



India 5G Standardization: WISDOM

GISFI Workshop

1st September 2014

Venue: Mumtaz Mahal, Taj Palace Hotel, New Delhi, India

Krishna Sirohi

Chairman, GISFI Standards Committee

GISFI Approach for defining India-5G



India 5G Standardization Theme : WISDOM
Wireless Innovative System for Dynamic Operating Mega Communications



User Perspective & Network Capability

Indian User Perspective

- Higher Data rate 1000x
- Reduced Latency 100x
- Higher Data Density (per sq kms) 1000x
- Opportunity to communicate beyond speech (Sense-1) and video (Sense-2)
 - 1G & 2G enables communication of Sense-1 (Voice)
 - 3G & 4G made is possible to communicate Sense-2 (Video)
 - 5G must create technical feasibility to communicate other human Senses i.e., Touch, Smell and Taste

Network Capability Perspective

- LTE further Evolution
- New Radio Transmission Technology
- Efficient Spectrum Management & related considerations
- Advanced Self Organizing Networks (SON)
- Heterogeneous & Collaborating Access Network
- Sustainable Network Infrastructure
 - Extremely cost effective
 - Energy Efficient
 - Easy to use
 - Easy to Operate
 - Easy to maintain and enhance
- ..more.

Network Architecture & New Deployment/Business Models

Network Architecture Perspective

- Wireless Access with Overlapping Hierarchical Cells
- Variety of Radio Remote Head as only distributed Access Infrastructure
- High Speed Backhaul to connect RRH
- Cloud RAN (NFV)
- Cloud CN (NFV)
- Cloud User Services
- Unified Service Delivery Platform

Network deployment & Indian Business Model Perspective

- Telecom Infrastructure Provider
- Telecom(+) Service Provider/s
- Virtual Service Providers
- Self-Service provisioning
- Build Your Own Network: Create local Community Networks
- Commoditizing Network Services
- Collaborative Network Infrastructure

Special Networks & Inclusive Growth

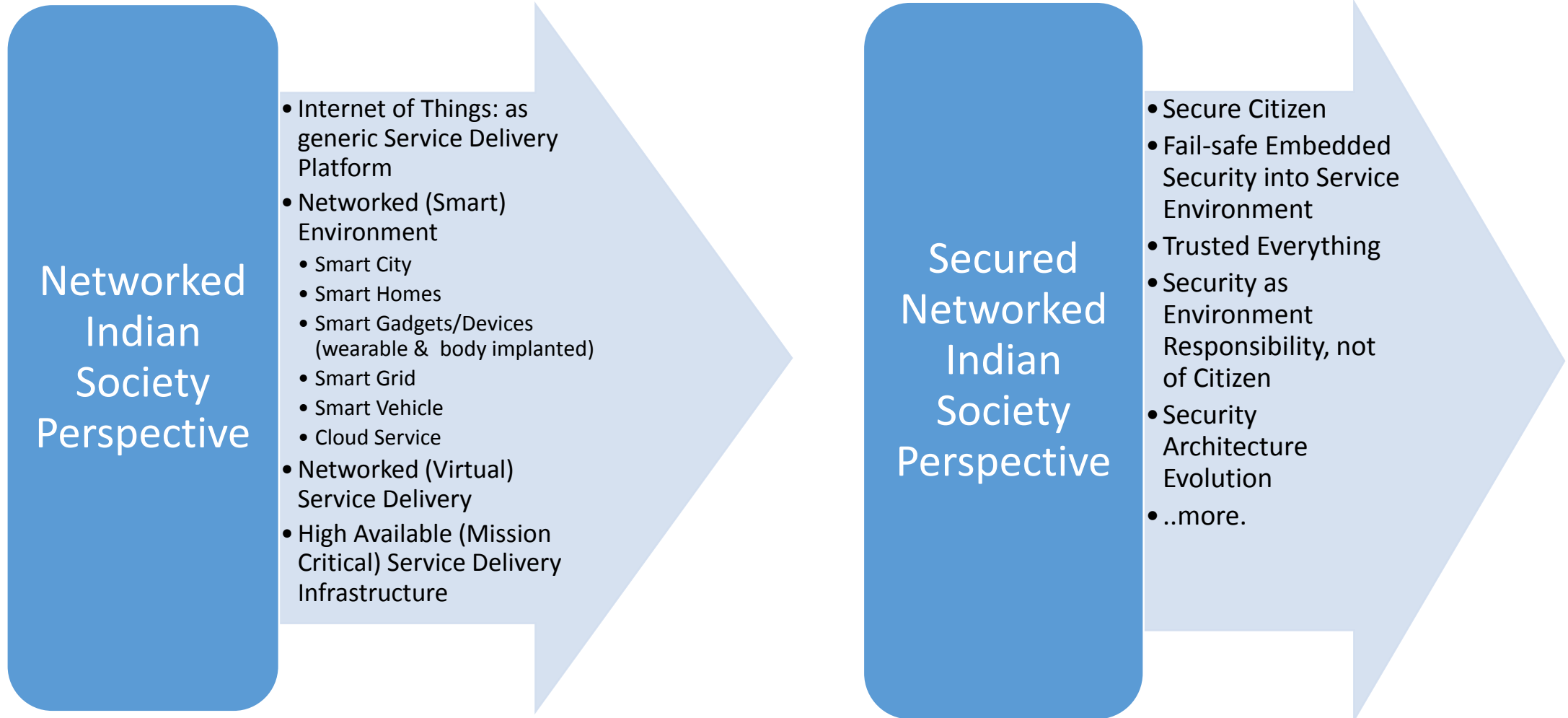
Strategic & Special Purpose Networks Perspective

- Unified Network Technology to build Strategic & Special purpose network
 - Network for Defense Requirements
 - Emergency Response Networks
 - Secure Intelligence Network
 - Secure Administration Network
 - Railway network
 - Isolated Communities Network
- Additional Network Features
 - LTE : Device to Device
- Secure Intelligence Networks

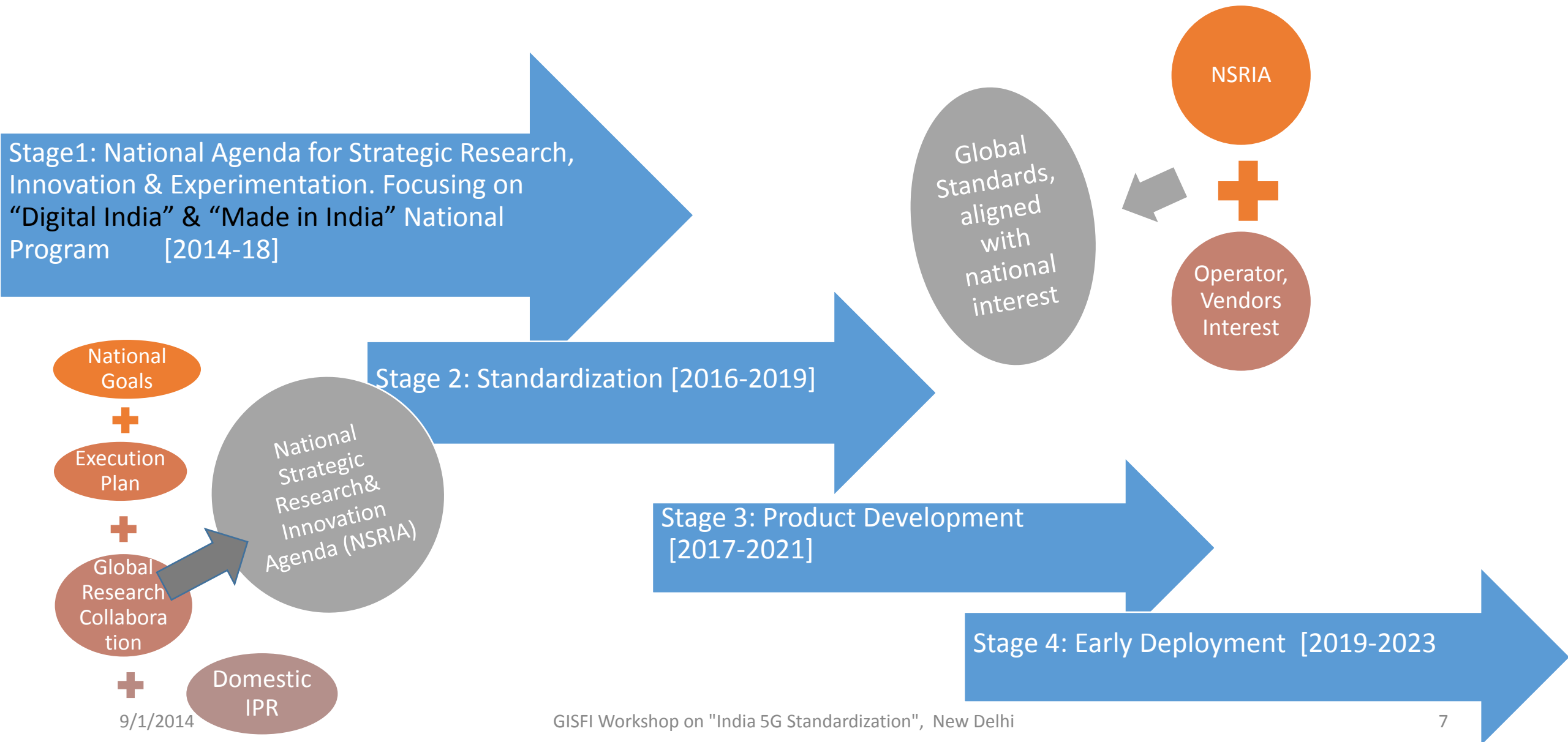
Indian Inclusive Growth Perspective

- Services to ALL: Universal Service Obligation
- Delivery of Services to Remote – unconnected underdeveloped Societies
- Effective Virtual Service Delivery:
 - Identity
 - Education
 - Health
 - Banking
 - Agriculture Management
 - Governance

Networked Society & Security

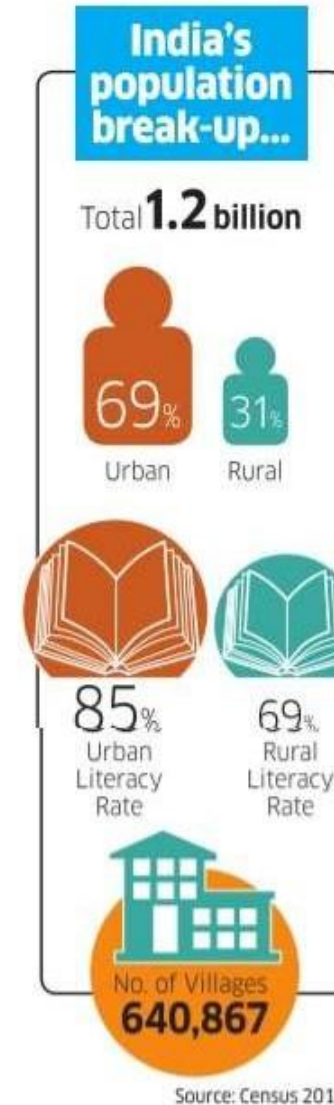


GISFI Plans, Stages for 5G Definition & Adoption



DIGITAL INDIA PLAN

- Vision to boost Health & Education sector through state of art sustainable Telecom & Services Infrastructure
- to transform India into a connected knowledge economy offering world class services at the click of a mouse
- To be implemented in a phased manner by 2018
- Estimated cost of implementation about Rs 1,13,000 crore. (~20B\$)
- Government confess: "We obviously can't ensure the quality and quantity of teachers but we can deliver world class education to children through massive online open courses," . Subject modules prepared by the private sector could be delivered online to the CSC which can be accessed by children.
- Despite making right to **education** a fundamental right, India struggles to fill its schools with teachers across the hinterland, leading to poor quality of education and innumerable dropouts.
- Key ongoing programs:
 - implementation and delivery of various eServices
 - National Optical Fibre Network (NOFN)
 - Electronic manufacturing and
 - Common Service Centres (CSC)



DIGITAL INDIA PLAN-2

- Monitored by Committee headed by PM
- Project Aims to Ensure:
 - government services are available to citizens electronically and
 - people get benefit of the latest information and communication technology.
- The government's vision under Digital India :
 - creation of ICT infrastructure like high speed Internet at gram panchayat level,
 - on demand availability of government services like health, education etc and
 - digital empowerment of citizens specially through digital literacy.
- Identified nine pillars as growth areas:
 1. broadband highways,
 2. everywhere mobile connectivity,
 3. Public Internet Access Programme,
 4. e-Governance,
 5. e-Kranti (which aims to give electronic delivery of services),
 6. information for all,
 7. electronics manufacturing,
 8. IT for Jobs and
 9. Early harvest programmes



Digital India AND Other Key Initiatives

- Broadband in 2.5 lakh villages by 2019**
- Wi-fi in 2.5 lakh schools, all universities**
- Wi-fi hotspots in public spaces in cities, tourist centres
- 4 lakh public internet access points**
- Train people in smaller towns and villages for jobs in IT sector
- Spend on current schemes **₹1 lakh crore**
- Spend on new schemes **₹13,000 crore**

NATIONAL OPTICAL FIBRE NETWORK: Conceptualized in 2011, the programme plans to connect all 2.5 lakh gram panchayats in the country at a cost of ₹20,000 crore. The government set up the Bharat Broadband Network to execute the programme

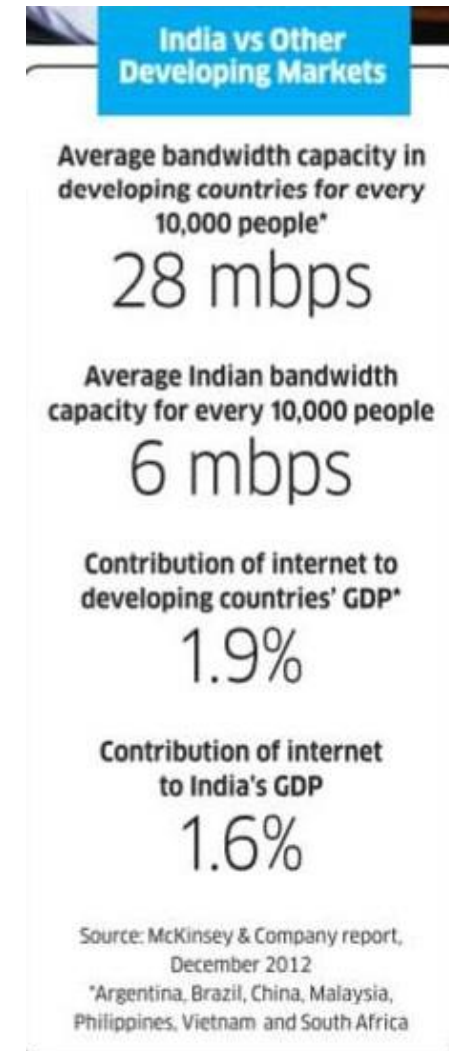
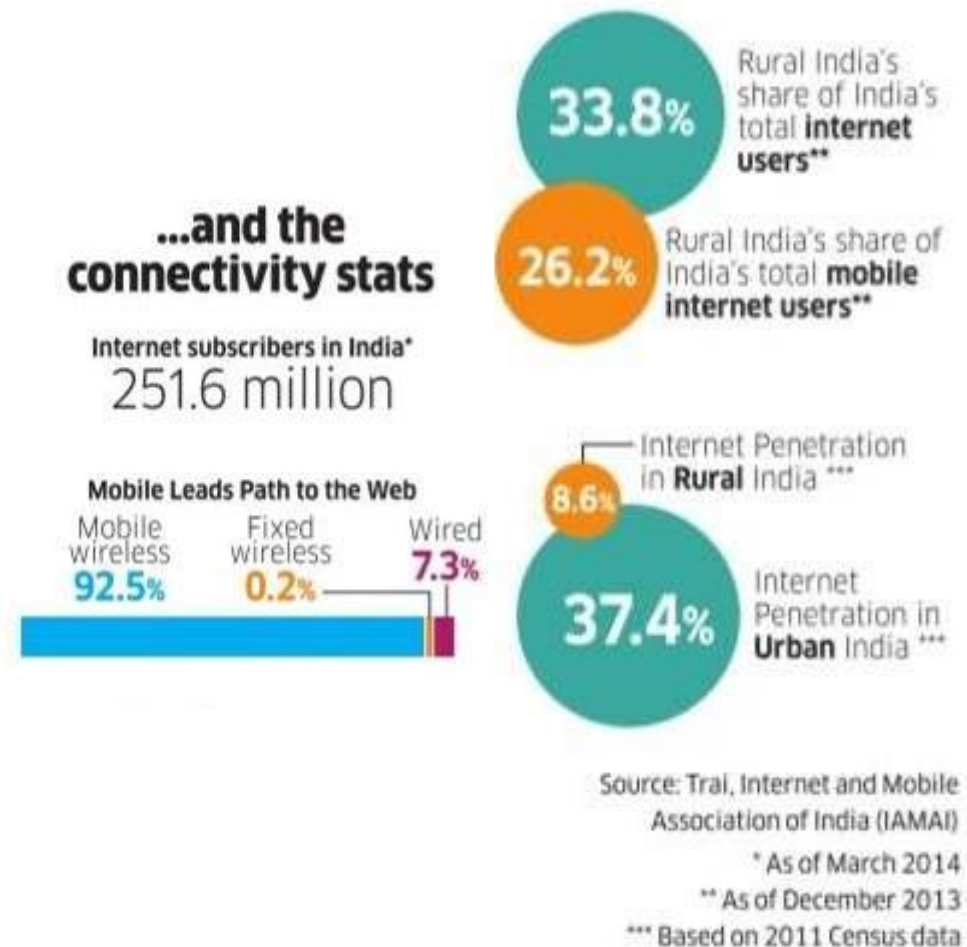
NATIONAL DIGITAL LITERACY MISSION: Set up in 2012 by IT industry body Nasscom and companies like Intel and Microsoft, NDLM will complement the government's efforts and intends to make 10 lakh people digitally literate by the end of 2015



DIGITAL INDIA PLAN-3

Key Areas of vision :

1. Digital infrastructure as a utility to every citizen
 - Digital Identity,
 - Mobile phone and
 - Bank account,
2. Safe & Secure cyber space
3. Governance & Services on demand –
 - Services available in real time on online and mobile platform,
 - Making financial transactions electronic and cashless
 - Digital empowerment of citizens
 - all documents, certificates available on **cloud**.



Set National Strategic Research & Innovation Agenda (NSRIA)

Concept is important, not figures:

- Set 5G Technology /Service objective to save significantly out of national outlay for Digital India (to be implemented by 2018), through NSRIA
- Provision of the Digital India Project implementation cost saving to NSRIA
- GISFI will take lead in the national program of Research and Innovation.

Workshop Outline

Keynote Addresses

A.K.Mittal, Sr. DDG, Head of TEC, DoT, Govt of India,
Kohei Satoh, Managing Director ARIB, Japan,
HyeonWoo Lee, Chair, 5G Forum Global Alliance Subcommittee, Korea,
Nigel Jefferies, Chairman WWRF
Tilak Raj Dua, Vice Chairman GISFI,

Session-1 :

5G User Perspective and Network capabilities

Chair: Nigel Jefferies, WWRF

Co-Chair: Dr. Ashok Chandra, Former Wireless Advisor, Government of India

Session 2:

Inclusive Growth and Secured Networked Society Perspective

Chair: Narendra Nath, DDG-Security, Department of Telecom

Co-Chair: Anand Prasad, NEC, Japan

Session 3:

Networked Society and Strategic/Special Purpose Networks Perspective

Chair: Kohei Satoh, ARIB, Japan

Co-Chair: Balamuralidhar P, TCS Innovation Lab, India

Session 4:

Network Architecture, Deployment Strategies and emerging Business Models Perspective

Chair: Sri Chandra (IEE-SA)

Co-Chair: Niranth Amogh, Huawei, India

Session 5:

Round Table Discussion : The Workshop Recommendations

Chair: Vijay Madan, Tata Tele

Co-Chair: Kiritkumar Lathia, GISFI India

Firm recommendation from workshop, Conclusion & Dinner

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Networked Society Perspective

- Internet of Things: as generic Service Delivery Platform
- Networked (Smart) Environment
 - Smart City
 - Smart Homes
 - Smart Gadgets/Devices (wearable & body implanted)
 - Smart Grid
 - Smart Vehicle
 - Cloud Service
- Networked (Virtual) Service Delivery
- High Available (Mission Critical) Service Delivery Infrastructure

Secured Networked Society Perspective

- Secure Citizen
- Fail-safe Embedded Security into Service Environment
- Trusted Everything
- Security as Environment Responsibility, not of Citizen
- Security Architecture Evolution
- ...more.

Thanks, Let us Begin !

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