ITU-D Global Event

«Emerging Technology for Connectivity: Accelerating Digital Transformation in LDCs, LLDCs and SIDS» [1]

DAY ONE
5 JULY 2021

TRENDS IN EMERGING TECHNOLOGY FOR CONNECTIVITY AND DIGITAL TRANSFORMATION

Presentation No.1

Spotlight – Breaking brainchains: the development of the slow network

There is introduced the concept of a brainchain as a series of assumptions that insensibly limit and restrict the freedom of one's thinking. Such brainchains are exemplified by the terms «least developed countries» (LDCs), «landlocked developing countries» (LLDCs), «small island developing states» (SIDS).

Session 1

Scalable e-Government solutions for developing countries

The session discussed the best practices in e-government and the main challenges faced by developing countries.

Digital government services are vital for developing a digital economy that benefits all citizens by expanding access to critical services such as health, education, and social protection. The modern advanced e-government model means the availability of a single digital platform of public services, universal for various authorities and sectors of government.

A good example is GovStack, an initiative which helps make the provision of digital government services more transparent, efficient, cost-effective and reliable.

Session 2

Opening of the conference

ITU-R promotes the provision of communication access to the population in remote areas. National regulators must determine themselves what technologies are suitable for them (depending, for example, on population density), when to introduce them and how much to spend on them.

The percentage of the population with Internet access in developing countries is much lower than in developed ones. A particularly low percentage (about 20%) is in the least developed countries.

Almost 4/5 of the population in LDCs does not have access to the Internet. Collaboration is needed to ensure universal access to the Internet in LDCs, capacity development and technology exchange. ICT should be included in national development plans, industrial, trade and other policies. It is necessary to involve the private sector and cut the cost of Internet access.

It is necessary to make access to digital resources and technologies more democratic, because this will help ensure the achievement of the Sustainable Development Goals (SDGs).

Provision of affordable and equitable access to the Internet (one of the SDGs) in LDCs is one of the priorities because the digital divide exacerbates existing inequalities and vulnerabilities.

Session 3

Trends in emerging technology for connectivity

There was a discussion on solutions and experiences in using the latest technologies to connect the segments of the population without access to the web and implement SDG 4 (high-quality education), SDG 9 (industry, innovation and infrastructure), SDG 11 (sustainable cities and communities) and SDG 17 (partnership to achieve goals). There is presented an overview of the latest technologies for connecting and data on the number of Internet connections in LDCs. Information is provided on the underpinnings of an emerging digital economy and affordable and effective connectivity in LDCs.

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[1]   Detailed information on the programme of the event is available on the ITU website

This material is prepared by the Directorate of Intersputnik

There is described the experience of Internet Para Todos (Internet for All) for connecting the population to broadband access in rural and hard-to-reach areas in Peru.

Session 4   **New technologies (ITEC)[2]**

The session was dedicated to the emergence and development of 5G networks, other related technologies. There is presented the information on technology of "deep packet inspection" (DPI), which provides for checking not only the main details (headers) of data packets passing through the control node of a network, but all information contained in them. There was dwelt upon the transition from 4G networks to the use of 5G networks.

**DAY TWO
6 JULY 2021**   ***FUNDAMENTALS OF EMERGING TECHNOLOGY
FOR CONNECTIVITY, SUCH AS CYBERSECURITY, NETWORKS
AND INFRASTRUCTURE, SPECTRUM***

Session 5   **Safe and secure resilient network solutions**

During the session it was noted the importance of cybersecurity for society, including that in developing countries, as well as social and political risks associated with the vulnerability of telecommunications networks and services, the impossibility of controlling the disclosure and use of personal data, especially as information and communications technologies are penetrating all areas of life deeper and deeper.

It was stated that earlier there was a task to expand the coverage of information and communication systems, but now it is the reliability and safety of their operation that comes to the fore. Threats are associated not only with technology and equipment, but even more so with social and psychological factors. All the presentations, in one form or another, stated that the possibility of malicious use of social engineering or indiscretion of one's own behavior makes individuals the main points of vulnerability.

Session 6   **Generation Connect: developing technology to connect
and to deliver quality education for youth**

The session was held in cooperation with the Generation Connect program, which is being implemented within the framework of the ITU Youth Strategy. The goal of the program is to involve young people from all over the world in the discussion of issues related to the development of information and communication technologies, as well as provide them with the opportunity of expressing their views and vision about the future of communication and telecommunications. The session was attended by representatives of the regions participating in the Generation Connect program.

During the first part of the session, participants discussed the growing role of new technologies in providing young people with quality educational services.

The second part of the session was devoted to the importance of new technologies for bridging the digital divide, including that affecting the marginalized part of the young generation.

In the final part of the session, it was noted that the transition to distance learning was not an easy process, to which almost everyone had to adapt to a certain degree.

Session 7   **Emerging technology for telecommunications in disaster management**

In 2021the ITU would like to set up a repository of case studies and subject matter experts. Such a repository would aggregate information and connect relevant interested parties with respect to new applications of emerging technologies or new uses of existing technologies to improve the use of ICT in disaster risk management.

During the session it was discussed the implementing of new emerging technologies for flood forecasting within the framework of the World Meteorological Organization. Panelists presented reports on end-to-end early warning systems for flood forecasting (E2E-EWS-FF), as well as on the options for using telecommunications for effective flood forecasting and management.

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[2]   ITU colloquium dedicated to emerging technologies and the Internet and held within the framework of the global event

It was also noted a range of questions related to the use of the machine learning in emergency response. Under this programme, there has been developed the machine learning application designed to automate the analysis of drone images and ultimately speed up response times during emergencies.

AI can improve our understanding of natural disasters and help to offer assistance in the event of natural emergencies, secure early warning and elimination of their consequences.

Session 8	**Big data for measuring connectivity**

Access to the Internet is very important, but in order to connect the unconnected one has to know who exactly is unconnected, meaning that one needs to have statistical data. One of the ways to obtain such data is to survey households door to door, but this is expensive and often impossible for LSCs, especially during the pandemic. Another method is to use big data. The ITU organizes such initiatives to collect information on broadband access through big data.

In this session were presented the activity of the ITU department that collects ICT data, as well as a research on how to use big data to evaluate the achievement of ICT-related sustainability indicators.

Also there was discussed the use of cellular operators' data (call details, CDR) in the context of various emergencies.

Session 9	**Resources needs for connectivity**

The evolution of technologies such as the Internet of Things would entail a significant growth of the number of connected devices and transmission of data amounts by far exceeding the capabilities of operators. Also, this would make it necessary to allocate additional spectrum and assign billions of new IP addresses.

In this session were discussed the results of the World Radiocommunication Conference 2019 (WRC-19) and the agenda of WRC-23 related to efficient and rational use of frequency spectrum as well as the allocation of spectrum to ground and air services, among other things, in order to set up 5G networks, provide IoT services, etc. There were also touched upon the problems of regulating the use of the radio frequency spectrum and Internet resources at the national and regional levels.

Session 10	**The digital divide – the adoption of new generation networks in rural areas (ITEC)**

The session was dedicated to the issues of bridging the digital divide on the base of adoption of new technologies. During the session there was provided the information on the events aimed at bridging the digital divide in Colombia, Uruguay, Ecuador, Mexico and Peru.

DAY THREE **7 JULY 2021**	**ROLE OF EMERGING TECHNOLOGY TO CONNECT THE UNCONNECTED AND ACCELERATE THE DIGITAL TRANSFORMATION IN LDCs, LLDCS AND SIDS**

Session 11	**Spotlight – Worldwide secure and efficient communication with SCION**

The session was dedicated to the new Internet architecture called SCION, which had been developed under a research project at ETH Zürich and Carnegie Mellon University.

SCION, an acronym for Scalability, Control and Isolation on Next-Generation Networks, is a next-generation Internet architecture with state-of-the-art security and scalability features designed to overcome the limitations of the current IP-based Internet and BGP to achieve robust security, high availability and high efficiency.

Session 12	**Internet of Things and 5G for smart and sustainable cities in the Arab region**

During the session it was noted the role of the Internet of Things (IoT) and 5G for development and creating a smart world on the example of the Arab countries.

The population of the Arab countries doubles approximately every thirty years. The Arab region is experiencing rapid urbanization - the annual rate of urbanization is increasing by about 2.5%. This leads to a disproportionate

distribution of the population between urban and rural areas. Currently, 66% of the population of the Arab region lives in cities, while in the rest of the world urban dwellers account for 55%.

This results in a number of problems such as air pollution, climate change, high energy consumption, aggravated poverty, lack of housing and others. In order to meet these challenges and respond to the rapid growth of urbanization, and as part of the steps taken to meet the needs of residents, Arab countries are beginning to carry out smart city projects, given the close relationship between smart cities and economic prosperity.

Session 13 **Emerging terrestrial technology for connectivity**

The session was dedicated to:

- 5G technology: its evolution, requirements and capabilities, applications for the provision of voice services, as well as the opportunities that 5G can offer LDCs, LLDCs, and SIDS in different regions and areas (both in urban and rural areas; in industry, agriculture, health care and other sectors).

- AirGig technology invented by AT&T, which is a device that uses existing infrastructure (power lines) to provide access to the Internet.

Session 14 **Emerging space technology for bridging the connectivity gap**

The session was devoted to problems and capabilities of new space technologies for connectivity such as LEO constellations, HAPS, and other emerging satellite technologies. Specifically, the panelists discussed how such emerging space technologies could help secure an affordable and sustainable Internet access and contribute to the digital transformation of LDCs, LLDCs, and SIDS.

Session 15 **Adoption of 5G in the region, future opportunities (ITEC)**

The session was devoted to the deployment of 5G in Latin America: predictions, requirements, national 5G plans, national digital plans, etc.

Certain countries in the region have already tested 5G networks in major cities while others conducted national research to choose applications for domestic industry while still others have already defined national 5G strategies.

It was noted the predictions of the countries in the region concerning the introduction of new networks such as 5G, segments of the population which 5G deployment mainly target, industries, businesses and services selected for the first 5G rollout, as well as the projections for rural coverage with next-generation networks by 2030.

5G networks are evolving, which means that regulators need to monitor their development and introduce tools to ensure their development in the countries of the region. This session is dedicated to the development of 5G networks in five countries: Argentina, Brazil, Chile, Panama, and Costa Rica.

DAY FOUR **8 JULY 2021**	*INTELLIGENT CONNECTIVITY AND APPLICATIONS (AI, BIG DATA, IOT) AND THEIR IMPACT ON THE DIGITAL TRANSFORMATION OF LDCs, LLDCs AND SIDS*

Session 16 **Advanced digital networks for data-oriented societies**

During the session it was noted:

- the use of the high-altitude platform systems (HAPS) providing broadband and high-speed Internet access to users living in remote and hard-to-reach areas (mountainous, coastal, desert), as well as aircraft and ships. On top of that, such systems are suitable for providing communications in areas affected by emergencies and natural disasters, because they can be quickly deployed anywhere in the world.

- Huawei's RuralStar hardware that provides connectivity to sparsely populated and hard-to-reach areas.

- approach of the Cisco to the organization of the remote work of the company.

- the regulation of spectrum use in the Asia-Pacific countries in the context of the development of 5G

technologies.

Session 17 **Blockchain and cybersecurity challenges and opportunities for digital finance**

During the session it was discussed:

- the use of blockchain technologies to increase the availability of financial services.

- checking the reliability and security of mobile applications used for settlements and money transfers.

- developing recommendations and methods for testing the reliability of mobile applications for financial services

- challenges and trends in the field of information technologies and cybersecurity.

Session 18 **Towards a sustainable digital transformation
and a net-zero emission with emerging technology**

The session discussed the following topics:

- cellular network coverage and Internet access in Africa; trends and problems associated with the use of new technologies in Africa;

- the use of new technologies to guarantee universal access to communications in developing countries and the achievement of the SDGs and a zero emission level;

- ensuring sustainable digital transformation through the development of international standards, including those meant for cities, governments, and the ICT sector;

- digital infrastructure as the basis of digital economy.

Session 19 **The change of paradigm to online life, projections, opportunities (ITEC)**

During the session there were presented reports on the following issues:

- the growing use of 5G and Internet of Things technologies and Ericsson's involvement in this;

- current statistics and forecasts for connectivity in Latin America;

- Facebook's initiatives to expand access in Latin America through partnerships;

- Internet Society's projects aimed at developing standards and sector policy, as well as at ensuring open access to the Internet.

**DAY FIVE
9 JULY 2021** *EMERGING TECHNOLOGY FOR CONNECTIVITY IN THE POST-COVID ERA*

Session 20 **Post-COVID era: enabling an inclusive society**

During the session there were presented reports on the following topics:

1. advanced immersive audiovisual systems - immersive technologies (augmented reality (AR), virtual reality (VR), expanded reality (XR))

2. Facebook experience in using emerging technologies to provide inclusive access to the Internet for disabled people (in particular those with visual and hearing impairments).

3. a cell phone with Internet access for markets with the low purchasing power.

*Presentation
No. 2* **Spotlight– ethics of emerging technologies**

The presentation was devoted to the importance of understanding the ethics not only as a set of principles, but also

as a methodology for decision-making in areas that are not subject to direct legislative regulation. Ethics, as a science of values, proceeds from the fact that no technology is value-neutral. That is, behind each technology lies its contribution, for example, to economic growth or sustainable development. Thus, any technological development must be built around a certain system of values.

Session 21   Connectivity for inclusive digital societies

During the session were discussed the role of connectivity and new technologies in developing digital societies based on decisions made in the African region.

Panelists shared their experience in using emerging technologies and connectivity models for a transformative environment and evaluation of the challenges and opportunities for implementing inclusive solutions to connect digital communities and cities. The importance of digital transformation to support the economies of ITU member states was emphasized, as well as the key role of ICT, especially during the pandemic as well as in the post-COVID era. There were discussed the digitization of the world and the specifics of this process along with the transformation of business processes caused by digitization such as the transition to digital communications, cloud and digital services as products.

Companies, which offer solutions, spoke about providing intelligent connectivity as the foundation on which digital services such as SDN, NFV, Edge AI Cloud can be overlaid.

Session 22   Learning in a post-COVID world: how can emerging technologies help achieve universal access to quality education?

In the session were presented two ITU projects - Connect2Recover and Giga. The COVID pandemic harmed especially vulnerable groups of residents from the viewpoint of education, health and employment, so Connect2Recover will focus specifically on these areas, and the Giga project specifically on education.

In September 2020, the ITU launched the global Connect2Recover project to strengthen and rebuild the digital infrastructure and digital ecosystem.

The Giga project is focused on connecting every student and every school to the Internet.

Session 23   Artificial intelligence for heath

In the session was presented the information on the activities of two ITU-T focus groups dealing with AI.

1. ITU-T focus group on AI for health. AI can be used for detection, diagnosis, medical decision-making; machine learning and big data for electronic health records; smartphones - for remote access to medical services.

2. ITU-T focus group on AI for natural disaster management (for example, pest invasion). Such disasters are particularly harmful to some regions (including LDCs) and vulnerable groups. Issues the group is working on: using AI to understand, detect, predict, and give notice of natural disasters, as well as identify best practices and limitations of AI.

Session 24   Opportunity of satellite connectivity

In order to bridge the digital divide and make at least basic telecommunications services generally accessible, all existing technologies need to be put to use, including telecommunications satellites. This implies also the use of small satellite technologies and non-geostationary satellite systems.

During the session there were presented reports on:

*   satellite communications market and possibility of satellites to provide the population with the broadband Internet access;

*   capability of satellites to provide communication services to substantially more users;

*   use of satellite to bridge the digital divide in Nigeria and China.

Additionally the panelists discussed:

- a project to establish a third satellite telecommunications system within the European Union (in addition to the existing Galileo and Copernicus systems) - Secure Space-Based Connectivity System.

- global low-orbit satellite telecommunications system Lightspeed.