FABRIC

Feasibility analysis and development of on-road charging solutions for future electric vehicles

International Electric Vehicle Conference Workshop

"Europe meets IEVC" Workshop

IEEE IEVC FLORENCE 2014 www.ievc2014.org IEVC

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Contents

ANNOUNCEMENT

Europe meets IEVC Workshop

December 19, 2014 (11:00 a.m. -1:30 p.m.) ‖ Florence, Italy

In the recent years electromobility has been receiving progressively increasing support from governments and large vehicle manufacturers and OEMs in the form of large funding schemes for research and development and the introduction to the market of fully electric vehicles respectively, in an effort to shift globally towards a cleaner and more sustainable form of transport. This workshop aims at bringing together the leaders from the industry, academia and policy makers in Europe to assess the state of electromobility in Europe, identify trends and roadblocks and possibly draft a roadmap towards the large scale implementation of electromobility. The workshop will provide the opportunity for key stakeholders to present state of the art developments in EC funded and national projects and share ideas.

The workshop is organised by FABRIC, a 7th framework funded Integrated Project, which aims to perform a feasibility analysis and implementation of on-road charging solutions for future electric vehicles (http://www.fabric-project.eu/).

EXPECTED PARTICIPANTS

- Automotive industry
- European Authorities
- Electromobility research projects delegates
- Infrastructure Companies
- Academia
- ICT solution providers
- Energy providers
- Charging solution providers
- Road Operators
- Grid Operators
- Distribution System Operators
- Urban Transport City Companies
- National and City authorities

CHAIRS/MODERATORS:

Angelos Amditis
Research Director,
Institute of Communication & Computer Systems (ICCS), FABRIC IP Coordinator

Bert Witkamp
Secretary General,
AVERE - European Association for Battery, Hybrid, and Fuel Cell Electric Vehicles

SPEAKERS

Bert Witkamp
Secretary General,
AVERE - European Association for Battery, Hybrid, & Fuel Cell Electric Vehicles, Belgium

Angelos Amditis
Research Director,
Institute of communication & Computer Systems (ICCS), Greece
FABRIC project Coordinator

Axel Barkow
Senior Manager,
Forschungsgesellschaft Kraftfahrwesen mbH Aachen, Germany
UNPLUGGED project Coordinator

Umberto Guida
European Projects Director,
UITP - International Association of Public Transport, Belgium
ZeEus project Coordinator

Horst Pfluegl
Global Research Program Manager,
AVL List GmbH, Austria
ASTERICS project Coordinator

Yannis Damousis,
Scientific project manager, ITS, ICCS, Greece
FABRIC project technical manager

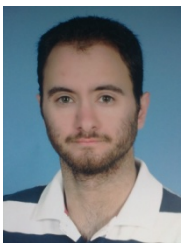
Giovanni Coppola
Product Manager,
Enel Distribuzione SpA, Italy
Green eMotion project partner

Brusaglino Giampiero
Engineer,
Associazione Tecnica dell'Automobile- ATA, Italy
EV CONNECT project partner

Paolo Guglielmi
Associate Professor,
Politecnico di Torino, Italy
eCo-FEV project partner

Allessandra Barbieri
Municipality of Florence, Italy
STEEP project partner

Enrico Cioni
Engineer, Mobility Department,
Municipality of Florence, Italy
Ele.C.Tra project partner



Ioannis Karakitsios
SmartRue research group,
National & Technical University of Athens (NTUA), Greece
FastInCharge project partner

THE FOCUS

Atmospheric pollution and noise caused by vehicles are some of the problems cities face during the current trend of global population urbanization. Mega-cities are and will be major contributors to climate change via the green-house pollutants produced by ICE vehicles' operation. During the workshop electromobility developments will be presented as a viable solution to the above problems.

The workshop will open with introductory speeches from Dr. Angelos Amditis, the FABRIC project coordinator and Bert Witkamp, the Secretary General of AVERE; then national and EU funded research projects on the field of electromobility will be presented in order to assess the maturity of electromobilty, its current penetration and identify both technology and business trends. After the presentations a round table dialogue will take place providing the opportunity to organizations from academia and industry to discuss roadblocks preventing the wide implementation of electromobility and propose solutions and innovative concepts to overcome them.

WORKSHOP AGENDA

Title - Topic	Presenter	Duration
"*Europe meets IEVC*" – Workshop introductory presentation	**Angelos Amditis,** ICCS	10'
"*European Electric Vehicle Sales 2008 - 2014*"	**Bert Witkamp,** AVERE	10'
R&D Initiatives		
"*FABRIC: Feasibility analysis and development of on-road charging solutions for future EVs*"	**Yannis Damousis,** FABRIC	10'
"*Interoperable Inductive Charging for Electric Vehicles*"	**Axel Barkow,** UNPLUGGED	10'
"*Zero Emission Urban Bus System*"	**Umberto Guida,** ZeEUS project	10'
"*ASTERICS project presentation*"	**Horst Pfluegl,** ASTERICS	10'
"*eCo-FEV : an ICT solution for electric vehicle charging*"	**Paolo Guglielmi,** eCo-FEV	10'
"*Paving the way into an electromobility future*"	**Giovanni Coppola,** Green eMotion	10'
"*EV CONNECT: Interconnecting Electric Vehicle Infrastructure Roadmap*"	**Giampiero Brusaglino,** EV-CONNECT	10'
"*Static and Dynamic Fast Inductive Charging: The FastInCharge project concept*"	**Ioannis Karakitsios,** FastInCharge	10'
"*STEEP: The System Thinking for comprehensive city Efficient Energy Planning project*"	**Alessandra Barbieri,** STEEP	10'
"*E-mobility Florence Municipality's Projects ELECTRA and DOROTHY*"	**Enrico Cioni,** Ele.C.Tra: Electric City Transport/DOROTHY Cluster	10'
Dialogue session		

PRESENTATIONS SESSION

1. **Title of presentation:** "*Europe meets IEVC*"

Content:

Dr. Amditis, Research director at ICCS and FABRIC project coordinator, as one of the Workshop's chairs welcomed the participants, introduced them to the basic workshop objectives, presented the agenda and gave a short overview of the different R&D initiatives to be presented during this event. During his speech, an overview of the activities taking place in European level to support the deployment of Electromobility by the different stakeholders (i.e. OEMs, National & EU authorities, Vehicle manufacturers, Standardisation bodies) as well as the proposed topics for discussion during the dialogue session has been also presented.

2. **Title of presentation:** *"European Electric Vehicle Sales 2008 - 2014"*

Content:

The second Chair of the Workshop, Bert Witkamp, Secretary General of AVERE, presented the deployment of EV's in Europe and worldwide, providing details on car types and numbers. Some conclusions from the actual development have been also presented not only in Europe but on a global level while recommendations for policies have been also discussed during this presentation.

3. **Title of presentation:** *"FABRIC – Feasibility analysis and development of on-road charging solutions for future electric vehicles"*

Content:

During his presentation Dr. Y. Damousis, the technical manager of FABRIC project provided a short overview of the project's objectives and expected results. Specifically he highlighted that batteries cost is a major factor that raises the cost of EVs and reduces their large scale adoption and that current battery technology usually offers limited range and slow recharging times. In order to facilitate large scale deployment of electromobility, FABRIC is aiming to address these issues by assessing the feasibility of new charging technologies. For reaching the basic project objectives, adapted EVs, ICT and wireless power transfer solutions, road and grid infrastructures will be integrated in three FABRIC test sites in Italy, France and Sweden. Testing and validation of prototypes will be performed to feed a thorough feasibility analysis and impact assessment with respect to the users, the society and the environment. The basic challenges that the project consortium is phasing were also presented by Dr. Y. Damousis.

4. **Title of presentation:** *"UNPLUGGED – interoperable inductive charging for electric vehicles"*

Content:

During his presentation A. Barkow, the UNPLUGGED project coordinator, gave a short overview of the UNPLUGGED objectives. The project aims to investigate how the use of inductive charging of Electric Vehicles in urban environments improves the convenience and sustainability of car-based mobility. Different charging scenarios (static, stationary, dynamic) were studied and demonstrated in two test sites, at Aachen (research) and Zaragoza (research and demonstration). The interoperability between the different inductive charging technologies, as well as Positioning, Communication and Energy Transfer were also addressed. The project consortium concludes its activities and organizes its final event in Zaragoza on 25- 26 March 2015.

5. **Title of presentation:** *"ZeEUS Zero Emission Urban Bus Systems"*

Content:

Umberto Guida, ZeEUS project coordinator, gave an overview of the basic project objectives and core activities. ZeEUS, is the main EU activity to extend the fully-electric solution to the core part of the urban bus network. To achieve its mission, ZeEUS will test innovative electric bus technologies with different charging infrastructure solutions in eight demonstration sites across 6 European countries to validate their economic, environmental and society viability. Moreover, the ZeEUS project seeks to be the flagship electric bus project that will also closely follow the development of electric bus systems all around the world through the ZeEUS Observatory. Selected Observed and Monitored Demonstrations will directly contribute to some of the ZeEUS core activities and strategic outputs. The project foresees also a set of activities to develop standards, support local regulations and identify financial tools in order to foster the introduction of electric buses in the European cities fleets. Demo Groups, which consist of stakeholders conducting Demonstrations, will test e-buses in real operations, thanks to which they will be able to provide practical answers to cities, Public Transport Operators and Authorities who are interested in introducing electric buses but would like to gain more insight before taking the decision.

6. **Title of presentation:** *"ASTERICS project presentation"*

Content:

ASTERICS– "Advanced testing and simulation methods for electric vehicles" project follows the target to increase the efficiency of battery electric vehicles (BEV) by means of improved virtual models and intelligent testing and verification methods. Better models in the early design- and development phases allow more realistic and improved concept studies and hence detailed optimization at component level as well as global optimization at system level. Through intelligent testing methods it is possible to enhance the model quality on one hand and reduce the test time on the other hand. These testing methods also allow the assessment of durability and ageing effects for electrical components in the BEV-driveline. The combination of virtual co-simulation with realistic, for BEV relevant driving cycles leads to a very good possibility for optimization of predictable mileage.

During the workshop, Horst Pfluegl, the ASTERICS project coordinator, presented the ASTERICS results and the research work performed on advanced testing and simulation methods for EV's and components as well as on the entire system. In the framework of ASTERICS batteries, inverter and e-motor models have been build and evaluated with measurements. Moreover, advanced & accelerated testing methods as well as realistic driving cycles were also briefly presented.

7. **Title of presentation:** *""eCo-FEV : an ICT solution for electric vehicle charging"*

Content:

During his speech, Paolo Guglielmi from POLITO talked about the eCo-FEV FP7 project which aims to create a cooperative ICT network among all the different actors that needs to interact in the Electric Vehicles private users in the actual and future transportation environment. Design a trip for an EV is the key point of the assistance that the eCo-FEV project aims to give to the user of his network. The management of the electric sources that can remove the user anxiety in the EV drivers is the main goal of the project. All possible sources will be considered, the more classical one like private and public charge points together with the more exotic and futuristic wireless charging both static or "while driving". Test sites have been settled up to prove the active interaction among all the vehicles and road information in a realistic (or quasi-realistic) environment. The Italian Test Site that is more focused on the WPT with light vans while the French one is centered on the interaction of all road information with EVs one glueing the public

transportation option too. Paolo Guglielmi, focused his presentation Italian Test site as he is the POLITO WPT solution provider Leader for both eCo-FEV and FABRIC.

8. **Title of presentation:** *"Paving the way into an electromobility future"*

Content:

Green eMotion project was funded within FP7 as a major R&D effort to harmonize electric mobility pilot projects throughout EU. Relying on more than 40 partners across diverse industries, including OEM, Technology Provider, Utilities, Research Centers, Green eMotion has developed solutions to lower major barriers for electric mobility adoption, delivering major outcomes such as international IT standardizations, interoperability of services amongst different charging station operators, the promotion of the adoption of a single plug for DC and AC charging. During his presentation Giovanni Coppola from ENEL talked about the overall project concept and objectives as well as the research performed by the consortium in different demo regions to develop and demonstrate a commonly accepted and user-friendly framework that combines interoperable and scalable technical solutions with a sustainable business platform. One of the main project activities to build a consensus on a broad base, the Green eMotion Stakeholder Forum, with approximately 300 members was also presented.

9. **Title of presentation:** *"EV CONNECT: Interconnecting Electric Vehicle Infrastructures Roadmap"*

Content:

Giampiero Brusaglino, from ATA gave a speech about the EV CONNECT project. The project's main objective is to define a road map for the development of a network of infrastructure for energy supply to electric and externally chargeable hybrid vehicles, supported by an information-communication system to be coordinated by an electric mobility management system. Actions to be suggested to activate the development of the infrastructures are discussed within the involvement of various Entities involved or interested in this field: Public Authorities Industries, Electric Utilities, ICT Providers and End Users.

10. **Title of presentation:** *"Static and Dynamic Fast Inductive Charging: The FastInCharge project concept"*

Content:

Ioannis Karakitsios, from ICCS presented the FastInCharge project that aims to foster the democratization of electric vehicles in the urban environment by developing an inductive charging solution to ease the Electric Vehicles use by the large public and facilitate their implementation in the urban grid. In this scope, a complete inductive charging infrastructure will be developed and demonstrated in the city of Douai, France. Furthermore, the project will study the impact of static and dynamic inductive charging on the distribution grid, while also developing an EV charging management system offering fast wireless charging services to the EV users while considering the network capacity limitations.

11. **Title of presentation:** *"STEEP: The System Thinking for comprehensive city Efficient Energy Planning project"*

Content:

STEEP project representative, Alessandra Barbieri from the Municipality of Florence presented the Florence activities within the project. Florence was chosen along with the city of Bristol (UK, Green Capital 2015) and San Sebastian (Spain), as the European urban reality innovative respect to sustainability. In general, Mrs Barbieri talked about the STEEP project objectives and concept. In general, the project aims to draw up a smart energy plan and it utilizes a decision-making model,

the Systems Thinking, able to analyze the different needs to be met, in an integrated and practical way, calculating benefits and disadvantages of all the elements that compose it. The main components analyzed are those concerning the efficiency of the buildings, the smart mobility and ICT as an instrument but also as a goal to achieve by the project. Following that Mrs Barbieri presented the activities of a pilot area, in Florence the Cascine Park, and then spread to the entire city and concluded that already in the pilot area is seen that the choice of a smart mobility also passes through the electric mobility and the promotion of use of electric vehicles.

12. **Title of presentation:** *"E-mobility Florence Municipality's Projects ELECTRA and DOROTHY"*

Content:

During his presentation Mr. Enrico Cioni, highlighted that the Municipality of Florence intends to stimulate the private use of electric vehicles, in particular in restricted traffic areas of the historic center of the city. In this perspective, the Municipality has joined two European projects which were shortly presented to the attandees:

1. Ele.C.Tra. (Electric City Transport), funded by the programme Intelligent Energy Europe. Mainly objectives: to reduce pollution due to passenger transports and to promote a new urban sustainable mobility model. The project aims to increase the electric scooters use in urban areas, stimulating the private subjects to organize short and long term rent. Pilot cities: Genua, Florence (Italy) and Barcelona (Spain).
2. DOROTHY (Development of regional clusters for research and implementation of environmental friendly urban logistics), funded by the programme Regions of Knowledge. Mainly objectives: to enhance the distribution process of urban goods by reducing the number of vehicles and enhancing environmental standards. This project aims to develop the potential of innovation and research in urban logistics across the European regions of Tuscany (Italy), Valencia (Spain), Lisbon & Tagus Valley (Portugal) and Oltenia (Romania).

STATE OF ELECTROMOBILITY IN EUROPE

Electromobility research projects and development initiatives are targeting essential aspects such as range extension, range anxiety by multiple technological means and strategies, smart ICT solutions for battery and energy management. Moreover, strategies such as dynamic wireless charging are in the process of being assessed. Dynamic wireless charging is a technology that is being currently reviewed with respect to technological maturity and socio-economical feasibility. In addition, for addressing the aforementioned topics, as pointed out during the session, it is essential to build an overall technological framework that will enable the development of optimized HW/SW solutions and power electronics that lead to optimized charging cycles. Advanced simulation techniques can contribute to fine defining the technical requirements of EV HW and SW modules.
In addition to the EV itself, ICT strategies to build infrastructures that will support the deployment of EVs are required. Electromobility management and integration of the energy infrastructure with charging infrastructures requires the definition of interoperable standards both at an informational and organizational context. Interoperability at all levels is crucial in fostering the adoption of EVs and will play a critical role in providing a solid basis for additional investment from relevant stakeholders. In addition to the electric system infrastructure, harmonization including ICT systems is essential. Moreover, studies that assess the impact of massive EV charging can contribute to a fine definition of standards and strategies that will ensure the safe integration of electro mobility in the power grid.
In addition to systems that will specifically be tailored to meet requirements for electromobility, auxiliary, yet critical systems for the deployment of EV's include advanced driver assistance systems. Such systems can help at providing routing, navigation and charging station localization stations thus reducing the burden of range anxiety.
In addition to technical aspects regarding the various sub systems related to EV charging operations optimization and the optimized functionality of the EV, clustering activities among stakeholders of the EV ecosystem can lead to the promotion of e-Transport and it's initial adoption from localized transport authorities. Urban bus networks could be among the first operational actors that could benefit from such clustering initiatives. Moreover, operators and especially local municipalities should assess additional and alternative mobility schemes, such as electric scooters etc.

Conclusions:

1. Interoperable standards and business models must be designed and promoted in order to enable a solid basis to foster the deployment of electromobility. (more information regarding interoperability needs can be found in the respective report)
2. Dynamic wireless charging could tackle issues such as increased battery weight and limited range. However techno economical studies must be made in order to evaluate the overall cost of the extended electrical, civil and ICT infrastructure required to make dynamic wireless charging possible.
3. Core technologies such as power electronics, optimized energy management and control HW/SW modules must be further developed in order to improve EV energy efficiency and range
4. Advanced Driver Assistance Systems for EV routing and navigation, could lead to optimal drive cycles thus increasing the overall range of the EV.
5. integration of Charging Infrastructures to Distribution System Operators is essential; interoperable standards are required in order to enable a smooth harmonization of EV infrastructure with the grid.

6. Clustering activities among EV various EV stakeholders such as OEMs, Service Providers, Transport Operators etc, can lead to the definition of viable and sustainable business cases.

DIALOGUE SESSION

The dialogue session took place after the presentation session. One of the important discussion points was related to the policies and strategies that would enable the large scale adoption of e-Mobility by various stakeholders. Among technical and interoperability issues the fact that political will, must help boosting the adoption of interoperability was highlighted. In this context success stories of successful deployment of e-mobility schemes were outlined (for example e-Buses in Paris). Moreover, alternative schemes of e-mobility deployment such as e-scooters were discussed and best practices were investigated; speakers concluded that clustering driven by public bodies (municipalities, governmental institutions) is a pattern that has shown significant results, especially at initial phases of e-Mobility deployment.

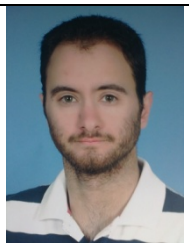
Among technical considerations regarding simulation methodologies for optimization of power electronics, HW/SW modules where discussed. One of the aspects that is essential during testing procedures, is to collect real data from real driving patterns. On the basis of such data and simulation tools, optimal parameters for the design of the aforementioned components can be calculated.

An additional aspect that was highlighted by discussion was interoperability. Speakers agreed that interoperability is a major concern. Current projects aim at testing various charging systems end protocols at an international level in order to identify gaps and in order to define issues that should be included in standardization. An outcome of the discussion was that in addition to electric interfaces standardization must aim at ICT interoperability.

ANNEX: SPEAKERS BIO

 **Dr. Angelos Amditis,** Research Director, ICCS, Greece	**Short Bio**: Dr. Angelos Amditis is Research Director in the Institute of Communication and Computer Systems (ICCS), and member of its Board of Directors. He is the founder and the Head of the I-SENSE Group. He is the President and one of the founding members of ITS Hellas, and member of the ERTICO Supervisory Board. He is the president of the EuroVR Association. He is the writer of several peer reviewed journal articles, book chapters and many conference papers. He has participated in more than sixty projects in the last 10 years and he is currently the coordinator of the following projects: FABRIC, INTE-TRANSIT, RECONASS, and ROBO-SPECT. He has been working with ITS including Automation and Electromobility the last 20 years.
 **Bert Witkamp** Secretary General, AVERE - European Association for Battery, Hybrid, & Fuel Cell Electric Vehicles, Belgium	**Short Bio**: Bert Witkamp is Secretary General of AVERE, The European Association for Electromobility. He is focussing on the promotion of deployment of electromobility, at short term and the expected large scale deployment in the future. Integrating in this work the developments in renewable energy which are currently transforming the world of energy and which impact positively the deployment of electric drive technology. Bert has degrees in Molecular Biology and Chemical Engineering. He has worked for 25 years in multinational companies supplying the automotive sector where he has held senior executive positions in supply chain, manufacturing and general management in 5 different countries. He has helped defining long term CO2 reduction targets, energy and material efficiency strategies, setting up in-house life cycle assessment competence and sustainable product development. As interim CEO he has run businesses in wind energy, biomass, solar energy, sustainable housing and sustainable waste management. Bert is married and has four children and since 2011 living in Belgium.
 **Yannis Damousis,** Technical manager, Intelligent Transport systems, ICCS, Greece	**Short Bio**: Dr. Ioannis (Yannis) Damousis graduated from the Electrical and Computer Engineering School of Aristotle University of THessaloniki in 1997. His PhD (2004) focused on genetic algorithm and machine learning methods for power systems optimization. He worked for several years as senior researcher and project manager at the Center for Research and Technology Hellas-CERTH (Informatics and Telematics Institute-ITI and Hellenic Institute of Transport-HIT) in several FP6 and FP7 research projects on various fields ranging from advanced biometrics to automotive safety applications. He has been active in developing machine learning algorithms for equities trading. He is the main author and co-author of more than 25 papers published at international journals and conference proceedings with more than 1000 citations. He is with the ICCS/I-SENSE team since January 2014.
 **Axel Barkow** Senior Manager,	**Short Bio**: • Born March 6th 1978 in Cologne • 2006 Diplomingenieur Electrical Engineering and Information Technology at RWTH Aachen University • 2006 – 2010 Scientific Researcher at Institute für Kraftfahrzeuge Aachen (ika) • 2009 – 2010 Manager Embedded Hardware and Software at ika • Since 2010 Senior Manager Electrics/Electronics Department at Forschungsgesellschaft Kraftfahrwesen Aachen mbh (fka)

Forschungsgesellschaft Kraftfahrwesen mbH Aachen, Germany	
 **Umberto Guida** European Projects Director, UITP - International Association of Public Transport, Belgium	**Short Bio**: Umberto GUIDA holds an MsC in System Engineering from University of Naples and is the Head of EU Project Department in UITP, the International Association of Public Transport. He has more than 15 years of management of projects funded by different national and international entities. He has worked in aerospace sector for 9 years following the early stages of the Galileo programme and dealing with Satellite Navigation applications to all means of transport. He is in UITP since 2008, and has been the coordinator of the "European Bus System of the Future" EBSF Project, the largest research project funded by EU in the frame of the VII-FP about urban transport. Today he coordinates the 3iBS project, follow-up of EBSF, and the ZeEUS project about demonstrations of large-size urban electric buses.
 **Horst Pfluegl** Global Research Program Manager, AVL List GmbH, Austria	**Short Bio**: Global Research Program Manager for Division Instrumentation & Testsystems (ITS). He studied Electrical Engineering and specialized in Control & Automation Engineering at the Technical University in Graz. Horst Pfluegl joined AVL Graz 1995 in the segment Calibration and Optimization Technologies, where he finally was responsible for development and research for the products CAMEO and CRETA as Head of Development.Since 2010 he is in the central research & technology group of AVL-ITS responsible for set-up, management and evaluation of research projects that explore new relevant methods & technologies. E.g. project set-up of the ARTEMIS Project CRYSTAL (Embedded Systems), project set-up and lead of EU Project ASTERICS (EGVI), etc.
 **Paolo Guglielmi** Associate Professor, Politecnico di Torino, Italy	**Short Bio**: Paolo Guglielmi received the M.Sc. degree in electronic engineering and the Ph.D. degree in electrical engineering from the Politecnico di Torino, Turin, Italy, in 1996 and 2001, respectively. In 1997, he joined the Department of Electrical Engineering, Politecnico di Torino, where he became a Research Assistant in 2002. Since 2012, he is Associate Professor with the Politecnico di Torino. He has authored several papers published in technical journals and conference proceedings. His fields of interest include power electronics for wireless power transfer, high-performance drives, and computer-aided design of electrical machines. Dr. Guglielmi is a member of the IEEE Industry Applications Society and the IEEE Industrial Electronics Society.
 **Giovanni Coppola** Product Manager, Enel Distribuzione SpA, Italy	**Short Bio**: Giovanni Coppola, M.Sc. Engineering, he is currently employed in the Innovative Services Technology department of Enel Distribuzione SpA, Italy's largest Distribution System Operator. His responsibilities embrace international R&D&D program management within Smart Grids business and product management of Enel's EV fast charging infrastructure. He is involved in drawing out innovative business models in order to secure new sources of value in the fast evolving framework of energy business. Before joining Enel, he has worked as hardware engineer for ASIC development within semiconductors industry, designing System-On-Chip products for energy efficiency and biomedical applications, developing hands-on know-how on leading edge technology development, prototyping and TTM process management.

 **Brusaglino Giampiero** Engineer, Associazione Tecnica dell'Automobile-ATA, Italy	**Short Bio**: Giampiero Brusaglino is Electrical and Aeronautical Engineer, graduated at Politecnico di Torino. He has been Vice Director at Centro Ricerche Fiat as responsible for national and international programs on Electric and Hybrid Vehicles. He has been President of A.V.E.R.E. and is chairman of the Technical Committee CEI-CIVES, the Italian Section of A.V.E.R.E. In ATA He is involved in the activities related to Electric and Hybrid Vehicles, including the Formula SAE ATA Electric Italy, dedicated to University and High School students worldwide.
 **Ioannis Karakitsios** SmartRue research group, National & Technical University of Athens (NTUA), Greece	**Short Bio:** Ioannis Karakitsios received his Diploma in Electrical and Computer Engineering from National Technical University of Athens (NTUA) in 2011. Since 2012 he is a PhD Student at the Electric Power Division of NTUA in the area of Distributed Energy Resources. His research interests include design-control architecture as well as grid impact of inductive charging of electric vehicles.
 **Allessandra Barbieri** European projects service Municipality of Florence, Italy	**Short Bio**: Alessandra Barbieri graduated in Political Science with specialization in International Organisations; she's actually working in the staff of the City Manager of the Municipality of Florence, European projects service. Her key qualifications are: Contact for the Covenant of Mayor, Responsible for the Sustainable Energy Action Plan project, project manager of the Smart City plan (Under approval), Responsible for the STEEP project, Administrative expert involved in planning and management of urban regeneration project, Contact People for the ERDF project in regional competitiveness and employment objective and Experience with information and communication activities including citizens agreements, events management, training and dissemination material design.
 **Enrico Cioni** Engineer, Mobility Department, Municipality of Florence, Italy	**Short Bio**: 1990 degree in Civil Engineering section Transportation. 1992 Traffic Unit Responsible of Municipality of Arezzo 1996 Traffic and Mobility official of Municipality of Perugia From 1997 Infrastructures and Mobility official of Municipality of Florence. Mainly professional activities: mobility and traffic planning, mobility infrastructures projects, health and safety planning in public works.

ANNEX 2 PHOTOS

Figure 1. Introductory speech by **Angelos Amditis**, ICCS, Workshop Co-chair

Figure 2. Opening presentation by **Bert Witkamp**, AVERE, Workshop Co-chair

Figure 3. **FABRIC** presentation by **Yannis Damousis**, Technical Manager, ICCS

Figure 4. Presentation of **Unplugged** by the project coordinator, **Axel Barkow**, FKA

Figure 5. **ZeEUS** presentation by the project Coordinator, **Umberto Guida**, UITP

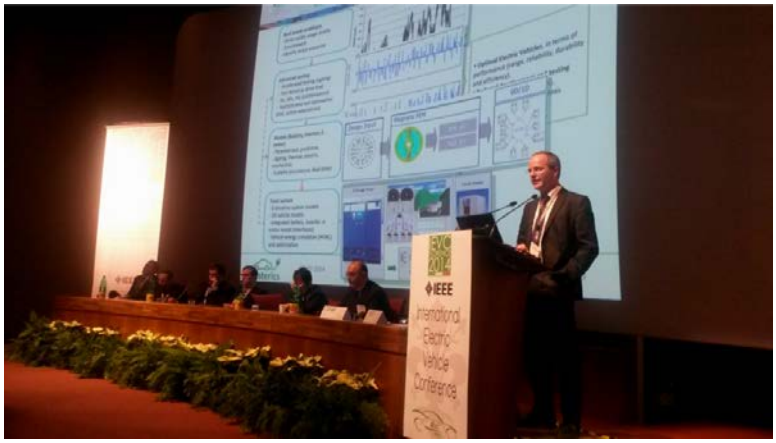


Figure 6. Presentation of **ASTERICS** project by the Coordinator, **Horst Pfluegl**, AVL Graz

Figure 7. Presentation by **Paolo Guglielmi,** Polito on the **eCo-FEV** project

Figure 8. Speech by **Giovanni Coppola,** Enel Distribuzione SpA, about **Green eMotion**

Figure 9. Presentation by **Giampiero Brusaglino,** ATA, on **EV CONNECT** project

Figure 10. **FastInCharge** project presentation by **Ioannis Karakitsios,** NTUA

Figure 11. Presentation by **Alessandra Barbieri,** Municipality of Florence about **STEEP**

Figure 12. **Enrico Cioni,** Municipality of Florence presentation on **Ele.C.Tra** & **DOROTHY** projects

Figure 12.Dialogue Session