GreenTouch™

Why You Should Join GreenTouch

Launched in 2010, GreenTouch is a global research consortium of leading Information and Communications Technology (ICT) industry, academic and non-governmental research organizations and individual experts dedicated to significantly improving the energy efficiency of communications and data networks, including the Internet, and thereby fundamentally transforming and reducing the carbon footprint of ICT devices, platforms and networks.

Our Global Mission

By 2015, our goal is to deliver the architectures, specifications and technologies – and demonstrate key components – needed to increase network energy efficiency by a factor of 1000 compared to 2010 levels. As GreenTouch membership expands, so do our collective knowledge and opportunities – if you have the desire and the ability to contribute to achieving the GreenTouch objectives, we invite you to join us!

Together we are working to reinvent telecommunications networks and ensure a sustainable future for data networking and the Internet. As we move toward these goals, GreenTouch members will benefit from:

- Collaboration with leading experts from around the world
- Application of fundamental research in exciting new areas
- Access to network models and studies examining key energy-related issues
- Information on network power consumption, traffic growth and energy trends
- Opportunities to bring innovative new ideas to reality

See a video about the GreenTouch Consortium: http://y2u.be/pAyQ-kxPw9o

Through a focused and collaborative cross-industry initiative, we intend to define the challenge, collect and track the network trends essential to energy use, conduct breakthrough research, and deliver innovative new technologies and sustainable solutions that can be applied across ICT and beyond — for a greener and more sustainable communications future and for the benefit of all.

www.greentouch.org

Value of GreenTouch Membership

Joining GreenTouch provides the opportunity to lay the groundwork for an entirely new direction in telecommunications research, and to invent the technologies on which energy-efficient networks of the future will depend.

As a member, you'll have the chance to work with world-renowned technology experts from industry and academia, as well as gain access to a global network of partners in science and commerce who have innovative ideas and sector-leading experience. See the list of current GreenTouch members at http://www.greentouch.org/members.

If you are with an **academic or other non-profit research organization**, you'll enjoy the additional benefits of:

- Access to funding opportunities driven by for-profit members
- Industry perspective and collaboration opportunities

If you are with a **commercial enterprise**, your organization will benefit from:

- A community of experts engaged in the research interests of your business
- The opportunity to fund and accelerate research in the areas most relevant to your company
- The ability to combine resources cross-industry to leverage your research investments

In addition, GreenTouch voting members have access to certain technology rights owned by other active members in order to conduct scientific research and develop new technologies that improve the energy efficiency of ICT networks. Voting members are also granted a royalty-free, non-exclusive, worldwide license to use the GreenTouch logo for their products and services that reduce or contribute to the reduction of energy consumption consistent with the GreenTouch mission.

As GreenTouch evolves beyond its second year, engaging more than 50 leading organizations from 23 countries, and expanding our range of both mature and developing projects, we seek to grow our professional community. New and valuable opportunities are arising for telecommunications operators and policy-making organizations – to both increase the technical benefits of energy efficiency and effectively demonstrate ICT's contribution to mitigating climate change. We urge participants in those sectors to jump on board and extend our work.

"GreenTouch™ has gathered a team of researchers and scientific experts from all regions and sectors who are working together in ways they may not have thought possible. The symbiotic collaboration created through GreenTouch is making a lasting and measurable impact on the energy efficiency of ICT networks to a greater degree than our individual organizations could have accomplished alone."

Thierry Van Landegem
GreenTouch chairman

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What GreenTouch Is Working On Now

GreenTouch has built a research portfolio around five major themes: wireline access, mobile communications, switching and routing, optical networking, and services, applications and trends. Currently 16 major research programs actively involve more than 350 participants. Among those projects, the Large Scale Antenna Syste (LSAS) and the Bit Interleaved Passive Optical Network (Bi-PON) technology have already been showcased in public demonstrations.

GreenTouch has also conducted a global research study to assess the overall impact of the technologies, architectures and techniques being investigated. These Green Meter Research findings indicate it is possible to reduce the net energy consumption in communication networks by up to 90% by 2020 through dramatic improvements in energy efficiency in mobile access, wireline access and core networks.

Sample Research Projects

Wired Core and Access Networks Working Group

- **Service Energy Aware Sustainable Optical Networks** – a clean-slate core network design project that provides an underlying dynamic wavelength capability as a basis upon which other projects can build
- **Highly Adaptive Layer for Meshed On-Off Optical Networks** – focuses on optimizing optical network energy efficiency
- **Router Power Monitoring** – working to provide a detailed power profile of a range of network equipment and will develop power-measuring hardware and software
- **Optimum End-to-End Resource Allocation** – investigating the optimum allocation of resources in a core network in a dynamic fashion, so as to reduce the network's power consumption and carbon footprint
- **Zero Buffer Router Architectures** – developing mechanisms to minimize or even eliminate buffers and packet storage in core networks, enabling single-chip and/or all-optical packet handling
- **Switching and Transmission** – investigating energy efficiencies through device and network architectures that employ transmission and switching more than IP routing, leveraging recent progress in low power large photonic switch architectures
- **Single Chip Router with Photonic Integration** – improving the scalability and reduing the power consumption of IP routers by focusing on silicon-photonic interconnects to reduce the power consumption in the interconnect structure and bringing the optical interface as close as possible to the electronic processing
- **Content Distribution and Clouds for Service Delivery** – providing a systematic approach for quantifying the energy efficiency of a range of cloud services and identifying the optimum tradeoff between performing tasks in the cloud relative to using local computing resources
- **Low-Energy Architecture** – working to identify the access solution with the lowest possible energy consumption for the scenario where a PON-based fiber infrastructure is available, and for a greenfield scenario where there is no existing infrastructure
- **Virtual Home Gateway** – seeking energy efficiency improvements by simplifying the customer premise equipment and virtualizing typical home gateway functionalities into a central server in the network
- **Bit-Interleaving Passive Optical Networks** – developing new bit-interleaving protocols for time division multiplexing PON optical network units to reduce the intensive processing being performed on the entire data stream being broadcast from the optical line terminal

Mobile Communications Working Group

- **Beyond Cellular Green Generation** – investigating how to overcome existing limits, going beyond the traditional cellular architecture through a complete separation of the signaling network and the data network
- **Green Transmission Technologies** – focuses on fundamental research into the energy-efficient design of transmission schemes and radio resource management strategies: what are the trade-offs that leave network service satisfactory to various users?
- **Large Scale Antenna Systems** – carrying out research in the following areas related to Large Scale Antenna Systems: Architecture and Deployment, Algorithms and Simulation, and Energy Modeling and Control

Services, Policies and Standards Working Group

- Investigating and deriving the traffic trends, services and applications that need to be supported in future networks
- Establishing the relationships between GreenTouch and relevant standards and policy organizations
- Coordinating the interactions between the GreenTouch working groups and projects as they relate to important and relevant standards bodies
- Laying the groundwork for deploying the new GreenTouch technologies into the commercial markets.

Green Meter Webcast and Announcement:
www.greentouch.org/index.php?page=green-meter-research

Interested in any of our Sample Research Projects?

Do you have ideas about how to improve the energy efficiency of ICT networks? Join GreenTouch and contribute your expertise!

To see a GreenTouch project in action, watch the Large Scale Antenna (LSAS) or the Bit Interleaved Passive Optical Network (Bi-PON) demonstration videos at: http://www.greentouch.org/videos.

Membership Levels and Fees

- **For-Profit Membership –** The amount of the annual membership fee depends on company size; the range is from EUR 15,000 to EUR 25,000. Your specific dues will be calculated when you send in your completed Membership Application.
- **Not-for-Profit Membership –** The annual membership fee is EUR 5,000.
- **Associated (Individual) Membership –** The annual membership fee is EUR 5,000.

How to Join GreenTouch

To become a member, please fill out and sign both the Membership Application and Non-Disclosure Agreement, which you can download from our website at http://www.greentouch.org/join, and send them to contact@greentouch.org. When we've received these documents, we will send you a complete Membership Agreement and Guidelines package, detailing:

- Your specific membership fees
- The GreenTouch intellectual property framework
- Our working operational structure
- Governance and regulations
- Member roles and responsibilities

Questions?

Please direct any general questions about GreenTouch or questions regarding membership to contact@greentouch.org, or call us at +1-781-876-8808.

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