Exploring the impact of WTSA-24: An overview ITU work on performance, QoS, and QoE

Meeting of Quality of Service Development Group (QSDG) in Bhubaneswar, India, 5 December 2025

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ITU is the United Nations specialized agency for information and communication technologies (ICTs)











Years of ITU









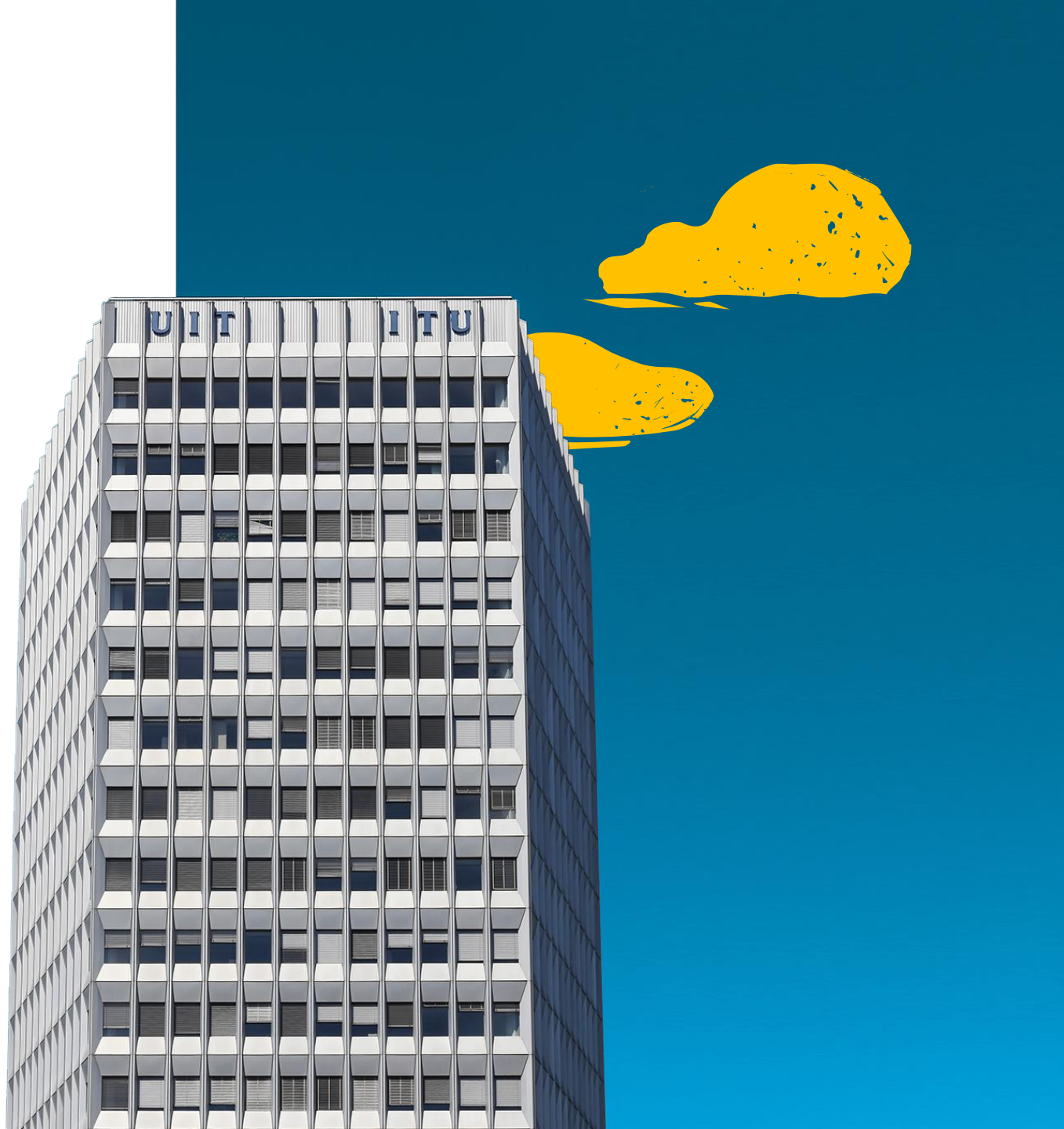


International Telecommunication Union

- UN specialized agency
- Headquartered in Geneva, Switzerland

Our work spans three areas, or *Sectors*:

Standardization | **Radiocommunication** | **Development**



We are our members

194
Member states

1000+
Companies, universities international and regional organizations



ITU Area and regional offices

Area offices

- Panama
- Santiago
- Bridgetown
- Dakar
- Yaounde
- Harare
- Jakarta
- New Delhi

Regional offices

- Brasilia
- Addis Ababa
- Cairo
- Geneva
- Moscow
- Bangkok

UN office

- New York

Governance

Plenipotentiary Conference

Council

Sector conferences and advisory bodies

Plenipotentiary Conference

- ITU’s highest policy-making body
- Sets strategic direction every four years

Next edition

- **2026,** Doha, Qatar

Sectoral governing bodies

Radiocommunication

- **World Radiocommunication Conference**
  - *Next edition:* WRC-27
- Radiocommunication Assembly
- Radiocommunication Advisory Group
- Radio Regulations Board

Standardization

- **World Telecommunication Standardization Assembly**

ITUWTSA
NEW DELHI2024
15-24 October 2024
New Delhi, India

- Telecommunication Standardization Advisory Group

Development

- **World Telecommunication Development Conference**

ITUWTDC
BAKU2025
17–28 November 2025
Baku, Azerbaijan

- Telecommunication Development Advisory Group

WTSA-24 Outcomes

ITUWTSA NEW DELHI2024

- WTSA-24 was held from 15 to 24 October 2024 in New Delhi, India, preceded by a Global Standards Symposium on 14 October 2024.
- Approximately **2,059 representatives** (1,900 on-site, 159 remote) from **145 Member States** (1,359 on-site, 121 remote) were in attendance.

Key WTSA-24 outcomes

8
New Resolutions

44
Revised Resolutions

1
Revised Recommendation

10
Study Group mandates approved

Appointed **Chairs and Vice-chairs** of TSAG, the ITU-T study groups, and the Standardization Committee for Vocabulary

ITUWTSA NEW DELHI2024

New Resolutions

- Artificial Intelligence (Res. 101)
- Digital public infrastructure (Res. 103)
- Vehicle communication (Res. 104)
- Metaverse (Res. 105)
- Emergency location communication (Res. 102)
- Sustainable digital transformation (Res. 106)
- Youth (Res. 107)
- Strategic planning (Res. 108)

SG2 - Operational aspects

SG3 - Economic & policy issues

SG5 - Environment, EMF & circular economy

SG11 - Protocols, testing & combating counterfeiting

SG12 - Performance, QoS & QoE

SG13 - Future networks

SG15 - Transport, access & home

SG17 - Security

SG20 - IoT, digital twins & smart cities

SG21 - Multimedia, content delivery & cable TV

New Study Group

QoS, QoE and performance standards at ITU-T

SG2 - Operational aspects

SG3 - Economic & policy issues

SG5 - Environment, EMF & circular economy

SG11 - Protocols, testing & combating counterfeiting

SG12 - Performance, QoS & QoE

SG13 - Future networks

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ITU-T Study Group 12 is the expert group responsible for the development of international standards (ITU-T Recommendations) on **performance, quality of service (QoS) and quality of experience (QoE)**.

The work addresses the **full range of ICT services, networks and devices** – from speech, audio and video over fixed and mobile networks to emerging services in fields **including digital financial services**.

Participants represent **network operators, service providers, vendors, academia** and **telecoms regulators**

Liaison activities with many other organisations (3GPP, MPEG, IETF, ETSI, etc.)

Updated and new WTSA-24 Resolutions relevant to SG12

- Res. 29 "**Alternative calling procedures** on international telecommunication networks"
- Res. 89 "Promoting the use of information and communication technologies to **bridge the financial inclusion gap**"
- Res. 92 "Enhancing the standardization activities in the ITU Telecommunication Standardization Sector related to non-radio aspects of **international mobile telecommunications**"
- Res. 93 "Interconnection of International Mobile Telecommunications networks"
- Res. 101 "Standardization activities of the ITU-T on **AI technologies in support of telecommunications/ICTs**"
- Res. 104 "Promoting and strengthening standardization activities for **vehicular communications**"
- Res. 105 "Promoting and strengthening **metaverse** standardization"
- **Res. 95 "ITU Telecommunication Standardization Sector initiatives to raise awareness on best practices and policies related to service quality"**

Resolution 95

ITU-T initiatives to raise awareness on best practices and policies related to service quality

Guides Study Group 12:

- to **elaborate Recommendations providing guidance to regulators** in regard to **defining strategies and testing methodologies to monitor and measure QoS and QoE**, in particular for broadband networks and services;
- to **study QoS and QoE evaluation scenarios, measurement strategies, mapping, visualization and testing tools, and publication mechanisms**, to be adopted by **regulators and operators**;
- to **study and provide guidance to regulators** in regard to **sampling methodologies for QoS measurements** at the local, national and global level;
- to **provide references relating to minimal satisfactory key performance and key quality indicators** for evaluating the quality of services;
- to **implement strategies to raise participation of developing and developed countries** from all regions in all their activities

Resolution 95

ITU-T initiatives to raise awareness on best practices and policies related to service quality

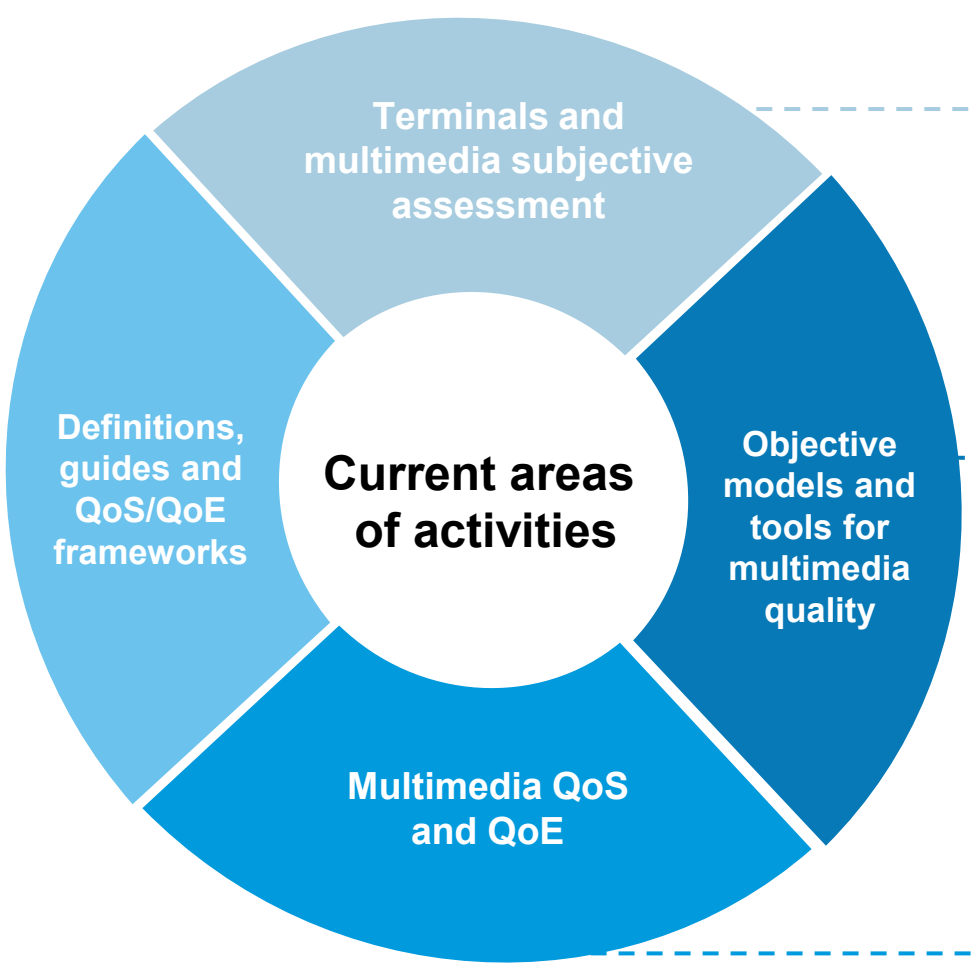
Acknowledges the **Quality of Service Development Group** (QSDG):

- Important role in fostering collaboration between operators, technical solutions suppliers and regulators in an open debate on new strategies to deliver better quality of services to users.

Invites the ITU membership:

- to participate in Study Group 12 and QSDG initiatives by providing contributions, expertise, knowledge and practical experiences relating to the work of Study Group 12.

ITU-T Study Group 12 - “Performance, quality of service and quality of experience”



Specification of devices: acoustics
Application in vehicles
Subjective testing methodologies for speech, multimedia, AR/VR, etc.

Modelling of QoE and QoS
Models for network planning and end-to-end supervision
Speech, video, audio-visual quality models

QoE and performance requirements for new services (5G verticals, mobile finance)
Operational aspects and network performance

ITU-T guidance on service quality

What do we need to assure quality?

The questions ITU's standards are built to answer:

- *What do we mean by quality?*
- *How do we measure it consistently?*
- *How can we tell when quality breaks down?*
- *How do we supervise and enforce it?*
- *How do we stay relevant as technology evolves?*
- *How do we help build trust in digital services?*

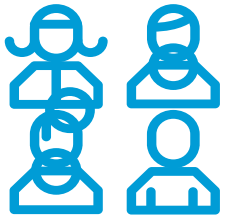
Who do standards serve

Regulators / policymakers

need transparent quality benchmarks and common frameworks to set data-driven quality targets to ensure reliability and fair competition

Operators / Service providers

require consistent metrics for network planning and shared KPIs to monitor QoS and optimize network performance and user satisfaction



Consumers

want clarity and trust in the services they use

Terminology

Provide consistent terminology essential for aligning quality discussions across users, service providers, and regulators:

- **ITU-T E.800:** formal definition of QoS and other key terms – *provides a basis for all QoS discussions*
- **ITU-T G.1000:** provides a structured framework for QoS, linking high-level user expectations to measurable network parameters
- **ITU-T P.10/G.100:** master vocabulary of performance, QoS, and QoE terms – *ensures we all speak the "same language"*

Updates underway on all three

Published standards

ITU-T E.800

Definitions of terms related to quality of service

ITU-T G.1000

Telecommunications quality of service: A framework and definitions

ITU-T P.10/G.100

Vocabulary for performance, quality of service and quality of experience

Foundational standards

Set the foundation for how telecom service quality is defined, measured, and managed:

- **ITU-T E.801 and E.802:** guidance on service quality agreements and service level agreements
- **ITU-T E.803:** detailed catalogue of parameters
- **ITU-T E.804:** defines end-user QoS measures and the methods for measuring them
- **ITU-T E.804.1:** practical guide to applying E.804

Published standards

ITU-T E.801
Framework for Service Quality Agreement

ITU-T E.802
Framework and methodologies for the determination and application of QoS parameters

ITU-T E.803
Quality of service parameters for supporting service aspects

ITU-T E.804
Quality of service aspects for popular services in mobile networks

Regulatory frameworks

Equip regulators with strategies to design and adopt service quality regulatory frameworks:

- **ITU-T E.805:** outlines approaches for building national QoS regulatory frameworks
- **ITU-T E.805.1:** practical guidance for day-to-day regulatory supervision of mobile QoS, such as how to run field monitoring, conduct audits, and handle user complaints efficiently

Published standards

ITU-T E.805

Strategies to establish quality regulatory frameworks

ITU-T E.805.1

Quality of service operational strategy for improved regulatory supervision of providers of mobile telecommunication services

Measurement and reporting

Translate the definitions and frameworks into practical tools to measure, validate, and communicate on QoS:

- **ITU-T E.806:** outlines how to design and run QoS measurement campaigns ensuring results are statistically credible
- **ITU-T E.807:** defines user-centric voice service indicators and specifies how they should be measured to reflect real user experience
- **ITU-T E.812:** introduces the use of crowdsourced data to measure broadband QoS cost-effectively, with guidance on data reliability and use in regulatory benchmarking
- **ITU-T E.813:** provides a framework for mapping and visualizing connectivity

Published standards

ITU-T E.806

Measurement campaigns, monitoring systems and sampling methodologies to monitor the QoS in mobile networks

ITU-T E.807

Definitions, associated measurement methods and guidance targets of user-centric parameters for call handling in cellular mobile voice service

ITU-T E.812

Crowdsourcing approach for the assessment of E2E QoS in fixed and mobile broadband networks

ITU-T E.813

Mapping and visualization strategies for the assessment of connectivity

Performance aspects

Provide concrete methods to measure delay, loss, and capacity in ways that reveal their impact on everyday telecom services:

- **ITU-T G.1023:** framework to assess mobile network capacity – *checks if networks can meet the expected demand*
- **ITU-T Y.1540:** defines core IP metrics – *baseline for checking if networks can meet performance requirements*
- **ITU-T Y.1545.2:** outlines mobility-focused performance metrics – shows *how performance varies when on the move*
- **ITU-T Y.1567:** introduces Latency Under Load metrics – *tests how networks behave when congested*

Published standards

ITU-T G.1023

Framework for capacity assessment of packet data services in mobile networks

ITU-T Y.1540

Internet protocol data communication service - IP packet transfer and availability performance parameters

ITU-T Y.1545.2

Quality of service metrics for continuity of performance of packet data-based services

ITU-T Y.1567

Latency under load metrics and methods of measurement

Case of digital financial services

DFS (aka mobile money) are a critical ICT domain requiring reliable, secure service:

- **ITU-T G.1033:** provides the foundation for approaching QoS and QoE of DFS
- **ITU-T P.1502:** provides methods to measure QoE for DFS
- **ITU-T P.1503:** extends the P.1502 methodology across borders and service providers

Approved Standards

ITU-T G.1033

Quality of service and quality of experience aspects of digital financial services

ITU-T P.1502

Methodology for QoE testing of digital financial services

ITU-T P.1503

Extended methodology for cross-country and inter-operator digital financial services testing

What do we need to assure quality?

How ITU's standards answers the key questions :

- A way to **know if "good service" means the same thing to everyone**
  - *ITU-T E.800, G.1000, P.10/G.100*
- **Measures that reflect** both the network's performance and the user's experience
  - *ITU-T E.803, E.804, E.804.1, E.806, E.807, G.1023, Y.1540, Y.1545.2, Y.1567*
- Tools that show **when problems are isolated glitches or systemic issues**
  - *ITU-T E.812, E.813*
- Methods that **compare operators fairly and transparently**
  - *ITU-T E.805, E.805.1*
- **Standards that keep pace** with new services and applications
  - *ITU-T G.1035, G.1036, P.812, P.1320 (for immersive media e.g., AR, VR, XR)*
- Confidence that **critical services e.g., payments truly deliver**
  - *ITU-T G.1033, P.1052, P.1053 (in the case of DFS)*

Next meeting

Geneva, 9-17 June 2026

- Remote participation will be provided.
- For registration and more info: https://itu.int/go/tsg12.

Contact: tsbsg12@itu.int

Years of **ITU**