

ITU-T STUDY GROUP 15

Networks, Technologies and Infrastructures for Transport, Access and Home

Glenn Parsons, Ericsson Canada
[Chair, ITU-T SG15 \(EN CN\)](#)

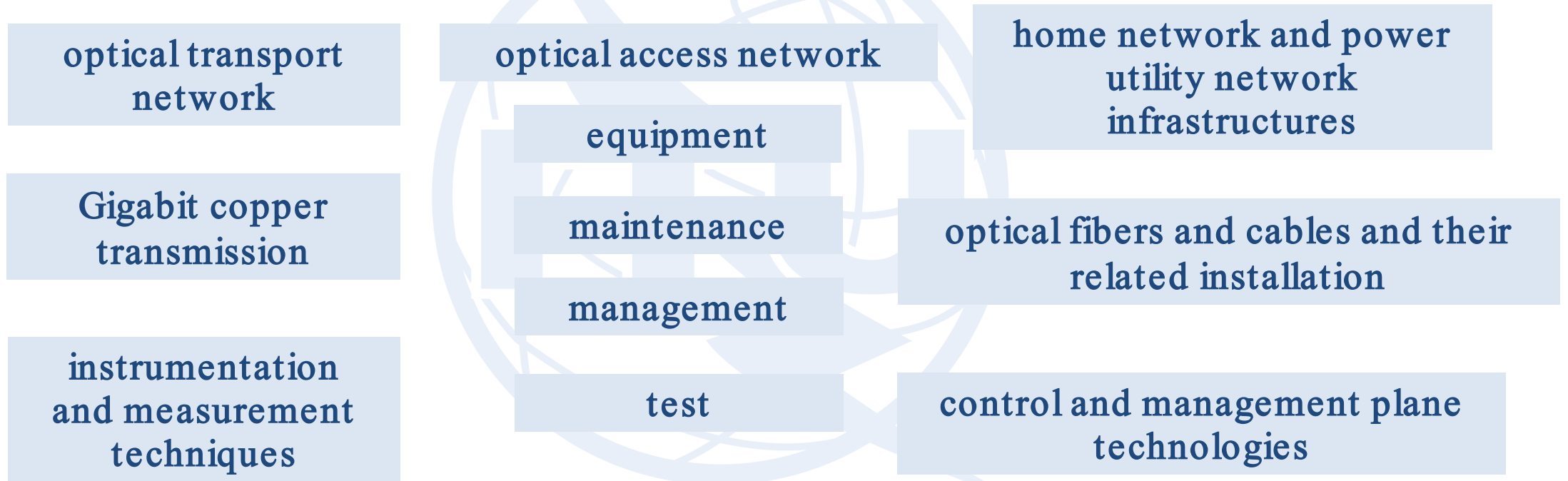
Symposium on Intelligent Optical Network in the F5G era

September 2023



SG15 mandate

SG15 is responsible for the development of standards on:

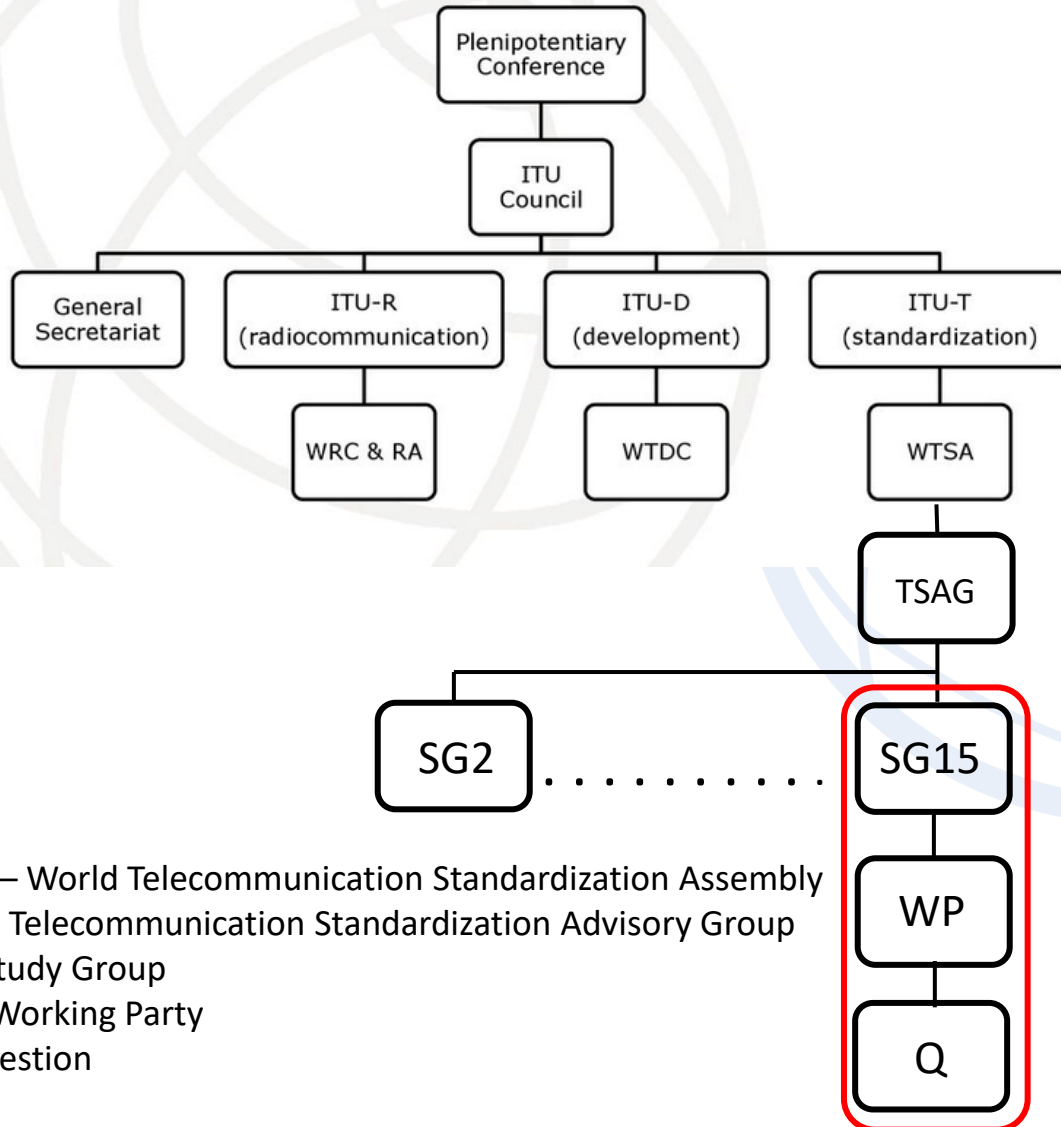


to enable the evolution toward intelligent e2e optical networks.



ITU and SG15

ITU Structure and organization



Leadership of ITU

- Plenipotentiary Conference (PP-22) - October 2022
- Member states elect leadership of ITU



Doreen Bogdan-Martin
Secretary-General ITU



Tomas Lamanauskas
Deputy Secretary-General
ITU



Seizo Onoe
Director of the Telecommunication
Standardization Bureau (TSB)

Leadership of ITU-T SG15

- WTSA-20 - March 2022.
- Appoints leadership of SGs



Glenn Parsons
Chair, ITU-T SG15
(Ericsson Canada)



WTSA – World Telecommunication Standardization Assembly
TSAG - Telecommunication Standardization Advisory Group
SG – Study Group
WP – Working Party
Q - Question

ITU-T SG15 management team

TSB Director, Deputy Director and Counselor with chair and vice-chairs



- Vice Chairs
 - Mohamed Amine BENZIANE
 - Sudipta BHAUMIK
 - Taesik CHEUNG
 - Tom HUBER
 - Emanuele NASTRI
 - Cyrille Vivien VEZONGADA
 - Fatai ZHANG
- WP1/15
 - Tom STARR
 - Ian HORSLEY
- WP2/15
 - Paul DOOLAN
 - Sudipta BHAUMIK
- WP3/15
 - Malcolm BETTS
 - Tom HUBER
- Promotion and Coordination
 - Jean-Marie FROMENTEAU
 - Vince FERRETTI



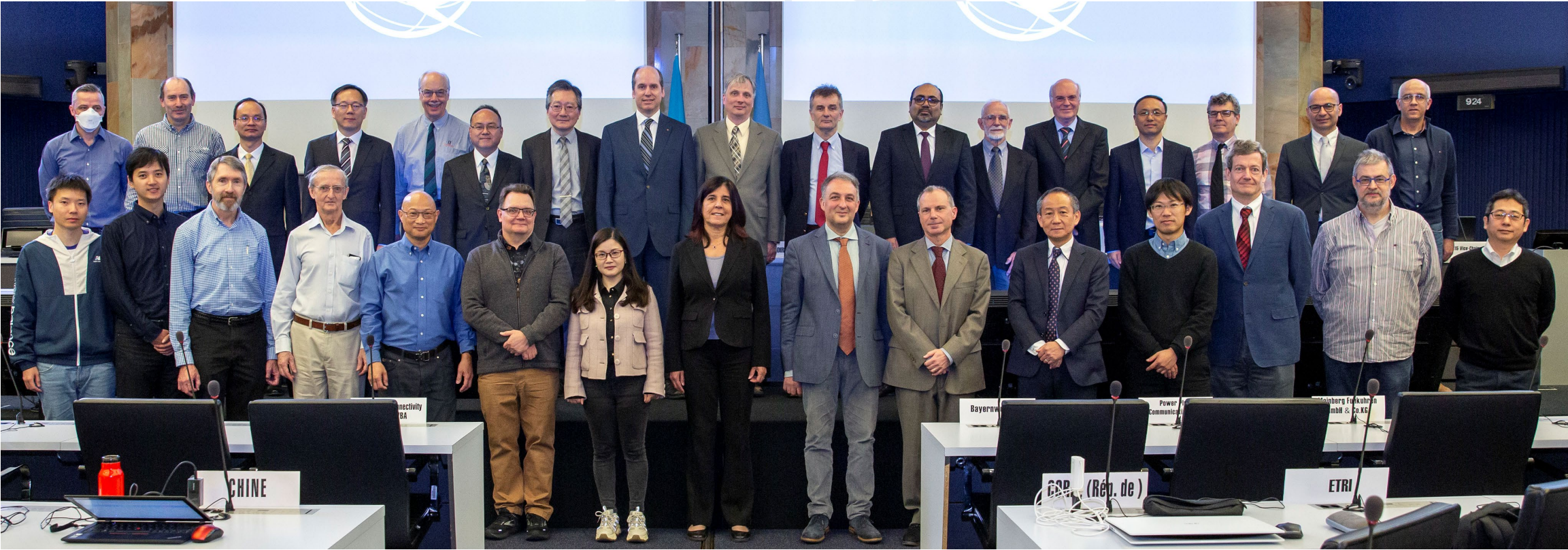
Questions and Working Parties of SG15

	Question Number	Question title
WP1	1/15	Coordination of Access and Home Network Transport Standards
	2/15	Optical systems for fibre access networks
	3/15	Technologies for in-premises networking and related access applications
	4/15	Broadband access over metallic conductors
WP2	5/15	Characteristics and test methods of optical fibres and cables, and installation guidance
	6/15	Characteristics of optical components, subsystems and systems for optical transport networks
	7/15	Connectivity, Operation and Maintenance of optical physical infrastructures
	8/15	Characteristics of optical fibre submarine cable systems
WP3	10/15	Interfaces, interworking, OAM, protection and equipment specifications for packet-based transport networks
	11/15	Signal structures, interfaces, equipment functions, protection and interworking for optical transport networks
	12/15	Transport network architectures
	13/15	Network synchronization and time distribution performance
	14/15	Management and control of transport systems and equipment

WP: Working Party



ITU-T SG15 extended management team



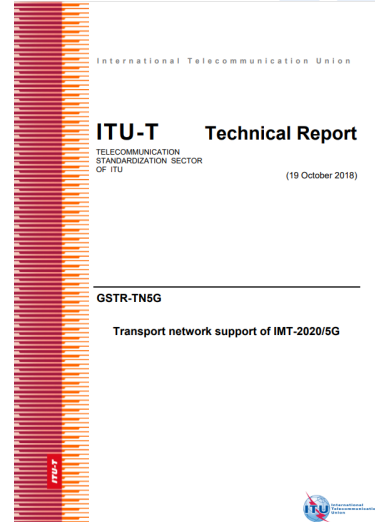
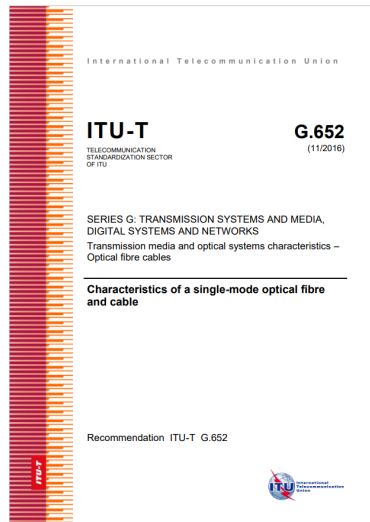
ITU-T SG 15 deliverables

- Work products:

- Recommendations
- Supplements
- Technical papers and reports
- Flyers

- Recommendation series

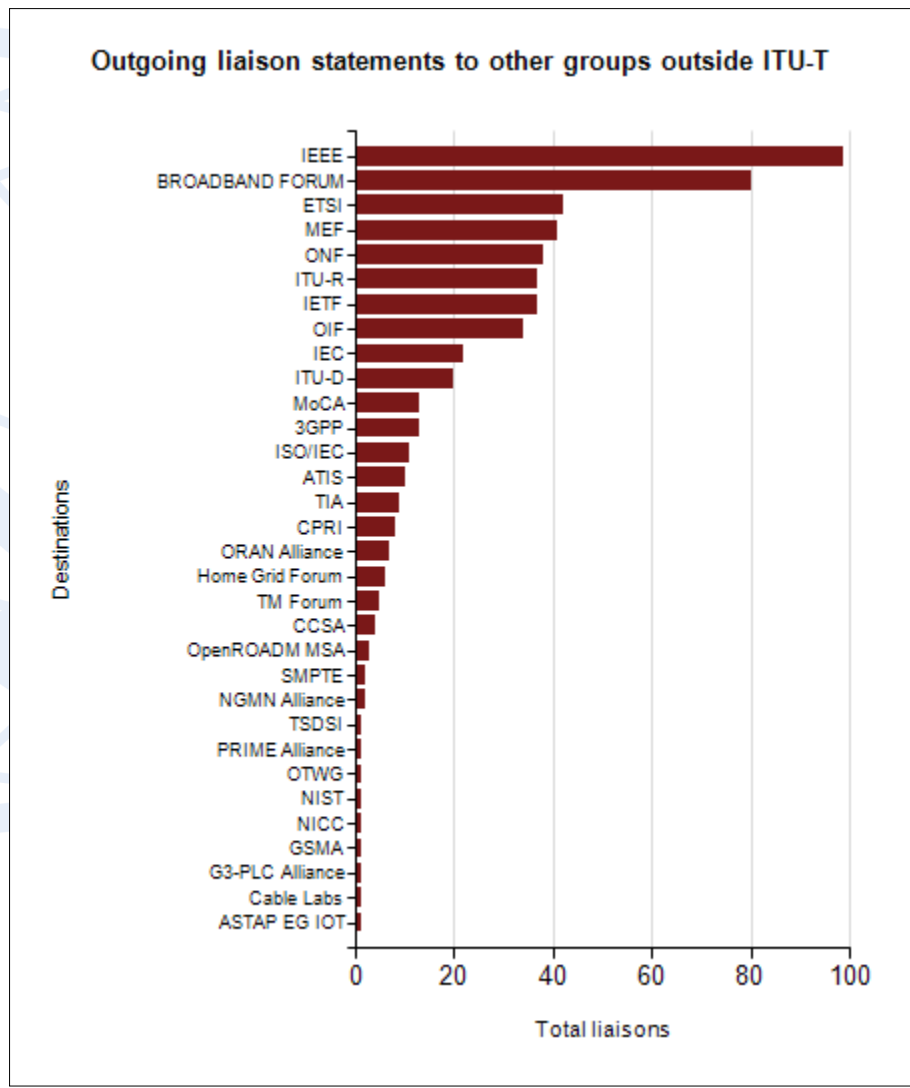
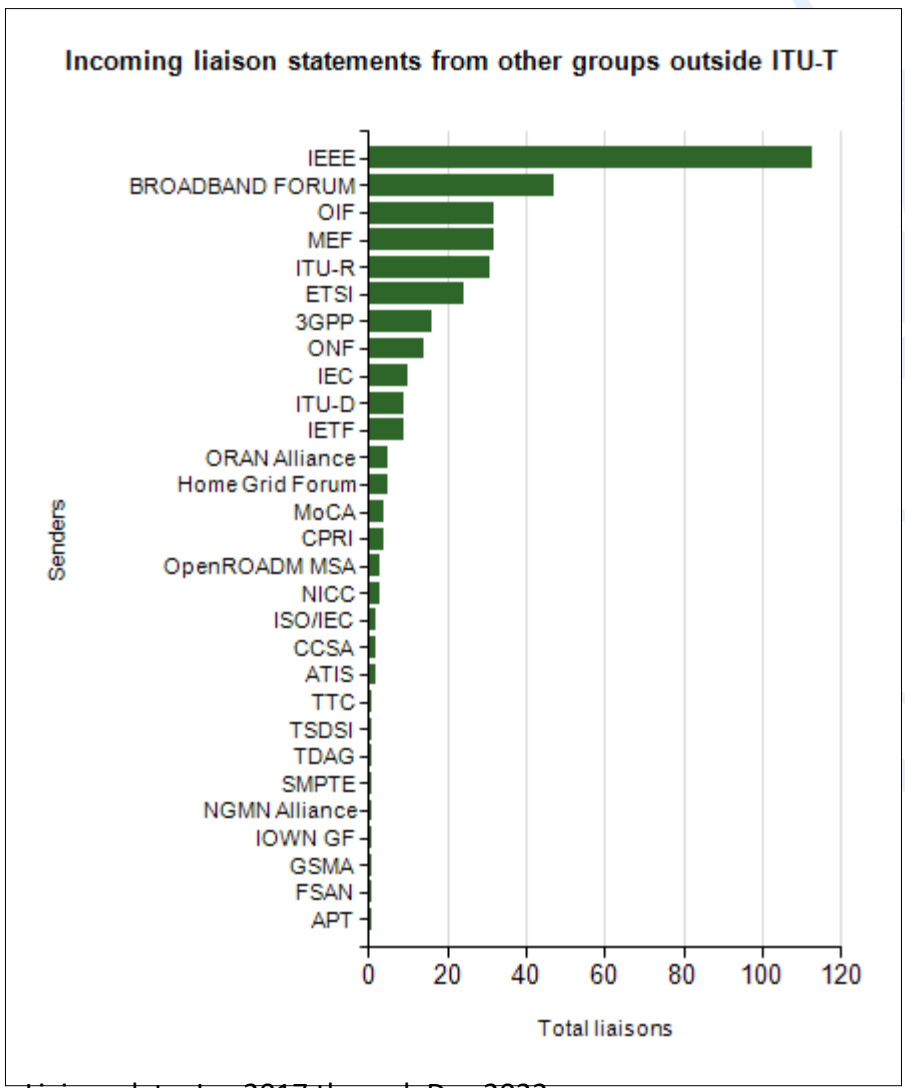
- + G.600-G.699: Transmission media and optical systems characteristics
- + G.700-G.799: Digital terminal equipments
- + G.800-G.899: Digital networks
- + G.900-G.999: Digital sections and digital line system
- + G.7000-G.7999: Data over Transport – Generic aspects
- + G.8000-G.8999: Packet over Transport aspects
- + G.9000-G.9999: Access networks
- + G supplements: Supplements to ITU-T G-series Recommendations



ITU-T Study Group 15				
Overview ITU-T Passive Optical Network Solutions				
1 Gbit/s per channel	2.5 Gbit/s per channel	10 Gbit/s per channel	25 Gbit/s per channel	50 Gbit/s per channel
Splitter-based ODN Single-channel TDMA systems				
G-PON G.984.x series	NG-PON (NG-PON1) G.987.x series	2		50G-PON G.9804.x series
	XGS-PON G.9897.x series	3		
Splitter-based ODN Multi-channel TWDM systems				
	NG-PON2 G.9893.x series	4.1		NG50G-PON G.9804.x series
Splitter-based ODN Multi-channel WDM Overlay				
NG-PON2 G.9893.x series	NG-PON2 G.9893.x series	4.2	G.9893.x series	4.2
Wavelength multiplexed ODN with logical point-to-point connections (a.k.a. WDM-PON)				
			25GMW-PON G.9802.x series	6



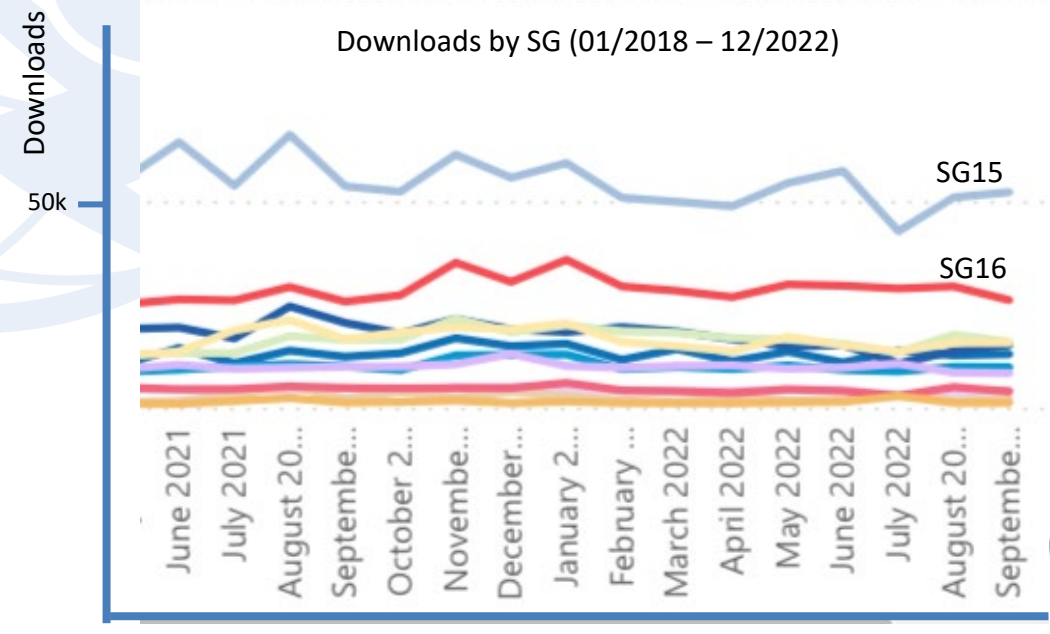
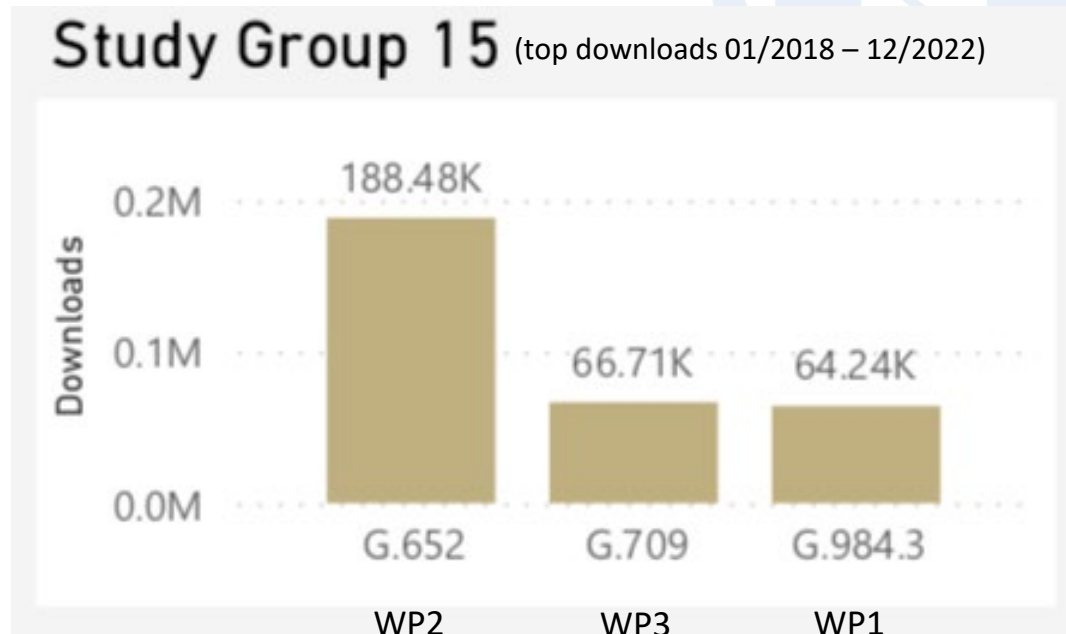
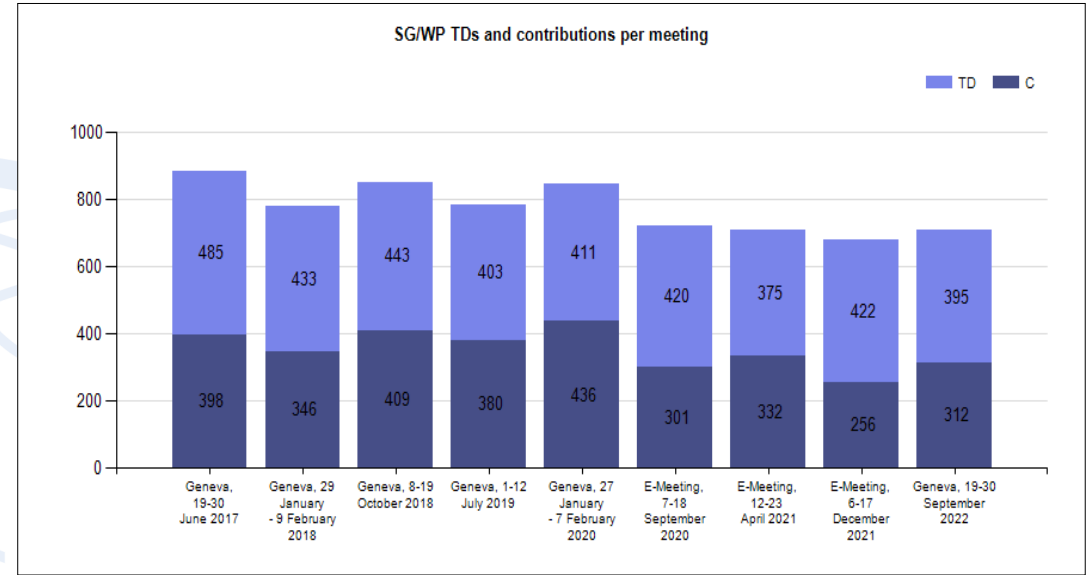
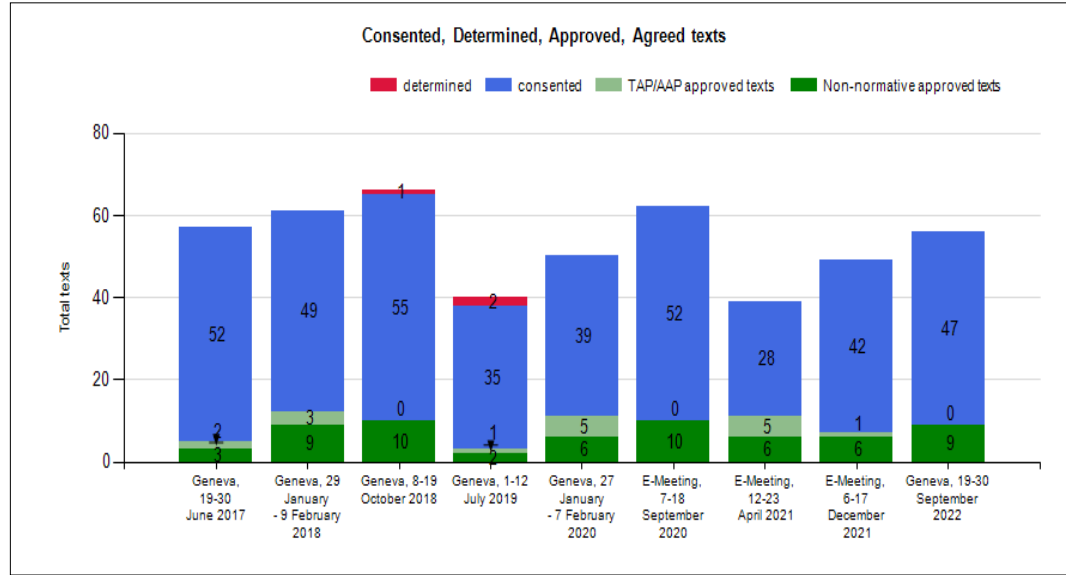
SG15 – a collaborative player in the ecosystem



Liaison data Jan 2017 through Dec 2022



Metrics on SG15



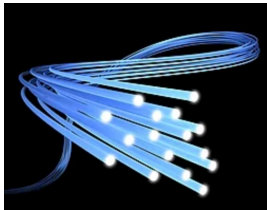
WP1 – Optical Networks for Access and Home

G.fastback

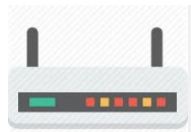
Multi-Gigabit copper backhaul

MGfast

Next generation
copper access 5-10 Gbps



Optical systems for access networks
Bidirectional P2P
XGS-PON, NG-PON2
50G-PON, WDM-PON



Continue collaboration with



G.RoF

PON support for mobile
front/backhaul, Radio over fiber



Fiber networking inside
the premises



Free space optical
home networking

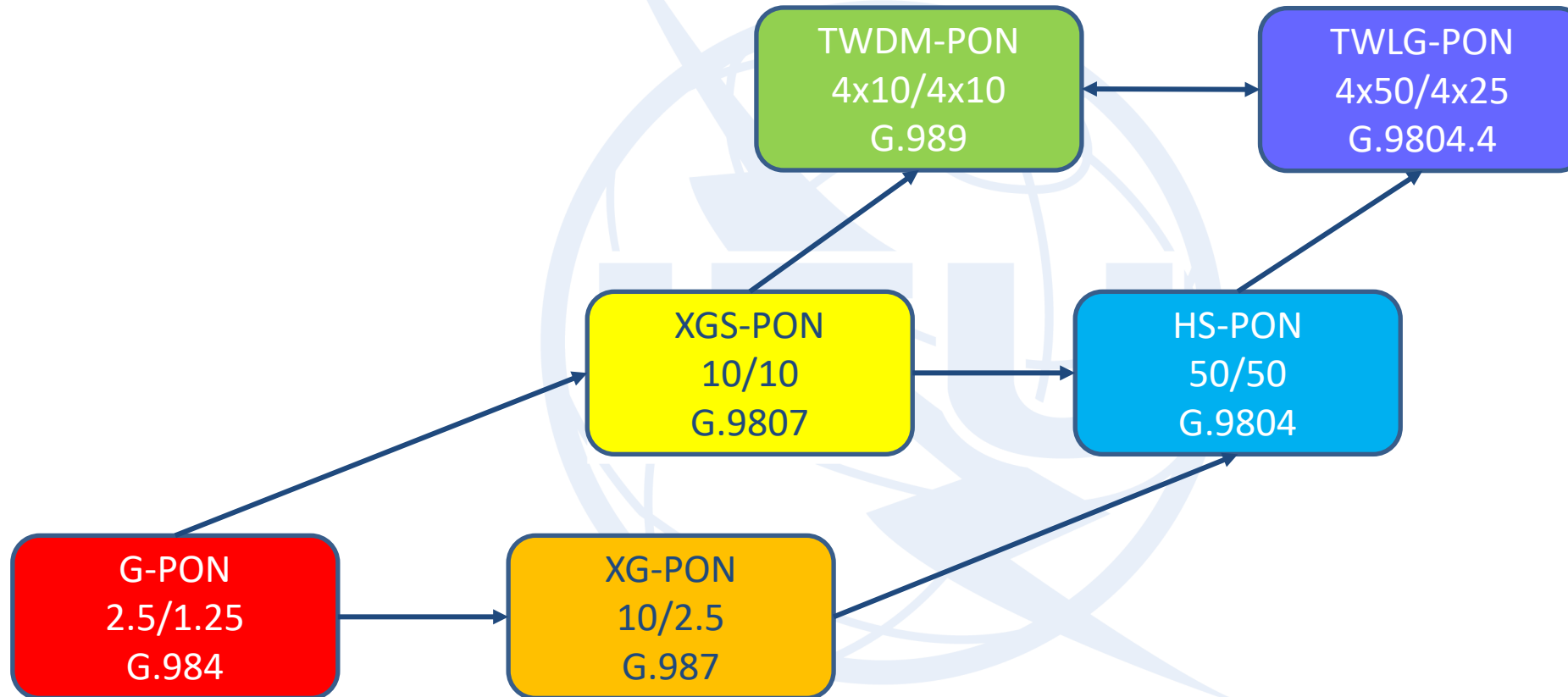


Powerline
communication
(PLC)

G.Hn

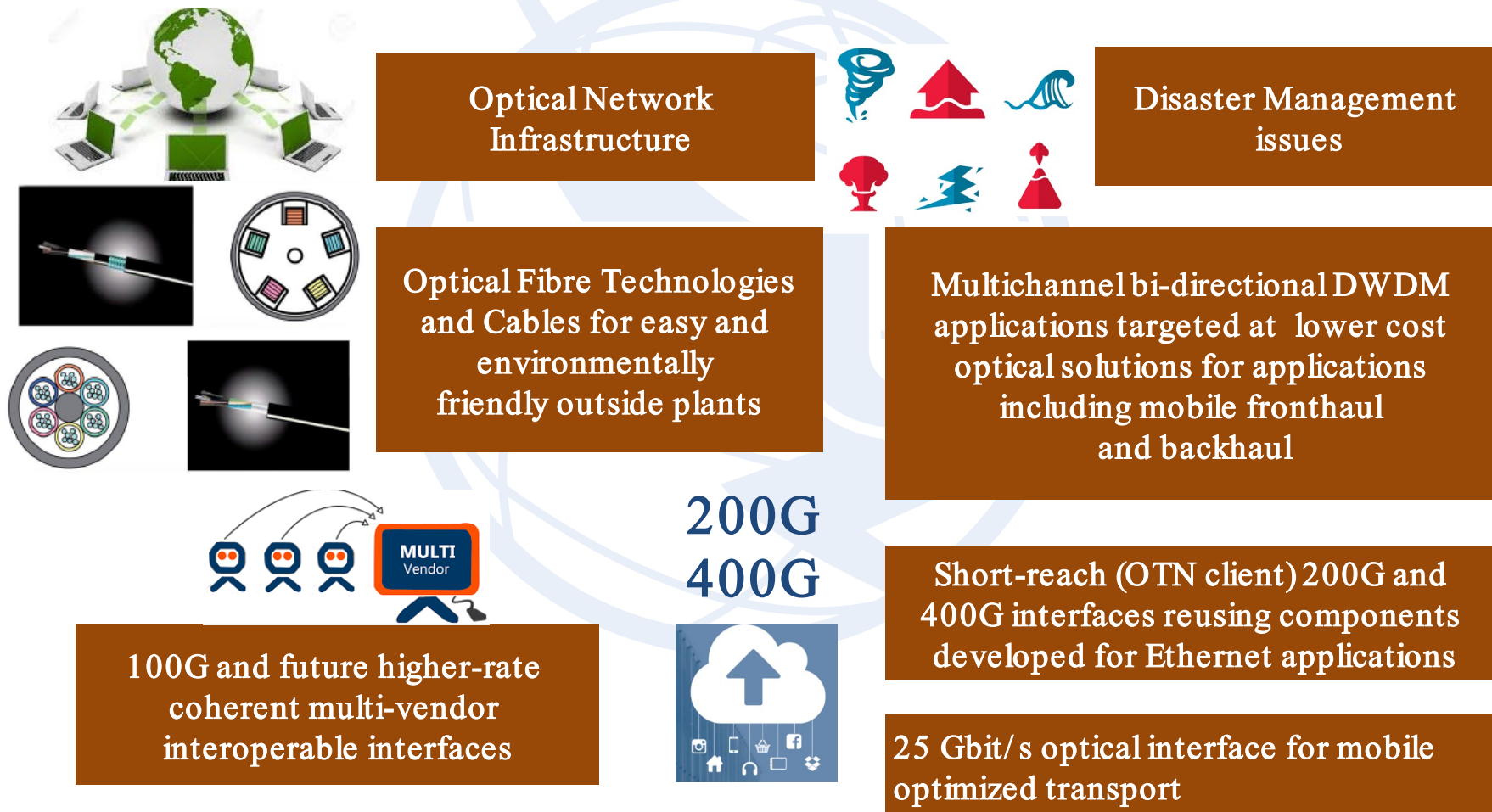
G.hn and G.hn2 home
networking over indoor
phone, power, and coax
wires >2 Gbps

Optical broadband access

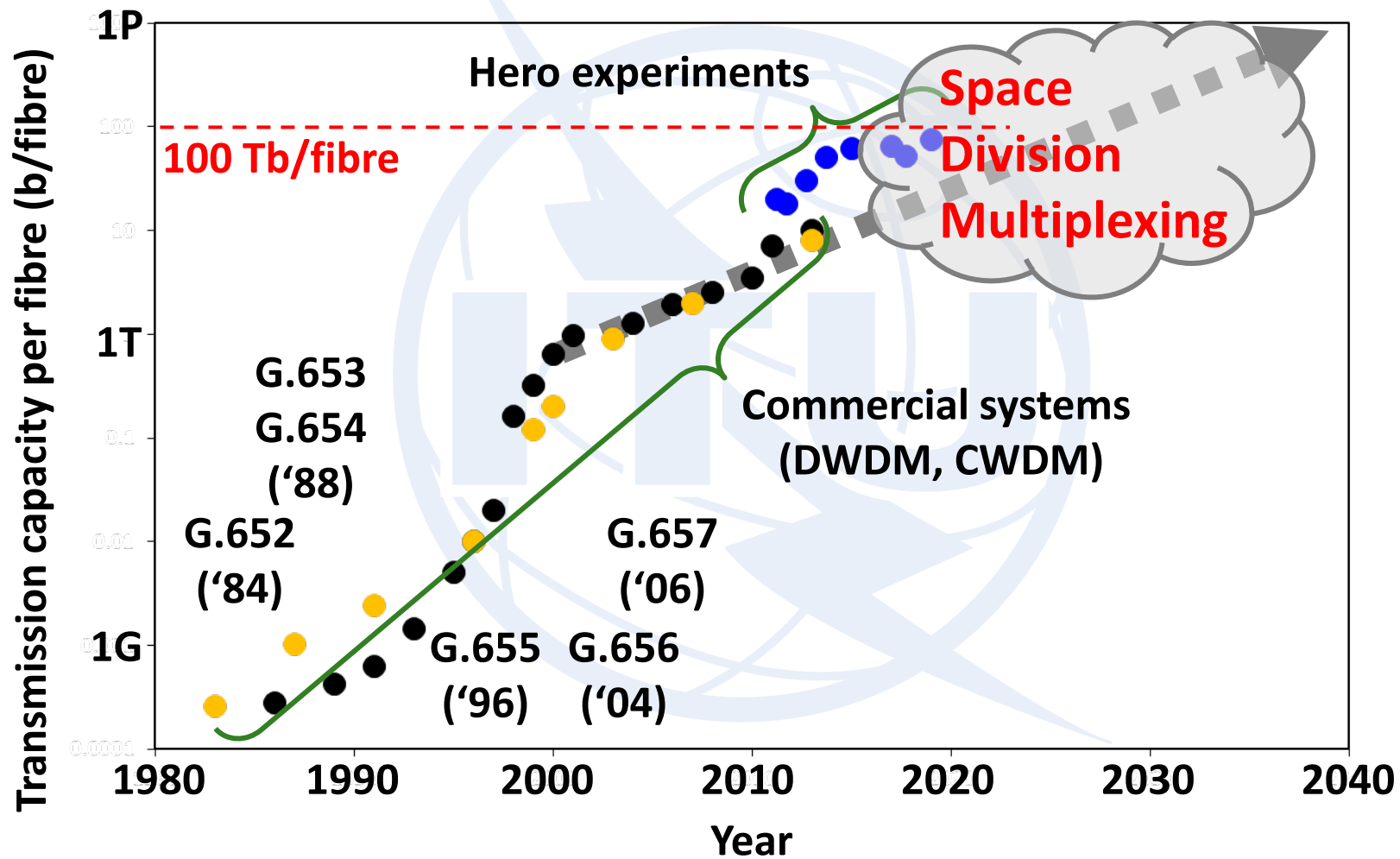


The largest application of WP1 optics is to provide broadband access to home and small business users, where the emphasis is on low-cost high-volume solutions

WP2 – Optical technologies and physical infrastructure



History of Optical Fibre Standards



WP3 – Optical Transport Networks

5G

Transport and synchronization supporting 5G mobile fronthaul and backhaul

MTN

G.83xx (metro transport network) for 5G optimized transport



Architecture and other Transport SDN Aspects

**BEYOND
100G**

New “B400G” OTN interfaces, including the use of coherent G.698.2 interfaces



Equipment & management specifications for OTN, Ethernet and MPLS-TP

**Optical
Transport
Networks**

Synchronization of packet Networks, MTN and future OTN networks, e.g., beyond 400G



Network survivability (protection and restoration)



Management aspects of control and transport planes



Core Information model enhancement for management of synchronization and optical media

Hot topics in WP3/15

OTN beyond 400G

- 800G FlexO interfaces, including Ethernet-optimized interfaces
- 800GE client mappings

Fine-Grained OTN (fgOTN) and Fine-Grained MTN (fgMTN)

- Sub-1G
- Service-awareness

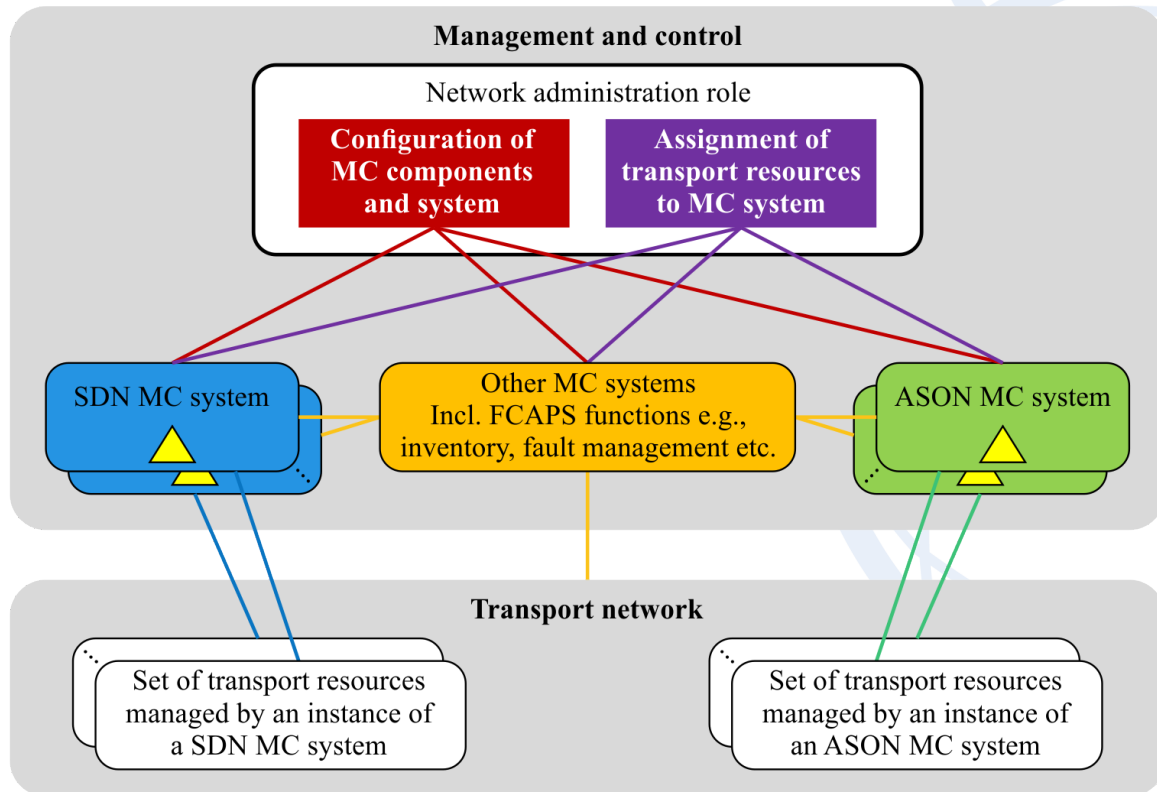
Synchronization

- PTP telecom profile evolution
- Timestamping accuracy of optical modules
- Network resilience and monitoring

Management and control

- Management of optical media and synchronization

Management and control (Q12, Q14)



▲ Common MC components - e.g., NCC, CC, RC, LRM

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- Development of generic management/control architecture
- Specification of management requirements and information models for the optical media layer
 - Includes management of amplifiers, ROADMs, etc.
 - The management information models are specified through pruning/refactoring the common core information model and extended with technology-specific properties
- Specification of management requirements and information models for synchronization

Conclusions

✓ Leading development of

Optical
Transport
Networks

ACCESS
NETWORK

Home Networking

✓ The **LARGEST** and **MOST PRODUCTIVE** group in ITU-T with broad, global industry participation

✓ SG15 support for F5G networks:

- Driven by industry requirements
- New optical cables – SDM
- Faster speeds for PON, OTN, WDM
- Enhanced synchronization
- Integrated network management

謝謝



Questions?