UNITED NATIONS COMMISSION ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)

Contribution to the CSTD ten-year review of the implementation of WSIS outcomes

Submitted by

INDIA

Questionnaire for CSTD's 10 - Year Review Report on WSIS Implementation- India's initial response

1. **To what extent, in your experience, has the "people-centered, inclusive and development-oriented Information Society", envisaged in the opening paragraph of the WSIS Geneva Declaration of Principles, developed in the ten years since WSIS?**

The objective of developing a 'people-centred, inclusive and development-oriented information society', with a view to enhancing digital opportunities for all people, still remains unfulfilled even after a decade of commitment from the international community through the WSIS Geneva Declaration of Principles of 2003. The realization of this objective entails that it should be governed in a transparent, democratic, representative and accountable manner. This calls for an urgent need for introspection in the implementation of, and follow-up of the WSIS outcomes of 2003 as well as 2005.

Many innovations have occurred in the field of ICT sector, which were not anticipated at the time of WSIS, including the growth of mobile Internet, social networking, cloud computing.

The following points illustrate the above mentioned broad assessment regarding the non-achievement of this goal:

(i) Universal, ubiquitous, equitable, non-discriminatory and affordable access to, and use of, ICTs–The uses of ICTs have developed considerably in past 10 years and contributed to the socio, economic and cultural growth both in Developed as well as Developing countries. However, there are glaring challenges of digital divide, and achievement of universal access to information and knowledge by all continues. Still over 50% of world population does not have access to ICTs, of which the majority reside in Developing and Least Developed Countries (LDCs). Around 1.1 billion households worldwide are not yet connected the internet and 90% of them are in developing world. Affordability is one of the important factors and ICTs penetration is still very low in low income and lower middle income countries.

(ii) Democratization of the management of critical Internet resources and implementation of the outcomes related to Internet Governance- Further, in order to realize the benefits of Internet, as the most powerful contemporary phenomenon with enormous economic, social, political and cultural impact across the world, needs to be governed in a globally democratic, representative and transparent manner. There has been no progress on the mandate including

related to International management of Internet as envisaged in Declaration of the principles (Para 48 Geneva summit 2003) and mandate of the Tunis Agenda of 2005 related to 'Enhanced Cooperation', as contained in its paras 68 and 69. One of the prime reasons for this is the failure of the international community to work together in achieving an open, transparent, representative, democratic, multilateral Internet Governance as envisaged under the Tunis Agenda. It is pertinent to mention that para 29 of the Tunis Agenda clearly states that Internet Governance should constitute a core issue of the Information Society agenda.

(iii) There is no multilateral, transparent and democratic global platform where governments can, on an equal footing, decide the full range of international public policies related to internet, in a holistic manner. There is no mechanism for the development of globally-applicable principles on public policy issues including those pertaining to coordination and management of critical Internet resources. Not establishing an Enhanced Cooperation process has denied the Governments an opportunity to carry out their roles and responsibilities in international public-policy issues pertaining to the internet. Further there is need to ensure, effective participation of the Developing Countries in the global Internet governance.

(iv) Financing mechanisms for meeting the challenges of ICTs- An important stumbling block in attaining the "people-centred, inclusive and development-oriented information society" has been lack of an adequate follow-up mechanism to implement one of the main themes of Tunis Agenda, i.e., financing mechanisms for meeting the challenges of ICTs. Connectivity is a central enabling agent in building the Information Society. Universal, ubiquitous, equitable and affordable access to ICT infrastructure and services, constitute one of the challenges of the Information society. Investments in infrastructure and Developing partnerships are proving critical. Hence, the challenges related to capacity building, transfer of technology, communications access and connectivity for ICT services and applications, and others still remain unaddressed to a large extent.

(v) Multilingualism of the Internet in a number of areas including domain names, and others- Development of local language content is an important element in ensuring overall socio-economic development, and a central element of involving all stakeholders, in their respective roles. However, Developing countries are often unable to access e-content in their own language. Therefore a lot remains to be accomplished by the World Information Society.

(vi) Using ICTs, as a tool to achieve the internationally agreed development goals and objectives, including the Millennium Development Goals- The current

platforms provided by WSIS and ITU to share best practices in relation to ICT applications need to be made more inclusive and comprehensive to realize the development of "people-centred, inclusive and development-oriented information society. The role of UN Commission of Science and Technology for Development (CSTD) to undertake system-wide follow-up of the implementation of Geneva and Tunis outcomes of WSIS has remained more like a 'one-way traffic', with no action oriented and specific recommendations or guidance offered by it to ensure effective implementation of these WSIS outcomes. As a result, there has been no effective monitoring of the implementation process within the UN system since the adoption of the WSIS outcomes in 2003 and 2005.

(vii) It may, therefore, be stated that while there has been considerable development in the last ten years, the objective of developing a 'people-centred, inclusive and development-oriented information society', with a view to enhancing digital opportunities for all people, remains substantially unfulfilled particularly in the Developing countries, including in the LDCs.

A report on India's national level experience on the progress made in implementation of the outcomes of the World Summit on Information Society (WSIS) may be seen at Annex-1.

2. How far do you consider the implementation of specific WSIS outcomes to have been achieved?

As mentioned above, the period since WSIS has demonstrated that nothing substantial has happened on 'enhanced cooperation' among member states of the UN to discuss and coordinate public policy issues relating to Internet Governance.

UNGA resolution concerning modalities for the overall review of WSIS to be conducted by a high-level meeting to the UNGA to be held in December 2015.

An assessment of the level of the implementation of specific WSIS outcomes requires an analysis of the following major outcomes of WSIS from its two phases in the past 10 years:

(i) <u>WSIS Action Lines</u>:

In the past 10 years, considerable progress has been made towards achieving the goals of WSIS Action Lines, which are being reported by the

designated Action Line Facilitator UN agencies in accordance to their mandates and expertise. However, their reports are generally only on the activities of the respective agencies, rather than facilitating activities among different stakeholders. The reporting structure is also not clearly defined and different action line facilitators use different approach to the same themes and thus it lacks a holistic view. Besides, the annual reports of the Action Line facilitating agencies also clearly indicates that several challenges still remain, such as persisting digital divide and the new digital divide due to rapid technological changes, obstacles in achieving universal access to information and knowledge by all, problem of affordability, lack of support for the construction of information infrastructure and technology transfer to developing countries and balanced development of the information society.

Synergy among the action line facilitators, international organizations and financing institutions is not found effective in implementing the WSIS action line programs. Current collaboration of WSIS is envisaged among the action line facilitators (primarily UN agencies). But considering financing is a critical factor in implementation of programs and limited availability of precious resources, the road map should include partnerships among the a. Action line facilitators, b. international organizations and c. financing institutions to avoid duplication of activities and to focus on priority areas.

(ii) <u>Internet Governance- including Enhanced Cooperation, and Internet Governance Forum</u>:

The Tunis Agenda recommended two follow-up processes regarding internet governance: (i) Establishment of an Internet Governance Forum (IGF); and (ii) Process of 'Enhanced Cooperation' on international public policy issues pertaining to the internet.

The Internet Governance Forum (IGF) was established by the UN Secretary General in 2006, and is conducting regular annual meetings in a multi-stakeholder format to discuss issues related to the internet governance. But, the mandate on the process of Enhanced Cooperation, as per para 69 of the Tunis Agenda, calls for enabling Governments, on an equal footing, to carry out their roles and responsibilities, in international public policy issues pertaining to the internet, but not in the day-to-day technical and operational matters, that do not impact on international public policy issues', still remains to be implemented.

The United Nations has not yet reached a shared understanding of 'Enhanced Cooperation' and hence no recommendations have been proposed to fully implement this important WSIS outcome. The CSTD Working Group on

Enhanced Cooperation (WGEC) (set up under the mandate of UNGA resolution A/Res/67/195) also failed to reach at an agreement to make recommendations for fully implementing this mandate, even after holding four rounds of extensive consultations in 2013 and 2014, in a multistakeholder format. This clearly indicates the wide divide among the global community and the extent of the problem on the issue. By not resolving this issue, the Governments have denied an opportunity to carry out their roles and responsibilities in international public policy issues pertaining to the internet on an equal footing with other stakeholders.

As the outcomes of the two phases of WSIS clearly indicates for establishment of a suitable mechanism for implementation of Enhanced Cooperation, an international mechanism needs to be created urgently, where all the governments, on an equal footing, could carry out their roles and responsibilities in international public policy issues pertaining to the internet and public policy issues, and coordination and management of critical Internet resources. Para 69 sets the tone for Governments to define a mechanism of the enhanced cooperation. This paragraph together with other paras in the Tunis Agenda, when read with the WSIS outcomes clearly provides the basis for establishing an international mechanism of enhanced cooperation to play the respective roles.

There has been a lopsided implementation of the Tunis Agenda, wherein the use of ICTs for development and the security vulnerabilities of ICT's globalized infrastructure, have been underplayed by certain developed countries. The situation is further exacerbated due to deficit in Internet Governance at present. A brief report on the national level implementation of the WSIS outcomes in India is attached at Annex I.

(iii) **Financing Mechanisms for meeting the challenges of ICT for development:**

As it has been stated in response to question 1, this important theme of the Tunis Agenda has not been adequately implemented. Hence, the challenges related to capacity building, transfer of technology, communications access and connectivity for ICT services and applications, and others still remain unaddressed to a large extent.

3. How has the implementation of WSIS outcomes contributed towards the development of a "people-centered, inclusive and development-oriented Information Society"?

Some elements of WSIS outcomes may have partially contributed in creating an enabling environment through widespread use of ICTs in communication and social infrastructure.

Para 31 of Tunis Agenda provides that Internet Governance, carried out according to the Geneva principles, is an essential element for a people-oriented, inclusive, development-oriented and non-discriminatory Information Society. Para 48 of the Geneva Principles states that Internet Governance constitutes a core issue of the Information Society agenda and that international management of Internet should be multilateral, transparent and democratic.

Tunis Agenda underscores that development of "people-centered, inclusive and development-oriented Information Society" is contingent upon enhanced cooperation amongst States to address the core issue of Internet Governance, which should be multilateral, transparent and democratic.

The WSIS outcomes have contributed towards building greater awareness about the importance of a "people-centred, inclusive and development-oriented Information Society" by widening and deepening of ICT penetration. However, several challenges in implementation of the WSIS Action Lines remain to be addressed, such as;

- More than half of the world's population still does not have access to ICTs.
- Greater efforts are still required to improve affordable access to ICTs, information and knowledge for all people, in particular in the developing countries and LDCs.

- Need for technology and know-how transfer in order to facilitate the transition to digital economy.

- Need to strengthen network security and privacy relating to the use of ICTs.

- Need to democratize the governance of the Internet and make it representative.
- The institutions that manage and regulate the Internet need to be broadbased and internationalized, and should be based in an appropriate international legal authority.

4. What are the challenges to the implementation of WSIS outcomes? What are the challenges that have inhibited the emergence of a "people-centered, inclusive and development-oriented Information Society"?

Challenges to the implementation of the WSIS persist, and some of them are as follows:

- Accessibility, availability and affordability of ICTs;
- Bridging the digital divide;
- Building synergies and partnership among action line facilitators, international organizations and financing institutions to ensure focussed approach and avoid duplication of efforts.
- Strengthening of common platform under ITU for sharing best practices in relation to ICT applications should be strengthened;
- Democratization of the management of critical Internet resources and establishment of multilateral governance of public policy issues pertaining to the Internet;
- Development of multilingualism of Internet and local language content;
- Interoperability and Net Neutrality;
- Lack of norms regulating operation, support and usage of the global information infrastructure;
- Lack of cooperation and collaboration among nations to reduce the risk of cyber conflicts;
- Safeguarding the ICT infrastructure against ever increasing cyber threats and vulnerabilities;
- As technology continues to exponentially race ahead of the ability of policy and legal communities to keep up, the cooperation remains stubbornly difficult, both among governments as well as between them and the private sector. Sharing of information regarding threats and vulnerabilities among the governments and among public and private sectors itself is a challenge.
- Mass scale digital data surveillance and intelligence gathering being carried out by countries thereby impacting human rights and fundamental freedoms,

diluting the confidence and trust in ICT systems, creating unfair competition and unethical use of ICT;

- Lack of harmonized international laws relating to cyber crime leading to non-effective cooperation among the countries;

- Lack of involving developing countries in the future of internet governance as internet governance has evolved from just being a technical management to now being a social and human rights issues thereby gaining a global dimension. The issues therefore range from being technical to economic and social such as technical, legal, public policy, free and fair access, privacy and security of the infrastructure and information. There is a clear need for consistency, transparency and accountability in Internet Governance.

    - **Consistency:** The issues of taxation need to be addressed to allow for free flow of trade between nations through the instruments of trade agreements such that the productivity gains achieved through the digital economy lead to increased tax revenues by taxing the profits earned in the country of operation. There should also be mechanisms, such as taxation, to monetize the data used by the operators in the country of operation, as the currency in the digital economy is data. This way there would be no discrimination between foreign and domestic firms involved in facilitating, creating, delivering or receiving services. This requires global cooperation and coordination.

    - **Accountability:** At the same time export controls and actions such as sanctions hamper trade. The rights of individuals have been undermined by deploying technologies and processes on the internet, both by intermediaries and state, which breach the global citizen's privacy. The Mega Internet companies are breaching privacy most and also infringing rights of citizens world over. These actions thus create a digital divide and further an affordability and access issue for people to not be connected to the Internet in a safe and secure manner thereby hampering economic and social progress. There should be mechanisms in place to ensure resistance to possible manipulation or misuse by any particular stake holder whether State or non-State. Privacy is not just a human right but also a consumer right. This requires work to be done on the standards and legal instruments at a global level.

    - **Transparency:** There should be complete transparency regarding locations and technical set up of root servers (at least among government entities so as to avoid the malicious actors from causing harm to the servers) as these are common and most critical resources. In addition the

governance of multilingual domain names, local language content and governance of routing are critical areas which need transparency. Governance of the Internet should also be sensitive to the cultures and national interests of all nations. Governance cannot be achieved until and unless there is intensified cooperation against criminal and military use of ICTs and harmonization of legal approaches at a global level by the states to help and empower law enforcement and prosecution agencies to take necessary and speedy action. This requires work to be done on various levels – standards, legal instruments, coordination and cooperation.

5. How are these challenges being addressed? What approaches have proved to be effective in your experience?

The challenges to the implementation of WSIS outcomes are being discussed and debated at some of the United Nations (UN) fora, including organisations such as ITU, UNESCO, UNDP, UNCTAD, etc. The efforts being made to address the challenges made at different levels are not adequate and not properly reported.

Challenges like accessibility, availability and affordability of information services have to be addressed at regional, national and international level with participation of all stakeholders in their respective roles and responsibilities effectively.

Similarly challenges in implementing the outcomes related to internet governance and development of a common platform for sharing best practices in relation to ICT applications has not received adequate attention and commitment by all the stakeholders of WSIS including all the Governments.

The above mentioned challenges need serious discussions among all stakeholders in a democratic manner and an environment of trust. The viewpoints that should be put forward by the stakeholders, should be in the interest of the global information society and not in the interest of a country. Hence new models would need to emerge and the rules of the game changed. As an example, clearly there is considerable discrediting of the current multistakeholder model of Internet Governance due to the loss of credibility, loss of trust and growing uncertainty of current practices being followed and collusions between concurring governments and co-option of private actors for achieving their desired deliberate actions which disregard the fundamental privacy rights of citizens globally. The rules of the game need to change here and a new model needs to emerge.

6. What do you consider the most important emerging trends in technology and other aspects of ICTs which have affected implementation of WSIS outcomes since the Summit? What has been their impact?

Convergence of ICT technologies since the time of WSIS has resulted in emergence of social media platforms, use of small devices and mobile phone, cloud computing. While increasing the use of Internet, this has resulted in raising concerns about privacy, security of data and networks, law enforcement and cybercrimes.

The emerging trends in ICTs that have affected the implementation of WSIS outcomes include the following:

- Transition to IPv6
- Mobile internet and mobile applications (mobile subscription increased from 2.2 billion in 2005 to 6.8 billion in 2012)
- Cloud computing presents cybersecurity issues at different levels - technical, organizational, procedural and legal – that have to be addressed
- Social networking
- e-learning including open online courses (MOOCs)
- e-participation
- e-health
- emergence of Internet of things
- Datafication of business and government organization and practice
- increased use of intellectual property type-protectionary measures (technological protection measures, digital rights management) to limit access to technology,
- the encroachment in the individual liberties to access information and content through the Internet,
- Mass scale and Targeted attacks on ICT users/ organizations - impacting confidence of people in use of ICTs for performance of important and critical activities,

The emerging Information & Communication Technologies can improve the efficiency, coordination and cost effectiveness of existing business and government practices. The most noticeable impact of the emerging trends in ICTs is that the developed countries enjoy more pervasive ICT usage and accrue the disproportionate benefits in comparison to the developing and less developed countries.

7. What should be the priorities for stakeholders seeking to achieve WSIS outcomes and progress towards the Information Society, taking into account emerging trends?

The roles and responsibilities of all the stakeholders have been defined in the WSIS outcomes. However, the legitimate roles could not be performed adequately by all stakeholders including Governments, in view of unequal implementation of the WSIS outcomes, especially internet governance. In this regards, the implementation of enhanced cooperation and global mechanism for governance related to the public policy issues pertaining to internet by assigning due role to the governments would be essential.

Enhanced Cooperation covers international public policy issues pertaining to the internet as well as the development of globally-applicable principles on public policy issues pertaining to the coordination and management of critical internet resources, but not the day-to-day technical and operational matters, that do not impact on international public policy issues.

There is an urgent need for all International organizations to evolve with the changing technologies to meet the needs of all stakeholders and all parts of the world to address emerging opportunities and challenges of ICTs. The role of each stakeholders and organizations should be associated with responsibility and accountability.

There is a need for international cooperation in evolving standards for technologies, architectures, implementation of the internet technologies and consistent and credible testing to ensure security of the transactions on the internet. Trust building plays a key role and it requires critical focus on the current architecture of Internet and information networks to enable traceability of communication for secure flow of communication through telecom networks.

Democratization of the management of critical Internet resources to enable equitable distribution among the countries.

In addition, it needs to be recognized that trust is at the core of social order and economic prosperity, and is a method to decrease the complexity in modern society while allowing people to deal with the uncertainty and complexity. Addressing the fundamental issue of winning back the confidence and trust in ICT systems should be the singular top priority for stakeholders so that society can freely communicate, be creative, and carry out commerce.

The other areas that need focus are legal, policy and ethics. As technology continues to exponentially outpace legal, policy and ethical

dimensions, it is critical that there is focus on these important aspects. Harmonization of cyber-crime laws at a global level should be taken up in urgency along with making it easier for countries to have on-demand extradition of data / blocking of sources from another country during investigations,

The data and statistics should focus on invisible forms of digital divides such as gender, accessibility, ICT skillsets, rural/ underserved, people not connected etc., to enable these vulnerable groups reap the benefits of development.

There is a need to focus on areas described above - consistency, transparency and accountability.

All stakeholders need to play their respective roles as identified in the Tunis Agenda. They should take initiatives in their respective domain for introducing the notion of ICTs as a key catalyst for development into the post-2015 development agenda. All stakeholders also need to ensure that everyone has the skills and capabilities to contribute to, and participate in, building inclusive knowledge societies.

8. What role should information and communications play in the implementation of the post-2015 development agenda?

The post-2015 Development agenda is envisaged as a far-reaching and comprehensive development-related endeavor undertaken by the United Nations.

The link between ICTs and human development is increasingly important. It is thus important to mainstream ICTs into the broader context of the post-2015 development agenda for development of inclusive information society.

The emerging technology trends would expand the definition of digital divide by including aspects such as in terms of access gap due to erratic connectivity, or usage ability which may require higher order skills and tools causing an economic and influence disadvantage. There is a need to identify these specific “new” digital divides, all forms of invisible digital divides and focus on addressing them. One clear divide that will emerge is education. There should be a huge focus on this sector globally and regionally for achieving people-centered, inclusive and development-oriented Information Society. India specific MOOCs (Massive Open Online Courses) in Indian languages to benefit

people in the urban as well as rural areas is an idea that is currently on the drawing board.

Need to ensure that the cultural and linguistic heritage of countries is not eradicated but preserved and represented in the information society going forward. Different languages and the ability for illiterate people to interact, access and derive benefits from the internet through the mechanisms of speech should be a focus area.

The other priority areas for ICT which need attention are energy, health, clean drinking water and agriculture. By focusing on these areas we would be able to fight known and emerging diseases, work towards green environment, improve life expectancy as well as achieve higher productivity. This would also help in employment generation and improved global trade.

It is a foregone conclusion that the ICTs would hold the key for effective implementation of the post-2015 development agenda. As mentioned above, some areas where ICTs can have important applications from increase connectivity and mobility include e-health, e-agriculture, e-government and e-environment. The sharing of best practices in ICTs among countries and all the relevant stakeholders will further strengthen its role in the implementation of post-2015 development agenda, as the potential of ICTs in impacting the social, cultural and economic growth will continue to grow.

9. Please add any other comments that you wish to make on the subject of the review that you believe would be helpful.

It is clear that the core issue of Information Society agenda of WSIS relating to Internet Governance remains unaddressed till date.
Hence, it will be important to review the work of CSTD Working Group on Enhanced Cooperation in fulfilling its mandate under the UNGA Resolution A/Res/67/195 (2012).In addition, it is also essential for the WSIS review to specifically focus on:

9.1. Global internet related public policy to address concerns of developing nations; and
9.2. Capacity building in developing nations

10. **We would also welcome any documents, reports, etc. that you can forward which you think will provide useful evidence for the review.**

Report of the Working Group on Information Technology Sector (2012-17) of Ministry of Communications and Information Technology, India, inter alia, provides for E-Inclusion policies with the view to achieve a truly inclusive Information Society. "E-Inclusion' refers to the effective participation of individuals and communities in all dimensions of knowledge-based society and economy through their access to ICT, made possible by the removal of access and accessibility barriers and effectively enabled by the willingness and ability to reap social benefits from such access".

The report mentions that 'E-Inclusion' is important in addressing the danger of social exclusion in the information society and to support the realization of full potential of the digital opportunity.

Annex-I

India's national level Experience on the progress made in implementation of the outcomes of the World Summit on Information Society (WSIS)

India has witnessed significant developments during the last ten years with respect to the realization of "people-centred, inclusive and development-oriented Information Society".

2. The Telecommunication services, Information Technology (IT) and IT Enabled Services (ITES) sector have become one of the key sectors for the Indian economy because of its economic impact. The sector is contributing towards people in the country in achieving full potential, improve their quality of life, promoted gender equality and also empowerment of women.

3. In this connection, following specific achievements can be cited:

a) The number of telephones have exponentially gone up from 98 million (in 2004) to 933 million (in Mar 2014). The Mobile connections with a modest beginning from 52 million (in 2004) have gone to 904 million (in Mar 2014). No. of internet users per 100 population has gone up from 2 (2004) to 21.4 (2013). The high level of growth rate of telephone connections has led to significant increase in national teledensity from 6.7% (in 2003) to 75% in 2014. India has touched 252 million internet connections (Mar 2014) including 61 million broadband connections.

   The enhanced connectivity through Mobile and fibre networks has provided significant impetus to the economy and commerce and provided a base to roll out all applications and services.

b) The IT / ITeS sector in India is estimated to aggregate revenues of USD 108 billion in the financial year 2012-13. As a proportion of national GDP, the sector revenues have grown from 1.2 per cent in financial year 1998-99 to nearly 8 per cent in 2012-13.

c) The domestic IT market (excluding hardware) was anticipated to grow at 14.1 per cent in Indian rupee terms in the year 2012-13 as compared to the year 2011-12.

d) This sector is the biggest employment generator and has spawned the mushrooming of several ancillary industries such as transportation, real estate and catering, security, housekeeping etc. During the year 2012-13 over 188,000 jobs (direct employment) were added consisting of 30 percent women employees and an indirect job creation estimated at 9.5 million by the sector.

e) National e-Governance Plan (NeGP) was approved by the Government of India in 2006 with a common vision, implementation methodology and management structure. It comprises 31 Mission Mode Projects having a singular mission to make all Government services accessible to the common person in his locality, through efficient, transparent and reliable mechanisms. For making public services available to citizens on anytime, anywhere basis, 99,947 Common Services Centres across the country to access e-Governance services have been established. Under the Capacity Building Scheme, State e- Mission Teams have been setup in 32 States and over 700 Government officials have been trained. Standards have been laid down in the areas of open standards, biometric standards, metadata & data standards, localization and language technology standards etc.

f) As an extension of the NeGP vision, and in cognizance of the vast mobile phone subscriber base in the country, it has been decided to also provision for access of public services through mobile devices, thereby establishing mobile Governance (m-Governance) as a compelling new paradigm within the ethos of e-Governance. Mobile Services Delivery Gateway was operationalized in July 2011 and has now become the core infrastructure for enabling the availability of public services through mobile devices where in for "PUSH SMS", 158 Central and State Departments have been integrated, and approximately 26 million SMSes have been pushed and for "PULL SMS", and 176 unique services have been operationalized.

g) Indian Computer Emergency Response Team (CERT-In) is the national nodal agency set up under Section 70B of the Information Technology Act, 2000 to respond to computer security incidents. CERT-In creates awareness on security issues through dissemination of information on its website and operates 24X7 Incident Response Help Desk. It provides Incident Prevention and Response services as well as Security Quality Management Services.

h) The Government is paving 'Broadband Information Highways' by investing about $4 billion for rolling out National Optical Fibre Network (NOFN). The objective is to connect 250,000 village panchayats, the smallest local

administrative unit, through fibre and offer the basket of services in e-governance, e-health and e-education etc.

i) In addition, areas where is marked improvement are as follows:

- Access for people with disabilities and vulnerable people to ICTs;
- Local content development;
- The IPv6 road map was unveiled in 2010. As a result of which most of the major services provider in India have become ready to handle IPv6 traffic and offer IPv6 services. The road map envisages IPv6 compliance for all service providers, and government organizations in a time bound manner. The main focus of the roadmap was to educate/ sensitise the Indian ecosystem about the issues related to IPv6 and enable it to take the first step in the transition towards IPv6 leading to delivery of futuristic IPv6 based applications and services in different sectors of Indian economy;

- Build confidence and security in the use of ICTs while strengthening the continued development of appropriate network security and continue to support capacity building and coordination on incident response. CERT-IN has empanelled 22 information security auditing organizations to carry out information security audit, including the vulnerability assessment and penetration test of the networked infrastructure of government and critical sector organizations. CERT-In also carries out mock drills with organizations from key sectors (115 organizations covering various sectors of Indian economy) to enable participating organizations to assess their preparedness in dealing with cyber crisis situations.
- Rolled out of coherent national policies on IT initiatives to promote investment in ICTs and infrastructure, and foster entrepreneurship and innovation, such as:

    - The Digital India project , the umbrella program of all the e-projects, is aiming to offer a one-stop shop for government services using all forms of connectivity including mobile phone, internet as the backbone for delivery mechanism to transform India into a connected economy through broadband highways across cities, towns and villages;

    - National Rollout of Mobile Service Delivery Gateway (MSDG);

    - National Information Infrastructure (NII 2.0);

    - National Cloud Computing Initiatives;

- Setting up of a National e-Governance Academy;
- IT Mass Literacy;
- Common Man Interface (Dial.Gov);
- E-Gov App Store and
- National Cyber Security Policy, 2013
- National Telecom Policy
- National IPv6 deployment roadmap

j) India has also experimented with MOOCs (Massive Open Online Courses) in engineering discipline and the results have been promising.

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