

# SMARTGREENS 2015

4<sup>th</sup> International Conference on Smart Cities  
and Green ICT Systems

LISBON, PORTUGAL | 20 - 22 May, 2015



## CONFERENCE AREAS

- Smart Cities
- Energy-Aware Systems and Technologies
- Sustainable Computing and Communications

The purpose of the 4<sup>th</sup> International Conference on Smart Cities and Green ICT Systems (SMARTGREENS) is to bring together researchers, designers, developers and practitioners interested in the advances and applications in the field of Smart Cities, Green Information and Communication Technologies, Sustainability, Energy Aware Systems and Technologies.

## CONFERENCE CO-CHAIRS

**Markus Helfert**, Dublin City University, Ireland

**Karl-Heinz Krempels**, RWTH Aachen University, Germany

## PROGRAM CO-CHAIRS

**Cornel Klein**, Siemens AG, Germany

**Brian Donnellan**, National University of Ireland, Maynooth, Ireland

## KEYNOTE LECTURES

**Álvaro Oliveira**, Alfamicro, Portugal

**Paolo Traverso**, Center for Information Technology - IRST (FBK-ICT), Italy

**Rudolf Giffinger**, Vienna University of Technology, Austria

**Andrés Monzón**, Universidad Politecnica de Madrid, Spain

**Alberto Broggi**, VisLab - Universita' di Parma, Italy

## CALL FOR PARTICIPATION

MORE INFORMATION AT: [WWW.SMARTGREENS.ORG](http://WWW.SMARTGREENS.ORG)

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## CONFERENCE AREAS

### AREA 1: SMART CITIES

- Smart City Business Models
- Human Smart Cities
- Intelligent Transport Systems and Traffic Management
- e-Mobility
- e-Work and e-Business Applications
- Supporting the Ageing Population
- User-Centred and Participatory Design of Services and Systems for Smart Cities
- Innovation Labs, Experimental Test-Beds and Simulation Environments
- Mechanisms for Motivating Behaviour Change
- Internet-Enabled Infrastructures and Services
- Service Innovation and Design to Support Smart Cities
- Cloud Computing and Service Models for Smart City Solutions
- Smart Sensor-Based Networks and Applications
- Analytics for Smart Cities
- IS Architecture Designs and Platforms for Smart Cities
- Case Studies and Innovative Applications for Smart(er) Cities
- Planning and Design Challenges for Smart Cities
- Frameworks and models for Smart City Initiatives

### AREA 2: ENERGY-AWARE SYSTEMS AND TECHNOLOGIES

- Architectures for Smart Grids
- Smart Grid Security and Reliability
- Load Balancing in Smart Grids
- Energy Management Systems (EMS)
- Economic Models of Energy Efficiency
- Energy Monitoring
- Renewable Energy Resources
- Greener Systems Planning and Design
- Virtualization for Reducing Power Consumption
- Virtual Power Plants
- Evolutionary Algorithms in Energy Applications
- Scheduling and Switching Power Supplies
- Energy Profiling and Measurement
- Harvesting Energy
- Energy-Aware Process Optimisation
- Optimization Techniques for Efficient Energy Consumption
- Microgeneration
- Energy Storage

### AREA 3: SUSTAINABLE COMPUTING AND COMMUNICATIONS

- Wireless Systems and Networks
- Security and Privacy
- Wearable Computing
- Green Data Centers
- Algorithms for Reduced Power, Energy and Heat
- Ecological monitoring, analytics and visualization
- Green Communications Architectures and Frameworks
- Qos and Green Computing
- Integration of Smart Appliances
- Embedded Sensor Networks
- Pervasive Embedded Systems
- Smart Homes (Domotics)
- Educational Ecosystems
- Green Computing and Education
- Case Studies on Green Computing and Communications
- Interoperability
- Energy Efficient Network Hardware
- Energy-Efficient Communication Protocols
- Low power Communication Technologies
- Green Software Engineering Methodologies and Tools
- Virtualization Impact for Green Computing
- Green Computing Models, Methodologies and Paradigms

## PUBLICATIONS AND INDEXATION

All accepted papers will be published in the conference proceedings, under an ISBN reference, on paper and on CD-ROM support.

SCITEPRESS is a member of CrossRef (<http://www.crossref.org/>) and every paper is given a DOI (Digital Object Identifier).

All papers presented at the conference venue will be available at the SCITEPRESS Digital Library.

A short list of presented papers will be selected so that revised and extended versions of these papers will be published by Springer in a CCIS Series book.

The proceedings will be submitted for indexation by Thomson Reuters Conference Proceedings Citation Index (ISI), INSPEC, DBLP, EI (Elsevier Index) and Scopus.

## VENUE

Lisbon is known as the white city, thanks to its unique light. The luminous environment and the kind climate allow for marvelous walks through the old town. The city has a beauty that extends beyond its famed monuments, an atmosphere that is best experienced directly in its quaint streets and alleys. The culture, architecture and people found in the city's historical neighborhoods are fundamental aspects of Lisbon's identity, and those who explore them will discover their own personal map in this extremely lively city.

## DOCTORAL CONSORTIUM

Joel Rodrigues, University of Beira Interior, Portugal





# Proposal for the European Project Space, SmartGreens2015

## Project Details

*Title:* OrPHEuS - OPTimising Hybrid Energy grids for smart cities

### *Project Description*

The overall aim of the OrPHEuS project is the elaboration of novel cooperative control strategies for the optimal interactions between multiple hybrid energy grids. This will be done by enabling simultaneous optimization for individual response requirements, energy efficiencies and energy savings as well as coupled operational, economic and social impacts. Starting from existing system setups in two cities, Ulm in Germany and Skellefteå in Sweden, enhanced operational scenarios will be demonstrated for today's market setup, as well as for future market visions.

### *Project Coordinator*

Ingrid Weiss, WIP-Renewable Energies, Sylvensteinstrasse 2, 81369, Munich, Germany

### *Project URL (if available)*

<http://www.orpheus-project.eu/>

### *Is a company involved? If yes, indicate name and URL*

NEC Europe Ltd, <http://uk.nec.com>

WIP-Renewable Energies, <http://www.wip-munich.de>

Stadtwerke Ulm/Neu-Ulm Netze GmbH, <http://www.ulm-netze.de>

Skellefteå Kraft AB, [www.skekraft.se](http://www.skekraft.se)

### *Other relevant information*

The OrPHEuS project addresses the following areas and topics of the SmartGreens2015 Conference:

- Area 1 "Smart Cities": Smart Cities: Smart City Business Models, Innovation Labs, Experimental Test-Beds and Simulation Environments, Internet-Enabled Infrastructures and Services, Case Studies and Innovative Applications for Smart(er) Cities, Frameworks and models for Smart City Initiatives
- Area 2 "Energy-Aware systems and technologies": Load Balancing in Smart Grids, Economic Models of Energy Efficiency, Energy Monitoring and Renewable Energy Sources under the conference
- Area 3 "Energy-Aware Systems and Technologies": Algorithms for Reduced Power, Energy and Heat, Integration of Smart Appliances, Case Studies on Green Computing and Communications

### *Institution that provides financial support to the project*

European Commission

### *List of institutional members of the project consortium*

WIP-Renewable Energies, SME, Germany

Hochschule Ulm, University, Germany

Stadtwerke Ulm/Neu-Ulm Netze GmbH, Distributor System Operator (DSO), Germany

Energy Economics Group of the Technical University of Vienna, University, Austria

Austrian Institute of Technology, Research Institute, Austria

Deutsches Zentrum für Luft und Raumfahrt eV (DLR), Research Institute, Germany

NEC Europe Ltd, ICT provider, United Kingdom

Technical University of Luleå, University, Sweden

Skellefteå Kraft AB, Utility, Sweden

## European Project Space Participating Forms

*By which way would you be interested in participating in this event (select as many as apply):*

Project Presentation

Demo

Booth

Poster Display

Special Session

Panel/Round table

**Workshop**

Other. Please Specify:

*Please specify any additional details that you consider relevant to your proposal*

The workshop to be organised in the framework of the European Project Space initiative at the conference SmartGreen2015 will represent a unique opportunity to share with the audience the first results obtained in the framework of the OrPHEuS project. As mentioned already above, the OrPHEuS project elaborates novel cooperative control strategies for the optimal interactions between multiple hybrid energy grids. At the time being, energy grids (electricity, heating/cooling, gas) still mainly operate independently and do not make use of synergies between them. Although interactions and synergies are increasingly apparent, they neither have been comprehensively analysed nor implemented in practise. During the workshop it will be highlighted how synergies among hybrid energy grids can be established and deployed towards energy savings, CO<sub>2</sub> reduction and load balancing. This will be done by showing the steps done during the project for the development of the novel cooperative control strategies for hybrid energy grids in smart cities. For each step a presentation will be given by different project partners. The presentations and related project partners selected for the workshop will be:

- "Increasing synergies among hybrid energy grids in smart cities", Silvia Caneva, WIP – Renewable Energies, Germany
- "The demonstration sites of the OrPHEuS project: City of Ulm, Germany, and City of Skellefteå, Sweden", Christer Ahlund, Luleå University of Technology, Sweden
- **"How to define a hybrid energy grid? The coupling points of the OrPHEuS hybrid energy grids"**
- "Economic models and use cases for hybrid energy grids in smart cities", Daniel Schwabeneder, Energy Economic Group of the Technical University of Vienna, Austria
- "Simulating hybrid energy grids", Daniele Basciotti, Austrian Institute of Technology, Austria
- "Novel cooperative control strategies for hybrid energy grids in smart cities", Anett Schuelke, NEC, United Kingdom

During the workshop the delegates will be provided with relevant information related to the development and implementation of cooperative control strategies for hybrid energy grids in smart cities. Representative from municipalities, distribution system operators and utilities will be provide with a tool which will lead to CO<sub>2</sub> reduction, energy savings, load balancing and a better integration of renewable energy systems in the cities where they usually operate. This will definitively provide an added value to their cities in the direction of a smart city approach. Representative from the research and university sector will be obtain a unique update on the Status-of-the-Art in the field of the research related to economic models, simulations, real data collection and analysis, coupling points, use cases, energy monitoring, RES integration, meteorological forecast, ICT devices and cooperative control strategies in hybrid energy grids. ICT providers attending the workshop will see how the novel cooperative control strategies developed within the project could open new market opportunities in the energy market.

### *Supporting Paper*

A position paper related to the OrPHEuS project will be submitted to the SmartGreen2015 Conference until 3 February 2015, according to the deadline.

## Presenter Details

Title: Eng.

Name: Silvia Caneva

Affiliation: WIP – Renewable Energies

Country: Germany

E-mail: [silvia.caneva@wip-munich.de](mailto:silvia.caneva@wip-munich.de)

Brief Biography: Eng. Silvia Caneva is a senior project manager. She holds a Master of Science in Environmental Engineering and a post graduate diploma in Energy Resource Management. From 2004 to 2007 she was a researcher at the R&D Centre of the Italian utility Edison in the field of electricity generation from renewable energy sources. She has been working since 2008 with WIP as project manager, mainly for European Commission, in the field of smart grids, integration of renewable energy systems in buildings and into the electrical grids. At the time being she is involved in the coordination of the OrPHEuS (OPTimising Hybrid Energy grids for smart cities) project and of the Secretariat of the European Photovoltaic Technology Platform both co-financed by the European Commission under the FP7 Programme.

Title: Prof.

Name: Christer Ahlund

Affiliation: Luleå University of Technology

Country: Sweden

E-mail:

Brief Biography: Prof. Dr. Christer Åhlund is chaired professor for the Pervasive and Mobile Computing research group and also professor in Mobile Systems at LTU. Christer has an M.Sc in Computer Science from Uppsala University and has been working 12 years in the industry as software engineer, system engineer and project manager. He then started working at LTU. At the time graduating as PhD, he established a new division at LTU. After becoming Associate Professor, he also got a new research subject established called Mobile Systems. Later he became the chair of Pervasive and Mobile Computing. Christer has industrial experience from big software engineering projects in the engineering industry. His research at the University is about computer communication, adaptive systems and context awareness. He has been involved in a number of projects funded by Sweden's Innovation Agency, EU funded projects and by directed industry funding. Early projects focused on access networks, mobility and scalability considering dynamically selecting network connection scalable for application requirements. Later projects target smart city ICT infrastructures including sensor networks and smart city applications and services.

Title: Mag.

Name: Daniel Schwabeneder

Affiliation: Energy Economics Group of the Vienna University of Technology

Country: Austria

E-mail: [schwabeneder@eeg.tuwien.ac.at](mailto:schwabeneder@eeg.tuwien.ac.at)

Brief Biography: Daniel is a research associate and PhD candidate at the Energy Economics Group at the Vienna University of Technology. He received a M.Sc. degree in Mathematics at the University of Vienna. He joined the Energy Economics Group in October 2013 as a junior researcher where he participates in international and national research projects. His research interests in Energy Economics include modelling and optimization in terms of sustainable energy systems under consideration of economic interactions between different stakeholders, hybrid grid structures and security of supply aspects.

Title: Dr.

Name: Daniele Basciotti  
Affiliation: Austrian Institute of Technology  
Country: Austria  
E-mail:  
Brief Biography:

Title: Dr.

Name: Anett Schuelke,  
Affiliation: NEC  
Country: United Kingdom  
E-mail:

Brief Biography: Dr. Anett Schülke is Chief Researcher at NEC Laboratories Europe. Currently, she is leading the Smart Grid Platform group. Anett Schülke is holding a Diploma (1992) and PhD degree (1995) in Physics from Dresden University of Technology. Joining NEC in July 2000, Anett's research focus has been at service delivery technologies and creating advanced services in Telecom and different application domains. During this working period, she represented NEC in various standards organizations (OMA, GSMA) in the contributor as well as chair role. Her current research focuses on Control technologies and utilization of ICT in the Smart Grid area for energy management and control for the future Power Grid. Her group specializes on optimization for energy control for consumption and storage for complex systems integrating knowledge from different power and IT domains for the Smart Energy layer. Special focus is currently set on Integration of Buildings and EV Charging in a Smart Energy concept for Smart Cities and Communities as well as the integration of energy storage systems. Those application areas are addressed also in international research collaborations in FP7 EU projects (e.g. CAMPUS-21 in EU EeB program, BaaS, SmartCEM in EU CIP).