ITU-T SG15 Success Stories

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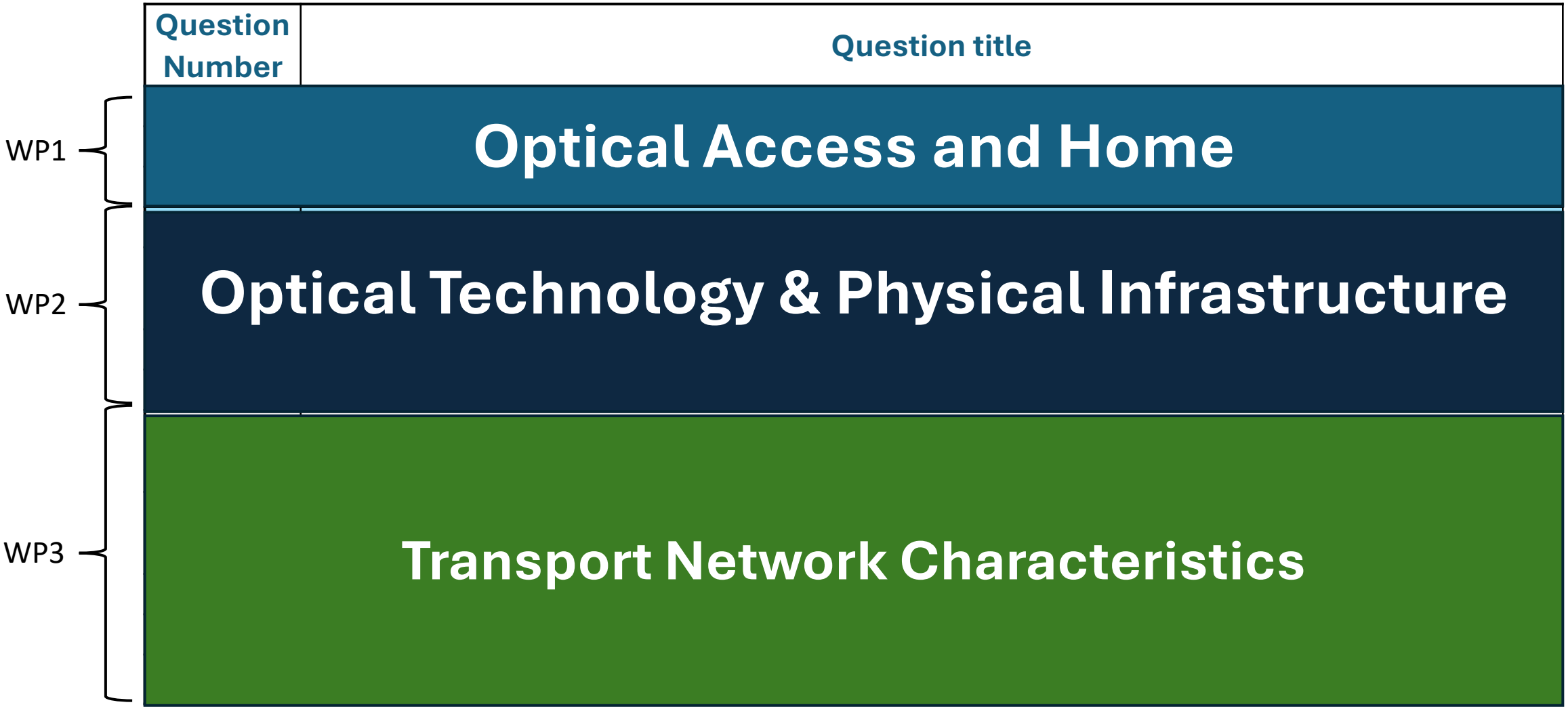
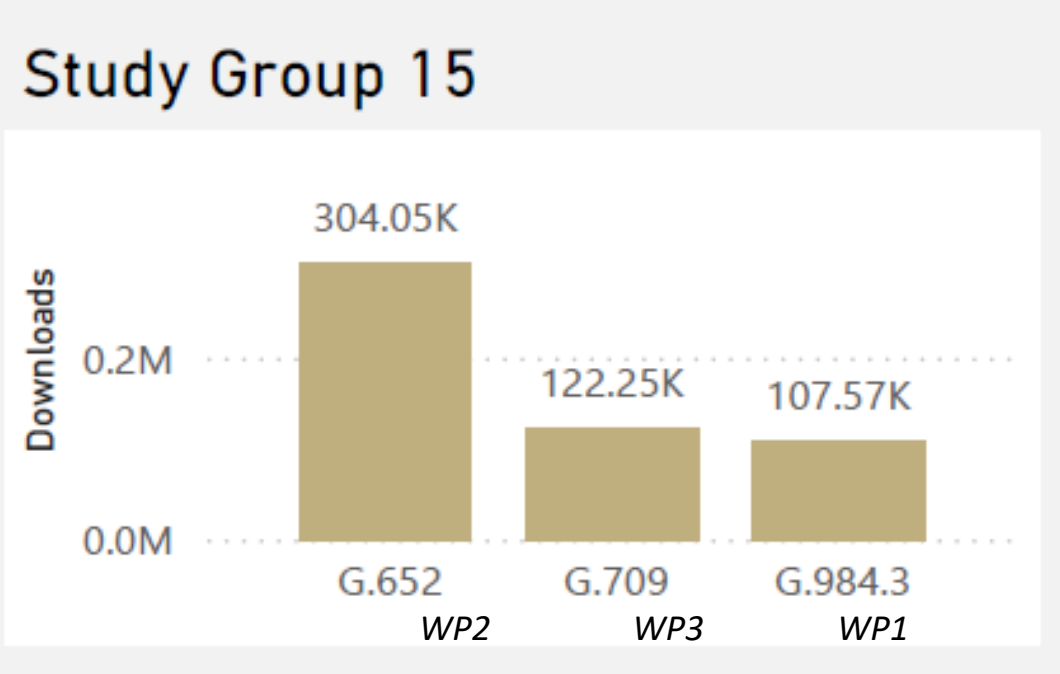
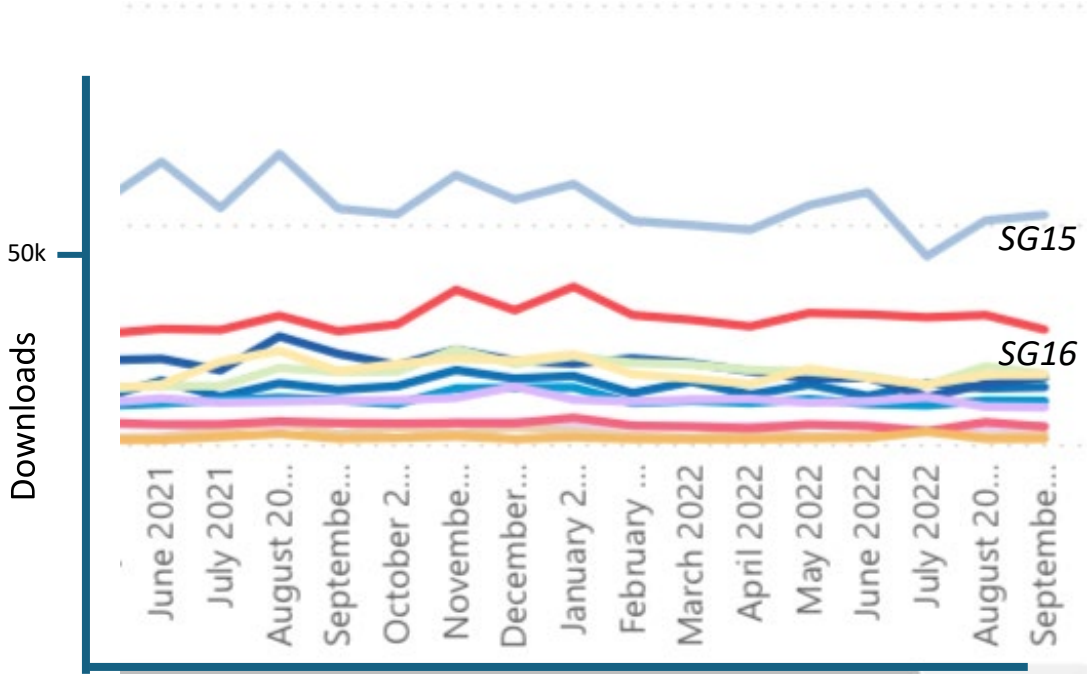
ITU-T SG15 Organization



WP: Working Party

ITU-T SG15 Downloads





ITU-T G.652 Characteristics of a single-mode optical fibre and cable

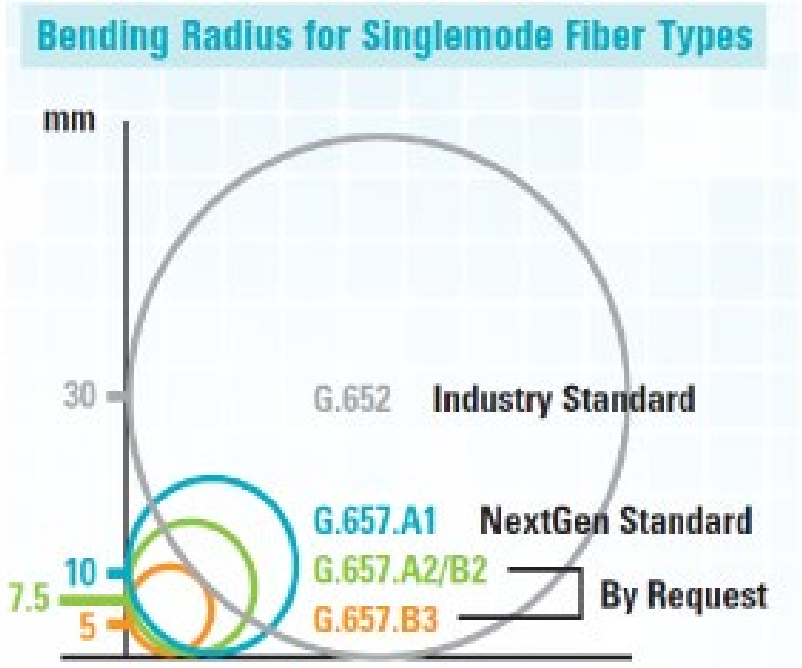
Arguably the most successful and widely adopted fiber optic standard in the history of telecommunications

- **Massive Adoption**
  - Most deployed fiber in Metropolitan Area Networks, long-haul links, and data center backbones worldwide.
- **Longevity:**
  - It has remained relevant for over 30 years by evolving, with subcategories A, B, C, and D allowing it to adapt to changing technology requirements.
- **Backward Compatibility:**
  - G.652.D is fully compatible with legacy G.652 cables, allowing easy, low-loss splicing for network repairs and upgrades.
- **Cost-Effectiveness:**
  - Due to high-volume manufacturing, G.652D is roughly 10–15% cheaper than newer, bend-insensitive fibers like G.657, making it the preferred choice for long-distance outdoor deployments where tight bends are not a factor.

Single Mode Fibre Evolution:

To address emerging bend sensitive applications, the market has shifted to G.652/G.657A1 compliant fibres

- **Shift to G.657:**
  - For Fiber-to-the-Home (FTTH) and last-mile applications, the G.657 (bend-insensitive) standard was introduced to address this weakness.
- **Hybrid Solutions:**
  - Today, many manufacturers produce fiber that meets both the G.652.D standard and the G.657.A1 bend-performance specification, allowing a single fiber to be both the backbone and the last-mile solution



G.984 series Gigabit Passive Optical Network (GPON)

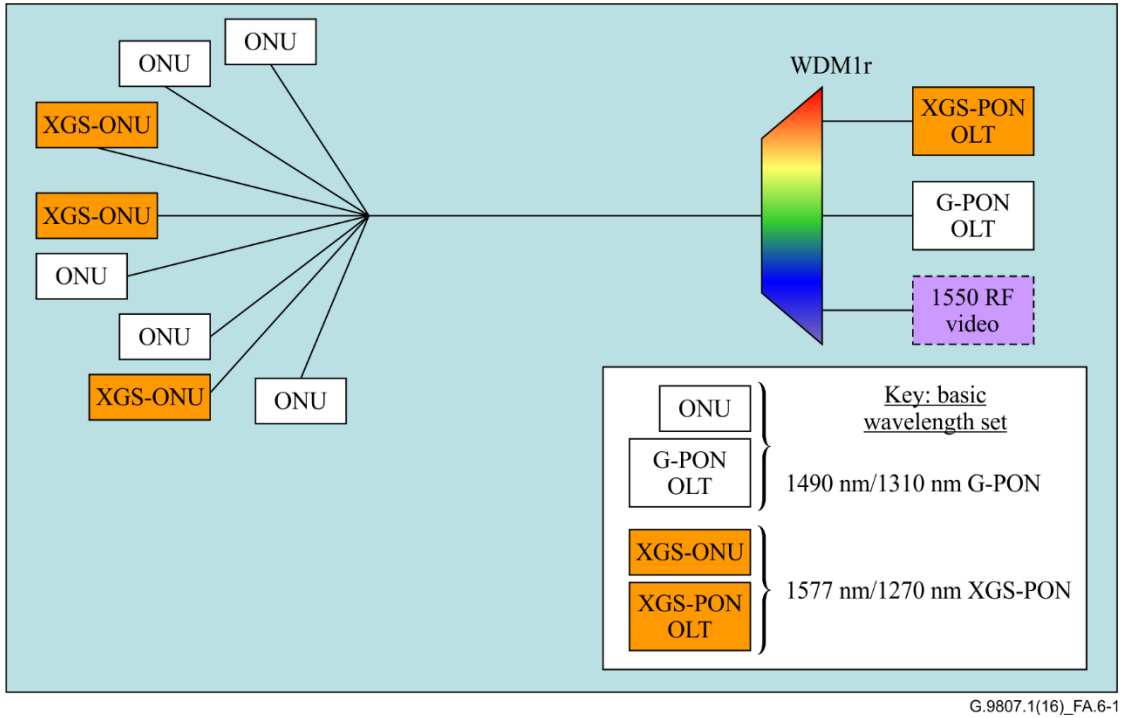
Serving as the dominant global standard for Fiber-to-the-Home and business broadband connectivity for over a decade.

- **Widespread Global Adoption**
  - **Market Share:** As of 2022–2023, it was recognized as the most common type of optical fiber connection, with extensive deployment in major markets including China, North America, Japan, and India.
  - **Infrastructure Shift:** It has been instrumental in the widespread replacement of copper, cables, and DSL with full fiber-to-the-home infrastructure.
- **Key Drivers of Success**
  - **Cost-Effectiveness & Efficiency:** GPON is highly efficient, allowing a single fiber to be split (typically 1:32 or 1:64) to serve up to 64 customers, significantly reducing the amount of fiber and active equipment required in the field.
  - **Performance:** It provides high bandwidth (2.5 Gbps downstream / 1.25 Gbps upstream) and is 95% more energy-efficient than copper networks.
  - **Scalability & Stability:** The standard enables stable connectivity even in heavy-traffic environments, supported by Dynamic Bandwidth Allocation (DBA).
  - **Vendor Ecosystem:** A mature, global ecosystem of offers a wide range of compatible, cost-effective equipment.

GPON Evolution

Co-existence through wave division multiplexing (WDM) enables easy upgrades

- **Long-Term Viability**
  - **Future-Proof Design:** ITU-T SG15 took care to ensure that next-generation PON technologies (XG-PON, XGS-PON) can coexist on the same fiber, allowing operators to upgrade from GPON without ripping out existing fiber infrastructure.
  - **Long Life Cycle:** Even as XGS-PON (10G) becomes the new standard, GPON remains widely used and relevant, particularly in areas transitioning from legacy networks.



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Thanks!