

Dream of a Digital India: Research Report 2014-15



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Contents

PREFACE	3
Digital India – overview.....	4
Digital India Products	7
Digital India Programs and Events	18
Digital India Investments and Initiatives.....	30
Digital India MoUs.....	43
INDIA AND US.....	43
INDIA AND AUSTRALIA	45
INDIA AND JAPAN	46
INDIA AND SINGAPORE	47
INDIA AND FRANCE	47
INDIA AND GERMANY	48
INDIA AND CHINA	49
INDIA AND RUSSIA	49
INDIA AND UK	49
INDIA AND UNITED ARAB EMIRATES- UAE	50
INDIA AND MALAYSIA	51
Digital India for Rural India	52
Digital India Quotes.....	56
References	63

PREFACE

Digital India programme is full of happenings and it has gained good coverage in national and international media too. Objective of this report is to perform a reality check on the status of Digital India. This report contains information collected from newspapers, journals, government/non government sources and third party sites (External Sites). This research is not done for any commercial purpose, it is intended to provide relevant facts and information related with Digital India. It's a Digital India encyclopedia that covers different aspects of Digital India programme. This report will help you in understanding the pace and direction in which Digital India programme is moving. Our Prime Minister used to say that "21st century is the century of knowledge" and I believe that this report will help you in becoming a knowledge citizen.

This study starts with an overview of Digital India, to give a basic understanding of the programme and its vision. The second section is about Digital India Products, in which I have shared information about different products, services, policies and research institutes that are launched under Digital India programme. Section 3 covers information about programs and events related with Digital India, here you will find information about major and noticeable events, and I have arranged this data in chronological order. Section 4 captures information about initiative and investment made by big brands in Digital India, some organizations are in the stage of discussion with the government for their participation and some have already started, I have tried to share all the relevant pieces. Section 5 covers information about all those MoUs and agreements that are signed with foreign countries and will have a direct or indirect impact on Digital India programme. The figure and facts shared in the Section 6 Digital India for Rural India will give you an idea that how technology can solve the most complex problems of rural and remote areas and how a leadership with right intention can make this happen... I believe that in the success of any program, inspiring quotes of leaders have their own space, therefore I have shared popular quotes of Shri Narendra Modi and IT Minister Mr. Ravi Shankar Prasad in the Section 7.

Here I would like reassert that this report is not for any commercial purpose, it's compilation of information and facts related with Digital India. I started this study in the month of December 2015 and it covers information for the period 2014- 2015. You can share your feedback/suggestions on my id-devsenamishra@dappstech.com

Digital India – overview

In his first Independence Day speech, our Prime Minister Shri Narendra Modi has said that “today it is IT that has the potential to connect each and every citizen of the country and that is why we want to realize the mantra of unity with the help of Digital India”. Transparency and accessibility are the key elements of Good Governance. Digital India programme’s theme is based on the idea of providing good and effective governance through E-Governance. As per its official definition “Digital India is a programme to prepare India for a knowledge future. In order to transform the entire ecosystem of public services through the use of information technology, the Government of India has launched the Digital India programme with the vision to transform India into a digitally empowered society and knowledge economy. Digital India is an umbrella programme that covers multiple Government Ministries and Departments. It weaves together a large number of ideas and thoughts into a single, comprehensive vision so that each of them can be implemented as part of a larger goal. Each individual element stands on its own, but is also a part of the larger picture”. Digital India is to be implemented by the entire Government with overall coordination being done by the Department of Electronics and Information Technology (DeitY).

(Source: <http://www.digitalindia.gov.in/content/vision-and-vision-areas>)

Vision of Digital India- The vision of Digital India programme is to transform India into a digitally empowered society and knowledge economy.

Vision Areas of Digital India: The Digital India programme is centered on **three key vision areas:**

Vision Area 1- Digital Infrastructure as a Utility to Every Citizen: - This includes:

--Availability of high speed internet as a core utility for delivery of services to citizens.

--Cradle to grave digital identity that is unique, lifelong, online and authenticable to every citizen.

--Mobile phone & bank account enabling citizen participation in digital & financial space.

--Easy access to a Common Service Centre.

--Shareable private space on a public cloud.

--Safe and secure cyber-space.

Vision Area 2- Governance and Services on Demand: - This includes:

-- Seamlessly integrated services across departments or jurisdictions.

-- Services available in real time from online & mobile platforms.

-- All citizen entitlements to be portable and available on the cloud.

-- Digitally transformed services for improving ease of doing business.

-- Making financial transactions electronic & cashless.

-- Leveraging Geospatial Information System (GIS) for decision support systems & development.

Vision Area 3- Digital Empowerment of Citizens: - This includes:

-- Universal Digital Literacy.

-- Universally Accessible Digital Resources.

-- All documents/certificates to be available on cloud.

--Availability of digital resources/ services in Indian languages.

-- Collaborative digital platforms for participative governance.

--Portability of all entitlements through cloud.

How Digital India will be realized- Pillars of Digital India

- 1. Broadband Highways**
- 2. Universal Access to Mobile Connectivity**
- 3. Public Internet Access Programme**
- 4. e-Governance: Reforming Government through Technology**
- 5. e-Kranti - Electronic Delivery of Services**
- 6. Information for All**
- 7. Electronics Manufacturing**
- 8. IT for Jobs**
- 9. Early Harvest Programmes**

Digital India Products: The services/products that are launched under this program are many and we will see many more such products in future too, a number of digital products like portals, apps and some research institutes have been launched under Digital India.

First set of Products/Services of Digital India was launched in the month of July 2015, during Digital India Week: Digital Locker, National Scholarship Portal, eHospital, eSign, Digitize India Platform, Digital India portal and mobile app, MyGov Mobile App, Swachh Bharat Mission App, BharatNet, BSNL NGN (Next Generation Network), BSNL Wi-Fi Hotspots, Center for Flexible Electronics, Center of Excellence for Internet of Things (IoT).

Second set of Products/Services was launched in the month of December 2015, during Good Governance Week:

--Launch of National Centre of Geo-Informatics for use of GIS in government.

--Announcement of Setting up of NIC Data Centre at Bhubaneswar.

--Initiating empanelment for private cloud services providers for e-governance.

--Inauguration of Wi-Fi hotspots at Har ki Pauri, Haridwar and Dargah Sharif, Ajmer.

--Dedication of 1 million connections with Next Generation Network (NGN) capacity.

--251 post office ATMs.

--Launch of e-Payment Portal for enabling 100% e-payment across country.

--Mobile App for Digital Locker account holders.

--Transfer of Text To Speech Technology in 9 Indian Languages, developed by a consortium of 12 institutes led by IIT Chennai.

--Rural ICT project for post offices- installation of solar panels to enable rural post office as multi-service delivery centres and Post Terminals were also launched.

--CBS post office- 12000 post office to offer core banking solution.

--Announcement of Pan India Free Incoming Roaming Facility for MTNL Customers from new year.

--Special Manpower Development Program for Chips to System Design.

--Launch of Olabs for CBSE Schools- virtual laboratory for Class IX to Class XII.

--Launch of Information Security Education and Awareness (ISEA) Phase-II- creating capacity and awareness for 1.44 lakh person through 45 participating institutions.

--Digital India e-Newsletter –electronic monthly newsletter from DeitY starting December 2015.

--All India BPO Promotion Scheme- creating 48,300 BPO seats in Tier II and Tier III towns.

--North East Business Process Outsourcing Promotion Scheme- dedicated first BPO center at Guwahati.

--Announcement of setting up of New STPI Centres in Bihar, Odisha and Uttar Pradesh.

--Transfer of Technology for “ICT Centre on Tactile Graphics” at IIT Delhi.

--Digital Programmable Hearing Aid (DPHA), indigenously developed by CDAC-Thiruvananthapuram.

--Mobile Towers in Naxalite areas (LWE) in Madhya Pradesh

Besides this all ministries and departments of government are participating in Digital India programme and digitizing their services. The way railway ministry has adopted a unique way to solve routine problems of passenger through twitter is appreciable, it is an example of **‘innovation in administration’**.

The pace at which Digital India programme is moving is remarkable, the difference between first product launch and second product launch is only 6 months...working at such pace and designing things at this scale needs high level of commitment and determination. India is witnessing an era of transparent and good governance through E-Governance...

Digital India Products

Digital India programme is bringing significant changes in our daily life, our government is working on smart cities and smart villages projects simultaneously. Digital India program is changing the mindset of government agencies and its employees. The government offices and departments that are once criticized for having the most outdated system and manual/paper work in place are now the ones that are using the most advanced technologies for their routine task...these days when some passenger in train needs some help in midway, he/she tweets the railway ministry and receives prompt response from the concerned official.

The pace at which Digital India program is running is enormous, no other government initiative in the past have witnessed such growth and speed, let's take a look:

Digital India Week (July 2015)

Digital Locker- As the name implies it's a digital storage facility where citizens can store their documents in the digital form. It is aimed at minimizing the usage of physical documents and enabling sharing of e-documents across agencies and individuals. One can store and share important documents such as PAN cards, passports and educational certificates. DigiLocker is linked with Digital India's vision of providing citizens a shareable private space on a public cloud and making all documents / certificates available on this cloud. When someone registers for a Digital Locker account, he/she gets a dedicated cloud storage space called 'digital locker' that is linked to their Aadhaar (UIDAI) number. Organizations that are registered with Digital Locker can push electronic copies of documents and certificates (e.g. driving license, Voter ID, School certificates) directly into these citizens' lockers. Citizens can also upload scanned copies of their legacy documents in their accounts. These

legacy documents can be electronically signed using the eSign facility [1].

This platform has the following benefits:

--Citizens can access their digital documents anytime, anywhere and share it online. This is convenient and time saving.

--It reduces the administrative overhead of Government departments by minimizing the use of paper.

--Digital Locker makes it easier to validate the authenticity of documents as they are issued directly by the registered issuers.

--Self-uploaded documents can be digitally signed using the eSign facility (which is similar to the process of self-attestation).

The following are the key stakeholders in the DigiLocker system:

Issuer: Entity issuing e-documents to individuals in a standard format and making them electronically available e.g. CBSE, Registrar Office, Income Tax department, etc.

Requester: Entity requesting secure access to a particular e-document stored within a repository (e.g. University, Passport Office, Regional Transport Office etc.)

Resident: An individual who uses the Digital Locker service based on Aadhaar number.

The main technology components of the DigiLocker system are:

Repository: Collection of e-documents that is exposed via standard APIs for secure, real-time access.

Access Gateway: Secure online mechanism for requesters to access e-documents from various

repositories in real-time using URI (Uniform Resource Indicator).

DigiLocker Portal: Dedicated cloud based personal storage space, linked to each resident's Aadhaar for storing e-documents, or URIs of e-documents.

There are two ways to sign up for a DigiLocker account.

1. Aadhaar based method: You can voluntarily use Aadhaar (issued by UIDAI) to sign up using mobile OTP or biometric fingerprint device.

2. Non Aadhaar method: You can authenticate your mobile number and then submit your proof of address and identity documents for manual verification. [1]

For more information visit: <https://digitallocker.gov.in/>

National Scholarship Portal- National Scholarships Portal is one-stop solution through which various services starting from student application, application receipt, processing, sanction and disbursement of various scholarships to Students are enabled. National Scholarships Portal is taken as Mission Mode Project under National e-Governance Plan (NeGP). This initiative aims at providing a SMART SYSTEM that is Simplified, Mission-oriented, Accountable, Responsive and Transparent for faster & effective disposal of Scholarships applications and delivery of funds directly into beneficiary's account [2].

Features:

- Ensure timely disbursement of Scholarships to students.
- Provide a common portal for various Scholarships schemes of Central and State Governments.
- Create a transparent database of scholars.
- Avoid duplication in processing.
- Harmonization of different Scholarships schemes & norms.
- Application of Direct Benefit Transfer.

Benefits:

- Simplified process for the students.
- All scholarships information available under one umbrella.
- Single integrated application for all scholarships.
- Improved transparency.
- System suggests the schemes for which a student is eligible.
- Duplicates can be reduced to the maximum extent (can be eliminated totally if AADHAAR is made mandatory).
- Helps in standardization.
- Master data for Institutions and courses at all India level.
- Scholarships processing.
- Serves as a decision support system (DSS) for Ministries and departments as up-to date information will be available on demand.
- Comprehensive MIS System to facilitate monitoring every stage of Scholarships distribution i.e. from student registration to delivery of funds.

For more information visit:

<https://www.scholarships.gov.in/about.do>

eHospital- Online Registration System (ORS) is a framework to link various hospitals across the country for Aadhaar based online registration and appointment system, where counter based OPD registration and appointment system through Hospital Management Information System (HMIS) has been digitalized. The application has been hosted on the cloud services of NIC. Portal facilitates online appointments with various departments of different Hospitals using eKYC data of Aadhaar number, if patient's mobile number is registered with UIDAI. And in case mobile number is not registered with UIDAI it uses patient's name. New Patient will get appointment as well as Unique Health Identification (UHID) number. If

Aadhaar number is already linked with UHID number, then appointment number will be given and UHID will remain same. [3].

For more information visit: <http://ors.gov.in/copp/>

eSign- eSign is an online electronic signature service which can be integrated with service delivery applications via an open API to facilitate an Aadhaar holder to digitally sign a document. Using authentication of the Aadhaar holder through Aadhaar e-KYC service, online electronic signature service is facilitated.

Features of eSign:

Easy and secure way to digitally sign information anywhere, anytime - eSign is an online service for electronic signatures without using physical cryptographic token. Application service providers use Aadhaar e-KYC service to authenticate signers and facilitate digital signing of documents.

Facilitates legally valid signatures - eSign process includes signer consent, digital signature certificate issuance request, digital signature creation and affixing as well as digital signature certificate acceptance in accordance with provisions of Information Technology Act. It enforces compliance through API specification and licensing model of APIs. Comprehensive digital audit trail, in-built to confirm the validity of transactions is also preserved.

Flexible and easy to implement - eSign provides configurable authentication options in line with Aadhaar e-KYC service and also records the Aadhaar ID used to verify the identity of the signer. The authentication options for eKYC include biometric (fingerprint or iris scan) or OTP (through the registered mobile in the Aadhaar database). eSign enables millions of Aadhaar holders easy access to legally valid Digital Signature service.

Respecting privacy - eSign ensures the privacy of the signer by requiring that only the thumbprint of the document be submitted for signature function instead of the whole document.

Secure online service - The eSign service is governed by e-authentication guidelines. While authentication of the signer is carried out using Aadhaar e-KYC services, the signature on the document is carried out on a backend server of the e-Sign provider. eSign services are facilitated by trusted third party service providers - currently Certifying Authorities (CA) licensed under the IT Act. To enhance security and prevent misuse, Aadhaar holders private keys are created on Hardware Security Module (HSM) and destroyed immediately after one time use.

eSign API - eSign Application Programming Interfaces (API) specification defines the major architectural components and also the format and elements of communication among the eSign stake holders including Application Service Provider, Certifying Authorities, Trusted Third Party eSign Service Providers and Aadhaar e-KYC service. This eSign API enables Application Service Providers to integrate eSign service in their application. The system is designed to integrate Application Gateway too [4].

Who can use eSign and where - Only Aadhaar holders can use eSign online electronic signature service. The eSign service can be used by individuals, businesses and government departments for electronically signing a document based on OTP or Biometric (Fingerprint/Iris) authentication through Aadhaar e-KYC service [4].

For more information visit:

<http://www.cca.gov.in/cca/?q=eSign.html>

Digitize India Platform- Digitize India Platform (DIP) is an initiative to provide digitization services for scanned document images or physical documents for any organization. The aim is to digitize and make usable all the existing content in different formats and media, languages, digitize and create data extracts for document management, IT applications and records management. DIP provides an innovative solution by combining machine intelligence and a cost effective crowd for meta-data tagging, IT application processing and analysis. Interestingly it also provides a way

of earning from home to those who are interested in data entry work, any individual can register himself as a contributor and can earn some money for data entry work through this portal [5].

For more information visit: <https://digitizeindia.gov.in/>

MyGov - On 26 July 2014, MyGov mobile app was launched by Prime Minister Shri Narendra Modi. It is a unique first of its kind participatory governance initiative involving the common citizen at large. The idea of MyGov brings the government closer to the common man by the use of online platform creating an interface for healthy exchange of ideas and views involving the common citizen and experts with the ultimate goal to contribute to the social and economic transformation of India. In its short span of existence till date, MyGov platform has been more than successful in keeping the citizens engaged on important policy issues and governance, be it Clean Ganga, Girl Child Education, Skill Development and Healthy India to name a few. There is no doubt that this platform has made inroads in diminishing the gap which has traditionally existed between the citizen and the government. Given the importance of this platform in transformation of India through participatory governance, the platform has been constantly undergoing upgrades to ensure an enhanced level of user experience. The major attributes of MyGov includes Discussion, Tasks, Talks, Polls and Blogs on various groups based on the diverse governance and public policy issues. Today MyGov has more than 1.78 Million users who contribute their ideas through discussions and also participate through the various earmarked tasks. In addition to this the platform gets more than 10,000 posts per weeks on various issues which are analyzed and put together as suggestions for the concerned departments who are able to transform them into actionable agenda. As mentioned by the Hon'ble Prime Minister, Shri Narendra Modi, MyGov is an initiative which should culminate into a mass movement towards self-governance or 'surajya' [6].

For more information visit: <https://mygov.in/>

Swachh Bharat Mission App- This mobile app is designed to resolve the issues and challenges faced by citizens and government organizations while taking swachhata (cleanliness) pledge and uploading of responses (images or videos) in the Swachh Bharat campaign on MyGov. It is available for Android and Window phone users.

For more information visit:

<http://msbm.gov.in/Public/Home.aspx>

Bharat Net- It is the world's largest rural broadband connectivity project using optical fiber to connect each of 2.5 lakh gram panchayats with a minimum of 100 Mbps bandwidth. Bharatnet will serve as the infrastructure backbone of Digital India, to facilitate delivery of e-Governance, e-Health, e-Education, e-Banking, internet and various other services. This initiative will work towards building high-speed digital highways to connect all 2.5 lakh Gram Panchayats of the country. This would be the world's largest rural broadband connectivity project using optical fiber [7].

Wi-Fi Hotspots- BSNL has launched Wi-Fi services at 78 hotspots over 17 locations across 6 cities to provide affordable, anywhere and anytime, high-speed broadband services while on the move. About 2,500 hotspots are planned to be set up by BSNL in FY16. These would essentially be in tourist destinations and government buildings dealing with people's issues. In the month of October 2015, Facebook has partnered with Bharat Sanchar Nigam Ltd. (BSNL) to create 100 Wi-Fi hotspots in rural India to drive digital penetration in the country. Facebook will invest Rs 5 crore per annum for buying bandwidth from BSNL in this joint initiative that also includes IT infrastructure services providers such as Quad Zen and Trimax for equipment and fibre deployment [8].

Next Generation Network (NGN)- NGN technology converge public switched telephone network, data network and wireless mobile network to enable high speed broadband across the country. This would provide the value-added services such as video chats, video conferencing

and other services on fixed line telephone at nominal prices [7].

INSTITUTIONS

Centre of Flexible Electronics- National centre for Flexible Electronics was established in 2014 through a grant from Department of Electronics and Information Technology (DeitY) under ESDM scheme of Electronics Policy 2012 of Government of India and support from the Institute (IIT Kanpur). This centre will function as a nodal point in India to bring academia, industry and public research organizations under one umbrella for research and development of large area flexible electronics. Flexible electronics, also known as flex circuits, is a technology for assembling electronic circuits by mounting electronic devices on flexible plastic substrates, such as polyimide, PEEK or transparent conductive polyester film. Additionally, flex circuits can be screen printed silver circuits on polyester.

For more information visit: <http://www.iitk.ac.in/flexe/>

Centre of Excellence for Internet of Things- Centre of Excellence on Internet on Things (IoT) is a joint initiative of Department of Electronics & Information Technology (DeitY), ERNET and NASSCOM. The Internet of Things (IoT) is the network of physical objects, devices, vehicles, buildings and other items which are embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data. IoT is the emerging technological advancement in IT/ITeS sector, which is expected to swamp the connected digital world. The Centre of Excellence for IoT is expected to promote a vibrant IoT ecosystem, helping India attain a leadership role in the field.

For more information visit: <http://www.digitalservicecloud.com/>

POLICIES

Electronics Development Fund Policy- The objective of this policy is to create a self-sustaining eco-system of venture funds that shall fill the gap currently seen in the domains of early stage angel funding and venture funding in

the technology areas of electronics, nano-electronics and IT. Electronics Development Fund (EDF) Policy aims to promote Innovation, R&D, and Product Development and to create a resource pool of IP within the country to create a self-sustaining eco-system of Venture Funds.

Other policies- A number of Policy initiatives have been undertaken by DeitY in the e-Governance domain like e-Kranti Framework, Policy on Adoption of Open Source Software for Government of India, Framework for Adoption of Open Source Software in e-Governance Systems, Policy on Open Application Programming Interfaces (APIs) for Government of India, E-mail Policy of Government of India, Policy on Use of IT Resources of Government of India, Policy on Collaborative Application Development by Opening the Source Code of Government Applications, Application Development and Re-Engineering Guidelines for Cloud Ready Applications. BPO Policy has also been approved to create BPO centres in different North Eastern states and also in smaller towns of other states.

Good Governance Week (Dec 2015)

On the occasion of Good Governance Week, our IT minister Mr. Ravi Shankar Prasad has launched 22 new digital India Initiatives. The event saw the inauguration of 22 new products / eServices to achieve ambitious project of Digital India. Highlights of the products launched:

DIGITAL INFRASTRUCTURE

National Centre for Geo-Informatics- National Centre of Geo-Informatics will be GIS platform for sharing and collaborating GIS data source, location based analytics and 'decision support system' serving to government departments across the country. The National Centre of Geo-Informatics has been approved as an independent division of Media Lab Asia, an organization of DeitY. The project cost is Rs 98.28 crore for a period of three years [9].

NIC's 4th Data Centre at Bhubaneshwar- The new data centre for the National Informatics Centre (NIC) in Odisha is expected to get operational by September 2016. The 40,000-sq

ft data center entails an investment Rs.189 crore, and would be a fully cloud-enabled data center [9].

Initiating empanelment for private cloud services providers for e-governance- In order to utilize and harness the benefits of Cloud Computing, our government has embarked upon an ambitious initiative – “GI Cloud” which has been named as ‘MeghRaj’. The focus of this initiative is to accelerate delivery of e-services in the country while optimizing ICT spending of the Government. This will ensure optimum utilization of the infrastructure and speed up the development and deployment of eGov applications [9].

Public Wi-Fi Hotspots- Inauguration of Wi-Fi hotspots at Har ki Pauri- Haridwar and Dargah Sharif- Ajmer [9].

One Million Connections in Next Generation Network (NGN).

251 post office ATMs.

DIGITAL SERVICES

Launch of e-Payment Portal- PayOnline is a cashless payment initiative to pay government taxes, bills and fees online. An electronic receipt portal, PayOnline is secure and easy to use. The portal is fully compatible with smart mobile or tablet and citizen can pay using own mobile or tablet as well. <https://payonline.gov.in/>

Mobile App for Digital Locker account holders- DigiLocker is a platform for issuance and verification of documents and certificates in a digital way, thus eliminating the use of physical documents. Indian citizens who sign up for a DigiLocker account get a dedicated cloud storage space that is linked to their Aadhaar (UIDAI) number. Organizations that are registered with Digital Locker can push electronic copies of documents and certificates (e.g. driving license, Voter ID, School certificates) directly into citizen’s lockers. Citizens can also upload scanned copies of their legacy documents in their accounts. These legacy documents can be electronically signed using the eSign facility. This e-facility now can

accessed on mobile devices via its app, available on Android and iOS.

Transfer of Text To Speech Technology in 9 Indian Languages- Technology Development for Indian Languages (TDIL) Programme initiated by the Department of Electronics & Information Technology (DeitY), Govt. India, has the objective to develop information processing tools to facilitate human machine interaction in Indian languages and to develop technologies to access multilingual knowledge resources. Consortium mode project has been initiated to develop and deploy Text to Speech system in nine regional languages, which are Hindi, Bengali, Marathi, Malayalam, Tamil, Gujarati, Odiya, and Assamese.

Rural ICT project for post offices- Rural ICT project aims to enable rural post office as multi-service delivery centres for this purpose installation of solar panels and distribution of 130,000 devices with application software is decided to complete by March 2017.

CBS post office- 12000 post office will be prepared to offer core banking solution.

Pan India Free Incoming Roaming Facility for MTNL Customers- Free roaming for all new/existing prepaid and postpaid customers including MNP customers.

DIGITAL EMPOWERMENT

Special Manpower Development Program for Chips to System Design- With a vision to make India high-end Very Large Scale Integration (VLSI) design destination, Department of Electronics and Information Technology (DeitY) has launched Special Manpower Development Program for Chips to System Design entailing investments of Rs 99.72 crore for the programme for five years. Under this programme, in addition to generation of more than 50,000 specialized manpowers in the area of VLSI, 10 cluster projects for development of systems are being launched. The initiative aims to achieve the vision of ‘make in India’ and to reduce the import of electronic items.

Olabs for CBSE Schools- Virtual laboratory for Class IX to Class XII being rolled out in CBSE schools in the country.

Information Security Education and Awareness (ISEA) Phase-II- Government has launched phase 2 of Information Security Education and Awareness (ISEA) Project to solve the issues around cyber security in India. DeitY had approved a project in 2005 entitled Information Security Education and Awareness (ISEA) which was completed in 2014 and now it has launched Phase II of this project with the total outlay of Rs. 96.08 crore for a period of 5 years. This project aims to create capacity and awareness for 1.44 lakh person through 45 participating institutions.

Digital India e-Newsletter- Electronic monthly newsletter from DeitY is started to share information about latest initiatives and happenings related with Digital India.

INDUSTRY PROMOTION

All India BPO Scheme- This scheme is launch to create 48,300 BPO opportunities in Tier II and Tier III towns.

North East Business Process Outsourcing Promotion Scheme- This scheme will provide the capital support in the form of Viability Gap Funding to eligible BPO companies, to encourage the growth of the IT industry in North East Region through BPO operations. On the occasion of good governance week government has initiated first BPO centre under this scheme at Guwahati.

Eight new STPI (Software Technology Parks of India) launched-Software Technology Parks of India (STPI) was established under the Department of Electronics & Information Technology, Ministry of Communications and Information Technology, Government of India in 1991 with an objective to implement STP Scheme, set-up and manage infrastructure facilities and provide other services like technology assessment and professional training. At the ‘Good Governance Day’ celebrations, the

government announced that 8 more STPI centres will start by September 2018, in Bihar, UP and Odisha.

Tactile Books- Tactile books are an excellent introduction to the fun of reading, as well as being an invaluable means of conveying ideas, concepts and vocabulary. They encourage interaction between the young reader and his sighted classmates and family. They are admired and enjoyed by sighted as well as blind children. Deity has sponsored an R&D project “ICT centre on Tactile Graphics” at IIT Delhi. Under the project 9th class NCERT Mathematics book has been converted into tactile graphics using image processing techniques for visual impaired persons.

Digital Programmable Hearing Aid (DPHA)-Indigenously developed by CDAC Thiruvananthapuram.

Mobile Towers in Naxalite areas (LWE)-Mobile towers will be set up in Naxal-affected areas in two areas--Madhya Pradesh and Uttar Pradesh.

(Source of above facts: government’s portal and public documents)

You can read brochures on these new products and services at:
<http://digitalindia.gov.in/content/brochures-new-products-eservices-and-other-initiatives>

OTHER PRODUCTS

Digital India Portal- It’s an information portal that provides all the information about Digital India program...interesting features like Discussion Forum, Quiz, Contests and Blogs are provided to encourage public participation and to create an environment of collaboration among citizens of India.

For more information visit: <http://www.digitalindia.gov.in/>

EBiz G2B Portal- eBiz is one of the integrated services projects and part of the 27 Mission Mode Projects (MMPs) under the National E-Governance Plan (NEGP) of the Government of India. eBiz is being implemented by Infosys under the guidance and aegis of Department of Industrial Policy and Promotion (DIPP) and

Ministry of Commerce & Industry. The focus of eBiz is to improve the business environment in the country by enabling fast and efficient access to Government-to-Business (G2B) services through an online portal. This will help in reducing unnecessary delays in various regulatory processes required to start and run businesses. This project aims at creating an investor-friendly business environment in India by making all regulatory information easily available to the various concerned stakeholders starting from the establishment of a business, through its ongoing operations, and even its possible closure. In effect, it aims to develop a transparent, efficient and convenient interface, through which the government and businesses can interact in a timely and cost effective manner. The vision of eBiz is to be the entry point for all individuals, businesses and organizations (local and international) who would like to do business or have any existing business in India by creating a one-stop-shop of convenient and efficient online G2B services to the business community, by reducing the complexity in obtaining information and services related to starting businesses in India, and dealing with licenses and permits across the business life-cycle.

For more information visit: <https://www.ebiz.gov.in/home/>

eCourts Project- In a bid to speed up disposal of pending cases, the cabinet has approved the second phase of eCourts Mission Mode Project at an estimated cost of Rs 1670 crore. It envisages enhanced IT enablement of courts through universal computerization, use of cloud computing, digitization of case records and enhanced availability of e-services through e-filing, e-payment gateways and mobile applications. The phase II of the eCourts project would also help in the automation of work flow management in courts thereby contributing to better court and case management. Touch screen-based kiosks and video conferencing facility will be installed at all court complexes and corresponding jails. Hand-held process service devices will be provided to process servers to ensure transparent and time bound delivery of court notices and summons [10].

Jeevan Pramaan- Prime Minister Shri Narendra Modi launched 'Jeevan Pramaan' – an 'Aadhar-based Digital Life Certificate' for pensioners. The Prime Minister said that after the push towards self-certification, this digital life certificate was another enabling mechanism which would benefit the common man. The proposed digital certification will do away with the requirement of a pensioner having to submit a physical Life Certificate in November each year, in order to ensure continuity of pension being credited into his account. The Department of Electronics and IT has developed a software application which will enable the recording of the pensioner's Aadhar number and biometric details from his mobile device or computer, by plugging in a biometric reading device. Key details of the pensioner, including date, time, and biometric information will be uploaded to a central database on real-time basis, ultimately enabling the Pension Disbursing Agency to access a Digital Life Certificate. This will conclusively establish that the pensioner was alive at the time of authentication. The software application system will be made available to pensioners and other stakeholders on a large scale at no extra cost. It can be operated on a personal computer or on a smartphone, along with an inexpensive biometric reading device. This facility will also be made available at Common Service Centres being operated under the National e-Governance Plan, for the benefit of pensioners residing in remote and inaccessible areas [11].

HRD MINISTRY APPS

E-Pathshala- It's a joint initiative of Ministry of Human Resource Development (MHRD) and National Council of Educational Research and Training (NCERT), it has been developed for showcasing and disseminating all educational e-resources including textbooks, audio, video, periodicals, and a variety of other print and non-print materials. Students, Teachers, Educators and Parents can access eBooks through multiple technology platform that is mobile phones and tablets (in EPUB format) and from the web through laptops and desktops (as Flipbook). ePathshala also allows user to carry us many books as their device supports. Features of these

books allow users to pinch, select, zoom, bookmark, highlight, navigate, share and make notes digitally [12].

For more information visit: <http://epathshala.gov.in/>

SARANSH- The Central Board of Secondary Education (CBSE) has launched an online self-review tool for schools affiliated to the board called SARANSH. CBSE says that this tool will allow schools to identify areas of improvement for students, teachers and curriculum and take necessary measures to implement change. It is currently available for standards IX to XII and provides a comprehensive overview of standard X performance since 2007 & standard XII performance since 2009 till the current academic session. It also provides schools with a view of overall and individual student's performance in academic and extra-curricular activities. The performance metrics are presented through numbers, charts and graphs. Schools can also compare their performance with other CBSE schools at an all-India level, regionally, state-wise and across school categories like government, private, Jawahar Navodaya Vidyalayas, Kendriya Vidyalayas and Central Tibetan Schools Administration. CBSE also plans to extend this tool to parents enabling them to monitor their child's performance along with the teachers.

HOW TO USE SARANSH

FOR PARENTS:

--Saransh is available for parents of students studying in CBSE affiliated Schools in class IX, X, XI or XII.

--Parents can register with Saransh by providing their ward's Registration/ Roll Number.

--User name and password will be sent on the registered mobile number via OTP and Email.

--Parents can only login after school approves the registration request.

FOR SCHOOLS:

--Saransh is available to all CBSE affiliated schools.

--The School Principals can login using their existing affiliation number and password as used for the Registration/LOC.

For more information visit: <http://saransh.nic.in/>

National Programme on School Standards And Evaluation (NPSSE)-Shala Siddhi- Shala Siddhi is a school evaluation platform that enables schools to evaluate their performance. NPSSE visualizes 'School Evaluation' as the means and 'School Improvement' as the goal. It refers to evaluating the individual school and its performance in a holistic and continuous manner leading to school improvement in an incremental manner. The programme envisions reaching 1.6 million schools in the country through a comprehensive system of school evaluation. As part of this endeavor the School Standards and Evaluation Framework (SSEF) has been developed as an instrument for evaluating school performance. This will enable the school to evaluate its performance against the well-defined criteria in a focused and strategic manner. The SSE framework comprises seven 'Key Domains' as the significant criteria for evaluating performance of schools. As part of the SSEF, a 'School Evaluation Dashboard-e Samiksha' has been developed to facilitate each school to provide consolidated evaluation report including areas prioritized for improvement. The School Evaluation Dashboard is developed both in print and digitized format. The School Evaluation Dashboard obtained from each school, will be consolidated at cluster, block, district, state and national level for identifying school specific needs and common areas of intervention to improve school performance. A web-portal and Mobile App on School Standards and Evaluation are in the process of development. In order to translate the objectives of NPSSE to institutionalize 'School Evaluation for Improvement', a strong operational plan has been formulated to extend support to each state [13].

For more information visit: [NPSSE- Shala Siddhi](http://NPSSE-ShalaSiddhi)

SHALADARPAN- SHAALADARPAN is a programme of Ministry of Human Resource Development, to provide mobile access to parents of students of Government and

Government aided schools. Using SHAALADARPAN parents can view updates on their child's progress. They can view records of attendance, assignments and achievements of their child. The ministry aims to launch the service in 2015 academic session. It's an online portal that is meant to maintain an online data base of each student. From attendance to examination papers, study material, medical conditions and health challenges, everything will be recorded in the software for any reference. The portal is developed by National Informatics Centre (NIC) will also provide a parent-teacher interface and also help parents to regularly monitor their wards. They will also receive routine progress reports of their wards, besides the conduct during school hours.

OTHER POPULAR APPS OF GOVERNMENT

Voter Name Search- With this app, the government makes it easier for you to find out if your name has been listed in the electoral roll of the constituency. The app also provides information about the precise polling booth a person has been allocated. Available for Android platform, the Voter Name Search uses SMS for pulling the information [14].

mPassport Seva- This app is meant for citizens who are interested in Passport related information. It provides details on areas such as the location of application centers, fees, application status, contact information and much more. Users can search for a Passport Seva Kendra (PSK) or District Passport Cell (DPC) as well as track status of their passport applications using file number and date of birth [14].

Grameen Vidyutikaran- This app allows users to track the progress of rural electrification initiative in the country. The application features a dashboard providing details about the villages that have received access to electricity, and villages that are yet to get the same. You can also track villages by state and key information such as progress made in the last one month [14].

Khoya Paya- This app is aimed at helping the missing and vulnerable children. It allows you to

register and share information about a missing or sighted child, without waiting for the completion of the legal procedures. Information will be published on the platform shortly after quick moderation. You can also search the database of the children by matching the attributes of the lost/sighted child [14].

Narendra Modi- Prime Minister Narendra Modi earlier this year launched an Android mobile app. The "Narendra Modi" app is aimed at facilitating direct communication between the Prime Minister's Office and the people of the country. Highlights of the application include the latest news and updates, interaction with the PM, sharing ideas and suggestions, and information about the government's initiatives and achievements. Furthermore, the app also allows citizens to contribute to various causes via the app [14].

M-Kavach- Prepared by CDAC, M-Kavach is a mobile security apps that is aimed at preventing threats to mobile devices. The app prevents threats related to malware that may access personal information and can be further misused. It provides security via features such as secure storage, application manager, anti-theft, call/SMS filter and authorized access to device resources like Wi-Fi, Bluetooth and camera. Users can also create local backup and restore of contacts and call logs via this app [14].

PostInfo- Developed by Centre for Excellence in Postal Technology (CEPT), PostInfo is the official mobile application of the Department of Posts. The app allows you to track posts including speed posts, parcels and electronic money orders. Apart from tracking, you can also use the app for searching post offices in your area. Other highlights of the app include postage calculator, insurance premium calculator and interest calculator [14].

Incredible India- Launched by Ministry of Tourism, the app features information about recognized tourism service providers including agents and operators. The app provides this information to tourists on their mobile phones based on their current location. Tourists can also seek similar details for any other city he plans to

travel to in future. Also, the application will provide places of interest for tourists [14].

MEAIndia (Ministry of External Affairs - Government of India)- This app acts as a single window source of all information related to the ministry's citizen-centric services and outreach activities. The application is completely user-oriented, intuitive and interactive with smart visuals/graphics.

For more information visit: <http://mea.gov.in/mea-mobile-app.htm>

RTI Online- This is a portal to file RTI applications/first appeals online along with payment gateway. Payment can be made through internet banking of SBI & its associate banks, debit/credit cards of Master/Visa and RuPay cards. Through this portal, RTI applications/first appeals can be filed by Indian Citizens for all Ministries/Departments and few other Public Authorities of Central Government.

For more information visit: <https://rtionline.gov.in/>

e-Aushadhi for J&K- A web-based supply chain management application e-Aushadhi has been launched by Jammu and Kashmir government at Jammu and Kashmir Medical Supplies Corporation Ltd (JKMSCL) office. The application has been prepared by Centre for Development of Advanced Computing (C-DAC) Noida, Ministry of Commerce and Information Technology. e-Aushadhi will help JKMSCL to improve drug warehousing and supply chain management in all government hospitals in the state. The application will keep a check on purchases, inventory management and distribution of various drugs and surgical items to various regional and district drug warehouses, district hospitals, primary health centres (PHCs) and community health centres (CHCs). (Source: CDAC official website)

Digital India Programs and Events

Digital India Program is full of events and happenings. In this section I'm sharing highlights of some major and noticeable events that are focused around Digital India programme. I arranged these pieces of information in reverse chronological order (month wise) from December 2015 to the August 2014 (when it was launched).

December 2015

Good Governance Week- On the occasion of Good Governance Week, our IT minister Mr. Ravi Shankar Prasad has launched 22 new digital India Initiatives. Here are the highlights [15]:

--Launch of National Centre of Geo-Informatics for use of GIS in government.

--Announcement of Setting up of NIC Data Centre at Bhubaneswar.

--Initiating empanelment for private cloud services providers for e-governance.

--Inauguration of Wi-Fi hotspots at Har ki Pauri, Haridwar and Dargah Sharif, Ajmer.

--Dedication of 1 million connections with Next Generation Network (NGN) capacity.

--251 post office ATMs.

--Launch of e-Payment Portal for enabling 100% e-payment across country.

--Mobile App for Digital Locker account holders.

--Transfer of Text To Speech Technology in 9 Indian Languages, developed by a consortium of 12 institutes led by IIT Chennai.

--Rural ICT project for post offices- installation of solar panels to enable rural post office as

multi-service delivery centres and Post Terminals were also launched.

--CBS post office- 12000 post office to offer core banking solution.

--Announcement of Pan India Free Incoming Roaming Facility for MTNL Customers from new year.

--Special Manpower Development Program for Chips to System Design.

--Launch of Olabs for CBSE Schools- virtual laboratory for Class IX to Class XII.

--Launch of Information Security Education and Awareness (ISEA) Phase-II- creating capacity and awareness for 1.44 lakh person through 45 participating institutions.

--Digital India e-Newsletter –electronic monthly newsletter from DeitY starting December 2015.

--All India BPO Promotion Scheme- creating 48,300 BPO seats in Tier II and Tier III towns.

--North East Business Process Outsourcing Promotion Scheme- dedicated first BPO center at Guwahati.

--Announcement of setting up of New STPI Centres in Bihar, Odisha and Uttar Pradesh.

--Transfer of Technology for “ICT Centre on Tactile Graphics” at IIT Delhi.

--Digital Programmable Hearing Aid (DPHA), indigenously developed by CDAC- Thiruvananthapuram.

--Mobile Towers in Naxalite areas (LWE) in Madhya Pradesh

Outstanding Performance Award for Digital India- On the occasion of Good Governance Week, **Warangal district and Mahabubnagar**

district of Telangana State received award from Minister of IT Mr. Ravi Shankar Prasad for their outstanding performance in Digital India campaign [16].

Tele-evidence & CSIC facility launched- As part of Good Governance Week celebrations, Union Health Minister J P Nadda has launched first tele-evidence facility for recording evidences through video conference at Post-Graduate Institute of Medical Education and Research (PGIMER), Chandigarh [17].

Microsoft CEO announced Center of Excellence in Visakhapatnam- On 28th December Microsoft CEO Satya Nadella met Andhra Pradesh Chief Minister Mr. Chandrababu Naidu and signed an MoU with the state government. The MoU is aimed to support the development of three Proof of Concept solutions in education, agriculture and e-citizen services. Microsoft also announced to setup Center of Excellence in Visakhapatnam [18].

November 2015

Intel launches Ek Kadam Unnati Ki Aur initiative- On 18th November 2015, Intel launched the 'Ek Kadam Unnati Ki Aur' programme at Nadimpalle village in Mahabubnagar district of Telangana by opening an Unnati Centre. The objective of the programme is to boost digitalization of rural India. It will be implanted in 10 states across the country and complements the Digital India initiative [19].

Features of Unnati Centre:

-- It will be used to create the framework for the Telangana model digital village.

--It provides various citizen services under the Telangana government's e-panchayat scheme.

-- It provides devices, relevant local content and training for citizens and creates opportunities for development and empowerment.

Ten Finalists Announced for Innovate for Digital India Challenge- On 19th November, Intel revealed the top 10 teams of the Intel and

DST Innovate for Digital India Challenge. The 10 finalists presented innovative devices and applications in the fields of healthcare, agrotech, e-governance, and online education. Notable innovations came from Bhubaneswar based Phoenix Robotix, which has developed a low-cost product called Aurassure, which measures the environmental pollutants and particulate matters and feeds the real time data. Teams with digital healthcare innovations included Chennai based Asha+, a diagnostics provider, Pune based Embryo, which has made a device called CerviScope that helps with early screening for Stage 0 and Stage 1 cervical cancer and Bengaluru based Tjay, an IoT-based wearable platform for people with epilepsy and other chronic disorders. E-governance based innovations included Airpaper from Hassan, Karnataka, which has built a digital data distribution platform, Bengaluru-based Aapna Seva, an e-governance player, leverages the Aadhaar ID, while Chennai-based Haqdarshak is a mobile technology and service delivery platform that helps citizens discover, apply for, and benefit from government and private schemes. Other winners included Delhi-based DEIAB which provides a Digital-Education-in-a-Box solution that runs on solar power, Bengaluru-based Jayalakshmi Agrotech which develops crop-specific mobile applications for farmers in regional languages and Ahmedabad based Indian TTS, who have developed a regional Text-to-Speech engine. The challenge, launched in April 2015 in support of the Indian government's Digital India vision, drew more than 1,900 entries from all over India. The winning teams were honored by Shri Ravi Shankar Prasad, Minister of Communications and IT, Gregory R. Pearson, Senior Vice-President and General Manager, Sales and Marketing Group, Intel Corporation and Debjani Ghosh, Vice-President, Sales and Marketing Group and Managing Director, Intel South Asia [20].

October 2015

Digital India Dialogue 2015: Fostering India's digital economy- On 8th Oct, the Indian Express Group organized a discussion called 'Digital

India Dialogue', the theme of the discussion was Fostering India's Digital Economy. The focus area of the discussion revolved around privacy and security of data, building better connectivity in the country and the challenges ahead. The discussion included Arvind Gupta- Head IT Cell BJP, Dr. Govind- CEO NIXI, Lt Gen Nitin Kumar Kohli- AVSM, VSM, Signal Officer in Chief, Indian Army, John E Matheson- Associate General Counsel Intel Technology Asia, Praveer Sinha- CEO & managing director Tata Power Delhi Distribution Limited, Mahesh Uppal- Director Com First India, former finance secretary R Gopalan, Shailesh Pathak- Executive Director Bhartiya Group and Deepak Maheswari- Head government affairs Symantec among others [21].

September 2015

11th National Summit E-Governance & Digital India- The 11th National Summit e-governance and Digital India- inclusive growth through digital empowerment is organized by ASSOCHAM. On this occasion Bharat Net chairman & MD Aruna Sundarajan said that the country is entering into a new era of digital empowerment. Our digital project is a giant leap to bridge the digital divide between urban and the rural India by linking all the gram panchayats in the country through the common platform of optical fibre cable. Our vision is to transform our country into a knowledge economy. Instead of NOFN model, 18 states have opted for AP (Andhra Pradesh) Fiber Grid Model to establish a highly scalable network infrastructure to provide on demand, affordable and end-to-end broadband connectivity of 10 to 20 Mbps per household. The states which have opted for AP Fiber Grid Model are: Maharashtra, Tamil Nadu, Kerala, Andhra Pradesh, Telangana, Madhya Pradesh, Chhattisgarh, Orissa, Delhi, Jammu & Kashmir, Uttarakhand, Himachal Pradesh, Punjab, Uttar Pradesh, Rajasthan, Jharkhand, Gujarat and West Bengal [22] [23].

August 2015

7th Annual Summit Cyber & Network Security 'Securing the Digital India'- ASSOCHAM organized the seventh annual summit on cyber and network security "Securing the Digital India". On this occasion Mr. Kiren Rijiju, Minister of State, Ministry of Home Affairs said that "Government must focus on development of legislative mechanisms and criminal law provisions to tackle the menace of cybercrime, as well as ensuring that concerned agencies have the necessary training, tools and know-how to take on new age cybercrimes. Cybercrime can only be effectively countered when there is a proper coordination and guidance available for various stakeholders, such as residents of a nation, industries as well as the local, state and central governments" [24].

SEHAT- Social Endeavour for Healthcare and Telemedicine- On 25th August 2015 IT Minister Mr. Ravi Shankar Prasad inaugurated an event "SEHAT". This is an initiative by CSC e-Governance Services India Ltd. (CSC-SPV). On this occasion a workshop was organized to showcase the initiatives taken to provide access to quality healthcare to rural and remote areas of India under Digital India. Tele-medicine services are being provided through Common Services Centers (CSCs) in collaboration with Apollo Tele Health Services (ATHS). The CSCs will also provide diagnostic services and promote sale of generic drugs through collaboration with Ministry of Health by setting up of the Jan Aasudhi Stores. An MoU was signed between CSC-SPV and Bureau of Pharma Public Sector Undertakings of India (BPPI). The programme was attended by more than 500 Village Level Entrepreneurs (VLEs) who are delivering telemedicine service across the country through CSCs. On this occasion a Handbook on profiles of 25 Best VLEs delivering Telemedicine from India was also released and felicitation of Top 10 VLEs delivering Telemedicine (Based on Telemedicine transactions) was done by IT Minister [25].

July 2015

Digital India Week- On 1st July 2015, Prime Minister Shri Narendra Modi launched Digital

India Week, he described cyber-related risks as a global threat of "bloodless war," and called upon the nation's IT community to serve the entire world by building credible cyber-security systems. The Prime Minister also exhorted the captains of India's IT industry to boost production of electronic devices and goods in the country, as part of the "Make in India" initiative, to reduce dependence on imports. The Prime Minister reiterated his Government's resolve to not allow the Digital Divide to become a barrier between people. He outlined his vision of e-governance and mobile governance, where all important Government services are available on the mobile phone. "I dream of a digital India where High-speed Digital Highways unite the Nation; 1.2 billion connected Indians drive innovation; technology ensures the citizen-government interface is incorruptible," the Prime Minister said. The Prime Minister said that earlier, India was criticized for launching satellites, but now it was recognized that these satellites help the common man, for instance, farmers through accurate weather forecasting. Similarly, the Prime Minister said, the Digital India initiative was aimed at improving the lives of the common man. He said that India may have missed the Industrial Revolution, but will not miss the IT revolution. The Prime Minister assured full support to young entrepreneurs who wished to launch Start-ups. He called upon the youth to innovate and said "Design in India" is as important as "Make in India." The Prime Minister unveiled the "Digital India" logo and released policy documents related to Digital India. He also felicitated two women CSC village level entrepreneurs. Union Ministers Shri Arun Jaitley, Shri Ravi Shankar Prasad, Shri J.P. Nadda, Shri Thaavar Chand Gehlot, Shri Jual Oram, and Smt. Nirmala Sitharaman were present on the occasion. A detailed description of Digital India Week is provided in the chapter 8 Digital India- Highlights of Digital India Week and recent development [26].

June 2015

The 18th Express Technology Sabha places the spotlight on 9 Pillars of Digital India -On

18th June 2015, the 18th edition of eGovernance forum, the Express Technology Sabha was organized by government organizations such as Ministry of Urban Affairs, Department of Electronics and IT (DeitY), National Informatics Centre (NIC), National Institute of Electronics & Information Technology (NIELIT), National Internet Exchange of India (NIXI) and the Government of Goa. The theme of the 18th edition of the Tech Sabha is: "9 Pillars of Digital India", on this occasion a detailed presentation on eGovernance projects that are being undertaken in the country was presented. It was a three day long event during which a panel discussion on '9 Pillars of Digital India-Ideas for developing eGovernance' also took place. This panel discussion had the speakers exploring the entire range of benefits that the Digital India Programme could bring to the citizens of the country [27].

Online employment portal launched- Government launched a digital employment exchange that will enable industrial enterprises to find suitable workers and job-seekers to find employment. The government initiative is aimed at strengthening communication between stakeholders and improving efficiencies in service delivery in the micro, small and medium enterprises (MSME) ministry [28].

PM Modi launches Smart Cities Mission- On 25th June 2015, Prime Minister Shri Narendra Modi launched three mega flagship schemes aimed at transforming urban India, including the Smart Cities proposal, with a whopping Rs 4 lakh crore kitty having been lined up for the projects. Mr. Modi also unveiled logo of the housing mission, which has his personal touch in the finalization of its design. On this occasion he said "The decision to make cities smart will be taken not by governments but by the people of the city, the local administration. Let there be competition between cities in development so that smart cities come up. Private property developers should not decide how a city should grow, it should be decided by residents and city leadership. Many people are wondering about what exactly Smart City is. But one does not need to think a lot. Smart city is a city that provides more than what a citizen expects.

Before he wants it, we provide it. This is not just a paper based programme. Stake holders of all kinds have been consulted, including financial world. This Government is committed to safeguarding the rights of the consumers at all times" [29].

Background: The Smart City and AMRUT projects will draw Rs 48,000 crore and Rs 50,000 crore, respectively, in central grants over five years. Housing-for-All by 2022 will see the government spend about Rs 3 lakh crore in the next seven years as it aims to construct 2 crore affordable houses in urban areas for slum dwellers and people from economically weaker sections and low income groups. Under the housing scheme, interest subsidy of 6.5 per cent on housing loans with tenure up to 15 years will be provided to EWS and low income groups, giving them a benefit of about Rs 2.3 lakh each. AMRUT seeks to ensure basic infrastructure for 500 cities with a population of above one lakh [29].

May 2015

National Telecom M2M Roadmap released- IT minister Mr. Ravi Shankar Prasad released the National Telecom M2M Roadmap. Anticipating the promising potential of Machine to Machine, DoT has come up with this roadmap, which will serve as a single reference document for all the M2M stake holders in India. It is first of its kind initiative taken by any government in the world. This roadmap is aimed to provide guidance to all the stakeholders to nurture M2M Communications. Speaking on the occasion, Ravi Shankar Prasad said that "M2M Communications will impact every aspect of life of common man and results in substantial and tangible social and economic benefits to consumers, businesses, citizens and government. At a time when the country is focusing on digital empowerment, it has to be ensured that it plays a lead role in the implementation of M2M technologies. All concerned agencies should join hands to ensure that all needed infrastructure is put in place at the earliest" [30].

First Postal ATM in Bihar- Expanding utilities of Post offices, the Centre is planning to open

1,000 postal ATMs (Automated Teller Machines) all over the country to provide facility of cash withdrawal round the clock. Mr. Ravi Shankar Prasad inaugurated the first postal ATM in Bihar at the Patna GPO (General Post Office). Mr. Prasad said "efforts were on to link post offices with the digital India Mission. There are around 98 crore mobile phones in the country at present and 30 crore masses availing Internet facility. We want 1.54 lakh post offices in the country to be part of the government's digital India mission, Prime Minister Narendra Modi during a review meeting of Postal department had said postal department has to change with times by adopting latest technology and assured nobody would lose jobs but, postal department employees need to catch up with the latest technology to expand its utility" [31].

April 2015

Hyderabad Gets 30 Wi-Fi Hotspots- Telecom Minister Ravi Shankar Prasad today rolled out a Wi-Fi service in Hyderabad, which has become the first city in the south zone to sport a BSNL Wi-Fi. The Wi-Fi hotspots will initially cover 30 places in the city, but in 2-3 years, will be available across all other major cities of Andhra Pradesh and Telangana. BSNL plans to commit about Rs. 500 crore for the service in the region. BSNL will be providing free Wi-Fi service for the first 30 minutes in a day for maximum three occasions in a month for the same mobile number. After free usage, a customer can pay Rs. 30, Rs. 50, Rs. 90 and Rs. 150 for a validity of 30, 60, 120 minutes and one day, respectively [32].

Innovate for Digital India- Intel and Department of Science and Technology has announced 'Innovate for Digital India' challenge. The initiative is supported by DeitY and MyGov.in and will be anchored by IIM Ahmedabad's Centre for Innovation Incubation and Entrepreneurship. The contest will be running from April 2015 to January 2016 and is open to academia, aspiring entrepreneurs and startups. The initiative will offer total grants worth Rs 1.5 crores which includes 20 prototyping grants of up to Rs 2 lakh each, a maximum of 10 product development grants of

up to Rs 5 lakh each and three seed funding or equity investment of up to Rs 20 lakh each. The challenge aims to encourage the creation of intuitive, easy to use products catering to financial services, healthcare, education, and e-governance [33]. From inspiration to innovation, the innovators will be provided technological assistance by Intel and expert guidance by IIM Ahmedabad's Centre for Innovation Incubation and Entrepreneurship cell to develop solutions that could be implemented in the Indian market.

For more information visit- <https://innovate.mv.gov.in/>

Indian Railways launches mobile app for paperless unreserved tickets- Indian railways launched mobile application for paperless unreserved tickets. Railway Minister Suresh Prabhu inaugurated this app from Delhi for commuters in Egmore and Tambaram suburban sections in Chennai that comes under Southern Railway zone. Developed by Centre for Railway Information Systems (CRIS) "utsonmobile" – the paperless unreserved ticketing feature in mobile application aims to eliminate the need for printing of unreserved tickets [34].

National optical fibre network renamed as BharatNet- The government has digitally connected 20,000 village panchayats across the country under the Digital India programme and has decided to overhaul the national broadband project programme, renaming it BharatNet. Under BharatNet retail broadband services should be available at prices below Rs 150 a month in poorer states and around Rs 250 per month in more economically advanced state, with speeds ranging between 2 Mbps and 20 Mbps for all households [35].

March 2015

Twitter Samvad launched- Prime Minister Mr. Narendra Modi has launched a new service called Twitter Samvad in India. This service will deliver a group of government written tweets to registered mobile users daily, and keep them updated about their proceedings and further e-governance. It's a first-of-its-kind initiative where every day a set of selected tweets will be delivered from the government and leaders' accounts to mobile users across the country via

SMS. Updates on government services, policies and activities will be delivered to any user with a mobile device signed up for the service. Anyone with a mobile phone, with or without a data plan, can register for the service by giving a missed call to a unique number dedicated. As of now 16 government offices, including the ministry of railways, the Bangalore police and the chief ministers of Uttar Pradesh and West Bengal are participating in Twitter Samvad [36].

Digital India Dialogue 'Making our cities smart and liveable'- On 26th of March 2015, The Indian Express Group and NewsX organized the Digital India Dialogue in New Delhi. The primary motivation was to encourage a frank exchange of thoughts between the political leadership, bureaucracy, chiefs of key academic and corporate institutions on each of the nine pillars of Digital India. Indeed, the gathering of select thought-leaders present on the occasion extensively deliberated on various aspects of the smart city concept and provided a diversity of ideas for harnessing modern technology to improve the quality of life in our existing and upcoming cities [37].

Digital Gender Atlas for girls education is launched- On 9th March 2015, the Ministry of Human Resource Development, Department of School Education and Literacy, launched the 'Digital Gender Atlas for advancing girls' education in India. This tool has been developed with the support of UNICEF, will help identify low performing geographic pockets for girls, particularly from marginalized groups such as scheduled castes, schedule tribes and muslim minorities, on specific gender related education indicators. The Atlas is placed on the Ministry of Human Resource and Development (MHRD) website and available and ready to use by the states/districts/blocks education administrators or any other interested group in order to plan and execute educational interventions. The purpose of the Gender Atlas is to help identify and ensure equitable education with a focus on vulnerable girls, including girls with disabilities. The Atlas provides comparative analysis of individual gender related indicators over three years and that enables a visual assessment of the change and an understanding of whether some

intervention introduced in a geography at a particular point in time has worked or not. It is constructed on an open source platform with an inbuilt scope of updating data by authorized persons to retain its dynamic character. The main components of the Gender Atlas are: Composite Gender Ranking, Trend Analysis of Gender Indicators, Vulnerabilities based on educational indicators in districts with substantial tribal, schedule caste, minority population in educationally backward blocks and in left wing extremist districts, and the low sex ratio districts selected under 'Beti Bachao Beti Padhao' programme [38].

MyGov launches nation-wide contest for PMO Mobile App –MyGov, the citizen engagement platform of the Government of India, in collaboration with Google, has launched a nationwide contest to build a mobile app for the Prime Minister's Office (PMO). This contest is organized across the country, at different institutions and colleges and received participation from people throughout India [39].

February 2015

Web-Portal Launched for Delivering E-Certificates- The Directorate General of Employment & Training, Ministry of Labour & Employment, has launched a web portal-www.ncvtmis.gov.in, to deliver e-certificates to the pass-outs from various NCVT courses including ITI pass-outs. The first semester examination for 9.65 lakh students enrolled in August 14-session commenced on 20th February, 2015. The system is designed as a self-service digital platform to deliver various services to current and prospective trainees of the vocational training system, apprenticeship trainees, employers/establishments, ITIs and other institutions, as well as States/UTs [40].

Digital India Summit 2015- Times Television Network hosted the 'Digital India Summit 2015' on February 3 and 4, 2015, in New Delhi. Based on the theme 'Digital India: Bits & Bytes of a Billion Dreams' the summit brought key policy makers, digital leaders and influential thinkers face-to-face to deliberate suggestions to contribute towards realizing the implementation

objectives of Digital India. The event was inaugurated by IT Minister Shri Ravi Shankar Prasad. On this occasion he said that "Digital India is an obligation we owe to the people. It is a tool to bridge the divide between the haves and have-nots. A floodgate of opportunities is going to open in India. I welcome concrete suggestions from all for making Digital India a grand success, we have to work together. Wherever it is possible digging will be done, cables will be laid, if we can supplement by satellite or balloon or drones, we will consider that. The 3 pillars of digital India that our government will focus on are digital infrastructure, digital service delivery and digital empowerment. Digital India is an enabling platform for change and will not be fulfilled without the Make in India initiative" [41].

ICICI Bank launches 'Pockets'- ICICI Bank launched Pockets, a digital wallet for mobile phones. Anyone, including those who are not customers of ICICI Bank, can easily download the e-wallet from Google Playstore, fund it from any bank account in the country and start transacting immediately. This wallet uses a virtual Visa card which enables the users to transact on any website or mobile application in India. Customers can also request for a physical card to use it at any retail outlet. The wallet allows users to instantly send money to any e-mail id, mobile number, friends on Facebook and bank account. The users can pay bills, recharge mobiles, book movie tickets, order food, send physical and e-gifts, split and share expenses with friends by using this e-wallet. The limit for transaction is of worth Rs. 10,000, if it is not linked to a savings account of the ICICI Bank. Users can choose to add a zero-balance savings account to the wallet, which will allow them to earn interest on their idle money [42].

Varanasi gets free Wi-Fi - Telecom Minister Ravi Shankar Prasad inaugurated BSNL's free Wi-Fi service in Varanasi and promised a project worth over Rs 100 crore to boost internet connectivity in the district. Besides, the Minister announced setting up the state's first IT Park with support from the central government. The company would be providing free Wi-Fi services, for 30 minutes per 24 hours that

visitors can utilize in multiple sessions. After the free usage limit of 30 minutes is exhausted, a customer can continue using the service on a paid basis, for which subscription plans are available in the denomination of Rs 20, Rs 30, Rs 50 and Rs 70 for validity of 30 minutes, 60 minutes, 120 minutes and one day, respectively. BSNL has also planned to expand the coverage of Wi-Fi facility to other Ghats like Rajendra Prasad Ghat, Man Mandir Ghat, Tript Bhairvi Ghat, Mir Ghat, Lalita Ghat and Manikarnika Ghat [43].

Digital locker launched- The Department of Electronics & Information Technology (DeitY) has launched an Aadhaar-based e-locker service for storing documents. Users will be able to store electronic versions of important documents like birth certificates, voters ID cards, university documents etc in the e-locker. They can also electronically sign these documents with the e-sign facility and can share them with government organizations or other entities whenever required [44].

SRCC Business Conclave- On 12th February 2015, a business conclave was organized by the student union of Shri Ram College of Commerce, Delhi University. On this occasion IT minister Mr. Ravi Shankar Prasad addressed the students on the emerging IT revolution and Digital India and the steps being taken by the Modi government for connectivity. He had a great interaction with a large young crowd who also asked him a lot of questions [45].

January 2015

India@Digital.Bharat Report- On the occasion of 9th India Digital Summit of the Internet and Mobile Association of India (IAMAI), Mr. Ravi Shankar Prasad released the IAMAI & The Boston Consulting Group (BCG) report India@Digital.Bharat which suggests measures to government to facilitate growth of Internet economy from about \$60 billion at present to \$200 billion by 2018. According to the report, India's Internet economy can grow up to five per cent of the GDP by 2020 on account of the fast paced growth in computer literacy and mobile internet. The report further estimates that the

growth in the Internet economy will create nearly 1.5 million -2 million job opportunities by 2018 compared to the present employment of 400,000-500,000. Meanwhile, Internet users in India will jump from 190 million as of June 2014 to over 550 million by 2018, including 210 million subscribers from rural areas [46].

23rd Convergence India 2015- At 23rd Convergence India 2015 Expo over 120 senior executives exchanged views on topics namely, Green Telecom in Digital India, TV white space & it's utility for mobile services, M2M Adoption, OTT- Transforming the future of TV and TV Vas—Drive for growth of Digital TV. The 2015 exhibition has attracted over 400 companies and their CEOs from 30 countries including Australia, Canada, China, Japan, Norway, Singapore, South Korea, UAE, UK, USA, to name a few showcasing the latest trends and technologies in broadband, telecom, cable, satellite, digital India, cloud computing, VAS, LTE Networks etc [47].

December 2014

Karnataka government launches mobile governance platform- The Karnataka government unveiled a multi-modal e-governance platform through which citizens can access as many as 4,500 services on a mobile phone. The Karnataka MobileOne platform facility can be used to pay utility bills, property tax, book railway and bus tickets or file income tax returns. MobileOne also plans to integrate digital media and advertising in the future in order to enable a self-sustaining model through advertising revenue, user fees and subscription models. The MobileOne platform was developed in a public-private partnership mode with mobile value-added services provider IMI Mobile. While inaugurating this initiative President Mr. Pranab Mukherjee has said that “The Digital India programme launched in August this year envisages the creation of a digitally-empowered society and knowledge economy by breaking the divide between digital ‘haves’ and ‘have-nots’. One of the components of this programme is the availability of government services in real time from mobile platforms”. As many as 500 government-to-citizen services and over 4,000

business-to-consumer services have been integrated into the MobileOne platform. Besides, it will also employ geo-tagging for a government-citizen engagement initiative through which users can notify authorities of non-functioning public services through photographs [48].

Intel launches 'Digital Skills for India' initiative- Intel launched a new initiative called 'Digital Skills for India' that aims to empower people with locally relevant digital tools and services. Under the initiative, Intel has introduced Digital Skills Training Application that is comprised of modules on Digital Literacy, Financial Inclusion, Healthcare and Cleanliness in five Indian languages. This application will be available free on the Android Play Store from Dec 6, while a similar offline training module will also be made available in seven Indian languages. Another main highlight of the initiative is partnership with Bharat Broadband Network Limited to build capacity by imparting digital literacy training to key resource persons in the first 1000 Panchayats under the National Optic Fiber Network roll-out in India [49].

SBI opens 385 digital tech centres across India- In support of Prime Minister Narendra Modi's vision to digitize India, Reserve Bank's deputy governor Harun Rashid Khan launched State Bank of India's 385 digital technology learning centres across the country to cover 15000 customers of the bank. Going forward, the bank plans to open digital branches, making all digital content come under digital space [50].

November 2014

Google launches alliance to promote local Indian languages- Google India has initiated an Indian Language Internet Alliance (ILIA), a group of stakeholders in this domain who will help push language content online. The first set of partners of this alliance include media firms such as ABP News, Amar Ujala, Jagran Prakashan, NDTV, Network 18, Times Internet Limited, and others, apart from technology companies and the government-run Centre for Development of Advanced Computing (C-

DAC). On its part, Google launched speech recognition tool for Hindi along with a portal hindiweb.com, which is meant to be a one-stop for popular content-related to entertainment, news and sports, among others. Google is planning to launch similar tools for other major Indian languages such as Bengali, Tamil and Marathi, over the next 15 months [51].

PM launches digital life certificate for pensioners' benefit- Prime Minister Narendra Modi launched "Jeevan Pramaan" an Aadhar-based Digital Life Certificate for pensioners. The Prime Minister, who has given a push for self-certification of documents, said that digital life certificate was another enabling mechanism which would benefit the common man. According to a prime minister's office release, the proposed digital certification will do away with the requirement of pensioners having to submit a physical "Life Certificate" in November each year, in order to ensure continuity of pension being credited into their accounts. The department of electronics and IT has developed a software application which will enable the recording of the pensioner's Aadhar number and biometric details from a mobile device or computer, by plugging in a biometric reading device [52].

NDMC launched Wi-Fi services in Connaught Place- On 17th November 2014, the New Delhi Municipal Council launched Wi-Fi services in Connaught Place, the business hub of the capital. Delhiites visiting the Connaught Place market will now be able to avail Wi-Fi services which were launched by New Delhi MP Meenakshi Lekhi at the Central Park. The civic agency has partnered with Tata Teleservices to provide the service, which will cover the Inner and Outer Circles of Connaught Place. The visitors can avail the facility on their mobile phones and computers by filling in details such as e-mail ID and mobile numbers. A one-time password (OTP) will then be received to connect to the internet. The service will be free of cost for the first twenty minutes and after the free usage time is exhausted, the user will have to do a recharge using recharge cards available at various shops, including Tata Docomo retail outlets, in the area. The recharge cards are

available at Rs 10 for 30 minutes, Rs 20 for 60 minutes, and Rs 50 for 180 minutes of Wi-Fi access [53].

October 2014

Intel And NIELIT: E-Governance Courses- National Institute of Electronics and Information Technology (NIELIT) and Intel have joined forces to offer Post-Graduate diploma courses in e-governance for women in India, kick starting the Digital India campaign and giving it the right platform. Under the memorandum of understanding (MoU) between these two parties, Intel will provide its expertise to NIELIT in charting out the course's curriculum and offer services on the software/hardware front. The said Diploma course will be more focused towards practical learning for women and offer them insight into latest trends in the industry [54].

Microsoft announces local data centres in India- Microsoft CEO Satya Nadella announced that the company would set up local data centres in the country. Microsoft will offer cloud services from its Azure and Office 365 stacks to local business and government clients. Data centres in India will enable access to customers in banking and financial services, as well as the central and state governments, which are restrained by regulations that require data to be hosted within the country [55].

Facebook keen to join Digital India programme- On his first visit to India, Facebook CEO and co-founder Mark Zuckerberg met Telecom Minister Ravi Shankar Prasad to discuss expanding reach of internet by using alternate technology. Facebook wants to connect more people to Internet in India which accounts for the third largest online user base globally after China and the US. After this meeting Zuckerberg said that “Connecting more than a billion people with Internet is not only going to improve lives of people in India but helping innovation and imagination of Indian people will help turn around the world and we are very excited about opportunities in India” [56].

Facebook to launch mobile app for Clean India- Facebook founder and CEO Mark Zuckerberg promised Prime Minister Narendra Modi that the firm would create and launch a mobile application devoted to Clean India, during a conversation where they discussed the PM's pet projects such as Digital India and his desire to use the networking site's use for social causes and prevent its misuse by terror outfits. Facebook is interested in working with the government on providing health and education services to the people. Facebook will help in the creation of the Clean India Mobile App and it would be launched soon [57].

September 2014

IBM keen on participating in Digital India projects- IBM expressed keen interest in participating in India's newly-launched initiatives like Smart Cities and Digital India, as its CEO Ginni Rometty met Prime Minister Narendra Modi at New York. With a global turnover of nearly \$100 billion, IBM is a major player in India and employs a large workforce in the country. The meeting between Modi and Rometty was part of a series of one-on-one meets the Prime Minister had with top business leaders of the US on his last day in New York [58].

PMO App Contest- Google has joined hands with MyGov to roll out a nationwide contest to develop mobile application for the Prime Minister's Office (PMO). The initiative seems in sync with Prime Minister's vision of digital India. By announcing the App contest, the PMO has shown its willingness to create a citizen-friendly, e-governance environment. According to Google India, the contest also aims to showcase how Indians can build a world-class app and bring the PMO to every citizen, thus, ensuring that each and every Indian citizen, living in rural areas or urban cities, can share his/her grievances with the government at the Centre without facing any difficulty [59].

BSNL announces plans to set up Wi-Fi hotspots and mobile wallet services- BSNL has announced plans to focus on establishing Wi-Fi Hotspots and starting mobile wallet

schemes under the National Optical Fibre Network (NOFN) project. Through NOFN the government plans to provide high speed internet connectivity to all 250,000 gram panchayats in India and promote m-governance through this measure. BSNL is also working on a setting up Wi-Fi Hotspots in the Varanasi Ghat area and the famed Bhul Bhulaiya (labyrinth) in Lucknow at the Bara Imambara complex. Work has already begun in these areas and fiber optic cables have started being laid in these places. Along with these initial spots, there are plans to set up Wi-Fi hotspots in public places of significant traffic like universities, malls and other historical sites [60].

Google India signs pact with Andhra Pradesh Government- Google India and the Andhra Pradesh government will launch a number of initiatives aimed at bridging the state's digital divide and enabling skill development, a memorandum of understanding (MoU) signed between the two. Google India will work with the state government to get women and small and medium businesses online and help them benefit from the Internet economy, help the state government make its websites mobile-ready and accessible in the local language, promote internet safety among children and government officials and improve and get more local language content online [61].

Cisco unveils 'Smart City' model for a digital India- Cisco unveiled a "smart city" model to demonstrate how smart networks can play a crucial role in areas like education, healthcare, work and electronic delivery of citizen services. Using Internet of Everything (IoE), Cisco showcased how connected education, connected healthcare, smart buildings, connected transport and smart parking can transform the way cities and communities are designed, built and renewed to ensure economic, social and environmental sustainability. The government plans to develop 100 smart cities by 2022. In the Budget, the Finance Ministry has allocated Rs 7,060 crore for developing these smart cities. Spread over 2.6 million sq ft, the Cisco Smart City is a campus-as-a-city for thousands of Cisco employees in India [62].

August 2014

On 15th Aug 2014 Prime Minister Shri Narendra Modi has shared his vision of Digital India with the nation, Excerpt from PM's first Independence Day speech - The real identity of India had not reached the world, but my dear brothers and sisters, our youngsters, 20-22-23 years old youngsters have mesmerized the whole world with their skills in computers. Our young I.T. professionals have given a new path of making a new identity of India. If our country has this strength, can we think something about the country? Our dream is, therefore, of "Digital India". When I talk of "Digital India", I don't speak of the elite, it is for the poor people. You can imagine what a quality education the children in villages will get, if all the villages of India are connected with Broadband Connectivity and if we are able to give long distance education to the schools in every remote corner of the villages. If we create a network of telemedicine in the places where there is a shortage of doctors, we can have a clear guideline of the way in which health facilities have to be provided to the poor people living in those areas. The citizens of India have mobile phones in their hands, they have mobile connectivity, but can we walk in the direction of mobile governance? We have to move in a direction where every poor person is able to operate his bank account from his mobile, is able to demand various things from the government, can submit applications, can conduct all his business, while on the move, through mobile governance and if this has to be done, we have to move towards 'digital India' and if we have to move towards 'digital India' then we have a dream. Today we are importing electronic goods on a large scale. Friends, you will be surprised that we are bringing in these televisions, mobile phones, i-pads and all these electronic goods. It is a necessity to import petroleum products, oil, diesel and petrol. Second to this is the import of our electronic goods. If we move ahead with the dream of 'digital India' to manufacture electronic goods and become self reliant at least there, how big can be the benefit for the treasury! Therefore, e-governance is what we need to take this idea of 'digital India' forward. E-governance

is easy governance, effective governance and also economic governance. E-governance paves the way for good governance. There was a time when we used to say that the railways provided connectivity to the country. That was it. I say that today it is IT that has the potential to connect each and every citizen of the country and that is why we want to realize the mantra of unity with the help of 'digital India'. Brothers and sisters, if we move ahead with all this then I believe that a 'digital India' will have the potential to stand with the world on equal footing. Our youth have that capability; it is an opportunity for them [63].

Government's eGreetings web portal launched- Communications and IT Minister Ravi Shankar Prasad on Thursday launched the eGreetings portal as part of the Digital India initiative that aims to promote an eco-friendly way of sending greetings by government ministries and officials to colleagues and friends. The portal, launched on eve of India's 67th Independence Day celebrations, has a collection of designs made by the people [64].

Digital India: Narendra Modi's dream to be launched today-Taking forward the promise of making India a better-governed place in the world, the Mr. Narendra Modi led Government has approved the Digital India project worth Rs 1 lakh crore. It has long been Prime Minister Modi's dream to serve India via e-governance. The Digital India project aims to ensure that the Government's services are available to citizens electronically and help people by reducing

paperwork. The best part of this initiative being it will also connect rural regions and remote villages ensuring that they too have high-speed Internet services. According to media reports, the project will be monitored by the Prime Minister himself. The project is expected to be completed by 2019 [65].

India's '.bharat' domain names now available in 8 regional languages- Mr. Ravi Shankar Prasad, Telecommunications and IT Minister unveiled the much awaited dot Bharat domain name. Now individuals who are interested in owning a website with domain name in Hindi will be able to book the name in Devanagari script. The domain name is the result of the labour of The National Internet Exchange of India (NIXI) and the Centre for Development of Advanced Computing (C-DAC) who has been working on it for the last two years. The dot Bharat ccTLD (country code top-level domain) is shared by other Indian languages such as Boro, Dogri, Konkani, Maithili, Marathi, Nepali and Sindhi-Devanagari and the end user can now get domain names in these languages apart from Hindi. This is soon to be followed in the coming months by similar launches in regional languages such as Tamil, Gujarati, Punjabi, Urdu, Telugu and Bangla. On this occasion Mr. Ravi Shankar said e-commerce is going to bring in revolutionary changes in the economic activities of rural India. It will not only generate new jobs but also create large number of business opportunities for all sections of populations in rural India [66].

Digital India Investments and Initiatives

This section I'll start with some excerpts from Prime Minister Narendra Modi's Vibrant Gujarat Summit 2015 speech-“Why India? India has three things to its credit – Democracy, Demography and Demand. This is what you are looking for, and I am sure, you will not find all of them together at any other destination. Just as we need highways, we need I-ways too. Under the Digital India Initiative, IT will be used to drive Government processes to improve service delivery and program implementation, and also to provide broadband connectivity to villages. There are immense possibilities for global investors in India. The process of development we are taking up is not incremental. We are planning to take a quantum leap. It is not limited to one sector or region, it is truly unlimited. And we want to do things in a cleaner and greener way. We are open to ideas, investments and innovations. We are dreaming big; and our dreams are numerous, our dreams can become the seeds of your growth, our aspirations can propel your ambitions. Friends! On behalf of the Government, let me give an assurance. We assure you that we will be available to hold your hands whenever you need us. You will find us standing with you in your journey. If you walk one step, we will walk two steps for you. Let us join hands! Let us work together for progress, prosperity and peace”.

These words of our Prime Minister have created urgency among national and international giant players. Here I'm sharing initiatives taken by these players for Digital India.

GOOGLE

Google has launched 'g.co/digitalindia'- A dedicated platform to capture the growth of digital revolution in India. Google's digital platform will also showcase real stories of entrepreneurs and small and medium businesses and how they're achieving their dreams, goals

and aspirations. Google recently made an attempt to empower companies by announcing an investment of \$20,000 of cloud credits for 1000 startups in 2016. According to Google, this is the single largest investment the company has made anywhere in the world for Google Cloud Services [67].

Google's New Indic Keyboard App Supports 11 Indian Languages- Google has announced the launch of its Indic Keyboard software on the Play Store, thereby providing an option to over a billion Indians in the sub-continent as well as around the world to type in their first language directly, just like they would on a regular PC or Mac. The software reportedly also supports a handwriting mode that is capable of detecting characters written in both Devanagari as well as Latin (English). The software has support for as many as eleven languages spoken in India and the rest of the sub-continent, including Hindi, Bangla, Punjabi, Assamese, Oriya, Gujarati, Marathi, Tamil, Telugu, Malayalam and Kannada. Apart from the support for a vast array of actual Indian languages, the software is also said to support a hybrid input mode – colloquially dubbed 'Hinglish' by combining the words Hindi and English – whereby it will suggest English words while typing, as words like 'smartphone', 'computer', and many medical, geographic and scientific terms either have no Hindi equivalent, or are not used under regular circumstances. Those willing to give Google's latest virtual keyboard app a try, can hit the download link given below [68].

Google and RailTel 'Project Nilgiri'- Under the **project Nilgiri** Google plans to provide free and high-speed Wi-Fi access to railway commuters at over 400 stations in India. Google has partnered with Railtel Corporation to make this project a reality. According to Google's announcement on 17th Dec 2015, the first station to get free Wi-Fi under this scheme will be

Mumbai Central, where testing has already been carried out. Google's free Wi-Fi at Mumbai Central goes live by January, 2016. Google plans to make free Wi-Fi live at over 100 stations in India by the end of 2016. The free Wi-Fi scheme will target stations across each railway zone in India [69].

Google Loon-

What is Google Loon? Project Loon is a research and development project being developed by Google X with the mission of providing Internet access to rural and remote areas. The project uses high-altitude balloons placed in the stratosphere at an altitude of about 18 km (11 mi) to create an aerial wireless network with up to 4G-LTE speeds. Users of the service connect to the balloon network using a special Internet antenna attached to their building. The signal travels through the balloon network from balloon to balloon, then to a ground-based station connected to an Internet service provider (ISP), then onto the global Internet. The system aims to bring Internet access to remote and rural areas poorly served by existing provisions, and to improve communication during natural disasters to affected regions.

(source: wikipedia)

Google Loon status in India- Our government is agreed to partner with Google's Project Loon on a pilot basis and BSNL has been assigned to partner it. IT minister Ravi Shankar Prasad said "As a minister I am open to all the pilot projects for experimentations. All the new technology projects should be given equal opportunity for exploration. In-principle we agree for a pilot project for Project Loon. We are quite open on the project and BSNL will partner with Google for it, my ministry will consult the ministry of civil aviation and other security agencies for the project". Government has rejected Google's Project Loon earlier over fears that it would interfere with cellular transmission and create technical glitches. After careful consideration of every aspect government will decide to proceed with it [70].

Ratan Tata partners with Google and Intel to launch Net initiative for women- Tata Trusts, chaired by Ratan Tata, has tied up with Google and Intel to help women access the Internet in large numbers under "Internet Saathi" initiative. Under the "Internet Saathi" programme, 1,000 specially designed bicycles having connected devices will give villagers an experience of Internet over a period of four to six months. The initiative aims to cover 4,500 villages over the next 18 months, starting with Gujarat, Rajasthan and Jharkhand and targets to reach out to about five lakh women [71].

FACEBOOK

Facebook, BSNL come together to set up 100 Wi-Fi hotspots in rural India- Facebook has partnered BSNL to create 100 Wi-Fi hotspots in rural India to drive digital penetration in the country. Facebook is investing Rs 5 crore per annum for buying bandwidth from BSNL in this joint initiative that also includes IT infrastructure services providers such as Quad Zen and Trimax for equipment and fibre deployment [72].

Facebook launches SME India Council- Facebook has launched the first SME India Council with 12 small business owners from different geographies and varied business objectives. The council is the first such in the Asia-Pacific region, will meet throughout the year to share feedback, discuss new ideas and work with Facebook to build better ads solutions. According to Facebook India, more than 1.99 billion interactions have been made between people and two million small businesses with Facebook Pages in India. Of the 138 million people on Facebook in India (90% on mobile), more than half of them are connected to at least one small business in the country. The SME India Council will meet a few times over the coming months to discuss progress on solutions, business ideas, discuss new successes and challenges and meet the Facebook teams. Some of the 12 small business owners are Amruta Walvekar, director, Wrapistry, Anaka Narayanan, director, Brass Tacks and Maya Chandrasekaran, chief of talent, Babajob.com, among others [73].

Mark Zuckerberg changes Facebook profile image in support of Digital India- On 27th Sep 2015, Facebook CEO Mark Zuckerberg has changed his profile picture in support of Modi's Digital India initiative. The new profile picture put up by Zuckerberg features his own display picture in the background with a pattern having colours of the Indian flag overlaying it [74].

MICROSOFT

Microsoft and Digital India- In the month of September 2015 Microsoft announced the availability of Microsoft Azure services via local datacenter regions in India. As the first public cloud provider from India, Microsoft has opened three new regions – Central India in Pune, South India in Chennai, and West India in Mumbai.

Microsoft Smart Village- Maharashtra Chief Minister Devendra Fadnavis has asked Microsoft CEO Satya Nadella to help the state develop 50 new smart villages in 2016. Microsoft and Mr. Devendra Fadnavis are already working to turn Harisal village into the first "smart village" of the country. In the month of September Microsoft India head Prashant Shukla, district collector Kiran Gitte and the CMO's IT chief Kaustubh Dhawase initiated this process under Digital India program [75].

Microsoft Signed MoU with AP- For utilization of ICT in citizen services the AP government signed a memorandum of understanding with Microsoft India to harness Microsoft Cloud technology. According to the MoU Microsoft India will apply Microsoft Azure Machine Learning and Advanced Visualization to predict and address specific problems in the fields of education, agriculture and eCitizen services [76]. Along with offering assistance in cloud technology, Microsoft will also provide training to the government officials for the better functioning in agriculture, education and citizen services.

Microsoft opened cyber security centre in Gurgaon- Microsoft opened a cyber security centre in Gurgaon, it's a pilot. This cyber security centre is focused on protecting India's critical infrastructure, enterprises, government

organizations from malware and any other kind of security threat [77].

Microsoft launched Edu-Cloud- Microsoft launched Edu-Cloud, a K-12 targeted product combining a digital learning platform on cloud and software solutions for schools, all deployed on Microsoft's Cloud Platform. Edu-cloud is going to provide ERP, SIS solutions and digital library access to schools and at the same time will offer virtual learning platform and teacher training aimed at students and teachers. This will be done by a system preloaded in a Lenovo tab serving as a point of access for all digitized content and Microsoft's other software offerings such as Office 365 and Evernote. Edu-Cloud is expected to reach 60 lakh students and 10 lakh teachers in over 1500 institutions in the next 18 months [78].

ORACLE

A major focus of Digital India is cloud computing. Oracle, which provides customers with all aspects of cloud computing—infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS) is well positioned to contribute in Digital India initiative. Oracle is working right now with 20 Indian states on various initiatives in areas such as education, police modernization, and government financial management including treasury management and commercial tax, among others. It's also working in the "Smart Cities" program. Oracle supports these efforts with approximately 33,000 employees and 11 research and development centers located across the country [79].

CISCO

John Chambers on Digital India- In an interview to livemint.com John Chambers executive chairman Cisco shared his views on Digital India, he said "Prime Minister Modi has probably done the best job I have seen done in terms of outlining a vision and strategy for the country. I've dealt with almost every government leader in the world, but Prime Minister Modi was able to tag all the pieces together—in terms of digital India, what it

means for GDP, job creation, understanding the implications of broadband access for every citizen and how that could change education and healthcare, and especially how you re-skill India to create a million jobs a month, and how you drive this through the system using smart cities, not one or two, but 100, what Make in India really means, and a willingness to listen. He also has the courage to challenge. He told me he wanted India to be the first country that grows GDP at a rapid pace and improves the environment. I am not sure that's a too ambitious goal. Because if you connect everything, you can reduce traffic, you can control emissions, you can change the way natural resources are used. He outlined among the most complete visions I have seen. I have had chance to meet with him a number of times on this. He also understands that this has to be owned by the country's leader. Everybody has unrealistic time frames on how quickly you can do all this. It will take time. Each one of these, Digital India, Skilling India, providing healthcare, etc., is a complex algebraic equation. I think he (Modi) is very realistic. He knows he has to move faster but he also knows he has to get the base right, otherwise you will build it up and it will collapse on you. We are extremely positive on India's approach to this. It is extremely ambitious, but also very realistic" [80].

Cisco Project IndiaG- Cisco has embarked on Project IndiaG to more than double its revenues in India over the next three-five years. For this project Dinesh Malkani President Cisco India and SAARC and his team will focus on smart cities, e-governance and citizen services, mobility, public safety, IoT, broadband access, Defense modernization, community Wi-Fi, among others. In March, the company set up a Cisco India Advisory Board comprising five industry leaders to advise the India leadership team on strategic matters and help the company tap new business opportunities in Digital India. The advisory board will also counsel Cisco executives on future investments and guide the company in addressing customer business priorities [81].

Cisco Smart City- Cisco announced the 'Cisco Smart City' as a blueprint for the future of smart and connected communities in India. The Cisco Smart City, unveiled along with the announcement of the next phase of the company's India site, symbolizes what the digitization of a country means for the future of work, education, healthcare and the electronic delivery of citizen services. As part of the inauguration, Cisco demonstrated the possibilities of the government's Digital India program where infrastructure would be offered as a utility to every citizen, governance and services would be on demand and citizens would be digitally empowered. Using the Internet of Everything, Cisco showcased how connected education, connected healthcare, smart buildings, connected transport and smart parking can transform the way cities and communities are designed, built and renewed to ensure economic, social and environmental sustainability. Spread over 2.6 million square feet Cisco Smart City is a spectacular showcase of how a pervasive physical network infrastructure can easily connect to devices (such as sensors, information access points and mobile devices) and with a high degree of security. The Cisco Smart City also demonstrated how intelligent networks could enable digitally empowered citizens through the availability of government services in real time, online and on mobile platforms [82].

IoE technologies showcased at the Cisco Smart City include the following:

Smart Parking: Cities and companies can manage parking and increase revenue with the ability to offer real-time availability of parking spots, guide drivers to open parking spots and change pricing based on demand. Smart parking solutions can help cities reduce the estimated 30% of urban traffic caused by motorists looking for parking

Smart Buildings: Smart buildings are built and operated, monitored and controlled for reduced energy and water consumption, reduced carbon emissions, lower costs and a better work environment. Smart building solutions can help cities, companies and citizens reduce the

estimated 40% of energy consumed by buildings worldwide

Remote Expert: Cisco Remote Expert Smart Solution transforms how services such as healthcare, citizen services, retail or banking can be delivered through a superior, on-demand video collaboration experience an immersive, lifelike experience between the user and subject-matter experts wherever they may be located. Remote Expert can be delivered in real time, anytime, anyplace, and on any device

Connected Learning: Cities, companies and educational institutions can use connected learning solutions to improve access to education beyond local resources by using network-based collaboration technologies to improve student outcomes, increase efficiency, enhance safety and security, and expand research capabilities

Smart Work Spaces: Smart Meeting Spaces is a solution to enable employees to collaborate together anywhere, anytime instantly. The Smart Personalized Spaces solution makes work spaces available for employees when and where they need it, on demand [82].

Cisco is working also with states such as Andhra Pradesh and Madhya Pradesh on smart city projects. In May 2015, Jaipur announced its intentions of rolling out digitization initiatives across the city and had said that it intended to transform itself into a smart city over the next few years, with the help of Cisco. In its first phase, Jaipur has created digital infrastructure to offer citizens amenities including intelligent kiosks, wireless broadband, safety and security services, traffic management and environmental updates. JDA has set up a City Infrastructure Management Centre as well as a Response Control Room to manage the city with greater efficiency and effectiveness. In Jaipur's City Infrastructure Management Centre, nearly all the solutions are integrated into a digital platform. The digital platform built by JDA can aggregate data from various sensors and solutions conduct data analytics and support a number of urban services. In this phase, JDA has implemented the solutions in Jantar mantar, Amer, Albert Hall, Jal Mahal, Ram Niwas Bagh, Hawa Mahal,

Central Park and Jawahar Circle. In the second phase of the project another 25 sites expected to be completed by the end of February 2016. The state has also embarked upon a comprehensive and scalable smart grid initiative in the state with the objective of providing a reliable, stable and efficient grid. Towards this, the state initiated various projects under the smart grid platform such as laying of fiber optic backbone, Enterprise Resource Planning (ERP) and substation automation. The Energy Department of Rajasthan has now embarked upon creating three classes of transformations: upgradation and modernization of electrical transmission infrastructure, addition of the digital layer to leverage benefits of ICTs and deployment of smart solutions and tools for intelligent operations, which are the essence of the smart grid and are, needed to provide stable, secure and smart transmission grids [83] [84].

Cisco India unveils new networking products- On 11th Dec 2015, Cisco unveiled three networking products, designed and developed by its Indian arm for digital transformation of large web-based enterprises. The Cisco Network Convergence System (NCS) 1000 Series, Cisco Network Convergence System (NCS) 5000 Series and the 5520 and 8540 Series Wireless LAN Controllers were showcased at its iExpo 2015. In FY 2015, Cisco spent approximately \$6.3 billion on R & D while Cisco India helped in filing 1,000 global patents in the last 20 years of which 600 patents were used for innovations across major technologies [85].

Cisco India Summit 2014- At Cisco India Summit 2014, the company announced partnership with IITL to support 'Digital India' initiative. The company also launched new networking products to contribute to the 'Make in India' project. The event highlighted Cisco's initiative for playing a bigger role in the developmental programmes like the 'Digital India' and 'Make in India'. As India is making many decisive moves for empowering its population by making the country a digital economy, Cisco's top leadership is exploring the possibility of deploying its cutting edge technology in various areas.

During the summit, Cisco showcased three networking products, which have been conceptualized, architected and designed in India. It unveiled two routers – ASR (Aggregation Services Router) 920-O and ISR (Integrated Services Router) 800M and MDS (Multilayer Director Switch) 9250i. These products are developed and built by company's engineering and systems division based in Bangalore [86].

Cisco on Indian Startups- Cisco Systems, Inc has announced that it is going to invest \$240 Million in the Indian Startup sector. It wants to associate with accelerators, startups, researchers, ecosystem partners and developers. The company will invest in the startups, which are working on the products with global appeal in different verticals like mobile tech, Internet of Things (IoT) and cloud computing. The president and Engineering & India Site leader, Amit Phadnis said, "We are not just investing in startups with returns in mind, but we are looking to partner with startups that build product which can be used by Cisco. We are looking for startups that create solutions for smart cities with digital innovation. We are committed to working with start-ups, accelerators, developers, researchers, ecosystem partners and the venture community to accelerate India's digital transformation" [87].

HP

NASSCOM partners HP to launch mobile classrooms in five cities in India- NASSCOM Foundation and HP have joined forces to push government of India's National Digital Literacy Mission (NDLM) by donating five mobile container classrooms. The shipping containers converted into mobile classrooms will be deployed in Mumbai, Pune, Chennai, Bangalore and Rajasthan with the capacity to train 6,000 beneficiaries on digital literacy. The cloud enabled and readily deployable shipping container classrooms will be equipped with technology, products, internet and HP LIFE e-learning solutions. The 40 foot X 9 foot container classrooms come with a host of benefits. Once the beneficiaries around an area where the mobile classroom is located get

trained, it can be moved to a new location to offer these benefits to a new set of people in need. The financial burden of construction and real estate associated with a brick and mortar classroom are done away with in this portable format. HP will facilitate the training infrastructure cost, trainer's cost and other operational expenses of the learning centre. This initiative focuses on helping people living in economically backward areas to become skilled in availing the benefits offered by the social media, e-commerce, internet and others and get business and vocational training [88].

Innovation Hub in AP- Top management of HP, Cisco and NASSCOM announced that they would be setting up innovation hubs in AP. NASSCOM president R Chandrasekhar said that discussions between the AP government and the trade association for IT companies were in advanced stages for setting up of a startup warehouse in Vizag. He also said that the state could emerge as a leader in cyber security solutions if it focuses on this sector as it is one of the major areas of concern for every state [89].

Titan and HP launched smartwatch- In the month of January 2016 titan in collaboration with HP launched India's first made in India smartwatch "Juxt". Titan Juxt is OS neutral and so pairs with both Android and Apple devices. A small OLED display on the honeycomb-design dial alerts its wearer to incoming calls, texts, emails, social media notifications, shows the time in upto five pre-set time zones and has a basic pedometer tracking function. It is tethered to a smartphone via an app specifically designed for this watch. Titan and HP will push out over-the-air software updates (downloadable via the Internet) [90].

Kerala selects HP to provide digital healthcare solution- The Department of Health and Family Welfare, Government of Kerala, has selected HP India to create an e-Health IT platform to enable the delivery of a digital healthcare solution and services for Health Care facilities across Kerala. The digital healthcare solution will help healthcare practitioners to improve patient care and focus resources.

DHFW chose HP to design and build a digital healthcare delivery roadmap for the 1,250+ facilities around the region. The roadmap outlines the steps to digitize the entire state healthcare delivery process in stages or phases starting from basic capturing of demographic details of every patient to complete Electronic Medical Record (EMR) creation [91].

INTEL

Ek Kadam Unnati Ki Aur initiative- On 18th Nov 2015, Intel launched a centre in a Telangana village under ‘**Ek Kadam Unnati Ki Aur**’ initiative. The first such Digital India Unnati Kendra has come up in Nadimpalle village in Mahabubnagar district. It will be used to create the framework for the Telangana model digital village. Besides providing various citizen services under the Telangana government's e-panchayat programme, the centre will provide devices, relevant local content and training for citizens thereby creating opportunities for development and empowerment. Company would help local entrepreneurs to set up Unnati centres that would go to villages and spread digital literacy. Intel has roped in Micromax, HP, Snapdeal and Shweta Computers and Peripherals as partners for the initiative. Intel is planning to work with other 10 states to drive technology enabled transformation at the villages [92].

The Intel & DST Innovate for Digital India Challenge- The Innovate for Digital India Challenge is an initiative by the Government of India in association with its technology partner Intel. This program aims at fostering innovation that would benefit the nation's technological endeavours as well as economy. From inspiration to innovation, the innovators will be provided technological assistance by Intel and expert guidance by IIM Ahmedabad's Centre for Innovation Incubation and Entrepreneurship cell to develop solutions that could be implemented in the Indian market [93].

Innovate for Digital India challenge was launched in April 2015 drew more than 1,900 entries from all over India. On 19th November 2015, Intel revealed the top 10 teams in the Intel

and DST Innovate for Digital India challenge at an innovation event in New Delhi. The 10 finalists presented innovative devices and applications in the fields of healthcare, agrotech, e-governance, and online education. Notable innovations came from Bhubaneswar based Phoenix Robotix, which has developed a low-cost product called Aurasure, which measures the environmental pollutants and particulate matters and feeds the real time data. Teams with digital healthcare innovations included Chennai based Asha+, a diagnostics provider, Pune based Embryo, which has made a device called CerviScope that helps with early screening for Stage 0 and Stage 1 cervical cancer and Bengaluru based Tjay, an IoT-based wearable platform for people with epilepsy and other chronic disorders. E-governance based innovations included Airpaper from Hassan, Karnataka, which has built a digital data distribution platform, Bengaluru-based Aapna Seva, an e-governance player, leverages the Aadhaar ID, while Chennai-based Haqdarshak is a mobile technology and service delivery platform that helps citizens discover, apply for, and benefit from government and private schemes. Other winners included Delhi based DEIAB, which provides a Digital-Education-in-a-Box solution that, runs on solar power, Bengaluru based Jayalakshmi Agrotech, which develops crop-specific mobile applications for farmers in regional languages, and Ahmedabad based Indian TTS, who have developed a regional Text-to-Speech engine [94].

Digital Skills for India Program- Intel will work with the Indian government to create digital literates across 1000 panchayats. As part of its 'Digital Skills for India' programme, Intel India has unveiled a digital skills training application, which includes modules on digital literacy, financial inclusion, healthcare and cleanliness in 5 Indian languages. The app will be available free on Android Play Store from December 6 in Hindi, English, Marathi, Gujarati, Tamil and Kannada. A similar offline training module will also be made available in seven Indian languages [95].

Intel signed Pact with C-DAC- Intel signed an agreement to collaborate with C-DAC (Centre for Development of Advanced Computing) to train 20,000 developers over the next seven years to build applications for High Performance Computing, to enable India to be a part of the select league of advanced countries with the top supercomputing machines in the world [96].

Digital Wellness Online Challenge- Intel in collaboration with National e-Governance Division (NeGD) launched the Digital Wellness Online Challenge, an online quiz aimed at sensitizing and creating a culture of digital wellness among children from classes 6 to 12. The online quiz promotes awareness on the benefits as well as potential threats of Internet-based interactions and familiarizes students with different types of cyber threats, consequences and protective measures. Those who complete the first level will get a Certificate of Participation, while students who answer all questions of the first level correctly and also complete the second level will be awarded a Certificate of Merit [97].

Intel India Maker Lab and Intel India Maker Showcase- On 29th August 2015 Intel India unveiled the Intel India Maker Lab and Intel India Maker Showcase, furthering its commitment to help realize Government of India Digital India and Make in India vision by accelerating innovation in India. Intel India Maker Lab will focus on hardware design by boosting product innovation and enhance maker capability for startups in India. While Intel India Maker Showcase will let visitors and participants see, feel and experience the products and solutions from the Intel India Maker Lab along with other innovations from Intel. The Intel India Maker Lab will be open to aspiring and existing entrepreneurs who are pursuing new hardware products and solutions in Internet of Things, Mobile Devices as well as other compute domains. They will be provided with development kits, reference boards, hardware and software tools to develop and test their ideas and bring their products and solutions to life, as well as mentoring and business support. The Intel India Maker Lab plans to support ten startup companies initially [98].

Intel And NIELIT signed MoU for E-Governance Courses- National Institute of Electronics and Information Technology (NIELIT) and Intel have joined forces to offer Post-Graduate diploma courses in e-governance for women in India. Under the memorandum of understanding (MoU) between these two parties, Intel will provide its expertise to NIELIT in charting out the course's curriculum and offer services on the software/hardware front. The said Diploma course will be more focused towards practical learning for women and offer them insight into latest trends in the industry [54].

IBM

IBM India Software Lab- IBM's India Software Lab (ISL) is developing solutions with an aim of contributing to the Digital India programme, in multiple areas. The company's latest technology innovations can find applications in multiple sectors like healthcare, education, finance and disaster management. The IT giant has unveiled a new solution in the education sector which enables personalized learning on cloud. It is already in dialogue with a few educational institutions on how to disseminate the course curriculum on the cloud. Similarly, India Software Lab has created a new solution called the digital locker. This will provide dedicated personal storage space, linked to each resident's Aadhaar number. The programme aims to enable citizens to share e-documents with government agencies thus eliminating the need for hard copies of notarized documents [99].

IBM sets up public data centre in Chennai- Technology giant IBM launched public data centre in Chennai to tap into growing demand from financial services and government sectors. Part of the company's global investment of \$1.2 billion, it is IBM's second such centre in India. The first one in Mumbai offers private cloud computing services [100].

NASSCOM announces digital hub on IBM cloud- In an effort to accelerate digital transformation at the start-up level NASSCOM in partnership with IBM, launched

Techstartup.in Delhi on IBM's cloud platform Bluemix. Techstartup.in will be updated regularly using tools from Bluemix, IBM's cloud platform that includes tools for social, mobile, analytics, cloud integration, Internet of Things, Watson cognitive computing and more. Additionally, as part of its commitment to the global startup community, IBM will offer up to \$120,000 of free IBM Cloud credits for local qualified startups to use as they build their businesses on IBM Cloud. The platform will offer a search engine and database which will profile every city-based tech company and investor, a continuously updated list of tech and start-up job openings, a citywide tech event and class calendar, an interactive map of tech companies and start-up resources [101].

RELIANCE

Reliance's commitment on Digital India Initiatives- On 1st July 2015, at the launch of Digital India Week, Reliance Group chairman Anil Ambani announced an investment of Rs. 10,000 crores toward "Digital India" over the next few years to enhance broadband delivery and cloud-enabled platforms. Speaking at the launch of "Digital India Week" Mr. Ambani said that Reliance Communications will double its data centre capacity to 1.2 million square feet over the next few years to play a critical role in the initiative [102].

On this occasion Reliance Industries Chairman Mukesh Ambani has also committed an investment of Rs. 250,000 crores on "Digital India". He said that "we at Reliance will invest over Rs. 2,50,000 crores across the Digital India pillars, I estimate Reliance's 'Digital India' investments will create employment for over 500,000 people". He further said his group, under the Reliance Jio platform, will roll out an internet protocol-based wireless broadband infrastructure across all 29 states in India. Reliance Jio will also set up a nationwide distribution network for 150,000 small vendors to sell and service devices [103].

Reliance Jio soft launches its 4G network - On the occasion of the 83rd anniversary of Reliance founder Dhirubhai Ambani, Reliance Jio soft

launches its 4G network. Reliance Jio is set to begin a large scale pre-launch test of its nationwide network with its large employee base of approximately 70,000 employees. With true 4G, your calls seamlessly switch from your mobile data connection over the LTE network, to your Wi-Fi connection at home. In fact, a true 4G network such as Jio's enables seamless high quality video calls, with up to 7-way conference calls and 4-way video conferencing. To add to the benefits, the concept of roaming is taken away as all communication is via data [104].

TATA

Ratan Tata on Digital India- "The transformation to a digital economy has already taken place, firmly. It's quite heartening to see what it has done to the average and less privileged Indian, it's given them stature, ownership and identity. It has transformed the marketplace. We have a potential market for a billion smartphones, and those who can upgrade to smartphones as time goes on will do so. That's the vehicle for buying; so many people can never be reached in the brick-and-mortar form. So, what digital India has done is to put a retail outlet in your pocket. And, as more and more Indians get involved with the Snapdeals, Flipkarts, Amazons and Googles of this world, India is going to blossom into a huge consumer marketplace. Now that's not the metrics but about the logistics reach. It is a transformation that has already taken place, it's not a bubble and it is there to grow. There will be ups and downs in individual companies, but I think digital India is here to stay" [105].

Tata Mutual Fund plans scheme on 'Make in India', 'Digital India' drive- Tata Mutual Fund plans to launch two new schemes based on 'Make in India' and 'Digital India' initiatives. Besides, Tata MF plans to launch four schemes focused on resources and energy, pharma & healthcare, banking and financial services and consumer spaces. The investment objective of the open ended schemes is to seek long-term capital appreciation by investing predominantly in underlying equity oriented sectoral mutual fund schemes. These schemes are aimed at investment in equity and equity-related

instruments of the companies engaged in the sectors such as consumption oriented, industrial & utility, information technology, banking and financial services and pharma & healthcare [106].

Ratan Tata partners with Google and Intel to launch Net initiative for women- Mr. Ratan Tata at the launch of "Internet Saathi" an initiative to deepen Internet usage among rural women, has appreciated the Digital India and said that "a digitally connected India will bring "tremendous power" in the hands of citizens by connecting them to the rest of the world. I'm delighted that the Prime Minister has decided to give so much preference and priority to the fact that India will be a digitized nation". Tata Trusts, chaired by Ratan Tata, has tied up with Google and Intel to help women access the Internet in large numbers under this initiative. Under the "Internet Saathi" programme, 1000 specially designed bicycles having connected devices will give villagers an experience of Internet over a period of four to six months. The initiative aims to cover 4,500 villages over the next 18 months, starting with Gujarat, Rajasthan and Jharkhand and targets to reach out to about five lakh women [71].

TCS

TCS gets new futuristic centre- Tata Consultancy Services (TCS) has set up a centre of excellence (CoE) to focus on creating futuristic technologies as part of the larger Digital India drive. The new research and development (R&D) hub, called the NextGen Technology CoE, will be based at its Hyderabad campus and house around 200 engineers. The company said the aim of the new centre would be to help define future standards and collaborate with academic institutes and open source communities. The primary focus of the CoE will be on emerging communication technologies such as Software Defined Networks (SDN), Network Function Virtualization (NFV), 5G and Wireless LAN (WLAN) [107].

TCS announced 60000 new IT jobs for Digital India- Tata Consulting Service has released the

announcement of a new 60000 IT / Software jobs to hire for Digital India in 2015-16. Tata Group's Cyrus Mistry said the company will hire 60,000 IT professionals this year [108].

AIRTEL

Airtel Digital India Investment- On the occasion of Digital India Week launch, Mr. Sunil Bharti Mittal, CMD, Bharti Airtel has said that "the company is planning to invest over Rs 100,000 crore (over \$16 billion) over the next five years for deeper infrastructure for rural and urban India and 4G to the masses, e-education, e-healthcare and manufacturing". The company will also collaborate with various manufacturers around the world to start manufacturing in the country to provide electronic products at the most affordable rates and reduce the burden of electronics import in the country [109].

Bharti Airtel partners with Madhya Pradesh government for 'E-Shakti'- Bharti Airtel announced its partnership with the Madhya Pradesh government for one of its Digital India Week initiatives. As part of this, the company rolled out 'E-Shakti', a scheme to build Internet awareness and literacy among women in Madhya Pradesh. On this occasion a training session was also conducted for over 300 girl students. The training module, which includes elementary knowledge on internet, looks to empower women by equipping them with an operating knowledge on internet. The first phase will be conducted across six districts of Madhya Pradesh - Bhopal, Dewas, Gwalior, Damoh, Dhar and Satna [110].

Airtel Digital TV launches 'Made in India' set-top boxes - In an effort to support the government's Make In India campaign for locally made products, Airtel Digital TV has announced the launch of its first indigenously manufactured set-top-boxes. The Made in India set-top-boxes will be available in HD to begin with and production of other varieties will follow later. Conceptualized and designed in India, the HD set-top-boxes will be manufactured in Ranjangaon, Pune. The product will be based on an in-house design by MyBox Tech (a subsidiary of Hero Electronics) and ST

Microelectronics (a multinational manufacturer of Integrated Devices and semiconductors). The India made Airtel Digital TV HD+ set-top-box will offer full HD 1080p support, MPEG-4 video with Dolby Digital Plus Surround Sound, 5X picture clarity, unlimited recording (via USB-drive) and USB-based Wi-Fi connectivity for on-demand, Anytime TV and interactive gaming. This move makes Airtel Digital TV the latest corporate to join the government's Make in India initiative contributing to its growing proliferation across sectors [111].

TECH MAHINDRA

ARPN 3.0- ARPN 3.0 software was launched by Defense Minister Manohar Parrikar as part of the 'Digital India Week', it is developed jointly by the Army Software Development Centre (ASDC) and Tech Mahindra. It is an upgraded version of ARPN 2.0, which has been used to partially digitize the records. The software will digitize details of soldiers, including personal documentation, unit administration, salary, leave, transfer and postings, besides various reports and returns. The software would be used across 45 of the Army's record offices in the country in a year. Other long-term plans of the army include developing automation applications for equipment procurement, storage, maintenance, logistics management and a geographic information system (GIS), connectivity for which is provided through the secure Army Data Network, available to all units of the Indian Army [112].

Mahindra Group launches 'MoboMoney', India's first contact-less digital payment ecosystem- Tech Mahindra announced the launch of India's first contactless digital payment ecosystem, branded MoboMoney. MoboMoney is a prepaid wallet issued in the form of an NFC (Near-Field Communication) Contactless Tag. It can be used to 'Tap n Pay' on a network of NFC enabled Merchant POS, thus allowing customers without an NFC-enabled phone to enjoy the simple tap and pay experience to purchase goods [113].

Tech Mahindra launches Smart City solutions- Tech Mahindra launched SDN and

NFV based solutions at the MWC 2015. The new suite promises to address the ever changing network scenarios and demands in building the smart cities. As a part of this suite of solutions, Tech Mahindra has developed a carrier grade Virtual Evolved Packet Core (vEPC) solution that scales independently for control and data plane surges. Tech Mahindra's 3GPP compliant vEPC comes with a custom developed VNF manager that enhances virtualization platforms for carrier grade requirements of virtual network functions. The company believes, this would result in significant reduction in capex as vEPC runs on commodity x86 hardware, provide for a highly scalable and flexible solution and ensure effective resource utilization [114].

CODE FOR INDIA Hackathon 2015 – Making an Impact for Digital India in 15 hours- Tech Mahindra is sponsored Code for India Hackathon 2015 at Tech Mahindra's Noida Facility. The main aim of this Hackathon is "Think Local, Hack Global", Code for India is one of the fastest growing tech communities that is committed to building scalable technological solutions for non-profit organizations that are solving real challenges in India. The Code for India Hackathon 2015 is being hosted in honour of Prime Minister Narendra Modi's visit to the Silicon Valley [115].

TWITTER

Twitter Samvad- Government partnered with Twitter to launch Twitter Samvad service that will deliver tweets from several politicians, including Prime Minister Narendra Modi, and departments such as the railways as SMSs on mobile phones. The Twitter Samvad service will be powered by ZipDial, the Bangalore-based marketing platform that was recently acquired by Twitter. People can make "missed calls" to selected phone numbers to receive the tweets as SMSs. Sixteen Twitter accounts have been associated with the service, including @NarendraModi and @PMOIndia, the two handles used by the Prime Minister, @adgpi, the official handle of the media office of the defence ministry, @RailMinIndia, the handle of the railway ministry, and the handles of external affairs ministry spokesman Syed Akbaruddin,

West Bengal chief minister Mamata Banerjee and Bihar chief minister Nitish Kumar [116].

Railway Ministry and Twitter ‘Innovation in administration’- The railway ministry is taking the digital India initiative seriously and helping the needy citizens reaching out through Twitter. These days if a passenger is facing some difficulty during his journey on Rail, he tweets railway ministry and receives prompt response from railway administration. We have heard a number of such incidents like...A man traveling with his unwell father received extraordinary help when his train stopped at his destination in Rajasthan. He had tweeted asking for a wheelchair and assistance to take his father out of the train during a short halt at Merta Road station. Mr. Jain, a businessman, found the station master, a few porters and railway staff waiting with a wheelchair when the train arrived. A senior railway ministry official said the staff responded immediately to Mr. Jain's tweet and escorted him and his father out of the railway station. A woman passenger being harassed on a train in Maharashtra got an instant response to her tweet asking the railway minister for help. Namrata Mahajan had sent an SOS to the twitter handle of Suresh Prabhu. "@RailMinIndia plz plz help in train no 18030. One male passenger harassing me at Shegaon. I am in train and terrified," she tweeted. Ms Mahajan had not given details of the train she was travelling in. The ministry tweeted back asking for her train details and seat number. As the train reached Bhusaval station 40 minutes after Ms Mahajan's tweet, she found personnel of the Railway Protection Force waiting for her. The alleged harasser was shifted to another coach [117]. Such incidents shows that how a government service can get improved with the help of digital and social media platform, I would say railway ministry has set an example of ‘innovation in administration’.

Twitter launches ‘Make in India’ Emoji- Our government became the first non-US based brand to have a Twitter emoji ‘#MakeInIndia’ which aims to promote the country as a global manufacturing hub.... As a key highlight of this campaign, an emoji of a black lion on an orange background, a version of the national

programme’s official logo, will now appear next to the #MakeInIndia hashtag in any Tweet worldwide [118].

Twitter Handle of Panchayati Raj Ministry- Union Rural Development Minister Chaudhary Birender Singh launched a mobile app and official Twitter handle of the Ministry of Panchayati Raj during Digital India Week. The initiatives and programmes as well as important development of the ministry will be communicated through the Twitter handle "@MoPRInida" and the mobile app "m-asset" can be used by citizens to capture photographs and geographical coordinates of various assets available at Gram Panchayat level. Since Panchayats are the government interface for majority of population of the country living in rural India, the ministry has advised all states and union territories to actively engage Panchayats during the DIW [119].

SNAPDEAL

Snapdeal becomes the knowledge partner for NIELIT led courses on Digital Marketing- Snapdeal, has signed an MoU with National Institute of Electronics and Information Technology (NIELIT), Department of Electronics and IT (DeitY), Ministry of Communications and IT, to roll out digital marketing courses for small and medium sellers and artisans across India and enable them to take advantage of e-commerce opportunities. NIELIT is actively engaged in the development of qualified human resources in the areas of IT, Electronics, Communication Technologies, Hardware, Cyber Law, Cyber Security, IPR, GIS, Cloud Computing, ESDM, e-Governance and related verticals. As part of the Digital India initiative, NIELIT has been undertaking various Capacity Building activities in Information and Communications Technology. Snapdeal has a growing seller base of 100,000 sellers and has a deep understanding of the challenges that SMBs face while looking to expand their business through online channels. Drawing synergies from each other’s areas of expertise, Snapdeal and NIELIT are partnering to build and launch digital marketing courses which will educate and

train SMBs on the finer nuances of selling online [120].

Snapdeal and IndiVillage initiative- Snapdeal has entered into a partnership with IndiVillage, a social enterprise that works on creating economic opportunities for women and youth in rural India. IndiVillage runs a rural BPO where it provides training and employment on information technology functions like data entry operations, online cataloging, content management, image tagging and transcription services among others. With strength of 40+ people, 70% of them being women, the rural BPO offers both full time and part time employment. Under this partnership, sellers on Snapdeal can cost effectively outsource their imaging tagging, transcription and content development for product descriptions to IndiVillage, hence creating significant rural employment and skilling opportunities [121].

SBI and Snapdeal MoU- SBI entered into an agreement with Snapdeal to finance manufacturers and sellers from the small and medium enterprises (SMEs). After signing the MoU with Snapdeal, SBI chairman Ms. Arundhati Bhattacharya said “under the scheme, the bank will provide loans to SME manufacturers and sellers at 11.35% to 13.35% rate, which would be determined by the credit worthiness of the sellers. Financing will help sellers ramp up productions, and online selling facility would provide greater market access to them. Thus, it would facilitate the Prime Minister’s Digital India and Make in India campaigns” [122].

Digital India MoUs

I observed that Prime Minister Narendra Modi's foreign trips are a favourite topic of discussion among critics and perception makers, but the reality is different. This section covers information about those MoUs and agreements that are signed during Mr. Narendra Modi's foreign tours and as a part of his foreign policy. I have included only those MoUs/agreements that will have a direct or indirect impact on Digital India particularly those that will promote entrepreneurship, innovation, research, MoUs in telecom and broadband sector, MoUs for smart cities/villages, Mobile/Cloud technology and EODB (Ease of Doing Business) related. Because I believe that these factors will influence the Digital India programme.

INDIA AND US

Key Agreements:

--The first MoU between Centre for Cellular and Molecular Platforms and the California Institute for Quantitative Biosciences is to develop Indo-US Life Science Sister Innovation Hub so as to enhance science-based entrepreneurship, research, academia and businesses by leveraging each other's ecosystems [123].

--Department of Biotechnology and Prakash Lab, Stanford University signed another MoU on Foldscope a frugal science innovation that has emerged from a lab of an Indian with majority of Indians working in this laboratory. The lab will work with DBT to further develop and deploy the products they develop [123].

--National Association of Software and Service Companies (NASSCOM) and the Indus Entrepreneurs signed a MoU to collaborate in a mutually satisfactory form and manner to support the creation of a vibrant ecosystem to foster technology entrepreneurship in India and Silicon Valley [123].

--IIM Ahmedabad's Centre for Innovation and Entrepreneurship (CIIE) and Lester Centre for Entrepreneurship of the Haas Business School of the University of California, signed an MoU to collaborate on mutual incubation, and support each other's activities of mutual interest [123].

--CIIE also signed an MoU with Los Angeles Cleantech Incubator to extend NGIN Membership benefits to CIIE. The CIIE /LACI NGIN Landing Pad Programme is a reciprocal initiative that enables entrepreneurs and innovators in the cleantech space to gain access to the California and Indian markets. The programme will assist early and growth stage cleantech companies with market expansion through partnerships and funding opportunities in California and India [123].

--IIM Ahmedabad's CIIE signed an MoU with Tata Trust for founding partner for the Bharat Fund, which will provide seed funding to Indian entrepreneurs [123].

--CIIE also signed an MoU with Google to support technology and impact entrepreneurs through strategic support [123].

In January 2015, President Obama and Prime Minister Modi decided to elevate the bilateral commercial and economic partnership by establishing the first-ever U.S.-India Strategic and Commercial Dialogue (S&CD). The S&CD is the signature, annual forum for policy discussions between the United States Government and the Government of India.

Below are the key highlights:

Launching An Innovation Forum- The United States and India will launch a private sector-led Innovation Forum. The Forum will consider a set of rotating topics to ignite and scale innovation, increase related two-way investment and trade, support the advancement of small and medium-sized enterprises (SMEs), and identify

where specific skill sets are needed to propel innovation forward. The Innovation Forum will be memorialized in a broader Memorandum of Understanding related to innovation and entrepreneurship between the India and United States.

Investment Promotion: The U.S. Department of Commerce’s SelectUSA initiative and the Silicon Valley chapter of The Indus Entrepreneurs (TiE) signed a memorandum of intent on September 18 to work together to provide Indian entrepreneurs the data and assistance they need to facilitate their expansion into the United States. SelectUSA will lead the first-ever “India Road Show” to New Delhi, Mumbai, Chennai, and Kolkata on October 13-16, 2015 in order to offer U.S. state, local, and regional economic development organizations the opportunity to directly market their locations to potential investors throughout India.

Participation in the Americas Competitiveness Exchange (ACE) for Innovation and Entrepreneurship: The United States has invited the Government of India to participate in the United States Department of Commerce’s ACE program. Through ACE, senior Indian commercial and economic decision-makers have the ideal opportunity to establish long-term global and regional partnerships and to see the results of economic development initiatives in the Americas that are strengthening innovation and entrepreneurship ecosystems.

Information and Communication Technology Working Group: The United States and India held the first meeting of the U.S. – India Information and Communication Technology Working Group where the U.S. put forth a draft work plan to facilitate collaboration and development in support of Prime Minister Modi’s “Digital India” initiative.

Smart Cities Infrastructure Business Development Mission: The United States Department of Commerce’s Deputy Secretary will lead a Trade Mission to further smart cities development in India, introduce U.S. technologies and solutions to boost the energy efficiency of India’s infrastructure, and support

efforts to build the commercial relationship in sectors that contribute to shared environmental objectives. In advance of this mission, the Deputy Secretary of Commerce co-hosted an event with the Federation of Indian Chambers of Commerce and Industry and 32 Advisors on September 21 to foster collaboration between Indian and US businesses on specific infrastructure and smart cities opportunities. The Trade Mission will include visits to New Delhi, Mumbai, and Chennai, and is scheduled to take place on February 8-12, 2016.

Indian Smart Cities Participation in NIST Global Cities Teams Challenge 2.0: The United States invited the Government of India to participate in the next round of the Global City Teams Challenge (GCTC) organized by the United States Department of Commerce’s U.S. National Institute of Standards and Technology (NIST). The next round’s objective is to encourage deployment of technologies to show measurable quality-of-life improvements. The Challenge facilitates partnerships among: city and community planners and project managers to identify common issues, share solutions, and design new approaches; technology innovators and providers to integrate technologies and create standards based platforms suitable for use across sectors such as energy, environment, transportation, resilience, and health care; and scientists, engineers, and technologists to translate the results of smart city R&D into practice. Participants in the Challenge will also work together with other international counterparts in developing a smart city framework and standards and technology roadmaps for interoperability.

The India-U.S Infrastructure Collaboration Platform (ICP): The ICP is a cooperative, interagency effort between the Government of India and United anchored by the United States Department of Commerce and the Indian Ministry of Finance and operated in concert with our two private sectors, to promote U.S. private sector engagement in India’s infrastructure growth and modernization. This effort develops business opportunities by matching unique U.S. company capabilities with India’s specific infrastructure needs, in areas such as power,

transportation, water and sanitation, safety and security, and health care.

Invitation for Smart Cities Comprehensive Economic Development Strategy (CEDS) Program:

The United States invited the Government of India to participate in the CEDS program, administered through the United States Department of Commerce's Economic Development Administration. This program would initiate a regionally-owned planning process in India designed to build capacity and guide economic prosperity and resilience related to smart city and other projects. And it would provide a coordinating mechanism for individuals, organizations, clusters, local governments, and private industry.

Smart Solutions for Smart Cities Reverse Trade Mission:

The U.S. Trade and Development Agency (USTDA) has invited a delegation of Andhra Pradesh and central government officials to the United States for a Smart Solutions for Smart Cities Reverse Trade Mission. The visit will introduce the delegates to U.S. technologies, solutions and best practices that can support the development of safe, efficient and integrated energy, transportation and communications urban infrastructure.

Technical Advisory Services for Smart City Development:

The U.S. Trade and Development Agency (USTDA) approved funding for technical specialty services to support smart city development in India. USTDA-funded experts in the fields of integrated urban and regional planning, as well as in energy, transportation and information communications technology infrastructure, will travel to India to provide advice and support to key stakeholders in advancing smart city planning and infrastructure development. The specialists will also identify and evaluate smart city project opportunities in India for USTDA funding consideration.

Indo-Pacific Economic Corridor (IPEC) Strategy:

Complementing India's Enhanced Look East Policy, the United States envisions an Indo-Pacific Economic Corridor that can help bridge South and Southeast Asia – where the Indian and Pacific Oceans converge and where

trade has thrived for centuries. Fostering these types of connections – physical infrastructure, regulatory trade architecture, and human and digital connectivity – will create linkages all the way from Central Asia to Southeast Asia, via South Asia. A more integrated South Asia where markets, economies, and people connect is more likely to thrive and prosper. During the January 2015 visit Prime Minister Modi and President Obama pledged to work together to increase connectivity across the Indian Ocean and Asia-Pacific Regions.

(Source of the above facts: U.S.-India Commercial, Trade, and Economic Cooperation, Fact Sheet, Office of the Spokesperson, Washington, DC, September 22, 2015 for more information visit- <http://www.state.gov/>)

AP Government signed MoU with Google India for Digital AP project-

The Andhra Pradesh (AP) Government on 29 September 2014 signed the Memorandum of Understanding (MoU) agreement with Google India for Digital AP project. The agreement was signed at the CEOs' Conclave of Information Technology (IT) companies in AP. Under the memorandum, Google India will work with the AP government to get women and small and medium businesses online and help them gain from the internet economy [124].

Highlights of the Agreement:

--Google will make websites mobile-ready and accessible in the local language.

--It will promote internet safety amongst children and government officials.

--Google will improve the online content as well as will get more local language content online.

--It will collaborate with AP government to scale initiatives to promote digital literacy amongst women.

--The initiatives will include developing Telugu font, keyboards and content.

INDIA AND AUSTRALIA

The Union Cabinet, chaired by the Prime Minister Narendra Modi, has approved the signing of a Memorandum of Understanding

(MoU) between India and Australia on cooperation in the fields of education, training and research. The MoU will help intensify existing partnerships between India and Australia in higher education & research, including technical and professional education, schools, vocational education and training and will open up new and innovative areas of cooperation.

The main objectives of this MoU are:-

--Consideration of expansion of the Australia India Education Council membership from time to time to ensure appropriate representation from academia, policy makers and industry as required and agreed.

--Strengthening the policy dialogue and exchange in areas of mutual benefit, including qualification and quality frameworks and standards for education, research and training.

--Supporting mobility of students and faculty members through formal exchange programs, internships and other modalities.

--Improving credit transfer arrangements and work towards qualifications recognition between Australia and India.

--Supporting and organizing professional development programmes for subject experts, educational administrators, faculty members and teachers.

--Encouraging twinning arrangements between institutions of higher learning and organization of joint research programmes and publications.

--Encouraging research collaboration between institutions of higher learning to enlarge the scope for joint research, joint Ph. D. programmes and joint degrees.

--Sharing best practice education materials including research materials, publications, and educational literature.

--Supporting skills development through joint conferences, seminars, policy dialogue and technical cooperation in national standards development.

--Strengthening communication for exchange of information on new policy initiatives and opportunities for development of education, training and research activities of both countries.

--Further develop bilateral programmes between institutions of educational excellence in technical, vocational, schools and higher education.

(Source of above facts: Prime Minister's official website-pmindia.gov.in)

INDIA AND JAPAN

Japanese Prime Minister Shinzo Abe has said that "strong India-Japan relations will contribute to peace and prosperity in Asia and the world. My belief has become stronger and stronger, and it has now turned into my conviction....Japan and India share fundamental values such as freedom, democracy, human rights and the rule of law and strategic interests. I believe that strong India is in the best interest of Japan, and strong Japan is in the best interest of India" [125]. Japan government has made available a special financial package to the tune of over \$12 billion for Japanese companies wanting to invest in India as Shinzo Abe urged a strong India-Japan partnership in innovation.

India and Japan signed a number of agreements in the fields of high-speed trains, defence equipment and technology, security, infrastructure, education and economy including civil nuclear energy. The agreements were signed after the delegation-level talks between Prime Minister Narendra Modi and Japanese Prime Minister Shinzo Abe [126].

Key Agreements:

--**India, Japan sign MoU to develop Varanasi into Smart City** - Prime Minister Narendra Modi has signed a Memorandum of Understanding (MoU) with Japanese PM Shinzo Abe to turn Varanasi into a 'smart city' with help from Kyoto. The pact is in line with Modi's vision of building 100 'smart cities' across India. Under the smart heritage cities programme, Kyoto will provide cooperation in the fields of conservation and modernization of

cities, as well as art, culture and academics [127].

--Agreement on amending protocol of double taxation avoidance- This agreement amends the convention between India and Japan for the avoidance of double taxation and the prevention of fiscal evasion with respect to taxes on income, signed in 1989.

--Letter of Intent on the strategic international cooperation programme between India's Department of Science and Technology (DST) and the Japan Science and Technology Agency (JSTA)- The programme promotes and supports collaborative activities, such as joint research projects, joint research laboratories and hub, joint seminars, symposia and other meetings between the research institutes and researchers supported by JSTA and DST.

--Letter of Intent toward establishing a young researcher's exchange programme between the DST of India and the Japan Society for the Promotion of Science- The document intends to establish reciprocal fellowship programme for capacity building and human resource development in frontier areas of science and technology.

--MoU between state government of Kerala and Lake Nakaumi, Lake Shinji and Mt. Daisen area Mayors Association- Under the memorandum, Kerala and the Sanin region, Japan, agree to develop trade, investment and economic relations between the business circles with particular focus on small and medium enterprises.

--MoU between Indian Institute of Management-Ahmedabad (IIM-A) and Japan's National Graduate Institute for Policy Studies (GRIPS) - The memorandum promotes collaboration between the two institutions to enrich the intellectual environment of both.

INDIA AND SINGAPORE

During his two-day visit to Singapore PM Narendra Modi met with his counterpart Lee Hsien Loong and the President of Singapore Tony Tan Keng Yam in order to enhance cooperation in defence, civil aviation and cyber security, among others areas [128].

Key Agreements:

--MoU on cooperation in cyber security: This is to promote better cooperation and information exchange related to cyber security between the Computer Emergency Response Teams of the two nations. This will be done by establishing a wider framework for future dialogue, information exchange on cyber attacks and research collaboration in smart technologies.

--MoU on cooperation in planning: Inked between NITI Aayog and SCE, this deal promotes exchange of information related to urban planning, waste water management, solid waste management and public-private partnerships between the two government agencies.

INDIA AND FRANCE

India and France today signed a Memorandum of Understanding (MoU) on digital preservation and conservation of rare written documents, archives and manuscripts. The two countries signed the MoU to conserve, develop and publicize written heritage at the National Library in Kolkata. Sreya Guha, Joint Secretary (Library) in the Ministry of Culture and Bruno Racine, President of the National Library of France signed the MoU on behalf of their respective countries [129].

India and France inked a number of agreements, including in the field of civil nuclear energy, railways and space, and three Letters of Intent as Prime Minister Narendra Modi held talks with French President Francois Hollande [130].

They inked three agreements in the field of space. These include an MoU between ISRO and French space agency CNES. Another one is between French National Centre for Space Studies (CNES) and ISRO -- the agreement

proposes cooperation in the areas of satellite remote sensing, satellite communications and satellite meteorology, space sciences and planetary exploration, data collection and location, operations of satellite ground stations and spacecraft mission management, space research and applications. It covers the potential cooperation activities such as joint earth observation mission, hosted payload opportunities and Mars exploration.

An MoU in the field of architecture is for cooperation in joint planning and geographical studies in India and France and training of local counterparts in modern urban and regional research as well as in techniques of scientific methods in urban and regional planning, geography, environment, Building engineering and management.

Another MoU is for cooperation in the fields of sustainable development, urban planning, heritage conservation and up-gradation of basic services.

INDIA AND GERMANY

Key Agreements:

--Joint Memorandum of Understanding between the Ministry of Skill Development and Entrepreneurship of the Republic of India, on one Hand, and the Federal Ministry of Education and Research and the Federal Ministry for Economic Cooperation and Development of the Republic of Germany, on the other Hand, on Cooperation in the Field of Skill Development and Vocational Education and Training.

--Joint Declaration between the Ministry of Science and Technology (Government of the Republic of India) and the Federal Ministry of Education and Research (Government of the Federal Republic of Germany) on the extension of the tenure of the Indo-German Science and Technology Centre (IGSTC).

--A Joint Announcement on setting-up a fast-track system for German firms in India was signed between the Department of Industrial Policy and Promotion (India) and Federal Ministry for Economic Affairs and Energy (Germany). This MoU envisions a single point

clearance for multiple projects in order to encourage investments by German firms, thereby boosting Prime Minister Narendra Modi's Make in India campaign.

--Joint Declaration between the Government of the Federal Republic of Germany and the Government of the Republic of India on the continuation of the cooperation in the field of advanced training of corporate executives and junior executives from India [131].

(Source: Ministry of External Affairs- Joint Statement - Third India Germany Inter-Governmental Consultations (IGC) in New Delhi (October 05, 2015))

Prasar Bharati signed MoU with Deutsche Welle- On 5th August 2014, India's public broadcaster Prasar Bharti has signed an MoU with Germany's public service broadcaster Deutsche Welle (DW) that will allow Doordarshan programmes to be in a "Free-to-Air" mode abroad. The agreement will help the 55-year old channel will now be seen in 120 million homes abroad and will be available in Europe, Africa and even Australia. This step is expected to give a new life to the channel and help to gather a global viewership at minimal cost [132].

MoU for Gujarat's GIFT city- Infrastructure Leasing & Financial Services (IL&FS) and Gujarat International Finance Tec-City Company Ltd (GIFTCL) on Tuesday announced the signing of a memorandum of understanding (MoU) with Siemens Ltd to develop Smart Mobility Solutions for GIFT City. GIFTCL is a 50:50 joint venture of Gujarat Urban Development Company Ltd and infrastructure development company IL&FS. GIFT, a globally benchmarked smart city on the banks of the Sabarmati River in Ahmedabad, is an ambitious project, being designed as a hub for the global finance services industry. Over the medium term, GIFT expects to generate 500,000 direct jobs and another 500,000 indirect jobs. The city has already sold development rights equivalent to 14 million square feet. As these developments materialize, these will generate over 80,000 new jobs by 2017-18 [133].

INDIA AND CHINA

Key Agreements [134] [135] [136]:

--MoU to develop the Ahmedabad Industrial Park signed by the Gunagdong-based Wangtat Construction and Investment Holding Group of China and the Apollo Group of Companies.

--Wangtat Group has also joined hands with the Gujarat-based Payal Properties to develop an industrial park in Bharuch.

--An Industrial Park Cooperation Working Group made up of equal number of representatives from both the countries will be set up to identify and agree upon the detailed modalities for implementing cooperation under this agreement and will periodically review the progress.

--An investment cooperation agreement has been signed between the Silkroad Development Holdings Ltd of China and the India-based Vasundhara Infra-Developers to develop the ambitious Silk Road project.

--A three-party cooperation agreement to boost cross-border e-commerce has been signed between SFC Service Ltd, Global Private and Gati.

--MoU between the ministry of skill development and entrepreneurship of India and the ministry of human resources and social security of China on cooperation in the field of vocational education and skill development.

-- Action plan on cooperation in setting up of the Mahatma Gandhi National Institute for Skill Development and Entrepreneurship in Ahmedabad/Gandhinagar in Gujarat.

--Agreement on the establishment of sister-state/province relations between state government of Karnataka and provincial government of Sichuan of China.

-- Agreement on establishment of sister-city relations between Chennai and Chongqing of China.

-- Agreement on establishment of sister-city relations between Hyderabad and Qingdao of China.

-- Agreement on establishment of sister-city relations between Aurangabad and Dunhuang of China.

INDIA AND RUSSIA

Key Agreements [137]:

--Tripartite Memorandum of Understanding between Centre for Development of Advance Computing (C-DAC), Indian Institute of Science Bangalore (IISc) and Lomonosov Moscow State University (MSU).

--Tripartite Memorandum of Understanding between Centre for Development of Advance Computing (C-DAC), OJSC "GLONASS" and GLONASS Union.

--MoU in the field of investment cooperation in the Russian Far East between the Tata Power Company Limited and Ministry for Development of the Russian Far East.

--Memorandum of Understanding between Prasar Bharati and Digital Television Russia on Cooperation in the field of Broadcasting.

INDIA AND UK

Key Agreements [138] [139] [140]:

--Kloudpad Mobility Research's £100 million investment to produce the next generation of smart watches, wearables and tablets in South India will support 50 highly skilled researchers in the UK and create 2,500 manufacturing jobs in India. At the same time, Kloudpad has announced the launch of its smart watch and 4G tablet in India, available from 1 December 2015 through an agreement with a distribution partner, AGTE.

--Vodafone has announced a range of further investments in India totaling £1.3 billion (Rs 13,000 crore) to support the Government of India's 'Digital India' and 'Make in India' campaigns. These include: £800 million to upgrade and expand its country-wide network coverage, £300 million in its high-end

technology centres in Pune and Ahmedabad that service several international markets, that will create a further 6,000 jobs. A further £100 million will be invested to create a first of its kind, state-of-the-art tier-4 data centre, providing customised communication services for enterprises and businesses and another £100 million investment to create a payment bank focused on serving the unbanked and under banked and to accelerate India's journey towards a cashless economy.

--HSBC announced the launch of its Skills for Life initiative in India, a programme to skill 75,000 disadvantaged young people and women over five years. The programme will support non-governmental organisations in implementing projects in three focus areas: employment and entrepreneurship-linked skills training for disadvantaged youth, upskilling of teachers and educators and financial literacy and entrepreneurship development of women.

--Zyfin and Sun Global announced that they would be listing the world's first India fixed income exchange traded fund (ETF) on the London Stock Exchange – the broadest ETF market in Europe. Capitalizing on the recent reforms led by Prime Minister Modi, this ETF will give international investors access to the Indian fixed income market, which is worth \$1.3 trillion and is a vital source of finance for the infrastructure sector.

--The union ministry for Women and Child Development signed a memorandum of understanding (MoU) with the Vedanta to develop and modernize 4000 Anganwadis across the country. Vedanta will invest over Rs 400 crore in this initiative which the company said is aligned with Prime Minister Narendra Modi's vision of Swachh Bharat, Women Skill Development and Digital India. Through this partnership, Vedanta aims to create social incubators that will help uplift the communities on a national scale by educating children, eradicating malnutrition and developing vocational skills among women in India.

(Source of above facts about India UK MoUs- Press Release-
www.gov.uk)

INDIA AND UNITED ARAB EMIRATES- UAE

Key Agreements:

MoU Between TRAI and TRA- TRAI has signed a memorandum of understanding (MOU) with the UAE's Telecommunications Regulatory Authority (TRA) to strengthen the collaboration between the two countries within the Telecommunications and Information and Communications technology (ICT) space. The MoU pledges both countries' commitment to promoting closer co-operation and knowledge exchange pertaining to various aspects of international and regional ICT. The two telecom regulators will cooperate in the areas of technological developments and new technologies; universal services, Mobile Number Portability (MNP), spectrum issues, green telecoms, e-government and e-services, participation in international events and forums, amongst other issues [141].

Arab India Economic Forum 2015- India and the UAE have launched a forum to discuss strategies and solutions to investor challenges in India due to taxation and policy related issues and to evaluate business opportunities in infrastructure, alternative energy, tourism and finance sectors. The Arab-India Economic Forum (AIEF), in partnership with the Consulate General of India in Dubai, has been launched to bring together political and business leaders from UAE, Saudi Arabia, Qatar, Kuwait, Bahrain, Oman, Jordan, Egypt and India. The AIEF shall be focusing on opportunities in infrastructure, alternative energy, digital India, tourism and finance. Focusing on the growth sectors, it will address the policy framework and guidelines required to attract Arab investors and industrialists [142].

India UAE Joint Business Council- External Affairs Minister Sushma Swaraj and UAE Foreign Minister Sheikh Abdullah Bin Zayed Al-Nahyan inaugurated the India-UAE Joint Business Council. UAE Minister of State Reem Ebrahim Al Hashemi said her country was keen to invest in India in the opportunities emerging

out of the government's Make in India, Digital India and smart cities initiatives [143].

INDIA AND MALAYSIA

Memorandum of Understanding (MoU) on cooperation between CyberSecurity Malaysia (CSM) and the Indian Computer Emergency Response Team (CERT-In) of India's Department of Electronics and Information Technology. Under the MoU, India and Malaysia will conduct joint activities in cyber

security during the first meeting of The Joint Working Group on Information Technology And Services (JWG-ITS). Both countries officially agreed to also promote closer cooperation and the exchange of information pertaining to cyber security in accordance with the relevant laws and regulations of each country [144].

Digital India for Rural India

Digital India's one of the main objectives is utilizing technology for the benefits of rural India. As a part of the Digital India programme 2.5 lakh Gram Panchayats are to be connected by National Optic Fibre Network in next three 3years through seven lakh kilometers of Optic Fiber Cable. A concept of Digital Village is designed where one block in every state will be selected to ensure that technology can be used to deliver education and healthcare services. These assumptions that Digital India is only for rich and technology cannot solve the problems of rural India are not correct. The figure and facts shared in this section will give you an idea that how technology can solve the most complex problems of rural and remote areas and how a leadership with right intention can make this happen...our Prime Minister Mr. Narendra Modi has always emphasized on the need of developing a prosperous Rural India.

Here I would like to quote some points from our Prime Minister Mr. Narendra Modi 's speech at Digital India Week launch-"Young Stanford scholars are teaming up with Indian counterparts in Delhi to make affordable biomedical devices for rural India. MIT Tata Centre's Khethworks is changing the lives of small farmers with solar-based irrigation systems. I dream of Digital India where quality healthcare percolates right up to the remotest regions powered by e-Healthcare. I dream of Digital India where the farmers are empowered with real-time information to be connected with global markets. I dream of a Digital India where Quality Education reaches the most inaccessible corners driven by Digital Learning. It is government's duty to make rural India benefit from digital drive. People used to debate why does a poor nation like India need to send satellites? But, now that satellites forecast weather, it benefits the poor farmer".

A number of initiatives/programs have been launched that directly benefits rural India. Let's take a look at some major ones...

Wi-Fi Hotspots in Rural India - Facebook has partnered with Bharat Sanchar Nigam Ltd. (BSNL) to create 100 Wi-Fi hotspots in rural India. Facebook is investing Rs 5 crore per annum for buying bandwidth from BSNL in this joint initiative that also includes IT infrastructure services providers such as Quad Zen and Trimax for equipment and fibre deployment. The Wi-Fi network has a capacity to allow an average of 2000 individuals to latch on at the same time. Qaud Zen will be responsible for equipment sourcing and sales and marketing initiatives for the south-west region while Trimax has been roped in for the northern region in an open process. BSNL has rolled out 450 hotspots with a focus on pan-India tourist spots, and aims to set up a total of 2500 Wi-Fi hotspots by the end of current fiscal year through March 2016 [145].

Intel's 'Ek Kadam Unnati Ki Aur' initiative- Intel India has announced the launch of an initiative called '**Ek Kadam Unnati Ki Aur**' for the digitization of the rural India. It has already been rolled out in 10 states from Nadimpalle village in Telangana [146].

Some facts about the initiative:

--The first Digital India Unnati Kendra has already been set up at a Common Services Centre (CSC) in Nadimpalle village, Telangana.

--This centre will be used to create the framework for the Telangana Model Digital Village.

--Digital India Unnati Centres will provide devices, relevant local content and training to the citizens.

--Intel will work with Central and state governments to create a blueprint to bring

technology enabled transformation in 10 states in India.

--Over 800 villagers have already been using it.

Vanga Nageshwari- A farmer's daughter is leading Intel's digital village- Vanga Nageshwari became the first ever head of Intel's Digital India centre, under the Ek Kadam Unnati Ki Aur (One Step Towards Progress) programme. She along with her sister Nagarani, tours villages with three computers in tow. The duo spends a month in a village, making the people there digitally literate. She has so far trained about 800 villagers, of whom about a quarter have passed a digital literacy exam conducted by the Centre. For every student who clears the exam, Nageshwari earns Rs 500 [147].

ICICI Bank's Digital Village- Joining Prime Minister Narendra Modi's Digital India programme ICICI Bank has launched its own 'digital village' project while adopting an entire village in Gujarat to provide services ranging from cashless banking to digitized school teaching. This village, named Akodara, in Sabarkantha district of Gujarat incidentally happens to be the same place where Mr. Modi started Gujarat's first animal hostel in 2011 when he was the Chief Minister of the state. In the digital village besides ATMs and other digital banking services, the bank has set up e-health, e-milk producer group, Wi-Fi connectivity and schools with digital black boards in the village, along with a host of other digital facilities. The village also has high speed broadband connectivity via Wi-Fi and farmers can access the latest information on prices of agricultural commodities on NCDEX. Besides, a website is being created for the village [148].

NIELIT and Snapdeal signed MoU for rural entrepreneurs- On 23rd April 2015 National Institute of Electronics and Information Technology (NIELIT), Department of Electronics and IT (DeitY) and Ministry of Communications & IT has signed a MoU with Snapdeal. This partnership will help the small and medium business and artisans to become entrepreneurs using online tools and marketing channels. Drawing synergies from each other's areas of expertise, Snapdeal and NIELIT are

partnering to build and launch digital marketing courses which will educate and train SMBs on the finer nuances of selling online. These courses will help the trainees understand the fundamentals of digital marketing and effectively utilizing the online sales channel. The course will be divided into three levels – basic (60 hrs), intermediate (90 hrs) and advanced (120 hrs). It will include practical training on cataloguing, IT skills and social media tools required for selling online successfully. As the industry and knowledge partner, Snapdeal will provide inputs on the course and will facilitate industry interactions for the participants. Initially the course will be launched in 6 centres- Srinagar, New Delhi, Aurangabad, Kolkata, Calicut and Chennai [149].

Rural post offices to provide online services- Now the rural post offices across the country will also function as common service centres (CSCs) providing e-services. Government has decided that all the 1.30 lakh rural post offices should also become common service centres (CSCs), implemented under the National e-Governance Plan and formulated by the Department of Electronics and Information Technology, the CSCs are ICT-enabled front end service delivery points at the village-level for delivery of government, financial, social and private sector services in the areas of agriculture, health, education, entertainment, FMCG products, banking, insurance, pension, utility payments etc. IT minister has urged the employees of postal services to contribute towards the government's initiative to modernize the postal department [150].

Arogya Sakhi- Swayam Shikshan Prayog (SSP), a learning and development organization has joined Digital India programme to improve the situation in rural Maharashtra through a programme called Arogya Sakhi. ArogyaSakhi is a mobile application that helps rural women entrepreneurs deliver preventive health care at rural doorsteps. Women equipped with tablets and mobile healthcare devices like glucometers, blood pressure checking machine visit homes and collect data from the village women. This data can be accessed by doctors at any location

who could provide relevant advice to the patients remotely [151].

‘SEHAT’ telemedicine- Mr. Ravi Shankar Prasad launched the government's latest health and IT initiative called SEHAT (Social Endeavour for Health and Telemedicine). This venture with the Apollo Hospitals was the first of its kind in India to connect 60,000 Common Service Centers across the country to a common network and provide healthcare access to millions of citizens irrespective of geographical location or connectivity [152].

Digital India: Chikkamagaluru district ranks first in the State: The Chikkamagaluru district administration has secured first rank in the State for Digital India campaign. Innovative methods adopted by the administration to reach the benefits of Digital India project among rural masses and student community have helped the district bag the first rank. Bengaluru Rural and Kolar districts have secured the second and third places, respectively [153].

Microsoft signed MoU with AP govt- Microsoft signed an MoU with the Andhra Pradesh government in deployment and use of information and communications technologies to offer better citizen services in the state. The state government will use technical knowledge from Microsoft India, which will support building of up to three proof-of-concept (POC) solutions to apply Microsoft Azure Machine Learning and Advanced Visualization in education, agriculture and e-citizen services. Telangana government has sought Microsoft's cooperation in areas such as digitization of classrooms and last-mile connectivity to rural areas. Microsoft is interested in working with Indian entrepreneurs to connect rural areas with technology and new economy [154].

Muzaffarnagar best performer in state during Digital India Week- Muzaffarnagar stood first in the list of best performing districts in Uttar Pradesh during the Digital India Week (DIW), followed by Shravasti and Meerut. During DIW, e-governance programmes, seminars, rallies and poster publicity run by National Informatics Centre (NIC) and Common Service Centres (CSCs) at urban as well as rural

levels in Muzaffarnagar were evaluated as the best in the state [155].

Rurban Clusters- The government will develop 300 rural growth clusters, called 'Rurban Clusters', across the country to unearth their latent potential and accelerate growth of rural India. The 'Rurban Clusters' would comprise several contiguous villages which have economic capability but need supplementary economic, social and physical support to transform the image of rural India. This would be achieved by **creating infrastructure ranging from mobile health units to encouraging digital literacy along with agro-processing and agri-services units.** The 'Rurban Clusters' scheme would be implemented under the newly-launched Shyama Prasad Mukherji Rurban Mission (SPMRM) with an outlay of Rs. 5,142.08 crore (almost \$580 million) in the next five years - 2015-16 to 2019-20. The 'Rurban cluster' would be a group of geographically adjoining villages with a population of about 25,000 to 50,000 in the plains and coastal areas and a population of 5,000 to 15,000 in desert, mountainous or tribal areas. The components to be envisaged as desirable parts in each cluster include skill development training linked to economic activities, agro-processing, agri-services like storage and warehousing, fully equipped mobile health units, upgraded schools, sanitation, provision of piped water supply, solid and liquid waste management, village streets and drains, street lights, inter-village road connectivity, public transport, cooking gas connections, digital literacy, Citizen Service Centres for electronic delivery of citizen centric services and e-gram connectivity [156].

Call centres in mofussil towns- As a part of its 'Digital India' initiative; the government announced a plan for call centres or business process outsourcing (BPO) centres to be opened in smaller 'mofussil' towns. IT Minister Ravi Shankar Prasad said "Our flagship 'Digital India' is directed more at the poor rather than the elite. The government will incentivize private players to open such centres in the smaller towns. It can propel India to a different horizon. Various ministries, which were implementing their schemes in these areas, had shown interest

to become customers of such a scheme. My understanding of digital equality is when in a ‘Mahadalit’ village, a digitally literate person is operating a call centre that is the vision we must work towards” [157].

India Post would be launching payment banking- Indian Telecom Minister Ravi Shankar Prasad has said that India Post would be launching Payment Banking by March 2017. So far 12000 branches of India Post Office have been linked with Core Banking. By March 2016 25000 branches will have core banking facilities. He has given hand held devices to Posts Masters from rural areas to run such services [158].

DIGITAL INDIA PRODUCTS FOR RURAL INDIA:

Although all digital products of Digital India are designed by keeping needs of every citizen of this country mind but there are some products that I believe will specifically cater the needs of rural India are:

Rural ICT Project- Launch of Post-Terminals (Rural ICT – RICT) – Ricoh India a leader in the field of Imaging and IT Solutions, is partnering with Department of Post for Implementing and Operating integrated Rural Hardware solution for around 1,30,000 post offices across India. Ricoh solution not only includes hand held devices with camera and bio metric facility but also includes set of solar panels at EDO level and network connectivity. Under the project Ricoh India will supply, install and maintain services of hardware, peripheral devices and operating system for “Rural ICT (Information & Communication Technology)”. By March 2017 1.30 lakh hand-held devices will be made available across rural branch offices. Booking and delivery of Speed Post, registered mail, money orders, sale of stamps and postal stationary will be done through these devices and paper receipts will be generated instantly [159].

Digital Locker: The service was launched as an important facility to store crucial documents like Voter ID Card, Pan Card, BPL Card, Driving

License, education certificates etc. in the cloud [160].

National Scholarship Portal: This initiative aims at making the scholarship process easy. From submitting the application, verification, sanction and disbursement to end beneficiary, everything related to government scholarships can be done on this single portal online. Our bright youths from rural areas are the primary beneficiaries of such scholarships and through this portal they can check what all scholarships are available and whether they are eligible for it or not. This portal will help them in receiving their scholarship without any hassle or government office roundtrips [160].

Bharat Net: It is the world’s largest rural broadband connectivity project using optical fiber to connect each of 2.5 lakh gram panchayats with a minimum of 100 Mbps bandwidth. Bharatnet will serve as the infrastructure backbone of Digital India, to facilitate delivery of e-Governance, e-Health, e-Education, e-Banking, internet and various other services. This initiative will work towards building high-speed digital highways to connect all 2.5 lakh Gram Panchayats of the country. This would be the world’s largest rural broadband connectivity project using optical fiber [160].

Grameen Vidyutikaran App- Recently launched by the government, this app allows users to track the progress of rural electrification initiative in the country. The application features a dashboard providing details about the villages that have received access to electricity, and villages that are yet to get the same. You can also track villages by state and key information such as progress made in the last one month [14].

At the end I would like to say that scope and scale of Digital India is enormous and this programme will achieve new milestones in the coming years. Our country is going Digital and it is all happening around us, I appeal to you to join this journey.

Digital India Quotes

For the success of any program it is necessary that its stakeholders stay motivated, I believe that Digital India is a programme in which all citizens of our country are stakeholders because its scope is not limited to any region or group, its outcomes will shape the lives of all citizens...here I'm sharing the inspiring quotes of our Prime Minister Shri Narendra Modi and IT Minister Shri Ravishankar Prasad.

PM's remarks at the launch of Digital India week [161]:

I dream of a DIGITAL INDIA where High-speed Digital Highways unite the Nation.

I dream of a DIGITAL INDIA where 1.2 billion Connected Indians drive Innovation.

I dream of a DIGITAL INDIA where Knowledge is strength – and empowers the People.

I dream of a DIGITAL INDIA where Access to Information knows no barriers.

I dream of a DIGITAL INDIA where Government is Open - and Governance Transparent.

I dream of a DIGITAL INDIA where Technology ensures the Citizen-Government Interface is Incorruptible.

I dream of a DIGITAL INDIA where Government Services are easily and efficiently available to citizens on Mobile devices.

I dream of a DIGITAL INDIA where Government proactively engages with the people through Social Media.

I dream of a DIGITAL INDIA where Quality Education reaches the most inaccessible corners driven by Digital Learning.

I dream of a DIGITAL INDIA where Quality Healthcare percolates right up to the remotest regions powered by e-Healthcare.

I dream of a DIGITAL INDIA where Farmers are empowered with Real-time Information to be connected with Global Markets.

I dream of a DIGITAL INDIA where Mobile enabled Emergency Services ensure Personal Security.

I dream of a DIGITAL INDIA where Cyber Security becomes an integral part of our National Security.

I dream of a DIGITAL INDIA where Mobile and e-Banking ensures Financial Inclusion.

I dream of a DIGITAL INDIA where e-Commerce drives Entrepreneurship.

I dream of a DIGITAL INDIA where the World looks to India for the next Big Idea.

I dream of a DIGITAL INDIA where the Netizen is an Empowered Citizen.

IT+IT=IT; Indian talent + Information technology = India Tomorrow

Our ancestors used to play with snakes, we play with mouse...

For more information visit- <http://www.narendramodi.in/text-of-pm-s-remarks-at-the-launch-of-digital-india-week-175130>

9 Quotes from PM Modi's Digital India Dinner Speech in San Jose, California [162]:

Facebook, Twitter, Instagram, these are the new neighborhoods of our new world.

If Facebook were a country, it would be the third most populous one and the most connected. Google today has made teachers less awe-inspiring and grandparents more idle. Twitter has turned everyone into a reporter. The traffic

lights that need to work best are on the CISCO routers.

Since my government came to office last year, we have attacked poverty by using the power of networks and mobile phones to launch a new era of empowerment and inclusion.

In this digital age, we have an opportunity to transform lives of people in ways that was hard to imagine just a couple of decades ago.

I see technology as a means to empower and as a tool that bridges the distance between hope and opportunity. Social media is reducing barriers; it connects people on the strength of human values not identities.

We must ensure that Technology is accessible, affordable & adds value.

We will transform governance making it more transparent, accountable, accessible & participative.

We must bridge digital divide and ensure digital literacy.

From computing to communication, entertainment to education, from printing documents to printing products, and, now to internet of things, it's been a long journey in a short time.

The pace at which people are taking to digital technology defies our stereotypes of age, education, language and income.

We want to turn our villages into smart economic hubs and connect our farmers better to markets and makes them less vulnerable to the whims of weather.

Affordability of products and services is critical for our success. There are many dimensions to this. We will promote manufacture of quality and affordable products in India. That is part of our vision of Make in India, Digital India and Design in India.

The task is huge; the challenges are many. But, we also know that we will not reach new destinations without taking new roads.

From large corporate to young professionals in this great centre of innovation, each can be part of the Digital India story.

For more information visit: <http://www.narendramodi.in/9-quotes-from-pm-modi-s-digital-india-dinner-speech-in-san-jose-california-347118>

Excerpt from PM's address to the Nation from the ramparts of the Red Fort on the 68th Independence Day [163]:

When I talk of "Digital India", I don't speak of the elite, it is for the poor people. You can imagine what a quality education the children in villages will get, if all the villages of India are connected with Broadband Connectivity and if we are able to give long distance education to the schools in every remote corner of the villages. If we create a network of telemedicine in the places where there is a shortage of doctors, we can have a clear guideline of the way in which health facilities have to be provided to the poor people living in those areas. The citizens of India have mobile phones in their hands, they have mobile connectivity, but can we walk in the direction of mobile governance? We have to move in a direction where every poor person is able to operate his bank account from his mobile, is able to demand various things from the government, can submit applications, can conduct all his business, while on the move, through mobile governance and if this has to be done, we have to move towards `digital India` and if we have to move towards `digital India` then we have a dream. Today we are importing electronic goods on a large scale. Friends, you will be surprised that we are bringing in these televisions, mobile phones, i-pads and all these electronic goods. It is a necessity to import petroleum products, oil, diesel and petrol. Second to this is the import of our electronic goods. If we move ahead with the dream of `digital India` to manufacture electronic goods and become self reliant at least there, how big can be the benefit for the treasury! Therefore, e-governance is what we need to take this idea of `digital India` forward. E-governance is easy governance, effective governance and also economic governance. E-governance paves the way for good governance. There was a time when we used to say that the

railways provided connectivity to the country. That was it. I say that today it is IT that has the potential to connect each and every citizen of the country and that is why we want to realize the mantra of unity with the help of `digital India`.

For more information visit:

http://pmindia.gov.in/en/news_updates/text-of-pms-address-in-hindi-to-the-nation-from-the-ramparts-of-the-red-fort-on-the-68th-independence-day/?comment=disable

Excerpt from PM's message to the Nation on the occasion of Good Governance Day [164]:

Good Governance is the key to a Nation's progress. Our government is committed to providing a transparent and accountable administration which works for the betterment and welfare of the common citizen. An important step for Good Governance is simplification of procedures and processes in the Government so as to make the entire system transparent and faster. Government process re-engineering is yet another measure that we are pushing for. Ministries and Departments of the Government of India have been instructed to look into their work spheres, their internal processes and work on what and how to simplify and rationalize them. I strongly believe that technology can and must bridge the divide between the government and the citizens. Technology is an empowering tool for the citizen and an accountability medium for the government. My government fully recognizes the huge potential of this tool –Digital India aims to transform the country into a digitally empowered society and knowledge economy. Proposed to be implemented in phases, Digital India is transformational in nature and would ensure that Government services are available to citizens electronically. It would also bring in greater accountability through mandated delivery of government's services electronically. The effort to usher in an era of Good Governance has just begun, and begun on a very promising note. An open and accountable administration is what we had promised to deliver and we will do so.

For more information visit:

http://pmindia.gov.in/en/news_updates/pms-message-to-the-nation-on-good-governance/?comment=disable

Excerpt from PM's speech at Vibrant Gujarat Summit, in Gandhinagar [165]:

We are also keen to move towards the next generation infrastructure. Just as we need highways, we need I-ways too. When I say I-ways, I mean Information Ways. Under the Digital India Initiative, IT will be used to drive Government processes to improve service delivery and programme implementation, and also to provide broadband connectivity to villages. I urge you to see and realize for yourself that –India is changing fast; India is growing fast; India is moving faster than expected; India is learning even faster; India is ready than ever before.

Someone's dream is dependent on someone's direction; Someone's success is related to someone's support; Someone's curiosity is linked to someone's care.

Why India? India has three things to its credit – Democracy, Demography and Demand.

We have to build fast track roads and railways. We have to energise homes and factories on a continuous basis. We have to build infrastructure for cities where almost half of our population lives. We have to take the taste of modern amenities to our rural areas, to every village. We have to propel our growth through value addition in our natural resources and agri-produce. We have to provide services to our people which are of global standards. At the same time, the whole world is looking for certain services. If our human resources can be equipped with skills and technology, we may serve the world in many areas. We are open to ideas, investments and innovations.

India is changing fast; India is growing fast; India is moving faster than expected; India is learning even faster; India is ready than ever before.

For more information visit:

http://pmindia.gov.in/en/news_updates/text-of-pms-speech-at-vibrant-gujarat-summit-in-gandhinagar/?comment=disable

Excerpt from PM's address at the Business Forum organized by NASSCOM and Fraunhofer Institute at Bengaluru [166]:

I must add that it is the software of India that will move the hardware across the world; it is the talent of India that will master the technology. It is the market of India that will motivate manufacturing.

Government has no business to do business...

We are committed to creating favorable conditions for business and industry.

Opportunities range from building 50 million houses to setting up 100 smart cities; modernization of our railway network and stations to setting up of new railway corridors; generation of 175 GW of renewable energy to construction of transmission and distribution networks, National Highways, bridges, and Metro rails. Such a huge potential for creation and production will not be available in any one country. More importantly, no one place on the earth can offer the potential for consumption on such a massive scale.

India, in fact, is on the threshold of a big IT revolution. We are at the tipping point where technology is going to be leveraged to meet the aspirations of our 1.25 billion citizens. These initiatives provide additional avenues for investment in modern technology and human resources.

It makes strong business sense to be in India. It makes even better business sense to Make in India.

For more information visit:
http://pmindia.gov.in/en/news_updates/text-of-pms-address-at-the-business-forum-organized-by-nasscom-and-fraunhofer-institute-at-bengaluru/?comment=disable

Excerpt from PM's Digital Dialogue [167]:

It (technology) combines 3Ss- speed, simplicity and service. Technology is fast, technology is simple and technology is a brilliant way to serve people. It is also a great teacher. The more we learn about technology and the more we learn through technology, the better it is

Technology empowers the less empowered. If there is a strong force that brings a change in the lives of those on the margins it is technology.

The entire Nation has joined hands to make the dream of a Digital India into a reality. Youngsters are enthusiastic, industry is supportive and the government is proactive. India is yearning for a digital revolution.

The investment committed by industry towards a Digital India indicates their optimism and the positive effects will be felt for generations. Most notably, several job opportunities will be created for our people.

The future belongs to social media. It is egalitarian and inclusive. Social media is not about any country, any language, any color, any community but it is about human values and that is the underlying link binding humanity.

M-governance is empowered governance. It has the potential to make development a truly inclusive and comprehensive mass movement. It puts governance into everyone's reach. It puts governance in your hands 24/7.

Startups are the engines of exponential growth, manifesting the power of innovation. Several big companies today are startups of yesterday.

We want India to emerge as the Innovation Hub where the next big ideas emerge, driven by the power of technology.

Youngsters are enthusiastic, industry is supportive and the government is proactive. India is yearning for a digital revolution.

When the Digital India initiative was launched, the fervor was unimaginable and unprecedented.

I want to tell everyone – our quest for a Digital India is all encompassing. It is going to touch your lives in several ways, making it easier.

Technology for me is- discover, learn, evolve and implement.

Technology makes access to information a lot faster. I am able to access news on the go. I may be travelling in the hills, in the Northeast of interior Chhattisgarh but thanks to technology I am abreast with what is happening.

Technology transforms people's lives. From mitigating poverty to simplifying processes, ending corruption to providing better services, Technology is omnipresent. It has become the single-most important instrument of human progress.

Technology is here to stay. The future of technology lies in its humanization.

To me technology used wisely is a catalyst to magically transforming the way we live.

Be it retail, tourism, transport, food industry, technology has given a new platform to thousands of people, most of who are on the margins.

I am confident that Indians will be second to none in their embrace of technology in all aspects of their lives in the years to come.

M-governance is empowered governance. It has the potential to make development a truly inclusive and comprehensive mass movement. It puts governance into everyone's reach. It puts governance in your hands 24/7.

These 3As are important for a Digital India- Accessible, Additive and Affordable.

In terms of scale, extent and influence, our Digital India initiatives must be path breaking and all inclusive, laying the foundation for how we script India's development story in the 21st Century.

Keep innovating. Innovation is what will help us grow faster.

For more information visit:
http://pmindia.gov.in/en/news_updates/pms-digital-dialogue/?comment=disable

Excerpt from PM's speech at the Startup Event (27 September 2015, San Jose, California) [168]:

The course of human history and progress has been shaped by imagination, inspiration, invention and innovation.

If there's a strong wind blowing, some might want to shut the window. Others will want to put up a windmill or launch their sails on the seas.

The difference between perception of something as a challenge or an opportunity is the difference between inertia and initiative; status quo and progress.

The idea of Start Ups is as ancient as this world. Each economic age has been defined by disruption of the previous one, by the evolution of ideas and products that displace the old ones.

This is a world in which you don't grow by extracting resources, but by spreading an idea. More than the creator, it is the consumer, who discovers applications.

Startups have always been the engine of progress. The mega corporations of today were startups of yesterday. What is different now is that the digital age has created a fertile new environment for startups.

I see Startups, technology and innovation as exciting and effective instruments for India's transformation, and for creating jobs for our youth.

When each of the five hundred odd towns produces ten Startups and each of our six hundred thousand villages produce six small businesses, on a regular basis, we will create an enormous economic momentum and generate a huge number of jobs in our country.

We are a nation of 800 million youth below the age of 35 years. They are eager for change; have the energy and drive to pursue it; and, the confidence to achieve it.

I see Startups, not as short term investments, but as long term commitments.

India's own ecosystem of startups is evolving rapidly. It is driven by the energy, enterprise and innovation of our youth.

The vision and the spirit behind Digital India, is to use technology to transform governance, empower our citizens, eliminate barriers to opportunities, deepen social change, impart scale

and speed to development, improve delivery of services, design affordable products for the poor, customize services for specific groups, and build a more sustainable future for our planet.

I also hope that a young girl in a small town in India will look at the exhibitors today and dream of her own project. And, someone in Mumbai or the Bay Area will be the angel to her dreams.

I want to see the idea and the spirit of Startups light up the economies and the fortunes of people in rural India. From handicrafts to tourism, the frontiers of possibilities and the scale of reach in India is immense.

I know you will succeed on the strength of your genius and enterprise. But, when you need a helping hand, or when you find hurdles in your way, we will be there for you.

For more information visit:
http://pmindia.gov.in/en/news_updates/speech-by-pm-at-the-startup-event-27-september-2015-san-jose-california/?comment=disable

Main points from PM's Twitter Address to the 18th National Conference on e-Governance [169]:

E-Governance is an essential part of our dream of Digital India. The more technology we infuse in Governance, the better it is for India.

While we look at e-Governance, let us think about 'mobile first' and thus give importance to m-Governance (mobile governance).

I urge you to explore ways to provide as many services as possible through mobiles. Let us bring the world into our mobile phones!

The youthful energy that our Nation possesses is our prized asset. Giving an impetus to skill development through technology is essential.

For more information visit:
http://pmindia.gov.in/en/news_updates/pms-twitter-address-to-the-18th-national-conference-on-e-governance/?comment=disable

IT Minister Mr. Ravi Shankar Prasad's popular statements on Digital India [170] [171] [172] [173]:

I'm convinced that in the coming 2-3 years, India will become equal to China as an IT market of the world, I have no doubts about it.

We are setting up call centres and BPOs at small towns and creating 48,000 jobs in the first phase. We will give subsidy to take IT revolution to smaller towns.

We are connecting 2.5 lakh village panchayats with broadband and opening common service centres at remote locations to provide services and government facilities at the doorsteps of citizens.

Post-men working in rural areas would be provided modern handheld devices and post offices would be computerized.

Digital India is a transformational programme for the country. It means strengthening the youth and future of the country.

Internet is one of the finest creations of human mind. It can't become a prerogative of few. Internet has to connect with local to become global.

India is sitting at the cusp of a big digital revolution.

There is enormous scope for investment, growth and also very exciting business prospects. India today is a happening place.

I don't believe in curtailing or discouraging entrepreneurship by imposing regulations.

To create a 'digital India' the state and centre has to work together.

The sheer opportunity that Digital India will create will also become a great business proposition.

'Digital India' is a revolution in itself. The 'digital India' will be possible in three areas--all gram panchayat are to be connected, all government services should be provided on digital platform and the aim is to strengthen every Indian, keep them informed and educated in terms of digital platform.

Technology can benefit in reducing capital losses of massive magnitude. Introduction of M2M in agriculture supply chain alone can help save up to 18 to 20 per cent of product cost.

India is set for a “digital revolution” as it implements an \$18 billion programme to expand

high-speed Internet access and offer government services online. This includes broadband for 250,000 cluster of villages at a cost of \$5.9 billion.

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