Telecommunications Standards Development Society, India

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India's Telecom SDO

VISION 2025

STANDARDISATION AS AN ENABLER FOR NDCP-2018

Background

The role of standards in fueling technical development, economic growth and global trade and services is well recognized. Developed countries have taken a lead, especially in the digital communications domain and used national strategies for influencing global standards with a view to enhancing their competitiveness. Of late, countries such as Korea, Japan and China, driven by a strong government policy to support standardisation, have started playing an influential role in the global Standards Development Organizations (SDOs) especially in the emerging technologies, including IoT and 5G.

Participating in and having an edge in the global standardisation requires a well concerted strategy which involves enhanced focus on market requirements analysis, harmonizing R&D with market requirements, kindling a collaboration spirit among stakeholders, and active participation. National SDOs play an important role in harmonizing the technology development activities of domestic start-ups, industry and R&D organization to global thought process and accordingly to drive global standards. Success depends on continued engagement in market requirements identification, participation in and contribution to the global SDOs, encouraging stakeholder engagement in the process at the national level and developing a strong ecosystem for telecom standards development. This will also require a strong industry and government partnership strategy to leverage the R&D efforts from the industry on activities of national importance.

Until lately developing Digital Communication Standards was regarded as a purely technical activity, in India, and hence received very little high-level policy support. There is now a growing recognition that a global, harmonized, dynamic, and mature standards ecosystem is urgently needed in India. Catalyzing India specific requirements and innovations systematically incorporated in the global standards would provide a global scale for Indian innovations, and would fuel economic growth and enhance the 'Made in India' label. The Indian National Standardisation Strategy (INSS 2018 - *https://commerce.gov.in/writereaddata/uploadedfile/MOC_636552662013452841_INSS_draft_23-2-18.pdf*) aims to bring about this change. Experience has shown that standards are driven by market requirements taken up by interested members. Thus, requirements from developed countries may not always effectively address the requirements of India and other developing countries. Further, developing a strong Indian portfolio of patents and standard essential patents will ensure that the associated royalty revenues stay within the country.

The Indian government has selected digital platforms as the core for delivering its developmental agenda through its Digital India Program (*https://www.digitalindia.gov.in/*, *http://dot.gov.in/sites/default/files/EnglishPolicy-NDCP.pdf* and *https://www.pmindia.gov.in/en/major_initiatives/make-in-india/*). This will be accelerated by incorporating new developments in emerging technologies such as 5G and IoT. On the service side, initiatives such as Jan Dhan, Aadhar and Mobile (JAM), linking bank account numbers to mobiles, Unified Payment Interface etc., and on the manufacturing side a focus on ICT manufacturing, as a part of "Made in India" are important drivers for the India specific requirements, which in turn should be used to drive standards. Thus, global standards development in technology as well as application layers will need to factor in requirements of India and other developing countries.

Setting up of the Telecom Standards Development Society of India (TSDSI) in 2014 as the Indian SDO, was a major milestone in the evolution of the telecom/ICT industry in India. Together with the TEC and BIS, TSDSI is destined to play a critical role, both domestically and internationally in meeting national objectives of digital communication standards. Domestically, it mobilizes and strengthens the industry, start-ups and the research community in pre-standardisation and standardisation capabilities and activities. Internationally, it enhances the level of participation and contributions in various global SDOs (Standards Development Organizations) and in ITU. TSDSI's objectives are i) Developing, promoting and standardizing India-specific Telecom/ICT requirements and solutions ii) Taking Indian requirements to global standards organizations, iii) Providing a platform to declare IP and commit for sharing on FRAND terms, iv) Helping create standards based manufacturing expertise in the country and v) Providing guidance and leadership to developing countries.

In order to significantly enhance India's positioning in digital communications standards there is a need to review relevant existing policies, bring about structural changes and greatly strengthen TSDSI. Thus, TSDSI, as the national SDO (Standards Development Organization) will need a strategic roadmap to achieve the above stated national objectives.

Digital Communications Standardisation Roadmap for India

TSDSI recognizes the convergence of Telecom and ICT technologies and has been re-scoped to address Digital Communication Standards.

STRATEGIC OBJECTIVES BY 2025

- Become a leading technical contributor to global digital communication standards

- Establish requirements and standards for India/developing countries and incorporate them in suitable global digital communication standards

- Maximize collaboration between Industry, Academia and Indian Administration

MEASURABLE GOALS FOR 2025

150+
Membership

Contribution in Global SDOs
eg. 20% @3GPP Plenary

20+
Global SDO leadership roles
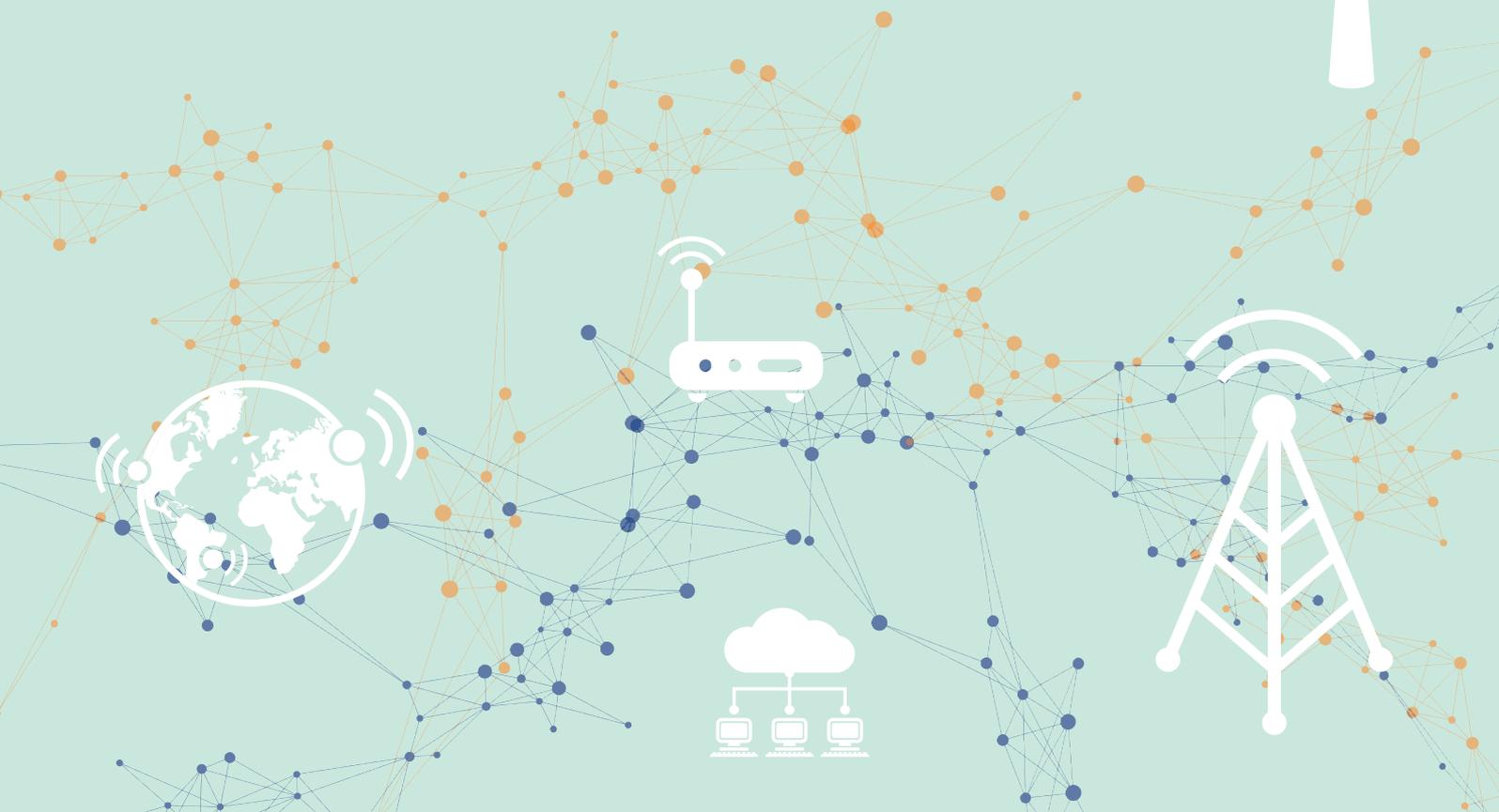
VISION

TSDSI's vision is to ensure that Digital Communication Standards increasingly drive domestic economic and policy activities and enhance India's competitiveness for ICT goods and services in global markets. It aims to do this by creating a leadership position through India's participation and contribution to emerging digital communication standards in global SDOs.

To achieve the above objectives and vision, TSDSI will focus on the following three pillars:

- Creating an Enabling Environment for a Standards Oriented Approach to Product Development and Adoption

- Developing TSDSI as a World Class National Digital Communications SDO

- Leadership in Global Digital Communications Standards

1. Creating an Enabling Environment for a Standards Oriented Approach to Product Development & Adoption

In a very fast changing technology, policy and regulatory environment, it is imperative for India to increase the scale and quality of participation in the global standards development process and work towards harmonized standards. Digital India, Make/Made in India, Start-up India, NDCP-2018, and INSS are existing government policies that can be leveraged. Additionally, the opportunities emerging from IoT, 5G and domain specific/vertical technology provides the impetus to enhance the focus on identifying and analyzing Indian market and regulatory requirements and drive them as an agenda in global standardisation initiatives. The success of various national SDOs has been based on timely technology adoption and spectrum reforms in their own countries. Creation of IPRs is an integral part of standards development process which promotes active engagement and incentive to participate in global standardisation.

To achieve the above objective, the following steps need to be taken:

- Strengthen the interface with DoT and MEITY to integrate requirements from various user ministries so that DoT and MEITY actively represent the integrated requirements in TSDSI.

- Create a Spectrum Reform Group (SRG) within the WPC-DoT (a high-level group as exemplified in the 5G HLF) to recommend, and facilitate spectrum reforms with members from industry and academia. Setting up a joint study group involving the WPC-DoT, TEC-DoT and TSDSI to drive initiatives related to spectrum requirements for 5G, 6G and IoT services, identification of bands, spectrum efficiency, licensed/unlicensed, harmonization.

- Establish mechanisms for identifying Indian market requirements to drive the standardisation agenda in different vertical domains, such as automotive, power, education, health etc. To materialize the policy objectives, a use-case lab led and appropriately funded

by government may be set up to study, analyze and specify India specific requirements and usage scenarios (such as, high population densities, very diverse last mile characteristics, low carbon print, low per capita etc. unlike in most other countries) through contextual deliberations. (Figure 1.)

- Develop a sustainable IPR policy and framework to encourage innovation.

  Create a facilitating environment for ease of patenting IPs, by reviewing existing schemes, pitching for efficiency and strengthening of the Patent Office. Ensure that digital patents are awarded in a time bound and effective manner.
  Create a fund for strengthening the standardization capacity, capability and processes. Promote training, awareness, and development platforms to build patenting competency. Strengthen Patent Office, especially for telecom/ICT.

- Consider the creation of a national organization for patent pooling and exchange (supported by *DIPP - https://dipp.gov.in/sites/default/files/National_IPR_Policy_English.pdf*), similar to NIST and standards exchange as proposed by the 5G INDIA 2020 Task Force. Pooled patent could be available on royalty or licensing basis.
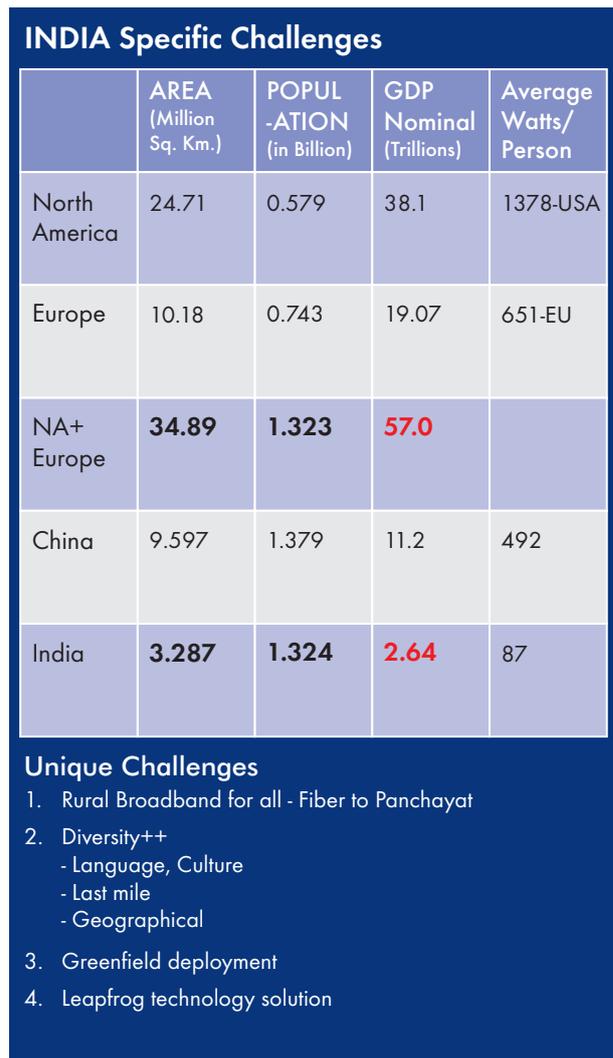
INDIA Specific Challenges

	AREA (Million Sq. Km.)	POPUL-ATION (in Billion)	GDP Nominal (Trillions)	Average Watts/ Person
North America	24.71	0.579	38.1	1378-USA
Europe	10.18	0.743	19.07	651-EU
NA+ Europe	**34.89**	**1.323**	**57.0**	
China	9.597	1.379	11.2	492
India	**3.287**	**1.324**	**2.64**	87

Unique Challenges

1. Rural Broadband for all - Fiber to Panchayat

2. Diversity++
   - Language, Culture
   - Last mile
   - Geographical

3. Greenfield deployment

4. Leapfrog technology solution

Figure 1: India Specific Challenges
Source: Presentation by DG, TSDSI, 19th Governing Council Meeting of TSDSI
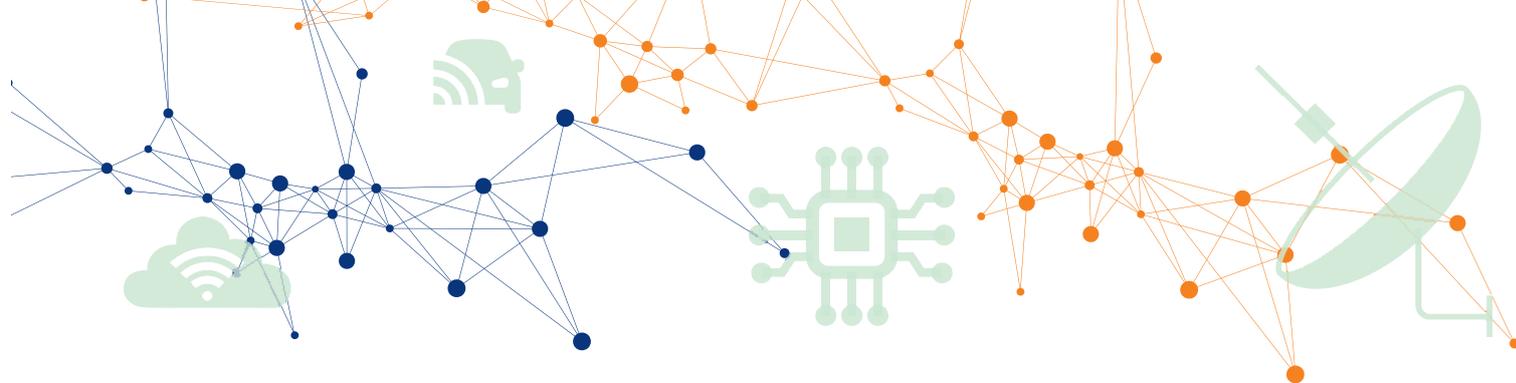
2. Developing TSDSI as a World Class National Digital Communications SDO

In order to achieve Vision 2025, it is critical to recognize and further strengthen TSDSI as the national SDO in the Digital Communication/ ICT space. Participation in and contribution to emerging telecom and ICT standards processes is crucial for attaining the above objectives for TSDSI. The developments in emerging technologies such as IoT and 5G, government's focus on standardisation, IPR policy, Make in India, Digital India have been important drivers for TSDSI. However, in order to develop a strategic roadmap, we need to take into account the larger environment of technological evolution and the Indian institutional context. In order to meet the challenges ahead, TSDSI needs to be further strengthened. To achieve these goals, TSDSI should:

- Be recognised as the centre of standards development across the standardisation life cycle (Figure 2).

- Strike a good balance in the membership to drive the collective needs of the ecosystem.

- Strengthen its external and internal processes to provide a platform by ensuring aligned R&D agenda of academia and government funded schemes to market and thereby helping Indian patents to be incorporated in digital communication standards.

- Create awareness/capacity building programs on IPR/Patenting.

- Frontend development of India specific requirements for different domains/verticals by bringing all stakeholders on a common platform. These should be driven guided by market directions and NDCP-2018 and similar government policy documents.

- Take a leadership role in providing a collaboration platform for emerging and similar economies to influence the global standards process.

- Coordinate with other bodies dealing with national standards like TEC-DoT and BIS, and ensure cooperative non-overlapping role for digital communication standardisation.

- Mobilize the Indian ecosystem by collaborating with think-tanks and industry bodies– TEPC, TEMA, ELCINA, MAIT, COAI, BIF.

- Be enabled to fund and drive pre-standardisation activities and to enhance participation in global SDOs.

- Create a framework for engaging all major stakeholders to contribute a funnel of requirements comprising India

specific scenarios and innovations to be addressed in global standards. This will enable a relevant and steady pipeline of NIPs/WIs flowing through the Study Groups to conduct requirements analysis and successful transformation in to contributions to global SDOs.

- Strengthen the Secretariat with an empowered and competent human resource work pool to manage specific verticals and start-ups.

- Establish a corpus that allows it to function professionally, cover its expenses and participate in global standards process.

3. Leadership in Global Digital Communications Standards

India's leadership in global standards will provide a platform for the domestic industries to be competitive and enhance its potential for trade in goods and service. For this to happen the following strategies need to be adopted:

- Academia/R&D, start-ups, and local industry should be incentivised through appropriate government funds for facilitating patenting on topics which find direct utilization by industry. Lobby for evaluation of career progression could include extent of patenting as well as contribution to standards. There should be a mechanism to provide for patenting expenses at scale and legal fees.

- Make it easy and meaningful for academia and start-ups to scale Standards-oriented research.

- Encourage academia to develop curriculum for patenting and standardisation with an industry/start-up orientation.

- Enable preferential market access from both government and non-government operators to India designed, patented and manufactured products.

- Strengthen the research collaboration between the government and industry to leverage advanced product development and expertise in the country.

- Enable greater and consistent participation in global standards organizations.

- Government should provide funds for standards driven research and test beds, interoperability, tests and certification labs. These initiatives need to be supported by DoT/MeitY.

- Create a national platform for matching problems to solution providers via workshops/portal, Roadmap Committee, Use case labs etc.

- Focus on product design standards for solving industry problems. e.g. for lack of fiberization.
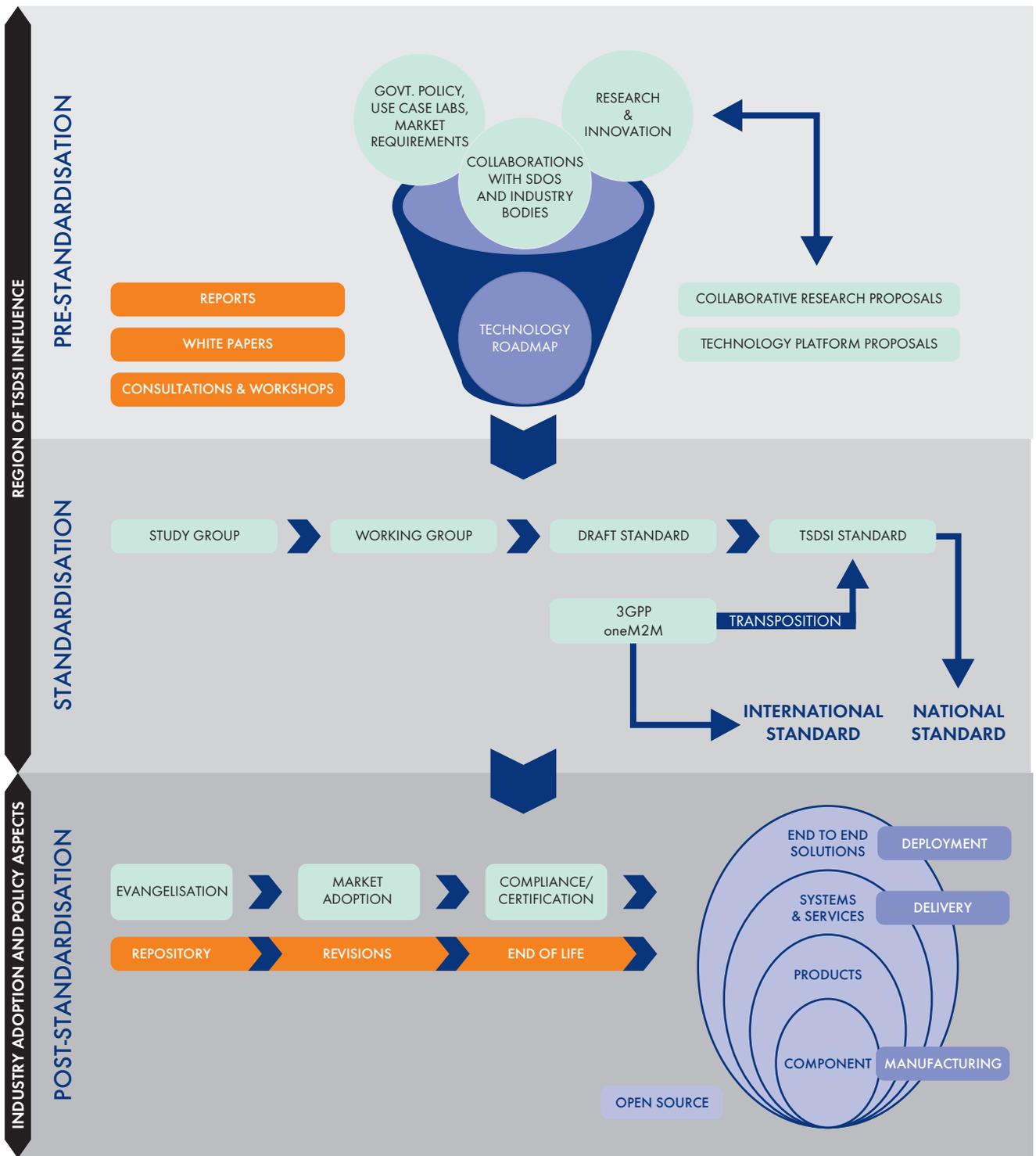
Figure 2: Standardisation Life Cycle
Source: Presentation by DG, TSDSI, 19th Governing Council Meeting of TSDSI

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