|  |  |  |
| --- | --- | --- |
| C:\Users\ponder\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\BDT-25th_anniversary_2017-Logo_411959-3_transparent.png | **World Telecommunication DevelopmentConference 2017 (WTDC-17)****Buenos Aires, Argentina, 9-20 October 2017** | C:\Users\ponder\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\BDT-25th_anniversary_2017-Logo_411959-1_transparent.png |
|  |  |
| PLENARY MEETING | **Document WTDC-17/29-E** |
|  | **11 September 2017** |
|  | **Original: English** |
| Telefon AB - LM Ericsson, Huawei Technologies Co., Ltd., Intel Corporation, Nokia France, Qualcomm, Inc., Samsung Electronics Co., Ltd. |
| Importance of 5G /IMT-2020 for developing countries and recommendations |
|  |
|  |
| **Priority area:** - Other proposals**Summary:**Ericsson, Huawei, Intel, Nokia, Qualcomm, Samsung are members of GSA[[1]](#footnote-1) (Global Mobile Suppliers Association) and leading suppliers of mobile technologies. The GSA members are covering close to 100% of all mobile network infrastructure deployments. This document provides information about the benefits of 5G for developing countries and recommendations to accelerate 5G[[2]](#footnote-2). |

 SM1[[3]](#footnote-3)/29/1

**Introduction**

First and second generation wireless networks were focused on voice services and the focus of 3G and 4G shifted toward data and mobile broadband. While the focus on mobile broadband will continue with 5G/IMT-2020, support for a much wider set of diverse usage scenarios is expected. 5G/IMT-2020 is positioned as an intelligent network that supports data and analytics use cases, helping it reach out to drive new industries in a way that wasn’t possible previously. 5G/IMT-2020[[4]](#footnote-4) enables developing countries to get the full benefits of new technologies such as Artificial Intelligence, Cloud computing, M2M, Data Analytics etc.

More than 90% percent of broadband subscribers in developing countries are using mobile broadband and it is very important to migrate to 5G/IMT-2020 successfully to obtain the full benefits of mobile broadband.

According to ITU-R M.2083; three major 5G/IMT-2020 usage scenarios include: (1) enhanced mobile broadband; (2) ultra-reliable and low-latency communications; and (3) massive machine-type communications.

**Importance of 5G/IMT-2020 for Developing Countries**

5G/IMT-2020 will provide new applications and services both for developed and developed countries. Some of the 5G/IMT-2020 applications will be much more important for the developing countries; such as smart transportation systems, e-health, education, smart grid, agriculture, emergency alert and disaster relief etc. details can be seen below.

Many developing and emerging economies are already leapfrogging older technology and becoming more mobile oriented, and 5G/IMT-2020 will have significant economic impact on these mobile enabled-economies. According to IHS report 5G/IMT-2020 will enable $12.3 trillion of global economic output when its full effects are realized and developing countries should maximise the benefit from this opportunity without any delay[[5]](#footnote-5).

**- Smart Transportation Systems**

According to the WHO[[6]](#footnote-6), 90% of the world's fatalities on the roads occur in low- and middle-income countries, even though these countries have approximately half of the world's vehicles. 5G/IMT-2020 will help enable smart roads and smart vehicles to prevent the accidents. Cars will talk to each other to avoid accidents.

**- Smart Grid**

Access to electricity is a big problem especially in Africa. And 5G/IMT-2020 will also help to this problem through helping to enable the smart grid.

**- e-health**

5G/IMT-2020 networks open up new avenues for the delivery of health care. Instead of bringing patients to a doctor for treatment, 5G/IMT-2020 networks can connect patients and doctors from across the globe. Connecting more medical devices to IoT will enable doctors to monitor patients without the need for costly in-patient care. Digital imaging can be sent anywhere in the world for analysis, expanding access for patients who live far away from health care providers and lowering the cost of getting a second opinion.

There are different health applications of 5G/IMT-2020 (health monitoring, remote surgery, cloud applications etc.). As an example, the ultra low latency of 5G will enable remote surgery. Specialists are not available in many hospitals and could join a local surgeon remotely to perform procedures which require expert skills.[[7]](#footnote-7) 5G's latency will be around one millisecond -unperceivable to a human and about 50 times faster than 4G. This will be critical, for example, if doctors are to command equipment to carry out surgery on patients located in different cities.

The health of millions of people living in developing countries can also be checked continuously via 5G/IMT-2020 based devices and networks.

**- Education**

5G/IMT-2020 will enter the classroom and bring new ways of learning to students. Augmented Reality, Virtual Reality and Virtual Presence will mean that students will be immersed in a more visual and interactive learning experience where students and teachers may not necessarily be in the same location.[[8]](#footnote-8)

**- Disability-Friendly Environments[[9]](#footnote-9)**

5G/IMT-2020 technologies and Softwarization will remove barriers for persons with disabilities. In the near future, robots, smart things, Internet of Things (IoT) and machines will become the new “tools” directly enabled through the 5G/IMT-2020 and Softwarization for helping persons with disabilities in daily lives, in their education, transport and emergency services and employment, in the smart cities and at home, in social protection, participation equality and external action. Persons with disabilities will be in an inclusive environment with suitable, accessible and quality services. This environment promises to deliver critically important applications and services to benefit humanity.

For example, mobile access to the internet, cloud-based services and big data analytics is allowing persons with disabilities to leverage this new kind of globally connected and shared knowledge base.

5G/IMT-2020 enabled robots is another excellent example of potential future ecosystem also it will allow the development and provision of cognition services for Persons with disabilities.

Smart cities bring together mix traffic of machines and humans generated by various city wide infrastructures, smart cities will becoming an inclusive, “Disability-Friendly Environments” in the near future.

**- Water Management and Agriculture**

5G/IMT-2020 will also bring a solution for smart water management and smart agriculture systems in developing countries. Such as sensors with wireless connectivity for crop fields can help optimize growing and minimize use of water and fertilizers through more targeted application.

There are different 5G/IMT-2020 applications and vertical industries which are also very important for developing countries and details can be seen at “[ITU-R WP5D Contribution 163](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=R15-WP5D-C-0163)” (health care, automotive, public safety, sustainability/environmental, education, smart city, public transportation, wearables, smart homes, smart grid, industrial etc.

**Emergency Telecommunications and Disaster Relief**

5G/IMT-2020 based sensor networks will help for the mission-critical early warning emergency services (such as Tsunami, Flood, Earthquake etc.). 5G/IMT-2020 can also be used for disaster relief purposes.

**Conclusion and Recommendations**

As explained in this contribution 5G/IMT-2020 is very crucial for the developing countries. In fact, it is as important for developing countries as it is for developed countries.

Recommendations;

- ITU-D should prioritize 5G/IMT-2020 for the next fouryear cycle study and help developing countries (it is already a prioritized subject at ITU-R and ITU-T sectors).

- ITU WTDC-2017 Conference work should include the followings;

 - Revision of Resolution 43 to reflect the importance of 5G (Resolution 43: Assistance for Implementing IMT – International Mobile Telecommunications)

 - Revision of Broadband and IMT related questions to reflect the importance of 5G/IMT-2020.

 - Development of a Handbook on 5G/IMT-2020 in collaboration with  ITU-R to help for the implementation of IMT-2020.

- WTDC-2017 Buenos Action Plan should prioritize 5G/IMT-2020.

- Helping for the successful and timely implementation of 5G/IMT-2020 through different global and regional activities.

- Helping for the financing models.

- Developing countries should assign sufficient spectrum for 5G/IMT-2020 at low, mid and high frequency bands without any delay. Developed countries are planning to start commercial 5G/IMT-2020 services from 2019 onwards and the economies of scale for 5G/IMT-2020 equipment and services generated in the developed world should be leveraged for the developing world as rapidly as possible.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. <https://gsacom.com> [↑](#footnote-ref-1)
2. Along the lines of agreed within Global Mobile Suppliers Association (GSA) [↑](#footnote-ref-2)
3. SM1: Telefon AB - LM Ericsson, Huawei Technologies Co., Ltd., Intel Corporation, Nokia France, Qualcomm, Inc., Samsung Electronics Co., Ltd. [↑](#footnote-ref-3)
4. [https://gsacom.com/building-5g-data-analytics-artificial-intelligence](%20https%3A/gsacom.com/building-5g-data-analytics-artificial-intelligence) [↑](#footnote-ref-4)
5. <https://www.ihs.com/Info/0117/5g-technology-global-economy.html> [↑](#footnote-ref-5)
6. [http://www.who.int/mediacentre/factsheets/fs358/en](http://www.who.int/mediacentre/factsheets/fs358/en%20) [↑](#footnote-ref-6)
7. <https://5g-ppp.eu/wp-content/uploads/2016/02/5G-PPP-White-Paper-on-eHealth-Vertical-Sector.pdf> [↑](#footnote-ref-7)
8. <http://gsacom.com/paper/5g-verticals-education> [↑](#footnote-ref-8)
9. [http://community.telecentre.org/profiles/blogs/disability-friendly-environments-in-the-age-of-5g-softwarization](%20http%3A/community.telecentre.org/profiles/blogs/disability-friendly-environments-in-the-age-of-5g-softwarization) [↑](#footnote-ref-9)