# NEED FOR ICT STANDARDS AND WAY FORWARD

By Vijay Madan  Adviser Solutions and Services TSDSI

# WHY DO WE NEED STANDARDS ?

"Standards should facilitate interoperability, support fair trade and fair competition, increase user, consumer and Government confidence and stimulate innovation"

- Karen Bartleson – IEEE President, former President IEEE-SA in her book" Ten Commandments for Effective Standards"

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# NEED FOR STANDARDS - 1

- **Safety and reliability** – Adherence to standards helps ensure safety, reliability and environmental care.
- As a result, users perceive standardized products and services as more dependable – this in turn raises user confidence, increasing sales and the take-up of new technologies.
- **Support of government policies and legislation** – Standards are frequently referenced by regulators and legislators for protecting user and business interests, and to support government policies. Standards play a central role in Single Market.
- **Interoperability** – the ability of devices to work together relies on products and services complying with standards.

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# NEED FOR STANDARDS - 2

- **Business benefits** – standardization provides a solid foundation upon which to develop new technologies and to enhance existing practices. Specifically standards:
  - Open up **market access and services**
  - **Customers Do not get locked to single product vendor or service provider**
  - Provide **economies of scale**
  - Encourage innovation
  - Increase **awareness** of technical developments and initiatives
  - Help the providers to focus on core business and not worry on technologies underlying
- **Consumer choice** - standards provide the **foundation for new features** and options, thus contributing to the enhancement of our daily lives. Mass production based on standards provides a greater variety of accessible products to consumers.

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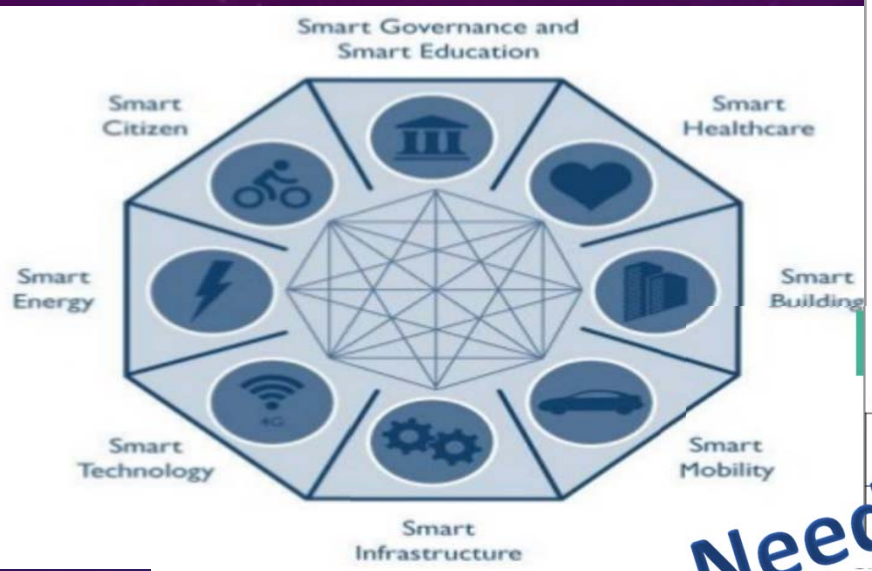
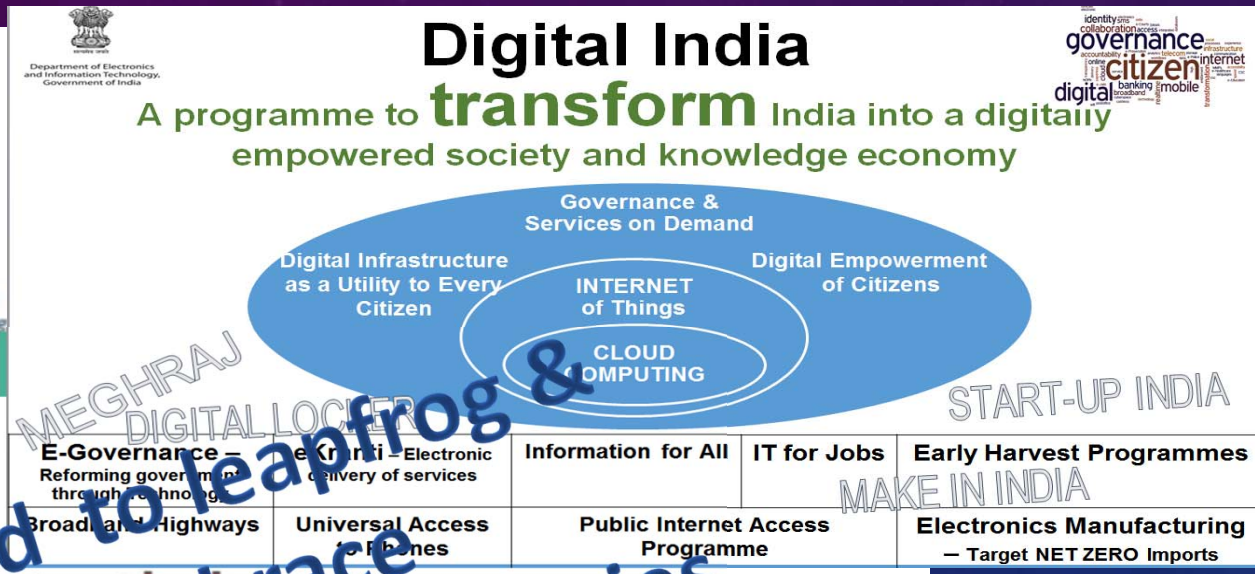
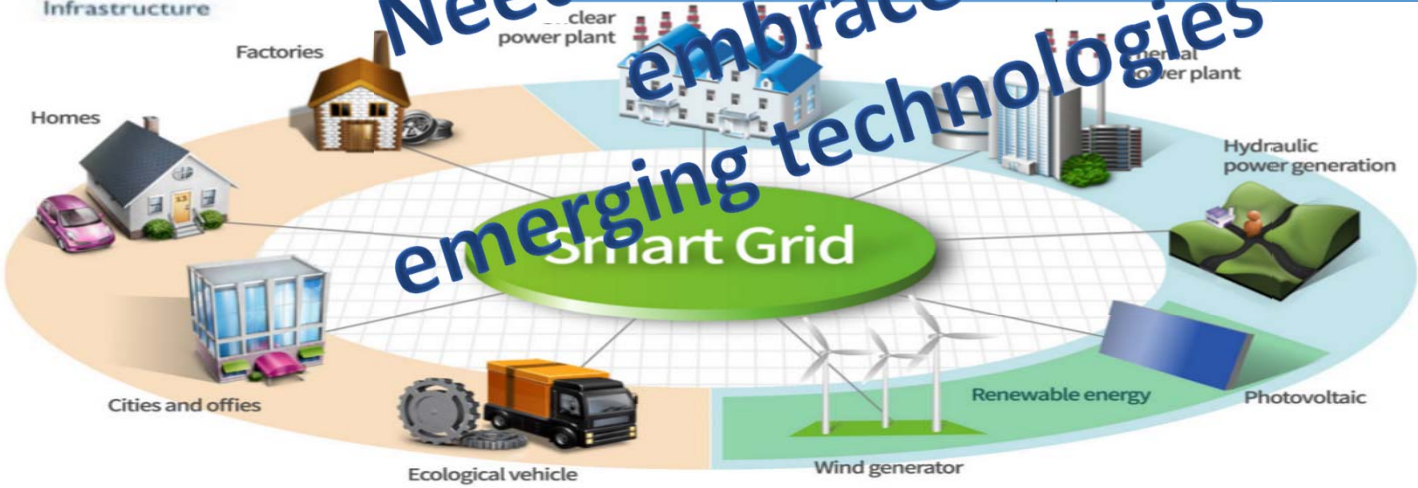
# SMART CITY, SMART GRID, SMART NATION ETC.

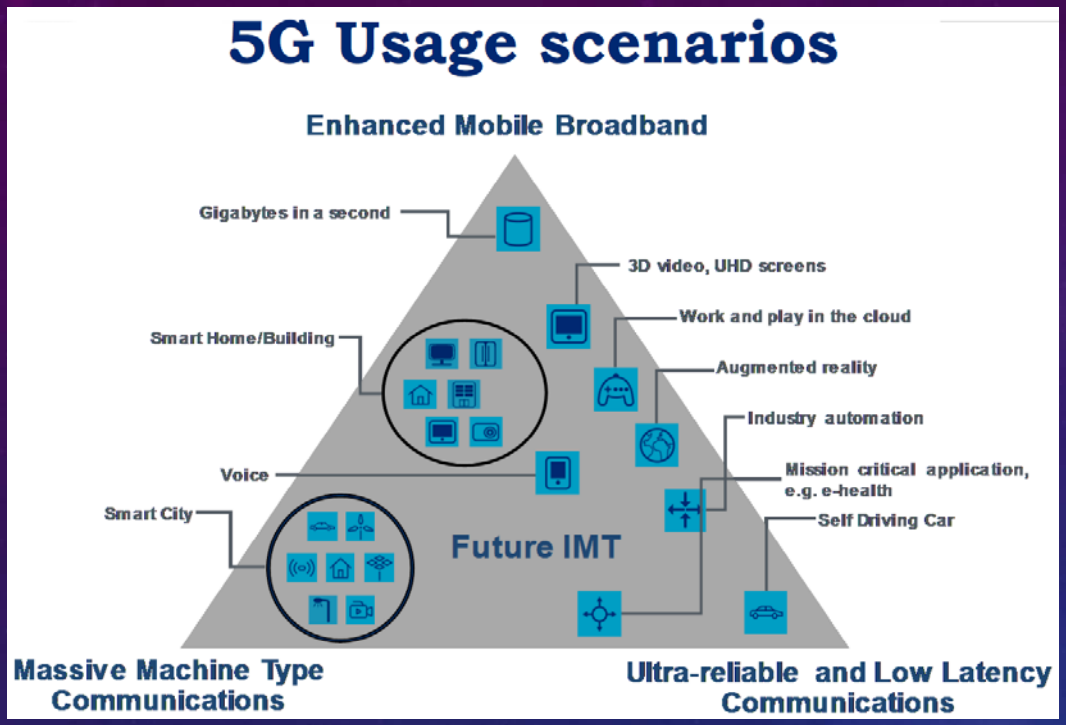


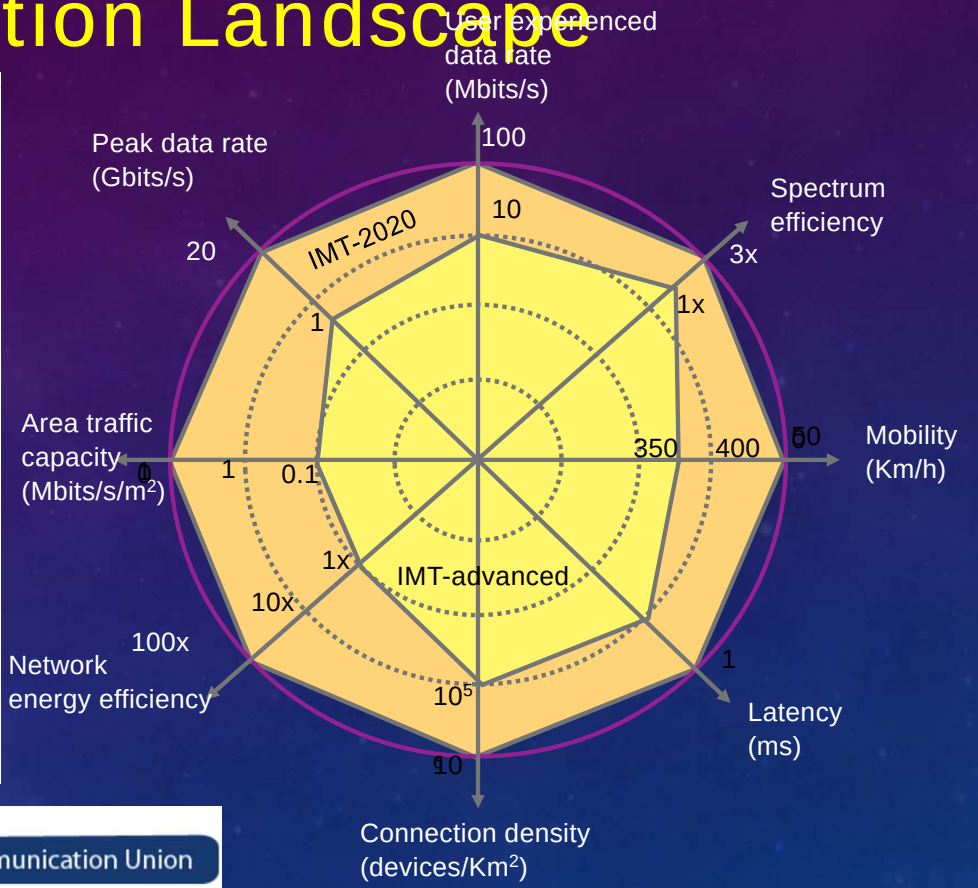




Need to leapfrog & embrace emerging technologies



# 5G Standardisation Landscape




International Telecommunication Union

3GPP A GLOBAL INITIATIVE

oneM2M

IEEE

IETF

ISO IEC



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# 5G APPLICATIONS IN INDIA

| | |
|---|---|
| Digital Economy | • Digital India, e-Governance, e-commerce, Digital Payments etc. |
| Smart Agriculture | • Information availability related to farmers and elimination of middle man |
| Smart City | • Smart Transport, Smart Grid, Smart Parking, Environment management/control etc. |
| Smart and Tele Health | • Healthcare availability to Rural Population – Tele-medicine, Tele-Diagnostics, Tactile Internet |
| Smart Manufacturing | • Industry 4.0, Augmented Robotics in warehouse and factories |
| Smart Governance | • Digitization of public services, Robust Disaster Management framework |
| Smart Entertainment and Content Distribution | • 4K Video, Video multicasting and Video on demand anytime, anywhere |
| Skill Development | • Smart education, Smart maintenance: Real life and Real time experience for remote skill development in the remote areas |

# TELECOM STANDARDS DEVELOPMENT SOCIETY INDIA - TSDSI

AFFLIATIONS & MOU with Multiple Indian & Global Forums, Organizations, Standard Bodies

TSDSI has about 50 Members including Telecom and ICT Manufacturing Organizations, Service Providers , Academia, R&D Organizations, Device OEMs, Use case Verticals, Government, PSUs

Also Other Organizational Partners of 3GPP, OneM2M

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# TSDSI CURRENT WORK AREAS

- Development of Standards for Interoperability and Portability of Cloud Services
- Public Protection and Disaster Recovery:
- Study and develop architecture for Information Centric Networking (ICN)
- Study on the UAV/Drone communications and services
- Indian Language Support
- Security and Privacy:
- M2M/IoT
- 400Khz NB-IOT Specification
- Enabler Private Networks
- Study of channel characteristics for 60 Ghz for 4G/5G backhaul
- Contributions for Futuristic Technologies – IMT 2020 and beyond
- IMT Advanced and IMT2000 Requirements

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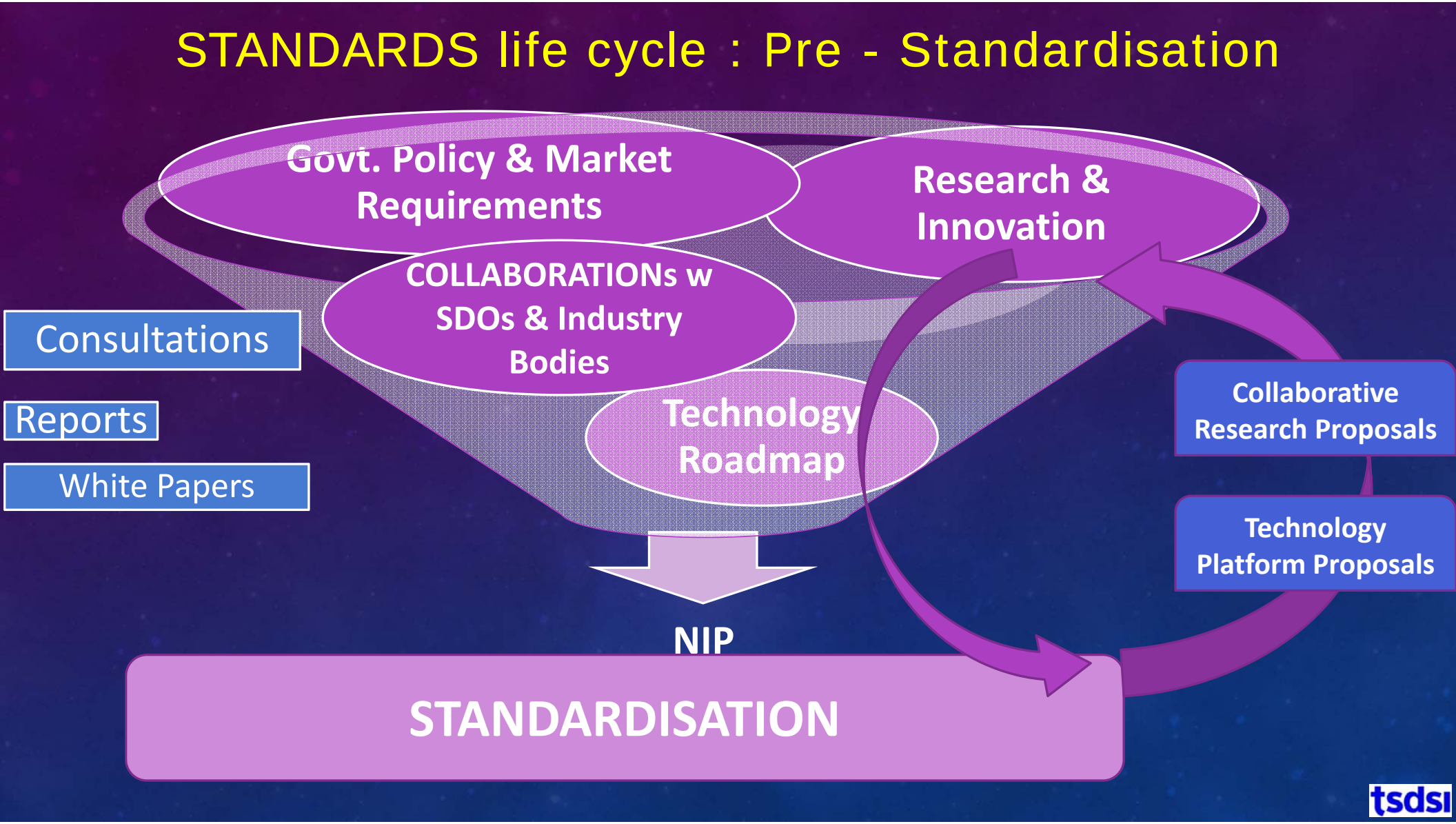
# STANDARDS life cycle : Pre - Standardisation

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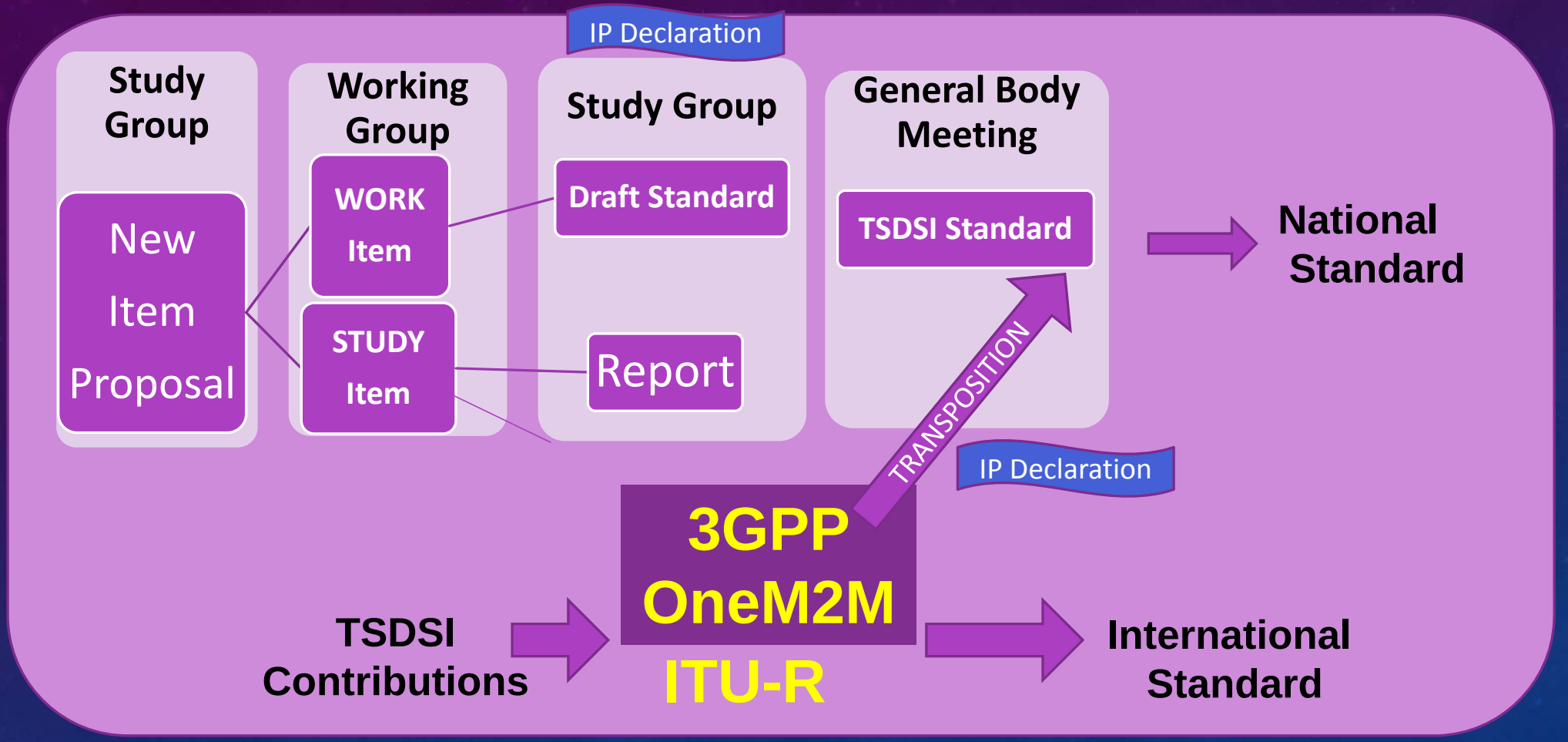
# STANDARDS life cycle : Standardisation

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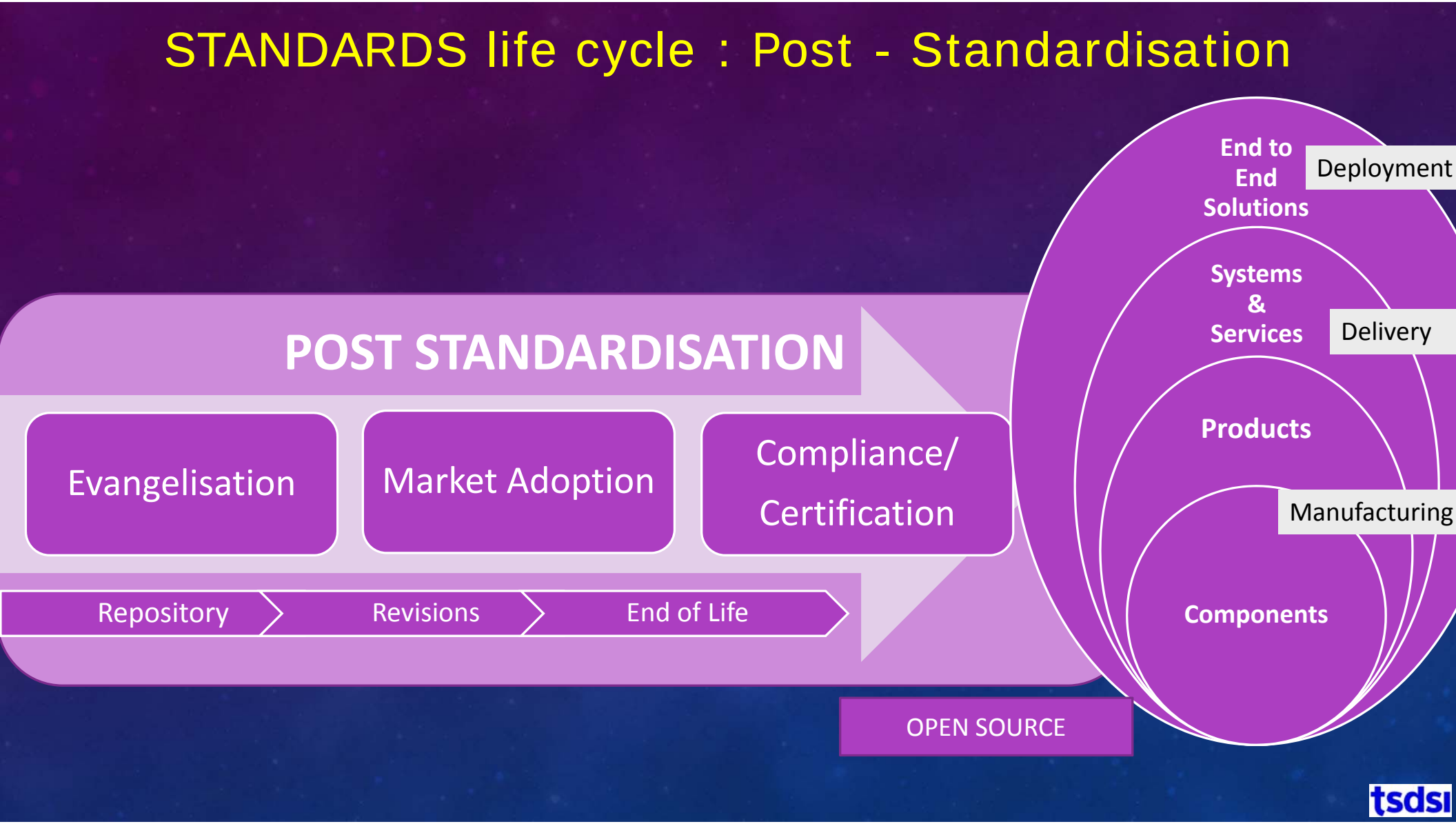
# STANDARDS life cycle : Post - Standardisation

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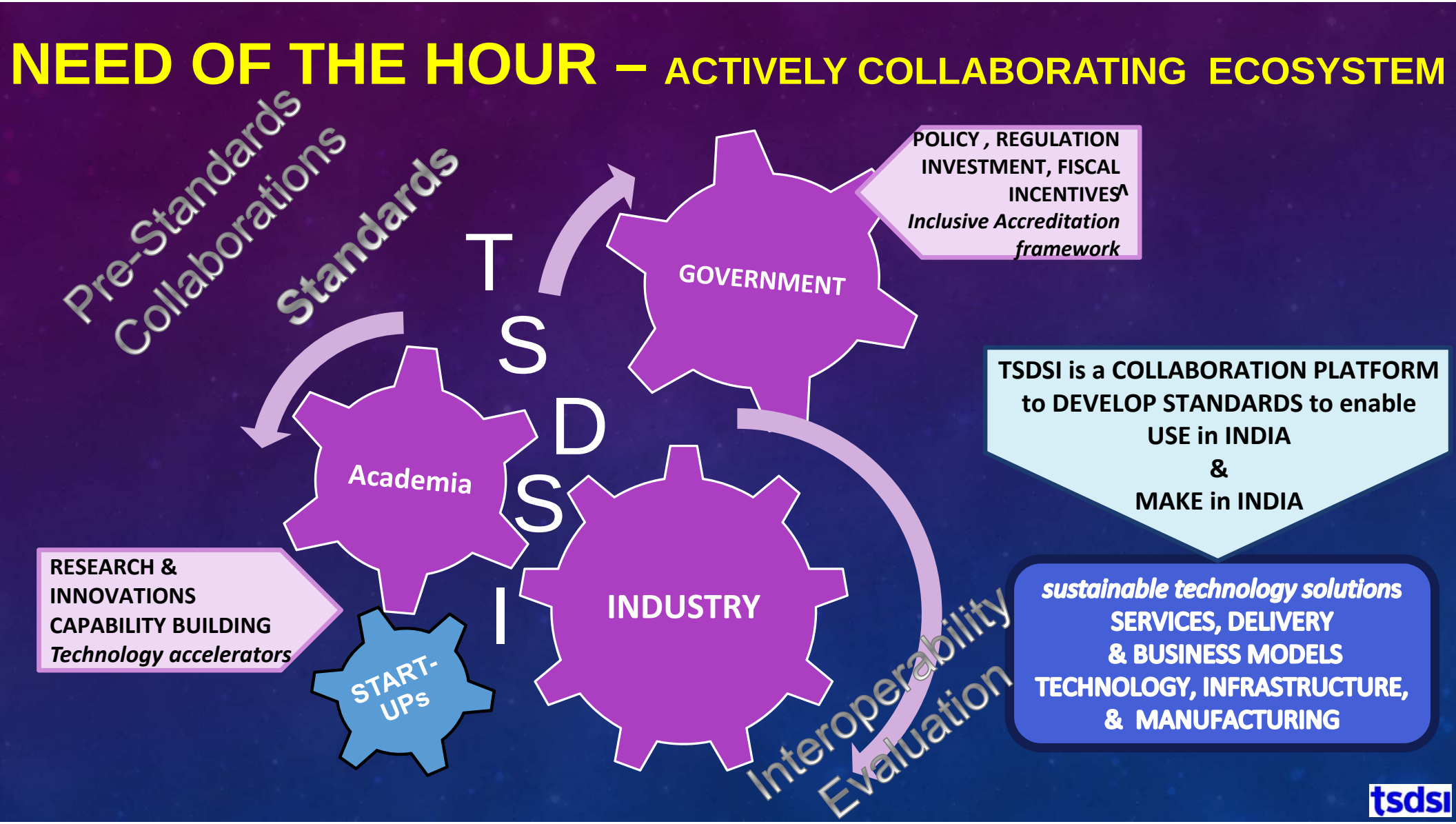
# NEED OF THE HOUR – ACTIVELY COLLABORATING ECOSYSTEM



# TSDSI Roadmap 1.0

| | 2018 | | | | 2019 | | | | 2020 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| **Critical Communications (PPDR)** | **Phase – I: Study Report**<br>- Indian usage scenarios & user requirements<br>- Gap analysis based on available standards | | | | **Phase – II: Technical Specification**<br>- Standard specifications for gaps identified<br>- Platform for plugtests and certification | | | | | | | |
| **Rural Broadband Architecture** | **Phase – I: Study Report (SR)**<br>- Requirement analysis for affordable broadband access in rural areas<br>- Plausible Architectures | | | | **Phase – II: SR**<br>- Candidate technologies for providing rural broadband connectivity | | | | **Phase – III: Study Report**<br>- Study report on energy efficiency of the candidate technologies and plausible architectures | | | |
| **vRAN using wireless backhaul** | **Phase – I: Study Report**<br>- Define enhancements over existing work on IPRAN based cloud radio<br>- Define vRAN architecture using microwave / E-band / V-band<br>- Re-define Layer-1, 2, & 3 functions among RRU and BBU | | | | **Phase – II: Study Report**<br>- Identify how to compress bandwidth requirement for VRAN architecture<br>- Identifying spectrum band & backhaul capacity that can be provided using special spectrum efficiency features. | | | | | | | |

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tsdsi Telecommunications Standards Development Society, India

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| **Cloud Interoperability** | **Phase – I: Use Cases & Gap Analysis**<br>- 5 to 6 use cases for smart city projects;<br>- Identify the gaps that exist for interoperability of these standards<br>- Draft specifications: Arrive at the minimum standards (Common + Gaps) required to be complied with for ensuring interoperability of cloud services | | | | **Phase – II: Testbed**<br>- Establishment of Test Bed under the aegis of DoT/TEC + CCICI<br>- Interoperability plugfests based on India specific requirements as specified in Draft Specifications for applications / components' level of interoperability. | | | | **Phase – III: Technical Specifications**<br>- Approved TSDSI Standards<br>- Contributions to Global Standards (eg. IEEE-P2302; 3GPP Cloud RAN, oneM2M Cloud Specs; ITU-T Cloud Specs etc.).<br>- Test Cases & Guidelines for Interoperability Certification. | | | |
| **Zero Call Drop Rate** | **Phase – I: Study Report**<br>- Develop strategies, key issues and requirements leading to reduced drop calls<br>- Define the data collection methodology and define its algorithms<br>- Provide recommendations best practices supporting the identified key issues | | | | | | | | | | | |
| **Unified Authentication Framework** | **Phase – I: Study Report**<br>- Developing UAF requirements & gap analysis with existing Aadhar schemes<br>- UAF architecture solutions and recommendations/conclusions.<br>- Conslusion of the Study Report | | | | | | | | | | | |

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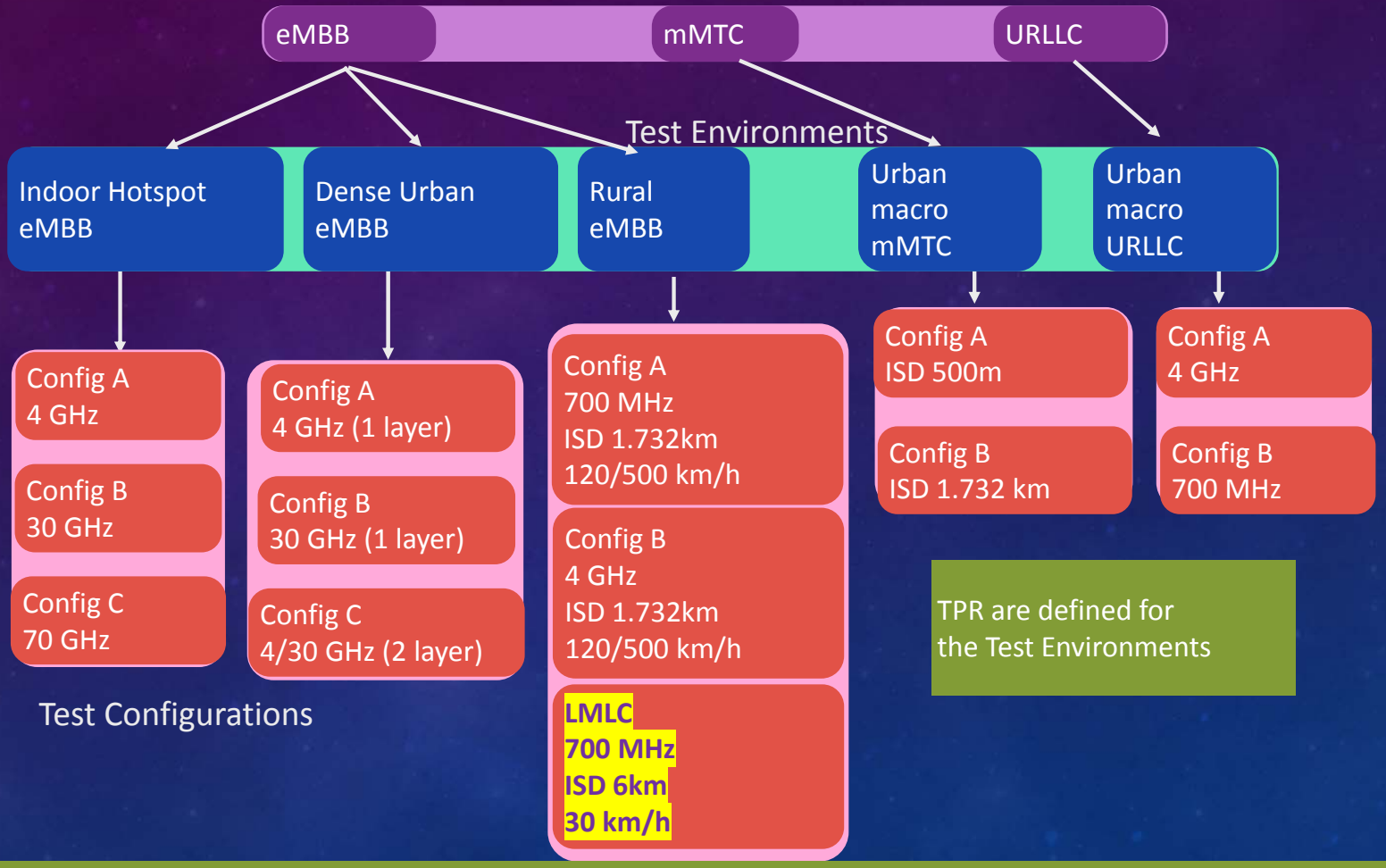
| **Information Centric Networking (ICN)** | **Phase – I: Whitepapers, Dedicated Workshops**<br>- Identify use cases for ICN<br>- Feasibility study of existing ICN architectures and use cases for India | | | | **Phase – II: Technical Reports, Test Bed**<br>- Create a test bed to test and validate the use cases and results from Phase 1 | | | | **Phase – III: Technical Specifications**<br>- Specify ICN architecture for India eco-system and use cases<br>- Develop specifications for different components of ICN | | | |
| **Dual SIM** | **Phase – I: Tech Specs**<br>- Documentation of DualSIM usage scenarios including single/dual RF capabilities<br>- Develop requirements and specification supporting the consistent behavior of DualSIM, with emphasis on single RF | | | | **Phase – II: Tech Specs**<br>- Extend the findings in Phase 1 to develop the support for dual RF/active DualSIM devices, including end-to-end technical specification and supporting test and interoperability requirements. | | | | | | | |
| **Spectrum Studies** | **Phase – I: Study Reports**<br>- Generation of reports of compatibility and coexistence in the bands mentioned herein and appropriate studies in other bands of interest e.g. V-band, mmWave bands | | | | **Phase – II: Study Reports**<br>- Align with the approach of international community which is best suited for the country<br>- Finalization of the Inputs<br>- Submission of Reports to WRC 19 during Oct 28 - Nov 22, 2019 | | | | | | | |

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

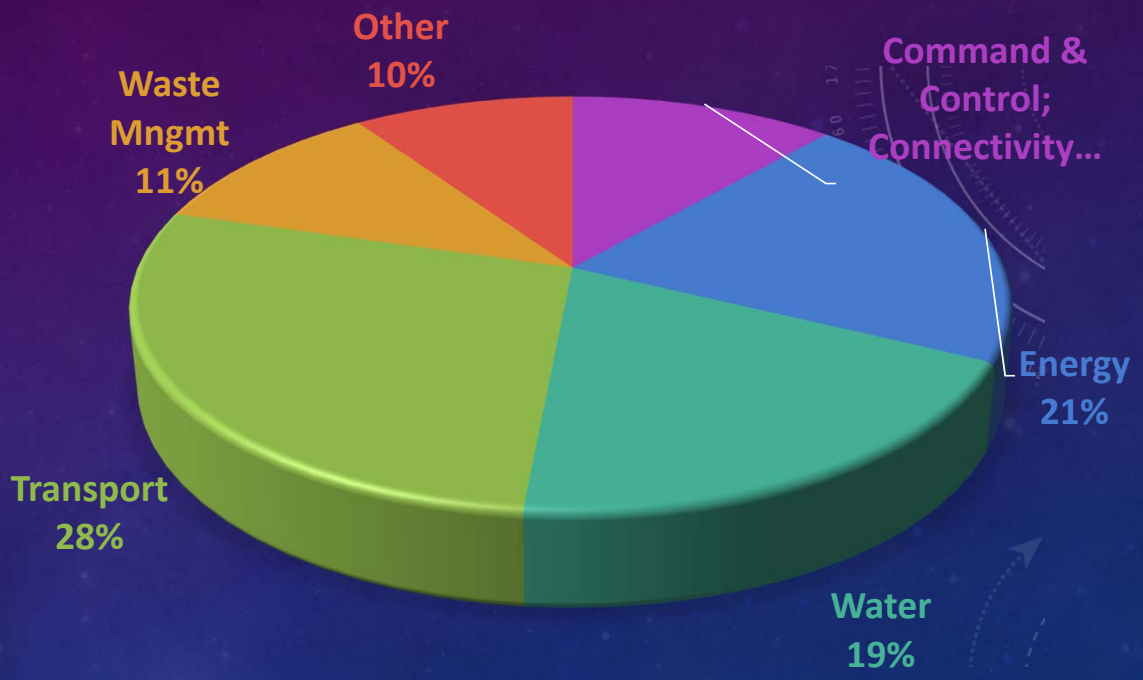



In addition, for the Rural-eMBB test environment, the average spectral efficiency value **should** meet the threshold values for the LMLC evaluation configuration with ISD of 6000m and either evaluation configuration with ISD of 1732m

# 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**




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

**Regular Participation and contributions from India at oneM2M**

**Transposition of oneM2M Release 2 by TSDSI**

# M2M COMMON SERVICE LAYER IN A NUTSHELL - ONE M2M

A software “framework”

Located between the M2M applications and
communication HW/SW that provide connectivity

Provides functions that M2M applications
across different industry segments commonly need
(eg. data transport, security/encryption, remote software update...)

Like an “Android” for the Internet of Things
But it sits both on the field devices/sensors and in servers
And it is a standard – not controlled by a single private company

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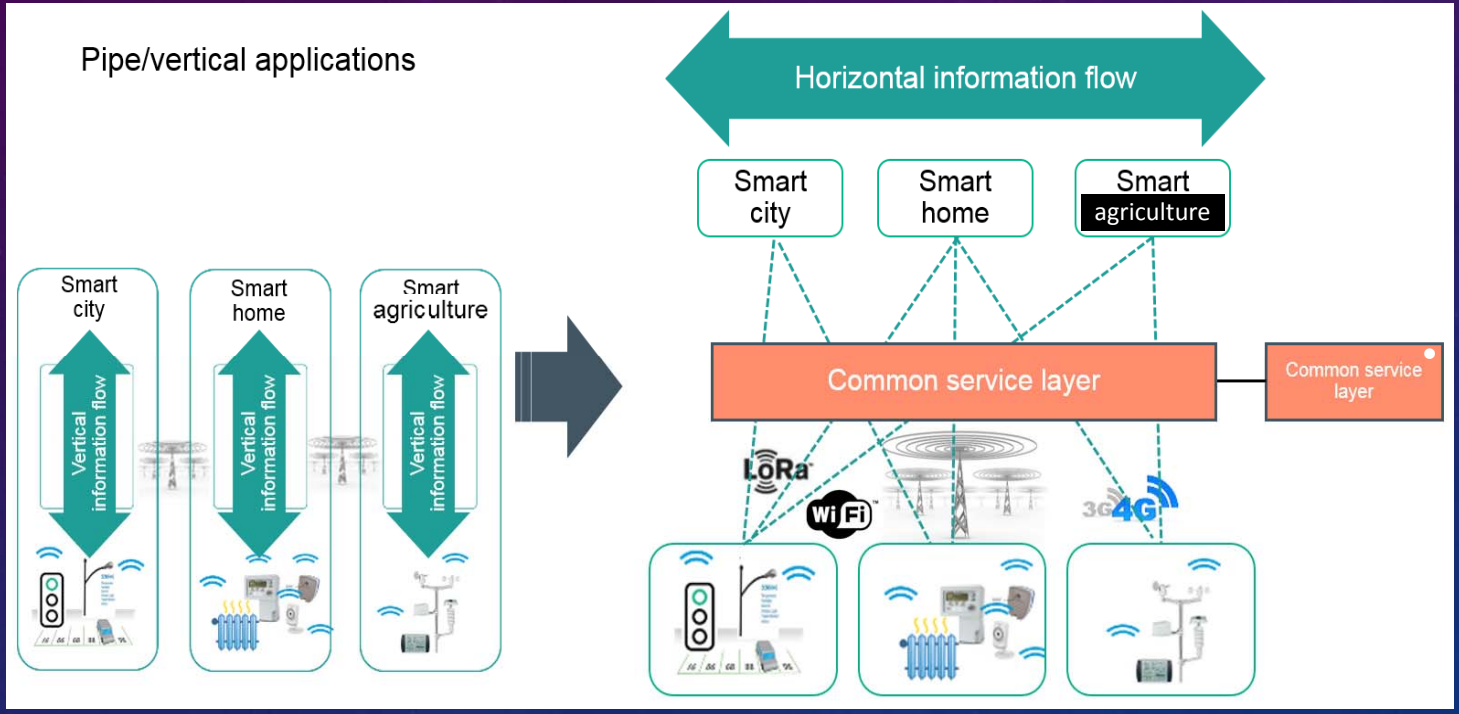
# HORIZONTAL IOT PLATFORM - BREAKING THE SILOES - ONE M2M




- Standardized architecture

Streamlines onboarding of new applications and devices

Manages information in a unified, secure, and flexible end-to-end system

Support various use cases, devices vendors, connectivities and protocols

Multi-purpose, multi tenant, collaborative applications across various industries

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# CHANGED REQUIREMENTS FOR PPDR -1

- Natural, technology failures / disruptions & other man made disasters threatening life, health, property, environment as well as other critical / emergency situations need:
  - Situational awareness for Immediate & effective response , relief & recovery systems besides proactive structured processes and warning systems
  - Holistic and well oiled coordinated working of all stakeholders, multiple agencies across locations, states, central systems in sustained time bound manner
  - Availability of emergency technology functions like remote video surveillance, real-time video communication and rapid exchange of data such as buildings, maps and other contextual information from incident sites to control centers and back to teams
  - Unified and scalable broadband communication technologies besides distributed and local systems deployments
- May also be important & essential that such information is made available centrally



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# REFERENCE INFORMATION

- TRAI consultation paper & comments by over a dozen responses by academia, service providers, PSUs, state governments, forums
- Various ITU-R & WRC resolutions
- European commission reports: Harmonized technical conditions and frequency bands for the implementation of Broadband Public Protection and Disaster Relief (BB-PPDR) systems, PPDR Spectrum Requirements, Compatibility studies between broadband disaster relief (BBDR) and other systems
- Report ITU-R M.2377-0: Radio communication objectives and requirements PPDR, Report ITU – R M.2291-1: The use of International Mobile Telecommunications (IMT) for broadband Public Protection and Disaster Relief (PPDR) applications
- Initial 3GPP Mission Critical PTT related standards Rel 12, 13, additional MCPTT rel 14 & 1
- ITU APT task force
- APT AWG task force on PPDR
- ITU special focus group, WPD5 subgroup