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| Contribution by India (Republic of) | |
| ITU-INDIA LOI FOR FUTURE-READY INFRASTRUCTURE PLANNING THROUGH DIGITAL TWINS | |
| **Purpose**  This document serves as an announcement of ITU-India collaboration on digital twin technology for future-ready infrastructure planning.  **Action required by the Council**  This report is transmitted to the Council for **information**.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **References**  *LoI signed between DoT (India) and ITU* | |

# 1 Introduction

India has been an active ITU member since 1869 and a regular ITU Council member since 1952, playing a key role in shaping global telecom policies and promoting inclusive digital development. Further, India is rapidly emerging as a global leader in digital transformation and the adoption of emerging technologies.

With a robust digital public infrastructure, a thriving startup ecosystem, and strong policy initiatives such as Digital India, the country is leveraging technologies like 5G, AI, IoT, blockchain, and quantum computing to drive inclusive growth and innovation. Government-backed platforms like Aadhaar, UPI, and DigiLocker have revolutionized service delivery and financial inclusion, while ongoing investments in skilling and R&D are positioning India as a key player in the global tech landscape. India's approach emphasizes not only technological advancement but also digital empowerment and equitable access, making it a model for emerging economies worldwide.

# 2 India’s commitment towards a better digital future for all

2.1 India is deeply committed to inclusive digital growth and sustainable telecom solutions, actively contributing to ITU initiatives and global digital policy-making through the ITU Council.

2.2 India has demonstrated global leadership in digital public infrastructure through pioneering platforms such as Aadhaar, UPI, DIKSHA, CoWIN, e-Sanjeevani, Sanchar Saathi, and Digital Twin (Sangam), many of which are being shared with partner countries. It has achieved the world’s fastest 5G rollout and is investing significantly in 6G research and development to lead future telecom innovations. Through the **Smart Cities** Mission and comprehensive telecom reforms, India is promoting sustainable urban development, improving ease of doing business, enhancing affordability, and building resilient digital infrastructure.

2.3 **India’s Global Digital Vision:** The ITU-India Digital Twin LoI represents a mutual learning opportunity that will advance efficiency, sustainability, and innovation. This collaboration will not only enrich both ITU and India but also contribute to global efforts in infrastructure digitization, especially benefiting developing countries, LDCs, LLDCs, SIDs through inclusive growth.

# 3 India-ITU LoI for advancing infrastructure planning through digital twin technologies

The Department of Telecommunications (DoT), India, and the International Telecommunication Union (ITU) have signed a Letter of Intent (LoI) to initiate strategic collaboration focused on emerging technologies.

## 3.1 Purpose

NextGen Telecommunications is evolving beyond connectivity to become a platform for intelligent, data-driven infrastructure planning. By integrating AI, digital twins, and ubiquitous connectivity, these technologies create smart, adaptive systems across sectors such as urban development, transport, and healthcare. The LoI marks a pivotal step in leveraging telecom networks for real-time, insight-driven infrastructure development and governance. The proposed partnership aims to:

– drive innovation in digital twins, AI-driven solutions, virtual world technologies, and the transformative potential of IMT-2030 technologies;

– promote the development of global standards and best practices to ensure seamless interoperability and scalability;

– advance sustainable development through shared frameworks, capacity building, and cross-sectoral collaboration; and

– foster citizen engagement and participatory approaches in urban and infrastructure planning.

## 3.2 Key highlights of the collaboration

– **Knowledge sharing and capacity building**: Facilitate the exchange of insights from initiatives like DoT’s Sangam and ITU’s Citi verse to enhance cross-sectoral data integration and collaborative planning.

– **Global standards development**: Contribute to ITU-T Study Group 20 on IoT, digital twins, and smart cities to develop global standards, APIs, and methodologies that ensure the seamless scalability of AI-driven solutions.

– **Sandbox environments and demonstrations**: Establish sandbox environments to test innovative digital twin technologies, conduct pilot projects, and adapt regulatory frameworks that validate the transformative potential of these technologies.

– **Citizen engagement and simulations**: Utilize AI-powered platforms to engage citizens in real-time urban planning and infrastructure development, thereby enhancing participatory governance and collaborative decision-making.

– **Mobile phone data (MPD) and privacy**: Share insights on privacy-enhancing techniques (PETs) and their application in ICT measurement, particularly for building digital twins in urban planning.

– **AI model integration for digital twins**: Customize AI models using country-specific datasets to deliver context-sensitive solutions for infrastructure development and urban mobility challenges.

## 3.3 Conclusion

India’s adoption of Digital Twin technologies is driving sustainable, data-driven infrastructure planning while fostering global collaboration through initiatives like the India-ITU partnership, positioning the country as a leading force in innovation and international knowledge exchange.

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