

Role of Standardisation in a Developing Economy

B S Chauhan

Executive Director (Ops), TSDSI, India

A Look at Rear View Mirror

- State of Telecom in India in 1985
- Population then 780 million, Teledensity < 1%, mostly electro-mechanical exchanges with a few SPC Analog ones. Digital switches were being introduced (E-10B switches of Alcatel)
- Department of Telecommunications, Govt. of India – monopoly operator
- Rural areas – near total absence of telecom

A Look at Rear View Mirror – *contd.*

- In telecom manufacturing, we had ITI, the giant PSU and little else
- ITI was doing licensed production of Strowger and crossbar exchanges, Microwave transmission equipment, telephones etc.
- The electro-mechanical switches were beset with problems in hot, dusty environment of India with unreliable mains power
- C-DOT 's mandate was to develop technology for digitalisation of Indian telecom network. ITI's 2nd DSS factory was planned to manufacture equipment based on C-DOT technology.

A Look at Rear View Mirror – *contd.*

- C-DOT developed TDM switches, EPABX, Rural switch (RAX) and Main switch. RAX, an astonishing success, helped reach telecom to rural areas.
- Some 40 public and private sector companies bought C-DOT RAX know how and went into production.
- C-DOT technology accounted for around 23 million lines in the network.
- C-DOT exemplifies the importance of standards in development of technologies. Standards gave a direction to the innovations.

A Look at Rear View Mirror – *contd.*

- Adherence to TEC (based on ITU / CCITT) standards ensured smooth interworking with diverse equipment working in the network then (from Ericsson, Siemens, Alcatel, Lucent etc.)
- Starting with a 128 port RAX with analog trunks, C-DOT introduced R2 and later SS7 signalling, RSUs, ISDN and V5.2 interfaces over time. The switch size went up to 40,000 lines and capacity to 800,000 BHCA.
- Examples of ITU standards based products: SS7, ISDN, V5.2 , Intelligent Networks and more recently GPON (G.984), WDAN(G.694.1, G.698.3). For NGN and IMS development, C-DOT relied on IETF and 3GPP standards. IEEE 802.11 b/g/n and 802.11ac products also developed.

A Look at Rear View Mirror – *contd.*

- With opening up of telecom to private sector, India witnessed a telecom revolution. The following statistics amply demonstrate that,
 - Population 1.25 billion plus, tele-density 83.36 %. Urban tele-density 154.01, rural 51.37
 - 2nd largest network in the world with a billion plus users.
 - Fixed lines: 25.22 million
 - Cell phones: 1033.63 million
 - Broadband connections (wired + wireless): 150 million
 - Tariffs, one of the lowest in the world

A Look at Rear View Mirror – *contd.*

- Technology, policies and entrepreneurship played a major role in the stupendous growth of telecom in the country
- Cellular technology, unlike other developed countries, became a means of connecting the unconnected.
- The wireless technology brought down the cost of providing a telephone connection to a fraction, roughly 20%, of the cost of providing a landline connection.
- Opening up of the sector brought multiple operators and competition to subscribers' benefit. Service providers innovated to reach bottom of the pyramid. Made it possible to have lowest tariffs in the world.

Why Standardisation?

- As we have seen, in 80s and 90s, we had a strong telecom manufacturing based on TDM technology developed by C-DOT. It was eminently suited to Indian conditions.
- For some reasons, C-DOT failed to catch the mobility bus. So, the impressive growth in tele-density has been achieved based on imports
- As India did not have representation in the standards bodies, ETSI, 3GPP etc., the equipment we got did not address Indian requirements very well
- Examples:
 - Propagation characteristics of Indian terrain

Why Standardisation?

- Power requirements. In India many BTSs work off grid or in areas where grid power is available only for a few hours a day. Low power consumption becomes a must.
- Spectrum availability is a challenge
- Indian rural use case is very different. Indian villages are population centres every few kilometres.
- The Industry, the academia and the Govt. of the country worked towards creating an Indian Telecom Standards Development Organisation.
- This collective thought found expression in National Telecom Policy 2012

TSDSI, India's TSDO

- Telecommunications Standards Development Society, India (TSDSI), registered as a not for profit Society in Jan 2014, was thus born.
- Recognised by Govt. of India as India's TSDO
- Objectives of TSDSI:
 - To project Indian interests, articulate service providers' requirements, and promote Indian IPRs into International standards and products.
 - To help Indian companies to develop standards for the telecom products and services to meet India specific requirements, which is expected to promote indigenous R&D, creation of Indian IPRs and manufacturing.

TSDSI, India's TSDO

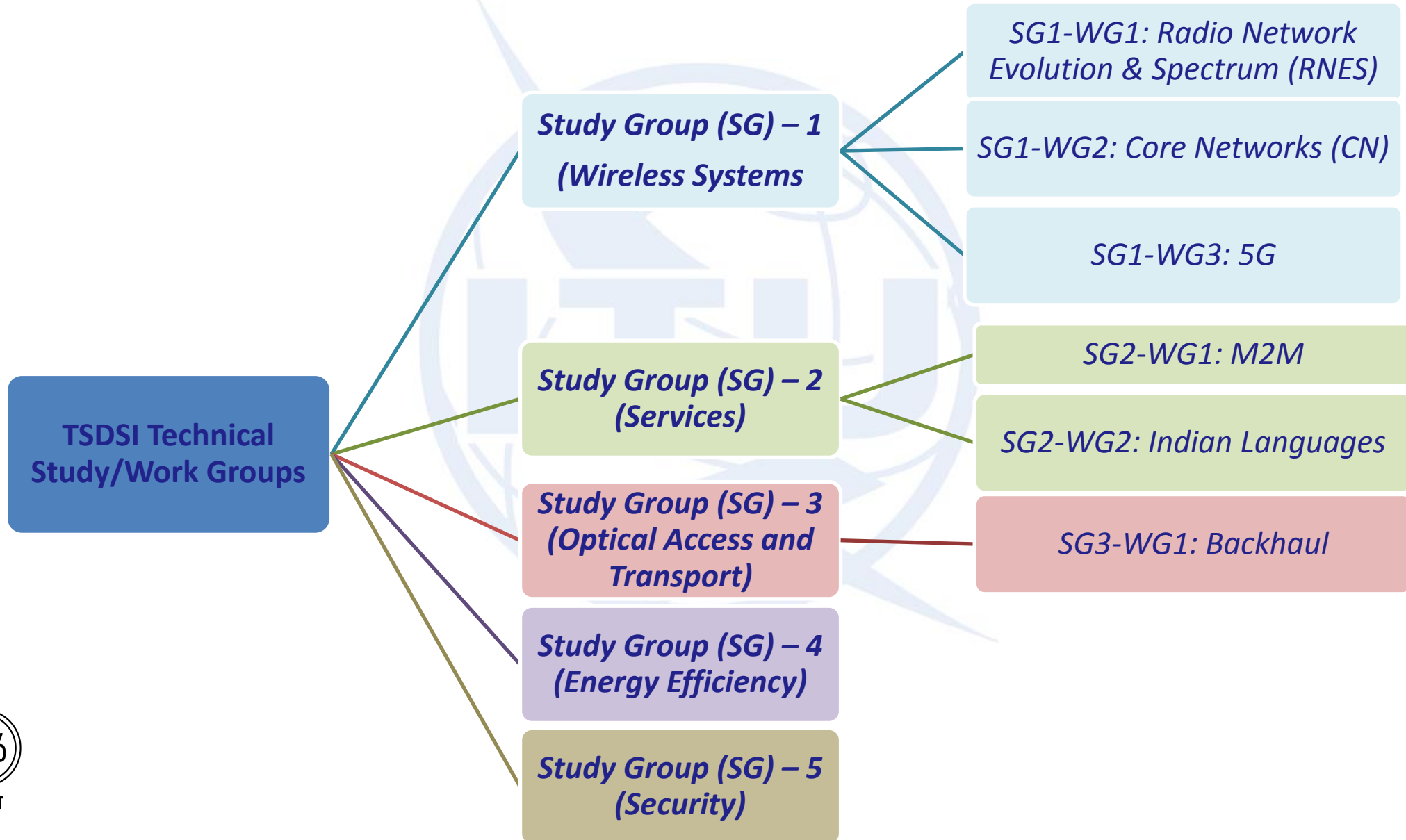
- With the development of new national standards, India will be in a position to influence various international SDOs and Forums in the development of global standards and in the inclusion of Indian IPRs in them.
- TSDSI shall draw the synergy of all Telecom stakeholders viz. manufacturers, research and development centres, academic institutions, service providers with the object of facilitating coordinated development of Standards for Telecom, especially suited to Indian environment. It shall play a key role in the development and deployment of new products and services based on these Standards.

TSDSI, India's TSDO

- A membership based organisation. Major Telecom Service Providers, manufacturing companies, R&D centres, Govt. departments, International Telecom companies and premier academic institutes are the members.

The logo for TSDSI, consisting of the lowercase letters 'tsdsi' in a bold, dark blue, sans-serif font. The letters are set against a light blue background that features a faint, stylized globe with latitude and longitude lines.

Technical Groups of TSDSI



International Cooperation

- TSDSI is –
 - Member of Global Standards Collaboration (GSC)
 - Organisational Partner (OP) of 3GPP
 - Partner Type 1 of oneM2M
 - Associate of ITU-T
- TSDSI has signed a collaboration agreement with ETSI
- TSDSI has signed Lol to collaborate with ARIB, ATIS, CCSA, TTC, TTA
- TSDSI has signed MoU with GCF
- TSDSI hosted a number of International meetings in April 2016 in New Delhi. GSC-20, 3GPP – PCG#36 and OP#35 and oneM2M SCM were hosted within a span of one week.

Priority Areas for TSDSI

- 5G
 - *mmWave*
 - *Massive MIMO*
 - *Access using Licensed and Unlicensed band*
 - *Relay*
 - *Spectrum Requirements for 5G*
 - *5G Security and Energy performance*
 - *Low Mobility Rural scenario*
- TDD NB IoT*
- NFV Performance Evaluation: Workload Design*
- Control and Management of Large Scale WLAN*

Priority Areas for TSDSI – *contd.*

- *M2M*
 - *Indian Requirements and Use cases*
 - *Naming and Addressing*
 - *IoT Security*
- *Indian Languages' support*
- *Security and Privacy*
- *Energy Efficiency*
 - *Energy optimization*
 - *Energy Performance for telecom networks*
- *CPRI Transport and Transport SDN*
- *Critical Communications*

A large, light blue watermark of the ITU logo is centered on the page. It features a globe with a satellite dish and the letters 'ITU' in a stylized font.

Thank You