

Progress in standardization of wired backhauling in-premises communication technologies in ITU-T SG15

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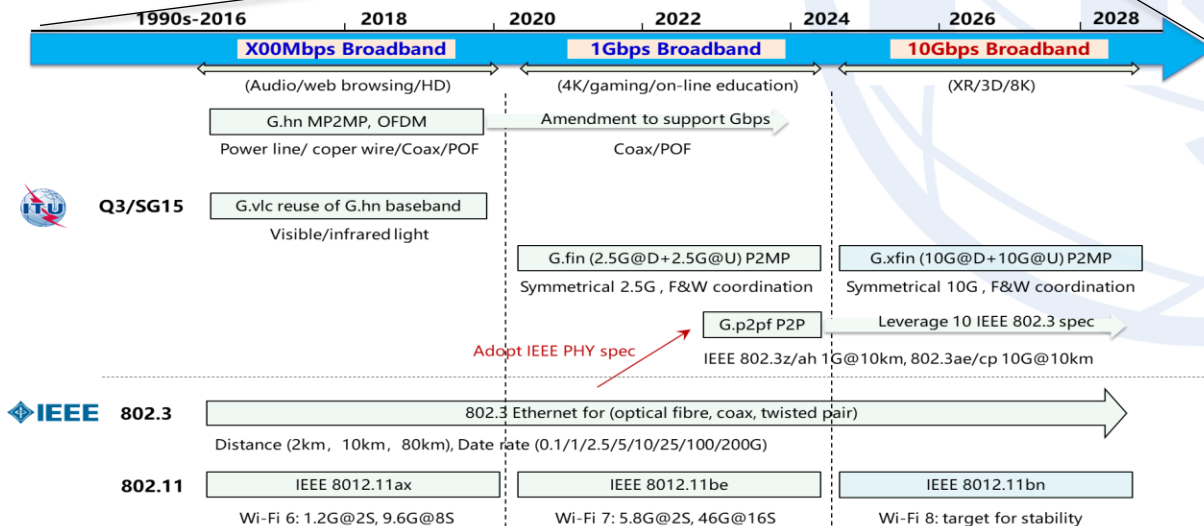
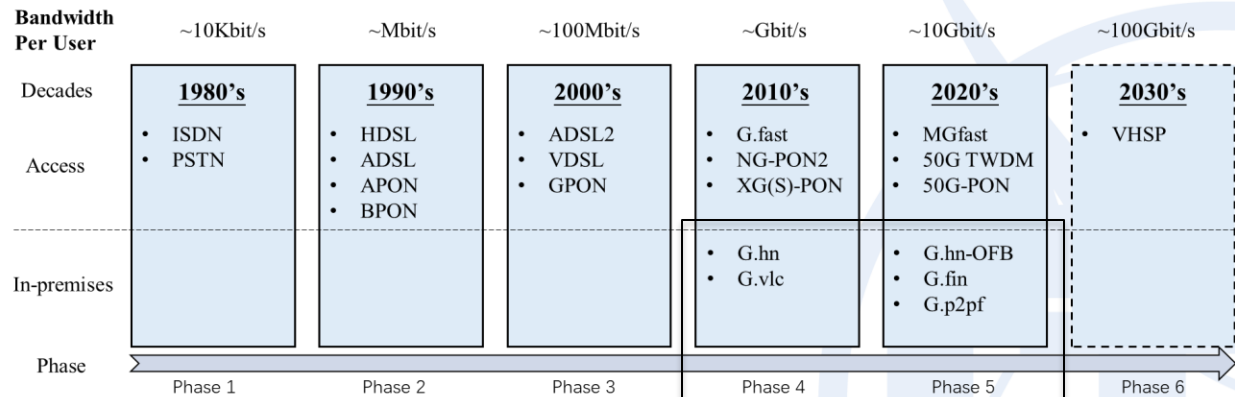
*FTTR Workshop
Geneva - Switzerland*

ITU-T SG15/Q3 experts group

- **Study Group 15: Networks, Technologies and Infrastructures for Transport, Access and Home**
- **Q3: Technologies for in-premises networking and related access applications**
- Main Projects:
 - **G.hn (G.996x series): Unified high-speed wire-line based home networking transceivers**
 - Operation over coax, twisted pair, powerline and POF
 - PHY layer (G.9960), DLL (G.9961), management layer (G.9962), MIMO (G.9963), Spectrum (G.9964)
 - **G.vlc (G.999x series): High speed indoor optical wireless communications**
 - Enable free space optical communication based on G.hn technology
 - Goal to produce Technical Papers on narrow beam OWC and channel adaptive OWC
 - **G.fin/G.Xfin (G.994x series): High speed fibre-based in-premises transceivers**
 - Enable in-premises P2MP fibre backhaul for Wi-Fi and provide fibre & Wi-Fi coordination
 - Architecture (G.9940), PHY (G.9941), DLL (G.9942), NM (G.9943), Wi-Fi coordination (G.wmci), Technical paper & supplement on use cases and requirements
 - **G.p2pf (G.9930): Optical ethernet for in-premises network**
 - Enable in-premises P2P fibre backhaul for Wi-Fi
- Ecosystem: Chip vendors, system vendors, service providers
- End customers: Telco operators, Power Utilities, Lighting companies, retail channels
- Main liaisons: ITU-R, ETSI TC ATTM, ETSI ISG F5G, CCSA TC6, IEEE, Broadband Forum, and HomeGrid Forum

Roadmap of in-premises technologies in ITU-T

Broadband access & in-premises network technologies evolution



● Gigabit phase:

1. G.hn (G.996x series) over copper or POF
2. G.fin (G.994x series) over single mode silicon fibre
3. G.p2pf (G.9930) by using optical ethernet

● 10 Gigabit phase:

1. G.Xfin (new recommendations on-going)
2. G.p2pf (G.9930) by using optical ethernet
3. G.hn-OFB

● Next generation (towards 2030):

1. Wi-Fi fronthaul technologies based on fibre
2. ~25G/50G Gigabit over fibre for in-premises

Main achievements and future deliverable timeline

ACHIEVED

FTTR (G.fin/G.Xfin/G.p2pf)

- **G.9930: Point-to-Point fibre in the Premises**
 - Uses P2P Optical Ethernet links
 - Xputs up to 10 Gbps
 - May use existing RGWs
- **G.9940/1/2/3: High speed fibre-based in-premises transceivers**
 - P2MP Fibre in the Premises
 - Evolution of GPON technology
 - Symmetrical 2.5 Gbps
 - PHY/DLL and Management layer
- **G.9949: WLAN management control interface (WMCI) for in-premises network**
 - Coordination of Wi-Fi 6/7 over Fibre backhauls
 - Low latency channel to convey Wi-Fi control commands
 - Features: Synchronization of Wi-Fi networks, Time coordination, Power management

IN THE PIPE

G.DoP project

- **G.DoP: Data Over Power – Vehicle Network. System, PHY and MAC Specification**
 - Usage of G.hn-based technology in intra-vehicle communications – Expected 2H25/1H26

FTTR (G.fin/G.Xfin/G.p2pf)

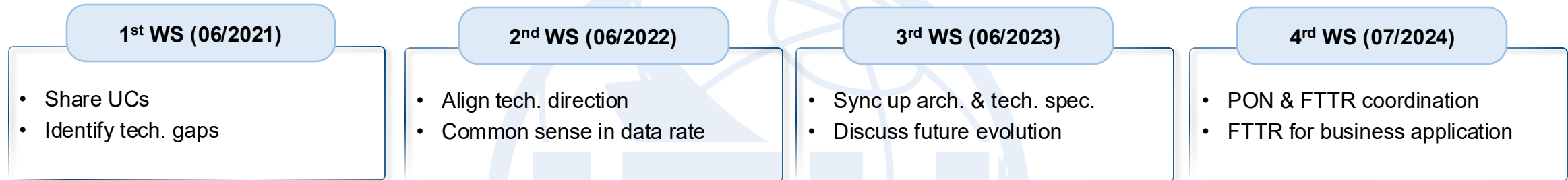
- **G.9949 (WMCI) Amendment 1: WLAN management control interface (WMCI) for in-premises network**
 - Addition of new features (Coordinated Spatial reuse, coordinated roaming, etc.) to the basic mechanisms– Expected consent in 10/2025
- **G.xFIN: High speed fibre-based in-premises transceivers (10Gbps), PHY and DLL**
 - Development of new standard – Goal to consent 2H25/1H206
 - Study on backwards compatibility with G.fin



FTTR joint workshop in 2025



➤ Multi-SDO (ITU, BBF, CCSA, ETSI) joint FTTR workshops, focusing on in-premises fibre networking



• Potential topics:

- 1. FTTR standard progress
- 2. Fibre infrastructure (e.g. fibre deployment, fibre components utilized in FTTR)
- 3. QoE of network service in residential and business area
- 4. Fibre and wireless coordination technology of FTTR
- 5. Network management of FTTR
- 6. FTTR deployment and development practice experience (e.g. policy, verticals)
- 7. FTTR business cases from operator's point of view
- 8. Extended applications over FTTR (e.g. Fibre sensing, VLC, narrow-beam OWC)
- 9. Future views and research outcome for next generation of FTTR

• Time: Wednesday October 22nd (during ITU-T SG15 plenary in Geneva)



