



IEEE SmartGridComm

OCTOBER 17-20, 2011 BRUSSELS, BELGIUM



Final Program

www.ieee-smartgridcomm.org



Badges

IEEE SmartGridComm badges must be worn at all times and are necessary for admittance into all technical sessions, keynotes, panels, tutorials, workshops and receptions.

Registration Hours

Monday, October 17	8:00 – 18:00
Tuesday, October 18	8:30 – 17:00
Wednesday, October 19	8:30 – 17:00
Thursday, October 20	8:30 – 13:00

Welcome Reception

Monday, October 1 • 19:00 – 21:00
Room: Klimt

The welcome reception is your chance to connect with peers and presenters in a relaxed, informal setting – and the organizing committee's chance to celebrate your arrival at IEEE SmartGridComm 2011.

Conference Banquet

Wednesday, October 19 • 19:00 – 22:00
The Belgium Comic Strip Center

The conference banquet will be held at The Belgium Comic Strip Center home to some of Belgium's best-known comic strip heroes such as Tintin, Spirou, Bob and Bobette, the Smurfs, Lucky Luke, Blake and Mortimer, Marsupilami, etc. Dine on local cuisine as you discover a range of permanent exhibitions, illustrated with original comic strip drawings and unique objects. The museum is walking distance from the hotel.

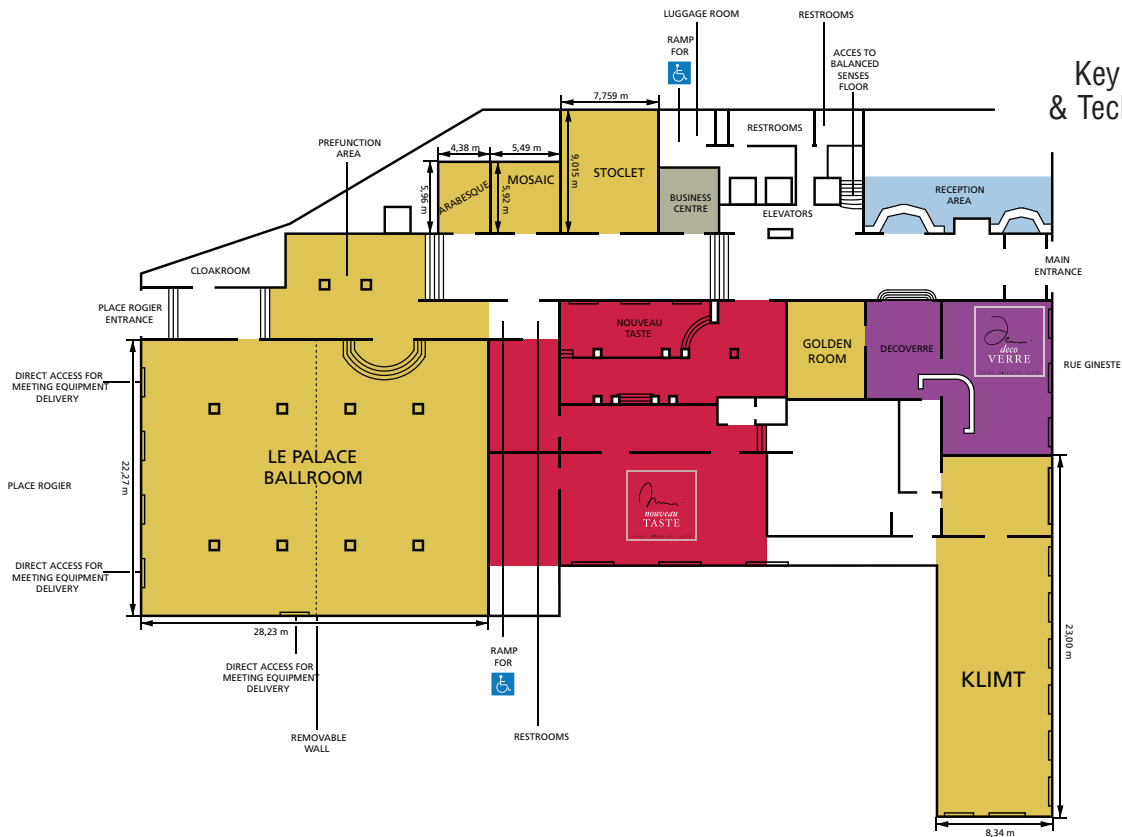
Student Video Competition

New to this year's event is the Student Video Competition, which invited students to submit a video offering original viewpoints on innovative smart grid concepts and benefits. The winner will be announced at the Closing Ceremony on Thursday, October 20 and awarded a prize of 500 EUR. Watch the videos on monitors during the coffee breaks and lunches.

Friendly Reminder

Please make sure cell phones and other communication devices are set to a silent mode during active sessions. The speakers and audience thank you for your consideration.

GROUND FLOOR Keynotes, Panels & Technical Sessions



FIRST FLOOR Tutorials & Workshops

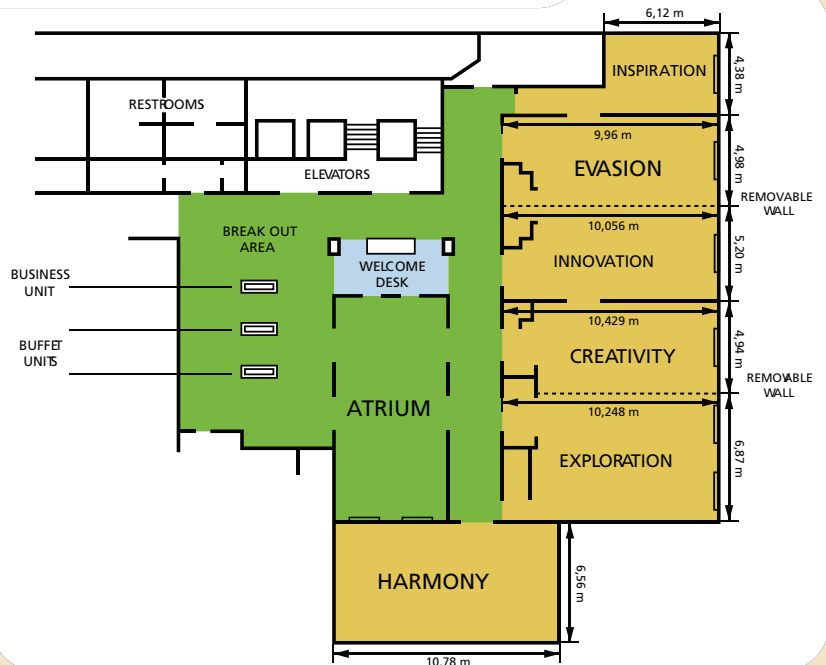


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PROGRAM AT A GLANCE

Monday, October 17		Tuesday, October 18	Wednesday, October 19	Thursday, October 20
9:00 – 10:45 Workshops Session 1 (2 in parallel)	9:00 – 10:45 Tutorial PLC Pt. 1	9:30 – 10:30 Plenary Opening Session 1: Welcome & Keynote Address	9:00 – 10:40 Technical Sessions (3 in parallel)	9:00 – 10:40 Technical Sessions (3 in parallel)
Coffee Break		Coffee Break	Coffee Break	
11:15 – 13:00 Workshops Session 2 (2 in parallel)	11:15 – 13:00 Tutorial PLC Pt. 2	11:00 – 12:30 Plenary Opening Session 2: Keynote Addresses	11:05 – 12:45 Technical Sessions (3 in parallel)	11:05 – 12:45 Technical Sessions (3 in parallel)
Lunch		Lunch		
14:00 – 15:45 Workshops Session 3 (2 in parallel)	14:00 – 15:45 Tutorials Pt. 1 (P4C/C4P, in parallel)	14:00 – 16:05 Technical Sessions (3 in parallel)	14:00 – 16:05 Technical Sessions (3 in parallel)	14:00 – 16:05 Technical Sessions (3 in parallel)
Coffee break		Coffee Break		
16:15 – 18:00 Workshops Session 4 (2 in parallel)	16:15 – 18:00 Tutorials Pt. 2 (P4C/C4P, in parallel)	16:30 – 18:10 Technical Sessions (3 in parallel)	16:30 – 18:00 Panel Discussion	16:30 – 18:00 Plenary Closing Session - Panel Discussion - Video Competition Award - 2012 Announcement
19:00 – 21:00 Welcome Reception		19:00 IGNITE Evening on SmartGrid Technology	19:00 – 22:00 Conference Banquet Comic Strip Museum	

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MESSAGE FROM THE GENERAL CHAIRS



Piet Demeester



Ralph Sporer



Frede Blaabjerg



Kameshwaar Poolla



Chris Develder

It is our honor and pleasure to welcome you to the 2nd IEEE International Conference on Smart Grid Communications (SmartGridComm) that will be held at Crowne Plaza 'Le Palace', in Brussels, Belgium, October 17-20, 2011. Sponsored by the IEEE Communications Society (ComSoc), IEEE SmartGridComm is centered on all communications aspects that are relevant to the Smart Grid and aims at bringing together international researchers from academia, industry, and national labs to exchange novel ideas, explore enabling technologies, discuss innovative designs, and share field trial experiences and lessons learned. As for last year's inaugural edition, we have strived to solicit the international cooperation of several technical communities in an effort aimed at facilitating cross-fertilization in this widely interdisciplinary area. We are proud of the obtained Technical Co-Sponsorship from 8 IEEE Technical Societies and 1 IEEE Council.

We believe that this conference provides an important forum to researchers and practitioners that are today engaged in the challenging problem of upgrading the current world's power delivery infrastructure. Developing the Smart Grid has become an urgent global priority, promising economic, environmental, and societal benefits. Information and communications technologies are at the core of the Smart Grid vision as they will empower today's power grid with the capability of supporting two-way energy and information flow, isolating and restoring power outages more quickly, facilitating the integration of renewable energy sources into the grid and empowering the consumer with tools for optimizing their energy consumption.

IEEE SmartGridComm 2011 has been organized in 11 independent Symposia, each one dedicated to a specific aspect of Smart Grid communications. In total, we have received 265 paper submissions by authors in 39 countries and all regions of the world: North America (50.5%), EMEA (35.3%), Asia/Pacific (14%). Each paper was carefully peer reviewed by a set of international experts coordinated by our 39 Symposia Chairs and 171 Technical Program Committee members. Over 780 reviews were submitted, amounting to an average of 2.9 reviews per paper. The top 105 papers were then selected for the final program by the Symposia Chairs and the Technical Program Committee Chairs, and will be presented at the conference in 24 technical sessions scheduled in three parallel tracks, October 18 through 20. Furthermore, the IEEE SmartGridComm 2011 program will include a distinguished set of keynote speakers and a panel session. We are also proud to introduce 2 full-day workshops and 3 half-day tutorials, which will precede the main conference on October 17.

The technical program of IEEE SmartGridComm 2011 would have not been possible without the dedication of hundreds of volunteers. We are most grateful to the authors who submitted their research work, the Symposium Chairs, the Technical Program Committee Chairs and members, and the many reviewers who have all contributed to the peer review process.

We look forward to welcoming you in Brussels and making IEEE SmartGridComm 2011 an inspiring experience.

Sincerely,

Piet Demeester, Ghent University – IBBT, Belgium
Ralph Sporer, Siemens AG, Germany
General Chairs

Frede Blaabjerg, Aalborg University, Denmark
Kameshwaar Poolla, University of California, Berkeley, USA
Chris Develder, Ghent University – IBBT, Belgium
TPC Chairs



Tuesday, October 18, 2011 • 10:00 – 10:30 • Room: Ballroom

Manuel Sánchez Jimenéz
Policy Officer Smart Grid, European Commission

Biography: Dr.-Ing Manuel Sánchez Jimenéz joined the Commission in 1996 as a Project Officer within the Renewable Energies Unit in Directorate General for Research. During his twelve years, he coordinated the areas of "Integration of Renewable Energies" and "Smart Energy Networks" and launched the European Technology Platform "SmartGrids" in 2006. He has contributed to set up a new sector for "Information and Communication Technologies solutions for Energy Efficiency" in 2007 at the Directorate General for the Information Society and Media. Since 2009, he is Policy Officer for Smart Grids at the Directorate General for Energy. He launched the European Task Force for Smart Grids in November 2009 and chairs the European Reference Group for standardisation of Smart Grids.

Highlights of the European Efforts for Smart Grids and the Way Forward

Smart Grids can substantially increase energy efficiency, improve integration of renewables and electric vehicles into the grid, empower the consumer and boost the overall competitiveness of European business. Since 2004, the European Commission has played an important role in its definition and progress by regulatory framework to provide incentives for Smart Grid deployment and providing continued support to innovation for technology and additional new large-scale demonstration initiatives.



Tuesday, October 18, 2011 • 11:00 – 11:30 • Room: Ballroom

Rolf Adam
Director, Global Solutions Development for Utilities Industry & Smart Grid Sales EMEA, Cisco

Biography: Rolf Adam is a Director with Cisco. He is responsible on a global basis for the solutions development for the utilities industry and leads the Energy & Smart Grid Sales Business Development in EMEA. In addition to his responsibilities at Cisco, he is an industry advisor to WHEB Partners (Cleantech fund), sits on the Advisory Board of Entelios AG (Demand Response start-up), and is an expert to the European Commission on Smart Grid. Prior to joining Cisco, he was a Principal at Booz Allen Hamilton where he had built and managed the European Smart Grid Practice and an Associate at A.T. Kearney.

He holds a Masters Degree in Economics and Business Administration from the University of Eichstaett and a MBA from Webster University.

Gridonomics: A Future History of the Grid

Smart Grid as we have come to know it today has come of age and we are looking back on a decade of Smart Grid technology, pilots and conferences. While the focus has been on technology, bringing the Smart Grid to life will require striking the balance between Technology, Economics and Politics – Gridonomics. This keynote address will provide an outlook on how the Smart Grid will evolve over the upcoming decade and what it takes to make this evolution happen.



Tuesday, October 18, 2011 • 11:30 – 12:00 • Room: Ballroom

Branko Bjelajac
Executive Vice President and Chief Technology Officer, Landis+Gyr

Biography: Branko Bjelajac is Executive Vice President and Chief Technology Officer for Landis+Gyr, Switzerland, the global leader in smart metering, since 2007. He is responsible for technology strategy, global alignment of research and development priorities, processes and resources as well as quality management. Before joining Landis+Gyr, he has held executive positions in Research & Development, Marketing, Business Development and Corporate Strategy at several well-known telecommunications and consumer electronics companies such as Mannesmann (now Vodafone), Grundig, SITA (Société Internationale de Télécommunications Aéronautiques) and France Telecom/Orange.

Mr. Bjelajac holds a diploma degree in Electrical Engineering from the University of Belgrade, Serbia, and a Ph.D. in Electrical Engineering and Information Technology from Aachen University of Technology, Germany. He gained executive qualifications from INSEAD, (France), IMD (Switzerland) and the Stanford GSB (USA). Mr. Bjelajac is member of the IEEE, the VDE and the Münchner Kreis, and a board member of Electrosuisse CES (Comité Electrotechnique Suisse).

The Last Mile - Reloaded

In the late 1990's, the telecommunication industry started introducing broadband services. Access networks using high-speed "Last Mile" technology had to be deployed as a prerequisite. Lessons learned back then can help us with today's challenges in Smart Grid Communications, the next "Last Mile" race. Triggered by the convergence of technologies and changing legislation, many innovative business models had been tried out in an environment characterized by fuzzy service definitions, upcoming standards and the need for large investments. The winners of the first "Last Mile" race were the end-users, DSL technology vendors, incumbent telco's, and business model innovators like Amazon and ebay. In this keynote, Bjelajac will discuss how we can benefit from their experience.



Tuesday, October 18, 2011 • 12:00 – 12:30 • Room: Ballroom

Lennart Söder
Professor, Electric Power Systems, Royal Institute of Technology (KTH)

Biography: Lennart Söder has been a Professor of Electric Power Systems at the Royal Institute of Technology, KTH, Stockholm, Sweden since 1999. KTH is responsible for the project "Smart Power" within the InnoEnergy consortium. Currently, he is the head of the Division of Electric Power Systems. His research interests include smart grids, distribution systems, power system planning, integration of wind power, deregulated electricity market, HVDC, power system control, distributed generation and power system reliability.

On the Value of SmartGrids for Power Systems

Lennart Söder will talk about power system operation of today and future challenges with much larger amounts of variable power sources. One solution to these challenges is more communication, more control and more demand side management, but there are also other solutions. It can though be expected that much more intelligence will be present in the future power system since the cost decreases and the demand increases.

Tuesday, October 18, 2011 • 14:00 – 16:05

Room: Ballroom I

CN-1: Communication Network Performance Analysis

Chair: J.P. Vasseur (Cisco, France)

New Throughput Analysis of Long-Distance IEEE 802.11 Wireless Communication System for Smart Grid

Masaaki Tanaka (Kyoto University, Japan)

Daisuke Umehara (Kyoto Institute of Technology, Japan)

Masahiro Morikura (Kyoto University, Japan)

Nobuaki Otsuki, Takatoshi Sugiyama (NTT, Japan)

Performance Analysis of Radio Propagation Models for Smart Grid Applications

Christian Müller, Hanno Georg, Markus Putzke, Christian Wietfeld (TU Dortmund University, Germany)

Analysis of Advanced Metering over a Wide Area Cellular Network

Michael R. Souryal, Nada Golmie (NIST, USA)

Performance Evaluation of MAC Backoff Algorithm in Narrowband PLC

Stanislav Mudrievskiy (Technische Universitaet Dresden, Germany)

Ievgenii Tsokalo (Kyiv Politechnik Institute, Ukraine)

Abdelfatteh Haidine (KEMA Consulting GmbH, Germany)

Bamidele Adebisi (Lancaster University, United Kingdom)

Ralf J. Lehnert (Technische Universitaet Dresden, Germany)

Performance Analysis of Wireless Mesh Routing Protocols for Smart Utility Networks

Gopalakrishnan Iyer, Prathima Agrawal (Auburn University, USA)

Emmanuel Monnerie, Ruben Salazar Cardozo (Landis + Gyr, USA)

Tuesday, October 18, 2011 • 14:00 – 16:05

Room: Ballroom II

MDR-1: Pricing Policies for Demand Side Management

Chair: Hans De Neve (Vito, Belgium)

Demand-Side Load Scheduling Incentivized by Dynamic Energy Prices

Hadi Goudarzi, Safar Hatami, Massoud Pedram

(University of Southern California, USA)

Optimal Time-of-Use Pricing For Residential Load Control

Senthilkumar Datchanamoorthy, Sunil Kumar, Yusuf Ozturk, Gordon Lee

(San Diego State University, USA)

Dual-pricing Policy for Controller-side Strategies in Demand Side Management

Siyu Yue, Jiong Chen, Yuantao Gu, Chenye Wu

(Tsinghua University, China)

Yiyu Shi (Missouri University of Science & Technology, USA)

Energy Delivery Transaction Pricing for Flexible Electrical Loads

Mahdi Kefayati, Ross Baldick (University of Texas, Austin, USA)

Optimal Energy Consumption Scheduling Using Mechanism Design for the Future Smart Grid

Pedram Samadi, Robert Schober, Vincent W.S. Wong

(University of British Columbia, Canada)

Tuesday, October 18, 2011 • 14:00 – 16:05

Room: Klimt

MCP-1: Wide Area Monitoring, Protection & Control I

Chair: Tefvik Sezi (Siemens AG, Germany)

Fully Distributed Bad Data Processing for Wide Area State Estimation

Dae-Hyun Choi, Le Xie (Texas A&M University, USA)

PMU Placement and Error Control using Belief Propagation

Deepjyoti Deka, Sriram Vishwanath (University of Texas, Austin, USA)

Real-Time Multiterminal Fault Location System for Transmission Networks

Armando Guzman, Yanfeng Gong, Mangapathirao Mynam

(Schweitzer Engineering Laboratories, Inc., USA)

A Distributed Fault Protection Method for Power Grid with High Penetration of Renewable Energy Sources

Dilek Dustegor (Prince Mohammad Bin Fahd University, Saudi Arabia)

Touria El Mezzyani, Sanjeev Srivastava (Florida State University, USA)

Lassoing Line Outages in the Smart Power Grid

Hao Zhu, Georgios B. Giannakis (University of Minnesota, USA)

Tuesday, October 18, 2011 • 16:30 – 18:10

Room: Ballroom I

AM-1: New Architectures for the Smart Grid

Chair: Anna Scaglione (University of California, Davis, USA)

Virtual Smart Grid Architecture and Control Framework

Yufeng Xin (Renaissance Computing Institute (RENCI), USA)

Iliia Baldine (Renaissance Computing Institute (RENCI)

& UNC Chapel Hill, USA)

Jeff Chase (Duke University, USA)

Tsegereda Beyene, Bill Parkhurst (Cisco Systems, USA)

Aranya Chakraborty (North Carolina State University, USA)

GRIP - Grids with Intelligent Periphery: Control Architectures for Grid2050

David Bakken, Anjan Bose (Washington State University, USA)

Mani Chandu (California Institute of Technology, USA)

Pramod Khargonekar (University of Florida, USA)

Anthony Kuh (University of Hawaii, USA)

Steven Low (California Institute of Technology, USA)

Alexandra von Meier (Sonoma State University, USA)

Kameshwar Poola, Pravin Varaiya (University of California, Berkeley, USA)

Felix Wu (University of Hong Kong, Hong Kong)

Information Infrastructure for Cellular Load Management in Green Power Delivery Systems

Mahnoosh Alizadeh, Anna Scaglione (University of California, Davis, USA)

Robert Thomas (Cornell University, USA)

Duncan Callaway (University of California, Berkeley, USA)

A Microgrid Energy Management System for Inducing Optimal Demand Response

Soojeong Choi, Sunju Park, Dong Joo Kang, Seung-Jae Han

(Yonsei University, Korea)

Hak-Man Kim (Electrical Engineering, Korea)

Tuesday, October 18, 2011 • 16:30 – 18:10

Room: Ballroom II

STD-1: Standardization, Interoperability and Coexistence & Regulation

Chair: Michael Koch (Devolvo AG, Germany)

Comparison of the Communication Protocols DLMS/COSEM, SML and IEC 61850 for Smart Metering Applications

Stefan Feuerhahn, Michael Zillgith, Christof Wittwer

(Fraunhofer Institute for Solar Energy Systems ISE, Germany)

Christian Wietfeld (TU Dortmund University, Germany)

CIMbaT - Automated Generation of CIM-based OPC UA-Address Spaces

Sebastian Rohjans, Klaus Piech, Mathias UsLAR (OFFIS, Germany)

Jean-Francois Cabadi (ALSTOM, France)

Towards the Automatic Alignment of CIM and SCL Ontologies

Rafael Santodomingo, José Antonio Rodríguez-Mondéjar,

Miguel Ángel Sanz-Bobi (Comillas Pontifical University, Spain)

Sebastian Rohjans, Mathias UsLAR (OFFIS, Germany)

Semantic Integration of IEC 60870 into CIM

Yoseba Peña, Aitor Peña, Oihane Kamara Esteban

(University of Deusto, Spain)

Tuesday, October 18, 2011 • 16:30 – 18:10

Room: Klimt

VPP-1: Microgrids

Chair: Lieven Vandeveld (Ghent University, Belgium)

Implementation of Dijkstra's Algorithm in a Dynamic Microgrid for Relay Hierarchy Detection

Taha Selim Ustun, Cagil Ozansoy, Aladin Zayegh

(Victoria University, Australia)

Distance Measurement over PLC for Dynamic Grid Mapping of Smart Micro Grids

Tomaso Erseghe, Francesco Lorenzon, Stefano Tomasin, Alessandro Costabeber, Paolo Tenti (University of Padova, Italy)

Improvement of Islanded Operating Stability for Lean-burn Gas Engine by Effective Use of Power Storage Device

Toshiyuki Ito
(Electric Power System Council of Japan & Tokyo Gas Co., Ltd, Japan)

Secondary Control for Voltage Unbalance Compensation in an Islanded Microgrid

Mehdi Savaghebi (Iran University of Science and Technology, Iran)
Josep Guerrero (Technical University of Catalonia, Spain)
Alireza Jalilian (Iran University of Science and Technology, Iran)
Juan C. Vasquez (Universitat Politècnica de Catalunya, Spain)

Wednesday, October 19, 2011 • 9:00 – 10:40

Room: Ballroom I

AM-2: Performance of the Smart Grid

Chair: **Anna Scaglione** (University of California, Davis, USA)

Phase Identification in Smart Grids

Vijay Arya, Deva Seetharam, Shivkumar Kalyanaraman, Kejitan Dontas (IBM, India)
Christopher Pavlovski (IBM, USA)
Steve Hoy (IBM, Australia)
Jayant Kalagnanam (IBM, USA)

Energy Router: Architectures and Functionalities toward Energy Internet

Yi Xu, Jianhua Zhang, Wenye Wang, Avik Juneja, Subhashish Bhattacharya (North Carolina State University, USA)

Performance Evaluation of Integrated Smart Energy Solutions Through Large-Scale Simulations

Terence Song, Dritan Kaleshi, Ran Zhou (University of Bristol, United Kingdom)
Olivier Boudeville, Jingxuan Ma (EDF R&D, France)
Aude Pelletier, Idir Haddadi (EDF Energy, United Kingdom)

Utilizing SOA-ready Devices for Virtual Power Plant Control in Semantic-enabled Smart Grid Analyzing IEC 61850 and OPC UA Integration Methodology

Stjepan Sučić, Ante Martinić (Končar Power Plant and Electric Traction Engineering Inc., Croatia)
Denis Francesconi (Hydro Québec, Canada)

Wednesday, October 19, 2011 • 9:00 – 10:40

Room: Ballroom II

SP-1: EV-1: V2G Optimization

Chair: **Jörg Heuer** (Siemens AG, Germany)

Distributed Charging of PHEVs in a Smart Grid

Zhong Fan (Toshiba Research Europe, United Kingdom)

Cost Minimization for Charging and Discharging of Electric Vehicles

Yifeng He, Bala Venkatesh, Ling Guan (Ryerson University, Canada)

Real-Time Vehicle-to-Grid Control Algorithm under Price Uncertainty

Wenbo Shi, Vincent W.S. Wong (University of British Columbia, Canada)

A Noncooperative Game for Double Auction-Based Energy Trading between PHEVs and Distribution Grids

Walid Saad (University of Miami, USA)
Zhu Han (University of Houston, USA)
H. Vincent Poor (Princeton University, USA)
Tamer Başar (University of Illinois, Urbana-Champaign, USA)

Wednesday, October 19, 2011 • 9:00 – 10:40

Room: Klimt

SP-1: Privacy Protection in Smart Grid

Chair: **Sanjay Goel** (University at Albany, SUNY, USA)

Cooperative State Estimation for Preserving Privacy of User Behaviors in Smart Grid

Younghun Kim (IBM T J Watson Research & University of California, Los Angeles, USA)
Edith C.-H. Ngai (Uppsala University & Division of Computer Systems, Sweden)
Mani B. Srivastava (University of California, Los Angeles, USA)

Network-layer Protection Schemes against Stealth Attacks on State Estimators in Power Systems

Ognjen Vuković, Kin Cheong Sou, György Dán, Henrik Sandberg (KTH, Royal Institute of Technology, Sweden)

Smart Meter Privacy: A Utility-Privacy Framework

S. Raj Rajagopalan (HP Labs, USA)
Lalitha Sankar, Soheil Mohajer, H. Vincent Poor (Princeton University, USA)

PASS: Privacy-preserving Authentication Scheme for Smart Grid Network

Tat Wing Chim, Siu Ming Yiu, Hui, Victor O. K. Li (University of Hong Kong, Hong Kong)

Wednesday, October 19, 2011 • 11:05 – 12:45

Room: Ballroom I

AM-3: Network Theory and Science applied to Smart Grid

Chair: **Anna Scaglione** (University of California, Davis, USA)

Network Coding in Smart Grids

Yannick Phulpin (INESC Porto, Portugal)
Joao Barros, Daniel E. Lucani (University of Porto, Portugal)

How Stochastic Network Calculus Concepts Help Green the Power Grid

Kai Wang (Tsinghua University, China)
Steven Low (California Institute of Technology, USA)
Chuang Lin (Tsinghua University, China)

Communication-Oriented Smart Grid Framework

Miles Hao Fu Wen, Ka-Cheong Leung, Victor O. K. Li (University of Hong Kong, China)

Crowdsourcing Energy via Mobile Devices as a Migration Enabler towards the SmartGrid

Stamatis Karnouskos (SAP Research, Germany)

Wednesday, October 19, 2011 • 11:05 – 12:45

Room: Klimt

SP-2: Information Theory and Cyber-security

Chair: **Stephen Bush** (GE Global Research, USA)

Distributed Joint Cyber Attack Detection and State Recovery in Smart Grids

Ali Tajer, Soumya Kar, H. Vincent Poor (Princeton University, USA)
Shuguang Cui (Texas A&M University, USA)

Specification-based Intrusion Detection for Home Area Networks in Smart Grids

Paria Jokar, Hasen Nicanfar, Victor CM Leung (University of British Columbia, Canada)

On the Use of Pattern Matching for Rapid Anomaly Detection in Smart Grid Infrastructures

Zubair Baig (King Fahd University of Petroleum and Minerals, Saudi Arabia)

Competitive Privacy in the Smart Grid: An Information-theoretic Approach

Lalitha Sankar, Soumya Kar, Ravi Tandon, H. Vincent Poor (Princeton University, USA)

Wednesday, October 19, 2011 • 11:05 – 12:45

Room: Ballroom II

EV-2: V2G Management & CN-2: Communication Traffic Analysis

Chairs: Jörg Heuer (Siemens AG, Germany)
J.P. Vasseur (Cisco, France)

A Distributed Multi-Operator W2V2G Management Approach

Jan Keiser, Juri Glass, Nils Masuch, Marco Lützenberger, Sahin Albayrak (Technische Universität Berlin, Germany)

An Approximate Dynamic Programming Approach for Coordinated Charging Control At Vehicle-to-Grid Aggregator

Jinbiao Xu, Vincent W.S. Wong (University of British Columbia, Canada)

Source Rate Maximization for Smart Meter Mesh Networks Using Distributed Algorithm

Yifeng He, Ling Guan (Ryerson University, Canada)

Data-Quality-Aware Volume Reduction in Smart Grid Networks

Liane Lewin-Eytan, Miriam Allalouf, Gidon Gershinsky (IBM Haifa Research Lab, Israel)
Joseph (Seffi) Naor (Technion, Israel)

Wednesday, October 19, 2011 • 14:00 – 16:05

Room: Ballroom I

CN-3: Communication Architecture and Protocols

Chair: J.P. Vasseur (Cisco, France)

A Hierarchical Communication Network Architecture for Smart Grid

Myongsoo Kim, John Jacob Metzner (Pennsylvania State University, USA)

Assessing Communications Technology Options for Smart Grid Applications

Amar Patel, Juan Aparicio, Nazif C. Tas, Michael T. Loiacono, Justinian Rosca (Siemens, USA)

Optimal Allocation of Heterogeneous Smartgrid Traffic to Heterogeneous Networks

Marco Levorato (Stanford University & University of Southern California, USA)
Urbashi Mitra (University of Southern California, USA)

UHF White Space Network for Rural Smart Grid Communication

Stephan Weiss (University of Strathclyde, United Kingdom)

A Secure Energy Routing Mechanism for Sharing Renewable Energy in Smart Microgrid

Ting Zhu, Sheng Xiao, Yi Ping, Don Towsley, Weibo Gong (University of Massachusetts, Amherst, USA)

Wednesday, October 19, 2011 • 14:00 – 16:05

Room: Ballroom II

MDR-2: Novel Demand Side Management Schemes and Architectures

Chair: Hans De Neve (Vito, Belgium)

Strategy and Modeling for Building DR Optimization

Richard C. Lau, Sami Ayyorgun, Siun-Chuon Mau, Sharanya Eswaran (Telcordia, USA)
Archan Misra (Singapore Management University, Singapore)
Steven Bushby, David Holmberg (NIST, USA)

A Game-Theoretical Decision-Making Scheme for Electricity Retailers in the Smart Grid with Demand-Side Management

Shengrong Bu, F. Richard Yu, Peter Liu (Carleton University, Canada)

Energy On Demand: Efficient and Versatile Energy Control System for Home Energy Management

Takekazu Kato, Kenji Yuasa, Takashi Matsuyama (Kyoto University, Japan)

Cloud-based Demand Response for Smart Grid: Architecture and Distributed Algorithms

Hongseok Kim, Young Jin Kim, Kai Yang, Marina Thottan (Bell Labs, Alcatel-Lucent, USA)

Forecasting the Usage of Household Appliances through Power Meter Sensors for Demand Management in the Smart Grid

Antimo Barbato, Antonio Capone, Marta Rodolfi, Davide Tagliaferri (Politecnico di Milano, Italy)

Wednesday, October 19, 2011 • 14:00 – 16:05

Room: Klimt

MCP-2: Wide Area Monitoring, Protection & Control II

Chair: Tevfik Sezi (Siemens AG, Germany)

Synchrophasor Processor Detects Out-of-Step Conditions

Armando Guzman, Edmund O. Schweitzer (Schweitzer Engineering Laboratories, Inc., USA)

Cooperative Congestion Control in Power Grid Communication Networks

Naveen Cherukuri, Klara Nahrstedt (University of Illinois, Urbana-Champaign, USA)

Model Predictive Control of HVDC Power Flow to Improve Transient Stability in Power Systems

Yannick Phulpin (INESC Porto, Portugal)
Jagabondhu Hazra (IBM, India)
Damien Ernst (University of Liège, Belgium)

Frequency Variations in Hybrid Renewable Energy Network with Integrated Storage

Michelle Lim, Mohit Chhabra (University of Colorado, USA)
Puneet Pasrich (University of Colorado & REgrid, USA)
Kimberly Newman, Frank Barnes (University of Colorado, USA)

Wide Area Monitoring with Phasor Measurement Data

Markus Wache (Siemens AG, Germany)

PANEL

Wednesday, October 19, 2011 • 16:30 – 18:00

Room: Ballroom

The Cross-industry View on Smart Grid Communication

The worldwide incentives to evolve to a low-carbon economy are driving the development of smarter, ICT-enabled power grids. Realizing this next-generation power grid requires cooperation between previously separated industries (telecom, power technology, sensor technology, GIS technology, etc.). With many stakeholders involved, and many (legacy) systems that will be impacted, communication between these stakeholders and systems becomes a key aspect. Unlike many other systems, a massive amount of data will need to be transformed into real-time intelligence, which should drive one of the most critical grids of our society. Many questions and challenges arise with respect to resilience, compatibility, self-management, etc. A panel of experts from industry, university and government will share the issues that are currently addressed, and will give their view on the future challenges.

Moderator:

Wouter Haerick, Ghent University - IBBT, Belgium

Panelists:

Manual Sanchez, Policy Officer Smart Grid, European Commission

Ward Gommeren, Global Power Sales Benelux, Alstom

Sandrine Perino, Utilities & Smart Grid Manager, CISCO

Sanjay Goel, Associate Professor, University at Albany, SUNY

Lennart Söder, Professor, Royal Institute of Technology, Stockholm

Thursday, October 20, 2011 • 9:00 – 10:40

Room: Ballroom I

SP-3: Cyber Protection Schemes for Smart Grid

Chair: Sanjay Goel (University at Albany, SUNY, USA)

MAC Aggregation Resilient to DoS Attacks

Vladimir Kolesnikov, Wonsuck Lee (Bell Labs, Alcatel-Lucent, USA)
Junhee Hong (Kyungwon University, Korea)

Smart Grid Data Integrity Attacks: Characterizations and Countermeasures

Annarita Giani, Eilyan Bitar (University of California, Berkeley, USA)
Miles McQueen (Idaho National Labs, USA)
Pramod Khargonekar (University of Florida, USA)
Kameshwar Poola, Manuel Garcia (University of California, Berkeley, USA)

Mediating Cyber and Physical Threat Propagation in Secure Smart Grid Architectures

Clifford Neuman (University of Southern California, USA)
Kymie Tan (Jet Propulsion Laboratory, USA)

Stealth False Data Injection using Independent Component Analysis in Smart Grid

Mohammad Esmalifalak, Huy A. Nguyen, Rong Zheng, Zhu Han (University of Houston, USA)

Thursday, October 20, 2011 • 9:00 – 10:40

Room: Ballroom II

WP-1: The Whole Picture: Sense, Communicate, Compute, Control I

Chair: Geert Deconinck (KULeuven, Belgium)

A Decentralized Algorithm for Optimal Resource Allocation in Smartgrids with Communication Network Externalities

Michael Kallitsis, George Michailidis (University of Michigan, USA)
Michael Devetsikiotis (North Carolina State University, USA)

Efficient and Reliable Multiple Access for Advanced Metering in Future Smart Grid

Husheng Li (University of Tennessee, USA)
Zhu Han (University of Houston, USA)
Lifeng Lai (University of Arkansas, Little Rock, USA)
Robert Caiming Qiu (Tennessee Tech University, USA)
Depeng Yang (University of Tennessee, USA)

Communication Limitations in Iterative Real Time Pricing for Power Systems

Gabriele Webber (ETH Zurich & Universita degli Studi di Trento, Switzerland)
Joseph Warrington, Sébastien Mariéthoz, Manfred Morari (ETH Zurich, Switzerland)

Near Real Time Energy Monitoring for End Users: Requirements and Sample Applications

Topi Mikkola, Erik Bunn, Pasi Hurri (BaseN oy, Finland)
Giulio Jacucci, Matti Lehtonen (Helsinki University of Technology, Finland)
Manyazewal Fitta, Solomon Biza (Aalto University, Finland)

Thursday, October 20, 2011 • 9:00 – 10:40

Room: Klimt

MSD-1: Management Mechanisms for Smart Grids

Chair: Filip De Turck (Ghent University, Belgium)

Management of Distributed Energy Resources in IEC 61850 using Web Services on Devices

Jens Schmutzler, Sven Gröning, Christian Wietfeld (TU Dortmund University, Germany)

Optimal Real-Time Pricing under Load Uncertainty based on Utility Maximization for Smart Grid

Poramate Tarasak (Institute for Infocomm Research, Singapore)

The Potential for Compensating Wind Fluctuations with Residential Load Shifting of Electric Vehicles

Anett Schuelke, Kellie Erickson (NEC Laboratories Europe, Germany)

Contingency Constrained Economic Dispatch in Smart Grids with Correlated Demands

Yiyu Shi (Missouri University of Science & Technology, USA)
Jinjun Xiong (IBM T. J. Watson Research Center, USA)

Thursday, October 20, 2011 • 11:05 – 12:45

Room: Ballroom I

SP-4 + AM-4: Challenges in Smart Grid Architectures

Chair: Anna Scaglione (University of California, Davis, USA)

Adapting PKI for the Smart Grid

Todd Baumeister (University of Hawaii, Manoa, USA)

Challenges of using Smart Local Devices for the Management of the Smart Grid

Ignacio Lopez-Rodriguez, Mario Hernández-Tejera (Institute for Intelligent Systems & University of Las Palmas de Gran Canaria, Spain)

Local Energy Storage Sizing in Plug-in Hybrid Electric Vehicle Charging Stations Under Blocking Probability Constraints

Islam S. Bayram (North Carolina State University, USA)
George Michailidis (University of Michigan, USA)
Michael Devetsikiotis, Aranya Chakraborty (North Carolina State University, USA)
Fabrizio Granelli (University of Trento, Italy)

Implementing a Laboratory Development Platform for an LVDC Distribution System

Pasi Nuutinen, Pasi Salonen, Pasi Peltoniemi, Tero Kaipia, Pertti Silventoinen, Jarmo Partanen (Lappeenranta University of Technology, Finland)

Thursday, October 20, 2011 • 11:05 – 12:45

Room: Klimt

MSD-2 + VPP-2: Optimization Techniques for Smart Grid Management

Chair: Matthias Strobbe (Ghent University - IBBT, Belgium)

A Rolling Horizon Approach to Distribution Feeder Reconfiguration with Switching Costs

Eugene Feinberg, Jiaqiao Hu, Kan Huang (State University of New York, Stony Brook, USA)

House Energy Demand Optimization in Single and Multi-User Scenarios

Antimo Barbato, Antonio Capone, Giuliana Carello, Maurizio Delfanti, Marco Merlo, Andrea Zaminga (Politecnico di Milano, Italy)

A Mixed Integer Linear Formulation for Microgrid Economic Scheduling

Alessandra Parisio, Luigi Glielmo (Università del Sannio, Italy)

Optimal Design of Hybrid Energy System with PV/ Wind Turbine/ Storage: A Case Study

Rui Huang, Steven Low, Ufuk Topcu, Mani Chandy (California Institute of Technology, USA)
Christopher Clarke (Southern California Edison, USA)

Thursday, October 20, 2011 • 11:05 – 12:45

Room: Ballroom II

WP-2: The Whole Picture: Sense, Communicate, Compute, Control II

Chair: Tomaso Erseghe (University of Padova, Italy)

Synchronization of Power Networks Without and With Communication Infrastructures

Husheng Li (University of Tennessee, USA)
Zhu Han (University of Houston, USA)

A Distributed Method for State Estimation and False Data Detection in Power Networks

Fabio Pasqualetti (University of Santa Barbara, Italy)
Ruggero Carli (University of Padova, Italy)
Francesco Bullo (University of California, Berkeley, USA)

Optimal Energy Storage Control Policies for the Smart Power Grid

Iordanis Koutsopoulos (University of Thessaly & CERTH & CERTH, Greece)
Vassiliki Hatzil, Leandros Tassioulas (University of Thessaly, Greece)

Inverter VAR Control for Distribution Systems with Renewables

Masoud Farivar, Christopher Clarke (Southern California Edison, USA)
Steven Low, Mani Chandy (California Institute of Technology, USA)

Thursday, October 20, 2011 • 14:00 – 16:05
Room: Ballroom I

CN-4: Communication Protocol Analysis

Chair: **J.P. Vasseur** (Cisco, France)

Sensing-Delay Tradeoff for Communication in Cognitive Radio enabled Smart Grid

Ruilong Deng (Zhejiang University, China)
Sabita Maharjan (University of Oslo & Simula Research Laboratory, Norway)
Xianghui Cao, Jiming Chen (Zhejiang University, China)
Yan Zhang, Stein Gjessing
(University of Oslo & Simula Research Lab., Norway)

SSTP: a Scalable and Secure Transport Protocol for Smart Grid Data Collection

Young Jin Kim, Vladimir Kolesnikov, Hongseok Kim, Marina Thottan
(Bell Laboratories, Alcatel-Lucent, USA)

The Effect of LPTV Channel Adaptation on the Performance of Broadband PLC for Smart Grid

Muharem A Tunç, Erik S. Perrins (University of Kansas, USA)
Lutz Lampe (University of British Columbia, Canada)

Blind Recovery of Smart Meter Wireless Transmissions employing Independent Component Analysis in the presence of Strong Wideband Interference

Raghuram Ranganathan, Robert Caiming Qiu, Shujie Hou
(Tennessee Tech University, USA)
Husheng Li (University of Tennessee, USA)

Comparison of Narrow-Band OFDM PLC Solutions and I-UWB Modulation over Distribution Grids

Andrea M. Tonello, Salvatore D'Alessandro, Fabio Versolatto
(University of Udine, Italy)
Carlo Tornelli (RSE, Italy)

Thursday, October 20, 2011 • 14:00 – 16:05
Room: Ballroom II

PRA-1: Results and Experiences

Chair: **Rolf Adam** (Cisco, Germany)

Design and Implementation of a Cross-Platform Sensor Network for Smart Grid Transmission Line Monitoring

Patrick Casey, Nabih Jaber, Kemal Tepe (University of Windsor, Canada)

Power Line Carrier (PLC) Signal Analysis of Smart Meters for Outlier Detection

Rakesh Rao, Srinivas Akella (University of North Carolina, Charlotte, USA)
Gokhan Guley (HiSoft Technology International, USA)

PRIME On-field Deployment: Summary of Results and Discussion

Inigo Berganza, Alberto Sendin (Iberdrola, Spain)
Aitor Arzuaga (ZIV, Spain)
Manu Sharma (Current Technologies International, Switzerland)
Badri Varadarajan (Texas Instruments, USA)

Talk to Transformers: An Empirical Study of Device Communications for the FREEDM System

Xiang Lu, Wenye Wang, Avik Juneja, Alexander Dean
(North Carolina State University, USA)

Effect of Couplers and Line Branches on PLC Communication Channel Response

Cornelis J. Kikkert (James Cook University, Australia)

Thursday, October 20, 2011 • 14:00 – 16:05
Room: Klimt

VPP-3: Distributed Generation and Renewables

Chair: **Lieven Vandeveld** (Ghent University, Belgium)

A Study of Low Voltage Ride-Through Capability for Offshore Wind Power Plant

Gary Chang (National Chung Cheng University, Taiwan)

Application of IEC 61850 to the Communication of a Large-scale Photovoltaic Power Generation Operation -Web Service and Conformance Test-

Hiroyuki Yusa, Tetsuo Otani, Noriyuki Senke, Eiji Ohba
(Central Research Institute of Electric Power Industry, Japan)
Yutaka Arai, Yoshimichi Okuno, Takanori Hayashi, Yasuyuki Hoshi
(Meidensha Corporation, Japan)

Predicting Solar Generation from Weather Forecasts Using Machine Learning

Navin Sharma, Pranshu Sharma, David Irwin, Prashant Shenoy
(University of Massachusetts, Amherst, USA)

Introducing Small Storage Capacity at Residential PV Installations to Prevent Overvoltages

Jan Cappelle (University College KaHo Sint-Lieven, Belgium)
Johan N Vanalme (HoWest & Ghent University, Belgium)
Stijn Vispoel, Thomas Van Maerhem
(University College KaHo Sint-Lieven, Belgium)
Bart Verhelst (HoWest & Lemcko, Belgium)
Colin Debruyne (Ghent University & HoWest, Belgium)
Jan Desmet (Ghent University, Belgium)

Assessment and Mitigation of Voltage Violations by Solar Panels in a Residential Distribution Grid

Tom Verschueren, Kevin Mets, Matthias Strobbe, Bart JF Meersman
(Ghent University, Belgium)
Chris Develder (Ghent University - IBBT, Belgium)
Lieven Vandeveld (Ghent University, Belgium)

PANEL

Thursday, October 20, 2011 • 16:30 – 18:00

Room: Ballroom

Smart Grid Communications Vision for 2015, 2020 and 2030

The Smart Grid envisions an interconnected communications and power distribution network that is intended to streamline power generation, transmission, distribution, monitoring, and control. The power grid is very wide ranging and complex system incorporating distributed generation, fault detection isolation and recovery, energy storage, demand response, automatic metering infrastructure, active and reactive power control, flexible ac transmission control, high power solid state electronics among many, many other components.

This panel will project 15 years into the future as current technologies evolve and mature and tries to layout the vision of the smart grid in the year 2030 when communications and power electronics will also have advanced significantly. New technologies that are on the horizon now will become commodities, for example, the solid state transformer, wireless power transmission, quantum key distribution, as well as new forms of small scale power generation. Advances in communication coupled with advances in power systems will enable entirely new power systems applications.

Moderator:

Sanjay Goel, University at Albany, SUNY

Panelists:

Stephen F. Bush, GE Global Research
Alex Gelman, CTO Netovations
Anna Scaglione, University of California, Davis
Wouter Haerick, University of Ghent

Monday, October 17, 2011 • 9:00 – 13:00 • Room: Creativity

Power Line Communications for the Smart Grid

Andrea M. Tonello, University of Udine, Italy

Masaaki Katayama, Nagoya University, Japan

This tutorial will cover recent advances in Power Line Communication (PLC), which is among the most interesting and important communication technology candidates for application in the Smart Grid since the grid is not only the information source but it also offers the infrastructure for the information delivery.

An overview of the various application scenarios of PLC (such as in-home, in-vehicle, and Smart Grids) and a summary about the evolution of PLC technology will be provided. We will then discuss the important topics of channel and noise modeling and report up-to-date results about statistical channel modeling, MIMO channel modeling, and noise/disturbances modeling.

The main challenges of physical layer design for both narrow-band (NB-PLC) and broad-band PLC (BB-PLC) to encompass the presence of channel attenuation and frequency selectivity, interference, and various noise sources will be addressed. In particular, we will describe existing and emerging single carrier modulation approaches, filter bank modulation approaches (as OFDM, DWT, FMT), and ultra wide band techniques. We will show that advanced modulation techniques, combined with coding and smart resource allocation algorithms are capable of granting robust performance and coexistence with other technologies.

We will then focus on the specific Smart Grid applications (as automatic meter management, grid monitoring, vehicle-to-grid communication, demand side management, home networking for energy management) and remark the similarity to those found in sensor and control networks. The role of PLC in HV, MV and LV networks will be discussed and in particular the relevant role of NB-PLC. MAC algorithms for sensing and control we will describe as well as proposed relaying and cooperative schemes that grant range extension through the grid.

Finally, an overview of the main standards will be offered covering both NB-PLC and broad-band BB-PLC.

Monday, October 17, 2011 • 14:00 – 18:00 • Room: Innovation

P4C: Power Networks for Communications Engineers

Frede Blaabjerg, Aalborg University, Denmark

This tutorial will explain how the power network works, and especially highlight the Smart Grid challenges which are faced today.

Environmental concerns and various benefits of small on site generation have resulted in significant penetration of dispersed generation in many distribution systems. Such a system demands for a much more intelligent grid structure (Smart Grid) and results in various operational problems like balancing, stability and reliability problems in the network together with power quality. In addition, various aspects of islanded operation of distribution systems with dispersed generation are also issues to consider.

Following topics are covered in the tutorial:

- The energy demand and supply of power
- The nature of the dispersed generation (Wind, Photovoltaic, others)
- Basic operation and protection of the grid (classical, dispersed)
- Power quality issues
- Grid reconnection requirements
- Synchronization and island detection
- Control and operation of dispersed generation grid connected and islanded scenario
- Communication demands now and in the future
- Future trends, micro-grid & Smart Grid

Monday, October 17, 2011 • 14:00 – 18:00 • Room: Evasion

C4P: Communication Networks for Power Engineers

Fabrizio Granelli, University of Trento, Italy

Michael Devetsikiotis, North Carolina State, USA

George Michailidis, University of Michigan, USA

This tutorial will explain how communication networks work and how they can be designed and employed in the Smart Grid setting.

The Smart Grid relies critically on communication and interaction among several devices to achieve its goals. In this framework, to enable incremental development of Smart Grid concepts, it is required to exploit the currently available communication technologies, including fiber-optics, and powerline communications, wireless metropolitan and local area networks, wireless sensor networks. Nevertheless, current communication technologies are not designed to completely fulfill the strict requirements of the future Smart Grid, therefore requiring the development of novel architectures and networking paradigms, aimed at real-time control, information and data exchange to optimize system reliability, agility, asset utilization, and security.

Following topics are covered in the tutorial:

- The Smart Grid: a communications perspective and vision for the future
- A taxonomy of the state-of-the-art in communications for the Smart Grid:
 - Wired communications: fiber-optics, powerline
 - Wireless communications: WiMAX, WiFi, UWB, ZigBee, 3/4G, WSN
- Open issues and potential solutions:
 - Network design for Smart Grid communications
 - Communications infrastructure for electric vehicles
 - Network reliability for smart metering and renewable sources
 - Smart Grid control and pricing for distribution and micro grids
 - Security issues, communication protocols and standards
- Case Study: FREEDM communication architecture
 - FREEDM overview, reliable and secure communications
 - SCADA protocols
 - Case study, measurements, lessons, and open questions

WORKSHOPS

Monday, October 17, 2011 • 9:00 – 18:00 • Room: Creativity / Exploration

Workshop on Smart Grid Modeling & Simulation

9:00 – 10:45

Opening and Session I: Electrical Vehicles

Chair: **Chris Develder** (Ghent University - IBBT, Belgium)

Requirements for Next-generation Smart Grid Modeling and Simulation

Craig Rodine (OpenSG Users Group, USA)

Market-Based Coordinated Charging of Electric Vehicles on the Low-Voltage Distribution Grid

Mattijs Ghijsen (University of Amsterdam, Netherlands)
Reinhilde D'hulst (VITO, Belgium)

Exploiting V2G to Optimize Residential Energy Consumption with Electrical Vehicle (Dis) Charging

Kevin Mets, Tom Verschueren, Filip De Turck (Ghent University, Belgium)
Chris Develder (Ghent University - IBBT, Belgium)

Activity Based Models for Countrywide Electric Vehicle Power Demand Calculation

Luk Knapen, Bruno Kochan, Tom Bellemans, Davy Janssens, Geert Wets (Universiteit Hasselt, Belgium)

Modeling of a Charging Network for Electric Vehicles

Keisuke Nakano, Kazuyuki Miyakita, Masakazu Sengoku (Niigata University, Japan)
Shoji Shinoda (Chuo University, Japan)

14:00 - 15:45

Session III: Simulators for Smart Grids

Chair: **Amit Narayan** (Stanford University, USA)

Mosaik: A Framework for Modular Simulation of Active Components in Smart Grids

Steffen Schütte, Martin Tröschel
(OFFIS – Institute for Information Technology, Germany)

Analysis Environment for Low Voltage Networks - Analysis of LV Network Model Parameters by Smart Meter Measurements

Matthias Stifter, Benoit Bletterie, Daniel Burnier, Helfried Brunner
(Austrian Institute of Technology, Austria)
Andreas Abart (Energie AG OOE Netz GmbH, Austria)

Evaluation and Test Environment for Automation Concepts in Smart Grids Applications

Christian Landsteiner, Filip Andren, Thomas Strasser
(AIT Austrian Institute of Technology, Austria)

Simulation for the Design of Smart Grid Controls

Ferdinanda Ponci, Antonello Monti (RWTH Aachen University, Germany)

Social Interaction Interface for Performance Analysis of Smart Grids

Jerom de Haan, Phuong Nguyen, Wil Kling, Paulo Ribeiro
(Eindhoven University of Technology, Netherlands)

11:15 – 13:00

Session II: Models for Smart Grids

Chair: **Craig Rodine** (OpenSG Users Group, USA)

Dynamic One Step Ahead Prediction of Electricity Loads At Suburban Level

Jelena Milojković, Vančo Litovski
(University of Niš, Faculty of Electronic Engineering, Serbia)

A Linear Dynamic Model for Microgrid Voltages in Presence of Distributed Generation

Saverio Bolognani, Guido Cavraro, Federico Cerruti, Alessandro Costabeber
(University of Padova, Italy)

Towards Improved Scalability in Smart Grid Modeling: Simplifying Generator Dynamics Analysis Via Spectral Graph Sparsification

Daehyun Ban (North Carolina State University, USA)
George Michailidis (University of Michigan, USA)
Michael Devetsikiotis (North Carolina State University, USA)

Traffic Generation of IEC 61850 Sampled Values

Jakub Wojciech Konka
(University of Strathclyde & Centre for Intelligent Dynamic Communications, United Kingdom)
Colin Michael Arthur (Agilent Laboratories, United Kingdom)
Francisco Javier Garcia (Agilent Technologies & Strathclyde University, United Kingdom)
Robert Caddell Atkinson (University of Strathclyde, United Kingdom)

Switched System Models for Coordinated Cyber-Physical Attack Construction and Simulation

Shan Liu, Xianyong Feng, Deepa Kundur, Takis Zourntos, Karen Butler-Purry
(Texas A&M University, USA)

16:15 – 18:00

Session IV - Demand Response

Chair: **Craig Rodine** (OpenSG Users Group, USA)

Simulating Integrated Volt/Var Control and Distributed Demand Response Using Grid Spice

Kyle Anderson (Stanford University, USA)
Amit Narayan (Stanford University & AutoGrid Systems, USA)

Optimal Real-Time Price Based on a Statistical Demand Elasticity Model of Electricity

Rongshan Yu, Wenxian Yang, Susanto Rahardja
(Institute for Infocomm Research, Singapore)

Optimization Models for Consumer Flexibility Aggregation in Smart Grids: The ADDRESS Approach

Alessandro Agnetis (University of Pisa, Italy)
Gabiella Dellino, Gianluca De Pascale (Università degli Studi di Siena, Italy)
Giacomo Innocenti
(Università degli Studi di Siena & Università degli Studi di Firenze, Italy)
Marco Pranzo, Antonio Vicino (Università degli Studi di Siena, Italy)

Modeling Quality of Service Vs. Peak Reduction Trade-Offs in a/c-based Demand-Side Management

Fabrice Saffre, Hanno Hildmann
(Etisalat BT Innovation Centre & Khalifa University, UAE)
Sebastien Nicolas (EBTIC, UAE)

Feasibility Study of Applying LTE to Smart Grid

Peng Cheng (Huawei Technologies & Tsinghua University, China)
Li Wang, Bin Zhen (Huawei Technologies Co., Ltd., China)
Shihua Wang (Queen Mary University of London, United Kingdom)

COMMITTEE

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Chris Develder, Ghent University - IBBT, Belgium

Amit Narayan, Stanford University, USA

Craig Rodine, OpenSG Users Group, USA

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Matthias Strobbe, Ghent University - IBBT, Belgium

Lieven Vandeveldde, Ghent University, Belgium

Adam Wigington, EPRI, USA

Monday, October 17, 2011 • 9:00 – 18:00 • Room: Harmony

Workshop on European Smart Grid Projects

Organisers: European Commission (DG ENER, INFSO and RTD)

Workshop will present and share lessons learned from key specific European Smart Grids projects and to discuss further actions needed for research, demonstration and deployment of Smart Grids.

9:00 – 10:45

Session I: EU Policy, Programmes and Planned Calls for Proposals

Chair: Manuel Sanchez, DG ENER

Patrick van Hove, DG RTD
Patricia Arsene, DG INFSO
Mario Dionisio, DG ENER
Matthieu Craye, DG ENER

11:15 – 13:00

Session II: Support through Co-ordination, Research, Innovation and Development

Chair: Patrick van Hove, DG RTD

OPEN METER for Developing an Open-access Standard for Smart Multi-metering Services

Nicolas Arcauz Eguren, Iberdrola Distribucion Electrica S.A.

ADDRESS: Active Distribution Networks with Integration of Demand and Distributed Energy Resources

Paola Petroni, Enel S.p.A

PEGASE: Advanced Simulation and State Estimation for the Pan-European Transmission Grid

Stephane Rapport, Tractebel Engineering S.A.

GRID+ Networking Smart Grids Demonstration of Projects in Europe

Michele de Nigris, RSE SpA

14:30 – 16:15

Session III: ICT solutions for Smart Grids

Chair: Patricia Arsene, DG INFSO

Project Smart House/Smart Grid to demonstrate how ICT-enabled collaborative aggregations of Smart Houses can achieve maximum energy efficiency

Anke Weidlich, SAP

Project NOBEL - Neighbourhood Oriented Brokerage Electricity and Monitoring System

Antonio Marqués, Grupo ETRA

Project OpenNode for the design and development of an Open Common Reference Architecture (hardware and software aspects) for the network of nodes

Jose Gonzallo Moreno, Iberdrola
Joerg Heuer, Siemens

Project ICT4SMARTDG to foster and promote large-scale integration of domestic and distributed micro generation and improve energy efficiency through the implementation of innovative ICT solutions into local smart power grids

Peter Moray, EUTC

16:15 – 18:00

Session IV: Demonstration projects

Chairs: Mario Dionisio, DG ENER

Matthieu Craye, DG ENER

Project Grid4E

Anh Vu, ERDF

Project EcoGrid to demonstrate the efficient operation of a distribution power system with high penetration of many and variable renewable energy resources EU

Kim Behnke, Energinet

Project Twenties to demonstrate by early 2014 through real life, large scale demonstrations, the benefits and impacts of several critical technologies required to improve the pan-European transmission network, thus giving Europe a capability of responding to the increasing share of renewable in its energy mix by 2020 and beyond while keeping its present level of reliability performance.

Jose Luis Mata, Red Eléctrica de España

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Ralph Sporer, Siemens AG, Germany

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Kameshwar Poolla, University of California, Berkeley, USA
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Filip De Turck, Ghent University - IBBT, Belgium

Panel & Keynote Chair

Wouter Haerick, Ghent University - IBBT, Belgium

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Matthias Strobbe, Ghent University - IBBT, Belgium

SYMPOSIA CHAIRS

Architectures and Models for the Smart Grid

Anna Scaglione, University of California, Davis, USA
Alejandro Dominguez-Garcia, University of Illinois, Urbana-Champaign, USA
Andrew Wright, N-Dimension, USA

Smart Grid Management and Service Design

Filip De Turck, Ghent University-IBBT, Belgium
Marcus Brunner, NEC Europe, Germany
Dejan Milojevic, HP Labs, USA

Wide-Area Monitoring, Control & Protection - WAMPAC

Tevfik Sezi, Siemens AG, Germany
Galina S. Antonova, ABB Inc., Vancouver, Canada
Vladimir Terzija, University of Manchester, UK
Jean-Claude Maun, Université Libre de Bruxelles, Belgium
Mladen Kezunovic, Texas A&M University, USA

The Whole Picture: Sense, Communicate, Compute Control

Lutz Lampe, University of British Columbia, Canada
Geert Deconinck, Katholieke Universiteit Leuven, Belgium
Sumit Roy, University of Washington, USA
Anthony Ephremides, University of Maryland, USA

Communication Networks for Smart Grid

Nada Golmie, NIST, USA
Jean-Philippe Vasseur, Cisco Systems, France
Sang-Jo Yoo, Inha University, Korea

Cyber and Physical Security and Privacy

Sanjay Goel, University at Albany, State University of New York, USA
Stephen F. Bush, GE Global Research, New York, USA
William H. Sanders, University of Illinois, Urbana-Champaign, USA

Smart/Virtual Metering, Demand Response, Dynamic Pricing

Hans De Neve, Vito, Belgium
Yoshizumi Serizawa, Central Research Institute of Electric Power Industry, Japan
Shie Mannor, Technion, Israel

Interconnections and Communications of Electric Vehicles and Smart Grids

Joerg Heuer, Siemens AG, Munich, Germany
Peter Van Den Bossche, Vrije Universiteit Brussels, Belgium
Jørgen S. Christensen, Dansk Energi | Danish Energy Association, Frederiksberg, Denmark
Onur Altintas, Toyota InfoTechnology Center, Tokyo, Japan

Virtual Power Plants, Distributed Generation, Microgrids, Renewables and Storage

Lieven Vandevelde, Ghent University, Belgium
Gary W. Chang, National Chung Cheng University, Taiwan
Paolo Tenti, University of Padova, Italy

Standardization, Interoperability and Coexistence & Regulation

Michael Koch, Devolo AG, Germany
Stefano Galli, ASSIA, USA
Emmanuel Darmois, Alcatel-Lucent, France
Paul Brown, White Box Associates Ltd, UK

Getting Practical: Field Trials, Deployments, and Lessons Learnt

Ronnie Belmans, Katholieke Universiteit Leuven, Belgium
Michele de Nigris, Ricerca sul Sistema Energetico - RSE S.p.A., Italy
Devang V. Khakhar, Indian Institute of Technology, Bombay, India
Rolf Adam, Cisco Systems, Germany

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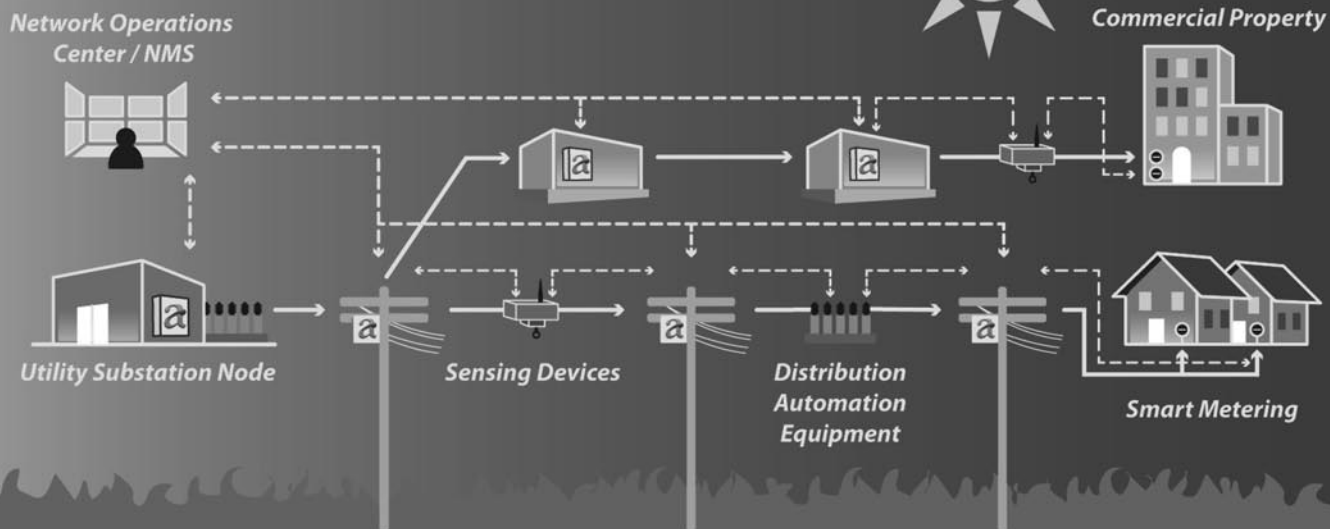
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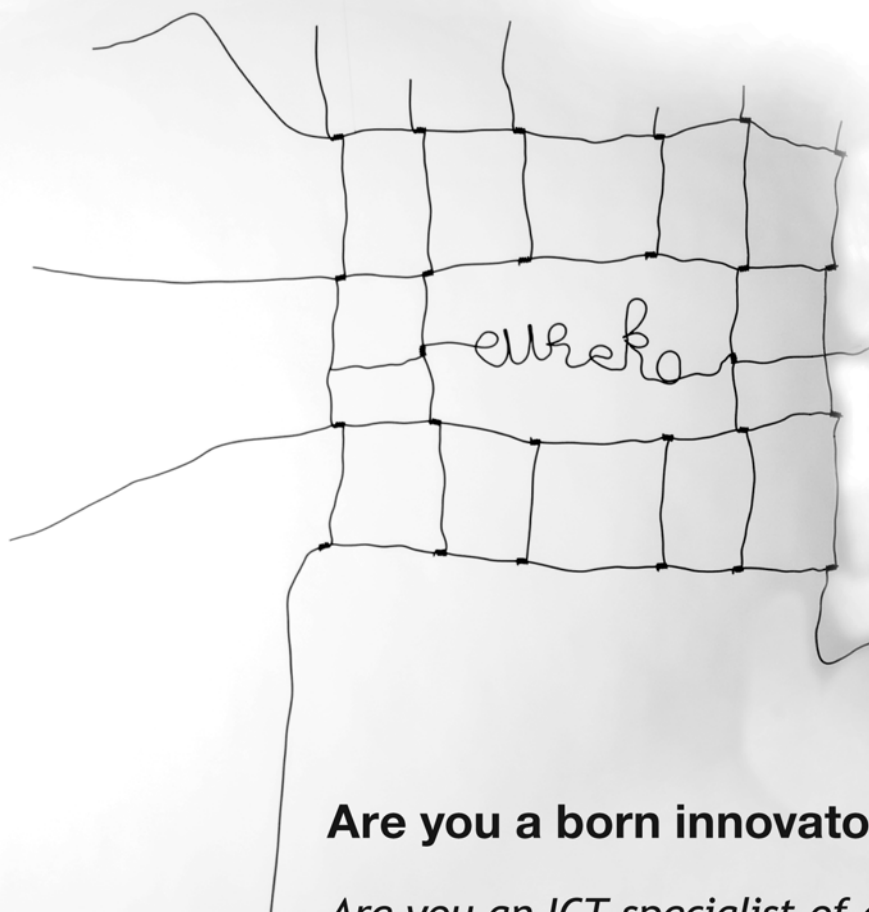
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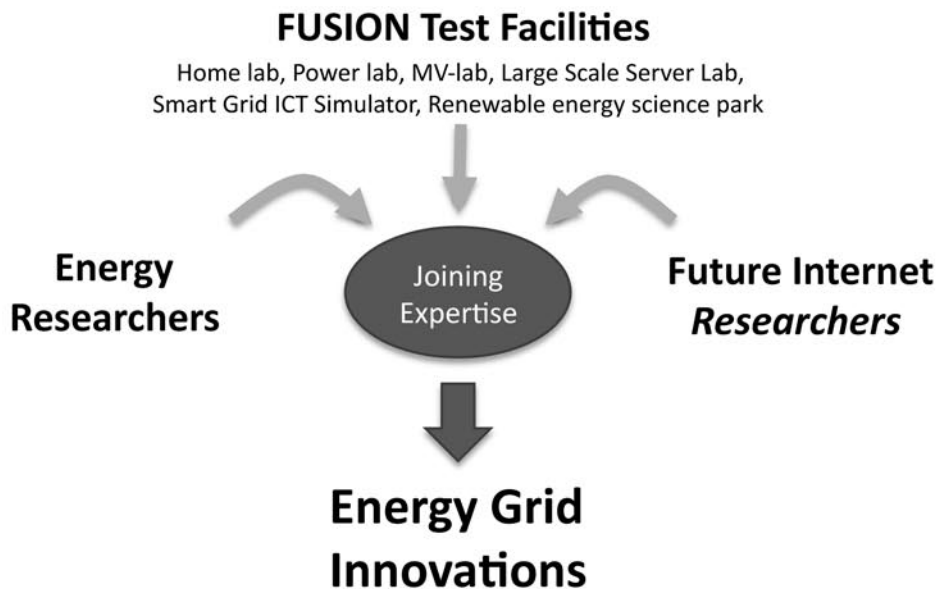
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IMPORTANT DATES

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Camera Ready Paper Due:

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August 1, 2012

Notification of Acceptance:
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