ITSO SYMPOSIUM 2026

AN ITU PERSPECTIVE ON SATELLITE DEVELOPMENTS

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Enabling interference-free global connectivity

Advancing global connectivity

Safeguarding global satellite connectivity

Universal connectivity

Enable global access to affordable, high-quality and secure telecommunications/ICTs.

Sustainable digital transformation

Foster equitable and inclusive use of telecommunications/ICTs to empower people and societies for sustainable development.

PUBLIC-SERVICE PRINCIPLES

- **Fair, non-discriminatory access**
- **Lifeline communications**
- **Trusted international oversight**
- **Common heritage protection**

The Persistent Connectivity Gap

Connectivity has expanded, but the hardest-to-reach communities remain offline

312 million

people remain **beyond the reach** of a **mobile-broadband network**[1]

2.2 billion

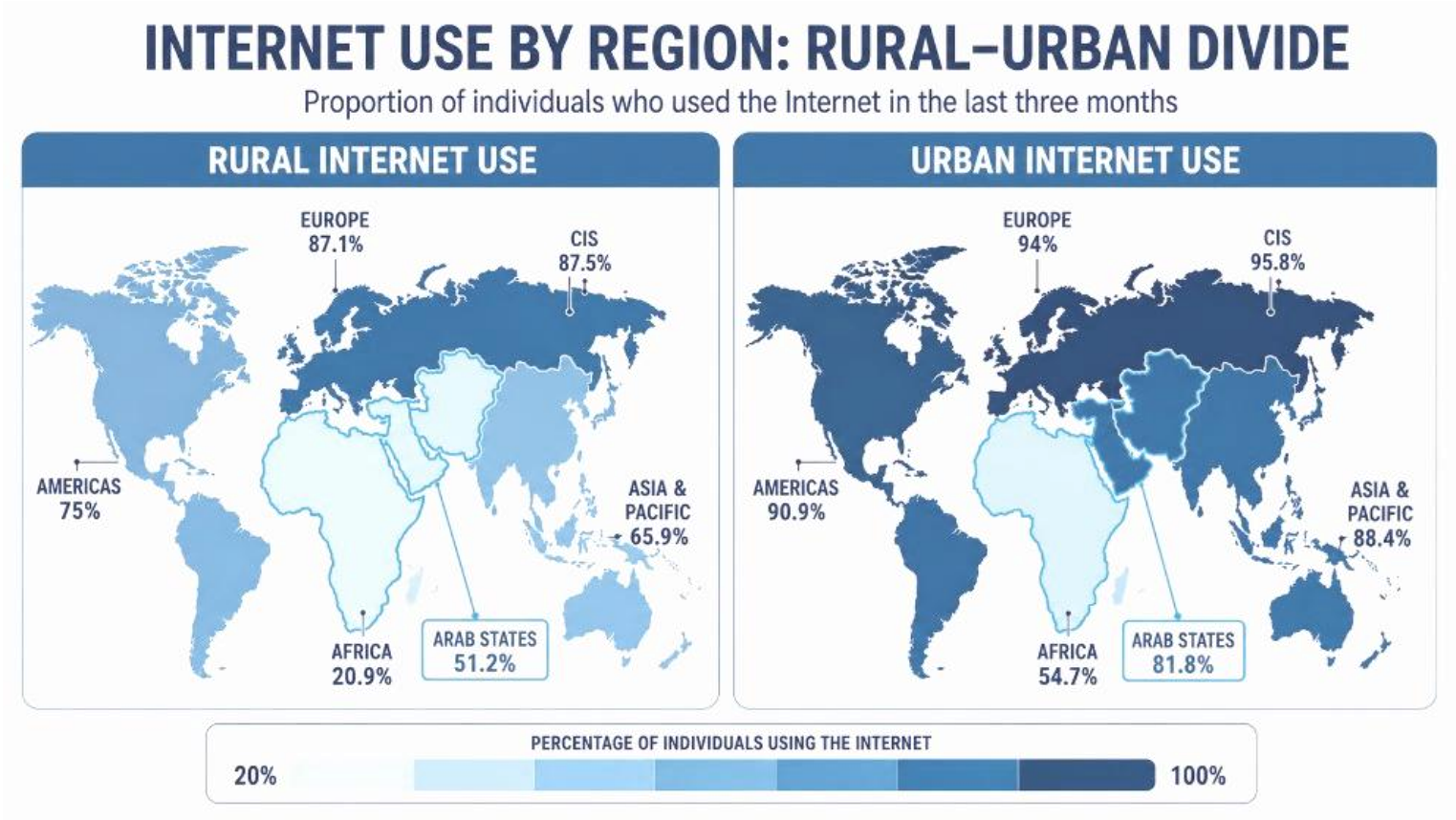
people remain **offline worldwide** as at 2025[1]

85% vs 58%

internet use in **urban vs rural areas**[2]

Satellite systems cannot address every barrier to adoption, but they can complement terrestrial networks where distance, terrain, mobility or disasters make coverage difficult

Sources: [1] ITU Facts and Figures 2025
[2] ITU datahub



Many regions lack ground-based infrastructure and rely on satellite connectivity. Mobile services cover 96% of the global population but only 20% of the Earth's landmass.

Sources:
Graphs: Global Connectivity Report 2025
Connectivity: Individuals using the Internet: Individuals using the Internet - ITU DataHub

Remote and rural communities

Islands and landlocked developing countries

Maritime and aeronautical users

Schools, clinics and community backhaul



Emergency communications

Restoration of disrupted networks

Public-warning dissemination

Diverse links for critical infrastructure

Earth observation

Weather and climate monitoring

Navigation and timing

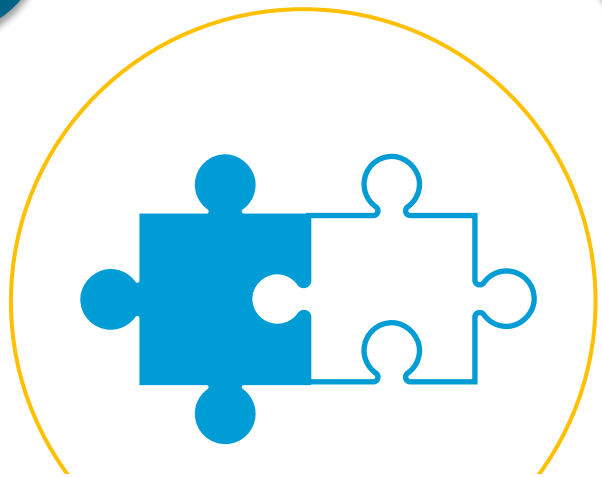
Space technology offers unique capabilities for monitoring the climate and Earth's natural resources

ARCHITECTURE	CHARACTERISTICS	APPLICATIONS
GSO	Persistent coverage from an apparently fixed orbital position	Broadcasting, trunking, backhaul, mobility
MEO	Constellation-based coverage below GSO	Navigation and timing, broadband connectivity
LEO	Lower propagation delay, “fast- moving” satellites	Broadband, IoT, D2D, Earth observation
Lunar / deep space	Missions beyond conventional Earth-orbit systems	Science, exploration and mission communications

Different orbital architectures serve complementary needs

GSO

- ✓ Persistent regional coverage
- ✓ Efficient one-to-many distribution and broadcasting
- ✓ Established trunking, backhaul and mobility applications
- ✓ Fixed antennas can point continuous at the same orbital position



COMPLEMENTARY STRENGTHS

NGSO

- ✓ Lower propagation delay at lower altitudes[2]
- ✓ Constellation-based capacity and coverage
- ✓ Flexible broadband, IoT and D2D architectures
- ✓ Potential high-latitude reach, depending on constellation design

Sources: [1] ITU, Regulation of satellite systems;
[2] ITU, Space Connect: Updating regulations for LEO satellite services, 2025

ITU-R provides the global framework for satellite spectrum and orbital resources



GLOBAL RULES: Radio Regulations and Master International Frequency Register



INTERNATIONAL COORDINATION: Advance Publication, coordination, notification



TECHNICAL FOUNDATIONS: Sharing, compatibility and interference-management studies through Study Groups, ITU-R Recommendations, Reports and Handbooks.



IMPLEMENTATION SUPPORT: Regulatory assistance, software tools, seminars and capacity building

WRC-27 ITU PROCESS TIMELINE

1 — FINAL STUDY-GROUP MEETINGS BEFORE DRAFT CPM TEXT DUE DATE

SEP–DEC 2026

SG7 25 Sep

SG6 2 Oct

SG4 30 Oct

SG5 30 Nov–1 Dec

2 — DRAFT CPM TEXTS DUE

23 OCT 2026

Final texts to CPM

Chapter

Rapporteurs

3 — CPM27-2

5–15 APR 2027

Geneva



4 — FINAL STUDY-GROUP MEETINGS

5 — WRC-27

18 OCT–12 NOV 2027

Shanghai



Studies are reaching maturity and responsible Working Parties are finalising draft CPM texts. We are entering decisive phase of the WRC-27 preparatory process

FIXED-SATELLITE AND BROADCASTING-SATELLITE

- **1.1** – Aeronautical/maritime earth stations in motion
- **1.2** – Min diameter for FSS earth stations
- **1.3** – NGSO Gateway earth stations
- **1.4** – Fixed/broadcasting satellite service allocation in Region 3
- **1.5** – Unauthorized operations of non-GSO earth stations
- **1.6** – Equitable access in Q/V bands
- **7** – Satellite regulatory issues

TERRESTRIAL

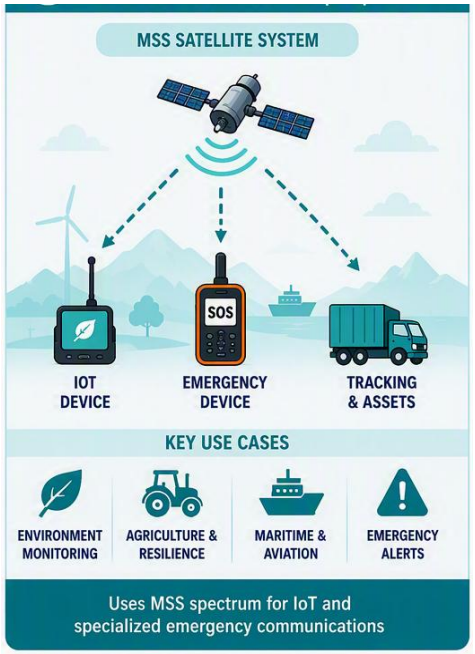
- **1.7** – IMT identification in 4. 4-4.8 GHz, 7.125-8.4 GHz and 14.8-15.35 GHz
- **1.8** – Radiolocation above 231.5 GHz
- **1.9** – Aeronautical Mobile HF modernization
- **1.10** – FS/MS Protection at 71–76 & 81–86 GHz

MOBILE-SATELLITE

- Space-to-space links – **1.11**
- MSS - IoT development – **1.12**
- MSS – D2D connectivity – **1.13**
- MSS - Additional allocations – **1.14**

SCIENCE

- Lunar communications – **1.15**
- Radio Quiet Zones – **1.16**
- Space weather sensors protection – **1.17**
- EESS and RAS protection above 76 GHz – **1.18**
- EESS allocation around 4 GHz – **1.19**



MSS for **low-data-rate** non GSO systems

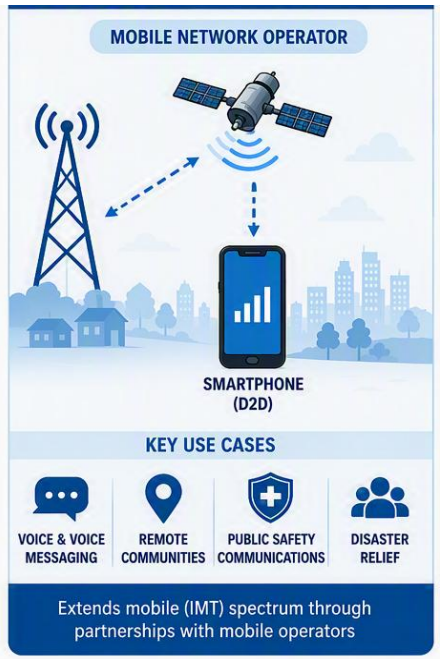
Frequency bands

1 427-1 432 MHz (↓)
1 645.5-1 646.5 MHz (↓, ↑) 1 880-1 920 MHz (↓, ↑)
2 010-2 025 MHz (↓, ↑)

AI 1.12

Direct Connectivity between Mobile-Satellite Service space stations and **IMT UE** (DC-MSS-IMT)

AI 1.13



AI 1.14

2 010-2 025 MHz (↑)
2 160-2 170 MHz (↓)
in R1& R3

2 120-2 160 MHz (↓) in all Regions

Possible **MSS** allocations

Frequency bands

Enable the use of the frequency band 51.4-52.4 GHz by **gateway** earth stations transmitting to **NGSO** systems

AI 1.3

Limit **unauthorized operations** of FSS and MSS non-GSO earth stations

AI 1.5

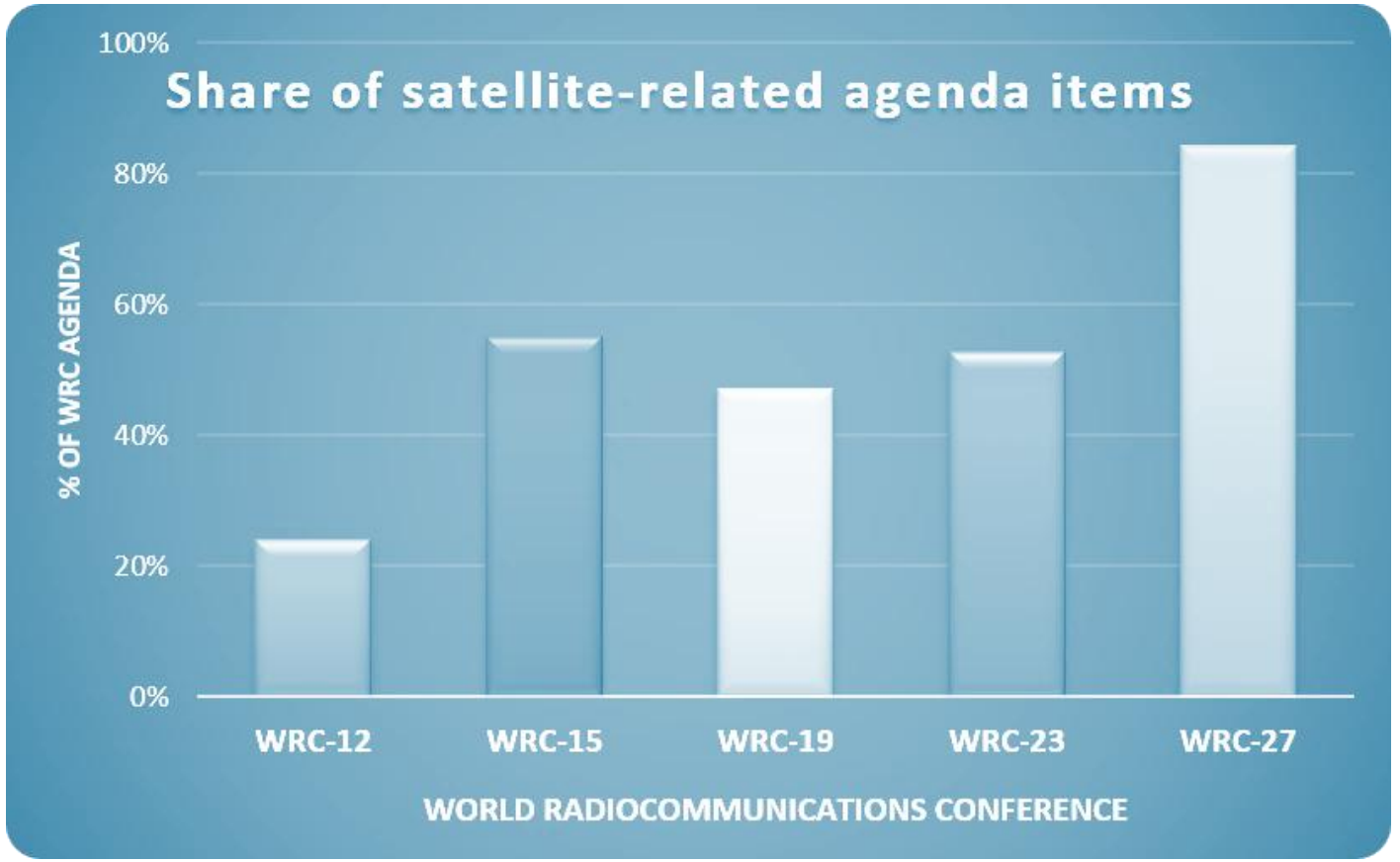


AI 1.6

FSS **Equitable access** to the frequency bands 37.5-42.5 GHz (space-to-Earth), 42.5-43.5 GHz (Earth-to-space), 47.2-50.2 GHz (Earth-to-space) and 50.4-51.4 GHz (Earth-to-space)

AI 1.15

SRS (space-to-space) allocations, for development of **lunar surface** communications (Res. 680 (WRC-23)



The WRC-15 to WRC-23 period shows a broadly stable high plateau around one-half of the substantive agenda, followed by a major step-up for WRC-27

WRC-12

2012

MSS, SRS, BSS, AMSS, RDSS and MetSat allocation /planning

WRC-15

2015

FSS, BSS, MSS, EESS, Space research, ESV

WRC-19

2019

GSO ESIM, small sats, BSS, NGSO regulatory (Q/V, constellation milestones), GMDSS, VDES sat component, MetSat

WRC-23

2023

FSS, inter-satellite links, ESIM, NGSO regulatory (orbital tolerances), AMS(R)S, EESS space sustainability (RA-23)

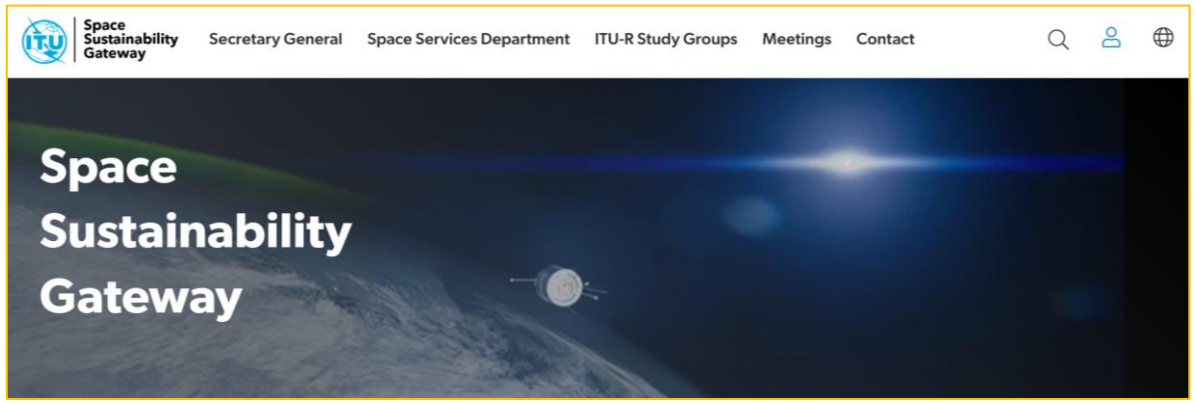
WRC-27

2027

Satellite topics dominate:
D2D • Q/V ESIM • Lunar • Science • MSS IoT • Inter-satellite links • EESS MetSat • Smaller ES terminals

Regulatory:
FSS equitable access Q/V • Unauthorized NGSO ES operations • RR 4.4 • Spectrum access facilitation

The satellite connectivity journey is promising to continue with even higher demands: the preliminary agenda items for WRC-31 already show that there is a need for new identifications to satellite services and further enhancing the access to resources for non-GSO systems.



Collective efforts and responsible use help sustain space and orbit-spectrum resources for the long term.

A shared resource base for sustainable space

ITU FRAMEWORK

ITU-R Resolution 74
ITU PP Resolution 219
Ongoing work in ITU-R Study Group 4

KNOWLEDGE EXCHANGE

Previous Space Sustainability Forum

SPACE ENVIRONMENT

Satellite catalogues and space-traffic coordination tools
Collision avoidance guidelines and environment reports
Environmental protection of the GSO

IADC RESOURCES

Status of the Space Debris Environment report
Statement on large LEO constellations
Space Debris Guidelines and supporting material (Rev. 5.7, 2020)

RESPONSIBLE OPERATIONS

Post-mission deorbiting and spacecraft disposal strategies

UNOOSA

Toolkit on Good Registration Practices
Long-term Sustainability Information Repository

RELATED REPORTS

Clear Orbit, Secure Future: A Call to Action on Space Debris
Handbook for New Actors in Space



2nd IRIS – 14-16 December 2026

Presentation and review of the draft CPM Report, including draft Methods for WRC-27, review of draft Regional views/positions

3rd IRIS – Q3-Q4 2027

Presentation and review of challenging parts of CPM & Dir. Report, review of draft Regional views/positions



SHANGHAI, CHINA

RA-27

(ITU Radiocommunication Assembly 2027)

11 – 15 October 2027

WRC-27

(ITU World Radiocommunication Conference 2027)

18 October – 12 November 2027

CPM31-1

15 – 16 November 2027



THANK YOU!

MARIO MANIEWICZ

Director of the Radiocommunication Bureau

29 September 2026