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Submissions from entities in the United Nations system and elsewhere on their efforts in 2017 to implement the outcome of the WSIS

Submission by

Internet Society

This submission was prepared as an input to the report of the UN Secretary-General on "Progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society at the regional and international levels" (to the 21st session of the CSTD), in response to the request by the Economic and Social Council, in its resolution 2006/46, to the UN Secretary-General to inform the Commission on Science and Technology for Development on the implementation of the outcomes of the WSIS as part of his annual reporting to the Commission.

Part One: An executive summary (1/2 page) of activities undertaken by all stakeholders, progress made, and any obstacles encountered.

Since the Tunis Summit, the Internet Society (ISOC) has been actively involved in supporting the implementation of the targets, recommendations and commitments of the WSIS as they pertain to the Internet. Significant progress has been made toward the vision of the people-centred, inclusive and development-oriented Information Society, and in this submission we would like to specifically underline lessons learned by the Internet Society in the areas of Internet access development and promoting a trusted Internet. We strongly believe that the continued implementation of the targets and commitments are dependent on a multistakeholder approach. Collaboration between stakeholders has become essential in addressing issues affecting the information society.

Part Two: A brief (1–2 pages) analytical overview of trends and experiences in implementation at the national, regional, and international levels and by all stakeholders, highlighting achievements and obstacles since WSIS. This could include information on the facilitation process of implementation, monitoring and cooperation among stakeholders.

Although great progress has been made to achieve the WSIS goals over the past 10 years, there are still challenges to be overcome. For instance, today, roughly 50% of the world's population remains off-line. Given the Internet's role as a horizontal enabler for development, this digital divide presents a major challenge to meeting other related development goals, such as those formulated in the recently adopted 2030 Agenda for Sustainable Development. In 2017, the Internet Society placed a specific focus on those communities, countries and regions that are characterized by vulnerabilities as a result of geography, small populations, higher exposure to global economic disruptions, and frequent natural disasters.

Report: Connectivity in Small Island Developing States

Small Island Developing States (SIDS) face challenges in Internet connectivity due to their remoteness and the high cost of crossing open sea, combined with small populations, low population density and consequent low economies of scale which often lead to higher connectivity costs. While not all SIDS have the same characteristics, and there is tremendous diversity among them, some of these characteristics often has negative implications for connectivity.

Despite the challenges, SIDS have made impressive progress in recent years in improving connectivity. The use of mobile communications has grown rapidly, and is in many SIDS approaching ubiquity. Broadband Internet is increasing (mainly through mobile broadband, which most SIDS have now launched), and international connectivity has improved as more SIDS have connected to submarine fibre-optic cable networks, lowering wholesale costs and improving quality of service. This is of major significance because satellite capacity is much more expensive, and combined with the higher latencies of satellite links, dependence on satellite connections had previously hindered Internet take-up.

Despite the wide variation in levels of economic development between the SIDS, it can be observed that across the income groups, some SIDS have weathered these changes well and exhibit ICT sectors that are profitable, with relatively low broadband prices, built on the latest technology and providing widespread access; while other SIDS are not faring as well. This points to giving a high priority to this area in national development plans, and devising appropriate national broadband and ICT strategies, along with demand-side support for local content creation and use of e-government services. In addition, ensuring reliability and trust in the use of Internet services is likely to become more of a priority as broadband use increases, and SIDS will likely need to ensure that effective computer emergency response teams (CERTs) are on hand to respond to security issues.

The analysis show that many of the improvements to connectivity have come about as a result of competition introduced in many SIDS over the last 15 years. Prices have dropped and levels of access have risen. However, the degree of competition varies widely among SIDS in terms of market concentration. To some extent the intensity of competition will always be constrained in SIDS due to the small size of their markets, and this is reflected by the fact that most SIDS have a duopoly market structure. This makes it critical that regulatory oversight is strong, and both operators be on sound and sustainable footing to effectively compete with each other.

In terms of supporting ICT and broadband development strategies more generally, along with defining policy and regulatory needs, more information exchange is needed. Convening of multistakeholder groups at national and regional levels to identify and discuss emerging issues should be encouraged, such as via the workshops on SIDS taking place at the regional and global Internet Governance Forums (IGFs). For more information, the full report is available here.

Report: Boosting the Internet in Landlocked Developing Countries

The key factor that sets Land Locked Developing Countries (LLDCs) apart from other countries is access to the sea and the consequent trade obstacles it presents in respect to transport and transaction costs. Rather than describe generic issues related to enhancing Internet access applicable to many developing nations, ISOC's study focused on some of the specific challenges for these countries and how the Internet can help the specific condition of being landlocked. Using the Internet Society's policy framework to analyze how the Internet can be boosted in the LLDCs, the study identified how various deployment and governance models play a significant role in the expansion of backbone infrastructure, reduce the costs of connectivity, and support digital businesses.

Similar to the transport of goods trade, landlocked countries are dependent on transit countries for access to submarine cables. National backbones are crucial for LLDCs in order to interconnect with the networks of sea facing nations for access to undersea fiber optic systems. Downstream local access is dependent on upstream backbone networks as well as traffic exchange arrangements in terms of quality and prices. If there is insufficient international bandwidth due to constraints with the backbone network, quality and pricing of Internet access will be high. LLDCs that can successfully deploy cost-effective national backbones that are interconnected with regional transmission networks and submarine cables and where there are open domestic traffic exchange mechanisms will reap gains through fast Internet and low prices for consumers.

Internet Exchange Points (IXPs) are of particular relevance to the backbone infrastructure of LLDCs since they keep locally destined data traffic within the country, helping reduce costly IP transit traffic. IXPs also improve quality by lowering latency, often serve as hubs of technical expertise, and are attractive to foreign and local content providers who want their content to be easily accessible within the country. Also, IXPs keep local Internet sites running if a country experiences disruptions to its international bandwidth. However, despite their value, the study found that only half of LLDCs had an active IXP as of May 2017.

While most LLDCs have created sector specific regulators, introduced competition and quite a few have ICT sector development plans, results are mixed. This is often related to hard to quantify but critical factors such as commitment, transparency and institutional independence. All but two of the LLDCs have opened their mobile market to competition but the depth of competition varies, with a number of LLDCs exhibiting signs of high market concentration. Twenty-four LLDCs (75%) have a sector regulator although true independence is not always assured as it depends on the regulator's management composition, how they are appointed and whom they report to. For more information, the full report is available here.

Internet and Education: Achieving SDG 4

The Internet has great potential to not only expand access to, but also improve the quality of education. It opens doorways to a wealth of information, knowledge, and educational resources to students and teachers. It also promotes opportunities for learning beyond the classroom – a critical feature to promote the lifelong learning that the future demands. In 2017, ISOC placed a specific emphasis on the Internet's potential to support education, including a dedicated report on Internet for education in Africa**.**

The report assesses how the Internet is being used in the education sector in the African region and elsewhere, and how it can be harnessed to address the pressing needs of the education sector in Africa within the framework of the Global Education Agenda (the Sustainable Development Goal 4) adopted by the United Nations. It provides recommendations on the roles of policy makers in encouraging learning powered by the Internet over the next decade, emphasizing the need for creating the necessary ecosystem for ICT integration in education. The improved connectivity in the region and the vast learning resources that are available over the Internet can be harnessed to advance access and quality of education in Africa. Policy makers primarily need to articulate a holistic vision for a blended form of learning by crafting and implementing an ICT for education policy that covers the entire spectrum of learning (pre-primary, primary, secondary, TVET, higher education, distance, on the job and lifelong learning).

The Internet's potential to support education is fundamentally dependent on a holistic policy approach that recognize the need for an enabling framework for access to the Internet. To this end, ISOC has developed a dedicated policy briefing for how policymakers can unlock the Internet's potential by focusing on five prioritized areas: *infrastructure and access; vision and policy; inclusion; capacity; content and devices.*

More information about the Internet for Education in Africa report is available here, and the dedicated policy briefing can be read in full here.

Report: Internet Society Perspectives on Internet Content Blocking

The use of Internet blocking by governments to prevent access to illegal content is a worldwide and growing trend. There are many reasons why policy makers choose to block access to some content, such as online gambling, intellectual property, child protection, and national security. However, apart from issues relating to child pornography, there is little international consensus on what constitutes appropriate content from a public policy perspective.

While there is a need to consider the motivations of blocking certain content from an ethical, legal, economic, political or social perspective, the report focused on the need to understand the benefits and drawbacks of the most common blocking techniques used to prevent access to content deemed illegal from a technical persepctive. With the aim to support an understanding of what each technique can, and cannot, block, along with the side effects, pitfalls, trade-offs, and associated costs, the report emphasize the importance of a thourough analysis given that the use of Internet blocking to address illegal content is generally inefficient, often ineffective, and prone to cause unintended collateral damages to Internet users. For more information, the full report is available here.

Infrastructure Development and Capacity Building in Support of WSIS

ISOC has placed significant emphasis on organizing, supporting, and participating in hands-on technical training for Internet engineers in emerging economies and developing countries. ISOC hosts training events and workshops on a range of network development and operational skills, including network administration and monitoring, bandwidth and critical resource management, advanced routing (IPv4/IPv6), wireless networking, and Internet services, among other topics, in various in-country locations ranging from Latin America and the Caribbean, Africa, and Asia. ISOC has also committed to scaling this expertise by developing a portfolio of online resources including those available on our Deploy360 portal. As an example, in 2017 ISOC has together

with other partners trained more than 1850 experts through onsite and online training programs, including community building support and network management training to 27 Network Operator Groups (NOGs).

As highlighted in the report on Land-Locked Developing Countries, the deployment of IXPs constitute an important contribution to infracture development and lowered access costs. This year, ISOC has worked closely with other organisations (AfriNIC, APNIC, IX-F, LAC-IX, LACNIC, RedClara, RIPE NCC) and experts to support the capacity and deployment of 23 IXPs in Albania, Belize, Bolivia, Cameroon, Cote D'Ivoire, DRC, Ecuador, Gambia, Ghana, Guatemala, Honduras, Kenya, Kyrgyzstan, Lebanon, Madagascar, Nigeria, Pakistan, Papua New Guinea, South Africa, Tajikistan, Tanzania, Togo, Uganda.

To further strengten our community and promote bottom-up development initiatives, ISOC launched the Beyond the Net program in July 2015 to replace the Community Grants funding programme. These community based initiatives has proven to be efficient means of addressing some of the challenges in implementing WSIS, and the annual impact assessment of the Beyond the Net program in 2016 showed impressive results in the strenghtening of local communities' ability to access and use the internet, with more than 100.000 people estimated to have gained access as a reuslt of these local initiatives. In 2017, 130 Chapter and Community and projects in 57 countries from around the world received a total of over $US 500,000 in funding.

Furthermore, in 2010, ISOC together with Digital Empowerment Foundation (DEF) launched the Wireless for Communities (W4C) initiative to create community-owned and community-operated wireless networks in rural and remote locations where mainstream Internet Service Providers (ISPs) are not willing to provide internet connectivity. These community networks highlight a sustainable solution to address the connectivity gaps that exist in urban and rural areas around the world, and in 2017 ISOC suported and helped launch 10 community network projects across 4 regions, in Argentina, Georgia, India, Mexico, Kenya, Kyrgyzstan, Pakistan, South Africa (2) and Zimbabwe. ISOC also organized 6 workshops and events on community networks to exchange knowledge and expertise, and to support capacity building of practiioners.

Community networking is not a new issue, but they have received a renewed focus as they are targeted and effective. To this end, ISOC organized the "First Summit on Community Networks in Africa" in 2016 within the AfriCHI conference aimed at increasing collaboration between community network operators in the region, and to increase engagement with other stakeholders. Following the success in 2016, the "Second African Community Network Summit" was organised between 25-26 May 2017 in Nairobi, Kenya and brought together community network operators, wireless network researchers, policy makers, regulators and regulatory associations, civil society organizations and members of the public interested in the topic.

Part Three: A brief description (1–2 pages) of:
a) Innovative policies, programmes and projects which have been undertaken by all stakeholders to implement the outcomes. Where specific targets or strategies have been set, progress in achieving those targets and strategies should be reported.

Since its inception over 20 years ago, the Internet Society has been working with partners globally to make sure it addresses the wide range of policy issues that interfere with an open and sustainable Internet. Our multistakeholder nature confers a unique value to our policy recommendations that benefit from the expertise of a wide range of constituencies. Over the past years, we have developed a series of policy papers and recommendations for expanding Internet access and promoting trust online, including a large set of Policy Briefs that provide a concise description of the Internet Society's perspective on critical Internet issues such as IPv6 adoption and Privacy on the Internet. The purpose is to enlighten policymakers' decisions with technically grounded information, and to promote the continued development of an open and trusted Internet that is accessible to all.

Community Networks and Spectrum Access

In 2017, the Internet Society has placed extra efforts on connecting unserved communities in rural areas by scaling our support for the development of Community Networks. These networks are built and operated by people in the community and is a viable way to truly connect everyone, everywhere by allowing the unconnected to connect their communities. They represent a viable way to connect areas that are underserved by telecommunication operators and governments. While these networks are often small in scope, usually serving communities under 3,000, some serve more than one village or community. For example, guifi.net, a community network located predominantly in Spain, and with nodes in Africa, Asia, Latin America, and Portugal, is estimated to serve more than 50,000 people.

Ensuring access to spectrum is a significant challenge to connecting unconnected areas via community networks. Community networks critically rely on the availability of spectrum where the scarcity, or perceived scarcity of spectrum, threatens the networks' ability to operate and deliver services. Too often the notion of scarcity has been an argument that stalls competition and delays all manner of network deployment.

Access to affordable and available spectrum is a foundational principle for ensuring access to ICTs and future network development. For every community to reap the social and economic benefits of ICTs, policy makers must ensure that adequate spectrum is available for community networks, citizens, and other entities seeking to develop networks and provide access to ICTs. To this end, ISOC has released a policy brief with a set of reccomendations that urges policy-makers to consider the benefits of community networks, and ensure that these networks have adequate access to spectrum.

Promoting Trust in the Internet of Things (IoT)

Often referred to as the 'Internet of Things' (IoT), billions of smart devices are expected to come online in the coming decade, bringing with them the promise of global economic opportunities and new innovations that will transform the way we work, live, and play. At the same time, however, there remain significant challenges associated with IoT that could stand in the way of realizing its potential benefits. Some of the most pressing challenges and questions include issues of security, privacy, interoperability, and standards, as well as the readiness of emerging economies to adopt it.

In 2017, ISOC aquired the Online Trust Alliance (OTA), a non-profit initiative with the mission to enhance online trust, user empowerment and innovation through convening multi-stakeholder initiatives, developing and promoting best practices, ethical privacy practices and data stewardship. Together with the OTA, ISOC will be promoting the "IoT Trust Framework", a set of required and recommended strategic principles necessary to help secure IoT devices and their data. The framework has been developed through a consensus driven multisakeholder process, and identifies 37 strategic and measurable principles that are imperative to the security of IoT throughout the entirety of their life-cycles.

Furthermore, in an effort to promote security best practices, data stewardship and responsible privacy practices, the OTA conducts an annual audit of over 1,000 websites, examining consumer protection, security and privacy protection practices. More information about the audit and the results of 2017 are available here.

Internet Infrastructure Security Guidelines for Africa

In 2014, the African Union (AU) members adopted the African Union Convention on Cyber Security and Personal Data Protection. To facilitate the implementation of the Convention, the African Union Commission (AUC) invited ISOC to jointly develop the Internet Infrastructure Security Guidelines for Africa, which were released in May 2017.

With contributions from regional and global Internet infrastructure security experts, government and CERT representatives, and network and ccTLD DNS operators, the guidelines put forward four essential principles of Internet infrastructure security: Awareness, Responsibility, Cooperation, and adherence to Fundamental Rights and Internet Properties., The Guidelines also identifies a set of critical actions, tailored to the African cyber security environment's unique features: a shortage of skilled human resources; limited resources (including financial) for governments and organizations to allocate for cyber security; limited levels of awareness of cyber security issues among stakeholders; and a general lack of awareness of the risks involved in the use of information and communication technologies (ICTs).

The Guidelines highlight, and is an example of, the importance of a multistakeholder model, and a collaborative security approach in protecting Internet infrastructure, emphasizing the responsibility of all stakeholders, including governments and Internet service providers, to agree upon solutions to ensure the Internet in every country remains safe, secure and resilient.

(b) Future actions or initiatives to be taken, regionally and/or internationally, and by all stakeholders, to improve the facilitation and ensure full implementation in each of the action lines and themes, especially with regard to overcoming those obstacles identified in Part Two above. You are encouraged to indicate any new commitments made to further implement the outcomes.

ISOC's Global Internet Report 2017: Paths to Our Digtial Future
In 2016, the Internet Society launched a project to better understand the forces of change that will shape the Internet over the next five to seven years. We engaged with a broad community of Members, Internet Society Chapters, experts and partners. We conducted three global surveys and two regional surveys that generated more than 3,000 responses from 160 countries. We also interviewed more than 130 Internet experts and users, and hosted more than 10 roundtables.

Through these surveys and interviews, the community identified six key forces – or 'Drivers of Change' – that will have a profound impact on the future of the Internet in the years to come: the Internet and the Physical World; Artificial Intelligence; Cyber Threats; the Internet Economy; Networks, Standards and Interoperability; the Role of Governments.

Furthermore, what was clear from the outreach conducted was that the global Internet community is looking at these Drivers through the lens of three areas of impact. These are: Digital Divides; Personal Freedoms and Rights; Media and Society.

Among the key findings of the report is the risk of a digital divide along the lines of security and economic opportunity. While we still have a long way to go, the digital divide as we have historically defined it – between those who have access to the Internet versus those who do not – is closing, but in its wake are new divides driven by developments in technologies and networks, as well as by the lack of economic opportunity and cyber readiness. Of critical concern for the implementation of WSIS is the fact that these new divides will not only deepen socio-economic disparities between countries but also within countries, placing an emphasis on the need to prioritise infrastructure development and promote skills - and the need to incorporate security-by-design into devices and systems to prevent the emergence of a security divide. For more information, including the full list of reccomendations, the report is available here.

Efforts to measure the cost of Internet shutdowns (COST project)
In November 2017, ISOC joined effort with NetBlocks.org, a network observatory that monitors Internet shutdowns, network disruptions, and cybersecurity incidents, to develop a tool to better measure the cost of shutdowns, and convince governments to keep the Internet on. The Cost of Shutdowns Tool (COST) will be a

data-driven online tool that will enable anyone – including journalists, researchers, advocates, policy makers, businesses, and many others – to quickly and easily estimate the economic cost of Internet disruptions. The tool will cover shutdowns affecting social media, key content platforms and full Internet blackouts. Development of this online and mobile platform has started, and we expect an early functioning platform to be available by summer 2018.