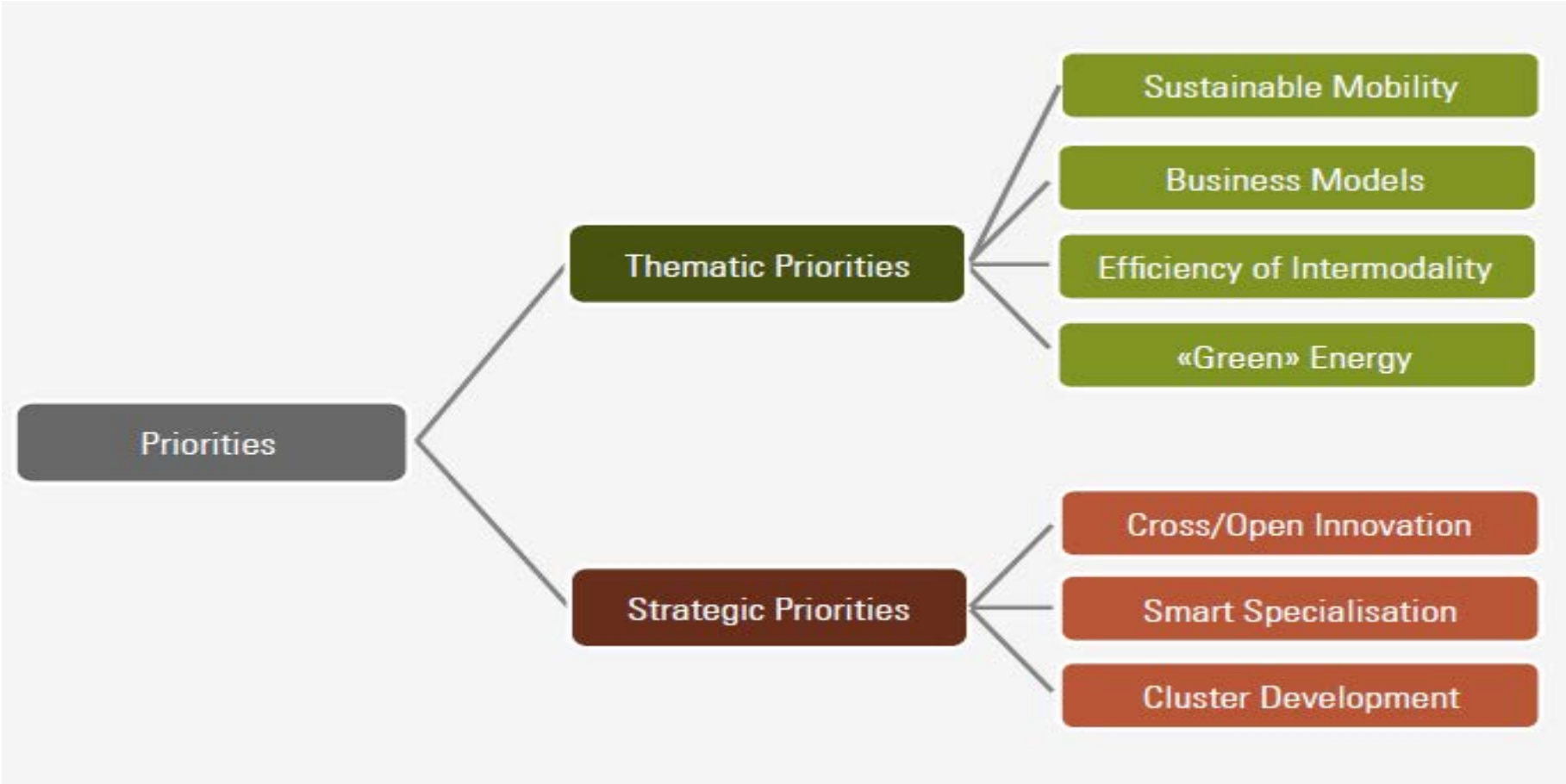
Partner & Competences



Regional Impact



E-Mobility Related Challenges and Deducted Priorities



Joint Actions

- Help local authorities to prepare local electromobility strategies and action plans
- Test seamless and interoperable e-charging and billing systems
- Implement an “e-commuters without borders” scenario
- Prepare joint research projects on wireless charging systems for electric vehicles
- Implement a “photovoltaic-sharing” model for electric vehicles
- Create awareness-rising campaigns towards public / private large fleet owners and the general public
- Establish one-stop-shops for electromobility
- Create a practical Total Cost of Ownership calculation tool for the general public
- Develop cross-border models for mobility by defining and expanding new interchanges such as tourism

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PLATFORM SOLUTIONS: MOBILITY SERVICES

Dr. Rolf Reiner / Stuttgart Region Economic Development Corporation

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Mobility Services

- Requirements for an integrated mobility services platform
  - **One face to the customer**
  - Unified billing solutions
  - Intermodal approach
  - Multi modal routing services
  - Added value services

Example: Stuttgart Services

schaufenster elektromobilität
Eine Initiative der Bundesregierung

livinglab BW^e mobil
Unterstützt durch das Land Baden-Württemberg

- **Facts & Figures:**
- >100 partners in 40 projects with a total volume of more than € 110 million
- 2015: > 2,000 EVs and 1,000 charging points
- development of sustainable mobility systems and viable business models

STUTTGART SERVICES

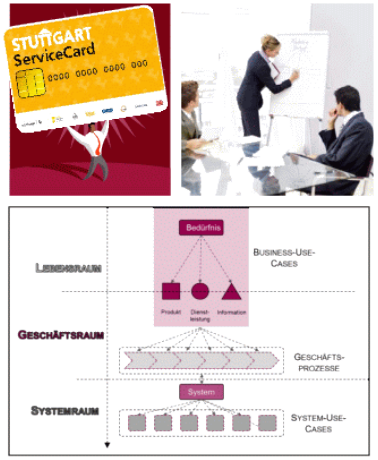
The platform project in the LivingLab BW^e mobil

Stuttgart Service Card

- One card / app for
  - E-ticketing for public transport
  - Carsharing
  - Parking
  - Charging
  - Bike and pedelec rental
  - Metropolitan services
  - ….

Business model

- B2C service will start with 70 system-use-cases
  - Information
  - Reservation
  - Booking
  - Routing
  - Electronic ticketing
  - …



Technical approach

- System architecture based on business and system-use-cases
  - Hybrid architecture
  - B2B platform
  - Mobility platform (B2C)
  - Routingserver (B2C)

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Electromobility Solutions for Cities and Regions

Field test early 2014 / Roll-out in 2015

Organized by

Fira Barcelona avele

Hosted by

AVERE mea Ajuntament de Barcelona

In collaboration with

EVAA EDTA

Supported by

European Commission

Opportunities

- Cross border extension through Horizon 2020
- Integration of further services
- Reach-out: > 600,000 potential customers
- Your feedback is welcome!

STUTTGART SERVICES

CROSS-BORDER ELECTROMOBILITY: THE RHEIN MOBIL CASE STUDY

Léonard Gay / Pôle Véhicule du Futur Alsace Franche-Comté

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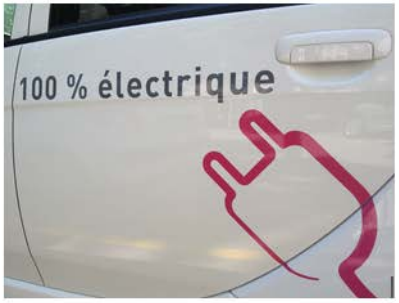
Cross-Border Electromobility

- A Few Facts About Cross-Border Commuting in Europe
  - **About 800,000 cross-border commuters** (2007)
  - A growing trend in many places
  - Main countries of frontier workers' origin : France, Germany and Belgium
  - **Massive individual motorised traffic** despite all the efforts made by local authorities to develop local public transport solutions
  - Related issues : congestion at rush hours, noise, air pollution, road safety



Cross-Border Electromobility

- Is Electromobility Suitable for Cross-Border Trips ?
  - **Daily occurrence**
  - Work-related journeys (but not only)
  - **Rather long distance travelled**
  - **Ride-sharing** (car-pooling) **already a habit** for many groups of workers
  - Awareness of transport-related issues most of employers
  - **Specificities** to be addressed with cross-border commuting: billing systems, charging standards, etc.

Cross-Border Electromobility

- The Rhein Mobil Project As a Case Study

RHEINMOBIL

  - French-German initiative fostered in 2012 by 4 automotive clusters and co-funded by the DEUFRAKO programme
  - **Electric mobility research pilots with an economic perspective**
  - Target group: cross-border workers (about 30,000 French frontier workers living in Alsace region are in employment in Germany)
  - **Challenge: are electric vehicles (EV) more economical than conventional vehicles?**

Cross-Border Electromobility

- Rhein Mobil Project Partners

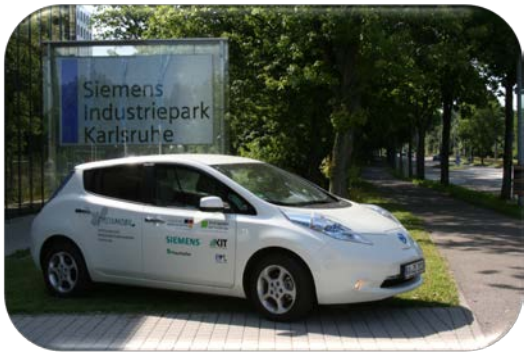
Cross-Border Electromobility

- Rhein Mobil Project Overview
  - **Maximising the annual mileage of the EVs** in the urban space in France and in Germany
  - **Optimised fleet management according to driving profiles, including smart charging**
  - Research on **customer behaviour**
  - Including technical functions as well as environmental and social aspects
  - German pilots: electric 7-passenger vans and electric cars (first results available)
  - French pilots: electric cars (on-going: no results yet)

Cross-Border Electromobility

- German Pilot Facts (1/2)

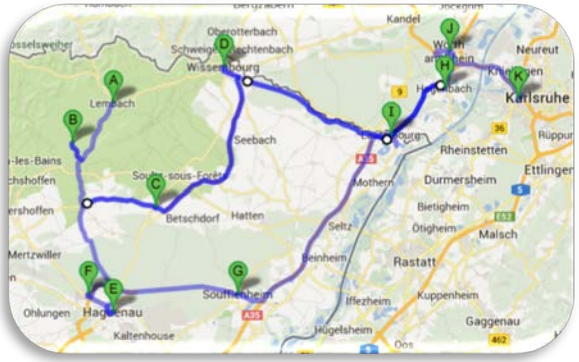
Technical Data	E-Wolf Delta 2 @ Michelin	Nissan Leaf @ Siemens
Range	154 km	175 km
Top speed	110 km/h	145 km/h
Speed-up 0-100 km/h	12,5 s	11,9 s
Average distance	Michelin Kalrsruhe → Elsass 60-80 km per tour	Karlsruhe → Haguenau 70 km per tour
Commuters per car	7	Max. 4



Cross-Border Electromobility

- German Pilot Facts (2/2)

Mileage	35.400 km
Cars on the road	4 (up to 9 in the project)
Number of charging processes (conventional)	442
Number of charging processes (fast)	80
Average consumption	0,2 kWh/km
Rekuperated energy	Ca. 15 %

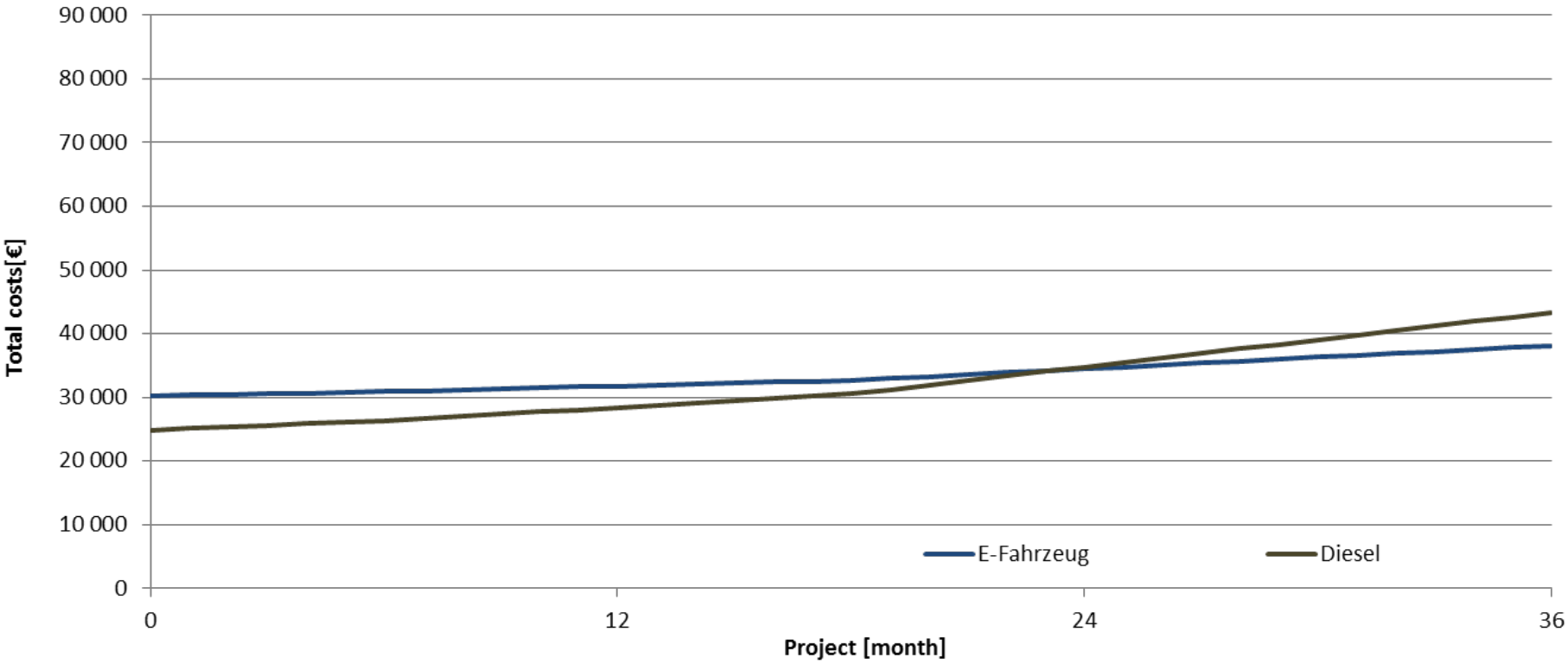


Cross-Border Electromobility

- Rhein Mobil First Results (German Pilots)
  - On 35,400 km up to now 3.3t CO_2 saved
  - **High purchase costs above all are the reason for buying resistance**
  - **State support is still necessary on account of high purchase costs**
  - Only with “sinking” vehicle prices (mass production) will EVs become more favorable than conventional vehicles
  - **Cross-border commuting within the range is well-suited to EVs**
  - **The restricted range is not limiting if EVs match the right mobility requirements**
  - **High vehicle occupancy requires fast charging**, which leads to specific infrastructure investments
  - Simple accounting systems required for “tanking” the EVs with electricity

Cross-Border Electromobility

Electric vs. Diesel Vehicle Total Costs



Cross-Border Electromobility

- Rhein Mobil Project Outlook
  - Until the end of 2013 a total of six vehicles are to be on the road
  - Installation of fast charging stations end of 2013 / beginning of 2014
  - Intensified training for drivers to increase recuperation
  - Intelligent fleet management, i.e. several carpools use one vehicle to achieve a high annual mileage and further reduce costs

Cross-Border Electromobility

- One Step Further
  - Relevance to **roll out ambitious electric mobility schemes based on successful pilots** like Rhein Mobil, CROME, etc.
  - **Potential European regions concerned by massive cross-border commuting**, such as neighbour areas of Switzerland, Luxembourg, Germany, The Netherlands and Austria, plus other spots in the proximity of Finland, the Republic of Ireland, Portugal, Liechtenstein, Andorra, etc.

- Opportunities
  - Joint Actions in the framework of the ELMOs project
  - Horizon 2020 programme to be launched very soon
  - Your feedback and know-how welcome !

eROAMING/BILLING AND CROSS-BORDER PROJECTS

Dr. Reha Tözün/ Stuttgart Region Economic Development Corporation

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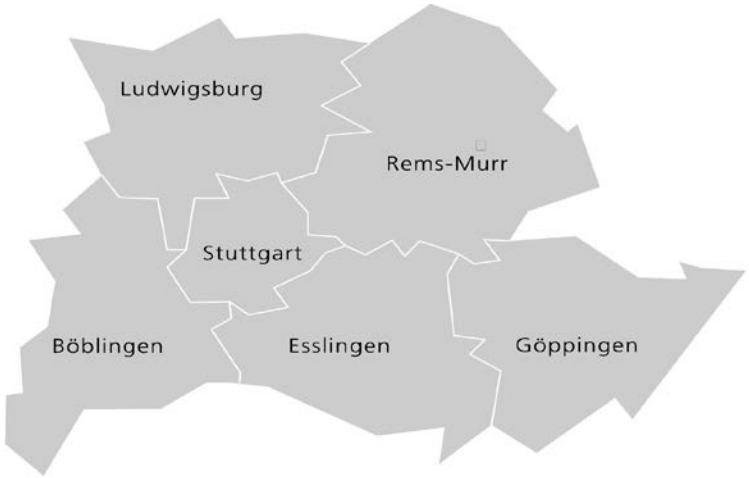
eRoaming and Billing in the Stuttgart Region

- General problem: Charging stations are often operated by proprietary networks, which very often require drivers to have a membership beforehand.
- In practice: One driver, one vehicle, many membership cards.
- Roaming to allow drivers to get access to the networks of other providers is required.
- Ultimately, electric car drivers should have the same freedom that the “normal” drivers get to have at the filling pumps.

In and round the Stuttgart Region

- Infrastructure providers: EnBW (one of the four biggest utility providers in Germany, has the largest charging points network in the region and Baden-Wurttemberg, mainly in the city of Stuttgart) and numerous small and local providers, with up to three charging stations each.
- Two potential eroaming providers:
  - Bosch SI , technology supplier to Hubject (EnBW a co-founder) and
  - ladenetz.de (a joint initiative of the smaller utility providers in Germany)
- Especially the “occasional” commuters have difficulty in accessing the infrastructure and face additional charges.



Steps to a solution

- Three dedicated workshops and a broad discussion with all relevant stakeholders (e.g. utility providers, OEMs and suplliers, technology providers, local politics and planners, parking providers)
- A first solution in the form of a cooperation between two towns/districts Schwaebisch Gmuend and Goeppingen, which have their own local und publicly owned utility providers.
- Two separate and mutually independent projects, where diverse stakeholders in the process are involved, are used as vehicles to implement the first pilot solution (EMiS and iZEUS).
- Apart from minor issues, eroaming between the two locations and the EnBW charging network (meaning the city of Stuttgart) is now live.

Next steps:

- In terms of the Stuttgart Region and Baden-Wurttemberg: to expand on the existing solution with further cities and to create eroaming corridors.

- In terms of ELMOs project, two project ideas are being developed:
  - Seamless and interoperable e-charging and billing (tentative title)
  - e-Commuters without borders (tentative title)

JAP / 2.1: Seamless and interoperable e-charging and billing

- Key topic: Set up a transnational, interoperable booking and billing system for electric vehicle charging

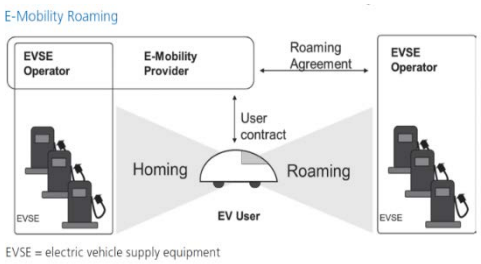
- Objective: Initiate and implement a platform to accelerate the large scale pilot deployment of a Europe-wide interoperable booking and billing system for electric vehicle charging infrastructure, thus increasing the penetration of e-vehicles and reducing pollution.

- Lead Partner: CARS/Stuttgart Region
  - ELMOs Participants: Pôle Véhicule du Futur, Vorarlberg, Switzerland…)
  - Other Participants: European regions and cities with an existing e-activities.

- Fast-charging is a point of interest.

JAP / 2.1: Seamless and interoperable e-charging and billing

- eRoaming consortia/networks/infrastructure already in place in Germany, France, Switzerland, Belgium and Holland. There is need to assist the cross-links between them and help the expansion of DC-charging
- The project can and should build on these networks and the outputs of currently on-going projects, like Green eMotion, CROME (CROss-border Mobility for Evs), iZeus and Rheinmobil, to name a few.
- Task: Creating a pan-European network that stimulates an efficient cooperation platform for private enterprises, local authorities and national as well European institutions.



Source: FINSENY Project

JAP / 2.2: e-Commuters without borders

- Key topic: Set up a cross-border, consumer-oriented electromobility service
- Objective: Identify the existing cross-border commuter streams and stimulate the development of cross-border sustainable mobility services based on intermodality and carsharing in a 3- year project.

- Lead Partner: CARS/Stuttgart Region
- ELMOs Participants: Pôle Véhicule du Futur, Vorarlberg, Switzerland and potentially Friedrichshafen (based on BodenseEmobil)
- Other Participants: Border regions and cities in Europe with a high-level of regular cross-border traffic. Here key local partners are the regional development agencies, regional tourism marketing offices and local transport services providers, among others.

Contact

For more information on ELMOs project, please visit:

www.future-mobility.eu