



tsds
India's Telecom SDO

GSC | 22
MONTREUX, SWITZERLAND



TSDSI Priorities

GSC22, Montreux, Switzerland

SDO Priorities Session

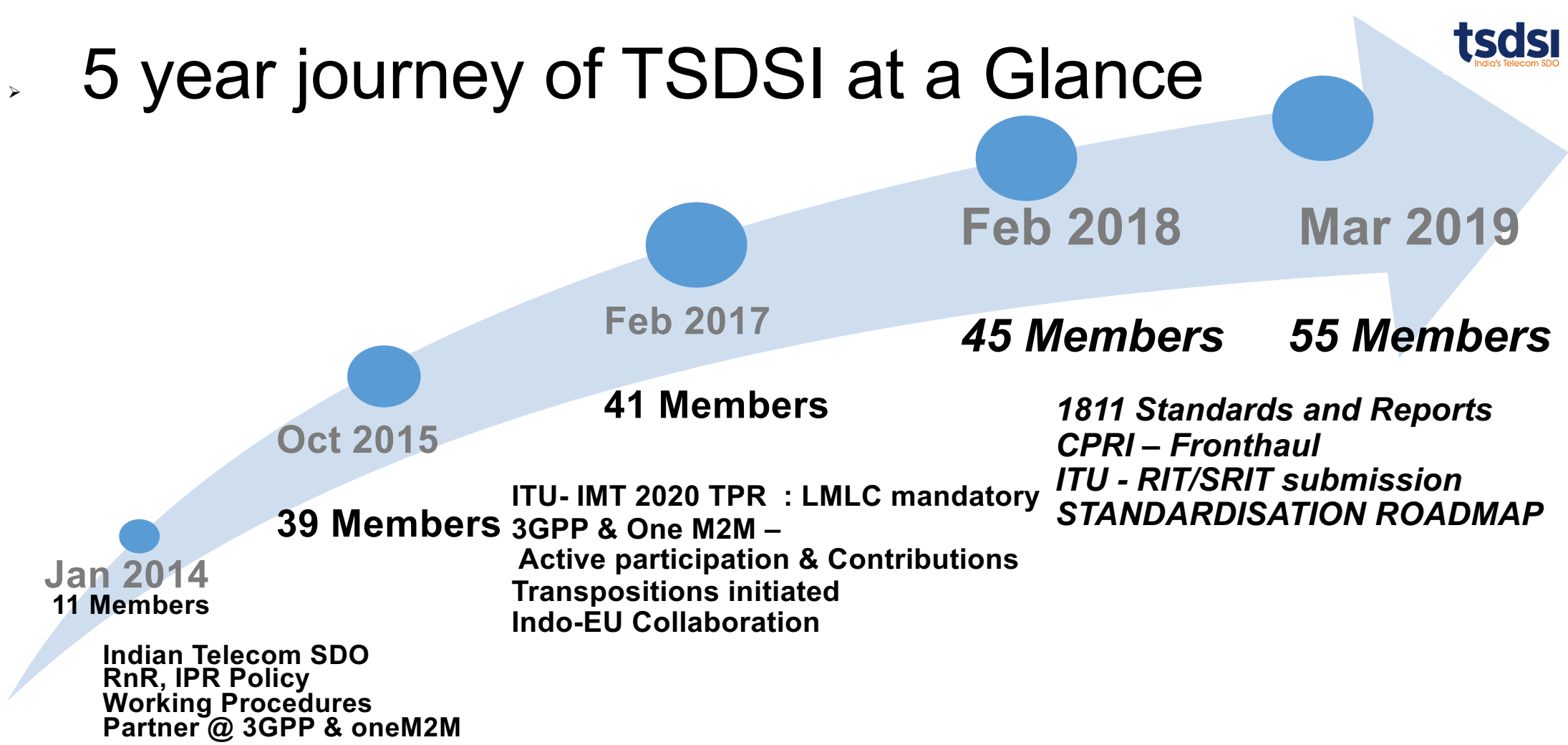
26 March 2019

Pamela Kumar
Director General, TSDSI

Outline

- **5 years of TSDSI**
- National Priorities
- Some Initiatives
- Conclusion

5 year journey of TSDSI at a Glance



FORMING

STORMING

NORMING

PERFORMING

TSDSI Goals & Accomplishments

Goal	Accomplishments
Enhance Technical Activities	1811 STANDARDS and REPORTS published 30+ active STUDY ITEMS/ WORK ITEMS in Study Groups Roadmap published
Higher Impact in Global Forums	ITU : IMT2020 – LMLC in TPR, RIT/SRIT(multi-country), VVV changes 3GPP : Release 15/16 enhancements oneM2M : Release 2/3 enhancements TSDSI GC member is 3GPP SA6 Chair; Deputation to 3GPP; 3GPP PCG chair in 2020
Establishing TSDSI as World Class SDO	Membership: 55 members (15 new) 30+ External events & Outreach sessions National Digital Communication Policy-2018, Strengthening the Standardisation Framework, 5G India 2020 HLF, Technical track at IMC 7 MoUs, Indo–EU Project, Country to country proposals (Indo-Japan, Indo-Korea, BRICS, Indo-German, Indo-Taiwan, China). Strengthening the Secretariat



TSDSI Roadmap 1.0



	2018	2019	2020
Critical Communications (PPDR)	<p><u>Phase – I: Study Report</u></p> <ul style="list-style-type: none"> - Indian usage scenarios - Indian user requirements - Gap analysis wrt available standards 	<p><u>Phase – II: Technical Specification</u></p> <ul style="list-style-type: none"> - Specifications for gaps identified - Plugtests & certification 	
Rural Broadband Architecture	<p><u>Phase – I: Study Report (SR)</u></p> <ul style="list-style-type: none"> - Requirement analysis for affordable broadband access in rural areas - Plausible Architectures 	<p><u>Phase – II: SR</u></p> <ul style="list-style-type: none"> - Candidate technologies for rural broadband 	<p><u>Phase – III: Study Report</u></p> <ul style="list-style-type: none"> - Energy efficiency study - Plausible architectures
vRAN using wireless backhaul	<p><u>Phase – I: Study Report</u></p> <ul style="list-style-type: none"> - Enhancements over IPRAN cloud radio - vRAN architecture (microwave / E-band / V-band) - Layer-1, 2, & 3 functions among RRU and BBU 	<p><u>Phase – II: Study Report</u></p> <ul style="list-style-type: none"> - Bandwidth compression for VRAN - Spectrum efficiency - Spectrum band & backhaul capacity 	

TSDSI Roadmap 1.0



Cloud Interoperability

Phase – I: Use Cases & Gap Analysis

- Use cases for smart city projects;
- Gaps vis a vis Global standards
- Draft specifications:

Phase – II: Testbed

- Interop Test Bed
- Interop Plugfests.

Phase – III: Technical Specifications

- TSDSI Standards
- Contributions to Global Standards
- Test Cases & Interop Certification.

Zero Call Drop Rate

Phase – I: Study Report

- Issues associated w call drops
- Strategies to reduce call drops
- Data collection & algorithms
- Recommendations

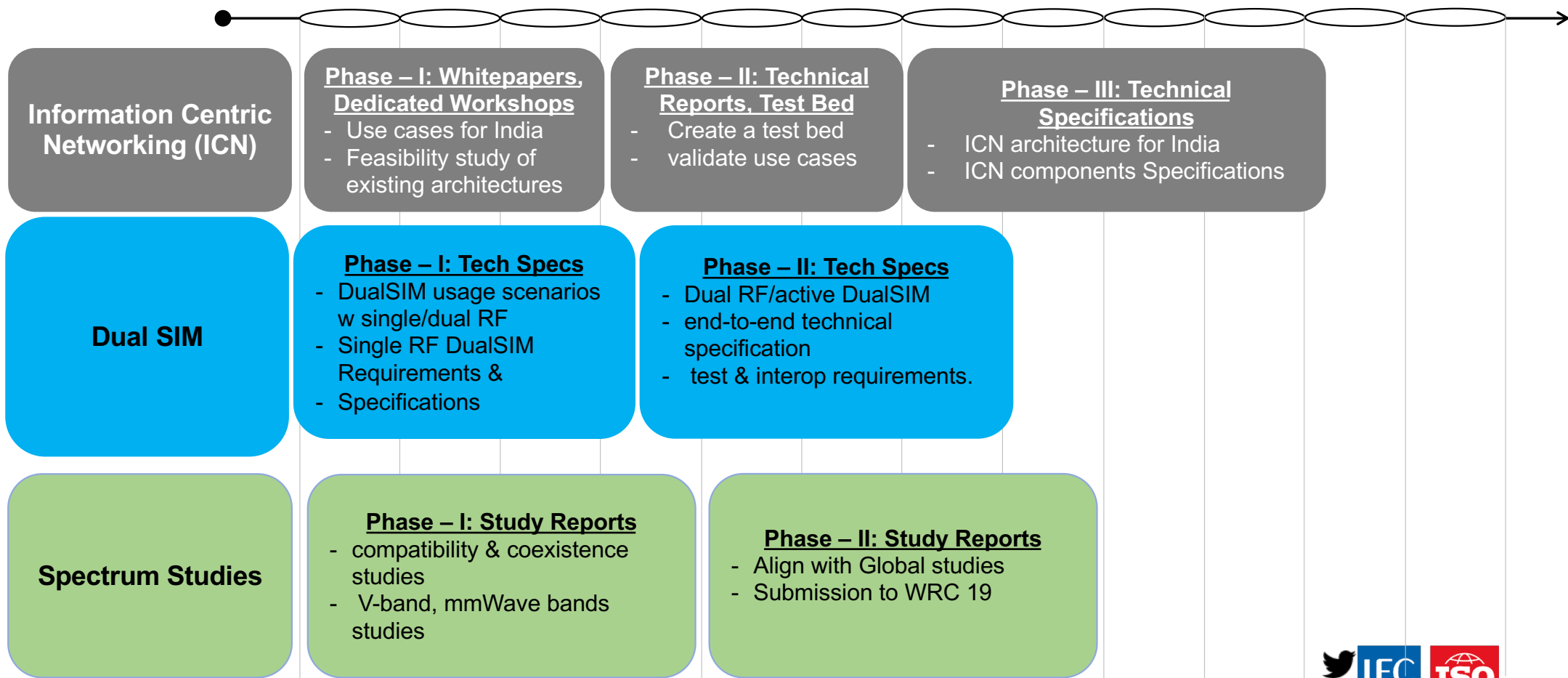
Unified Authentication Framework

Phase – I: Study Report

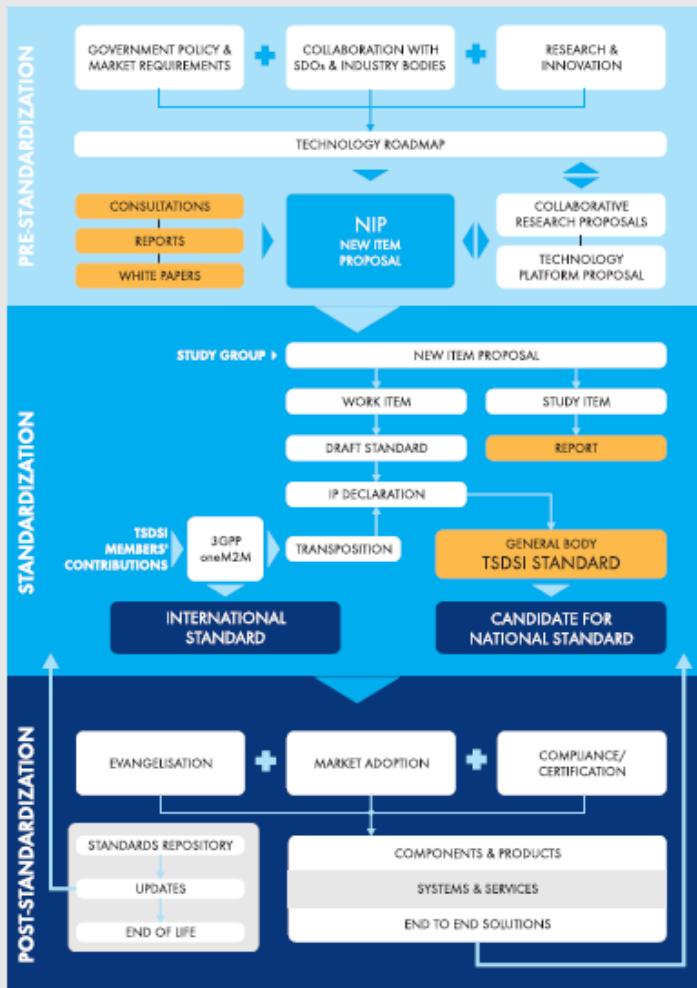
- UAF requirements
- Gap analysis wrt Aadhar
- UAF architecture solutions
- Recommendations/conclusions.



TSDSI Roadmap 1.0



Standards Life Cycle



Technical Activities @TSDSI

TSDSI Technical Groups

Study Group NETWORKS

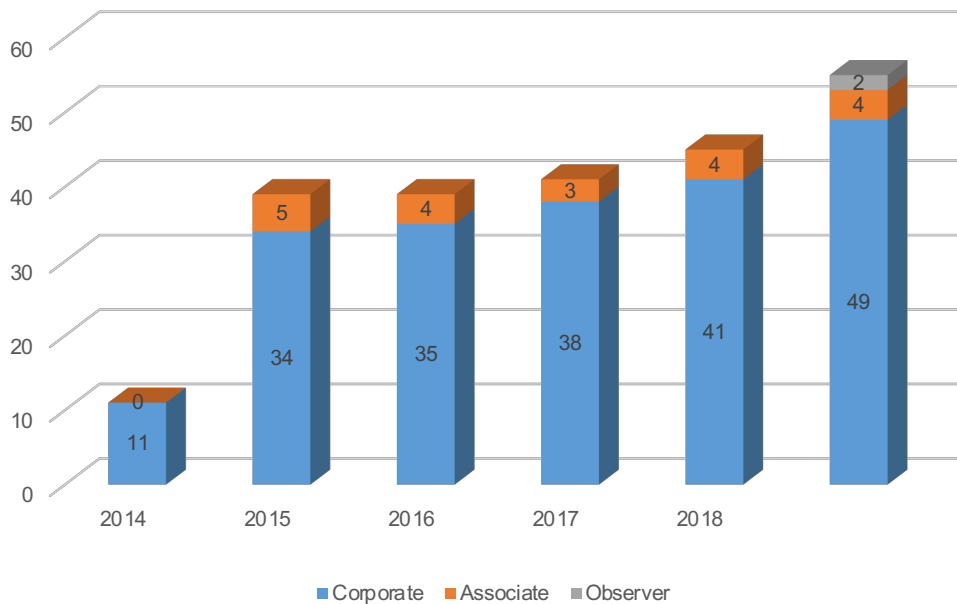
- Study of Channel Characteristics for 60GHz for 4G/5G backhaul
- Enablers for Private Networks
- NB-IoT Extension
- Broadcast offload
- IMT2020 (5G) Technologies

Study Group SERVICES & SOLUTIONS

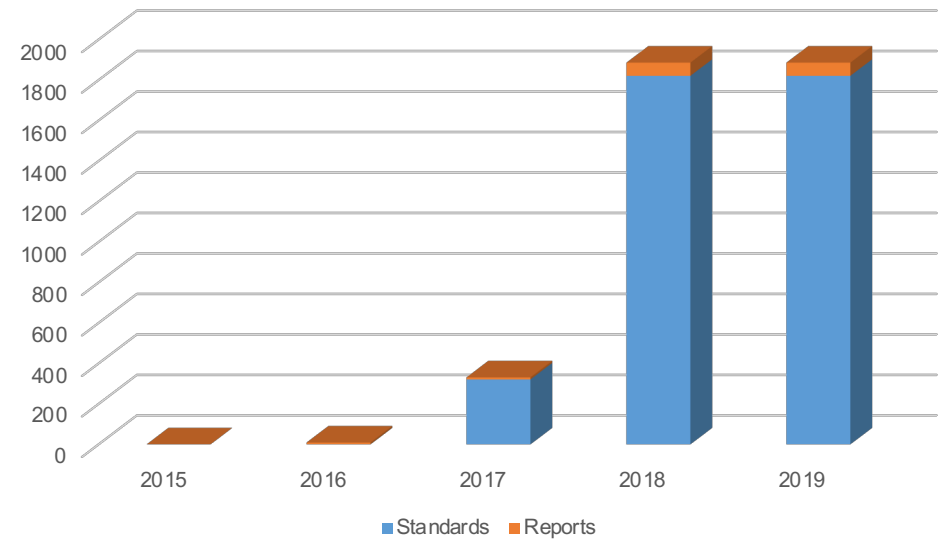
- Cloud Interoperability and Portability
- Public Protection and Disaster Recovery
- Support for Indian Languages
- Information Centric Networking
- UAV/Drone Communications and Services
- M2M/IoT
- Security and Privacy

TSDSI@5

Membership Growth



Published Standards



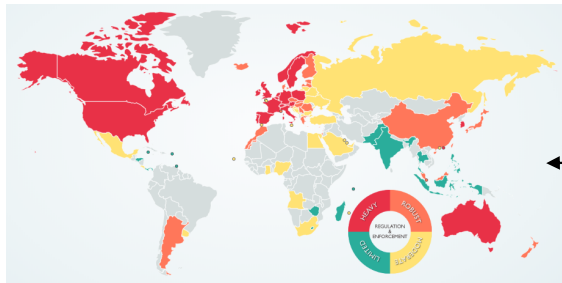
MoUs : ETSI,
IEEE-SA,
5GIA, ATSC,
BIF, CCICI,,
GCF, TAICS,
TTA , WWRF

- TSDSI-5GIA-BIF Workshop on 5G Technology Landscape
- TSDSI-ATSC Workshop on Broadcast-Broadband Convergence
- IEEE-TSDSI workshop on 5G Technologies @IMC2018
- India EU – oneM2M Multicity tutorials & hackathons
- BIF-TSDSI-BE Conference on 5G Technologies
- 5G Technology Dialog Series

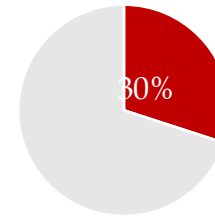
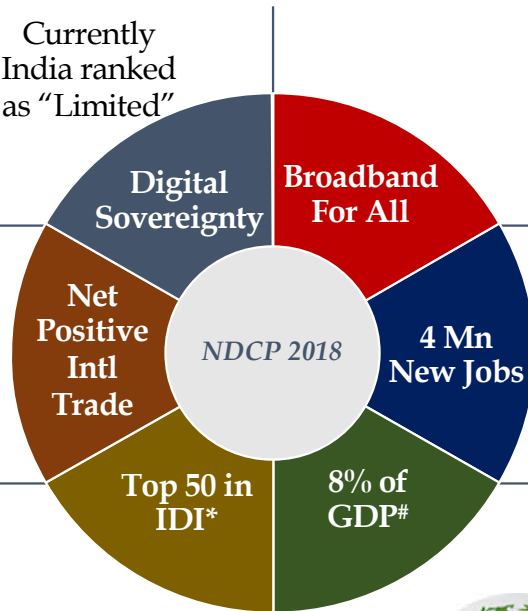
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- **National Priorities**
- Some Initiatives
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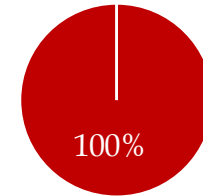
National Digital Communication Policy 2018 Objectives



Currently India ranked as "Limited"



2017



2022

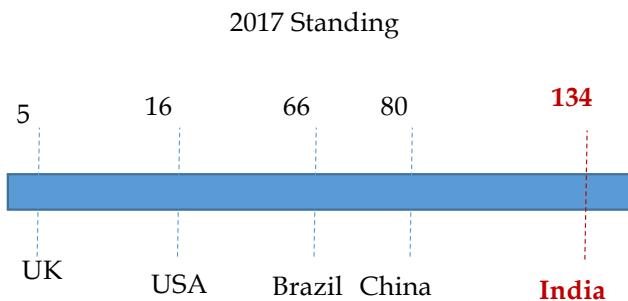
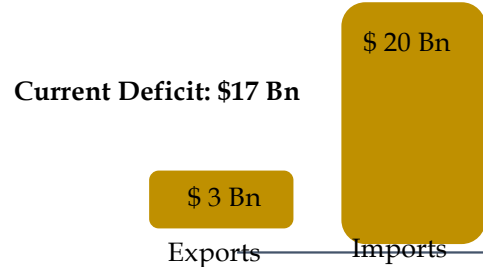
8 Mn



2017



2022



* ICT Development Index of ITU



Current Global Average
4.5%

Expected contribution of Telecom Sector to India's GDP



National Digital Communication Policy 2018

Marching towards the Future – with Aspiration and Determination



Connect India

Broadband for All – a tool for socio-economic development

Propel India

Investments, Innovation & IPR – to enable

Next Generation Technologies (5G, AI, IoT, Cloud and Big Data)

Secure India

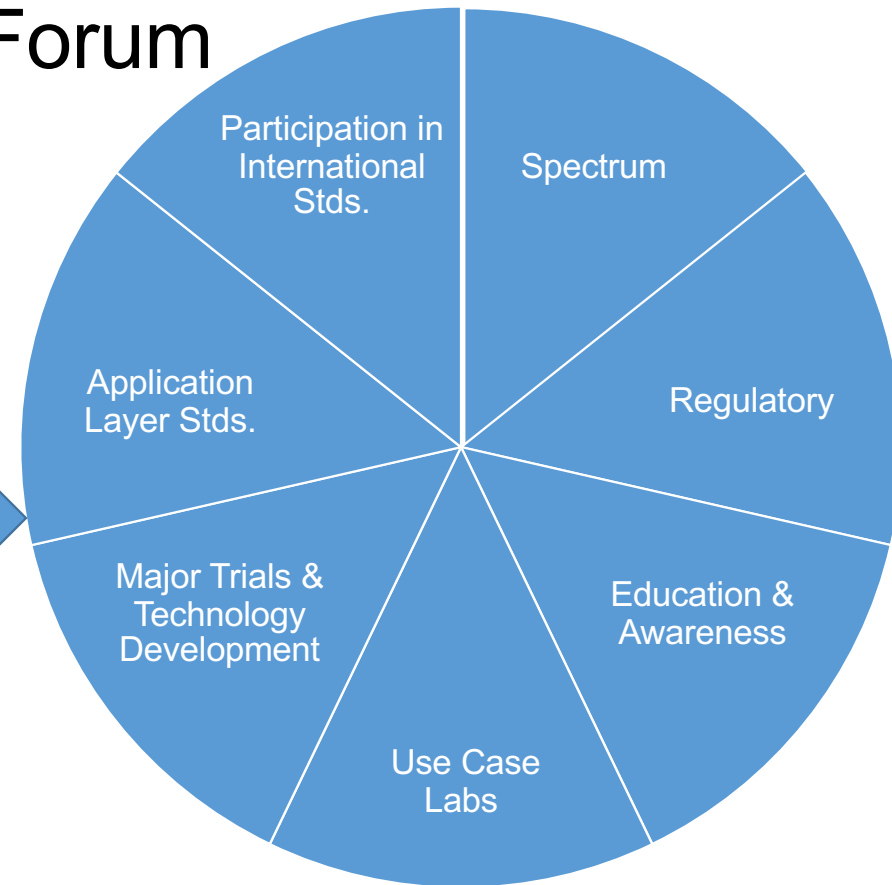
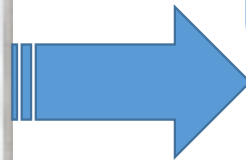
Sovereignty, Safety and Security of Digital Communications

2022 Goals:

1. 50 Mbps Universal broadband connectivity
2. 10 Gbps connectivity to all Gram Panchayats
3. 100 Mbps broadband on demand to all key development institutions
4. Fixed line broadband access to 50% of households
5. 'Unique Mobile Subscriber Density' of 65
6. 10 million public Wi-Fi Hotspots
7. Connectivity to all uncovered areas



5G India 2020 High Level Forum



5G technology has the potential of ushering a major societal transformation in India by enabling a rapid expansion of the role of information technology across manufacturing, educational, healthcare, agricultural, financial & social sectors.

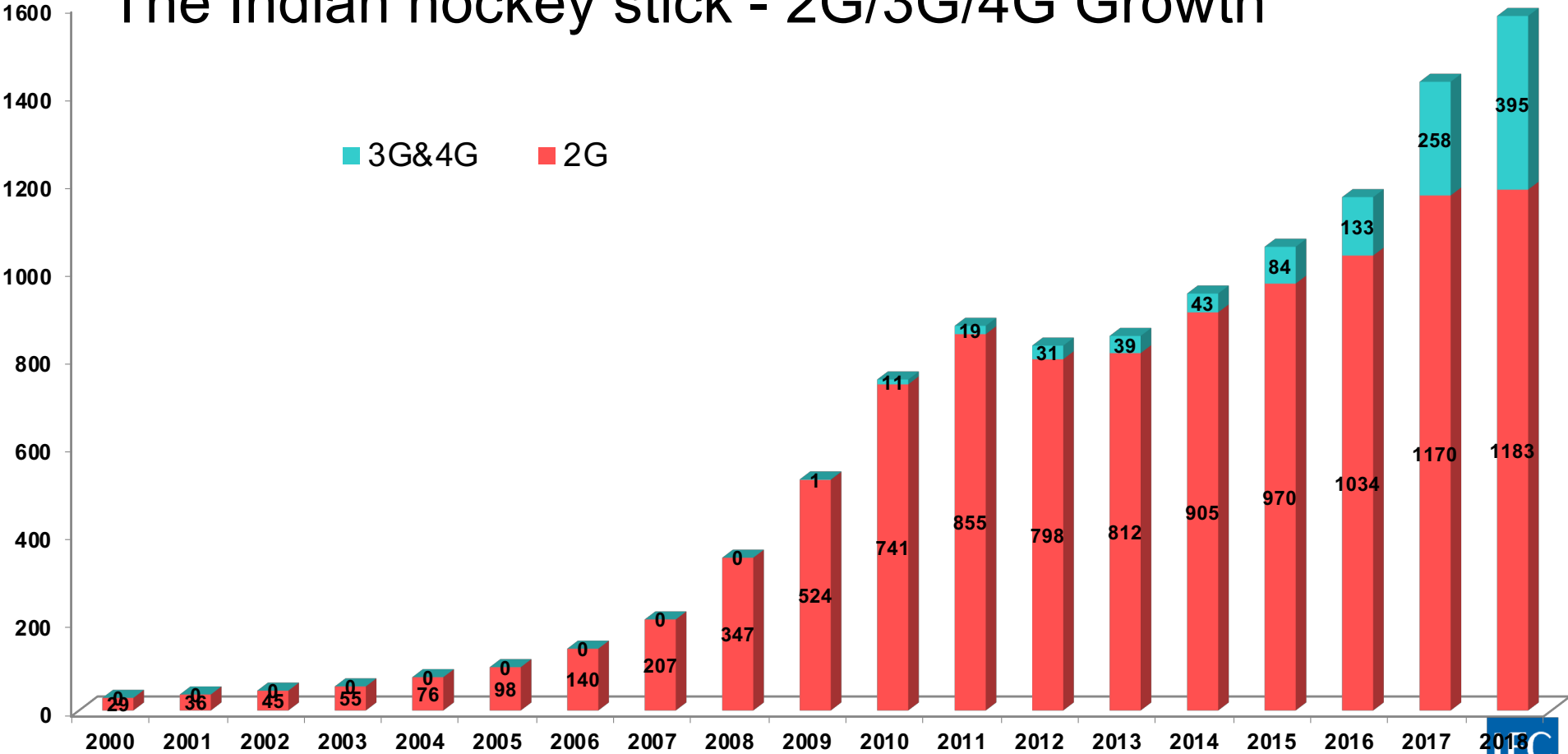
India must embrace this opportunity by deploying 5G networks early, efficiently, and pervasively, as well as emerge as a significant innovator and technology supplier at the global level.

Emphasis should be placed on 5G touching the lives of rural and weaker economic segments so as to make it a truly inclusive technology.



Why we need India Specific – Trials, Use cases & Standards

The Indian hockey stick - 2G/3G/4G Growth



*All subscription in millions

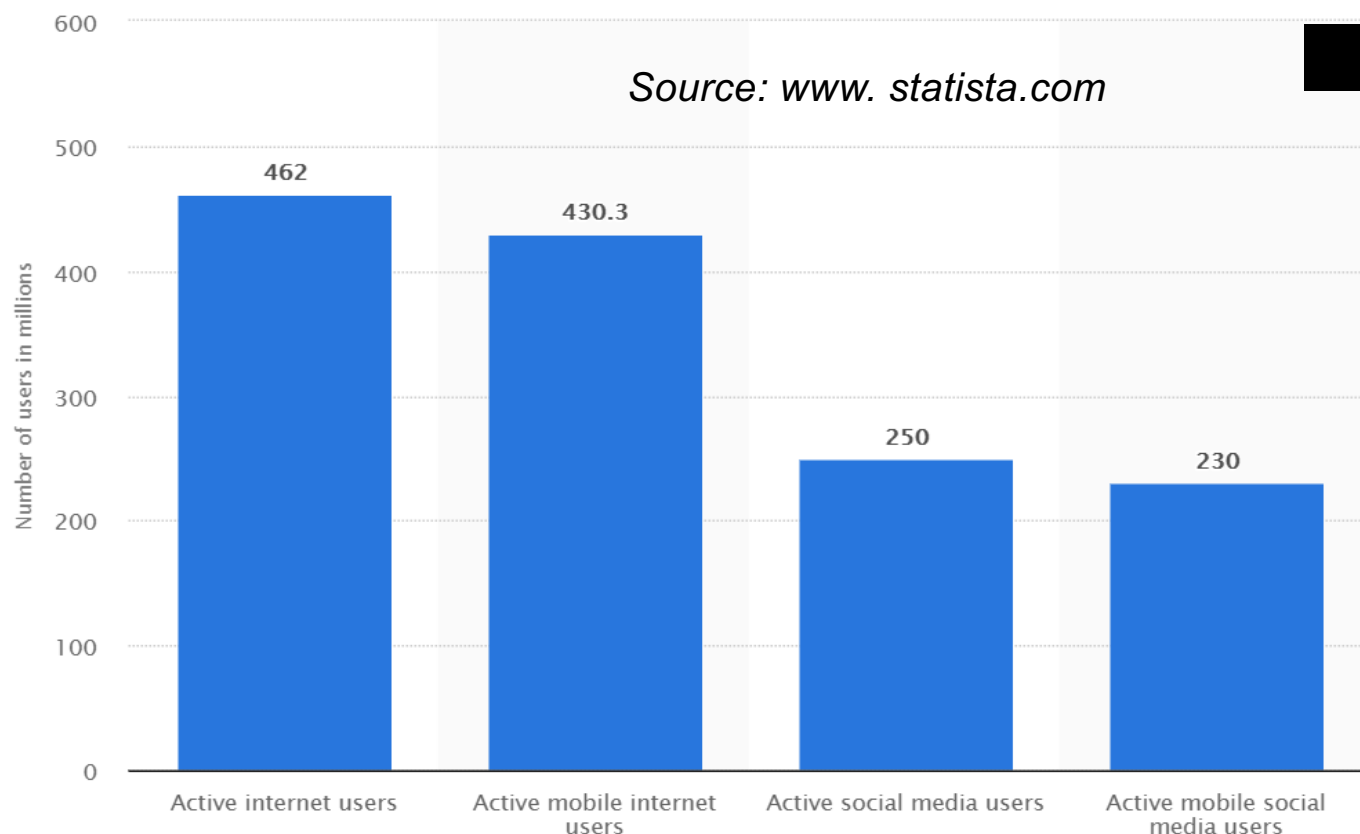
Source : GSMA, TRAI and internal estimates

Sensitivity: Internal & Restricted



India is the Largest consumer of Mobile Data India is probably the World's most fertile market for 5G adoption

Digital population in India as of January 2018 (in millions)



DATA Consumption :

- 1,500 Petabytes per month
- 11Gbytes per user per month
- 90 % devices sold in 2017 are 4G
- Smartphones worth \$28.5 billion (161/330 million) sold in 2018
- 65-75% video
 - 90% in regional languages

Source: Niti Aayog, Nokia MBIT report

*All subscription in millions

Source : GSMA, TRAI and internal estimates

Sensitivity: Internal & Restricted

Internet penetration : 829 million Indians by 2021



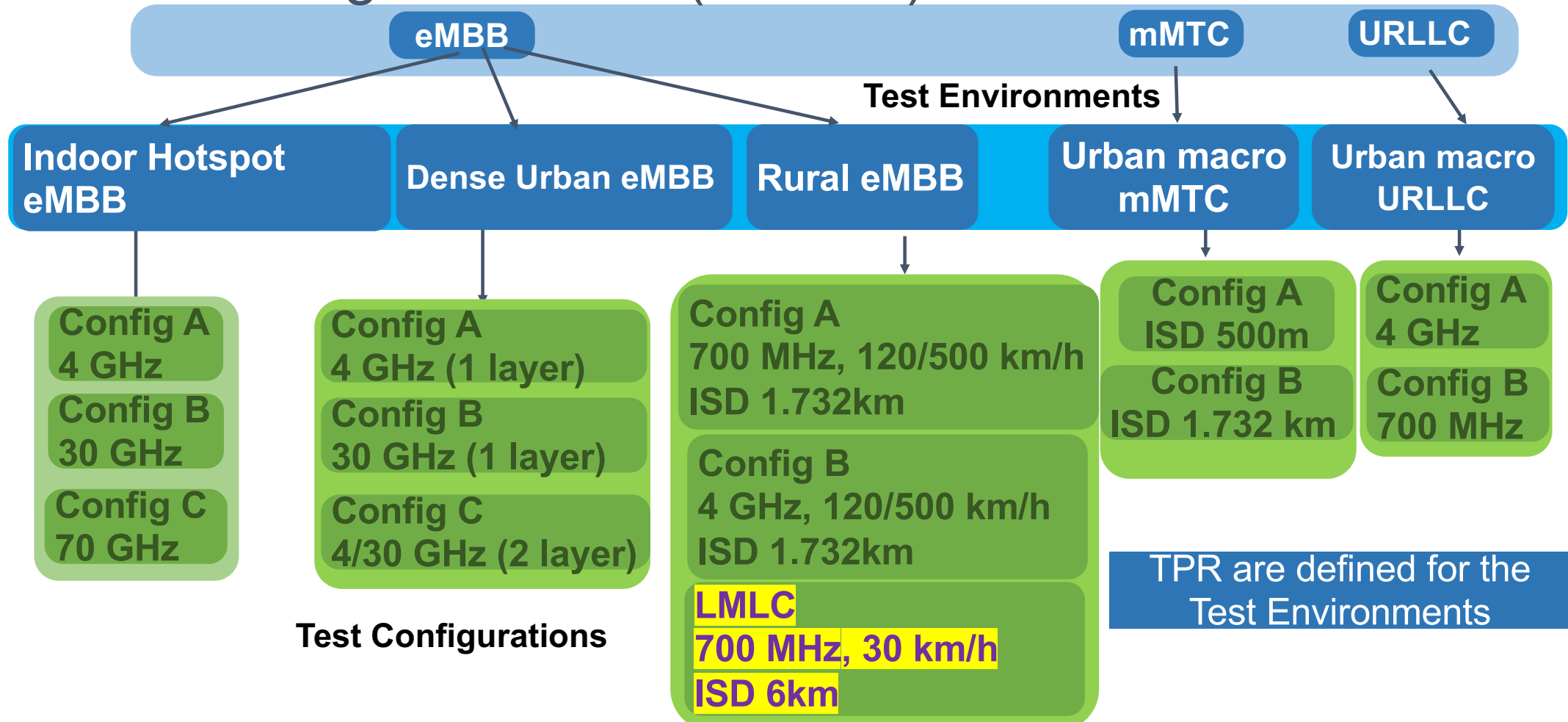
(Picture Courtesy: ultraxart.com)

Social Media Users: The number of **Social Media Users** has increased by 1 million new users every day in 1 year.

Outline

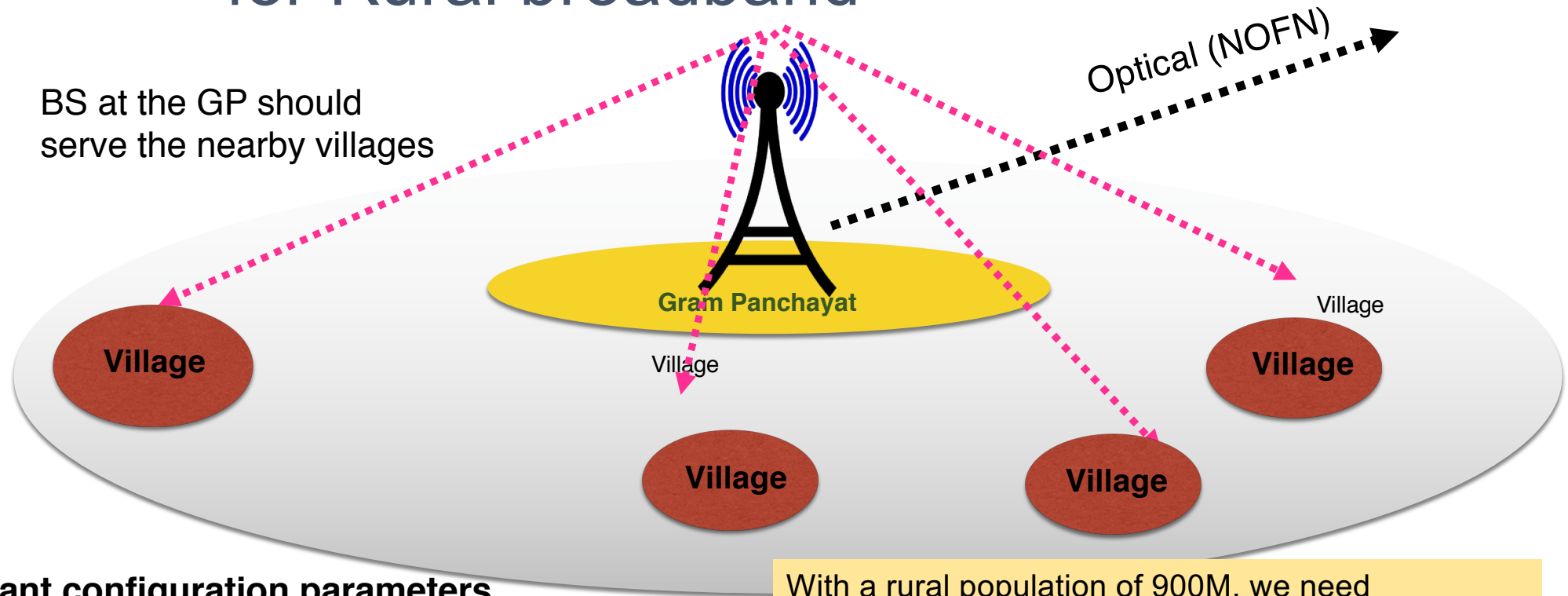
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IMT2020 Usage scenarios(M.2083)–LMLC is MANDATORY



In addition, for Rural-eMBB test environment, average spectral efficiency values **should** meet threshold values for LMLC evaluation configuration with ISD of 6000m & either evaluation configuration with ISD of 1732m

Low Mobility Large Cell(LMLC) Proposal: for Rural broadband



Important configuration parameters

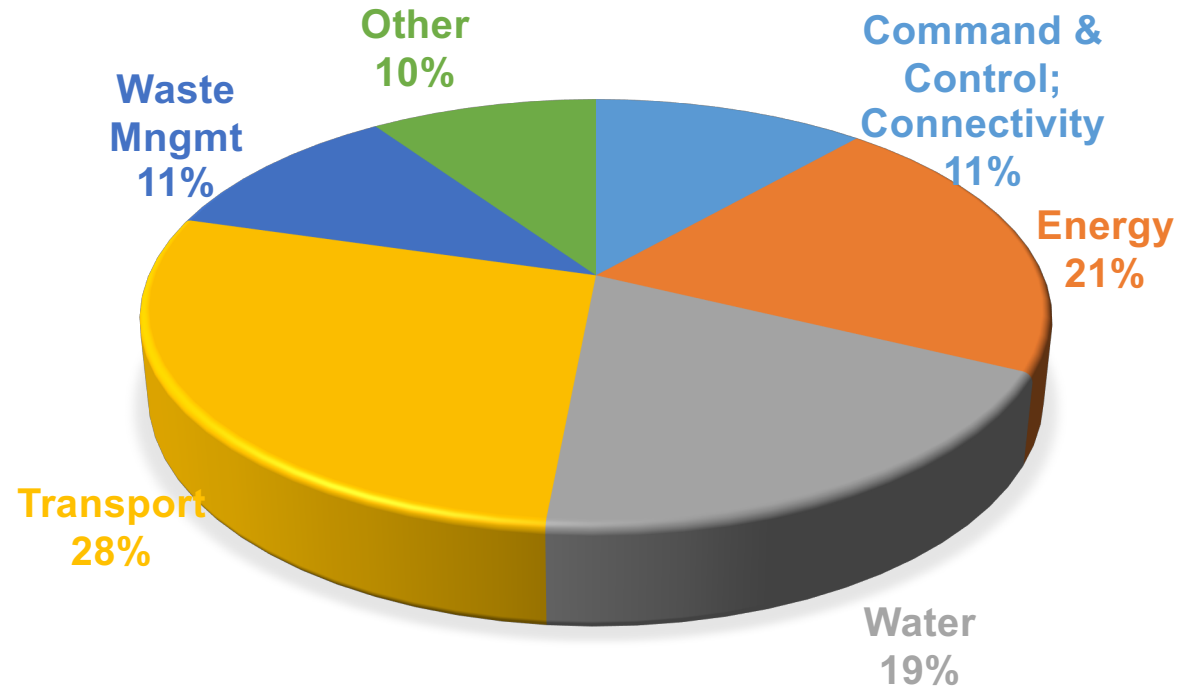
1. Cell radius
2. UE height
3. Mobility model
4. Target edge/average cell spectral efficiency

With a rural population of 900M, we need All the spectrum to deliver broadband
LMLC test case is only for 700 MHz
India is looking at using all FR1 bands in rural areas

Smart City Solutions in India

“99 smart cities have been selected and to be allocated Rs 2.04 lakh crore (20 Billion Euro)

2020: \$1.5 trillion market



MoHUA has released [Solution Exchange for Transformation of Urban India](#)

[Integrated Command and Control Center: Maturity Assessment Framework](#)

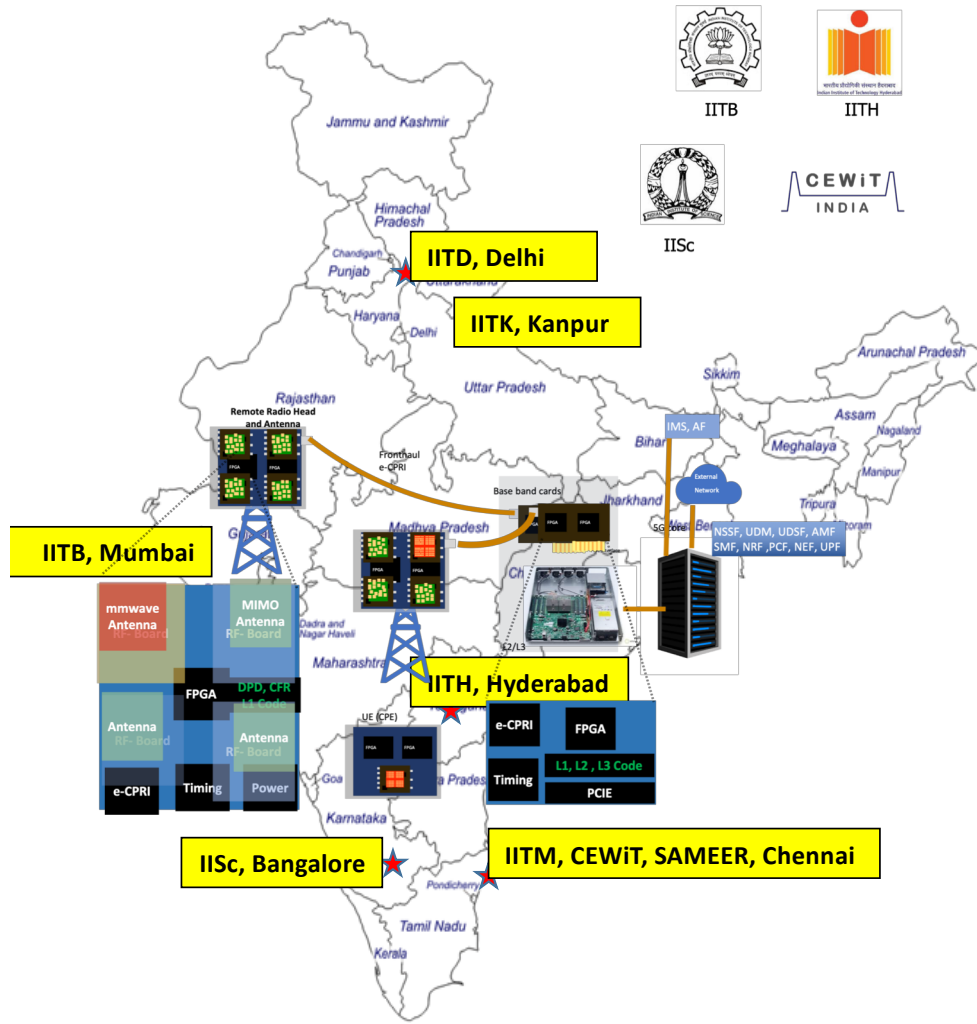
[Smart cities Promoting Innovation Research and Incubation in Technology \(SPIRIT\)](#)

[DataSmart Cities: Empowering Cities through Data](#)

QUEST for an Interoperable Common Services Platform – Is **oneM2M** the answer?



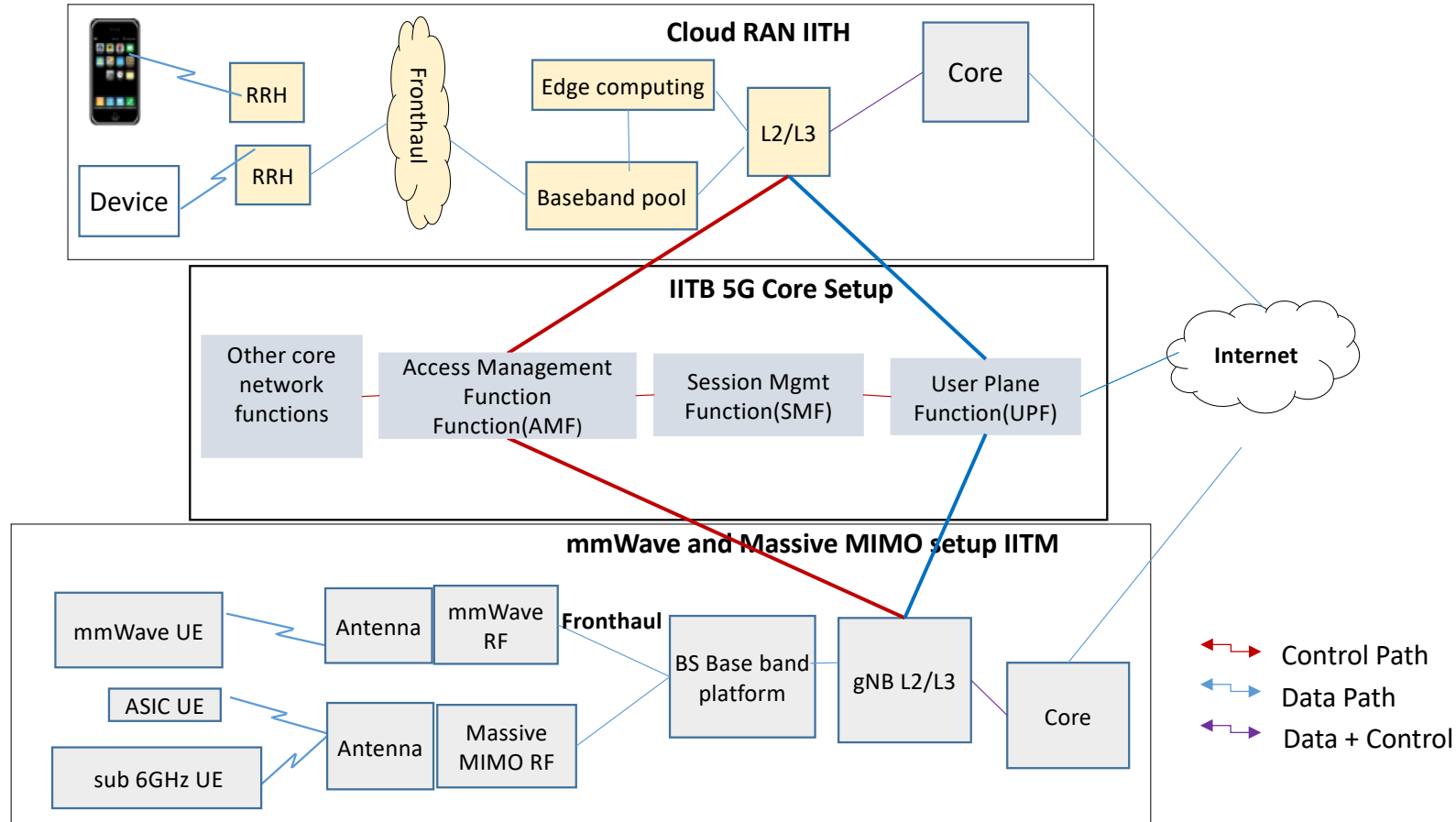
India's Collaborative Testbed - \$ 35 Million



Major Goals of 5G test bed

- Demonstrate solutions for India
- Boost Product Design & Manufacturing
- Encourage telecom product Start-ups
- Increase participation in Global Forums
- Hugely enhance capacity in 5G
- Multiply R&D Capability

Test Bed Setup at IITB–Integrated with IITM and I I H



CONCLUSION

- **TECHNOLOGY for DEVELOPMENT is the NEED of the HOUR**
 - Rapid adoption of Technology is **ABSOLUTELY ESSENTIAL** for INDIA's DEVELOPMENT
 - **INDIA SPECIFIC REQUIREMENTS** need to influence the roadmap of "New Technologies"
 - INDIA needs to **INNOVATE** and **CONTRIBUTE** to the development of "New Technologies"
-
- INDIA is a late entrant in Standardisation
 - INDIA is at an **EARLY STAGE** of building **INNOVATION CAPABILITY**
 - The **BARRIERS** to entry in Standardisation are **HIGH** for Developing Countries like INDIA
 - **Can we work together to make STANDARDISATION more INCLUSIVE ?**



Acknowledgements

- TSDSI Chair, Vice Chair & GC members
- TSDSI Secretariat
- 5G India 2020 HLF
- Deptt of Telecommunications