

Hundreds of Leading Experts Address Global Energy Issues at 1st IEEE International Conference on Smart Grid Communications

Held at the National Institute of Standards and Technology (NIST) in Gaithersburg, Maryland, the 1st IEEE International Conference on Smart Grid Communications (SmartGridComm) 2010 exceeded inaugural expectations as hundreds of international energy experts convened from 4 – 6 October 2010 to discuss the development and upgrade of global smart grid infrastructures “that are sure to empower our daily lives in a cleaner, safer and more affordable way.”

In all, 450 scientists, industry professionals and scholars representing North America, Asia and Europe attended over 100 presentations aimed specifically at revolutionizing the production, delivery and use of electricity worldwide. This includes successfully integrating existing technologies with the latest communications and control advances in a global effort to “increase energy independence, reduce energy pollution and provide consumers with revolutionary ways to effectively manage and control their energy use.”

On Monday morning, Conference General Co-Chairs Dr. George Arnold of NIST and Dr. Stefano Galli of Panasonic welcomed attendees, while stressing the international importance of developing standards, fostering R&D and sharing best practices among an extended cooperative community that includes communications, control, and power experts. During these remarks, Dr. Galli also reviewed the vast interest in this effort and widely enthusiastic reception for this first-ever event, which drew more than 250 paper submissions from 30 different nations as well as an attendee and presenter base consisting of both researchers and industrial professionals. Another confirmation of the wide and interdisciplinary nature of the topics addressed by this conference was the unprecedented level of support other IEEE Technical Societies and Councils provided. Specifically, IEEE SmartGridComm 2010 received the Technical Co-Sponsorship of 11 IEEE Technical Societies and two IEEE Councils.

Immediately after this introduction, Guido Bartels, General Manager of Global Energy & Utilities at IBM and Chairman of the GridWise Alliance, followed by emphasizing the smart grid’s role as “the ultimate enabler for economic growth” in a world that is increasingly becoming “smaller, flatter and more intelligent.” According to Bartels, interconnectivity is key for not only modernizing the world’s electricity systems, but also “making energy smarter.” Paramount to this is the creation of networks that integrate all facets of life, embrace local and

global collaborations, and facilitate precise ethical policies founded by open and agreeable standards.

Later that afternoon, Aneesh Chopra, the Chief Technology Officer of the United States and Assistant to the President, addressed the forum about the nation's energy agenda and its mandate to "improve people's lives today." This included challenging industry to develop systems that are driven by robust connectivity, open data architectures, transparency and accountability in order to actively engage consumers in results-driven, frictionless eco-systems. To facilitate this multi-pronged approach to the "promised land," he then detailed the current administration's efforts to "double the amount of spectrum available for high-value uses," develop systems that ensure connectivity and cyber-security simultaneously and encourage entrepreneurs "to try, design, fail and start again" in attempts to develop "frugal engineering" that "achieves large-scale, enterprise-class services."

Punctuating the first day's agenda was the highly-anticipated panel discussion titled "International Standards Coordination," which was moderated by Conference Co-Chair George Arnold of NIST. During this session, representatives of global standards organizations from the IEEE, International Telecommunications Union (ITU-T), European Telecommunications Standards Institute (ETSI) and Internet Engineering Task Force (IETF), actively discussed their efforts to modernize electrical grids with cost-effective and interoperable technologies.

Focused on nearly all communications aspects related to the modernization of the power grid, each panelist agreed that cooperation across all networks, industries and governments is a necessity for overcoming interconnectivity issues and building networks that are "more valuable than any individual application." Among the revelations was the need to develop pre-standards that would supply the foundation for global time-synchronized communications. According to one panelist, "connectivity is its own reward" in a world where "energy is a basic human right." As a result, it is "critical for everyone involved to combine their efforts and bring timely, coherent and stable IP-based protocols and PLC standards to the market."

Phoebe Yang, the Senior Advisor to the Chairman on Broadband at the Federal Communications Commission (FCC), opened the second day of the conference with her presentation on "The National Broadband Plan: Driving Innovation and Investment in the Green Energy Economy." Throughout her talk, Ms. Yang reiterated the importance of open standards,

which are “powerful forces for driving down the prices of devices and enabling stronger security.”

As her presentation proceeded, she also spoke of the commission’s goal to improve the nation’s broadband ecosystem, create smart homes and spur new markets for consumer devices through the optimization of TV white spaces as well as enhanced spectrum availability. These remarks included the desire to develop “super Wi-Fi networks” that effectively and securely facilitate grid automation services and consumer access to “enhanced billing, pricing and usage information through smart meters.”

Following Ms. Yang’s address, Emmanuel Darmois, Vice President of Corporate Standards at Alcatel-Lucent, began his presentation by referring to the smart grid as a “transformational journey” that is “not about selling boxes and equipment,” but rather “the creation of enhanced levels of intimacy between utilities and customers.” Again, Dr. Darmois reinforced the ongoing imperative that the smart grid should be encapsulated in a vision of a “powerful, connected network” consisting of millions of sensors that reach the most outlying of areas and “extend right into the user’s home.”

Further elaborating on the needs of users, Patricia Hoffman, Assistant Secretary for the United States Office of Electricity Delivery and Energy Reliability, discussed the overall necessity for consumer confidence in her Tuesday afternoon keynote remarks. In addition to “keeping the lights on for the American people,” she also reflected on the importance of a flexible, layered network that ensures reliability and sustainability. According to Ms. Hoffman, an interagency, industry-wide initiative is necessary for avoiding “a one-size, fits all” smart grid approach for promoting the sharing of data and creating a clean energy and affordable economy for consumers.

Rounding out the day’s agenda was then the presentation of the “Smart Grid of the Future” panel detailing the visions of several international industry experts. Throughout the discussion, panelists highlighted the importance of developing a universal smart grid founded on an infrastructure of evolving applications, robustness, control and long-term needs. Essential to this process, most agreed, is a regulatory environment that is unfettered by short-term goals or immediate profits and fosters a “risk-based approach” initiated by a new category of engineers, who can actively respond to “unanticipated emerging behaviors” as “billions of transactions interact on the system every second of every day.”

In his address on Wednesday morning, Jeffrey Taft, Distinguished Engineer and Smart Grid Chief Architect for the Smart Grid Business Unit at Cisco, also referenced the multi-faceted communications nature of the smart grid as “N Way Flow.” During his speech, he spoke extensively of the need to develop and implement technologies that will provide operators with “deep situational awareness” of the network, while offering “cross-tier and vertically-integrated control” of its functions. The end goal, Dr. Taft explained, is to provide “self-healing capabilities” and “faster and finer control” to the overall smart grid design.

Afterwards, Hironori Nakanishi, Director for Technical Regulations, Standards and Conformity Policy for the Ministry of Economy, Trade and Industry in Japan discussed “Japan’s Roadmap to International Standardization for Smart Grid.” During this presentation, Mr. Nakanishi spoke at-length about Japan’s own initiative, which includes expanding the scope of their country’s smart grid infrastructure and reducing greenhouse gas emissions by 25 percent by the year 2020. This includes the production of smarter user communities that are interconnected and embrace the broad introduction of renewable energy sources.

IEEE SmartGridComm 2010 then concluded on Wednesday afternoon with the last of three days of technical sessions organized into 12 separate symposia, each designed specifically to address a particular aspect of smart grid communications. This included topic discussions that actively detailed the newest solutions and approaches for facilitating remote metering, mobile communications, improved security measures in a cyber-environment, enhanced consumer information services and the on-road recharging of the next generation of electric vehicles.

For more information on IEEE SmartGridComm 2010 please visit <http://www.ieee-smartgridcomm.org>. The presentation of Vinton Cerf of Google as well as the presentation slides of many of the conference’s keynote speakers and panelists can also be viewed at <http://www.ieee-smartgridcomm.org/presentations.html>.

With IEEE SmartGridComm 2010 considered a major success by attendees and presenters alike, planning has already begun for the next event, which will be held in Brussels, Belgium from 17 – 19 October 2011. Researchers, academics, engineers and business professionals are urged to visit <http://www.ieee-smartgridcomm.org/> for call for paper details and then submit technical papers to conference planners by 14 April 2011.

IEEE SmartGridComm 2011 will once again be dedicated to bringing together international researchers from academia, industry, and national labs in an attempt to solve the

many challenges related to the modernization of the world's electrical infrastructure. Its fundamental goal is to provide a common forum to this wide and diverse technical community, which fosters the exchange and development of novel ideas, new enabling technologies, innovative designs, shared field trial experiences and lessons learned.