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To,
Advisor (IT &CA)
TRAI,
New Delhi

Ericsson input on TRAI CP Digital Inclusion in the Era of Emerging Technologies

Dear Sir,

We would like to express our sincere appreciation to TRAI for taking the initiative to initiate the consultation process on Digital Inclusion in the Era of Emerging Technologies.

We are pleased to submit our comprehensive response to the consultation paper, which outlines our views, insights, and recommendations on the significant aspects discussed. We believe that this collaborative effort will contribute to shaping the future of digital inclusion in India.

Thank you for considering our input, and we look forward to continued collaboration in this important endeavor.

Q1. What should be the definition of Digital Inclusion? What all parameters should it include to highlight disparities across different segments of society to have a realistic assessment from a policy perspective? Please provide your answer with suitable justification.

Q2. Do you agree that the indices mentioned above and developed by various international organisations adequately represent the status of Digital Inclusion in the country? What other indices and factors need to be considered to identify the gaps in Digital Inclusion in the country?

Q3. Are Digital Connectivity, Digital Affordability and Digital Literacy the main factors responsible for Digital Inclusion in the country? Do you agree that by addressing these, Digital Inclusion can be achieved in the country? If not, please suggest other factors responsible for Digital Divide that need to be addressed to ensure Digital Inclusion?

A: Today, technology plays a much bigger role in the quality and scope of how we learn, such as new digital learning platforms which are estimated to reach 350 billion USD by 2025; what we learn, with a growing emphasis on programming, robotics, AI and automation; and how we can use it in the job market, with digital skillsets increasingly becoming a prerequisite of tomorrow's workforce.

At the current trajectory, mobile broadband will provide network coverage to around 92 percent of the world's population by 2024. This scale brings an unprecedented opportunity to address global challenges of sustainable development.
The changes which are happening today show the disparity between the developed and undeveloped world. If you are not connected, that shows you the leap which you have to make between the connectivity aspect, access to education and benefits which are derived from that. Closing this digital divide, with those who are not connected or not considered to be digitally literate, is imperative to ensuring a fair distribution of digital opportunities across countries, locations, gender, socioeconomic status, and age.

While there are numerous factors involved, including income, age and physical access, where you live plays a big role. The International Telecommunication Union (ITU) notes that globally, only 46 percent of people in rural areas are internet users, compared to 82 percent in urban places.
Poverty and economic constraints that limit resources and prevent folks from obtaining or using modern technologies are the most common causes of a digital divide. According to predictions made by experts, computers will be out of reach for the typical citizen in developing nations for the next 20 years or more.

Far worse than the economic disparity is the reality that technology is still so complex that many people would be unable to utilize a computer even if they were given one for free. Many others can use computers, but they do not reap the full benefits of the contemporary world since most of the available services are too complex for them to comprehend. Even though about 40 per cent of the population has low literacy abilities, few websites adhere to the rules for writing for low-literacy users.

Q4. Apart from efforts made by the Government through various Projects for provisioning of broadband connectivity under NDCP 2018 and NBM 2019 and other schemes, what additional measures are required to fulfill the objectives of universal connectivity in India?

Q8. Is there any need to take steps to make satellite internet a viable option for providing connectivity to remote/ inaccessible areas? If yes, please provide your answer with suitable justification. If not, what are the other alternatives for provision of connectivity in these areas?
A: India today has broadband services deployed using 4G, 5G and Fixed Wireline services covering all major towns, cities and villages, There are still many villages and rural areas which are not connected for high speed data services. The need is to extend this coverage to rural, higher hilly terrains, remote connectivity across sea/deserts/wet lands, basically connect the unconnected area and also continuously increase capacity in urban cities.

Fixed wireless access service is one step to offer mobile broadband wirelessly to unconnected places, fixed wireless service can be an equivalent to fibre in rural and unconnected india. This solution can also be deployed in urban cities to help get high speed broadband services using mox of mid band and mmWave deployments.

We should also explore options like long distance 4G and 5G connectivity. Today 4g and 5G cell site range can be extended upto 100-113 KM and can be used for offering IOT, broadband services. This can be of great value to connect across Hills/ deserts/sea and other long range land connectivity. This technical solution can be easily deployed using existing 4G/5G Radio sites and many current available devices support different coverage range (distance between 10-115Km). There have been such deployments using 4G/5G radios/sites done in Australia which are serving farmlands up to 113 KM.

Q19. What steps should be taken to monitor the impact of Digital Public Infrastructure (DPIs) on underserved and vulnerable segments of the society? Kindly indicate the key parameters that need to be monitored to assess such impact and actions required to promote adoption citizen centric services by these segments of the society.

A. Digital transformation is already a global engine of sustainable economic growth and, undoubtedly, 5G will be a socio-economic driver for India. The enhanced speed, security and resilience offered by 5G will provide stimulus for local industry to innovate and digitize rapidly, creating significant economic value for the country. Connected, digital enterprises not only tend to thrive and generate jobs, but also contribute to government revenues and efforts to tackle climate change.
Digitalization will help us address big global challenges like bridging the digital divide and reducing the carbon footprint amongst others.

Digital solutions have the potential to reduce global carbon emissions by up to 15 percent by 2030
The strong digital infrastructure we are establishing in India will help bridge the digital divide, create jobs and boost the economy. It will help businesses simplify operations and reduce costs, thereby increasing efficiency and productivity. School connectivity and digital skills for young people are crucial for unlocking the potential within developing economies.

Autonomous and more sustainable mining processes supported by 5G connectivity are single-handedly reshaping the mining industry. We have done a concrete quantification of carbon emission through a collaboration with Swedish mining company Boliden, which showed that automation powered by a 4G/5G network saved the company approximately 1 percent of the Aitik mine's total annual costs.
Like the mining industry, there are many other examples of digital transformation of industries where digitalization creates new opportunities for industries to limit their impact on the environment.
For example, technologies such as 5G enable will enable connected smart energy systems that can better match supply with demand and integrate renewable energy sources like wind and solar.

Q23. What measures should be taken to provide high-speed broadband connectivity to schools in the country, especially in states with low number of schools having internet connectivity?
The implementation of interactive digital content such as gamification, simulations, and interactive videos with 5G technology can enhance students' understanding of subjects by transforming theoretical concepts into vivid experiences. 5G will also facilitate personalised learning experiences, by utilising data analytics and AI, making education more engaging and customised to meet each student's specific needs and preferences too.

The availability of mobile broadband networks and the rapid adoption of smartphones during the past five years has had a significant impact on the Indian society and economy. The impact of connectivity has been very visible in the field of education - the widespread availability of mobile broadband connectivity and affordable data plans allowed many schools to pivot to remote education quickly at the onset of Covid 19 pandemic.

As in many other sectors, 5G will have a transformative impact on school education in India. It can not only help bring reliable broadband access to the millions of unconnected students but also bring about a sea-change in the teaching methods leading to positive learning outcomes.

In India, with 5G technology we expect new use cases to emerge. However, globally, several use cases have already been executed in collaboration with service providers. For example, Ericsson

partnered with NOS, a leading communications and entertainment group in Portugal, to develop technological projects in a school in Matosinhos. The 12th-grade Science and Technology students used a virtual reality solution over 5G to visit a science museum located over 300km away in Lisbon. The students remotely controlled a robot equipped with a 360º camera and interacted with the museum exhibits in an immersive and realistic way.

For example, incorporating virtual and augmented reality (VR/AR) in lessons can create an immersive learning environment that can captivate students in innovative and stimulating ways. Imagine taking a tour of the solar system through virtual reality where students can explore the planets, moons, and other celestial bodies in stunning detail and with a sense of presence that was previously impossible. This is the kind of hands-on learning which is much more engaging and impactful.

With 5G networks, students and teachers can connect from anywhere with minimal delay and disruptions, allowing real-time collaboration and feedback. Additionally, 5G-powered applications such as VR and AR can offer interactive and engaging learning experiences that are not possible with traditional online learning tools. 5G can also support high-quality video streaming and conferencing, making it easier for remote students and teachers to participate in live classes and discussions. Moreover, VR and AR can offer a phygital (physical and digital) learning curriculum for students studying robotics and automation. 5G can bridge the gap between physical and remote classrooms and create new opportunities for students to learn from anywhere, at any time.

Ericsson also partnered with Free Senegal to establish a proof-of-concept project that provides digital education resources to schools in Senegal. The project connected several schools with Fixed Wireless Access (FWA) technology and provided laptops, learning content, and teacher training to develop the ecosystem.

In addition, Ericsson and DNB conducted a landmark 5G technology showcase in Sarawak, Malaysia. The technology allowed for a seamless interaction between a lecturer at Universiti Teknologi Malaysia (UTM), Kuala Lumpur, and a group of students located 1,400km away at Curtin University, Miri, using AR/VR headsets. The lecturer and students interacted with each other as if in the same physical environment, with no noticeable delay.

These global use cases have significant relevance for India and can inspire innovative applications of 5G technology in education and other fields.

Regards

Sanjay Kumar Tanwar

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