

The GreenTouch Consortium, a global research initiative dedicated to dramatically improving the energy efficiency of information and communications technology (ICT) networks by a factor of 1,000, today detailed the accomplishments of its first eight months of operation and demonstrated a Large-Scale Antenna System proof of concept – the first of many technologies it is working to deliver. This antenna system offers the potential for tremendous energy savings thanks to its novel wireless transmission techniques.

Presented at a GreenTouch event held here, the Large-Scale Antenna System proof of concept demonstrated that radiated power consumption could be significantly reduced as the number of antenna elements is increased. For example, an antenna array comprising 100 elements would transmit only one percent of the energy transmitted by a single antenna, for the same quality of service.

In addition to this technology demonstration, the event included a series of presentations from industry experts who detailed significant milestones GreenTouch has reached since its launch last year and highlighted some of the more than two dozen research projects that are either already in progress or under consideration. These milestones included: doubling membership and attracting the participation of leading scientists from across the industry and around the world; establishing ongoing working groups focused on several key technology areas; and earning awards from Global Telecoms Business and the World Economic Forum.

The research projects featured today were drawn from the consortium's key areas of technology focus – wireline access; core switching and routing; mobile communications; core optical networking and transmission; and services, applications, and energy trends – and will be introduced in greater detail in upcoming months.

“The areas of the network where GreenTouch is focusing its research efforts are those that have clear potential for achieving significant energy efficiencies, and evidence that the consortium has made some impressive strides in a short period of time,” said Vernon Turner, Senior Vice President of Enterprise Infrastructure, Consumer, Network, Telecom and Sustainability research groups, at IDC. “What makes this demonstration of initial technology such a promising step forward is that it credibly addresses the sweet spot where the amount of data transmitted is maximized as the energy required for that transmission is reduced.”

“When we launched the GreenTouch Consortium last year, we set ambitious goals for ourselves,” said Gee Rittenhouse, GreenTouch Consortium chairman and vice president of research at Alcatel-Lucent Bell Labs. “This initial technology demonstration and the research projects we’ve undertaken show that GreenTouch is on track to meet its objectives and position us squarely on the cutting edge of sustainable technology development.”

Besides Rittenhouse, other GreenTouch technology visionaries who spoke at today’s event included Executive Board Member Claude Monney, Senior Consultant, Swisscom, who reviewed the group’s research strategy; and Executive Board Member and Network Committee Chair Rod Tucker, Laureate Professor of Electrical and Electronic Engineering, University of Melbourne, who provided an update on the consortium’s research pipeline and its key Network Committee projects.

Representative projects include:

- Utilizing energy-efficient electronic integration of packet router functions combined with silicon photonic technologies to minimize losses in electronic interconnections and in the optical and electronic interfaces used in high-speed optical transport networks
- Generating energy efficiencies in delivery of high-bandwidth services through a dynamic wavelength capability that can more closely align the energy requirements of a given service with the energy needed to support it
- Reducing energy consumption in wireless access networks without compromising coverage by using separate data and signaling networks to facilitate “on-demand” rather than “always on” device functionality

Special guest speaker Luis Neves, Chairman of the Global eSustainability Initiative (GeSi) and Vice President of Corporate Responsibility at Deutsche Telekom, provided commentary in the area of ICT networks energy efficiencies and how ICT-driven sustainability is of benefit to everyone.

Large-Scale Antenna System Demonstration Details

What distinguishes the GreenTouch Large-Scale Antenna System from other antenna systems

and enables it to achieve such a significant reduction in power is the way in which it transmits signals. Instead of broadcasting signals throughout the entire coverage area as other antenna systems typically do, the Large-Scale Antenna System utilizes knowledge of the propagation channels to transmit concentrated beams of information selectively to many users at once. The greater the number of antenna elements deployed, the higher the concentration of the beams and, therefore, the lower the power that any antenna needs to send a given amount of information. Importantly, along with the large reduction in radiated power, signal strength and quality of service are maintained. In practical application together with advances in other wireless technologies, the potential benefits this technology could yield are immense.

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