WORLD TELECOMMUNICATION
STANDARDIZATION ASSEMBLY

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

Overview of ITU-T Study Group 15 during the Study Period 2022-2024

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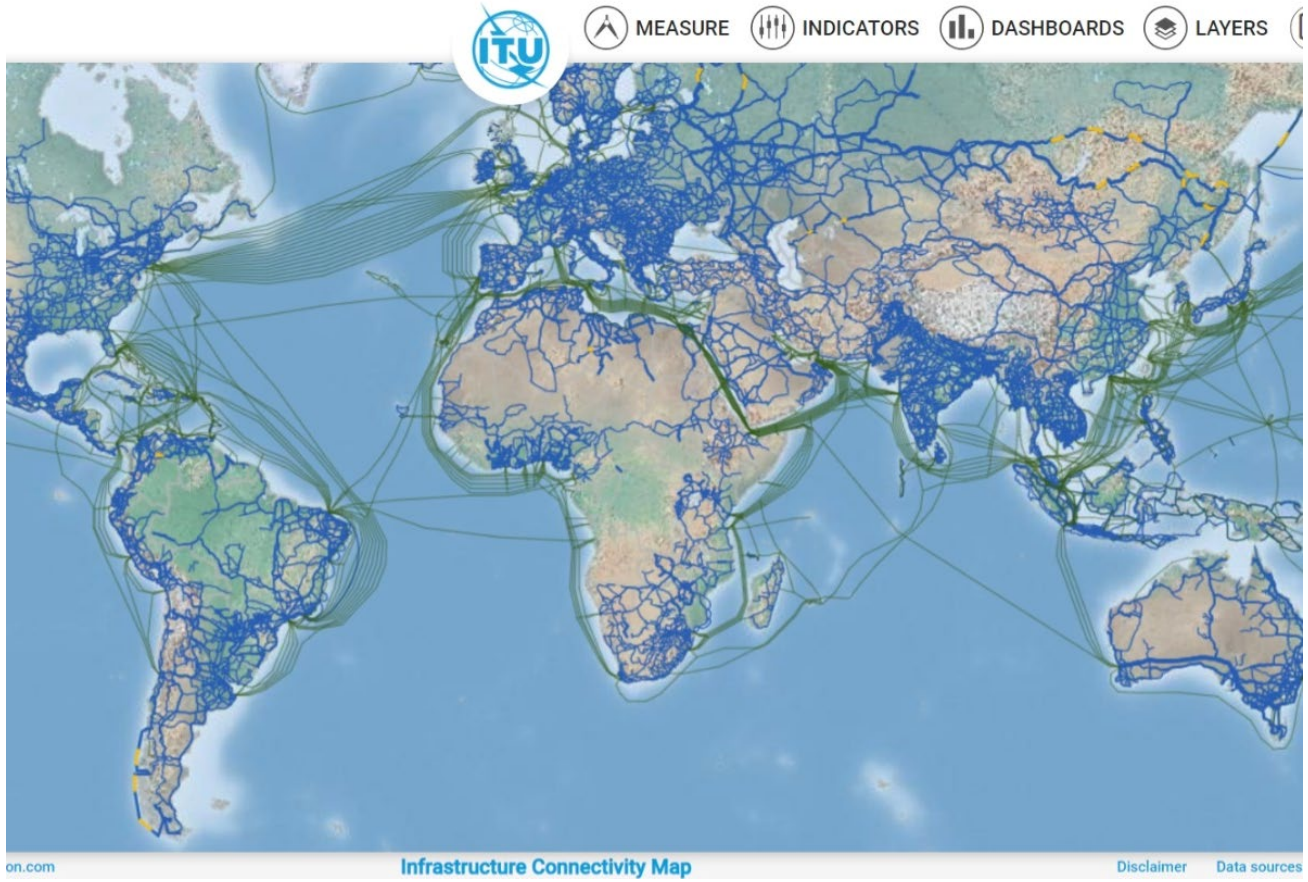
The optical infrastructure

- SG15 is the Lead Study Group on
  - access network transport
  - home networking
  - optical technology

- Optical fiber networks are deployed in telecommunication systems worldwide.
  - They are the central nervous system that society, industry and the economy relies upon.



ITU Connectivity Infrastructure Maps

ITU-T SG15: Key Areas of Work during 2022-2024

SG15 is responsible for the development of standards on:

- optical transport network
- optical access network
- home network and power utility network infrastructures
- Gigabit copper transmission
- equipment
- maintenance
- management
- optical fibers and cables and their related installation
- instrumentation and measurement techniques
- test
- control plane technologies

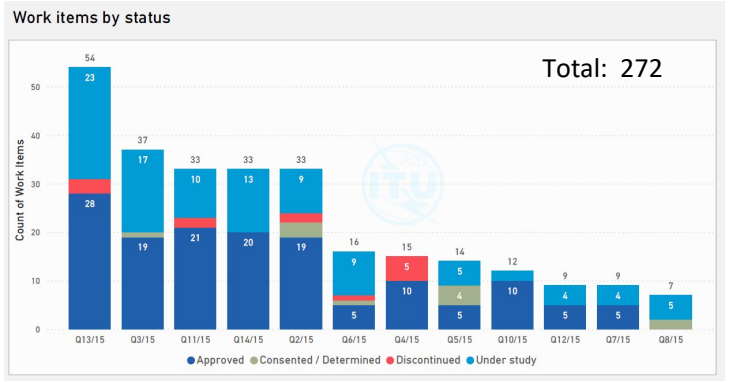
to enable the evolution toward intelligent transport networks, including the support of smart-grid applications

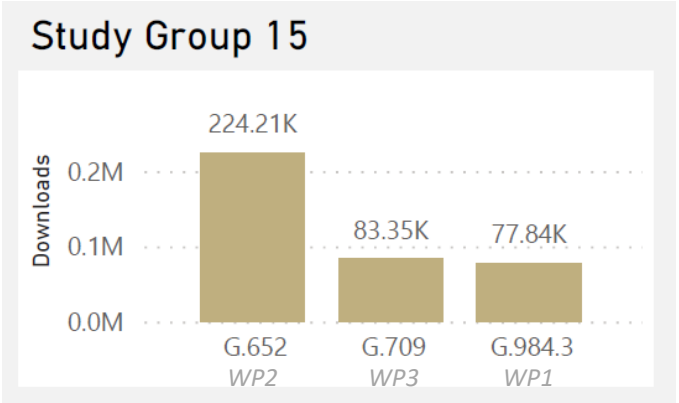
ITU-T SG15: Key ITU-T Recommendations

- Passive optical access networks up to 50 Gbit/s (G.980- and G.9800-series)
- Metallic access networks (G.fast and MGfast) up to 10 Gbit/s (G.9700-series)
- Smartgrid access over powerlines (G.990x-series)
- Optical fibre based home networking up to 10 Gbit/s (G.9900-series)
- Single-mode fibre Recommendations (G.65x-series)
- Multi-vendor optical interface including CWDM, DWDM, OWDM (G.69x-series)
- Submarine cables including SMART cables (G.97x- and G.973x-series)
- Architecture of transport networks (including the media network) (G.800-, G.8000-, G.8100- and G.8300-series)
- Optical Transport Network (OTN) including 800 Gbit/s and beyond 1 Tbit/s (B1T) (G.709.x-series)
- Metro Transport Network (MTN) (G.8300-series)
- Packet Transport (G.8000-series)
- Network synchronization (G.8200-series)
- Management/control architecture to use SDN and ASON to manage a transport network (G.7700-, G.8000-, G.8100-series, G.8300-series)

ITU-T SG15: Main Achievements

- Passive optical access networks up to 50 Gbit/s (NG-PON, HS-PON)
- Metallic access networks (G.fast and MGfast) up to 10 Gbit/s
- Smartgrid access over powerlines
- Optical fibre-based home networking (FTTR) up to 10 Gbit/s
- Single-mode fibre Recommendations (G.652 version 10)
- Multi-vendor optical interface including CWDM, DWDM, OWDM
- Submarine cables including SMART cables
- Optical Transport Network (OTN) including 800 Gbit/s and beyond 1 Tbit/s (G.709-series)
- Metro Transport Network (MTN) (G.8300-series)
- Network synchronization including telecom clocks and PTP telecom profiles for time/phase and frequency
- Management/control architecture to use SDN and ASON to manage a transport network including synchronization.





ITU-T SG15: Photos

SG15 meeting, Geneva, Nov./Dec. 2023

SG15 meeting, Montreal, July 2024

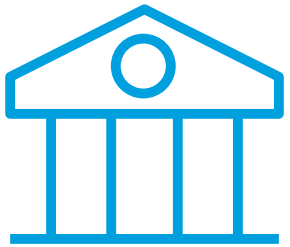
Joint workshop with IEEE, Montreal, July 2024

OFC2023, San Diego, March 2023

OFC2024, San Diego, March 2024

ITU-T SG15: Future Topics in 2025-2028

- Optical access networks using higher Speed Passive Optical Networks (50 Gbit/s and beyond)
- G.fast, MGfast –fibre extension broadband access using existing copper pairs or coaxial cables
- High speed fibre-based in-premises transceivers and xnetwork management
- Optical fibre and cable for space division multiplexing transmission
- Optical fibre cable for FTTx applications
- Multi-vendor interoperable optical interface specifications for:
  - mobile optimized applications at 25 Gbit/s
  - 200G and 400G (and beyond) coherent optically amplified multichannel DWDM applications
- Transverse compatible DWDM applications for repeatered optical fibre submarine cable systems
- Telecommunication Infrastructure facility management
- Transport network support for IMT-2020/5G, 5G advanced and IMT-2030/6G
- Architecture of transport networks
- Optical Transport Network including OTN beyond 1 Tbit/s
- Network synchronization for networks operating at beyond 1 Tbit/s
- Management and control of transport networks, including AI/ML driven autonomous networks

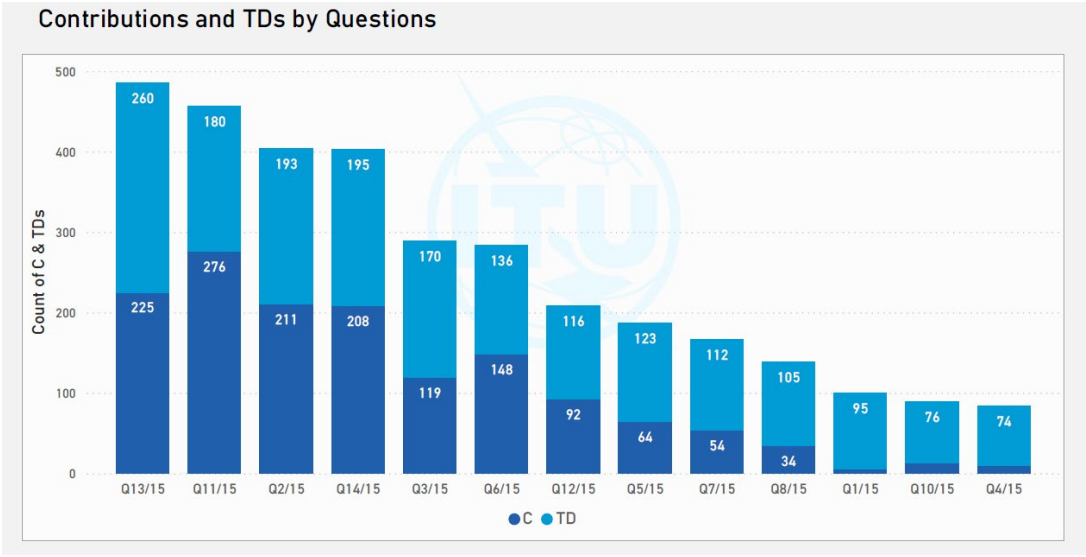


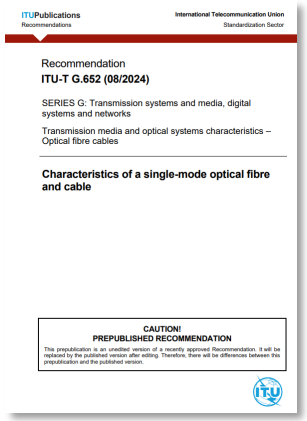
ITU-T SG15: Collaboration

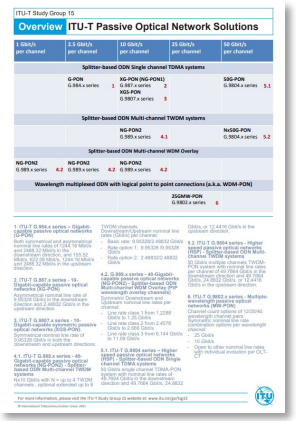
SDO	Related SG15 Questions	Topics
BBF	Q2, Q3, Q4, Q14	G.fast, MGfast, xDSL and PON, YANG
CENELEC TC86A & TC86BXA	Q5, Q7	Optical fibers and cables, optical connectors & passive components
ETSI ISG F5G	Q2, Q3	PON, Fiber to the Room (FTTR)
IEC TC86 - SC86A	Q5	Optical Fibers and cables
IEC TC86 - SC86B	Q7, Q5	Optical connectors & passive components
IEEE 802.1	Q10, Q12, Q13, Q14	VLAN Bridging, OAM/CFM, Synchronization, Time Sensitive Network (TSN), Information modelling Issues, YANG
IEEE 802.3	Q2, Q6, Q11, Q12, Q14	OTN mappings for Ethernet, Optical characteristics of Ethernet modules used for OTN, PON, Information modeling Issues, YANG
IEEE 1588	Q13, Q14	Time Synchronization, Synchronization Management
FSAN	Q2	PON
MEF	Q10, Q11, Q14	Ethernet Services, OTN & Wavelength services, LSO
OIF Networking, IETF (CCAMP, TEAS, PCE), ONF	Q12, Q14	Optical Control Plane, SDN, Information modeling Issues, YANG
OIF PLL	Q6, Q11	Flex Ethernet, 400ZR, 800ZR

ITU-T SG15: Results

- 4 Plenary meetings (attended by ~340 experts from 34 countries)
- Received 1221 contributions
- 178 Rapporteur meetings
- Produced 19 new Recommendations
- Revised 131 Recommendations
- Promotion and coordination (WSIS Forum, OFC, ECOC, other external conferences and flyers)
- Held 3 workshops (on FTTR, on IMT2030/6G, Joint with IEEE 802)




ITUPublications
Recommendations
International Telecommunication Union
Standardization Sector
Recommendation
ITU-T G.652 (08/2024)
SERIES G: Transmission systems and media, digital systems and networks
Transmission media and optical systems characteristics – Optical fibre cables
Characteristics of a single-mode optical fibre and cable
CAUTION!
PREPUBLISHED RECOMMENDATION


ITU-T Study Group 15
Overview ITU-T Passive Optical Network Solutions

www.itu.int/wtsa2024

ITU-T SG15: Conclusion

✓ Leading development of

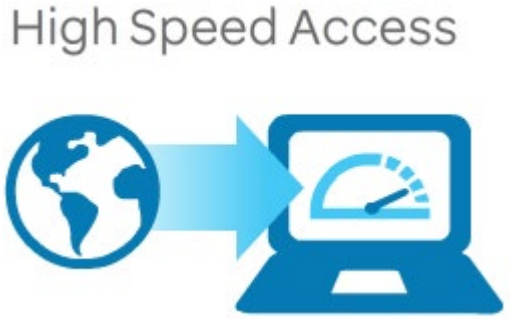
Optical Transport Networks

ACCESS NETWORK

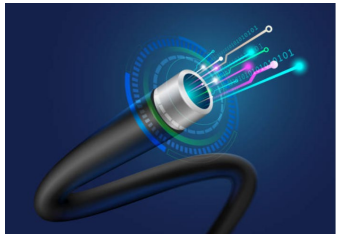
Home Networking

✓ LARGE and HIGHLY PRODUCTIVE group in ITU-T with broad, global industry participation

✓ Highlights include:



Home Networking



Optical Technologies

Synchronization

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Thank you