



Another group of attendees enjoys time at the Kinkaku Temple.

Institute for Environmental Studies, Japan (“Academic Presentation Skills”), and Akihiko K. Sugiyama of Information and Media Processing Labs, NEC (“Easy and Lazy Technical Writing for Engineers and Scientists”).

Additionally, an IEEE Senior Member elevation event for researchers and engineers was held to help members in achieving Senior Member status. We supported ten members to be included in this event and have worked to promote

mutual communication among researchers and engineers.

There were also an opening ceremony and a welcoming reception at the venue on 11 October, an awards ceremony and banquet on 13 October, a closing ceremony on 14 October, and city tours every morning during the conference, all of which provided participants with plenty of opportunities to interact with one another.

GCCE 2017, the sixth such conference, will be held in Nagoya, Japan, 24–27 October 2017. The latest information on GCCE 2017 can be found online at <http://www.ieee-gcce.org/2017/>. We look forward to your submissions and participation!

—Wataru Uemura,
Conference chair, GCCE 2016

—Tomoya Kawakami,
Conference chair, GCCE 2016

Global Humanitarian Technology Conferences

Over the last decade, the IEEE has promoted the mission of “Advancing Technology for Humanity.” The IEEE Humanitarian Activities Committee (HAC) [1] has been mandated to support the Board-endorsed vision of IEEE volunteers around the world carrying out and/or supporting impactful and local grassroots humanitarian activities. Such activities include developing technology for communities with limited resources, including those recovering from disasters. Conferences are now platforms to showcase and disseminate technologies and good practices to volunteer engi-

neering organizations and other non-governmental organizations (NGOs).

This is a conference report on the sixth IEEE Global Humanitarian Technology Conference (GHTC), which was convened in Seattle, Washington, 13–16 October 2016. The seventh GHTC [2] will be hosted by the IEEE Santa Clara Valley Section in San Jose, California, 19–22 October 2017.

IEEE GHTC brings together diverse stakeholders from around the world, including engineers, scientists, practitioners, educators, philanthropists, corporations, foundations, and NGOs. What they share in common is a commitment to developing, implementing, validating, and adapting technology-based solutions addressing poverty, disaster response,

conflict, environmental change, and other challenges facing underserved populations worldwide.

The history of the GHTC is outlined in the “Conference Reports” column in the October 2016 issue of *IEEE Consumer Electronics Magazine* [3]. This article adds information about what happened at GHTC 2016 and provides a preview of GHTC 2017.

GHTC 2016

GHTC 2016 was hosted by the IEEE Seattle Section, with financial support from Region 6 [4], the Seattle Section [5], the Oregon Section [6], and the IEEE Society on Social Implications of Technology (SSIT) [7]. GHTC is grateful for the technical cosponsorship of

the IEEE Consumer Electronics (CE) Society [8], SSIT, the IEEE Engineering in Medicine and Biology Society [9], the IEEE Power & Energy Society [10], the IEEE Microwave Theory and Techniques Society (MTT-S) [11], and IEEE-USA [12]. All technical cosponsors publicize the conference and its results. The financial patrons for 2016 included the IEEE HAC, Global Good [13], Vodafone [14], and Renavits [15].

The GHTC 2016 conference covered a broad range of science and application areas and attracted more than 300 attendees, including leaders and representatives of organizations and global humanitarian initiatives from around the world. There were attendees from several volunteer engineering organizations, including the IEEE Special Interest Group on Humanitarian Technology (SIGHT) [16], IEEE Smart Village [17], Engineers Without Borders [18], Engineering for Change [19], and Engineering Ministries International [20]. Finally, we had representation from more than three-dozen universities, colleges, and institutes. The sheer diversity of these organizations provides valuable insight into the successes and challenges of applying technology for human benefit.

CE SOCIETY'S INTERESTS

The particular role of the IEEE CE Society is promoting communications in the developing world. As noted in the article "Consumer Electronic Association's Five Technology Trends to Watch" [21], there is a mobile revolution in Africa. In fact, this revolution in communications also impacts the entire developing world, including parts of the Americas and Asia. The article notes that "... for the majority of the world's population, the most powerful device in their CE arsenal might be the US\$75 smartphone that lacks most of the features showcased at the Consumer Electronics Conference (International CES) but still invaluablely serves as a business tool, a banking device, a Web portal, a messaging service, and, of course, a phone."

The GHTC Steering Committee aspires to maximize the IEEE's impact by supporting people in developing countries. Success is measured in lives saved



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and lives improved. Going forward, the team wishes to increase engagement with the entrepreneurial community. For GHTC 2016, the conference committee added a ninth track: deployment. The two track chairs were Jackie Stenson, cofounder of distribution network Essmark [22], and Roger Johnson, an inventor of biomimetic humanitarian technology, of Eidon LLC [23].

GHTC 2016 featured two panels of interest to CE Society members: "Mobile Technology" and "Building Effective Distribution Channels for Humanitarian Technologies." The "Mobile Technology" panel discussed the use of mobile technology for innovations deployed in emerging markets and impoverished areas. The panelists shared their experiences and the difficulties they have encountered. The panelists included:

- ▼ Dr. Richard Fletcher of the Massachusetts Institute of Technology and the University of Massachusetts Medical School
- ▼ Steve Feng of the University of California, Los Angeles (UCLA), and Cellmic LLC
- ▼ Tim Burke of Arch
- ▼ Sona Shah of Neopenda
- ▼ Cody Finke of the California Institute of Technology
- ▼ Dr. Navid Amini of UCLA
- ▼ Fredrik Winsnes (moderator) of NetHope.

The "Building Effective Distribution Channels for Humanitarian Technologies" panel discussed ways to successfully disseminate life-changing and life-saving technologies in the developing world, with particular focus on distribution where these technologies can have the most impact. Panelists included:

- ▼ Emma Colenbrander, cofounder of Pollinate Energy
- ▼ Steele Lorenz, cofounder and chief executive officer (CEO) of MyRain

- ▼ Jodie Wu, cofounder and CEO of Global Cycle Solutions
- ▼ Jackie Stenson (moderator) of Essmark.

GHTC 2016 SPEAKERS AND WORKSHOPS

GHTC 2016 included keynotes by several distinguished and experienced speakers:

- ▼ Bartosz Wojszczyk, "Disrupt or Be Disrupted" (on energy supplies)
- ▼ Walt Hubbard, "Technology and Resilience in the 21st Century" (about planning to mitigate disasters before they happen)
- ▼ Kartik Kulkarni (chair of IEEE SIGHT), "Building a Locally Funded Community of Engineers for Global Development"
- ▼ Paul Cunningham, "IEEE HAC and Global Development"
- ▼ Alexis Bonnell (USAID), "Beyond the 'Shine', The Future of Humanitarian Response"
- ▼ Maurizio Vecchione (Global Good), "The Power of Developing World Technology: Reverse Innovation"
- ▼ Dave Cook (Engineers Without Borders, United States), "Building a Better World Through Volunteering."

GHTC 2016 hosted a SIGHT workshop on "Creating Local Impact for Achieving Global Internet Inclusion." The IEEE HAC also hosted several workshops. The entire GHTC 2016 program may be accessed at http://ieeeghtc.org/files/2016/09/GHTC-2016-Complete-Program-Schedule_Final2.pdf.

PAPERS AND SOCIAL MEDIA

The GHTC 2016 papers are published in IEEE *Xplore*. All IEEE conferences utilize websites, and GHTC also used the following social media:

- ▼ blog: <https://ieeeghtc.wordpress.com/2015/>
- ▼ Facebook: <https://www.facebook.com/ieeeghtc>
- ▼ Twitter: <https://twitter.com/ieeeghtc>
- ▼ YouTube: <https://www.youtube.com/channel/UCnUUGTjpw3ACgGyV3VlR6g>
- ▼ LinkedIn: <https://www.linkedin.com/groups/IEEE-Global-Humanitarian-Technology-Conference-3729373>.

GHTC 2016 has been testing a new conference support application called Whova [24]. This worked very well, allowing attendees to

- ▼ view the event agenda and plan schedules
- ▼ download the assembled conference papers
- ▼ plan whom to meet by browsing the attendee profiles in advance
- ▼ send messages (e.g., meet for this talk at this time) and exchange information (e.g., contacts)
- ▼ find attendees with common affiliations, education, shared networks, and social profiles
- ▼ receive updates from conference organizers (e.g., schedule or room changes)
- ▼ access the conference agenda, locate places and rooms, and find parking.

GHTC 2017 PREVIEW

GHTC 2017 will be held in the San Jose area, hosted by the IEEE Santa Clara Valley Section. This area, Silicon Valley, includes the headquarters of many leading technical companies interested in corporate social responsibility. The call for papers is published at the website at [2]. The conference is seeking technical papers, posters, special sessions, workshops, speakers, and sponsoring patrons. We are expecting over 300 attendees this year.

A selection of contributions will be used as the baseline for the conference program, along with invited papers, deployment case studies, poster papers, remote conferencing sessions, and panels. Panel sessions will focus on topics such as the societal impacts of technology, field communications, and remote health provider solutions. GHTC 2017 plans a workshop on how to effectively disseminate applied science, specifically including the work of NASA.

GLOBAL CONNECTIONS

GHTC 2017 is following a successful model developed by the inaugural GHTC in 2011 that has been expanded and improved through 2016. The conference leadership is explicitly connecting with other conferences to exchange information and best practices. In 2017,



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there will be related conferences in Latin America (2017 IEEE Mexican Humanitarian Technology Conference, Puebla, Mexico, March 2017 [25]), Africa (2017 IEEE International Symposium on Technology, Windhoek, Namibia, May 2017 [26]), and Canada (2017 IEEE International Humanitarian Technology Conference, Toronto Ontario, July 2017 [27]).

FUTURE

The IEEE continues to invest more resources in the HAC, continuing the Board's commitment to grassroots activities. Cooperative work will continue between GHTC and related conferences. The conferences will keep on driving technology into the hands of NGOs and volunteer engineering organizations.

The IEEE encourages the formation of SIGHT chapters attached to geographic locations (IEEE Sections around the world) and to international IEEE Societies (e.g., SSIT and MTT-S). This is an open invitation to encourage the formation of SIGHT chapters affiliated with the IEEE CE Society. An example of SIGHT activities can be summarized as

- ▼ find a locally identified need
- ▼ find solutions from a conference
- ▼ build and adapt locally implemented and sustainable solutions for that need.

—Joseph Decuir,
IEEE Fellow

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