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Magazine for mobility and electromobility

Electromobility in Europe



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mobilität morgen accompanies change throughout the transportation world: from the changes in private mobility services concerning public local, long-distance and air transportation, to the latest mobility services for businesses. The developments will be presented from a technical, political, social and modern emotional view point.

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Electromobility in Europe

Together, we can accomplish a lot in Europe. I am very pleased, that we have succeeded in creating the present issue of our "Mobility tomorrow" with such a top-class insight into the various approaches of many European cities.

I would like to express my special thanks to the NoAE and the initiative GreenCities! I am honoured to be part of these initiatives.

What I was enthusiastic about from the start was the approach of mutual inspiration and learning from each other. This positive tenor and the zest, not to await something but to push topics independently – sometimes with scarce resources – is remarkable.

Talks with cities and municipalities show which technical solutions are useful and which requirements need to be met to serve the customer's needs.

This especially shows that there is a lot of good and positive in variety. Exchanging results and experiences leads us to become faster and more efficient overall. By the example of others more people engage in taking things into their own hands and implementing electric mobility.

I wish all readers enjoyment in learning about the different approaches and hope that we will succeed in setting much more in motion.

Get connected to our partners, so that we can reach the critical mass and make Europe visible around the world in terms of sustainability!

A. Mand /

Prof. Dr.-Ing. Achim Kampker

NoAE-GreenCities Special Issue An overview

elcome. This Special Issue of "Mobilität Morgen" represents the first official bulletin of "NoAE GreenCities". Experiences, ideas, innovation, technologies, opportunities: a green route to next generation cities has been sketched out in this special issue by many authors, representing cities, companies, institutions, and research centres. They are the first ones to believe and bet on our idea of innovation. An idea based on the integration of different competences, all focused on a specific target: creating comfortable and sustainable cities. The union of different competences can occur only if a stable but open platform is created and smart connections established. This is NoAE GreenCities: cooperation for innovation, projects for our future. "Coming together is a beginning; keeping together is progress; working together is success." - (Henry Ford)

Why is NoAE GreenCities special?

The official kick-off of NoAE Green-Cities was during the NOAE 5th Project Day, April 18th 2012, Dusseldorf - Germany. Just a few weeks of preparation and an unexpected success. Many European cities, such as Berlin, Dortmund, Castellòn, Vienna, Florence, Turin, Katowice, Copenhagen, Helmond, Frisian Islands, joined the network and the kickoff event, presenting their activities and projects in the field of e-mobility. Also, several one-to-one meetings have been organized with city, company and university delegates. Some cooperation has been started during the kick-off event and many others during the following weeks. The NoAE GreenCities approach has been the following: First stage: creating "connections" among cities, companies and competences (coming from SME and Universities); Second stage:



transforming connections to contacts; Third stage: Creation of practical pilot project proposals.

Thus, 5th Project Day presented a unique formula of cooperation, thanks to the mixing of technical workshops, exhibition, innovation competition, technical meetings; all around the NoAE GreenCities arena. Now, several pilot projects and also large network activities are ready to be implemented, thanks to private and public funding. Last call of the 7th Framework Program will be the next opportunity. Many of the players of these projects have been invited to give a contribution to the first NoAE GreenCities special issue, which has been organized in the following sections:

- **1. Introduction:** content overview and how NoAE GreenCities works
- 2. Network and cluster activties: examples of running network projects and approaches to e-mobility
- 3. Cities: actual and future projects on mobility
- **4. Companies:** state of the art, new trends and technologies for mobility
- **5. Opportunities** from Europe.

We hope that contents of the NoAE GreenCities special issue will be helpful for readers to better understand the state of art of green mobility implementation in Europe but, also, to see new trends and technologies for the next generation cities. NoAE GreenCities represents more than a simple network: it is an opportunity of cooperation for those who want to share experiences, ideas and knowledge to create a smart mobility in our cities. Everybody is welcome on our platform.



Roadmap and events in 2012 and 2013

5th Project day, April 18th 2012, has been the starting point for NoAE GreenCities. Now, the NoAE GreenCities team is working on the evolution of the new network, which will have a milestone at the next project day. The "Mobility Matrix" model (see below) has been designed and it will be implemented in several pilot and network projects. It is a unique approach, as it takes into account all components and phases of the mobility value-chain. Next dates for NoAE GreenCities are:

- October 16–18, 2012. IEEE-ESARS International Conference: NoAE special session for GreenCities and European projects (Bologna, Italy – www. esars.org);
- November 13–15, 2012. SmartCity Expo: NoAE will participate with a booth at the exhibition and with technical speeches (Barcelona, Spain – http://www.smartcityexpo.com/)



 April 18–19, 2012. 6th Project Day: the official event of NoAE Green-Cities with specific workshops, exhibition and a NoAE GreenCities arena for meetings and contacts (Dusseldorf, Germany – http://www.projectdays.com/)

Acknowledgments

The first NoAE GreenCities special issue has been achieved with the contribution of several experts from municipalities, universities and companies. A first thanks to all authors, who participated in creating a very high quality level of content for this special issue. Another particular thanks to the NoAE Green-Cities team for coordinating and collecting all proposals. Also, thanks to Ms. Tanja Pohlen (TEMA AG) for her professional work in giving shape to this special issue. Finally, special thanks to Prof. A. Kampker, who shares our vision of next generation mobility and supported NoAE GreenCities for this special issue.



NoAE-GreenCities Dr. Giuseppe Tomasso, University of Cassino and South Lazio tomasso@unicas.it



NoAE-GreenCities The change we wish to see in the world

ccessibility has become essential in our societies for well-being and "prosperity". Each person has the freedom to reach places where activities, interests or other people are. This is important not only for economic matters but, also, for "real quality of life". Of course, accessibility involves not only individuals, but also companies, associations and firms, in their ordinary changes of goods and services. Thus, accessibility and, hence, "mobility" nowadays gives a real degree of civilization to our world. A world, which turns around the physical center of life: the "city". Cities can be considered "hubs" for transportation, connected one to each other with roads, railways and airways: backbones of accessibility systems.

However, if on one hand "mobility" is synonymous to freedom and economic growth, on the other hand its effects have a strong impact on the natural and human environment. The Fossil fuel combustion which, most of the time, allows accessibility, generates emissions of pollutants that cause damage to human health, agriculture and ecosystems, contributing to global climate change. Paradoxically, mobility can limit freedom itself, "as it can contribute to the degradation of urban environments, with loss of quality of life and economic productivity from the delays and frustration caused by congestion and stress from traffic noise" (United Nation report on transportation).

Balance between environmental matters and progress trends is not so easy. The right compromises pass through a global approach to the next generation mobility, which includes new technologies, renewable energy (from well to the wheel method), smart integration of different systems but, also, a radical change in the transport and society organization.

Our approach

NoAE – Network of Automotive Experience, is a professional network with the objective to intensify the strategic organizational and technological exchanges of ideas and experiences among companies, research centers, universities and users. Most of the NoAE activities are focused on reducing the impact of transportation inside urban areas. For this reason, at the end of 2011 it has been decided to start the NoAE-Green-Cities platform: a project-oriented worldwide network, where it is possible to:

- share ideas and new concepts for emobility with high quality researchers
- integrate city-to-city e-mobility infrastructures
- construct open platforms for data (users, vehicles and logistics, etc.) interchange
- start common projects with other cities
- share technical solutions with all NoAE companies



Players of the NoAE-GreenCities platform

- evaluate the actual environmental impact of several proposed strategies to create "e-mobility models" for any kind of city
- give guidelines to companies for standards and technology integration
- promote the "full-green" approach for eMobility: only renewable energy for electric vehicles
- create public-private dedicated platforms for urban mobility

As mentioned, the focus on mobility is due to the strong impact that transportation systems have on energy and, hence, fossil fuel consumption: more than the 50 % of the world consumption (source: EIA). Therefore, it is important to identify the best "new technologies" for urban mobility and to optimize the integration process, considering the high initial cost of implementation. As a matter of fact, sustainable mobility can be achieved only by means of sustainable costs. This is the reason why the innovation process has to involve all the important players: cities (requirements), institutions (rules and standards), companies (technologies), research institutes (ideas and competences). Cities represent the first pillar of this innovation process and they can be considered the centre of the future global business.

NOAE-GreenCities: how?

Integration of knowledge and competences around specific requirements is not an easy task. The unique approach of NoAE-GreenCities is to implement the entire value-chain in the mobility innovation process by means of the "Mobility Matrix" (see after): from requirements to mobility, passing through optimal energy generation, distribution, management and consumption. Requirements are defined considering each city as a "mobility-hub", where ground, railways and airways transports, both for passengers and logistic, are integrated under one multimodalintermodal platform. ICT, smart-grid, renewable energy, efficiency and optimization are some of the basic keywords of this integration. This has to be the starting point of the innovation process to be implemented. Of course, this approach requires the combination of diverse technologies and, most of the time, also the interaction with several competitors. For this reason, NoAE-GreenCities promotes the establishment of public-private platforms on specific projects, in which it acts as guarantor for technology transfer and implementation process.

Behind NoAE-GreenCities

NOAE-GreenCities activities are coordinated and promoted by a group of volunteers, experts in the field of innovation, projects management and mobility. Following, NOAE-GreenCities founders:

- Dr. Giuseppe Tomasso
- University of Cassino and South Lazio tomasso@unicas.it – Martin Pohl
- NoAE-GreenCities Spain coordinator m.pohl@acs-cpd.com
- Jens Christian Lodberg Høj NoAE-GreenCities Island coordinator jclh@insero.dk

Besides, a group of volunteers forms the NoAE-GreenCities working team: Vassilen Iotzov, Ingolfur Hardarson, Peter Kuen, Arie Lavie, Simona Constanceanu, Peter Homa, Gabriel Vladut, Kristian Winge, Mikko Koskue.





Please, address any request and communication to:

Herbert Köpplinger, NoAE Director h.koepplinger@ewf-institute.com http://www.project-days.com

The NoAE Mobility Matrix

Il over the world cities, politicians, organizations and, even more significantly, companies are all talking about finding green solutions in order to secure the world we live in. The International Energy Agency has defined the Blue Map¹, which focuses on what developments should be made in energy production and consumption – with high focus on mobility – in order to keep the worldwide average increase in temperature down to 2 °C.

Many cities have already realized their responsibility in this process and started implementing changes in their mobility for public transportation, availability of roads (congestion charges, bicycle paths or closure of city parts) and investments in their own vehicle portfolio. In order to make this effect there has to be a long term strategy and commitment to pursue these initiatives for more than just the public relations that follow it.

The Mobility Matrix concept

This is why NoAE² developed and established the NoAE Mobility Matrix, which is a powerful and holistic tool to approach all the relevant areas of strategy development for large fleet owners in both the public and private sector.

"The NoAE Mobility Matrix is a tool developed by the Network of Automotive Excellence and is highly effective due to its integrated approach and the fact that it is supported by other NoAE activity fields such as NoAE Innovation and NoAE GreenCities³," says Herbert Köpplinger, Creator and Founder of the NoAE.

Within the paradigms of future mobility even multinational groups will realize areas in which they are lacking of expertise and struggling to overcome without the help of an independent innovative network. The NoAE wide international portfolio of experts can, based on its strong cross sectoral ties to both SMEs and large companies, institutes and research centres, rely on a network of experts. These can through NoAE make their competences available in each of the areas in the NoAE Mobility Matrix. This provides the city or company with the possibility of getting a tailored solution based on their needs and targets from the most competent product and service providers in Europe.

"This is what networking is all about. Using the strengths of other companies, where you need it and at the same time helping them with your strengths," underlines Prof. Giuseppe Tomasso, Chairman of NoAE GreenCities, and continues "When you have competitors working together in order to help a third party, you know that your network is powerful and the effect unique."

How to use it

The NoAE Mobility Matrix is built on the concept of network, where each contributor will profit for their work and the receiver will benefit from unique solutions focused on their overall strategy and needs. The usage of the matrix is based on close dialogue with the city or company, who wishes to focus on a greener mobility for the future. The process used is a five step process with a focus on keeping complexity low in order to deliver results quickly.

The definition of the strategic goals is an important first step in order to define an overall direction of the change that is to be made. This process is partly started

	Information & Communication	Means of transportation	People	Goods
Planing				
Execution				
Completion and payment				
Sustainability				

¹ http://www.iea.org/techno/etp/etp10/key_figures.pdf

² http://www.noae.com

³ http://www.noae-greencities.eu

by the organization itself but can be supported by the network in NoAE GreenCities, where experiences from other areas can be shared. The strategic goals are defined in such a way they can be targeted and measured for the best possible implementation of changes.

The strategic goals are then used in a methodical walkthrough of each area of the NoAE Mobility Matrix, which provides the organization with a task list of tools, approaches, contacts and assignments in order to achieve the desired targets for a green mobility.

The outcome of the second phase is then prioritized through simple and effective tools to showcase which are the most appropriate to start with and

thereby creates a complete roadmap with definition of responsibility in the organization in order to secure an organizational support and drive in the progression.

Since all tools and solutions are based on the NoAE, each of the approaches chosen will come with a number of experts, who will be able to aid the organization in the future realization of the strategic goals. Once phase 4 is reached, these will be involved in the dialogue and the NoAE controlled process will become more autonomous since each

activity will live a life of its own when moving into the implementation phase. The destructuring of the process will secure the momentum in each of the activities and avoid bureaucracy in order to achieve an effective and efficient implementation.

Jens Christian Lodberg Høj NoAE GreenCities jclh@insero.dk





AVVE Valencian Electric Vehicle Association Think big – Start small

Jorge Sanjuan (Vice President AVVE) interviewed by Martin Pohl (NoAE GreenCities Spain)

Iectric Mobility is on the agendas of all major cities. Can small and medium sized cities also benefit from this evolution? How can electric vehicles on the road also help those cities towards the necessity to fulfill future CO² regulations? How can it help to get them to cleaner mobility systems? Are those cities and municipalities prepared to go that route? The Valencian Association for Electric Vehicles AVVE has identified an immense lack of basic knowledge and missing solutions. The Association has detected a high demand for training and offers individual solutions with joint forces to overcome the missing capabilities.

Mr Sanjuan please let us know about the background of the Cluster

The Valencian Association for Electric Vehicle (AVVE) is a young association, founded in 2011 with a territorial scope in the Valencian community, i.e. the Spanish provinces of Alicante, Castellon and Valencia. The association was founded based on the initiative of Renault and the company Electric Lloc, system developer and manufacturer of charging stations for electric vehicles. Intense discussions between both companies formed the understanding of the need to meet regularly with companies interested in electric mobility to share experiences and grow together in the Valencia area. From the beginning there was the good possibility to gather local companies that cover the entire spectrum of electric mobility, from distributors of electric vehicles to companies working in the maintenance of batteries.

How do you see the development of your Association and how does it fit into the value chain for electric mobility?

The association is growing continuously and currently consists of 12 members. The members represent a reasonable selection of today's electric mobility value chain. Experts from the area of renewable energy, the interface between energy generation and the vehicle, the vehicle itself and the end customer related business models are joining our initiative.

Who are these members?

- Renault Retail Group Valencia Sale of electric vehicles
- Clem Ecologic Distributor of electric vehicles
- Electric Lloc Manufacturer of infrastructure for charging electric vehicles
- GND Nagares Group Supplier of electronic components for electric vehicles
- ITE Energy Technology Center
- Movus Promoter car sharing
- Prisma Luz Installer charging points
- Tecnibat Battery related services

- VSE Manufacturer of smart meters
- Energetia Management operation
- of electric vehicle charging points
- Gamesa Renewable energies
- Nissan Almenar Sale of electric vehicles

What are the main aims of the association?

Primarily we promote the implementation of electric vehicles in the Valencian Community. We act as a center of knowledge of electric mobility, educating and informing the citizens, municipalities, local Government institutions and public entities of its benefits and regulations. AVVE believes that there is a lack of basic knowledge on electric mobility and only through informing and educating, it will overcome that barrier and then the implementation of electric mobility will be possible in cities. It is essential that education and information are provided to both citizens and different departments of city councils, such as the departments responsible for mobility and environment. The same education and information has to be given to other public and private organizations e.g. driving schools, car insurance companies, etc.

Secondly we aim to promote business cooperation becoming a forum of companies with interests in the field of electrical vehicles, allowing the implementation of innovative joint initiatives aimed at exploiting new business

Network and Cluster Experiences





opportunities and to launch research projects, development, innovation and implementation of electric vehicle pilot projects.

How exactly would you describe your recent activities, what was your main focus with regards to the implementation of electric mobility in Valencia?

All of the activities can be summarized as follows: Promote, advise and act as an information and promotion platform in the implementation of electric vehicles in Valencia, with public and private agencies affected by the implementation of electric mobility. Examples of these activities include meetings with different cities and participation in different forums with citizens.

We are curious to get some examples

During 2012 AVVE has met with both, medium size municipalities such us Castellón (180,000 inhabitants) and with small villages as Genoves of only 3,000 inhabitants. For these events, the Association offers to the municipalities' electric vehicles and charging points, allowing citizens to drive such vehicles and attend an introductory presentation of electric vehicles. Similarly, meetings are held with the technicians of the municipalities where they are given information about measures that can be integrated into the cities to promote the introduction of electric vehicles and the different national and European legislation that must be taken into account. After this first meeting with the technicians and depending on their interest, workshops are held during the following months trying to initiate pilot projects.

And about the interaction between the companies?

We target to increase business dynamism of the electric vehicle industry, business opportunities and economic growth. Based on the new grown relationships between members, several companies are already working together.

Can you offer us some concrete examples about new business relationships catalyzed by AVVE?

They are of various shape and content and I would like to name you some significant examples that were created thanks to the association:

Renault / Prismaluz. Prismaluz has been nominated official installer of charging points for Renault in Valencia.

Clem / Electric Lloc. Implementation of fully electric buses on the city of Vigo by Clem where Electric Lloc has developed and manufactured the different charging systems needed in the city; charging systems in both AC and DC.

Movus / Electric Lloc. Movus has Implemented a car sharing system in the cities of Valencia and Sagunto where Lloc Electric has developed the ad-hoc recharging points and management software for carsharing.

How will you continue then in 2012 and what are your expectations?

During the second half of 2012 AVVE will meet with the other two main municipalities of the Valencia community, Valencia and Alicante and the same technical workshops will be offered afterwards. Based on the feedback we receive AVVE expects to increase its number of associates during the next months to become even more relevant and a focus point for all related electric mobility needs in the Valencia area.

Martin Pohl

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Jorge Sanjuan, Vice President AVVE vicepresidente@avve.info

Electric Vehicle Systems in Finland – EVE Beating the challenges – an open approach to electric mobility

s electric vehicles become more commonplace, a wholly new service business sector will emerge internationally. The long-term goal of the program is to decouple the amount of Finnish business related to electric vehicles and machinery.

The Electric Vehicle Systems EVE program is coordinated by Tekes – the Finnish Funding Agency for Technology and Innovation – and has a budget of approximately EUR 100 million. The EVE program is creating a new international community that will focus on creating new businesses around electric vehicles and the machinery and systems related to them as well as new testing environments.

The goals of the EVE program are:

- To create a community for EV industry and common view for collaboration and coordination of activities
- To improve national and international value networks with the help on programme services
- To create large test environments and demonstration projects in Finland
- To develop and commercialize new technologies and services especially for electric vehicles and mobile machinery

Central to the program is its customeroriented viewpoint. To be successful, the products must take consumer needs into account already at the product development stage. The collection of user experiences and the building of testing environments are supported by Finland's excellent infrastructure and technological know-how. EVE cooperates



with organizations around the world and constantly looks for new partners. The program is equally interested in attracting service providers, infrastructure companies and other organizations in the field. Finland is a perfect platform for e-mobility development because of its top class IT and engineering competence. The functional infrastructure and harsh weather conditions create optimal conditions for demanding testing environments.

The EVE programme takes advantage of the close co-operation of the Finnish research institutes and enterprises to create an outstanding international community of e-mobility businesses. Three of the main five big platforms are situated in the Helsinki region, which as capital of Finland holds a population of around 1 million people within a 765 sq.km area. The projects are described shortly below:

Electric Traffic – Helsinki Test Bed www.electrictraffic.fi

Traffic solutions for large cities are the most promising application area for electric vehicles. In the Electric Traffic project, the Greater Helsinki area together with dozens of companies develops test environments for electric public transport and private motoring. Consortium is developing urban structure, infrastructure and services more favourable and compatible with electric vehicles. Technologies are developed on the basis of user experiences, and the design aims to create a more pleasant and more functional urban environment. The aim is to create conditions that will enable speedy increase of electric vehicles in Finland.

EUL – EcoUrban Living www.eco-urbanliving.com

The EUL -project is a development platform for new urban development and electro mobility related technologies. The Eco Urban Living initiative aims to research, test and demonstrate the features and functionality of fully electric vehicles as well as the economic feasibility of related components, including various charging solutions. The initiative operates on an open platform allowing for the development and utilization of all types of equipment and services. The area of development is the part of Helsinki called Espoo, and the key operation partners are Valmet Automotive, Aalto University, Hanken, Lappeenranta University of Technology and Technical Research Centre of Finland VTT.

ECV – Electric Commercial Vehicles www.ecv.fi

The electrification of vehicles and mobile machinery offers great opportunities for reducing noise and air pollution. In stores, mines, goods transportation and public transport, the switch-over to electric vehicles can reduce local disadvantages significantly. The ECV consortium creates a world-class R&D network as well as a platform for the development of a wide range of electric commercial vehicles, their power trains and key components. ECV offers a comprehensive approach from components to demonstration platforms to laboratory and fleet tests. Finnish companies have a strong foothold in, for example, the manufacturing of electric mining machinery, forklifts and buses.

The projects outside the greater Helsinki area are

- WintEVE (www.winteve.fi), arctic testing facilities, operative in Oulu region
- Evelina (www.evelina.fi), a country wide testing facilities, operative in the center of Finland respectively.

For more information www.tekes.fi/programmes/EVE

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NoAE Green Islands of Europe Networking Solution for Closed Ecosystems to become green

re major cities the only to benefit from a greener and cleaner approach to mobility and energy systems? Of course not. This is why the initiative NoAE GreenIslands has seen the light of days propelled with enthusiastic islands of all sizes from Iceland to Malta and the Frisian Islands in Holland. It creates a worldwide network of islands working towards becoming green; for the future and for the economy.

Background

The main thought of the NoAE Green-Cities network is to create a network where cities, companies and research institutions can meet in order to build projects, exchange knowledge and experience and create a common framework for the future of mobility across Europe. The concept was immediately a success and now a new subgroup has evolved as a part of the dynamic structure of the initiative.



The global mega trends include as one of the most central for the development of Mega Cities and Mega Corridors, where millions of people will be living on very little space. These cities will become massive islands of people in the midst of countries. In order to support their development, advances within technology, urbanisation, transport and many other areas are needed. In order to develop this demonstration, areas are needed and islands provide fantastic opportunities for this. An island is a closed area that in all ways can be disconnected from the mainland and can therefore act as an individual test hub for new technological solutions or systems.

All over the world a large amount of research is put into electric grid and systems on islands – from Bornholm in Denmark, via Frisian Islands in Holland and Mallorca in Spain to the Green Island in Taiwan. These are therefore sources for important knowledge for the future of smart cities and mobility. The NoAE GreenIslands initiative serves the role of creating a link between all islands that are interested in the future of mobility and how they can benefit from and contribute to it.

NoAE GreenIslands – the first steps

Starting with a number of islands, the concept of NoAE GreenIslands is the same as that of NoAE GreenCities – creation of a network that allows for exchange of ideas, knowledge and experience between all relevant stakeholders that work with the mobility of the future.

Already at the 5th Project Day of the Network of Automotive Excellence, the first islands made significant their interest in developing themselves to CO² neutral areas, where mobility plays a very central role. This drive and initiative is to be kept alive through an active work from the core team behind the network and with the establishment of national partners in all relevant countries.

The NoAE GreenIsland initiative will work with the same tools as NoAE GreenCities and therefore is to be understood as a unified part of the initiative; however the nature of islands makes it possible for them to address other and specific challenges that would be too complex in a larger city.

Islands can learn from cities as well as cities can learn from islands but just as important is the exchange of knowledge and experience between the different islands, where the Frisian Islands as an example are talking with Bornholm in order to see how their individual knowledge can help each of them develop. This interaction between central stakeholders becomes possible due to NoAE GreenIslands' construction with national contact persons who know the right people in the involved organizations and can act as door openers and their constant communication with other national contacts create a net, where new ideas, opportunities and potential projects are actively being pushed to the network members. As a member of NoAE GreenIslands, the organizations behind them will become a part of an active group with an ambitious perspective on the future.

Future themes to approach

The start of NoAE GreenIslands has created new opportunities for companies and research institutions to work with areas that can be controlled in a completely different way, which is highly relevant when looking at new opportunities for mobility, logistics, ICT and most importantly electricity. With the coming of the electric vehicle these topics blend into each other and a holistic view on these issues is necessary in order to understand the complexity of the future. This is brought into practise with the NoAE Mobility Matrix that allows for all aspects of mobility to be developed to create holistic solutions.

Some of the solutions for islands will be directly transferable from islands to major cities and can create growth through product and service sales. Some need to be developed further and are obvious sources for future projects. These will however not be identified unless active work is done in connecting the innovative solutions from the islands with the companies and cities where they can be used. It is in such a work that NoAE GreenIslands can also prove its value.

The core issues for 2012 for NoAE GreenIslands will be the expansion of the network to even more islands, cross linking with projects to establish Horizon 2020 task groups that will work on new project ideas. Lastly the close link with NoAE Innovation will be showcased at the 6th Project Day in Düsseldorf – April 17-18 2013, where NoAE GreenIslands will be a visible and active part of the NoAE GreenCities workshop and allow for islands, large and small, to interact with the industry.

Jens Christian Lodberg Høj NoAE GreenCities jclh@insero.dk







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Free City The electrical-emission-free and sustainable satellite city in Gdansk

The Free City project construction has started in Gdansk, northern Poland. The 27-acre Free City is a "city within a city" – modern, self-sufficient and adapted to the needs of its inhabitants.

The founders of the Free City have decided to offer a new quality of life in a modern residential district. Developing an area the size of a small town is a challenge, but also an opportunity to create an entirely new, well thought out and valuable living space, tailored to the ideas and needs of its residents.

The Free City has been designed as a big garden, where the entire area may be used for recreation, but which also includes more private spots. Vast fields and meadows, mild hills and an existing pond allow for diverse recreational activities for residents of any age. Keeping in mind family life, we have designed a network of walk and bike routes, linking the most important places of this small town and, at the same time, creating an additional opportunity for daily recreation. Low-rise buildings are concentrated around the single, central axis, effectively setting the inner part of the small town away from car traffic, which has been redirected to the outskirts or underground.

The underground parking garages as well as the outdoor parking lots will be equipped with EV (electric vehicle) charging stations. Electric bus transportation connecting the Free City with Gdansk is currently under discussion.

In the age of incredibly intensive technological progress related to the development of electricity the environment is becoming more and more exposed to the effect of the electromagnetic field (EMF) created by artificial sources.

Aiming at the welfare of the Free City inhabitants, Eco-Classic together with ADR Technology will become the first developer in the world to use modern technologies involving absorption of low frequency electric emission Free City means living away from the harmful effect of the electric field

The shielding materials used in the apartments (special primer) are absorption layers designed to protect humans against the artificial electromagnetic radiation. The protection range is an outcome of ingredient combination used to create the shielding system. It has the best shielding properties against EMF in the range of ~100mHz to ~1Mhz. It allows for a two-fold decrease in the intensity of the electromagnetic field in a dwelling and, therefore, significantly reduces the effects of EMF on the human body.

The Free City will eventually comprise of 1200 low-rise apartment buildings, service and trade space, courtyards, playgrounds, landscaping and parking lots.

As a result, it will combine innovation, functionality and well-thought solutions where its success is measured by the satisfaction of its inhabitants.

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Empowering Business Solutions for Smart Cities





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[smart thinking]



Paul Timmers Director Sustainable & Secure Society, European Commission



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Michael Dixon General Manager Global Smarter Cities IBM



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Kenneth Berlin General Counsel -Coalition for Green Capital



Nigel Jacob Co-Chair, Mayor's Office of New Urban Mechanics Boston City



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[smart solutions]



Efficient last mile logistics Sustainable management of freight transport demand in urban areas

ities face the challenge of growing freight transport demand. In an increasing number of cases, urban road transport infrastructure is overburdened, transport supply services are deteriorating, and residents have to contend with negative environmental and social impacts. Fuel combustion in urban areas accounts for a half of the overall road transport fuel consumption.

By re-organising freight movements to reduce their volume or redistribute the demand in space or time, it is possible to limit freight transport related energy consumption and the negative environmental impacts of freight vehicles. This is what the cities of Newcastle and Leicester (United Kingdom), Szczecin (Poland), Stuttgart (Germany), Parma (Italy), the Municipality of Montana (Bulgaria) and the island of Malta are seeking to achieve in their joint project C-LIEGE - Clean last mile transport and logistics management for smart and efficient local governments in Europe.

C-LIEGE is being delivered under the Intelligent Energy Europe Programme. Representing the seven C-LIEGE "urban labs", public authorities, think tanks, policy makers and scholars in the above locations are seeking to reconcile the needs of local businesses and freight carriers with the public policies proposed by C-LIEGE, and to institutionalise the functions of the so-called City Logistics Manager.

To equip City Logistics Managers with the right tools, C-LIEGE has introduced a set of 45 standardised push and pull measures. Based on good practices in energy-efficient urban freight transport identified in cities across Europe, this C-LIEGE toolbox evaluates the level of local applicability of each measure in order to identify which have the best chances of success. The toolbox is designed to serve administrations of all interested European cities.

Newcastle leads the way for attractive pull measures in C-LIEGE: FORS

A new membership and certification scheme has been introduced in the English metropolitan area of Tyne and Wear to help trucking companies improve their operations by becoming greener and cheaper. The Freight Operator Recognition Scheme (FORS) is being set up to help freight operators cut their costs, reduce their energy consumption and environmental impact, and improve safety standards by sharing best practice and progressing through a series of bronze, silver and gold awards.



C-LIEGE approach



Network and Cluster Experiences





This C-LIEGE scheme has been introduced by the Tyne and Wear Freight Partnership with financial assistance from Transport for London – the local government body responsible for the transport system in Greater London and the implementation of the London transport strategy. Transport for London already run a successful FORS scheme in the capital.

Certified FORS members can demonstrate their environmental standards to customers and benefit from a range of services such as driver profiling and development, online driving training, fuel cost reduction tools and advice, best practice advice direct from leading industry experts and tools to help improve the performance of their fleet.

The first step is for operators to receive bronze accreditation, demonstrating lawfulness and best practice while silver and gold certified operators are more actively committed to improving safety, environmental impact and efficiency, and can provide evidence of improvements.

With the London scheme covering more than 85,000 registered vehicles being run by nearly 800 companies, FORS has already proved to be an effective and cost efficient way to work and communicate with the industry and a means of encouraging more sustainable and environmentally friendly business operations.

Developing freight quality partnerships

A high priority within C-LIEGE is to develop freight quality partnerships where they do not already exist. Being equipped with one of the largest port complexes on the Baltic Sea, the Szczecin Metropolitan Region experiences an increase in freight transport volumes every year. The introduction of a freight quality partnership as initiated by C-LIEGE has been endorsed at the highest political level in the Province of West Pomerania:

"I expect that the defined policies within C-LIEGE could evolve from a pilot to a long-term model and public-private-partnerships in the whole Szczecin Metropolitan Region and the Baltic Sea communities of West Pomerania. I am grateful that Szczecin has been given the chance to implement newest trends. This is why I welcome very much this project." Olgierd Geblewicz, Marshal of West Pomerania

Integrating soft and hard measures

One of the major concerns of the Municipality of Montana with regard to urban freight transport is an anticipated increase in the volume of freight traffic passing through one of Montana's residential areas, following the opening of the second Danube bridge between Bulgaria and Romania. However, increasing the capacity of the urban road infrastructure to cope with this extra demand is not the only solution for Montana. The municipal administration intends to introduce C-LIEGE measures such as charging for distribution operations in central areas and the enactment of access "time windows".

The local council of Tarxien (Malta) intends to reinforce long-term planned infrastructure measures with a number of C-LIEGE soft components: a freight consolidation centre complemented by the closure of the city centre to traffic. Short-term push and pull measures from the C-LIEGE toolbox will help to bridge the time until the hard measure is implemented: these include the rerouting of traffic on major roads including one-way accessibility and complete closure for traffic as well as better signage in order to inform drivers of the new diversions introduced.

C-LIEGE invites all interested stakeholders to access its toolbox for efficient urban freight transport demand management at: www.c-liege.eu

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Electromobility in Copenhagen Ambitious targets trigger Trendsetting Solutions

ue to its e-mobility project the municipality of Copenhagen has turned out to be a European pioneer, when it comes to implementing hydrogen- and electrical driven vehicles (EVs) in the townscape.

With its constantly evolving population and its dedication to environmental responsibility Copenhagen has been at the head of initiatives within sustainability and eco-friendly solutions. In order to accommodate the increasing requirements for CO² reductions in traffic and furthermore introduce EVs to the city, the Technical and Environmental Administration has constructed an ambitious climate plan which is already being executed.

With this climate plan the municipality of Copenhagen has shown the way and proven to be a first mover in introducing and implementing hydrogen- and electrical vehicles in Denmark. The Technical and Environmental Administration began the project in 2009 and has since the 1st of January 2011 acquired EV's to form part of their original car fleet. Eventually, as conventional cars are to be replaced due to common wear, the new hydrogen- and electrical vehicles will be purchased instead. The objective before 2015 is that 85 percent of the car fleet in the municipality of Copenhagen shall be hydrogen- or electrical driven. This will result in a fleet of 500 EV's and a reduction of approx. 800 tons CO². Furthermore the employees in the municipality are obliged when driving in their work to use the available EV's in their daily errands. This has turned out to be a huge success. Each administration in the municipality of Copenha-



gen must – when renewing cars for personal transportation or expanding the fleet – purchase EV's, if it is possible to find a car that fits the purpose.

The success of using EV's in all the administrations in the municipality in Copenhagen has created a snowball effect to a great number of other Danish municipalities, organizations and companies. In order to make it easier for the common citizen to benefit from their choice of purchasing and driving in an EV, the municipality of Copenhagen has put op several charging stations all over the city which should make it more convenient for private people to own and drive an EV.

Today the EV fleet in the municipality of Copenhagen consists of 62 cars whereas 54 of them are EVs and the remaining 8 are electrical vehicles driven by hydrogen. The car fleet is continuously growing and 15 new EVs driven by hydrogen have just been ordered.

In order to become a greener city the initiatives for Copenhagen have not only been to replace the conventional cars with a fleet of EVs, but furthermore to reduce by half the number of vehicles



in the fleet by making the transportation opportunities more efficient. Moreover, in order to reduce CO^2 and become CO^2 neutral by 2025, the municipality of Copenhagen has been testing the electrical driven busses in order to make the public transport sustainable and cut down the emission of CO^2 in collective vehicles.

As Copenhagen is known as the "City of Cyclists" electrical bikes are - of course - also part of the EV strategy. The Administration has bought 20 e-bikes and the goal is to shift shorter works trips from car to e-bikes. The initiative has also reached beyond work as a number of employees from different administrations are testing e-bikes in their daily life. Although the sale in the EV business is growing slowly, the work and initiatives in Copenhagen has shown that a public authority, through its engagement in environmental issues, can act as a role model and catalysator to initiate a green trend within e-mobility.

Annette Kayser, Copenhagen Municipality Technical- and environmental administration annkay@tmf.kk.dk

Katowice – the city of high technology

ocated in the heart of Upper Silesian metropolitan area Katowice has been for many years in the centre of social and economic changes and now it is becoming the city of technological progress. Its localization imposes a special role in terms of management and tackling new challenges in order to improve inhabitants' life quality. Therefore the city has decided to focus on development of key technologies such as e-mobility, efficient energy management and high technologies. Development of e-mobility has started thanks to participation in EVUE project (Electric Vehicles in Urban Europe under URBACT II programme which aims at establishment of European cities network for providing sustainable and integrated development). Preparation of the Local Action Plan for e-mobility development assumes, from its early stages, widespread promotion of e-cars as well as foundation of a preferential scheme for e-cars users which includes parking lots' fee exemption. The second stage refers to creation of the urban infrastructure of charging points for e-cars. Approx. 30 charging points will be placed throughout the city for both fast and garage charging. Katowice held a meeting for the leading cities on best practices on the methods of implementation of e-mobility. The implemented project as well as actions correspond with the strategy of the urban development which depicts Katowice as the city of green areas and high technologies. Currently 42 % of the city is covered by green areas such as gardens and parks. Functioning of the agglomeration and city requires effective energy management which reduces both costs and negative impact of the city on environment. Those objectives encouraged Katowice to participate (along with the Polish Foundation for Energy Efficiency) in two international projects: PEPESEC

(Partnership Energy Planning as a tool for realising Sustainable Energy Communities) and SEC-BENCH (Sustainable Energy Communities – Benchmarking of energy and climate performance indicators on the web). The goal of PEPESEC is to collect experiences and tools and then use them for energy planning. Its innovative approach lies in cooperation of local authorities from EU countries, unceasing experience exchange and mutual inspiration for solution search. So far the cities managed to hold a series of thematic trainings and conferences, implement a system of energy and environment management and create new methods based on sustainable development criteria for supplying cities in fuel and energy. SEC-BENCH project which concentrates on comparing European areas in terms of indicators for energy and climate changes has led to preparation of two fundamental documents. The first one presents the concept and vision of economic progress within the city (included in the strategies for energy development) while the second one

consists of assessments and methodology for energy indicators of the city (included in Katowice benchmarking). Around 33 tasks such as thematic workshops, trainings, conferences and projects' applications have been prepared and carried out. Agglomeration development is impossible without a reasonable use of modern technologies which flourish in this region. IT and automation companies as well as other firms which, thanks to their experts, make the region so powerful have their headquarters in the agglomeration. Therefore Katowice is interested in creation of clusters which would be based on high-tech of the city. Currently we are working on a model of cooperation which would live up to all expectations.

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Electromobility in the German Capital Region



The progress to intelligent, networked and individual mobility in Europe's large metropolitan areas is under way. Electromobility has become an important component of the mobility of the future and plays a strong role in an environmentally friendly 'green city.'

Many automotive experts believe that the market will expand to include a large selection of electromobility possibilities from an assortment of providers. Already today we are witnessing that it is no longer important for people younger than 30 to possess their own cars in a metropolis like Berlin. This is different from older generations. Young people want to be mobile. In Berlin, 44 percent of all households have no car at all. In addition, the cars that are privately owned are normally not used for 23 of the day's 24 hours. We believe that this trend of changed behavior in mobility will stabilize or even intensify. 'Mobility as a service' is one of the catch phrases for the future and will govern

the 'market of new mobility.' Innovative concepts for mobility will seize upon the changing and more diversified needs of the residents and visitors to our city, or already have. The combination of various vehicle providers, like car-sharing or multimodal transport solutions. Travel and events services will increasingly take hold. This will ring true for transporting people and goods, to an equal degree.

Less than a couple of decades ago, the automobile branch discovered electromobility through the development of new drive concepts. For Berlin and Brandenburg metropolitan areas, this is an enormous opportunity: Berlin-Brandenburg aims to become the leading location for electromobility in Europe and with it, an internationally visible place for electric vehicle testing and usage. In the German capital region, the entire value-added chain for electromobility is planned – from research and development to production to use and training – in order to make electromobility visible and able to be experienced by residents and visitors.

The conditions are excellent. Brandenburg is the leader in sustainable energy production. In the future even more 'green' energy will be available from Brandenburg. There, for example, hydrogen is produced from wind energy, and it is used to power fuel-cell vehicles in Berlin. Power supply companies offer charging systems and payment systems for public charging points. In addition tests are under way here for rapid charging, inductive charging and controlled charging.

The success has made our efforts worthwhile. On April 3, 2012 the German government announced that four regions in Germany were to be further developed as showcases for electromobility. These regions are intended to make electromobility more visible through a variety of projects and allow for the population to experience the concept. The federal government will provide a total of 180 million euros in funding. Berlin-Brandenburg is one of these four regions with its "International Showcase of



Electromobility": Berlin and Brandenburg support the showcase by up to 25 million euro. This is a very important signal for us. Four focal areas, "driving," "energy storage," "charging" and "coordination" will provide the guiding principles for our showcase.

We stand at the beginning of an intensive endeavor. We have planned more than 70 different projects for the showcase. These range from electric car-sharing for the public to fleets for companies or the city's administration and even electric delivery. A particularly noticeable project for residents and tourists will be the battery-run electric bus line from the central train station through Berlin to the eastern train station. The buses will be charged inductively at the first and last stops. That means they will be fed electricity from below without the necessity of a charging cable. Pedelecs, or electric bikes, for commuters between Berlin and Brandenburg, will also be part of the showcase.

The topic of networking plays a central role in all the projects. One example could be to link the various transport possibilities, like public transport, carsharing and bicycle services to a 'mobility card,' or a smartphone app in a consumer friendly way. A linked car, for example, would be able to offer entirely new possibilities for use in the transport infrastructure - perhaps for the optimal coordination of traffic light phases. Another aim could be for electric transport to be linked with an intelligent electricity network so that electricity would be taken foremost from wind power systems in Brandenburg. The goal is to make the transport system in Berlin-Brandenburg more intelligent and also more compatible for the climate and the city.

The many car-sharing projects here serve this purpose. Car-sharing was invented in Berlin and was fine-tuned here, so to speak. So it's no surprise that Berlin is today "the place to be" for carsharing in Europe with its more than ten providers. Some of these have added electric vehicles to their fleets and make electromobility available to the public in the process. Large, well-known providers like car2go, drive now and Flinkster are involved, as are several smaller providers.

With the emerging "e-Mobility-Showroom" at Potsdamer Platz and the already existing EUREF-campus at the gasometer in Schöneberg, we have developed and conceptualized two prominent sites for electromobility. They are popular far across the region's borders and make the topic tangible for specialists and also for the broad population.

Electromobility's potential will only be fully appreciated as an integrated part of a total transport and mobility concept. We, the Berlin Agency for Electromobility eMO, are emphatically working on the preparation and implementation of this ambitious concept. We have the support or more than 200 project partners from politics, industry and research: 107 large companies, 90 SMEs, 34 R&D and educational institutes, 24 chambers, networks, associations, and also both states, form a strong network for electromobility. With Audi, BMW, Daimler, Ford, Opel, VW, Citroen, Fiat, Mitsubishi, Peugeot,

Renault Nissan, Toyota and Volvo, 14 global automobile manufacturers and nine of the 10 largest in the world, including all the German manufacturers, are taking part. Bosch, Continental, Siemens and Deutsche Bahn, as the sector leaders in the automotive supply fields, energy technology, infrastructure and transport, are involved. BVG is one of the largest European public transport companies. Three of the four large German energy providers - E.ON, RWE and Vattenfall - are also on board, as are globally active logistics companies DHL, Hermes and UPS. With Vodafone, Nokia and Capgemini three large IT and communications companies are also participating.

Electromobility fascinates both, developer and user. It's sustainable and makes sense both economically and ecologically. And electromobility is doing more than its part to implement modern mobility in a modern metropolitan region like Berlin. It's a big step toward the 'green city.'

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DRIVEN – Helmond City of Smart Mobility

s the Netherlands are densely populated and very mobile, the road network in the Netherlands is highly utilized. This leads to an average of 200 kilometres of traffic jams per working day. Many measures are taken to facilitate this high level of mobility and many more are needed as traffic, despite the economic crisis, is expected to grow further. Sometimes new road infrastructure is inevitable. However, modal shift towards more sustainable modes of transport and better use of existing infrastructure, are in many cases the more preferable options.

Intelligent Transport Systems (ITS) could very well contribute to a better use of the existing road network and could, at the same time, increase road safety and reduce the negative impact of traffic on the environment. Electric vehicles could also help to achieve Helmond's smart mobility ambitions of a "zero-emission, zero-congestion, zero-accidents" traffic system.

Helmond mobility policy

In Helmond the share of bicycle use is already very high compared to other European cities. More than 30% of all inner-city trips are done by bike. Although a further increase of sustainable transport modes will be supported by the city, Helmond is very well aware that good accessibility for cars and freight vehicles is a requirement for an economically viable city. Helmond believes that with the help of technology, the negative impact of traffic could very much be reduced. One of the key aspects in Helmonds policy is the active involvement of the city in ITS and electric mobility pilots and showcases. This involvement includes participation in the set up of smart mobility testing facilities. Being an industrial city and hosting the Automotive Campus NL on its grounds, Helmond has become an important centre for automotive research and testing activities. As developments in the automotive sector are increasingly connected with mobility issues such as road safety, congestion and air quality, Helmond is confident that research and innovation in the automotive sector will contribute in finding answers for the current and future mobility challenges.

ITS test bed

Over the last 10 years, Helmond has invested in an extensive traffic management network, providing a platform for innovative solutions. The Helmond test site covers the intra-urban main road (N270) through the city centre, the interurban highway A270 between Helmond and Eindhoven, and various test facilities on the Automotive Campus. Testing equipment on different scales is available in one geographically concentrated area. This unique test environment for ITS has already been the location for showcases. In various projects and 2009, Helmond hosted the European CVIS and SAFESPOT events, in which the benefits of ITS for road safety and traffic flows have been demonstrated in real-life traffic situations. On the inter-urban highway A270, Dutch research institute TNO in 2010 and 2011 performed a number of important tests and showcases, like the shockwave prevention tests and the Grand Cooperative Driving Challenge.

The region is now ready for the next step. More than twenty companies, road authorities and knowledge institutes working in the field of smart mobility together are realizing a permanent test and innovation environment for smart mobility in the Helmond region: the Dutch Integrated Testsite for Cooperative Mobility (DITCM). A common vision on smart mobility by all stakeholders and the use of shared facilities



will speed up the deployment of solutions in the field of traffic management and ITS. By working together, the DITCM partners utilize each other's innovation power and save on the costs of expensive test facilities. This unique cooperation between public bodies and private companies enables the Netherlands to become one of the frontrunners in Europe in the field of smart mobility.

Electric Mobility

Helmond also has a comprehensive program on electric mobility. The city is working on projects in 4 program lines (infrastructure, vehicles, branding and development & innovation). In this way Helmond aims to facilitate and stimulate the use of electric vehicles within and beyond its city limits. At this moment there are already 18 public charging points in Helmond. Through various events Helmond is creating awareness with companies and individuals. The city also offers a co-funding scheme to stimulate the purchase of electric vehicles by companies.

Just like in ITS, Helmond is actively supporting innovation in electric mobility. The city offers the urban environment as a living lab for pilots and tests. Together with partners from the industry and knowledge institutes, projects have been initiated in the field of full electric public transport and the integration of decentralized energy solutions, smart grids, smart charging and electric vehicles in the Helmond "All Electric Street".

Partner in projects

The city of Helmond not only facilitates R&D and testing, but also participates as a partner in projects. As an example, Helmond is one of the pilot cities (together with Bilbao, Lyon and Kra-kow) in the European FREILOT-project.

The intersections on the main route through Helmond are equipped with technology for communication between traffic lights and freight vehicles. FREI-LOT vehicles get priority at these traffic lights, and in addition to the priority, the vehicles get a speed advice and continuous information on the moment the traffic light will change colour when nearing the intersections. By driving the right speed and anticipating, the vehicle will either arrive at the intersection in a green window or will be able to smoothly come to a halt. This measure reduces the number of stops significantly, reduces CO² emissions with 13 % and is saving both time and fuel for the fleet owner. Helmond Fire Brigade also took part in the pilot, getting absolute priority at intersections in case of emergency.

Conclusion

The positive results of the FREILOTpilot strengthened our ideas that smart mobility technology is one of the main answers to the environmental, congestion and road safety challenges. The challenge however is not only in the technology itself. To come to a widespread deployment of new smart mobility technology, it is all about cooperation. Cooperation between industry, R&D, education and public authorities. In this sense, also cities have the possibility to play a crucial role in making a better future. This idea keeps us motivated, it keeps us DRIVEN.





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Helmond is the winner of the European iMobility award 2011



DITCM partners overview

Dortmund – Flagship of E-Mobility in the Metropole Ruhr

The Metropole Ruhr is one of the largest conurbations in Europe. Once the industrial pulse of the continent, today the Metropole Ruhr is a technological, commercial, scientific and cultural centre at the heart of Europe. 5.2 Mio people live in an area of 4,400 km². Therefore this region belongs to five largest metropolises in Europe.

Among the cities of the Metropole Ruhr, Dortmund is the largest one. 580,000 people live here. It is the regional center for science and the economy, the interface between the metropolis and the surrounding countryside. Due to its numerous universities and research institutes the city has become a hot spot for the energy sector and technologies of tomorrow. The "Dortmund-project" is a success story for the structural change from an area that focussed once on mining, steel and brewing towards a modern city offering a wide range of service industries.

New technologies and climate protection are the leading topics which are supported by all stakeholders of the city and which have become the guidelines of the new urban development. In 2009 Dortmund received the Eurocities Award for its "Konsultationskreis Energieeffizienz und Klimaschutz" (Steering Committee on Energy Efficiency and Climate Protection called "KEK"). 28 stakeholders worked together for a better future. The KEK is the foundation of the action program "Climate Protection 2020" whose activities will save 40 % CO² by 2020 (compared to 1990). Electric and sustainable mobility, renewable energies and smart technologies are major topics of the program.

"Dortmund has been using e-mobiles for more than 100 years", as commented by Mr. Jung, director of the public services Dortmund when discussing issues of electric mobility. Since 1989 ISOR e.V. (Initiative for Solar Mobility Ruhr) has been organizing the "Tour de Ruhr". It is a successful demonstration that electric vehicles are reliable tools in the daily use and that they are no longer individual prototypes of a few experts.

2009 the NRW cluster "Infrastructure and Networks / Electric Mobility" was founded at the Technical University of Dortmund. It is one of three technology centers of the State of Northrhine-Westfalia beside the clusters "Battery and Materials" (University of Munster) and "Automotive Engineering" (RWTH Aachen). The "TechnologieZentrum-Dortmund", located next to the university, is the home of the competence centre for interoperable e-mobility, in-

frastructure and networks called "TIE-IN". TIE-IN is the test and development site which can be used by utility companies or manufacturers of charging stations and systems, clearing systems or communication devices. Besides the testing of electric or communication requirements, further testing options will be offered. For example, environmental tests, operator security, functional tests of electronic systems or electromagnetic compliance checks. The competence centre is focusing on the supply chain from the power network, charging stations and clearing systems to the on-board electronics.

September 2011 the project "ELMO – electric mobile urban retail logistics" was started. Fraunhofer Institute of Material Flow and Logistics is the lead partner. It is going to approve new ur-



Ullrich Sierau, mayor of the City of Dortmund, is using an e-scooter on his way to a meeting.

ban retail concepts. For the first time three logistics companies, UPS Deutschland, CWS-boco International und TEDi Logistik, will use 12 electric commercial vehicles with a minimum total load of 7.5 tons, to supply goods to customers in the Metropole Ruhr without any excess noise and CO2. New retail concepts will be developed from the experience of this project. The objective is to reduce the density of traffic during rush hours and to fulfil environmental requirements. The trucks being using in the project are based on production vehicles and on upgraded conventional vehicles which had been using diesel engines before. In addition IT tools such as planning software or telematics services will continuously be improved to support the specific requirements of electric vehicles.

The Federal Ministry of Transport, Building and Urban Development is supported another project called "metropol-E". Its objective is the evaluation of new planning tools to install infrastructure considering settling and transport concepts. Furthermore a new fleet solution is being developped for the fleet of the City of Dortmund. It will be tested and integrated into the mobility concept of the city administration. Within the following two years existing vehicles will be replaced by low-carbon vehicles such as e-mobiles, supported by new reservation and charging concepts.

In August 2012 twenty electric vehicles will be integrated into the fleet (10 cars plus 10 e-bikes) and evaluated. It is important for all the departments of the city administration that the electric vehicles will perform as reliable as conventional combustion engines. For the optimized use a new IT based fleet management tool is being developed. It is an important issue to provide a central booking system which can be accessed by every employee. The objective is the creation of an integral mobility concept that includes the public transport just as well as car sharing options.

In addition innovative charging systems will be developed such a novel fast charge technology. They will be com-



City of Dortmund

bined with smart booking and clearing systems. For marketing purpose the installation of new charging stations will opened in the pretence of the local stakeholders.

Both issues – fleet management and charging concepts – will be integrated in a new use concept of the city administration. For a better understanding of the new technology further vehicles which are no part of the project metropol-E will be invited to participate into this evaluation of the charging infrastructure. The City of Dortmund is leading the way of electric mobility which might be copied by other cities in the future.

The "Steering Committee of Electric Mobility Dortmund" is a unique institution because it is acting as one partner for all questions related to questions and requirements of electric mobility. It helps to find project partners much easier. And it will provide uniform regulations concerning the installation of infrastructure or legal planning issues. Due to its successful participation in the "IBM Smarter City Challenge" Dortmund is the first German city which is going to develop a catalogue of countermeasures and an approach towards a smart future of the Metropole Ruhr supported by the experts of IBM.



7,5 t e-truck, operated by CWS-boco

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Municipality of Timisoara Challenges and Opportunities in developing an Urban Mobility

Timisoara is undoubtedly the largest and most important city in the west of Romania, a city in constant development, important university centre, economic "pole" with an intense cultural and social life, being a promoter of development all over the western region of Romania.

In the past 20 years, the city benefited from major changes because of numerous investments covering various fields of activity, especially in infrastructure, determined also by the increase in the number of road vehicles and of motor traffic.

As the old walled city was not prepared, in terms of urbanism, to face an everincreasing influx of road traffic, the local public authority was compelled to implement actions and projects focused on traffic modernization and optimization.

In 2007, the "Vision Timisoara 2030" concept, developed by a consortium of specialists in exemplary collaboration: Fraunhofer IPA Stuttgart, "Politechnica" University of Timisoara and the Timisoara City Hall, generated a unitary approach in the long run of the manner the city's infrastructure should develop. This project will ensure the improvement of all types of urban traffic, to ensure mobility in the urban, metropolitan area.

Signing of the Covenant of Mayors and approval, in 2010, of the "Climate Change Strategy and Action Plan to combat, mitigate and adapt to climate change in the city of Timisoara", which includes the Sustainable Energy Action Plan, bring forward measures and actions in "Transport", the second important sector in CO^2 emissions. The target of reducing CO^2 emissions proposed for the former sector is 22 % by 2020.

Given that, since 1990s, the wish to purchase a private motorcar has been achieved easier and easier, and dependency on one's own car has become more pronounced, the municipality was bound to improve and expand the local public transport network and to provide new transport services and facilities so that this sector could become more attractive.

The first municipal projects aimed at strengthening and prioritizing public transport by creating dedicated lanes and more efficiently optimizing the existing infrastructure. The increase in attractiveness of public local transport started with the renewal of the transport fleet, the purchase of modern, safe, energy efficient, lower polluting buses and trolleybuses, which now provide the conditions for public transport at high standards. Interconnecting Timisoara with the suburban localities from the metropolitan area by extending local transport routes will ensure easier mobility for the residents in these rural areas.

Another direction in the development of mobility is the promotion of bicycle transportation. At this moment, Timisoara has more than 60 kilometres of cycle paths in a network that is in constant development and interconnection. Special attention is given to ensuring the safety of cyclists in traffic, with specific measures to reduce the speed of vehicles on certain road segments, to develop good road signs and to promote education and information actions directed not only at cyclists but also at pedestrians and drivers.

The two recently inaugurated bike-sharing centres have been welcomed both by Timisoara dwellers who do not own bicycles, and by tourists who can now visit the city in an economical, dynamic, and environmentally friendly manner.

Environmental education is aimed at all road users and is a constant concern of municipality. Projects dedicated to pupils and students play a crucial role, the young generation being a target group able to assimilate and promote further, to the adult segment of the population, new mobility concepts such as environment protection and sustainable development. The actions focused on environmental education of the young generation, while enjoying constant success, are prerequisite for





responsible civic behaviour towards the environment.

Implementation and development of intelligent traffic management through traffic control, GPS systems, public transport fleet management and passenger information in real time will provide increased quality to local public transport services, reducing the impact on the environment, increasing public transport commercial speed and mobility.

For the next period, the municipality is analysing the appropriateness of projects meant to close the historic city centre to motorized traffic and to transform this area for the exclusive use of pedestrians and of cyclists in some areas.

In addition, in the near future, the "park & ride" system will be established in a total of 8 centres, allowing decongestion in central areas, connectivity between public and individual transport and the possibility to assure long-term parking.

A perspective for future development of mobility in Timisoara municipality is the inclusion of the Bega Canal in the public transport system. The "Vision Timisoara 2030" concept aims to develop electrically powered means of boat transport on the Bega Canal, interconnection with other public transport systems and expansion of transport to neighbouring towns in the metropolitan area.

The City Hall, by its implemented projects and by those expected to develop mobility in the future is open to all forms of collaboration and cooperation with EU cities and regions through exchange of experience and best practices. Promoting the use of electric vehicles in the near future, providing tax relief for owners of such vehicles, as well as developing parking and charging space for them is a starting point in the development of public-private partnership projects focused on mobility.

Sustainable development of the city depends essentially on how the municipality with all local stakeholders will consider the need to decouple from the use unsustainable of resources, the promotion of technologies for production and use of renewable energies and the correct management of public transport services, so that the development of Timisoara should be a "green", sustainable one.

Dan Diaconu Deputy Mayor City Hall of Timisoara dan.diaconu@primariatm.ro





The "Florence way"

Florence, a rather small town of 360,000 inhabitants, but strongly interconnected with a complex and fragmented metropolitan area of nearly one million people. A historical and cultural capital, world heritage site, daily interchange point of myriad cultures and histories, powerful economic driver and, at the same time, producing rigidity and stiffness towards any kind of innovation you can figure out.

The matter for urban innovation ranges from minimalist, such as "lean city" pattern that points to a few interventions, simple, effective and immediately measurable, targeted mainly to environmental sustainability, to more and more structured approaches. Every place has it's own way but however we believe in a "bottom up", model, starting together with citizen needs, rather than a industry driven "top down". To understand smart innovation in Florence we'll discuss a number of actions of the last years just to give the feeling of our approach. The frontier of the digital divide has already clearly moved far ahead of ADSL. The city has a double ring 2.5 Gb/s, connecting all the municipal offices and other city institutions, such as universities, hospitals and so on. On this ring, we started playing the game of ultrawideband, with a program of internet connections over 100 Mb/s starting from our schools and datacenter.

This point is important, in a more general view, for cloud computing, that sees in bandwidth, the essential premise. Accurate studies conducted by the City assure strong savings through the transfer of services to external (though public) data centers with a strong recovery efficiency than in the past as most services are moved to the cloud. In this week we are going to virtualize a first lot from the 4000 PCs of the Municipality offices.

On the front of the mobile, we well know the huge increase in the mobile internet data exchange in the next three years. In Florence the focus was on the federation of access points. Already more than 500 federated hot spots are provided from the City, Province, University and so on who shared far beyond the splashpage, login credentials. This system, already open to the public, tends to limit the proliferation of services in the area, framing the entrance to the "mobile city" through an unique "gate". It is not a game that you play only or primarily on connectivity but also towards services M2M (machine to machine).

Our mobile home page, while allowing visibility to the one who offers the service (and direct access to a private walled garden for each), opens with no login or time limit, a wide range of content, already structured to be sensitive to the geographical context and the user profile. Otherwise you can log in using a wide range of credentials, and navigate freely for a limited daily time.

These aspects of infrastructural character constitute the backbone upon which, as we have said, we are supporting innovation processes related to the devices. This is not only of smartphone or tablet, but also networks of sensors fixed and mobile governing sensing and acting cycles. On this point we are strongly committed, for example, the testing of wireless sensor network technologies for museum services in Palazzo Vecchio.

The City has also launched this year a strong policy towards Open data so today is ranked number three in Italy for number of open and linked datasets published. Most of the sets are geographic, available in different formats including kmz. A lot of layers are used for environmental service such as all city trees,





,going to release an APP to optimize the relationship between each citizen and the Administration. In particular, the School is one of the strategic elements of Florence smart. The schools online are more than 200. They all share the municipality datacenter with a new interaction tool 2.0, to be published on the Apple store and Android market early in september.

A review, which we have presented, certainly partial, but wants to give the feel of the innovation path we have taken. Each city has its own vocation, and is not particularly fruitful going to rank them for smartness. The results, unfortunately, will emerge on their own, in short, in our cities and metropolitan areas in terms of quality of life, economic development, democracy and participation.

geo-referenced via GPS and reported to their species, or the digital model of the terrain surface (DSM, DTM and related processing hillshade) measured with laser Doppler method with step to 1 meter. Citizen and third parts are developing APPS for a better sustainability as for cycling and walking. However, it is interesting to note some specific aspects, such as the widget "Open bilancio", which allows an intuitive analysis of the dynamics of the budget over the years, also in a national benchmarking, on which is in the process of completing a study to level of any single money transaction.

Was carried out, starting in 2009, a further extensive pedestrian zone program for city center, significantly increasing its streets and squares off-limits to traffic and bringing them to what many call the most important pedestrian street of Italy and in any case implies a value approximately 40 hectares of road net surface returned to pedestrians and bicycles.

This has significantly changed the structure of mobility, encouraged by the development of infrastructure dedicated to cycling. At the same time has been enhanced public transport with a program of "intelligent digital stops" (90 by 2012) and the possibility to buy your ticket via SMS. The payment of all parking structure to accelerate intermodality, you can directly using the highway toll payment device, without any operation at the gate.

In 2011, the Citizen of Florence has worked with 108 online services, a total of 10,000 registered users, 2.21 million contacts to the site, 55,000 online transactions with a turnover of 5.4 M . It Giovanni Menduni Comune di Firenze giovanni.menduni@comune.fi.it

Public Transport System of "Green Jerusalem"

erusalem is living in an era of transforming into an ultramodern, efficient, and sustainable eco-urbanization-system underpinned by the public transport system with the "Jerusalem Transportation Master Plan". The city has carried out a series of extensive urban planning project to assemble a public transport system to the enjoyment of locals and tourists. Introducing green elements into its eco-system to upgrade the streetscape, including cycling and walking routes, with trees and paved pedestrian malls, waste separation and recycling. But more importantly the overall system of transportation has been upgraded by remarkable means. Jerusalem has created a technologically advanced multi-model transport infrastructure by combining public transport, private vehicles, pedestrian walks, bicycle paths, park-and-ride facilities into the an overall systems solution to the city's transportation landscape.

A remarkable feature of the city's public transportation infrastructure is the Light Rail. It began operating in August 2011 on a 14 km route with 46 coaches stopping at 23 stations and 3 major park-and-ride lots, and utilizing sophisticated ticketing and control system. Another element to relieving traffic congestions and reducing noise and air-pollution are the designed lanes for high-grade eco-friendly feeder busses. In addition the "Jerusalem Transportation Master Plan" made extensive performance evaluation of hybrid electric buses to be introduced in the public transport system. One of the plans is a mass transit Bus Rapid Transport (BRT) corridor travels through the city center and intersects with the Light Rail. The daily capacity of the Light Rail is up to 120.000 passengers and is a major component in the transportation system of Jerusalem. Changes take time, and as the public adjusts to these changes in the public transportation infrastructure, the prediction is significant reduction of private vehicles, lowered carbon emission and cleaner air.

Another project in the making is a proposal for developing a "Green Transportation Corridor" for Hybrid BRT between Ramallah, the city of the Palestinian National Authority, through Jerusalem, the Capital of Israel, to Bethlehem. A Hybrid BRT would be a green solution and extension of to Jerusalem's public transportation system. Prof. Arie Lavie is promoting this project.

This green transportation corridor operating100 hybrid electric 60 ft busses with automatic bus stop stations would comply with the concept of the International Emergency Management Society for emergency management, and it would allow Israeli and Palestinian people and tourists to freely visit the



holy sites in the areas. The proposal to the project is submitted to Israeli and Palestinian Government Authorities, as well as the project pinpoints the significant need for simulations of four possible hybrid electric busses.

The first step in the implementation of a green transportation corridor is the proposed use of PSAT (Power-train System Analysis Toolkit) simulations. The desired output of the simulation is to compare and contrast emission results for each of the four busses, such as particulates, CO², unburned hydrocarbons and NOx, as well as fuel economy for each of the vehicles, and state of charge and requirement for each of the busses.

The Green Transportation Corridor project calls for international industry and investors participation in the development. The schedule and budget for the project is set in three stages. First, the simulation period of 12 months, serving as the preliminary design project, \$600.000. Second, the initiation of a full design of the green transportation corridor, estimated at 2 years and budget of \$5 Million. Thirdly, the development and construction of the corridor, including operation of 100 Hybrid Busses for Rapid Transit, 3-5 years and budget estimated to be \$200 Million.

Jerusalem has taken significant steps in creating "Jerusalem Green City" of the future, and continues to do so through its extension of the public transport system.

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Torino – a city committed to green logistics





Freight transport and people mobility are very important factors for economic growth and social development, but the increased and, sometimes, uncontrolled traffic level in urban areas is generating high social costs in terms of congestion, environmental pollution and noise, energy consumption, accidents and the decay of the urban fabric.

In order to plan and manage the mobility system in the medium and long term (10 years), and consistently with the most recent national, regional and European Union policies, Torino has already approved in July 2008 the guidelines of the Urban Sustainable Mobility Plan (Piano Urbano della Mobilità Sostenibile- PUMS) with the aim to achieve a real balance of demand between collective and individual transport. The goal is to reduce traffic congestion and to improve accessibility to the different urban services with a mobility policy that really encourages the use of collective transport and pursues, with determination, sustainable individual and freight transport, with prohibitions for non-ecological vehicles and an integrated transport system able to improve intermodality and to set going green goods delivery.

In coherence with the "Action Plan on Urban Mobility" that the Commission of European Communities communicated to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions in September 2008, the Urban Sustainable Mobility Plan was adopted in 2010. The plan has been developed in accordance with a strategic vision by coordinating all the components of the mobility system with scenarios modulated in time. Thanks to a monitoring plan, the effects produced during its own implementation will be measured by evaluating the actions carried on as well as the operational measures adopted to achieve the strategic objectives that have been defined. These operational measures can also be intepreted according to the guidelines of the economic, social and environmental principles stated in the guidance of the common European strategy for mobility contained in the EU Green and White Paper.

Concerning in particular the logistics sector, in Italy in 2005 the Council for road haulage and logistics, being directly at the service of the Ministry of Infrastructures and Transport, was set up and its task is to carry on studies, monitoring and consulting activities for the definition of intervention policies and strategies of government in the field of road haulage and goods logistics.

There exists a real need to integrate traffic management policies with the ones concerning air quality and logistics; moreover it is necessary to work for less polluting logistics and to plan actions and measures by involving all of the actors in the system.

In Torino, the Municipality has already committed itself for a long time to the "Van Sharing" project, which provides for the use of collective vehicles for freight transport too; this represents the concrete realization of one of the actions identified in the Urban Sustainable Mobility Plan in support of urban logistics.

Meanwhile, the Council for road haulage and logistics, together with its scientific committee, started a wide debate on the theme of urban goods distribution which is identified as one of the factors of economic developmentthe Council deemed it useful to come to the approval of a National Logistics Plan. The Council established a collaboration with ANCI, the National Association of Italian Municipalities, with the aim to involve smaller institutions and to come to a more uniform management: a free consulting center to assist municipalities in decisions on urban mobility involving stakeholders (transport companies, retailers) has then been set up. Moreover it has also been signed a Memorandum of Understanding between ANCI and the Council for a joint program of activities for the management of urban logistics and its relevant change. In this context, the President of the Council for road

haulage and logistics asked the Mayors of Torino, Milan and Naples for a "case history" to be brought to other metropolitan areas in order to highlight the implications of a different and more innovative management of goods in the city. That in this case it has also been proposed the signature of a Memorandum of Understanding identifies similar guidelines and deliberations in the three concerned municipalities. The protocol envisages the involvement of the concerned stakeholders, the adhesion of commercial carriers to new forms of goods distribution (the adhesion is not compulsory and is supported by incentives), the technological "fertilization" through open and shareble solutions and the accessibility to applications. In order to develop the programs already agreed, a coordination group made up of representatives from each of the three signatory municipalities and by three representatives for road haulage and logistics will be set up.

Within two months, the group shall develop an operational action plan to be better expanded and detailed in accordance with the times and methods identified by each of the signatories. Moreover a pilot project will be worked out with the aim to achieve the objectives by specifying the activities to be carried on as well as indicators of success and failure: the results of the experimentation will be, then, available for other metropolitan areas.

As far as Torino is concerned, the City is already participating in European and environmental projects in collaboration with the Ministry of Infrastructures and Transport, that could be considered as the first implementation of the guidelines of the National Logistics Plan. Within the sphere of the Europen project "Citylog", it has been presented as a new way of goods distribution by couriers using specific areas and new containers that will limit urban routes for trucks and vans.

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The future of e-vehicles Mobile Apps – IT delivers the answer

ne thing is for sure: e-vehicles will come, when starting difficulties are resolved. Cities, regions and other green initiatives already work on the construction of necessary e-infrastructures. But in the same measure the success of e-vehicles and the acceptance in the society depends on new technologies for the support of the use of electric automobiles.

Mobility means access – to goods, services, people and information

Electromobility means more enjoyable, environmentally-friendly driving and the fulfillment of the different individual mobility needs by using electric vehicles. In the near future more and more cities build up an electro mobility infrastructure. But people don't only need evehicles and charging stations. They do need a complete service infrastructure and a complete IT platform to manage all the requirements. Coordination of all these services is not quite easy. The connection of all different players like customers, service dispatchers and service people is the key to success. But how all these groups can take advantage of the emerging green opportunities?

First of all: the customer is king

So the e-vehicles manufacturers should attend the developments in our society. Soon, the generation of Digital Natives will set the tone. They are always linked up, communicative and creative, but also critical and demanding. They are consumers, who know what they want: that is to say to use applications on their smartphone or tablet PC to order goods and services or to get information or to get in contact with other people. And they also want to use all these apps in their cars - among the thousands of apps, which exist for smartphones, there are only hundreds for drivers. Modern people should have the chance to analyze the GPS coordinates for finding the next charging or service stations for their e-vehicles. In the same time they should have the chance to order e-vehicles repair services mobile and to pay these services with an app via near field communication. Apps in e-vehicles can give location based information on the points of interest or sightseeing tips. These apps can also show the charging status of the car and guide the people to the next charging station. Apps can make everything possible to give the customers an easy way for communication.

From the technical point of view all these dreams of the future could become true very soon. There are already mobile solutions to realize the directly represented scenario. Business apps for service dispatchers are state-of-theart. The Field Force Automation App by Heidelberg Mobil manage services via mobile application. Field service or the technician receive orders from the dispatcher via smartphone app. Service providers can complete orders immediately e.g.: battery replacement, tire change, sensor change etc. The service provider documents the service to the mobile device and gives feedback via app to the service dispatcher.

The new way of Car-to-X communication could be standard in the near future. Therefore IT platforms are needed - to guarantee more effective consumer oriented services and urban design that improves accessibility to everybody. Also manufacturer of the automobile industry have to open their minds and pass on their island solutions. Nowadays there are digitally steered functions offered by the car manufacturers. However, Digitally Natives expect more than to be limited only to few single manufacturers applications. They want to be connected with their own personal apps at any time.

The abolition of the separate island solutions is bound to strategical and commercial decisions. The question after the cooperation with third, as for example to developer of mobile applications turns out absolutely fiddly. Nevertheless, to attach importance to the customer wishes would be desirable. Quick mobile access via apps to all needs is the key to success.

About Heidelberg Mobil International GmbH

Heidelberg Mobil is a specialist for smartphone apps for B2B and end customers. We create mobile strategies for exhibition sites, events, brands, retail, e-vehicles and tourism and put them into practice in cooperation with our customers. Our core businesses are location-based services for all mobile platforms but also for desktop and incar solutions. Our particular strength is the integration of complex data into mobile apps for smartphones and tablet PCs. We are proud partner of NoAE and Green Cities.

Carsten Günther

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Emotionally charged

"Even prior to the start of the first e-mobility showcase scheme, five neighbourhood companies in Meerbusch already engaged in a commercial cooperation, showing their emotional ambition to the new world of e-mobility."

The best move as a first mover: Electric rechargeable cars are charged emotionally and affectively. They offer a completely new and exciting driving experience. Definitely better than flying – according to many customers, who were picked up at the airport with our electric vehicle.

In July 2011, five companies found common interest in starting an E-nitiative car sharing project, using a Mitsubishii-MiEV for short-distance travel, for example, to the airport. The project was started on the initiative of Athlon Car Lease Germany and could count on the coordination of local authorities. The companies involved are the following: wbm Wirtschaftsbetriebe Meerbusch GmbH (providing utilities, such as electricity, natural gas and water for the town of Meerbusch), Epson Germany GmbH, Kyocera Mita Germany GmbH, SSF Pools by KLAFS GmbH, and Athlon Car Lease Germany GmbH & Co.KG., all of which are located in the same industrial estate Mollsfeld in the town of Meerbusch, Germany.

Already from the very beginning, Athlon Car Lease set its final goal for the car sharing project, which is the following: the rental price should be a low-threshold offer. Similar to ordinary car sharing, only the kilometers driven have to be paid.

After a pilot run of six months, our balance sheet indicated that the i-MiEV had driven 4,800 km with equal-zeroemission. The six months experience with the project also taught us that we could offer more services to our customers. Therefore, we came to the decision that we had to adjust three essential influencing factors: 1) the ecar should be made available to all the companies in Meerbusch instead of serving only the few users entitled. As a car sharing customer of Athlon, the only requirement for booking the e-car should consist of an online registration with an identification code, shown on the loyalty card; 2) the operating range of the car was to be enhanced. For this reason, we replaced the i-MiEV with an Opel Ampera ePionier Edition with a driving range of 500 km; 3) the price should be more economical. By offering the Ampera, we managed to save further expenses for our customers with a cost of 9.99 Euro per hour - which is quite a competitive rental price, compared to the first car with a cost of approximately 15 Euro per hour.



In short, our corporate car sharing project can simply be implemented in any town of Germany and our business model can easily be conveyed to other industrial estates. The E-nitiative car sharing concept is open to all companies, who are ready to drive electrically powered and environmentally friendly cars and are willing to join us on our smarter mobility journey.

Our objectives are nothing more and nothing less than to create new business models and to establish new constructive and productive relationships with partners. Therefore, we are steering our company strategically towards smarter mobility. For example, we, as a sustainable mobility provider, undertook the start-up financing for our first commercial electric car sharing scheme.

As a company with almost 300 EVs in our commercial fleets, we know what the e-journey should aim for. E-mobility should develop in the direction of more range but fewer costs. This also applies to electric car sharing.

Our know-how in this area could benefit the showcase projects and gives us an unbeatable competitive advantage in the market place. We not only are the first mover in an electric corporate car sharing scheme but also far ahead of others, from a technological point of view. This is the key message that we would like to send to those friends who are located in the industrial estates in Germany.

Roland Meyer, Athlon Car Lease Germany GmbH & Co. KG roland.meyer@athloncarlease.de

Electric buses Quick recharging control systems

uses are and will be the most flexible, fast deployable and convenient means of transport for the creation of a wide transportation network that can be customized according to users and operators' needs within any socio-economic environment. Since they don't require particular heavy road infrastructures, buses are able to work both in a mixed traffic and dedicated lanes, often playing a key role within the integration of the railway transportation. Within the last decades, the challenge relevant to the drastic reduction in polluting emissions of diesel buses lead buses manufacturers and drive technology suppliers to the creation of promising experiences within the electric propulsion sector. In order to provide electric vehicles with performance levels tantamount to the ones with traditional fuel, today we can make use of innovative solutions based on fast-charge techniques, through fixed points at the terminus or by means of recharging "stretches" along a short part of the route.

One of SELEX Elsag's latest activities concerns a trial project for an electric buses recharging control system, that combines the optimized energy management with transportation, ICT system integration and technological innovation; this solution carries out several capacities concerning vehicular functionalities, communications between the surrounding world and the vehicle, as well as the interaction with other systems.

As part of the trial, the on-board component is able to manage all the information about the vehicle and batteries status. The central system manages battery recharge, by monitoring its charging activities along the route; it carries into effect operational strategies according to active charging points along the route, planned missions, traffic conditions, vehicle remaining range and instant load, as well as data relevant to the vehicle set of sensors (passengers counter,). The central recharging system also works with the cooperation of infomobility solutions, by exchanging information about vehicle speed and position data, of preferential traffic light system in order to optimize vehicles range, of AVM for a fleet dynamic management, in comparison with vehicles recharging needs and integrated capabilities of on-board video surveillance and multimedia communications to users.

SELEX Elsag, specialized in the design, development and support of high-tech systems within different industrial sectors, participates in the "Planet Inspired" vision, sponsored by Finmeccanica, through activities aimed at achieving a better quality of life within cities, by creating solutions for an integrated and optimized energy sources and transportation management, in order to reduce carbon emissions, pollution and congestion.

Networks interconnection and integration of applications related to different domains can lead to a higher level of overall knowledge about a city and its conditions, permitting to support effective decisions aimed at improving its quality of life. Starting from systems and architectural models that have been used within the defense sector, SELEX Elsag deals with the creation of its Smart City vision, called "City Inspired". This is based on the creation of data platforms and application services which allow an integrated management of different city functions (communications, mobility, energy distribution and usage, environmental and territory monitoring, urban security) with the subsequent sharing of resources among different services, for an optimal use of investments. These models permit to create applications in an incremental, economically sustainable and coherent way, in terms of costs and time, according to the city needs, and to meet Trust, Dependability and Privacy requirements of smart city domain.

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Sustainable Urban Mobility Pioneer Mobility Solutions for Smart Cities

reen transport (or sustainable rtransport) refers to the means of transport with lower impact on the environment, including cycling, walking, green vehicles, carsharing and the use of public transportation, with special focus on intermodality. Sustainable transport systems make a positive contribution to the environmental, social and economic sustainability of the cities. The European Initiative on Smart Cities supports cities and regions in taking ambitious and pioneering measures to progress by 2020 towards a 40% reduction of greenhouse gas emissions through sustainable use and production of energy. This initiative proposes ambitious and pioneer measures in transport and mobility sector, promoting the development of new technologies such as, mobility from electric vehicles, smartphone applications that enable customers to obtain advice on ideal multimodal chains, reservation of and access to vehicles and back-office computer systems that handle the data and the users' requests.

Mobility consultancy and turnkey solutions for smart cities

The ambitious urban mobility scenario envisioned by the European initiative on smart cities described above, reveals the necessity for new research, technological developments and innovative solutions. The company MOVUS is strongly aligned with the European transport and mobility strategy being a private company specialized in sustainable mobility solutions with a relevant experience in urban mobility consultancy and engineering services.

MOVUS provides advanced mobility solutions such as bikesharing, carsharing, carpooling and transport on demand. The company offers turn-key solutions covering all phases required from system specification, technological development, implementation and final operation of the mobility solution. MOVUS has a strong commitment to sustainable mobility in particular to electromobility and plays an active role in R&D projects. Moreover, MOVUS is a member of the advisory board of the Valencia Electric Vehicle Association – AVVE (www.avve.info).

In 2011, the company became the first Spanish company leading the technological development and operation of an electric carsharing system E:sharing, currently operating in the Mediterranean Region of Valencia. Furthermore MOVUS offers engineering and consulting services to local municipalities and private enterprises based on a proven track record in the definition of Sustainable Urban Mobility Plans (SUMP) and the implementation of specific measures defined in the SUMP. MOVUS is a strategic partner of the Public Administration, and has established agreements with local municipalities and regional agencies for the development and implementation of sustainable strategies in the field of transport and mobility.

Main customers of the company are public administration, transport operators and private companies such as: Ferrocarriles de la Generalitat Valenciana (FGV), the major public operator of the Valencia Region and CEPSA Company of the energy sector. Recently MOVUS has collaborated as subcontractor of the Valencia Energy Agency (AVEN) in the frame of the European Project INT-CARSVAL (Regional Study for the Development of a Standard and INTeroperable CARSharing in the VA-Lencia Community) which has been funded by the FP7-CIVITAS Project CATALIST. The main strategic objective of the project has been the standardization of the technical solution required

for the regional carsharing system to be implemented at the Valencia Community in order to guarantee interoperability in the overall region. For more details see article "Electric Carsharing for the Valencia Region" published by FEDARENE (http://www.fedarene.org/ documents/publications/Fedarene_Info/ FEDinfo38EN.pdf).

Operator of Mobility Services such as Bikesharing and Electric Carsharing

MOVUS is an operator of sustainable mobility services in urban areas being the unique operator of electric carsharing in the metropolitan area of Valencia City. Furthermore, MOVUS is currently operating bikesharing, carpooling and transport of demand services in the same area.

MIBISI: An Interoperable Bikesharing Service. The bikesharing system MIBISI is available in 10 different cities and offering a fleet of more than 1500 bikes. The service is based on a proprietary technology and has been development using open source software (Linux and Ubuntu operating systems) to offer a cost-effective solution and reduce system maintenance costs. The Central and local Databases are based on MySOL technology being synchronized each minute in order to guarantee the functioning of the system and enhance system robustness against communication failures.

The service is interoperable in all the metropolitan area of Valencia City and very easy to use. The customer just need to approach to a terminal and log using the service card, enter the PIN code and select an available bicycle on the screen. When the customer has completed its journey, the bicycle can be located in the nearest station with available stands, no matter the city where the station is located; the only requirement is that the destination station has to belong to the metropolitan area of the city. An audio signal on the stand confirms that the bicycle is locked correctly and the usage is complete.

E:sharing - Interoperable Electric Carsharing System in the Metropolitan Area of Valencia

The pioneer electric carsharing system E:sharing developed and validated by the company MOVUS during the period 2008-2011 it is currently operative in the metropolitan area of Valencia city. The technological development of the system has included the following tasks:

- Implementation and Validation of the service. The system integrates a set of novel technological developments in the field of clean vehicles, ICT and mobility management system. The validation activity has included: collection and report of system inconsistencies, operational data and usability degree.
- Assessment of customer satisfaction and mobility patterns evolution: on line customer satisfaction surveys, interviews, assessment of service related impacts.
- Optimization of the business model. The results of the previous task have supported the definition of measures to adjust the business model with the goal of a successful further implementation.

The E:sharing system includes three key elements: (a) The charging infrastructure which includes fixed recharging stations located in optimal positions around the city, (b) Smart electric vehicles communicating with the electric charging infrastructure and a Central Management System which implements all operational functionalities required (optimization of the recharging process, user identification and billing process). Currently the system is operative with a fleet of 10 electric vehicles and five stations located in public parkings and public spaces of Sagunto and Valencia cities. At the end of 2012, it is planned to install news stations at the Polytechnic University of Valencia and the objective is to reach a fleet of 40 vehicles by 2015.

E:sharing targets both professional and private profiles (in particular the tourist one). Nowadays, MOVUS employees use the service for commercial transactions in Valencia, where the company's offices are equipped with stations of the service. Potential cooperation partners for deployment of the service in the city are: the municipality hotels, management companies of public parkings, shopping centres, tour operators and so on. In particular, MOVUS has signed agreements with Companies of the energy sector and Managers of public parkings such as CEPSA and LUBASA repectively.

Addressing new strategic markets such as Latino America and East Europe.

The Company begun its internationalization process in 2011 with support of the Spanish programme PIPE managed by the National Trade Institute-ICEX which is devoted to foster the internationalization of innovative Spanish SMEs. Currently, the international market addressed by MOVUS are the Latino America market in particular the Brazilian one, participating in different trading missions in Brazil during 2011 and 2012. Strategic objectives of the company in 2012 are to create a local company in Brazil and consolidate business opportunities for implementation of bikesharing services in relevant cities of the São Paulo Region, such as: São Caetano do Santos, São Bernardo and São Carlos. Furthermore the company aims to establish agreements with foreign partners to address new countries in West- and East- Europe; initial studies to approach e.g. Lithuania, Romania and Ukraine are in progress. As part of this internationalization strategy, MOVUS has recently participated as a promoter of the international campaign Global Ride to Rio (http://www.global-



ride-to-rio.org/) devoted to promote bicycling in urban areas. Under the slogan "The bikes are for the summer", the Municipality of Paterna in collaboration with MOVUS organized the Kids Bike Festival configured as a course designed for kids between 9-13 years on all aspects of cycling safely and enjoyably on the road.

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The world's top experts and companies will gather in Barcelona to transform the global urban landscape

Cities from all around the world are facing one of the biggest challenges in their history, the urgent need to combine urban growth and sustainable development without hindering either of them. This question is not only of paramount importance for the welfare of the citizens living in these metropolises but also for the future of the planet. Smart City Expo & World Congress will bring together the world's leading cities, top experts and most innovative companies to find solutions to this challenge and promote initiatives in the field of smart cities.

On its second edition, Smart City Expo & World Congress, which will be held from 13 to 15 November in Fira Barcelona's Gran Via venue, will have a special focus on Technology and Energy and the Congress will add a new track to the conference programme focused on Urban Security and Emergency Services.

In this regard, the Congress will be an essential element to addresses issues such as rapid urban demographic growth, changing the current models of service provision and guaranteeing and improving the quality of life of urban inhabitants. The Congress will cover 9 themes through conferences, lectures, success stories, and round table debates. The main tracks are: Energy, Environment, Technology and Innovation, Collaborative city and the smart society, Urban planning and building, Mobility, Governances and economy, Emergencies and security and Smart Geo.

Featured speakers and top urban thinkers will take part in this year's Congress such as Thomas Barrett (European



Investment Bank); Ricky Burdett (London School of Economics); Dan Hill (The Finnish Innovation Fund Sitra); Jean Robert Mazaud (S'PACE Architecture, BLUE Holding, F4CT); Michael Braungart (Environmental Protection Encouragement Agency) Dr. Isher Judge Ahluwalia (ICRIER) and Suzana Kahn (Secretary of State for the Environment, Government of Rio de Janeiro).The organization of the event is finalizing the list of speakers and will announce the keynotes shortly.

Road Show 2012

Smart City Expo & World Congress has visited a total of 18 cities from 12 countries – Chile, Brazil, Colombia, China, India, Japan, Sweden, Denmark, Belgium, Spain, United Kingdom and United States–, and engage cities and local companies to ensure that the most innovative projects will be showcased in Barcelona.

The three-month road show began in Washington DC, where the Director of Smart City Expo & World Congress, Lluís Gómez, and the Conference director, Pilar Conesa, where invited to a workshop organized by the World Bank focused on the opportunities that smart cities offer to poor and developing countries to eradicate poverty and build sustainable economies. The conference gathered experts from international institutions, associations, cities, universities and private companies. Smart City Expo & World Congress was the only event invited to take part in the workshop.

A successful kick off

The first edition of Smart City Expo & World Congress, held on 2011, brought together 6,160 visitors, 2,082 of them congress attendees. The show became a truly global event on its very first edition and registered delegates from 51 countries from all regions of the world. A total of 118 companies showcased their latest solutions for smart urban improvement, among them industry's leaders such as Abertis, Accenture, Acciona, Agbar, Atos, Cisco Systems, CSC, Enel Endesa, Ferrovial, Gas Natural, IBM, Indra, Ros Roca, Siemens, Schneider Electric, Telefónica and Urbaser, among others.

According to Director of Smart City Expo & World Congress, Lluís Gómez, "the level of companies, projects and international delegations present at the show has already allowed Smart City Expo to become an international benchmark"

Smart City Expo & World Congress Dates: 13 – 15 November 2012 Venue: Fira Barcelona's Gran Via Exhibition Centre Av. Joan Carles I n. 58. 08908 L'Hospitalet de Llobregat (Barcelona) Spain www.smartcityexpo.com

AutoGlobal Business Network Ltd Coordination of international innovation projects

n 10th July, the European Commission published the Work Programmes for research funding for 2013; It is the largest set of calls for proposals ever under the Seventh Framework Programme - FP7, which cover all the main important research themes, including those related to vehicle electrification; a number of these calls are in fact in the frame of the Green Cars Initiative (GCI), and six different Directorates-General of the European Commission have contributed to their definition. The GCI is a Public Private Partnership with the objective of supporting "R&D on technologies and infrastructures that are essential for achieving breakthroughs in the use of renewable and non-polluting energy sources, safety and traffic fluidity."

The GCI is one of the instruments of the European Commission to foster the development of the infrastructures needed for the mass deployment of electric vehicles in Europe. As reported in the European roadmap for electrification of road transport http://www.green-carsinitiative.eu/public/documents/Electrification_Roadmap_Web.pdf/view, an accumulated number of five million electric vehicles may be on European roads in 2020. This implies that mass production of vehicles and components must be established in the next five years, creating at the same time an offer of competitive mobility solutions in terms of driving range, consumption, charging capabilities, comfort, safety, reliability, and at fair cost of ownership or use.

In order to reach the milestones shown in figure 1, a series of technology roadmaps have been defined, which concern the following topics: energy storage systems, drive train technologies, vehicle system integration, grid integration, safety, and transport system integration. The GCI supports R&D trans-national projects in these topics, through calls for proposals that are currently included in FP7 and will be part of the next European research programme, Horizon 2020, for the time frame 2014-2020.

Started in 2009, the GCI has supported more than fifty collaboration projects; the calls presented in July cover topics in the materials, sustainable surface transport, and information and communication technologies. Both research in urban vehicles - passenger vehicles and electric buses - and in freight transport will be funded. High attention is given to core technologies that will allow the deployment of mass electric vehicles in smart cities as well as those that will increase the efficiency in the use of heavy duty vehicles for medium and long distance road transport. These actions aim both at the development of sustainable intelligent transport and logistics solutions, and at increasing the European industries competitiveness. Electric vehicles will be essential to develop intelligent interconnected and sustainable transport in the European urban areas; besides, vehicle electrification is becoming a highly competitive field, and Europe needs to invest in research in order to keep a leading position in electric vehicles and components knowledge and production capabilities.

Breakthroughs are needed in the technologies that are core for the deployment of smart vehicles; the 2013 GCI calls solicit proposals for R&D projects - to be submitted to the European Commission by the 14th November or 4th December, depending on the call - in the following areas:

- New and improved materials for innovative ageing resistant batteries
- Advanced on-road charging solutions to improve driving range and battery lifetime
- Next generation of electric motors, with use of improved materials or substitutes
- Global architecture of light passengers urban electric vehicles
- Demonstration of clean, energy efficient and silent electric buses, to facilitate their market take up
- Configurable and adaptable trucks and load carriers to optimise load efficiency
- Innovative high efficient energy conversion concepts for heavy duty trucks
- Innovative solutions in intermodal freight transport to increase the performance and throughput of ports and terminals
- Advanced ICT (system architecture and energy management) to improve the cost and energy efficiency of the electric vehicle and its value chain

Both large scale projects (EU contribution of 10 M or more) and small or medium focused research projects (EU contribution not exceeding 3 M) will be funded. Detailed information on the Partnership and the calls can be found at the web address: http://www.green-cars-initiative.eu/public/

The majority of the GCI 2013 calls require the presentation of collaboration projects, for which international consortiums must be formed; the originator of a research proposal, typically an enterprise or a research centre, is required to find partners from at least two other European member states or associated countries, and together with them to develop a project plan and a budget. An FP7 proposal submission and negotiation process is shown in figure 2, where the activities to prepare and submit the proposal and to negotiate the agreement with the European Commission are grouped in six modules.

Enterprises and Universities may find the European GCI funding programme a very interesting opportunity, not only as a source for funding, but also to create international partnerships. The time is usually a constraint, which however may be well managed supposed that the project idea and objectives well meet the calls' requirements. It is recommended to contact the European Commission for an informal discussion at the very beginning of a proposal submission process; this discussion is usually extremely useful not only to verify the soundness of the project but also to get information on potential consortium partners and identify possible critical areas. Following this verification, a professional consortium formation and proposal submission management are essential to have the proposal highly ranked by the experts of the European Commission.

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