

INTERNET INCLUSION: Advancing Solutions

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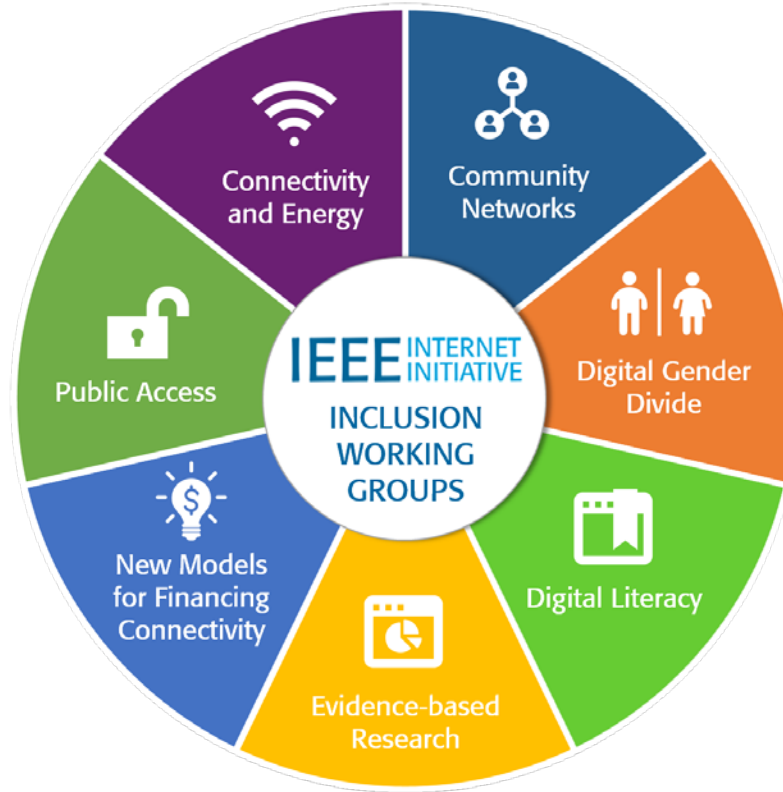
IEEE INTERNET INITIATIVE

Internet Inclusion: Advancing Solutions

Internet Inclusion: Advancing Solutions (IIAS)—organized by the IEEE Internet Initiative—gathered 16 October 2017 in Washington, D.C., in the United States to renew conversation and collaboration among the global technology, policy, and investment communities toward the goal of extending affordable, meaningful internet access to the estimated 60 percent of people worldwide who today are unconnected.

A series of moderated panel discussions addressed solutions for digital inclusion, profiled a variety of example inclusion projects and assessed interest among multilateral development banks (MDBs) in investing in information and communications technologies (ICT). Then, *IIAS-Washington's* 120 participants dispersed among seven working groups focused on prioritized challenges and barriers:

- Connectivity and Energy
- Community Networks
- Digital Gender Divide
- Digital Literacy
- Evidence-based Research
- New Models for Financing Connectivity
- Public Access



Roundtable: Advancing Solutions for Digital Inclusion

Deepak Maheshwari, director, government affairs, India and ASEAN, Symantec, and global vice chair, IEEE Internet Initiative, opened *IIAS-Washington* by moderating a roundtable discussion on digital-inclusion strategy.

Related events thus far—in Tel Aviv, Israel (May 2015)¹; João Pessoa, Brazil (November 2015)²; Delhi, India (September 2016)³; Guadalajara, Mexico (December 2016)⁴; Washington, D.C., United States (April 2017)⁵; Windhoek, Namibia (May 2017)⁶; Geneva, Switzerland (June 2017)⁷; and New Delhi, India (October 2017)⁸—have shown, he said, that, while “technology is global, policy more often is local ... That’s why we have this set of people who are so diverse in background. (The event) “unites all of us with a commitment and passion for this cause of internet inclusion.”

Jochai Ben-Avie, senior global policy manager, Mozilla Foundation, said, “I don’t think anyone in this room is satisfied with the notion that 4 billion people around the world still are not connected ... We have to disrupt the ecosystem.”

The challenge, he said, is greater than simply deploying connectivity to unconnected villages around the world. “Once you lay the fiber, light it up, and build a tower, what are the local solutions that actually lead to people coming online? How do we innovate around that? ... This is not your parents’ innovation, in terms of (traditional) R&D and locking a lot of engineers in the room.” He challenged *IIAS-Washington* participants to open their processes and engage a “broader swath of people to join the dialog” because the results will be “better than anything we could come up with by ourselves.”

Updating his presentation at a similar IEEE Internet Initiative gathering in Washington in April 2017, Mr. Ben-Avie revisited Mozilla’s launch of two competitions intended to generate prototypes and designs for providing connectivity during disasters and leveraging existing infrastructure to provide high-quality wireless connectivity to communities in need. In the months since, he said Mozilla had received 100 submissions from 27 countries.

Mark Buell, regional bureau director for North America for the Internet Society, said that the common perception of the digital divide is that it’s a gap between the developed and developing worlds. In fact, “we need to recognize that a significant digital divide exists in North America ... Many indigenous communities on tribal lands don’t have access to decent internet in the United States, and the situation is very similar in Canada.” He noted the importance of the work of the *IIAS Community Networks Working Group*, because there are so many “small, isolated

¹ <https://internetinitiative.ieee.org/events/etap/ieee-experts-in-technology-and-policy-etap-tel-aviv?highlight=WyJ0ZWwiLCJhdml2IiwidGVsIGF2aXYiXQ==>

² <https://internetinitiative.ieee.org/events/conferences/igf-2016/2-uncategorised/32-igf-2015?highlight=WyJicmF6aWwiXQ==>

³ <https://internetinitiative.ieee.org/events/conferences/internet-inclusion-advancing-solutions-india>

⁴ <https://internetinitiative.ieee.org/events/conferences/igf-2016?highlight=WyJndWFKYWxhamFyYSJd>

⁵ <https://internetinitiative.ieee.org/events/conferences/internet-inclusion-advancing-solutions-washington-d-c-2017>

⁶ <https://internetinitiative.ieee.org/events/etap/etap-forum-in-namibia-africa>

⁷ <https://internetinitiative.ieee.org/events/conferences/wsis-forum-2017-12-16-june?highlight=WyJnZW5ldmEiXQ==>

⁸ <https://internetinitiative.ieee.org/events/conferences/advancing-solutions-for-internet-inclusion-in-india-6-october-2017>

communities, where there simply is no market opportunity” that would lure network operators to roll out commercial services.

Mr. Buell concentrated his remarks on how “we need to rethink the ways we think about security. It isn’t an endpoint; it’s a process ... There really is no silver bullet for security—no single application of software or government policy (that will produce a secure environment for universal connectivity). Security is the responsibility of everyone in this room, the responsibility of everyone who uses the internet.”

Solomon Darwin, executive director, Center for Corporate Innovation, UC Berkeley-Haas School of Business, discussed the concept of openness. “Open innovation doesn’t mean, *‘I’m an open person; give me all of your ideas.’* It means, *‘I take the knowledge I have and put it in your business model, and you take yours and put it into mine.’* Knowledge has to flow two ways, in order to converge and eliminate cost completely from ecosystem.”

Mr. Darwin discussed his architecting India’s Scalable Smart Villages Project, intended to transform 474 villages. “But what is a ‘smart village?’ It’s not building roads, buildings and water tanks—it is building people. My definition of a smart village is a community—it’s people,” he said. “... In every village in India, we can get Nike shoes by Amazon; we can get a cold can of Coca-Cola in the most God-forsaken places. (The problem is that) it doesn’t work the other way. The lady who is making the beautiful sari in an Indian village can’t put it on the internet to sell it.” The idea of the project is to economically empower the villages with information access so that, then, “they themselves will build roads and water tanks.”

Patricia A. Davis-Muffett is senior head of global public-sector marketing with Amazon Web Services (AWS). She moved into her current work after leaving a more traditional technology company. “One of the things that motivated me was this idea of democratizing innovation and leapfrogging over all of the middle men who could stop innovation from happening—in the government and in nonprofits but also in the commercial sector,” she said. “It was really kind of a leap of faith for me.”

One of the barriers to actually bringing innovation to anyone who has a good idea around the world is a gap in digital skills, she said. Consequently, her team offers “free training on AWS coding skills for anyone anywhere in the world having a university email address.” AWS, she said, is committed to such digital-inclusion programs in part because “it’s a limiter to our growth if only a small percentage of the world is making use of our technology to innovate.” Ms. Davis-Muffett said she has started to see evidence that governments are beginning to get on board with the same line of thinking.

Doyle Gallegos, global lead, broadband access, World Bank, talked about his organization’s flagship Digital Development Report and “what it has done for our agenda.” By providing a means to measure progress, it has given the World Bank a key performance indicator (KPI) that drives the organization, “and we’ve seen an interesting transformation.”

His team is engaged in three primary initiatives:

- One, the World Bank is focusing on policy reform. “If we can get the policy right, we think we can solve 80 percent of our problem.”
- Two, the World Bank is working to “accelerate the investment that is required.”
- Three, Mr. Gallegos said, “we’re focusing on digital economy. The third day of the World Bank’s annual meeting was focused on digital economy; this wouldn’t have happened a year and half ago. Everybody’s talking about how to do digital solutions to drive development.”

Sonia N. Jorge, executive director, Alliance for Affordable Internet, and director of digital inclusion programs, Web Foundation, has worked extensively in ICT policy and regulatory analysis, strategic industry planning, and the creation of legal frameworks to address issues around competition, cost-based pricing, spectrum management, and infrastructure development and sharing. She discussed the criticality of new technology approaches to connect the unconnected because many of those delivered for connected regions “are not solutions that are commercially viable for you to serve the poor.” Also, she said, her groups are “really thinking about the real true cost of access ... considering the cost of losing privacy, protecting our own personal data and security. This is especially important for women ... Women are absolutely turned off from using online spaces ... not just because of harassment but also for the security concerns that they face.”

Ms. Jorge is an avid advocate of gender equality in development processes. “The reality is that the gender digital divide continues to increase,” she said in the *IIAS-Washington* roundtable. “A lot of innovation is not being thought through by women for women.” She said a focus on gender equality must be fully integrated at the outset of development of policy, technology, etc.

Vishal Mathur, head of connected society with GSMA, said there is a common misperception that mobile operators are not wanting rural inclusion. “They actually see it as a necessity,” he said. Much of the work that GSMA does with members and partners is trying to significantly reduce the cost of access, he said. “I invite anyone out there, private or public, to work with the mobile industry to sandbox some of these solutions and see if they’re scalable.”

Other areas of GSMA focus with regard to internet inclusion are around “the consumer orientation,” he said—the need to address gender inequality, digital literacy, distribution of financing of affordable smartphones, development of local content ecosystems, etc. Finally, “we need to open up the investment appetite and develop a low-risk approach,” Mr. Mathur said. There are issues to be solved around taxation and cross-ministerial dialog with regard to opening up rights of way from passive to active sharing, he said.

Diego Molano Vega, an international consultant on digital transformation of companies and governments, spoke from his experience as minister of ICT in Colombia from 2010 to 2015. His policy plan, “Vive Digital,” was intended to reduce poverty and create jobs using technology. Colombia expanded its digital ecosystem—across infrastructure, services, applications, and users

alike. In Colombia, every rural community with more than 100 inhabitants has internet community centers.

The issue here is about working both sides of the equation: “supply side and demand side,” he said. For example, he said, “the tax men of the world see telecom industry as a beautiful source of revenue because it is easy,” so there is reform to be undertaken in that area. At the same time, “we have to discover the killer applications for the poor, because they are different than the killer applications for the rich.”

Panel: Findings from the WG-MDBs Research Project

The Working Group on Multilateral Development Banks (WG-MDBs) Investment Strategies in the ICT Sector, led by the Alliance for Affordable Internet and the Web Foundation, shared findings and initial recommendations of a research project designed to answer whether investments in the ICT sector are a priority for MDBs.

Guy Zibi, principal, Xalam Analytics, said the working group sought to use the latest data-analytics and organization tools to look at how to make the investment decision-making process faster and more timely. He said the group sees this as “elemental to lifting millions of people out of poverty.” The research conducted was intended to, one, understand the scale; two, size up the achievements; and, three, frame recommendations.

In seeking to understand the nature of MDB investments in the ICT sector, Mr. Zibi said, the group confirmed a “fairly well-known point ... that the ICT share of MDB commitments is very low, about 1 percent.” He pointed out that it is especially low, from the standpoint in terms of the importance that ICT has on GDP. Most commitments, he said, go to southeast Asia and sub-Saharan Africa, where needs are very pressing.

One of the core questions that the working group had, Mr. Zibi said, is that if “MDBs and government think the ICT sector is extremely important, what is the catch?” Why isn’t more funding going toward ICT projects such as for internet inclusion? The key, fundamental reason, he said, is that the “ICT sector is perceived as nearly exclusively a private-capital industry with little need for public” engagement. While the private sector has been a key source of capital for the ICT sector for the last 20 years, Mr. Zibi said, it’s not enough. “The paradigm is hitting a wall in terms of connecting the unconnected. We have to change what we’re doing if the objective is to be reached.”

The working group’s analysis yielded initial suggestions:

- Propose a paradigm shift with a focus on closing the investment gap and increasing impact
- Emphasize strategic investments in the enabling policy frameworks
- Focus more heavily on rural investments, with innovative approaches to finance and policy

Staci Warden, who runs the Center for Financial Markets at the Milken Institute, then moderated a panel discussion in which she challenged participants to drive toward additional concrete recommendations for boosting MDB investment in ICT.

Boutheina Guerhazi with the World Bank said, “It cannot be business as usual because (what is being done is) too small, too fragmented, and not enough to live up to the ambition of our clients.” She said, “over the past few years, we’ve focused a lot on policy and regulation (and the) enabling condition for the private sector to go there.” We’ve brought “connectivity to a number of countries in west Africa that were not connected. Those are great results but not sufficient.” She said she is encouraged with more of an ecosystem approach to development that takes into account the concurrent needs for skills, institutions, regulations, and infrastructure.

Antonio Garcia Zaballos said his organization has been “mainly focusing on Latin American countries ... Whenever you’re trying to implement, you realize that, despite the fact that you’re providing broadband services, telecom law relates to 1990s and 2000s.” He said a country’s minister of telecoms typically is not the problem. “The bottleneck is the minister of finance. In more and more countries in Latin American, at the presidential level, the government has an office dealing with that. But there’s a lack of coordination.”

Ms. Guerhazi said the World Bank has “faced a similar thing in Africa ... the race against technology is not very easy for policymakers.” With each new wave of technological innovation, there needs to be a way to re-examine whether “the law and regulation and policy (are ready) to move to the next level ... We talk about market failure, but there are a number of policy failures that need to be addressed.”

Mr. Zibi said, for example, there must be “more flexibility around spectrum regime, allowing people to share it.” He recommended an asset-sharing, “malls model.”

Profile Project Roundtable

Next at *IIAS-Washington*, Manu Bhardwaj, vice president for research and insights at the Mastercard Center for Inclusive Growth, moderated a panel featuring leaders of projects for meaningful internet inclusion. The panelists shared first-hand experiences of what is working and what is still needed for impact and sustainability and how to fill the gaps identified.

“In certain countries, they are still lacking just basic access ...,” Mr. Bhardwaj said. “We all are here because we view the internet as an equalizer in terms of providing economic opportunity to businesses, to entrepreneurs, and to individuals, but we are seeing that so many people just don’t even have that chance.”

Vanu Bose, chief executive officer and founder of Vanu Inc., a provider of innovative wireless-infrastructure solutions, said he has found that bringing connectivity to underserved regions is typically more of an economic than technical problem to solve. With so much less revenue to be generated per cell site, Mr. Bose said, the operational expenditures (OPEX) around, for example, diesel power “doesn’t pencil.” Diesel is a very expensive energy source in many underserved

regions, he said, as well as a highly valued target for thieves. (He told of a sign in Puerto Rico in the aftermath of Hurricane Maria that read, “Please don’t steal our generator, but feel free to use our power.”)

Cell sites typically require 10 to 30 kilowatts of power, which is “not feasible on any level” in largely unconnected areas. He said his company was able to optimize power utilization to the point that an entire site it launched in Rwanda delivering cellular and IEEE 802.11™ “Wi-Fi®” services required only 90 watts. The lessons learned that his company gleaned in deployments in deep rural Africa and America—around power and size efficiency, rugged and mobile equipment, jitter tolerance, etc.—have turned out to be applicable in disaster-relief work, such as in Puerto Rico, Mr. Bose said.

[Editor’s note: Mr. Bose died 11 November 2017, reportedly from a sudden pulmonary embolism.]

Paul M. Cunningham, president and chief executive officer of International Information Management Corporation and founder and director of the IST-Africa Institute, offered at *IIAS-Washington* a series of guidelines for development projects in underserved regions based on his organizations’ experience: “If you are not focused on making sure that any activity you do in a country is supporting engaging and skills transfer and increasing entrepreneurship, please go home—please stop wasting people’s time ... If you don’t deal with digital-literacy gaps first, stop. You are going about this in the wrong way ... If you are not basing it on local ownership ... and investing in stakeholders on the ground, stop.”

He discussed IST-Africa’s work to co-design an open-source, multilingual mobile-health platform integrating electronic medical records, medical sensors, and generation of monthly aggregate health indicators. The intention is to strengthen primary healthcare delivery in resource-constrained health clinics in Africa; IST-Africa collaborates with ministries and national councils in 18 African member states. “If I was asked for a recommendation, it would be all future MDB- or donor-funded plans should automatically mandate funding for shared infrastructure, ... focus on digital literacy, and insist on enabling ICT as a horizontal enabler,” Mr. Cunningham said.

Teresa Horejsova is director for project development for the DiploFoundation, a non-governmental organization (NGO) providing capacity-development programs in digital literacy and related issues. Ms. Horejsova said one of her learnings is that “there’s a lack of capacity of governments to take the good decisions (and convert them into) informed policy decisions. Especially in small and developing countries, this is a problem.”

Capacity development among government decision makers is not easy, she said. “We have to work with these people that they have knowledge, acquire skills, and be regular participants at meetings at the UN or meetings such as this one.” She talked about her organization’s work on building a methodology for online learning and to serve as a one-stop shop for policy development. “This is really a lot of peer-to-peer learning, interactive-coaching type of courses (so that) in a targeted way, we prepare the people to be able to participate.”

Michael Potter, founder of Geeks Without Frontiers, complimented especially a couple of key recommendations from the recently released United Nations Broadband Commission Report: that every country should have a national broadband plan and strategy (adding “I think every state should have their own broadband policy”) and that every state should reconsider their regulatory structures.

He also noted the report calls specifically for “Dig Once” strategies. Geeks Without Frontiers has helped write model regulation to support Dig Once projects, in which underground fiber links are installed as an integrated element of any major infrastructure program, such as building or renovating roads, railways, pipelines, utility infrastructure, and energy distribution channels. “All of the multi-lateral lending agencies on the planet do not have enough money to solve the world problems, but with policies like Dig Once and integrated infrastructure” creating a “megafund of dollars,” Mr. Potter said, it would provide “more gunpowder available for multi-lateral lending agencies.”

Kartik Kulkarni chaired the IEEE Special Interest Group on Humanitarian Technology (SIGHT) steering committee. He described an IEEE SIGHT project “driven and led by youth of Tunisia, guided by seniors inside and outside Tunisia.” He described a “six Cs” approach to curriculum—for connect, consume, communicate, collaboration, caution, and contribution—intended to help encourage adoption of the internet to improve lives in Tunisia. “The curriculum is really effectively reinforced among students, parents, and teachers via train-the-trainers modules.” “There are two narratives that this group is using. The first one is, *here is some interesting stuff you can do with internet* ... The second narrative is, *here is a list of routine tasks that could be done with the internet that would make your life easier*. That includes paying utility bills, looking for movie reviews, shortlisting local services, etc.”

Mr. Kulkarni said that the No. 1 challenge faced by the IEEE SIGHT project is finding relevant content and services that local people will actually use. He talked about development toward a capability to monitor the cleanliness of water by connected devices. He said, once the local residents see “what internet can do for them, it will be contagious.”

Parul Seth Khanna is the co-founder and director of pinBox Solutions, a Singapore-based “fintech” enterprise (for “financial technology”) committed to supporting digital pension inclusion in developing countries. She talked about how old age will be the greatest reason for poverty in most of the countries being discussed at *IIAS-Washington*. For example, there are 14 million domestic workers in India, who, in most instances, “make enough money but don’t have access to financial products,” she said.

Ms. Khanna’s organization created a digital “gift-a-pension” platform for pension and insurance inclusion for home help (maids, drivers, guards, cooks, etc.) and blue-collar workers in India’s export factories. pinBox Solutions is now working to enable “global gift intervention” toward individual pension accounts. “On the demand side,” Ms. Khanna said, “one of the demons there is having trust in the system for people to actually engage themselves with a pension program.” To combat this issue, pinBox both supports digital literacy programs through access points and works with governments to devise trustworthy administrative platforms for pension inclusion that are easy to access even in very remote areas.

Shivananda Salgame is co-founder and director, social business, for Guru-G Learning Labs, which builds solutions to enable teachers to improve the quality of the teaching/learning process in the classroom, as well as solutions to make classrooms more engaging and enriching. Toward bridging the urban-rural divide in extreme through technology, Guru-G Learning Labs designs its solutions to work in extremely remote places. The startup operates across seven states in India, reaching more than 500 schools via multiple Indian languages since 2014.

Mr. Salgame talked during the roundtable about the importance of his organization's coming to "know the on-the-ground challenges ... We spend much time on the ground to get deep insight from the users." By understanding what users need and want and how they speak and interact through six months of prototyping, he said, Guru-G Learning Labs was "able to demonstrate how to use this technology with less than 10 minutes of orientation." Through a partnership with India's education ministry, Guru-G Learning Labs is scheduled to embark in January 2018 on a program through which it could work with 10 million teachers across the country to improve the quality of education in India.

Working Groups

Next at *IIAS-Washington*, seven working groups met to progress their work, share information, and report on new developments.

The **Evidence-based Research Working Group** intends to produce outcome metrics that will better target ICT-for-development efforts through the power of data. It seeks to help diverse groups from both the development and technical communities tap into the robust research tradition that measure the social impact of interventions for internet access and development, in terms of health, education, agriculture, and gender empowerment.

At *IIAS-Washington*, the working-group lead, Christopher Yoo of the University of Pennsylvania, discussed his group's efforts to bridge technical and development communities in improving and measuring progress in social outcomes driven by universal access. One of its first areas of focus has been capturing case studies, in areas such as low-soil testing in agriculture, connecting health centers, and education and healthcare metrics. "We also had an interesting discussion about things we should be doing—the most important of which being whether we should be considering middle-mile and backhaul investments and the use of cloud solutions, as well, in terms of making it work." Finally, Mr. Yoo said, the working group discussed "what kinds of information we need to galvanize people and the tensions between social science for research purposes and social science for changing minds."

The **Public Access Working Group** is dedicated to the proposition that any realistic strategy to meaningfully connect and enable the next billion(s) must have a public-access component. The working group sees connecting libraries and other public-access facilities as the most economical and equitable way to reach the most people—with the potential to also deliver training and support for digital literacy.

Group-lead Don Means of Digital Village and P4PA reported at *IIAS-Washington* that, over the next six months, its best contributions would be advancing existing exemplary collaborative actions, such as in Tunisia, and extending them elsewhere in central Africa and Colombia “as a way to effect action immediately. That’s been our practice side. We have developed an emerging policy side, where we are looking at Universal Service Fund reforms, spectrum reforms and also cybersecurity.” Mr. Means praised an Alliance for Affordable Internet report’s comprehensive treatment around issues of internet affordability around the world. He also said the working group is interested in supporting the drafting of an IEEE statement on public access.

The **Digital Literacy Working Group** is addressing various aspects of digital literacy that can expand opportunities, reduce risks, overcome obstacles, and address challenges by working toward a common definition of digital literacy, as well as a digital-literacy taxonomy and index.

Melissa Sassi of Microsoft, on behalf of the rest of the working group and her co-lead, Stephen Wyber of IFLA, noted the difficulty in “coming to one definition (of digital literacy) that applies to every person on planet.” The working group is looking at different personas and “what digital literacy means for a young boy or young girl in an affluent neighborhood here in D.C. might be vastly different to someone who has never turned on a device before. We decided it’s relevant for us to develop these personas and figure out specifically basic skills all the way to more complex skills, such as coding and computer science.”

Also, “the biggest thing that came out of our group happened even partly before we arrived ... we are very excited to be part of the (IEEE Standards Association or IEEE-SA) Industry Connections team.” This program helps incubate new standards and related products and services by facilitating collaboration among organizations and individuals as they hone and refine their thinking on rapidly changing technologies. The program offers an efficient, economical environment for building consensus and producing shared results, empowering groups with a customizable menu of IEEE and IEEE-SA resources to produce “fast-track” content and deliverables.

The **Community Networks Working Group** focuses on identifying and addressing key challenges for adoption of networks that involve communities in the design, construction, maintenance, and operations of their own telecommunications infrastructure. The group believes community networks are acknowledged drivers of a truly empowering internet inclusion.

The lead of the working group, Roger Baig Vinas of Guifi.net, said members agreed at *IIAS-Washington* on expected outputs and a work plan. He said the group is working on a report on a standardized process for community networks to be successful, which would be used for recommendations to MDBs and development agencies. The group plans an initial version by the December 2017 Internet Governance Forum (IGF) in Geneva, Switzerland, and a final version about four months later. Mr. Baig Vinas said it’s important to come to a definition and taxonomy around the concept of community networks. He added that one topic of conversation at *IIAS-Washington* among the working group was, “What do we target? Access or affordability? They seem to be somehow incompatible targets, and they have strong implications.”

The **Digital Gender Divide Working Group** focuses on identifying approaches to build and optimally use programs and successfully scale activities to bridge the gender digital divide. It works to address the challenges and opportunities regarding women and meaningful internet access through the development of action-oriented recommendations and best practices.

“We’ve asked for a gender focal point to be designated in every other working group,” lead Gary Fowlie of ITU reported. He said the Digital Gender Divide Working Group is looking at tactics of access, skills, and leadership, and it plans to expand its scope to rights and content. “The ultimate goal here is to ensure each gender-equity action has a measurable indicator,” he said. “The data deficit on gender and ICT is large, and we need to close that.” Also, Mr. Fowlie said, the working group is trying to identify overlapping efforts with other initiatives—such as the United States Agency for International Development (USAID), Align Equals, the World Economic Forum (WEF), and IEEE Women In Engineering. Furthermore, it intends to review the IEEE code of conduct with regard to gender inclusion.

The **New Models for Financing Connectivity Working Group** is focused on activities designed to close the pervasive financing gap for digital-infrastructure projects. The group (which combined the focus of the Innovative Business Models Working Group from previous *IIAS* gatherings with the WEF’s Internet For All Financing New Models for Connectivity) is working to identify and share investment opportunities, track current investment vehicles, illuminate investment gaps, and encourage new sources of funding (particularly social-impact investment).

John Garrity with USAID reported at *IIAS-Washington* that the group is focused on understanding how more investment in connectivity initiatives can be catalyzed. “We talked about why we think we need to do this (and) why the dominant models of network expansion by network operators and internet service providers tend to leave rural, remote, and marginalized communities out of service-coverage areas,” he said. The group is looking at various new initiatives that have been announced by Mozilla, Microsoft, GSMA, etc., and it discussed a proposal spearheaded at the WEF around developing a platform for financing connectivity initiatives. “The idea is more around a curated discussion between connectivity entrepreneurs, project managers, and the other side of the table, which are the investors,” Mr. Garrity said.

The **Connectivity and Energy Working Group** addresses energy as one of the most significant cost factors in internet access. It is looking at how to expand access to both the internet and energy concurrently, as well as how to reduce the costs of energy so that internet access can be realized and sustained.

The meeting at *IIAS-Washington* was the working group’s first. “We grew out of a discussion that was on the stage at (*IIAS*) in April, about how energy is really the base for the internet and how internet programs are helping increase energy access,” said group-lead Nilmini Rubin of Tetra Tech. She said the group agreed it would analyze different policies that are good for expanding both internet and energy access. “What we recognized is that discussions have been so silo-ed,” Ms. Rubin said. People working to extend internet service and people working to extend power “sometimes don’t realize their solutions are very similar.” The group intends, she

said, to perform a literature search and to create an events calendar to inform the professionals of events in each other's spaces "to connect the dots between the two communities."

Closing Remarks

Wrapping up *IAS-Washington*, David Crown from the Digit Group announced a \$250,000 gift to the IEEE Foundation's Connectivity Fund to support IEEE internet-inclusion projects. "One thing we felt was how important some of this work would be not just now but for the future," he said.

Timothy Lee, Boeing technical fellow and chair of the IEEE Internet Initiative inclusion program, encouraged participants to keep the momentum going between the *IAS*-series events, and Mei Lin Fung, organizer for People Centered Internet and IEEE Internet Initiative vice chair, thanked the attendees for their "working on one of the most important problems of our time."

Video and photos from *IAS-Washington* are available at <https://internetinitiative.ieee.org/events/conferences/internet-inclusion-advancing-solutions-16-october-2017>. IEEE is eager to expand the conversation about internet inclusion, prioritize next steps, and further explore the opportunities for extending affordable internet access to more and more people around the globe. Please visit <http://internetinitiative.ieee.org> or email internetinitiative@ieee.org for more information.