tsdsi India's Telecom SDO Years of developing ICT Standards celebrating 10

NCC

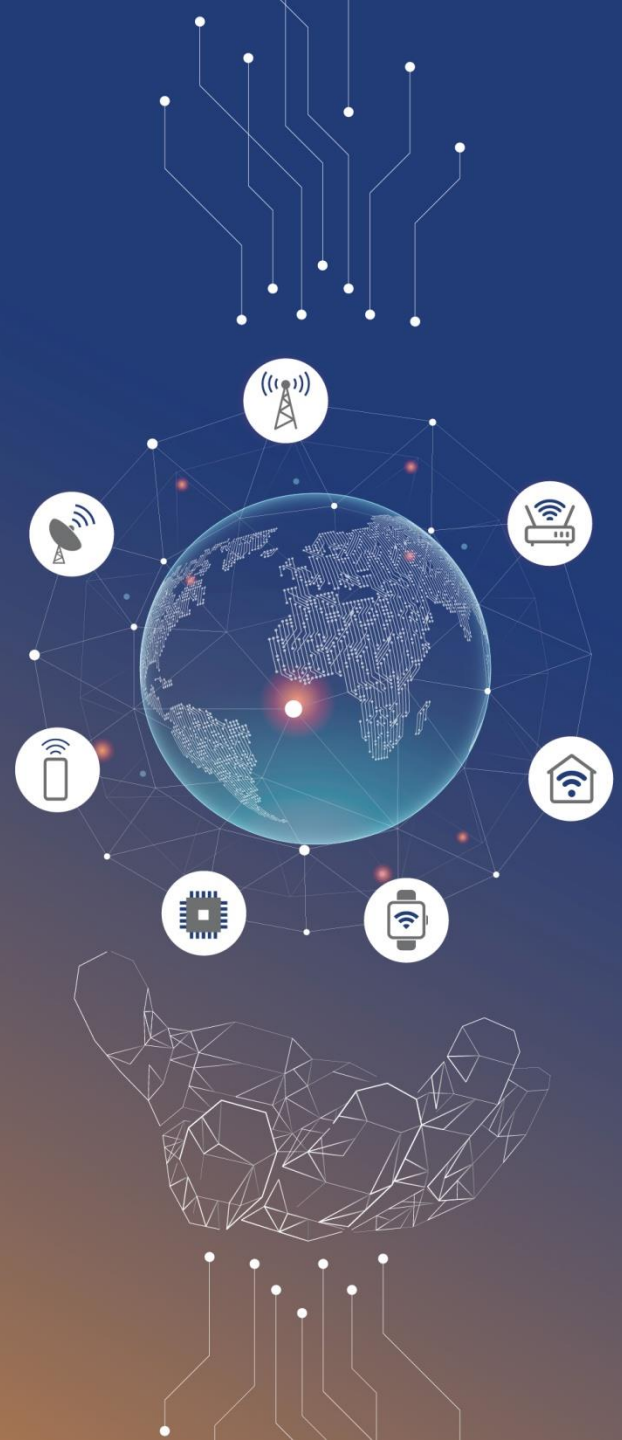
Workshop on

Standards-driven Research @ NCC 2024

28th February 2024

09:00 to 17:30 IST

IIT Madras



Workshop on Standards-driven Research @NCC 2024

Government initiatives for promoting Research leading to contribution to Standards

Rajesh Kumar Pathak

Bharat 6G Alliance

Contents

- Bharat's 5G and Beyond Initiatives
- Enabling Policies of the Government
- Technology Trends Adopted in ITU-R
- Towards 6G: the evolution of use cases
- ITU R Timelines for IMT 2030
- Call for Proposals to Accelerate 6G Ecosystem
- Bharat 6G Vision
- Bharat 6G Objectives
- Bharat 6G Alliance
- Bharat 6G Alliance Working Groups
- Bharat 6G Alliance membership

Bharat's 5G and Beyond Initiatives

- Large Pool of R&D funding by the Government
  - More than US $ 100 million per annum
- Testbeds across institutions
  - 100 Use case labs for 5G and beyond at institutions
- Quantum Technologies – Pilots/Deployments in progress
  - National Quantum Mission- Us $ 1 billion
- India Chipset Mission – Semiconductor Fabs, Assembly & Mounting
  - US $ 10 billion fund
- 6G R&D taking shape – Opportunity for global collaboration
  - 6G testbeds set up

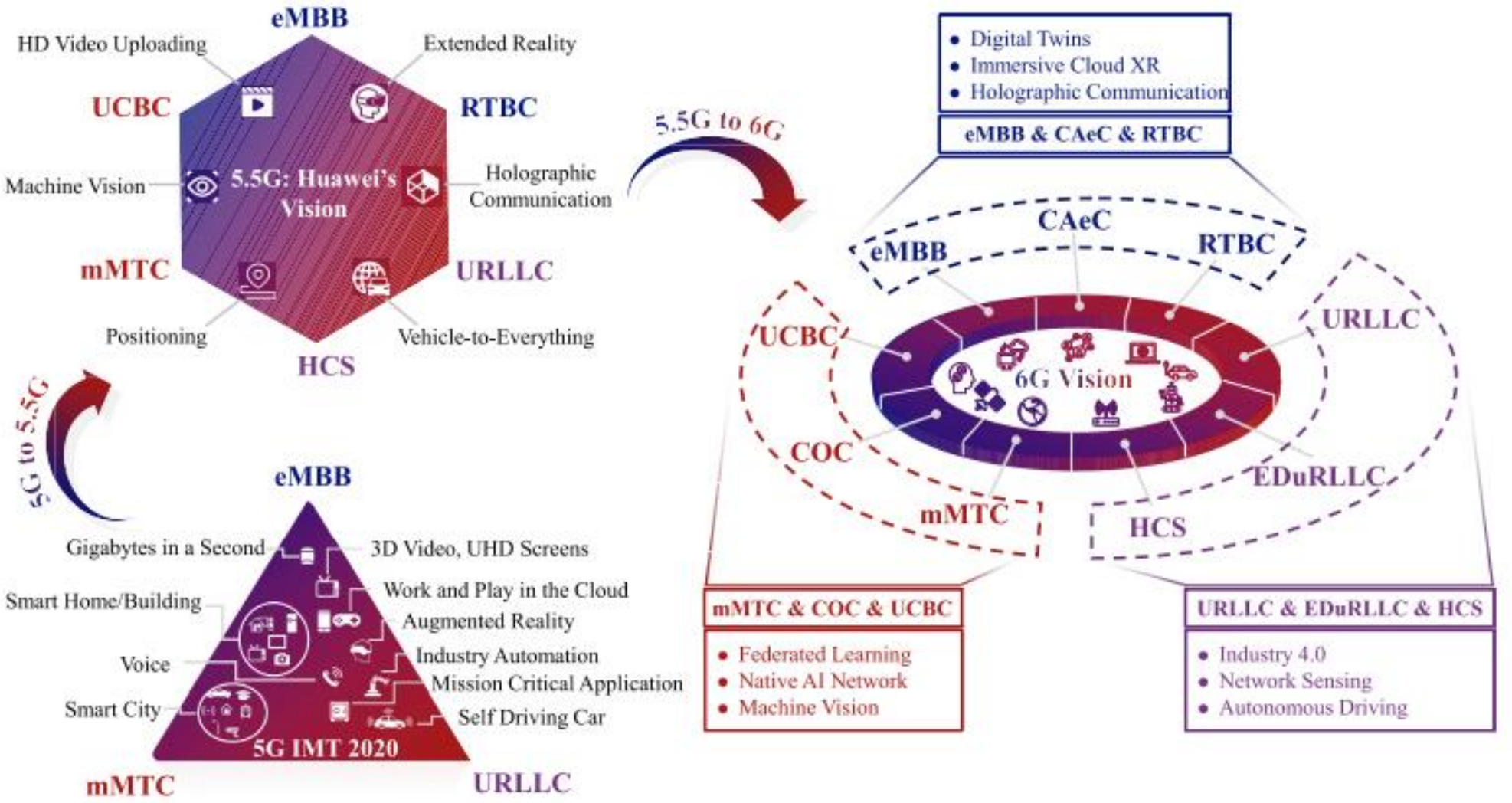
Enabling Policies from Government

Patents & Standards	TEC/TSDSI, **Bharat 6G Alliance**	Driving Global Standards
Standard Participation	Subsidy to startups/academia	Consistent participation
Funding for Design	DLM, Fabless DLI, TDDF, USOF	Catalyzing Domestic R&D
Manufacturing Support	PLI for Telecom and Components	Increasing global value addition
Pilots/Proof of Concepts	Technology Pilots/Proof of Concept	Helping Test technology developed

Technology Trends Adopted in ITU-R

Emerging technology trends and enablers	•AI-native communications •Integrated sensing and communication •Support the convergence of communication and computing architecture •Device-to-device communications •Efficiently utilize spectrum •Enhance energy efficiency and low power consumption •Natively support real-time services/communications •Enhance trustworthiness
Technologies to enhance the radio interface	•Advanced modulation, coding, and multiple access schemes •Advanced antenna technologies •In-band full-duplex communications •Multiple physical dimension transmission (RIS, holographic radio, OAM) •THz communications •Technologies to support ultra-high accuracy positioning
Technology enablers to enhance the radio network	•RAN slicing •Technologies to support resilient and soft networks for guaranteed QoS •New RAN architecture •Technologies to support the digital twin network •Technologies for interconnection with non-terrestrial networks •Support for ultra-dense radio network deployments •Technologies to enhance RAN infrastructure sharing

Towards 6G: the evolution of use cases



Call for Proposals to Accelerate 6G Ecosystem

- Edge AI Empowered 6G Network
- Federated Learning for 6G Network
- Holographic Communication
- Bio Nano Internet of Things Molecular Communications
- AR/VR Multisensory Applications
- Molecular Communications
- Blockchain for Infrastructure and Spectrum Sharing
- Metaverse Application
- Network Sensing
- Fluid Antenna Application

Bharat 6G Vision

Design, develop and deploy 6G network technologies that provide ubiquitous, intelligent and secure connectivity for high quality living experience for the world

Task Forces on 6G

- Multi-platform Next Generation Networks
- Devices
- Spectrum Policy
- Multi-disciplinary Innovative Solutions
- International Standards Contribution, and
- Financing Research and Development

… Indian innovation for the world

Bharat 6G Objectives

- Facilitate and finance Research and Development, design and development of 6G technologies
- Enable India to become a leading global supplier of IP, products and solutions of affordable 6G solutions
- Deploy 6G technologies to act as a powerful force multiplier for India@2030
- Enable inclusive and significant enhancement in quality of living experience of citizens

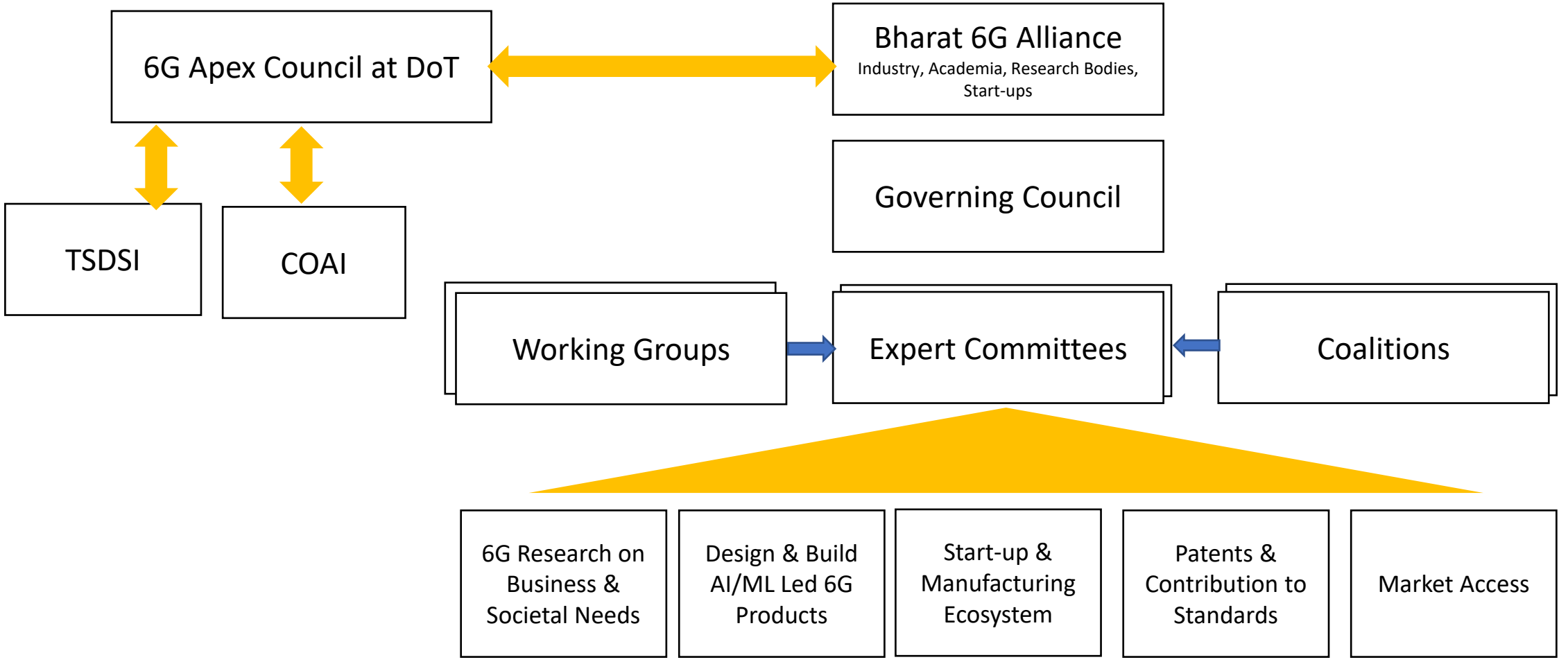
Bharat 6G Alliance (B6GA)

An industry led body consisting of public/private companies, academia, research institutions and Standard Development organizations facilitated by the Government

- Understand business and societal needs 5G advanced and 6G technology i.e. coverage, capacity and experience
- Build consensus on such needs, promote high impact Open R&D and pursue pre-standardization efforts
- Help design & develop AI/ML led Open 6G RAN products and solutions
- Ensure availability of 6G test beds and access to 6G / 6G RF / AI-ML chipsets
- Build consortia of Indian Startups, companies including manufacturing ecosystem
- Accelerate filing of patents from India and energize contribution to standards in 3GPP/ITU
- Facilitate market access for Indian telecom technology products & services
- Build coalition and synergies with like-minded 6G Global Alliances

Facilitate Realisation of 'Bharat 6G Vision'

Bharat 6G Alliance



Bharat 6G Alliance Working Groups

- Spectrum
- Device Technology, Sensors and Manufacturing ecosystem
- Technology
- Applications
- Green and Sustainability
- Outreach, and
- 6G Use-cases and Revenue Stream

Bharat 6G Membership

S. No.	Membership Fee Category	Annual Fee Rs.
1.	**Corporate Members (Indian Head Quarter industry and academia)**	
i)	Up to Annual Turnover <= INR 10 Crore (Startup)	10,000
ii)	INR 10 Crore > Annual Turnover <= INR 50 Crore	50,000
iii)	INR 50 Crore > Annual Turnover <= INR 100 Crore	1,00,000
iv)	INR Above 100 Crore	5,00,000
v)	Academic Institutions, Not-for- Profit R&D organizations, Government Department/ Statutory or Autonomous bodies/organizations set up by the Government or Statutory or autonomous bodies	1,00,000
2.	**Affiliate Members (Foreign companies incorporated and registered in India)**	5,00,000
3.	**Associate (Indian Associations)**	1,00,000
4.	**Associate (Foreign companies not registered in India)**	USD 10,000
5.	**Guest/Expert Members on Invitations**	NIL

Thank You

Rajesh Kumar Pathak
Director General
Bharat 6G Alliance, New Delhi
https://bharat6galliance.com
Email: dg@bharat6galliance.com