**Information for the 2017 Open Consultation of the ITU CWG-Internet**

Internet contributed some $6.3 trillion, or eight percent of global GDP.

Digital divide: 4,4 billion off-line individuals worldwide; 3,4 billion of the off-line population live in just 20 countries; 920 million of those 3,4 billion are illiterate.

Internet’s structure layers are infrastructure, logical, application and content.

The Internet is ever more critical for most aspects of our daily life, for work, education and leisure.

The next generation Internet will be even more pervasive, working with and through many different devices and sensors, and will present completely new functions and characteristics. It can become a more human Internet, and contribute to a stronger presence and competiveness of the EU worldwide. Given the importance of the Internet, both private and public interests in the domain are huge, and may dramatically change the way Internet will work in the future.

When we talk about the Internet we mean that in a broader sense, i.e. the networks and technologies powering the network and computing, the services and applications delivering user value, all the socio-economic innovation it enables and also the policies governing its use and evolution.

There are many activities ongoing; they may be focussed on technical aspects, on new services and application, or on delivering social innovation. Everybody invests into the Internet, companies and startups, and all levels of public sector – from regions to Europe. The Internet has many diverse stakeholders from the research, technical and business communities, citizens and the civil society.

It is time to take a fresh look, with a broad and inclusive perspective. Therefore the European Commission launches the 'Next Generation Internet' initiative.

A broad conversation and consultation is running with those actors who are the drivers of the next generation Internet, notably young researchers, the emerging generation of Internet startuppers and civil society.

The conversation should help defining research and innovation priorities for 2020. Some technology areas that could have a strong influence in the development of Internet in the years to come are presented.

Being home to 615 million Internet users, Europe is a major actor on the Internet. The European Union is the world’s single largest online market. Europe is home to many more great Internet companies than what is commonly known and many more are scaling up fast. Europe is strong in social innovation and is at the forefront of digitising its public sector. European values should influence the next generation Internet.

**Internet should:**

* be more human - social, easy, immersive, emotional.
* avoid the concentration of data in a few proprietary platforms.
* ensure diversity, pluralism and a right to choose.
* ensure citizens' sovereignty over their own data and protect privacy.
* be more inclusive, participatory and transparent.
* be a level playing field for new entrants and new economic models.
* be more resilient, secure and safe, especially for children, elderly and people with low digital skills.
* be a real agent of change towards sustainability.

**The relevant Technology areas of Internet:**

*Discovery and identification tools*

One of the premises of the Internet of Things is that devices around us will be partly physical and partly digital, with a vast majority of those devices being "headless", lacking buttons, screens and other means by which the user interacts with the device. This premise forces us to figure out ways to discover, identify, and interact with the objects, devices and services in our lives in a seamless way, as well as ways to be made aware of the connected devices that surround us at any given moment.

*New forms of interactions and immersive environments*

Increased computing, transmission power and next generation of devices (enabled by micro-nano- biotechnology) allow conceptualizing new forms of interactions with machines and immersive environments that will have an impact in our professional and private life. New challenges are raising related to augmented and virtual reality, behaviour, human-computer interactions, haptics, human- human interactions through computers, machine-to-machine, spatial recognition and geographic information systems.

*Personal data spaces*

Personal data privacy is one of the biggest concerns of today's internet. Personal data is everything that identifies an individual, from a person's name to telephone number, IP address, date of birth and photographs. The next generation Internet aims to develop technologies to help us achieve greater control of our personal data, knowing what is being shared and with whom.

*Distributed architectures and decentralised data governance*

Distributed open hardware and software ecosystems are capable of supporting decentralised data management (so that each piece of user-generated information remains under the full control of the entity who generated it, and is subject to on-demand aggregation by third parties), leveraging on decentralised algorithms based on blockchains, distributed ledger technology (DLT) or peer-to-peer (P2P) technologies.

*Software defined technologies*

There is an evolution towards software-defined technologies. These may provide more functionalities and control for the allocation of resources, configuration and deployment, and may open new opportunities to develop the Internet.

*Networking solutions beyond IP*

The current internet has certain limitations derived from its protocols that were developed in the 70's, like the transmission control protocol/internet protocol (TCP/IP) and its limitations on mobility, IP address management and task limitation. Quality of Service (QoS) is another problem derived from TCP/IP, which is a problem generated by the inherent nature of networking technologies and the focus on pumping data from point A to point B as fast as possible without focusing on how the data is sent. The internet of the future should be able to overcome these limitations.

*Artifical Intelligence*

Artificial intelligence will also change the Internet. Inspired by how the human brain works, mathematical models can learn discrete tasks by analysing enormous amounts of data. So far, machines have learnt to recognize faces in photos, understand spoken commands, and translate text from one language to another. But this is only the beginning. Artificial Intelligence will greatly sharpening the behaviour of any online services and be core technical enabler of the future Internet.

It is important promoting a free, open, inclusive and safe Internet. Recalling paragraph 29 of the Tunis Agenda, it is recognised that the management of the Internet as a global facility includes multilateral, transparent, democratic and multistakeholder processes, with the full involvement of governments, the private sector, civil society, international organisations, technical and academic communities, and all other relevant stakeholders with their respective roles and responsibilities. It is welcomed the Internet Assigned Numbers Authority function stewardship transition to the global multistakeholder community. Autonomous and effective management of national internet domains (ccTLDs) represents a key part of ICT development in each country;

Enhancing digital literacy and skills is essential to ensure that development interventions, enhanced by the use of digital technologies, generate positive outcomes for the target groups and leave no one behind;

It is important using ICT as an enabler for sustainable development, inclusive growth and inclusive societies. Digital by default should be a guiding principle for implementing development projects in the 21st century, with sensitivity to existing digital divides;

There is need to enhance knowledge sharing and coordination in a balanced manner. Fostering partnerships with all relevant stakeholders that are active in the ICT sector is essential to enhance the positive impact of ICT on sustainable development. Stronger coordination and engagement in multilateral fora as well as multistakeholder policy dialogue with developing and emerging economies can also create common ground for global governance mechanisms preventing trends of Internet fragmentation.