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| **Abstract:** | This report summarizes TSB facilitation of ITU-T activities from July 2024 to May 2025. |

**CONTENTS**

[内容提要 3](#_Toc198549031)

[Annex – Full report of activities in ITU-T 6](#_Toc198549032)

[1 ITU-T study groups 6](#_Toc198549033)

[1.1 Standards approved and study group meetings 6](#_Toc198549034)

[1.2 Non-attendance of vice-chairs 6](#_Toc198549035)

[2 ITU-T focus groups 7](#_Toc198549036)

[3 Workshops, symposia and webinars 7](#_Toc198549037)

[4 Electronic working methods and virtual meetings 8](#_Toc198549038)

[5 Updates on collaboration initiatives 8](#_Toc198549039)

[5.1 AI and multimedia authenticity 8](#_Toc198549040)

[5.2 Artificial intelligence and machine learning 9](#_Toc198549041)

[5.3 Digital financial inclusion and fintech 10](#_Toc198549042)

[5.4 Digital transformation for cities and communities 10](#_Toc198549043)

[5.5 Resilience to natural hazards 12](#_Toc198549044)

[5.6 Intelligent transport systems 12](#_Toc198549045)

[5.7 Green digital action 13](#_Toc198549046)

[5.8 CTO and CxO meetings 14](#_Toc198549047)

[5.9 Metaverse, Virtual Worlds and AI 14](#_Toc198549048)

[5.10 ITU/WMO/UNESCO-IOC Joint Task Force on SMART cable systems 15](#_Toc198549049)

[6 Academia 15](#_Toc198549050)

[6.1 ITU Journal 15](#_Toc198549051)

[6.2 ITU Kaleidoscope academic conferences 15](#_Toc198549052)

[7 Conformity and interoperability programme 16](#_Toc198549053)

[8 Membership 17](#_Toc198549054)

[9 Bridging the standardization gap 18](#_Toc198549055)

[10 Gender 20](#_Toc198549056)

[11 Human rights and standards development 22](#_Toc198549057)

[12 Publications 24](#_Toc198549058)

[12.1 Recommendations and supplements 24](#_Toc198549059)

[12.2 Official languages on an equal footing 24](#_Toc198549060)

内容提要

2024年7月至2025年5月，国际电联批准了[381份新的和经修订的ITU-T建议书及相关案文](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=8265&isn_status=-1,7,2&adf=2024-01-01&adt=2024-07-22&details=0&field=acdefghijo)。ITU-T各研究组会议的内容提要可查阅其各自[主页](https://www.itu.int/en/ITU-T/studygroups/2025-2028/Pages/default.aspx#/zh)。见[第1节](#_1_Achievements_in)。ITU-T的两个焦点组在本报告期继续开展工作。有关ITU-T各焦点组的活动和实际成果信息可查阅其各自[主页](https://www.itu.int/en/ITU-T/focusgroups/Pages/default.aspx#/zh)。见[第2节](#_2_ITU-T_Focus)。

2024年，ITU-T组织了94场[讲习班、网络研讨会和专题研讨会](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/Pages/default.aspx#/zh)，此外还几乎全年每天都针对[人工智能向善](https://aiforgood.itu.int/#/zh)数字平台进行编程。见[第3节](#_3_Workshops,_symposia)。

自2024年7月上次TSAG会议以来，人们努力将电信标准化局的旧应用整合并升级至[MyWorkspace](https://www.itu.int/myworkspace/)。有关电子工作方法、服务数据库应用和虚拟会议统计数据的综合报告，见[TD11](https://www.itu.int/md/T25-TSAG-250526-TD-GEN-0011)和[第4节](#_4_Electronic_working)。

人工智能和多媒体真实性标准合作，是在2024年人工智能向善全球峰会期间举办的“[检测深度伪造和生成式人工智能：人工智能水印和多媒体真实性标准讲习班](https://aiforgood.itu.int/event/detecting-deepfakes-and-generative-ai-standards-for-ai-watermarking-and-multimedia-authenticity/#/zh)”之后成立的，目的是探索验证多媒体内容的来源和真实性。国际电联、国际标准化组织、国际电工委员会（在“世界标准合作”的领导下）和行业领导者正在进行的合作，侧重于解决人工智能和多媒体真实性标准方面的差距，并支持确保透明度、法律合规性和消费者信任。请参阅[第5.1节](#_5.1__AI)。

WTSA[第101号决议](https://www.itu.int/pub/T-RES-T.101-2024)（2024年，新德里）强调了国际电联在建立可信人工智能标准方面的作用。首届[国际人工智能标准峰会](https://aiforgood.itu.int/ai-standards/#/zh)于2024年10月在新德里WTSA-24期间与国际标准化组织和国际电工委员会共同举办。本届峰会汇集了全球专家，以推进制定负责任和包容性的人工智能标准。

[2025年人工智能向善全球峰会](https://aiforgood.itu.int/summit24/#/zh)将于2025年7月8-11日在日内瓦举行。[人工智能向善影响举措](https://aiforgood.itu.int/impact-initiative/#/zh)于2024年5月在人工智能向善全球峰会期间启动，旨在扩大有影响力的人工智能解决方案，支持全球竞争和挑战并加强能力建设工作。国际电联仍继续开展一系列与AI相关的活动，包括人工智能向善发现系列、AI技能联盟、AI惠及人类创新工厂、机器人惠及人类青年挑战赛、国际电联AI/ML挑战赛和青年AI领袖社区。请参阅[第5.2节](#_5.2_Artificial_intelligence)。

[国际电联数字金融服务（DFS）安全实验室](https://www.itu.int/en/ITU-T/dfs/seclab/Pages/default.aspx#/zh)在2024年1月至2025年2月期间组织了13场诊所活动，有超过853名人员参加，为新兴经济体的监管机构提供了安全建议和技术援助。请参阅[第5.3节](#_5.3_Digital_transformation)。

在19个联合国机构的支持下，[可持续智慧城市联合体（U4SSC）](https://u4ssc.itu.int/#/zh)于2024年9月19日在西班牙马德里举行了第八次会议。[国际电联数字化转型对话](https://www.itu.int/cities/digitaltransformationdialogues/)（DTD）继续举办网络研讨会，分享对新兴技术和技术标准化的见解，其中包括由专家主导的会议，如炉边谈话、网络研讨会和“向专家咨询”活动。论坛于2024年7月至2025年3月举行，主题包括量子计算、TinyML和虚拟世界中的数字治理，对有关数字化转型及其影响的对话起到了促进作用。请参见[第5.4节](#_5.4_)。

由国际电联、联合国气候变化框架公约、联合国环境署、万国邮联和世界气象组织牵头的[利用人工智能解决方案抵御自然灾害全球举措](https://www.itu.int/en/ITU-T/extcoop/ai4resilience/Pages/default.aspx)，是建立在[ITU-T人工智能促进自然灾害管理焦点组](https://www.itu.int/en/ITU-T/focusgroups/ai4ndm/Pages/default.aspx#/zh)工作的基础之上。该举措旨在探索人工智能和新兴技术以提高抗灾能力，并支持通过研究和创新来管理自然和次生灾害。这一举措举行了两次会议：第一次于2024年11月6日在巴塞罗那举行，第二次于2025年5月9日在Frascati举行。见[第5.5节](#_5.5_Resilience_to)。

由国际电联和联合国欧洲经济委员会组织的最新一期[未来网络化汽车专题研讨会](https://fnc.itu.int/)于2025年3月24日至27日在线举行。国际电联牵头的[ITS通信标准协作](https://www.itu.int/en/ITU-T/extcoop/cits/Pages/default.aspx)下的[自动驾驶通信技术专家组](https://www.itu.int/en/ITU-T/extcoop/cits/Pages/egcomad.aspx)，继续通过两个工作组开展活动。请参阅[第5.6节](#_5.6_Intelligent_transport)。

国际电联利用COP28、具有里程碑意义的数字化日以及在COP29期间通过的《绿色数字行动宣言》的势头，继续推进其绿色数字行动举措。电信标准化局通过在标准化方面的领导作用、COP29期间的活动以及包括锂电池白皮书在内的关键活动，推动全球共同努力，使数字创新与气候目标保持一致。见[第5.7节](#_5.7_)。

首席技术官（CTO）和首席执行官（CxO）会议召集行业最高领袖和电信标准化局高级管理人员，讨论行业优先事项和标准化工作。最近一次会议于2024年12月9日在迪拜举行，期间会聚了20位C级高管，成果见[公报](https://www.itu.int/en/ITU-T/tsbdir/cto/Documents/Communique_ITU_CxO_2024.pdf)。参见[第5.8节](#_5.8_CTO_and)。

2024年6月14日，在日内瓦举行的首个[联合国虚拟世界日](https://www.itu.int/metaverse/un-virtual-worlds-day/)期间，发起了由国际电联和联合国国际计算中心牵头的新“[虚拟世界全球举措 – 探索城市元宇宙](https://www.itu.int/metaverse/virtual-worlds/)”，其目的是确定规范和原则，为城市规划、教育和市政服务等领域的城市元宇宙治理解决方案提供指导。首届联合国城市元宇宙挑战赛于2025年2月13日启动，由国际电联与16个全球合作伙伴共同举办。见[第5.9节](#_5.9_Metaverse,_Virtual)。

[国际电联2024年大视野活动：可持续世界的创新和数字化转型](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2024/Pages/default.aspx#/zh)与WTSA-24在印度新德里同期举行。下一届大视野活动将与2026年人工智能向善峰会同时举行。国际电联《未来与不断演进的技术》期刊和国际电联大视野会议以及国际电联学术成员网络研讨会，将继续作为学术界参与国际电联工作的重要平台。这些活动促进了研究合作、知识交流和吸收创新，加速了从学术研究到形成行业影响的进程。见[第6节](#_6_)。

[国际电联一致性和互作性（C&I）项目](https://www.itu.int/en/ITU-T/C-I/Pages/default.aspx)旨在增强ICT产品的一致性和互操作性。自2021年以来，测试实验室进行的产品测试获得了国际电联的官方认可，目前已有14个实验室注册。该项目还与国际实验室认可合作组织（ILAC）和国际认可论坛（IAF）合作，探索ITU-T建议书的认证方案，并不断更新国际电联产品一致性数据库。见[第7节](#_7_)。

ITU-T有266个部门成员和228个部门准成员。国际电联学术成员总数为178个。ITU-T的77个部门准成员正采用2020年1月31日生效的中小企业较低收费标准参加活动。见第8节。

WTSA-24更新的WTSA第44号决议概述了国际电联通过[弥合标准化差距（BSG）项目](https://www.itu.int/bsg/#/zh)为弥合发展中国家与发达国家之间的标准化鸿沟，而不断付出的努力。这方面的主要活动包括加强培训、改进电子工作方法、开展区域合作和能力建设，以增加发展中国家对ITU-T标准制定工作的参与。正在开展的工作侧重于实践技能、互动学习和促进国际伙伴关系，并得到了日本MIC等利益攸关方的大力支持。见[第9节](#_9_)。

电信标准化局继续致力于将性别平等观点纳入其所有活动和计划，充分利用国际电联性别平等任务组框架和[ITU-T的妇女联谊会（ITU-T下设的NoW），](https://www.itu.int/en/ITU-T/NoW/Pages/default.aspx#/zh)并继续扩大其工作。WTSA-24的性别平等目标鼓励成员国承诺支持增加女性担任ITU-T领导职位的人数。这些努力使全会中的女性代表达到26%。与上一研究期相比，担任领导职务的女性人数增加了24%，与WTSA-20相比，在WTSA-24期间担任领导职务的女性人数增加了一倍。见[第10节](#_10_Gender)。

ITU-T各研究组在国际电联标准制定过程中对人权给予了充分考虑。电信标准化局与联合国人权事务高级专员办事处保持密切协作，并参与人权理事会的讨论。见[第11节](#_11_Human_rights)。

在本报告期出版了300多份ITU-T建议书和增补。电信标准化局将继续收集ITU-T研究组建议的所有新术语和定义，并将其录入国际电联在线术语和定义数据库。电信标准化局继续翻译所有通过传统批准程序批准的建议书以及所有TSAG报告。见[第12节](#_14_Publications)。

Annex – Full report of activities in ITU-T

# 1 ITU-T study groups

## 1.1 Standards approved and study group meetings

ITU approved [381 new and revised ITU-T Recommendations and related texts](https://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=9677&isn_status=-1,7,2&adf=2024-07-23&adt=2025-05-26&pg_size=100&details=0&field=acdefghijo) from July 2024 to 22 May 2025. For all ITU-T Recommendations in force, see the [catalogue of ITU-T Recommendations](https://www.itu.int/en/ITU-T/publications/Pages/recs.aspx).

Executive summaries of ITU-T study group (SG) meetings can be found on their respective [homepages](https://www.itu.int/en/ITU-T/studygroups/Pages/default.aspx). During WTSA-24 held in New Delhi, India, ITU-T Study Group 21 was established. ITU-T study group meetings held between July 2024 to May 2025 are as follows:

* [SG2](https://www.itu.int/go/tsg2/): Geneva, 5-14 February 2025
* [SG3](https://www.itu.int/go/tsg3): Geneva, 8-17 April 2025
* [SG11](https://www.itu.int/go/tsg11): Geneva, 19-28 February 2025
* [SG12](https://www.itu.int/go/tsg12): Geneva, 14-23 January 2025
* [SG13](https://www.itu.int/go/tsg13): Geneva, 15-26 July 2024 and Geneva, 3–14 March 2025
* [SG15](https://www.itu.int/go/tsg15): Geneva, 17-28 March 2025
* [SG17](https://www.itu.int/go/tsg17): Geneva, 2-6 September 2024; Geneva, 8-17 April 2025
* [SG20](https://www.itu.int/go/tsg20): Geneva, 15-24 January 2025
* [SG21](https://www.itu.int/go/tsg21): Geneva, 13-24 January 2025

The first meeting of the ITU-T Study Group 5 in the new study period is scheduled from 3-12 June 2025 in Geneva, Switzerland.

## 1.2 Non-attendance of vice-chairs

PP Resolution 208 (Rev. Bucharest, 2022) "Appointment and maximum term of office for chairmen and vice-chairmen of Sector advisory groups, study groups and other groups" resolves that a Sector advisory group, study group or other group shall be made aware of the non-attendance of Chairs and Vice-Chairs in their respective groups and raise the issue through the Director of the relevant Bureau with the members concerned in an attempt to encourage and facilitate participation in these roles.

No Chairs were absent from any meetings held thus far in the 2025-2028 study period.

The following table lists Vice-chairs not in attendance at study group meetings held in the reporting period.

| Study Group | Meeting | Non-attendance of |
| --- | --- | --- |
| SG2 | Geneva, 5-14 February 2025 | Javokhir ARIPOV, Uzbekistan |
| SG3 | Geneva, 8-17 April 2025 | Zuhair Al-Zuhair, Kuwait |
| SG11 | Geneva, 19-28 February 2025 |  Emmanuel NTAMBARA, Rwanda |
| SG12 | Geneva, 14-23 January 2025 | Collins MBULO, Zambia |
| Alisher BABAXANOV, Uzbekistan |
| SG13 | Geneva, 15-26 July 2024 | Bülent ARSAL, Türkiye |
| Brice Murara, Rwanda |
| Obid Asadov, Uzbekistan |
| Anabel DEL CARMEN CISNEROS, Argentina |
| SG13 | Geneva, 3-14 March 2025 | None |
| SG15 | Geneva, 17-28 March 2025 | Umarbek Izbasarov (Uzbekistan) |
| SG17 | Geneva, 2-6 September 2024 | Mr Francisco Javier Díaz, Argentina |
| Ms Wala Turki Latrous, Tunisia  |
| Mr Gökhan Evren,Turkiye |
| SG17 | Geneva, 8-17 April 2025 | Ms Preetika SINGH, India (maternity leave) |
| Mr Kwadwo OSAFO-MAAFO, Ghana |
| Mr Abdenour BOURENNANE, Algeria |
| SG20 | Geneva, 15-24 January 2025 | Mr A Robert Jerard RAVI, India |
| Mr Khusan SOATOV, Uzbekistan |
| Mr Mars SYDYKOV, Kyrgyzstan |
| SG21 | Geneva, 13-24 January 2025 | Mr Mehmet Özdem, Turk Telekom Group, Türkiye |
| Mr Andrey Perez, Anatel, BrazilNOTE: Anatel, Brazil, recently informed that Mr Perez is no longer able to continue in the role. Mr Roberto Hirayama, who attended SG21 in January, has been proposed as the new Vice-chair. |

# 2 ITU-T focus groups

The [ITU-T Focus Group on Cost Models for Affordable Data Services (FG-CD)](https://www.itu.int/en/ITU-T/focusgroups/cd/Pages/default.aspx), established in March 2023, continues its work. The lifetime of the Focus Group was extended for another at the ITU-TSG3 Meeting in July 2024 and will complete its work in October 2025.

[ITU-T Focus Group on Artificial Intelligence Native for Telecommunication Networks (FG-AINN)](https://www.itu.int/en/ITU-T/focusgroups/ainn/Pages/default.aspx) was created in July 2024. This focus group identifies the requirements, challenges, and opportunities that AI-native networks will bring to the global communications landscape. FG-AI4NN organized the following meetings during the reporting period:

* 1st FG-AINN meeting, Virtual, 6-7 November 2024
* 2nd FG-AINN meeting, 14-15 April 2025, Istanbul, Türkiye

# 3 Workshops, symposia and webinars

In 2024, 98 ITU-T workshops, symposia and webinars were organized in addition to the weekly programming of the year-round [AI for Good](https://aiforgood.itu.int/%22%20/t%20%22_blank) digital platform. A listing of all past and planned events can be found on the [ITU-T workshops homepage](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2024/Pages/default.aspx%22%20/t%20%22_blank). The WTSA-24 related events can be found on [Related Events - WTSA-24](https://www.itu.int/wtsa/2024/related-events/). For all Digital Transformation Dialogues, see dedicated [web page](https://www.itu.int/cities/digitaltransformationdialogues/).

ITU-T workshops, symposia and webinars discuss emerging trends in standardization, increase the visibility of ITU-T work, enhance ITU-T collaboration with other bodies, attract and recruit new ITU-T members, and encourage peer-learning relevant to the development and implementation of international standards.

# 4 Electronic working methods and virtual meetings

[TD11](https://www.itu.int/md/T25-TSAG-250526-TD-GEN-0011) provides a comprehensive report on Electronic Working Methods, including virtual meeting statistics. Since last TSAG, there was a considerable effort into integrating and upgrading legacy TSB applications into MyWorkspace.

# 5 Updates on collaboration initiatives

Memoranda of Understanding and Cooperation Agreements are available on the [external cooperation web page](https://www.itu.int/en/ITU-T/extcoop/Pages/mou.aspx).

## 5.1 AI and multimedia authenticity

One of the main outcomes of the [Detecting deepfakes and Generative AI: Standards for AI watermarking and multimedia authenticity workshop](https://aiforgood.itu.int/event/detecting-deepfakes-and-generative-ai-standards-for-ai-watermarking-and-multimedia-authenticity/) organized by ITU during the AI for Good Global Summit 2024, was the establishment of an *AI and multimedia authenticity standards collaboration, convened by ITU under the World Standards Cooperation* (ITU, ISO and IEC).

Due to this ability to convincingly create or modify media, verifiable multimedia is becoming critical for ensuring transparency by providing context about the media's provenance and integrity with an effective, secure, and robust technical standard. The workshop highlighted the need for standards to guide how software and hardware products related to the creation, editing, and distribution of multimedia content record, verify, and manage provenance information. The overall goal of including provenance data in multimedia content is to equip online audiences with information about the source and/or editing history of digital content, such that they can make informed decisions about the content (similar to the purpose of a nutrition label on food). This also helps to facilitate trust through transparency among consumers of the content.

The ***AI and multimedia authenticity standards collaboration*** has been meeting since September 2024 on a monthly basis and provides a global forum for dialogue on priority topics for discussion across standards organisations in the area of AI and multimedia authenticity. In addition, to ITU, ISO and IEC, other members participating in the AI and multimedia authenticity standards collaboration include Shutterstock, C2PA, Adobe, JPEG, CAICT, WITNESS, Fraunhofer Institute and DeepMedia AI.

The main objectives of the Standards Collaboration are to:

* Provide a global forum for dialogue on priority topics for discussion across standards organisations in the area of AI and multimedia authenticity;
* Map the landscape of technical standards for AI and multimedia authenticity including but not limited to watermarking, provenance and deepfakes detection while facilitating sharing of knowledge on lessons learned from different stakeholders
* Identify gaps where new standards are required given the fast moving nature of the AI and multimedia authenticity landscape.
* Support the policy, regulatory requirements and government policy measures with regards to AI and multimedia authenticity to facilitate transparency and legal compliance with but not limited to protection of privacy of users, authorship and the rights of owners and consumers.

One of the main areas of work of the standards collaboration has been on mapping the landscape of technical standards for AI and multimedia authenticity. A White paper on the standards mapping landscape in AI & Multimedia Authenticity is planned for presentation at the AI for Good Summit 2025 during the AI and Multimedia Authenticity Standards Workshop on 11 July 2025.

## 5.2 Artificial intelligence and machine learning

[AI for Good](https://aiforgood.itu.int/) is the United Nations' leading platform on Artificial Intelligence. Focused on identifying trustworthy AI applications, building skills and standards, and advancing AI governance for addressing global challenges, the platform is organized by ITU in partnership with over 40 UN Sister Agencies and co-convened with the Government of Switzerland.

**AI for Good Global Summit 2025:** The [2025 edition](https://aiforgood.itu.int/) of the summit will take place in Geneva, 8-11 July 2025. The Global Summit will focus on identifying innovative AI applications to solve global challenges

The [AI Governance Dialogue](https://aiforgood.itu.int/summit25/programme/) will facilitate exchanges between key stakeholders on effective approaches to AI governance. The high-level plenary session will explore the changing landscape of AI governance, with a focus on innovative policy implementation across regions. Discussions will address risk management strategies and the emerging role of AI agents, particularly their implications for the future of work, investment, and cross-sector collaboration.

The adoption of [Resolution 101](https://www.itu.int/pub/T-RES-T.101-2024) (New Delhi, 2024) at 2024 World Standardization Telecommunication Assembly (WTSA-24) further emphasizes ITU's recognized role in establishing trusted AI standards.

The first [International AI Standards Summit](https://aiforgood.itu.int/ai-standards/), co-organized with ISO and IEC, in October 2024 in New Delhi brought together global experts to advance standards for responsible and inclusive AI. The next summit will take place in 2025 in South Korea. Prior to the Summit, the International AI Standards Dialogue will be held as part of the AI for Good Global Summit 2025.

The [AI for Good Impact Initiative](https://aiforgood.itu.int/impact-initiative/), launched in May 2024 during the AI for Good Global Summit, aims to scale impactful AI solutions, support global competitions and challenges, and strengthen capacity-building efforts—particularly for developing countries. Some notable activities include:

* **AI for Good Regional Programming**: [AI for Good Impact India](https://aiforgood.itu.int/event/ai-for-good-impact-india/), held on 18 October back to back with WTSA-24, [AI for Good Impact Africa](https://aiforgood.itu.int/event/ai-for-good-impact-africa/), to be held on 31 October 2025 in Johannesburg (side event of G20)
* **Global AI Challenges and Competitions:** [ML challenges](https://aiforgood.itu.int/about-ai-for-good/aiml-in-5g-challenge/), [Robotics for Good Youth Challenge](https://aiforgood.itu.int/robotics-for-good-youth-challenge/), [Innovation Factory](https://aiforgood.itu.int/about-ai-for-good/innovation-factory/)
* **AI skills and capacity development:** [AI Skills Coalition](https://aiforgood.itu.int/ai-skills-coalition/), [Innovate for Impact](https://aiforgood.itu.int/innovate-for-impact-2025)
* **Reports and Research papers**: [AI readiness Framework report](https://www.itu.int/dms_pub/itu-t/opb/ai4g/T-AI4G-AI4GOOD-2024-2-PDF-E.pdf), Robotics and ML Challenges report (in partnership with UNU, in progress) , [AI for Good Impact Report](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fs41721.pcdn.co%2Fwp-content%2Fuploads%2F2021%2F06%2FeBat-2402309_AI-for-Good-Impact-Report-E-v6.pdf&data=05%7C02%7CKseniia.Fontaine%40itu.int%7Cef3d3e893493402b607c08dd6d370598%7C23e464d704e64b87913c24bd89219fd3%7C0%7C0%7C638786805270904283%7CUnknown%7CTWFpbGZsb3d8eyJFbXB0eU1hcGkiOnRydWUsIlYiOiIwLjAuMDAwMCIsIlAiOiJXaW4zMiIsIkFOIjoiTWFpbCIsIldUIjoyfQ%3D%3D%7C0%7C%7C%7C&sdata=JeOi2ArbXtp5M%2BqQCYYMXlC5Dv%2B5vGCPfrYwcs5gLf8%3D&reserved=0) (in partnership with Deloitte)

These efforts directly support Resolution COM4/AI adopted at WTSA-24, which encourages continued support for the AI for Good platform and enhanced international cooperation on AI capacity-building.

Building on the momentum in AI for food systems, there are plans underway to expand on the activities and initiatives of the [ITU/FAO Focus Group on AI and IoT for Digital Agriculture](https://www.itu.int/en/ITU-T/focusgroups/ai4a/Pages/default.aspx), alongside partners such as the World Food Programme (WFP) and the International Fund for Agricultural Development (IFAD).

Other AI related activities include:

* **AI for Good Discovery Series**: [AI for Good Discovery Series](https://aiforgood.itu.int/about-us/discovery/) explores AI/ML-focused streams—climate science, GeoAI, trustworthy AI, manufacturing, humanitarian action, finance, future of work, biodiversity, health, robotics, Earth/sustainability science, ML5G, open-source AI, and "From Molecules to Models." It is hosted on the AI for Good Neural Network, which uses AI-driven smart matching to connect 40,000+ global members around AI for social good.
* **AI for Good Innovation Factory**: [AI for Good Innovation Factory](https://aiforgood.itu.int/about-us/innovation-factory/) connects 3,000+ startups from 150+ countries through monthly pitches and mentoring, with 200+ finalists competing at the Grand Finale for funding and partnerships.
* **Robotics for Good Youth Challenge**. [Robotics for Good Youth Challenge](https://aiforgood.itu.int/robotics-for-good-youth-challenge/) is a global educational robotics championship that invites students aged 10 to 18 to develop AI and robotics-based solutions for global challenges. In 2024–2025, over 7,000 students from 20 countries (35% from Least Developed Countries) are simulating disaster response with robotics in a global ITU-led challenge, culminating in the Grand Finale at the AI for Good Global Summit 2025.
* **ITU AI/ML Challenge**. ITU [AI/ML Challenge](https://aiforgood.itu.int/about-us/aiml-in-5g-challenge/) The 2024 AI/ML Challenge engaged 4,196 participants across 13 problem statements, generating 30,000+ submissions on real-world AI use cases like networks and GeoAI, supporting ITU's standards work.
* **Young AI Leaders Community**. Launched at WTSA-24, [Young AI Leaders Community](https://aiforgood.itu.int/young-ai-leaders-community/), unites 300+ youth (aged 18–30) across 89 hubs in 46 countries to lead AI for Good projects, share skills, and collaborate on regional and global initiatives.

## 5.3 Digital financial inclusion and fintech

For an overview of all TSB/ITU-T activities on digital financial inclusion and fintech, see its dedicated [web page](https://www.itu.int/en/ITU-T/dfs/Pages/default.aspx).

**DFS Security Lab:** The [ITU Digital Financial Services (DFS) Security Lab](https://www.itu.int/en/ITU-T/dfs/seclab/Pages/default.aspx) organized 13 DFS Security Clinics during from January 2024 to February 2025. The clinics were attended by over 853 participants from emerging economies. These security clinics aimed at providing an overview of the ITU DFS security recommendations to the regulators from the telecom and financial services regulators, mobile network operators and DFS providers.

Additionally, the knowledge transfer programme of the DFS Security Lab provides technical assistance to regulators in emerging economies to set up the DFS Security Lab in their country, to implement the DFS Security Recommendations including [Recommendation ITU-T X.1150](https://www.itu.int/rec/T-REC-X.1150-202403-I/en) and to assist the staff of the regulators to be able to conduct the security audits of mobile payment apps based on the standard methodology of the DFS Security Lab.

The following telecom regulators requested the technical assistance for the knowledge transfer for the DFS Security Lab in 2024: Peru, Zimbabwe, The Gambia, Ethiopia, Ghana, Antigua and Barbuda and St Lucia. The knowledge transfer programme for these countries is underway in 2025. New requests were received from South Sudan, Lesotho, Eswatini, Gabon and Burkina Faso.

Following the tender awarded to Deloitte Risk Advisory in 2024 for the update of the security tests manuals for the DFS Security Lab to align with the new version of OWASP Mobile Top 10 Security Risks 2024 and the Mobile Security Application Verification Standards (MSAVS), the work was successfully completed in September 2024.

## 5.4 Digital transformation for cities and communities

The [United for Smart Sustainable Cities (U4SSC)](http://www.itu.int/en/ITU-T/ssc/united/Pages/default.aspx) initiative is supported by 19 UN bodies to advance the Pact for the Future. Over 200 cities have adopted [U4SSC Key Performance Indicators](https://www.itu.int/en/ITU-T/ssc/united/Pages/publication-U4SSC-KPIs.aspx) based on ITU standards. The results of these evaluations are shared by [city snapshots, factsheets, verification reports and case studies](https://www.itu.int/en/ITU-T/ssc/united/Pages/publication-U4SSC-KPIs.aspx).

U4SSC is providing expert guidance (see [U4SSC reports](https://u4ssc.itu.int/publications/))in nine thematic areas:

* City platforms
* Enhancing Urban Economic Resilience and Smart Sustainable Cities
* AI in cities
* Enabling people-centred cities through digital transformation
* Digital public infrastructure for cities
* Digital wellbeing
* Sustainable digital transformation in buildings and urban energy
* Social-cultural sustainability in people-centred city governance
* Future foresight for cities

[New reports](https://www.itu.int/cities/publications/) published from July 2024 to March 2025:

* [U4SSC Key Performance Indicators for People-Centred Cities for city leaders](https://www.itu.int/net/epub/TSB/2024-U4SSC-Key-Performance-Indicators-for-People-Centered-Cities-For-city-leaders/index.html#p=1)
* [U4SSC Brochure – Connecting communities, empowering people](https://www.itu.int/net/epub/TSB/2024-U4SSC-Initiative-Connecting-Communities-Empowering-People/index.html#p=1)
* [Policy benchmarks for digital transformation of people-centred cities](https://www.itu.int/net/epub/TSB/2024-U4SSC-Policy-benchmarks-for-digital-transformation-of-people-centre/index.html)
* [Data and API requirements for centralized smart city platforms](https://www.itu.int/net/epub/TSB/2024-U4SSC-Data-and-API-requirements-for-centralized-smart-city-platforms/index.html)

The [eighth U4SSC meeting](https://u4ssc.itu.int/latest-meetings/8th-meeting/) was held on 19 September 2024, in Madrid, Spain. Highlights of the meeting included the establishment of new Thematic Groups and the newly published U4SSC deliverables.

See [U4SSC reports](https://u4ssc.itu.int/publications/) and [ITU reports](https://www.itu.int/cities/publications/) on smart cities.

The [ITU Digital Transformation Dialogues](https://www.itu.int/cities/digitaltransformationdialogues/) (DTD) serves as a dynamic platform for sharing knowledge and deepening our understanding of emerging technologies and technical standardization across various fields. Through a series of engaging sessions, DTD fosters discussions on the rapidly evolving digital landscape and its impact on industries and society.

The following events have been held from July 2024 to March 2025:

Fireside Chats:

* [Quantum Leaps: Pioneering the Future with Quantum Computing](https://www.itu.int/cities/digitaltransformationdialogues/quantum-computing/) (28 November 2024)
* [Less Power, Less Cost, More Impact – Tiny Machine Learning and Edge Artificial Intelligence To The Rescue](https://www.itu.int/cities/digitaltransformationdialogues/machine-learning/) (17 September 2024)

Ask the Expert Sessions

* [Smart Submarine Cables: The future of disaster management](https://www.itu.int/cities/smart-submarine-cables/) (05 November 2024)
* [Exploring DLT Beyond Cryptocurrency: Applications and Opportunities](https://www.itu.int/cities/distributed-ledger-technology/) (23 July 2024)

Webinars

* [ITU and ATU Webinar – Shaping Africa's Digital Future: Governance in the Metaverse and Virtual Worlds](https://www.itu.int/cities/digitaltransformationdialogues/africa-virtual-worlds/) (25 February 2025)
* [City Horizons: Celebrating World Cities Day and Shaping Urban Futures](https://www.itu.int/cities/digitaltransformationdialogues/world-cities-day/) (31 October 2024)

The [ITU Digital Transformation and Cities Digest](https://www.itu.int/cities/dt-digest/) provides the latest updates on digital transformation, smart sustainable cities, virtual worlds and the metaverse. It also features information on upcoming events and new publications. Issues from July 2024 to March 2025: [March 2025](https://www.itu.int/cities/wp-content/uploads/2025/03/Digest-March-2025.htm) | [December 2024](https://www.itu.int/cities/wp-content/uploads/2024/12/Digest-December-2024.htm) | [September 2024](https://www.itu.int/cities/wp-content/uploads/2024/09/Digest-September-2024.htm) | [July 2024](https://www.itu.int/cities/wp-content/uploads/2024/07/ITU-Digital-Transformation-and-Cities-Digest-July2024.htm).

ITU continues to curate a wealth of knowledge through the [Digital Transformation Resource Hub](https://www.itu.int/cities/dt-resource-hub/), offering high-quality publications on key digital transformation topics. These include, digital public infrastructure, artificial intelligence, the Internet of Things, blockchain, digital twins, the metaverse and virtual worlds, and emerging digital transformation trends.

The [ITU toolkit on digital transformation for people-oriented cities and communities](https://toolkit-dt4c.itu.int/) is a comprehensive online guide designed to help cities and communities leverage digital technologies for dealing with global challenges, covering areas such as digital infrastructure, data management and digital services. It provides practical strategies and tools for the digital age, focusing on improving quality of quality of life, promoting inclusivity and enhancing service delivery.

## 5.5 Resilience to natural hazards

The [ITU-T Focus Group on AI for Natural Disaster Management](https://www.itu.int/en/ITU-T/focusgroups/ai4ndm/Pages/default.aspx) has been succeeded by the new [Global Initiative Resilience to Natural Hazards through AI Solutions](https://www.itu.int/en/ITU-T/extcoop/ai4resilience/Pages/default.aspx).

The initiative is led by ITU, the UN Environment Programme (UNEP), UN Framework Convention on Climate Change (UNFCC), the Universal Postal Union (UPU), and the World Meteorological Organization (WMO).

The initiative examines AI (another other emerging technology)-related use cases for resilience, best practices, and supports research, innovation, and paves the way for standards development in this area.

It also aims to create an AI readiness framework to assess and improve national capacities for using AI in disaster management.

The initiative considers seismic, hydrometeorological and other natural hazards, as well as compound or cascading events that can result in disasters.

The following meetings of the Initiative have been organized:

* 1st Meeting, Barcelona (Spain) – hosted by the Barcelona Supercomputing Centre, 6 November 2024
* 2nd Meeting, Frascati (Italy) – hosted by the European Space Agency (ESA), 9 May 2025 [[See ITU News](https://www.itu.int/hub/2025/04/ai-standards-and-future-disaster-resilience/)]

The following events have also been held in the context of disaster management:

* Workshop on "[Resilience to Natural Hazards through AI Solutions](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2025/0508/Pages/default.aspx)", 8 May 2025, Frascati, Italy
* [Bridging the digital divide: ensuring inclusive frontier technology for climate action](https://unfccc.int/event/bridging-the-digital-divide-ensuring-inclusive-frontier-technology-for-climate-action) 18 November 2024, Baku, Azerbaijan [during COP-29]
* ITU/UNDRR/UNCDD Workshop on "[Reimagining Disaster Risk Reduction: The Role of Standardization and Innovative Technologies](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2024/1017/Pages/default.aspx) ,17 October 2024, New Delhi, India [WTSA-24 Side Event]
* [AI Innovations in Disaster Risk Reduction and Management: Enhancing Systemic Risk Analysis for a Resilient Future](https://apmcdrr.undrr.org/conference-event/ai-innovations-disaster-risk-reduction-and-management-enhancing-systemic-risk), 15 October 2024, Manila, Philippines

Participation is open to all interested experts. To join the initiative, contact tsbfgai4ndm@itu.int.

## 5.6 Intelligent transport systems

The [ITU-UNECE Future Networked Car Symposium](https://fnc.itu.int/) examines the latest advances in vehicle connectivity, automated mobility and the role of AI in the transport sector, sharing unique insight on associated implications for technology, business and regulation. Its latest edition was held online from 24 to 27 March 2025 and another onsite event is planned on 11 July 2025 during the AI4Good Global Summit in Geneva. [[See ITU News](https://www.itu.int/hub/2025/03/standards-shaping-the-future-of-connected-automated-and-safe-mobility/)]

The ITU-led [Collaboration on ITS Communication Standards (CITS)](https://www.itu.int/en/ITU-T/extcoop/cits/Pages/default.aspx) is a forum supporting the coordination of an internationally accepted, globally harmonized set of Intelligent Transportation Systems (ITS) communication standards of the highest quality in the most expeditious manner possible to enable the rapid deployment of fully interoperable ITS communication-related products and services in the global marketplace.

CITS meetings are typically held twice a year, in March and September, and often organized back-to-back with other ITS events, e.g., annual ITU-UNECE Future Networked Car Symposia, which also provide opportunities to exchange information and keep experts updated on ITS standardization. The representatives of involved standards bodies are invited to submit status reports on ITS standardization ongoing in their respective organizations to CITS meetings. The latest CITS Meeting was held on 28 March 2025 and the next one is planned on 12 September 2025.

CITS maintains the global [ITS Communication Standards Database](https://www.itu.int/net4/ITU-T/landscape#?topic=0.131&workgroup=1&searchValue=&page=1&sort=Revelance). The database is designed to assist the harmonization of ITS standards and includes standards developed by all relevant standards bodies, providing a reference to all standards supporting connected vehicles and automated driving.

The [CITS expert group on communications technology for automated driving](https://www.itu.int/en/ITU-T/extcoop/cits/Pages/egcomad.aspx) launched in 2023 continues to organize online meetings to advance its work. The previous meetings for this Expert Group were held on 12 September 2024, 6 December 2024 and 7 March 2025. This Expert Group has two Working Groups which conducts monthly meetings:

* **WG1:** Vehicular communications for merging automatically into congested lanes
* **WG2:** Vehicular communications for advanced emergency braking, including to protect VRUs

See also ITU's new [web portal](https://www.itu.int/en/ITU-T/ITS/Pages/default.aspx) on ITS.

## 5.7 Green digital action

ITU continues its [Green Digital Action activities](https://www.itu.int/initiatives/green-digital-action/) following their initiation with the [Green Digital Action track at COP28](https://www.itu.int/initiatives/green-digital-action-atcop28/) in 2023 in Dubai, UAE, together with partners spanning governments, companies, industry associations, civil society and fellow UN agencies. COP29 marked the first-ever Digitalization Day at COP, a significant milestone in recognizing how crucial technology is in addressing the climate crisis and it concluded with the adoption of the Green Digital Action Declaration. This Declaration is a collective commitment to accelerating climate-positive digitalization, reducing emissions, and ensuring green digital technologies are accessible worldwide. This commitment also lays the groundwork for our preparations for COP30.

TSB continues to play a leading role in the facilitation of Green Digital Action activities focused on standardization. During COP29, the following sessions were organized:

* 13 November 2024, [AI for Climate Action Innovation Factory](https://www.itu.int/initiatives/green-digital-action/events/cop29/ai-for-climate-action-innovation-factory/)
* 14 November 2024, [Shaping together: A more sustainable ICT sector – standards, challenges and opportunities](https://www.itu.int/initiatives/green-digital-action/events/cop29/shaping-together-a-more-sustainable-ict-sector-standards-challenges-and-opportunities/)
* 15 November 2024, [World Standards Cooperation: Bridging the digital divide with standards for sustainability](https://www.itu.int/initiatives/green-digital-action/events/cop29/world-standards-cooperation-paving-the-path-for-sustainability-by-design/)
* 15 November 2024, [Green Digital Action: International Standards – Harnessing Technology for Climate Solutions](https://www.itu.int/initiatives/green-digital-action/events/cop29/green-technology-for-climate-solutions/)
* 16 November 2024, [Climate Action: Transition Plans to Reduce the ICT Sector's Own GHG Emissions](https://www.itu.int/initiatives/green-digital-action/events/cop29/ict-sector-ghg-emissions/)
* 16 November 2024, [Closing the Loop: Transforming AI into a Green Force](https://www.itu.int/initiatives/green-digital-action/events/cop29/success-and-gaps-in-green-ai/)

Additionally, ITU was part of the Standards Pavillion at COP29.

TSB is active involve in the following GDA pillars:

* ICT sector GHG emissions
* Green Standards
* Green Computing

Furthermore, ITU-T together with other SDOs organized the following two sessions in December:

* 11-12 December 2024, [ITU-ETSI Symposium on ICT Sustainability: Standards Driving Environmental Innovation](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2024/1211/Pages/default.aspx)
* 12-13 December 2024, [IEEE-ITU Symposium on Achieving Climate Resilience](https://isarc.ieee.org/)

A key standard in 2024 is the [draft Recommendation ITU-T L.1472, "Requirements for the creation of an ITU database on energy consumption and GHG emissions of the ICT sector"](https://www.itu.int/t/aap/recdetails/10858), which defines requirements for creating a database on ICT sector energy consumption and GHG emissions, outlining what data should be collected nationally and globally to inform ITU's work. A pilot project will be carried out to test the feasibility of this draft Recommendation. The pilot project will include representation from all ITU regions by selecting companies and countries from each region, to provide a comprehensive assessment of feasibility. The expected timeline is from June to November 2025.

The [AI and the Environment](https://www.itu.int/pub/T-ENV-ENV-2024-1) report highlights existing and emerging standards that support the AI's environmental efficiency. ITU, France and UNEP co-initiated the Coalition of Sustainable AI and contributed to the report on [Standardization for AI Environmental Sustainability – Towards a coordinated global approach](https://www.sustainableaicoalition.org/wp-content/uploads/Standardization_AI_Sustainability.pdf) launched at the AI Action Summit.

A [white paper on Lithium Batteries for Telecom Sites](https://www.itu.int/pub/T-ENV-ENV-2025-1) was also published in March 2025.

## 5.8 CTO and CxO meetings

[CTO and CxO meetings](http://www.itu.int/en/ITU-T/tsbdir/cto/Pages/default.aspx) bring together high-level industry executives together with the senior management of TSB to exchange views on industry priorities and related standardization activities.

The most recent [CxO Meeting](https://www.itu.int/en/ITU-T/tsbdir/CxO/Pages/CxO-20221206.aspx) was held on 9 December 2024 at the Telecom Review Leader's Summit in Dubai, United Arab Emirates hosted by Telecom Review. Around 20 C-level executives attended the meeting in person. Their recommendations are summarized in a communiqué available [here](https://www.itu.int/en/ITU-T/tsbdir/cto/Documents/Communique_ITU_CxO_2024.pdf).

## 5.9 Metaverse, Virtual Worlds and AI

In June 2024, ITU, together with UNICC and Digital Dubai, launched the [Global Initiative on Virtual Worlds and AI – *Discovering the Citiverse*](https://www.itu.int/metaverse/virtual-worlds/). The Initiative serves as a global platform that aims at fostering open, interoperable and innovative AI-powered virtual worlds that can be used safely and with confidence by people, businesses and public services.

The [UN Virtual Worlds Day](https://www.itu.int/un-virtual-worlds-day/2025/) is an annual event organized by ITU and other 17 UN entities exploring AI-powered virtual worlds, including the metaverse, to advance the SDGs and the Pact for the Future. The inaugural event on 14 June 2024, in Geneva, showcased how immersive digital platforms can drive global progress. The second edition will be held on 11-12 June 2025, in Turin, Italy, featuring high-level dialogues, interactive showcases, and collaborative sessions to discuss how virtual technologies can foster sustainability, inclusivity, and digital public infrastructure.

The [1st UN Citiverse Challenge](https://www.itu.int/metaverse/virtual-worlds/1st-un-citiverse-challenge/), launched on 13 February 2025 and co-organized by ITU alongside 16 global partners, invites students and startups to reimagine the future through the citiverse and digital public infrastructure. Focusing on access to public services, sustainability and resilience, and tourism and digital culture, participants are challenged to design bold, innovative solutions that will shape the cities of tomorrow and drive inclusive, technology-driven urban transformation.

## 5.10 ITU/WMO/UNESCO-IOC Joint Task Force on SMART cable systems

ITU, the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (UNESCO-IOC), and the World Meteorological Organization (WMO) established the Joint Task Force (JTF) on SMART cable systems in 2012, dedicated to advancing the concept of 'Science Monitoring And Reliable Telecommunications (SMART) cables'. The first standard on SMART cables (G.9730.2) and on dedicated scientific sensing submarine cable system (G.9730.1) have been approved in August 2024 by ITU-T SG15. The work on "impact assessment framework for evaluating how ICT-based subsea infrastructure could support climate, environmental and biodiversity monitoring in the oceans" ([L.SMART](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=18961)) is ongoing within ITU-T SG5. In addition, several projects for deployment of SMART cables are ongoing.

# 6 Academia

[ITU Academia membership](https://www.itu.int/hub/membership/), the [ITU Journal on Future and Evolving Technologies](https://www.itu.int/en/journal/j-fet/Pages/default.aspx) and [ITU Kaleidoscope conferences](https://www.itu.int/en/ITU-T/academia/kaleidoscope/Pages/default.aspx) serve as key platforms for academic engagement in ITU's work. These initiatives foster collaboration between academia and industry, driving research and development while accelerating the transition of cutting-edge innovations from the lab to the market.

## 6.1 ITU Journal

The [ITU Journal on Future and Evolving Technologies (ITU J-FET)](https://www.itu.int/en/journal/j-fet/Pages/default.aspx) – free of charge to both readers and authors – offers comprehensive coverage of communications and networking. The quarterly, online journal welcomes research submissions all year long, on all topics relevant to the work of the Union. The journal has published over 230 papers since its launch in September 2020.

The journal includes [recorded webinar discussions](https://www.itu.int/en/journal/j-fet/webinars/Pages/default.aspx%22%20%5Ct%20%22_blank) with researchers and industry leaders. 10 Journal webinars were held in 2024 and 11 have been planned already for the first half of 2025.

Volume 5 (2024) focused on [Next generation computer communications and networks](https://www.itu.int/en/journal/j-fet/2024/002/Pages/default.aspx), [Satellite constellations and connectivity from space](https://www.itu.int/en/journal/j-fet/2024/001/Pages/default.aspx) , [Intelligent technologies for future networking and distributed systems](https://www.itu.int/en/journal/j-fet/2023/003/Pages/default.aspx), and [AI and machine learning solutions in 5G and future networks](https://www.itu.int/en/journal/j-fet/2024/003/Pages/default.aspx).

The first issue of 2025 was launched in March and presents a mix of research topics from leading experts in telecommunications and artificial intelligence (AI), including special features on Geospatial AI (GeoAI) alongside papers that delve into next-generation communications and sensing systems [[Download articles](https://www.itu.int/pub/S-JNL-VOL6.ISSUE1)].

Upcoming issues of the journal in 2025 are set to address:

* [Energy-efficient and environmentally sustainable edge computing and communications for artificial intelligence](https://www.itu.int/en/journal/j-fet/2025/002/Pages/default.aspx)
* [Privacy and security challenges of generative AI](https://www.itu.int/en/journal/j-fet/2025/003/Pages/default.aspx)

The journal is currently inviting submissions for the 5th edition of the [AI and machine learning solutions in 5G and future networks](https://www.itu.int/en/journal/j-fet/2025/004/Pages/default.aspx) (Deadline for paper submission: 20 April 2025)

## 6.2 ITU Kaleidoscope academic conferences

The [ITU Kaleidoscope](https://www.itu.int/en/ITU-T/academia/kaleidoscope/Pages/default.aspx) series of peer-reviewed academic conferences – organized with the technical co-sponsorship of the Institute of Electrical and Electronics Engineers (IEEE) and the IEEE Communications Society – calls for original research on topics of growing strategic relevance to ITU-T.

The 15th edition of Kaleidoscope was held from 21 to 23 October 20204 in conjunction with WTSA-24 in New Delhi, India.

[ITU Kaleidoscope 2024: Innovation and digital transformation for a sustainable world](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2024/Pages/default.aspx) focused on advancing digital technologies to address unprecedented global challenges. The conference has received over 140 submissions, the majority coming from the Host Country. The [programme](https://www.itu.int/en/ITU-T/academia/kaleidoscope/2024/Pages/programme.aspx) featured 56 papers, 2 invited papers, 1 keynote session and 2 special sessions that highlighted the role of youth in global standards development and the urgency of connecting the last one-third of the world's population who are not yet online.

Authors of the three best papers received special recognition and shared in a prize fund of 6,000 Swiss francs. Authors up to 30 years of age who presented accepted papers at the conference received a Young Author Recognition Certificate.

All papers accepted and presented at the conference have been published in the [*Kaleidoscope Proceedings*](https://www.itu.int/pub/T-PROC-KALEI-2024) and the [IEEE *Xplore* Digital Library](https://ieeexplore.ieee.org/xpl/conhome/10772729/proceeding).

The next Kaleidoscope edition will be held alongside the AI for Good Summit 2026.

# 7 Conformity and interoperability programme

The [ITU Conformity and Interoperability (C&I) programme](https://www.itu.int/en/ITU-T/C-I/Pages/default.aspx) aims to enhance the conformity and interoperability of ICT products implementing ITU-T Recommendations or part thereof, solicit feedback to improve the quality of ITU-T Recommendations, and reduce the digital divide and standardization gap by assisting developing countries with human resource and infrastructure capacity building.

ITU-T determined the key criteria for testing laboratories [recognition procedure](https://www.itu.int/en/ITU-T/studygroups/com11/casc/Documents/TL-RP_pub_2022-07-15.pdf) ([https://itu.int/go/‌tldb](https://itu.int/go/tldb)) and the [appointment of ITU-T technical experts](https://www.itu.int/en/ITU-T/studygroups/com11/casc/Documents/Guideline_CASC_EXP_RP-10-2019.pdf) (see latest list dated [October 2023](https://www.itu.int/en/ITU-T/studygroups/com11/casc/Documents/List-ITU-technical%20experts-CASC-Oct23.pdf)). Since December 2021, Testing Laboratories have been able to obtain official recognition from ITU for their competence to test the conformance of products with ITU-T Recommendations ([TSB Circular 368](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSB-CIR-0368)). Accordingly, testing labs are invited to apply for ITU recognition using the [application form](https://www.itu.int/net/itu-t/cdb/secured/reg-tldb.aspx). Testing Laboratories which meet the criteria are to be registered in the database and announced in the [ITU Operational Bulletin](https://www.itu.int/pub/T-SP).

As of February 2025, there are 14 Testing Laboratories registered in the [ITU Testing Laboratories Database](https://itu.int/go/tldb) for ITU-recognized facilities. The announcements have been issued via ITU Operational Bulletins [OB.1253](https://www.itu.int/pub/T-SP-OB.1253-2022), [OB.1256](https://www.itu.int/pub/T-SP-OB.1256-2022), [OB.1263](https://www.itu.int/pub/T-SP/publications.aspx?parent=T-SP-OB.1263-2023), [OB.1266](https://www.itu.int/pub/T-SP-OB.1266-2023), [OB.1283](https://www.itu.int/pub/T-SP-OB.1283-2024), [OB.1286](https://www.itu.int/pub/T-SP-OB.1286-2024) and [OB.1293](https://www.itu.int/pub/T-SP-OB.1293-2024). Since May 2024, TSB has updated the scope of accreditation and its validity for five registered Testing Laboratories based on the information provided. The Testing Laboratory database is up to date apart from the validity of accreditation of one Testing Laboratory. As of March 2025, one application is in process.

Various stakeholders, including recognized Testing Laboratories, may apply to include products tested against applicable ITU-T Recommendations using ITU-T test specifications or procedures adopted by an SDO or forum qualified under Recommendation ITU-T A.5 – in the ITU Product Conformity Database (<https://itu.int/go/tcdb>), using the designated [application form](https://www.itu.int/net/itu-t/cdb/secured/Register16.aspx). All criteria for populating the database are listed [here](https://www.itu.int/en/ITU-T/C-I/conformity/Pages/cdb.aspx).

The ITU-T SG11 updated its [C&I Action Plan](https://www.itu.int/md/T22-SG11-230510-TD-GEN-0507/en), which includes the Reference Table, providing guidance for populating the ITU Conformity Product Database. TSB keeps maintaining the Reference Table.

Building on a [Memorandum of Understanding](https://www.itu.int/en/ITU-T/extcoop/Documents/mou/MoU-ITU-T-IAF-ILAC-20220824.pdf) between ITU-T, the International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF), which facilitates ITU's recognition of labs accredited by signatories to the [ILAC Mutual Recognition Arrangement](https://ilac.org/ilac-mra-and-signatories/), ITU continues collaboration with ILAC and IAF on related aspects. ILAC secretariat has been invited to encourage Testing Laboratories registered in ITU TL database to register products tested against ITU standards in ITU Product Conformity Database.

In accordance Resolution 76 WTSA-24, which requests ITU-T study groups *"to submit to CASC a list of ITU-T Recommendations which could be candidates for the certification scheme, taking into account market needs"*, ITU-T CASC invited a representative from the International Accreditation Forum (IAF) to provide an overview of IAF certification schemes and their current activities. During the CASC meeting on 21 February 2025, the procedure for establishing a new IAF certification scheme was among the key topics discussed. CASC will continue its consultations with IAF and develop a questionnaire to assess the use of ITU-T Recommendations in national conformity assessment systems and provide guidance on selecting ITU-T standards that could become candidates for the certification scheme.

ITU-T SGs also continue developing ITU-T Recommendations which define testing requirements and test suites.

All details on implementation of ITU Conformance and Interoperability Programme are available on the [ITU C&I Portal](https://itu.int/go/citest).

# 8 Membership

ITU-T hosts 266 Sector Members and 228 Associates. ITU Academia members now total 178.

77 of ITU-T's Associates are participating under the reduced fee structure for small and medium-sized enterprises (SMEs) which came into effect on 31 January 2020.

The data included in this report reflect data available on 26 March 2025.

New Sector Members welcomed from 23 July 2024 to 26 March 2025:

* FiberCop S.P.A; China Automotive Technology and Research Center Co.,Ltd; China Automotive Engineering Research Institute Co.,Ltd; Zhejiang Geely Holding Group Co., Ltd.

New Associates welcomed from 23 July 2024 to 26 March 2025:

* Rapid.Space International (SG2); GlobalCell LLC (SG2); IMSI.AI (SG2); Bondio Limited (SG2); Karrier One Inc. (SG2); Giesecke+Devrient MobileSecurity TCD UK Ltd (SG2); Tactikom (SG3); CommScope (SG15); Knowledge Development for Rugged Optical Communications, S.L (SG15); Nav Wireless Technologies Pvt Ltd (SG15); Nvidia (SG15); China Datang Corporation Science and Technology General Research Institute Ltd. (SG15); Alcatel Submarine Networks (SG15); Koninklijke Philips N.V. (SG21); Miraclink Medical Technology (Shenzhen) Co., Ltd. (SG21); African Union Communications (SG21)**.**

Total ITU-T Sector Members, Associates and Academia (31 December 2012 – 26 March 2025):

The following table and figure illustrate the evolution of ITU-T membership from 31 December 2012 to 26 March 2025.

Table 1 – Evolution of ITU-T membership (31 December 2012 to 26 March 2025)

|  | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sector Members | 262 | 269 | 266 | 261 | 250 | 255 | 255 | 265 | 275 | 269 | 263 | 270 | 266 | 266 |
| Associates | 128 | 130 | 132 | 131 | 127 | 135 | 152 | 177 | 192 | 213 | 220 | 226 | 230 | 228 |
| Academia | 39 | 56 | 70 | 92 | 103 | 119 | 146 | 155 | 159 | 158 | 170 | 169 | 170 | 178 |
| TOTAL | 429 | 455 | 468 | 484 | 480 | 509 | 553 | 597 | 626 | 640 | 653 | 665 | 666 | 672 |

NOTE – Some of the figures in the table above have been subject to retroactive changes.



NOTE – The Academia category was created in 2011.

Figure 1 – Evolution of ITU-T membership (31 December 2012 to 26 March 2025)

# 9 Bridging the standardization gap

[WTSA Resolution 44](https://www.itu.int/pub/T-RES-T.44-2024), "Bridging the standardization gap between developing and developed countries", was updated at WTSA-24 to reaffirm and clarify the action plan for the next four years. [ITU's Bridging the Standardization Gap (BSG) programme](https://www.itu.int/en/ITU-T/gap/Pages/default.aspx) aims to enhance the ability of all countries, in particular developing countries, to participate in thedevelopment and implementation of ITU-T standards.

TSB action since WTSA-24 has built on the strong foundations of previous work, concentrating on:

1. Enhancing the content and delivery of training to more fully meet the needs of newcomers and experienced delegates, including those who serve or wish to serve in leadership positions. Training is provided online and in person at stand-alone events, study group meetings and regional group meetings, with an increased emphasis on practical skills and interactive learning; training materials are also provided for on-demand access via [ITU-T resources](https://www.itu.int/en/ITU-T/info/Pages/resources.aspx), in all six languages wherever possible. Such training and capacity building activities are being carried out in collaboration with work on WTSA Resolutions [55](https://www.itu.int/pub/T-RES-T.55-2024) (gender equality) and [107](https://www.itu.int/pub/T-RES-T.107-2024) (next-generation experts).

2. Continuous improvements to Electronic Working Methods to facilitate the participation of delegates from developing countries, primarily through the [MyWorkspace portal](https://www.itu.int/myworkspace/#/Home), and the enhancement of language services, such as on-demand machine translation of official (DMS) meeting documents. Such enhancements reinforce TSB's implementation of WTSA Resolutions [32](https://www.itu.int/pub/T-RES-T.32-2024) (strengthening electronic working methods) and [67](https://www.itu.int/pub/T-RES-T.67-2024) (use of all official languages on an equal footing).

3. Ongoing collaboration between TSB, BDT and the regional offices to raise awareness and build capacity in the regions, for example with the generous support of Japan's Ministry of Internal Affairs and Communications (MIC) for a project on *Artificial Intelligence Technology and Standards Capacity Building in Asia Pacific*. It is reminded that WTSA Resolution 44 invites voluntary contributions from all stakeholders to facilitate ITU-T's efforts to bridge the standardization gap, as outlined in WTSA Resolution 34 (voluntary contributions).

4. Streamlining and harmonizing internal data analysis, working methods and delegate on-boarding to help delegates, particularly those from developing countries, to contribute effectively at ITU-T events, and to report progress on implementation of WTSA Resolution 44 to Council, WTSA and TSAG.

**BSG capacity building activities:** BSG activities including capacity building relevant to standards development, WTSA and electronic working methods and tools were held at the following events, attended by 288 (82F/206M) during the period January to March 2025:

* Joint BSG training (Geneva, 14 January 2025 – 152 (51F/101M)) for:
* ITU-T SG12 (Geneva, 14-23 January 2025).
* ITU-T SG20 (Geneva, 15-24 January 2025).
* ITU-T SG21 (Geneva, 13-24 January 2025).
* ITU-T SG2 (Geneva, 5-14 February 2025 – 51 (13F/38M)).
* Training on Working Methods (Spanish only)​, (virtual online, 19-21 February, 27 March and on 10 April 2025).[[1]](#footnote-2)
* ITU-T SG3RG-AFR (Libreville, 19-21 February 2025).
* ITU-T SG11 (Geneva, 19-24 February 2025 – 21 (1F/20M).
* ITU-T SG13 (Geneva, 3-14 March 2025 – 48 (16F/32M)).
* ITU-T SG15 (Geneva, 17-28 March 2025 – 16 (1F/15M)).
* Joint BSG training (Geneva, 10 April 2025 – 70 (24F/46M)) for:
* ITU-T SG3 (Geneva, 8-17 April 2025).
* ITU-T SG17 (Geneva, 8-17 April 2025).

**Regional groups:** Stimulating effective participation in ITU-T SGs, regional groups play a key role in bridging the standardization gap between developed and developing countries. Regional group meetings are also demonstrating slightly better gender balance than meetings of ITU-T SGs. An overview of regional groups can be found [in the regional group webpage](https://www.itu.int/en/ITU-T/regional-groups/Pages/default.aspx).

The following regional group meetings were organized in the reporting period:

* Joint ITU-T SG3RG-LATAM/(SG3RG-LAC)/SG5RG-LATAM), (Lima, Peru, 5-6 September 2024).[[2]](#footnote-3)
* Joint ITU-T SG2RG-AFR/SG2RG-ARB (virtual, 17 December 2024).
* ITU-T SG13RG-AFR (virtual, 30 January 2025).
* ITU-T SG3RG-ARB (Amman, Jordan, 6 February 2025).
* ITU-T SG3RG-AO (virtual, 10 February 2025).
* ITU-T SG3RG-AFR (Libreville, Gabon, 19-21 February 2025).

ITU-T hosts 26 regional groups:

* Eight for Africa (SGs 2, 3, 5, 11, 12, 13, 17, and 20)
* Five for the Americas (SGs 2, 3, 5, 12 and 20)
* Five for the Arab States (SGs 2, 3, 5, 17, and 20)
* Three for Asia and the Pacific (SGs 3, 5, and 20)
* One for Europe and the Mediterranean Basin (SG3)
* Four for Eastern Europe, Central Asia and Transcaucasia (SGs 3, 11, 13, and 20)

**Fellowships:** Fellowships provide financial support to ITU-T delegates from eligible developing countries to assist their participation in ITU-T meetings. 162 fellowships were requested from January to April 2025 and 71 were awarded. Statistics on the fellowships awarded are provided below.

Figure 2 – Awarded fellowships by region, January-April 2025

Figure 3 – Awarded fellowships by gender, January-April 2025

# 10 Gender

TSB remains dedicated to integrating a gender perspective in all of its activities and programmes, leveraging the framework of ITU Gender Task Force and the [Network of Women in ITU-T (NoW in ITU-T)](https://www.itu.int/en/ITU-T/NoW/Pages/default.aspx).

TSB's ongoing efforts to enhance gender equality within TSB and ITU-T underscore ITU's commitment to diversity, gender parity and the empowerment of women.

NoW in ITU-T continues to develop its activities to expand the Network and encourage subscription to the NoW in ITU-T mailing list, nowinitut@lists.itu.int, sign up [here](https://www.itu.int/net4/iwm?p0=0&p11=ITU&p12=ITU-SEP-ITU-T-SEP-Other%20Groups-SEP-Network%20of%20Women%20in%20ITU-T&p21=ITU&p22=ITU).

In February 2025, a gender survey was issued to ITU-T membership (see [TSB CL25](https://www.itu.int/md/T25-TSB-CIR-0025/en)) which results will be presented to TSAG (see [TD77](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T25-TSAG-250526-TD-GEN-0077)) and will contribute to the development of NoW in ITU-T work plan. This survey builds upon a previous assessment presented at the May 2023 meeting of TSAG (see [TD196](https://www.itu.int/md/T22-TSAG-230530-TD-GEN-0196/en)).

Gender parity objectives for WTSA-24, supported by the [NOW4WTSA-24 campaign](https://www.itu.int/wtsa/2024/now/), encouraged Member States to pledge support for growth in the number of women in ITU-T leadership positions and the target of 35 per cent female participation at WTSA-24.

Concerted efforts to achieve the campaign goals resulted in 26% female representation at the Assembly.

The number of women in key leadership roles (Chair and Vice Chairs of SGs, TSAG, SVC) increased by 24% compared to the previous study period. Women now hold about one-quarter of all key ITU-T leadership positions. Significant progress was also made in female leadership at the Assembly itself, where twice as many women held leadership positions, doubling the number from WTSA-20.

Figure 4 below provides statistics on women's participation in the past four WTSAs.

As part of the NOW4WTSA-24 campaign activities, events and training sessions were conducted across regions. The campaign culminated at WTSA-24 with [a special event](https://www.itu.int/en/ITU-T/NoW/events/20241017/Pages/default.aspx) on 17 October 2024, New Delhi, India.

Six regional representatives, whose names are listed on [NoW in ITU-T homepage,](https://www.itu.int/en/ITU-T/NoW/Pages/default.aspx) were appointed by TSAG in January 2024 to support the campaign efforts, with their terms set for renewal at the TSAG meeting in May 2025.

In accordance with the [UNECE Declaration on Gender Responsive Standards](https://unece.org/gender-responsive-standards-initiative), endorsed by ITU along with other major standards bodies, TSB is inviting ITU-T members and staff involved in standards-development processes to undertake a [training course](https://learnqi.unece.org/courses/gender-responsive-standards/) on gender-responsive standards development. Members and staff are invited to send certificates of completion to NoW-T@itu.int.

The figures below provide an overview of TSB/ITU-T activities with respect to participants' gender.

Figure 4 – Women's participation in the past four WTSAs

Figure 5 – Women's share of ITU-T leadership position (across all roles) and participation in study groups and regional groups within study groups

Figure 6 – Women's participation in ITU-T statutory meetings by study period

# 11 Human rights and standards development

TSB works in close collaboration with the UN Office of the High Commissioner for Human Rights (OHCHR) on the topic of human rights and aims to integrate human rights into its technical standards, recognizing the vital role of privacy, data protection, accessibility, and non-discrimination in digital environments.

Relevant Events and Papers:

* [WSIS+20](https://www.itu.int/net4/wsis/forum/2024/Agenda/Session/246): ITU Secretary-General highlighted the need for inclusive digital governance that upholds human rights.
* [StandICT.eu webinar](https://www.hsbooster.eu/events/webinar-human-rights-standards): ITU emphasized integrating human rights into ICT standardization
* [Expert roundtable](https://mzv.gov.cz/mission.geneva/en/expert_roundtable_at_itu_with_african.html) (hosted by Czech Republic): Focused on human rights in digital standards, with input from African participants.
* Human Rights Council Discussion ([informal presidential discussion](https://indico.un.org/event/1012808/sessions/118014/)): ITU SG stressed ethical governance of emerging technologies like AI.
* Geneva Human Rights Platform Conference ([Annual Conference](https://geneva-academy.ch/event/ghrp-annual-conference/detail/471-2024-annual-conference-of-the-geneva-human-rights-platform)): ITU Deputy Secretary General highlighted the need to incorporate human rights in standardization.
* French CNCDH Audition: TSB promoted human rights-based digital diplomacy.
* UK Mission Workshop: TSB underscored the need for integrating human rights into international standards via the Global Digital Compact.
* OHCHR-ITU Expert Discussion: Called for applying UNGPs to AI standards and proactive state action.
* [IGF 2024](https://intgovforum.org/en/content/igf-2024-open-forum-44-fostering-trust-embedding-human-rights-in-technical-standards-for): ITU highlighted the need for transparent, inclusive standardization processes.
* [OECD AI Governance Summit](https://oecd.ai/en/actionSUMMIT): TSB highlighted human rights-aligned AI standards through multilateral cooperation.
* [White Paper](https://www.researchgate.net/publication/389164731_Promoting_and_Advancing_Human_Rights_in_Global_AI_Ecosystems_The_Need_for_A_Comprehensive_Framework_under_International_Law): ITU contributed to global AI governance recommendations based on international human rights law.
* [AI Standards Hub Global Summit](https://aistandardshub.org/global-summit/): TSB and DSG emphasized civil society inclusion and global rights-based AI governance.
* UN Globethics Panel ([panel discussion](https://globethics.net/events/un-panel-discussion-ai-and-global-human-rights-challenges)): ITU highlighted the need for stronger cooperation for ethical AI development through standards.
* EU–UN Dialogue on Business and Human Rights: TSB addressed AI, human rights, and digital shutdowns.
* [HRC58](https://www.ohchr.org/en/hr-bodies/hrc/regular-sessions/session58/regular-session) Side Event: ITU joined OHCHR and UN partners to promote inter-agency coherence on digital tech and human rights.
* [AI watermarking and deepfake detection](https://aiforgood.itu.int/event/detecting-deepfakes-and-generative-ai-standards-for-ai-watermarking-and-multimedia-authenticity/): Workshop highlighted the need for global standards to tackle generative AI risks, including multimedia authenticity, watermarking, and deepfake detection, ensuring secure and trustworthy AI systems

During WTSA-24:

* WTSA Resolutions referenced human rights in the [metaverse](https://www.itu.int/pub/T-RES-T.105-2024) and addressed trustworthiness in [AI standards](https://www.itu.int/pub/T-RES-T.101-2024)
* The Freedom Online Coalition (FOC)[Statement](https://freedomonlinecoalition.com/joint-statement-technical-standards-and-human-rights-in-the-context-of-digital-technologies/), supported by 42 countries, was delivered at the WTSA Plenary, calling for a human rights-based approach to ICT and AI standards aligned with the SDGs.
* [WTSA-24 side event](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2024/1021/Pages/default.aspx): Co-organized by ITU, OHCHR, EU, France, and Czechia— highlighted the need for embedding human rights in standards from the outset.

ITU-T Study Group 17 works to safeguard sensitive data, including personally identifiable information (PII), using advanced techniques such as federated learning and differential privacy, while also addressing child online protection.

ITU, in collaboration with ISO and IEC, launched the **Global AI Standards Exchange Initiative**, to create a centralized repository of AI standards through the lens of AI safety and human rights.

The **AI for Good** platform continues to drive conversations on ethical AI, rights-aligned governance, and responsible innovation.

# 12 Publications

## 12.1 Recommendations and supplements

Over 300 ITU-T Recommendations, amendments, corrigenda and Supplements were published in the reporting period.

As approved by TSAG, most corrigenda and amendments to ITU-T Recommendations are now integrated into the main edition, where the changes introduced by the amendment or corrigendum are shown with revision marks.

From the current study period, ITU-T Recommendations are systematically being converted to the portable HTML format. Apart from some documents where conversion flaws have been identified, ITU-T Recommendations are offered to the membership and the public through ITU-T's [MyWorkspace](https://www.itu.int/myworkspace/#/rec-external) platform. Users can now access the latest published Recommendations in the portable HTML format directly on the web browser, from any personal computer or smartphone. This project is ongoing with enhancements being made to conversion process and the integration of links to other repositories including the terms and definitions database.

### 12.1.1 Recommendations deleted between WTSAs

No Recommendations have been deleted in the current study period (as of 29 April 2025).

NOTE – Deletion of Recommendations between WTSAs follows the procedure described in clause 9.8.2 of WTSA Resolution 1 (Rev. Geneva 2022).

## 12.2 Official languages on an equal footing

The Standardization Committee for Vocabulary (SCV), composed of ITU-T members expert in all the official languages, serves as focal point to ITU-T study groups in terminology-related matters. SCV guides the adoption of terms and definitions in ITU-T Recommendations and their translation into the other languages of the Union in accordance with WTSA Resolution 67.

TSB continues to collect all new terms and definitions approved by ITU-T study groups, and enters them into the online [ITU Terms and Definitions database](https://www.itu.int/br_tsb_terms/#/) in all available languages.

As requested by WTSA Resolution 67, TSB continues to translate all Recommendations approved under the Traditional Approval Process as well as all TSAG reports. TSB has also translated three Recommendations approved under the Alternative Approval Process in the reporting period, in accordance with requests received from ITU-T SGs and linguistic groups, and within the available budget.

Trials are being successfully carried out on integrating the use of machine translation (ITU Translate) in HTML-based publications. This feature will be made available for future publications offered in the portable HTML format.

On a trial basis, machine translation has been deployed for formal meeting documents (DMS) at the meetings of ITU-T SG3, SG11, SG13, SG15, and SG17, reusing the approach employed at WTSA-24 and ITU Council.

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1. The experts were from the [Ministerio de Ciencia, Innovación, Tecnología y Telecomunicaciones](https://www.itu.int/hub/membership/our-members/directory/?myitu-members-states=true&request=organisations&id=1000100509) and [Superintendencia de Telecomunicaciones (SUTEL)](https://www.itu.int/hub/membership/our-members/directory/?myitu-members-states=true&request=organisations&id=1000100509). [↑](#footnote-ref-2)
2. The meetings were held in the framework of [ITU Policy and Economics Colloquium for the Americas (IPEC 24)](https://www.itu.int/go/IPEC2024). [↑](#footnote-ref-3)