

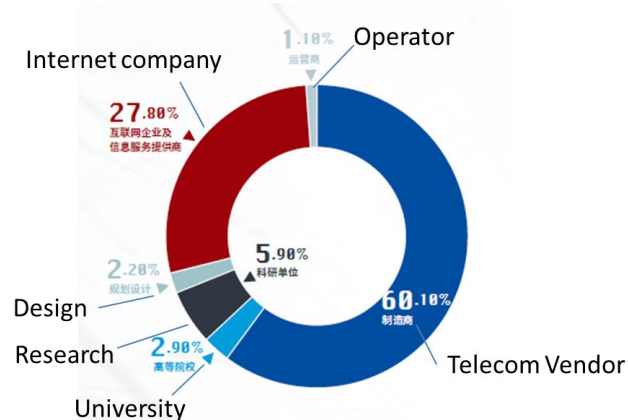
Progress on CCSA FTTR related standards

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China Communication Standards association (CCSA)

- CCSA is a non-profit organization in China for carrying out standardization activities in the field of Information and Communications Technology (ICT) across China.
- CCSA has more than 700 members, including Telecom/Internet vendors, operators, institutes and universities.



CCSA Technical Committees

TC1: Internet and applications

TC3: Network and service capability

TC4: Power supply and station working environment

TC5: Wireless communication

TC6: Transport and access network

TC7: Network management and operation

TC8: Network & data security

TC9: Electromagnetic Environment & Protection

TC10: Internet of things

TC11: Mobile internet application and terminal

TC12: Aerospace communication

TC13: Industrial Internet

WG1: Transport network

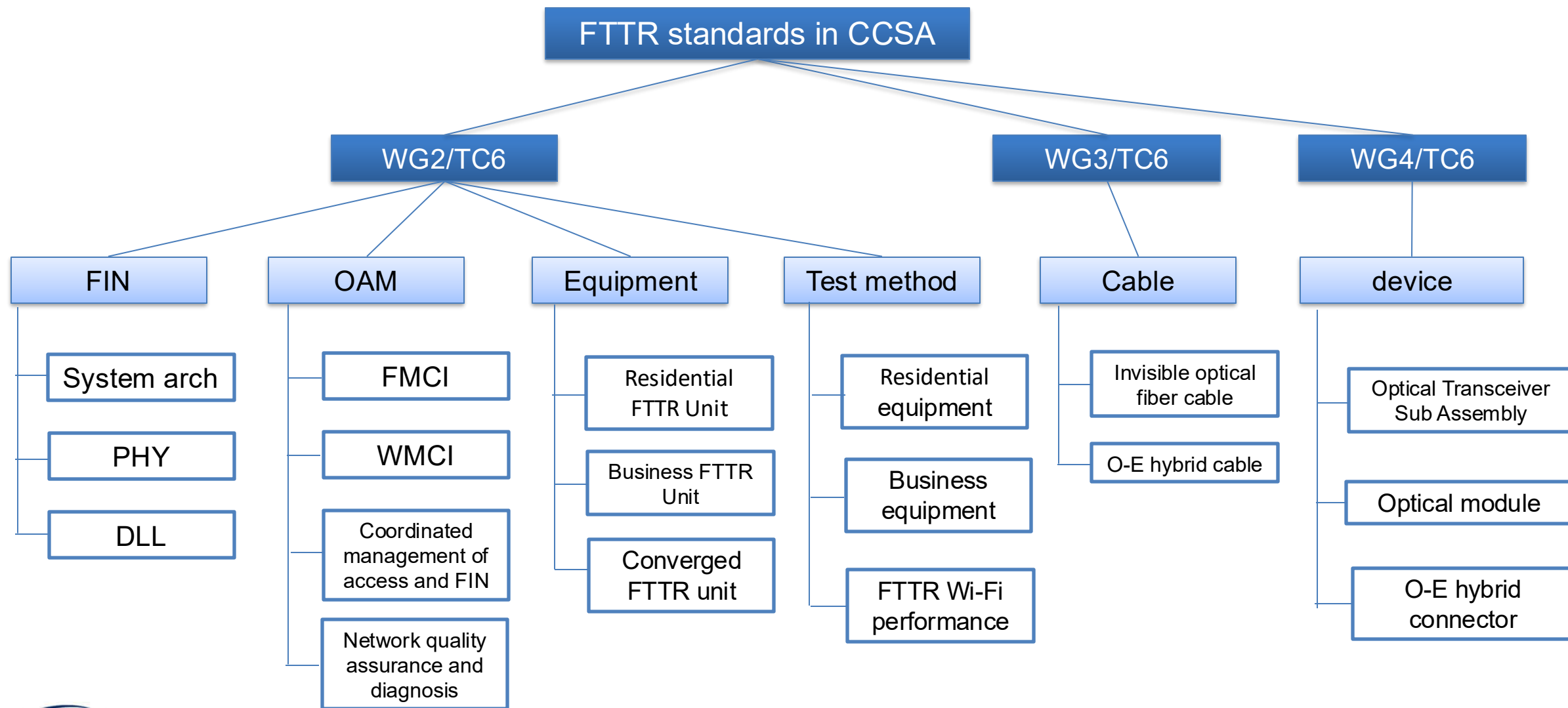
WG2: Access and home network

WG3: Optical fiber and cable

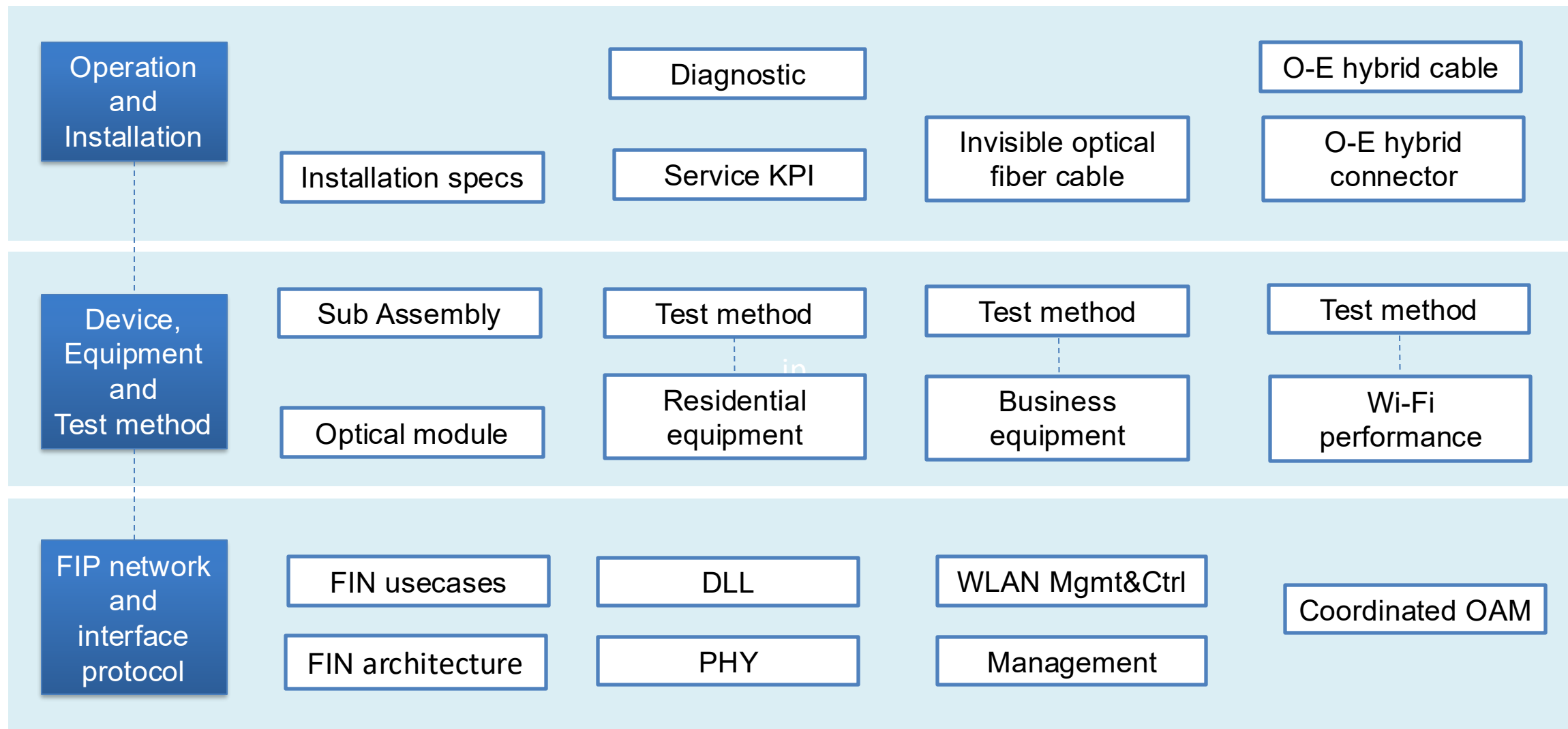
WG4: Optical devices

The standardization of FTTR is mainly the work of WG2/TC6, with a small part belonging to WG3 and WG4.

CCSA's FTTR standard umbrella



Overview of FTTR related standard layout in CCSA



CCSA FTTR standards related to FIN recommendations

- Based on the domestic scenarios, CCSA developed a series of standards which forms a superset of ITU-T G.fin series recommendations.

CCSA Std	Status	Correspond to ITU-T Rec.
FTTR – General requirements	Publish	G.9940
FTTR – PMD	Publish	G.9941 + G.fin-xPHY
FTTR – DLL	Approval	G.9942 + G.fin-xDLL
FTTR – Management	Publish	G.9943
FTTR – WMCI	Approval	G.9949 + G.9949 Amd1
FTTR – Management and Control coordination based on Optical-layer OAM	Approval	n/a

CCSA FTTR standards - optical related

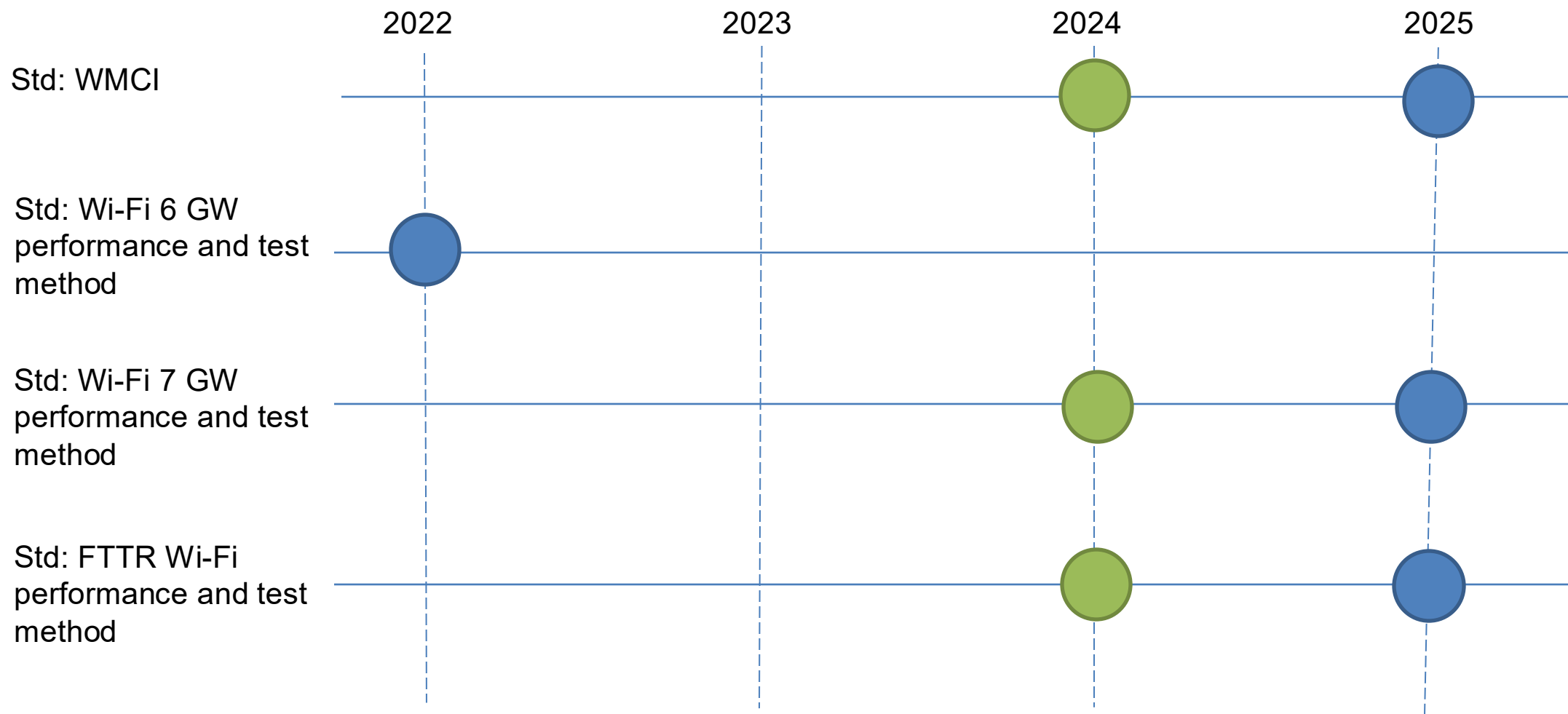
- For FTTR optical interface, CCSA standards correspond to G.802.3 serial recommendations of ITU-T, and make expand for asymmetry rate.
- Dual rate (asymmetry and symmetry) co-existence is an important feature for M-FTR

Downstream	2.5Gbit/s		10Gbit/s	
Upstream	1.25Gbit/s	2.5Gbit/s	2.5Gbit/s	10Gbit/s
PHY- class Ra	Yes	Yes	FFS	FFS
PHY- class Rb	Yes	Yes	Yes	Yes
DLL	GEM based		XGEM based	

CCSA FTTR standards - wireless related

- Wireless performance is a key index when evaluate the FTTR technology
- Four standards are developed in WG2/TC6:
 - WMCI: define the WLAN management and control interface between MFU and SFUs. It's equivalent to G.9949 and it's amendments in Q3/15
 - Wi-Fi 6 home-gateway WLAN performance and test method.
 - Wi-Fi 7 home-gateway WLAN performance and test method
 - FTTR network WLAN performance, including new metrics such as aggregated throughput for Multi-AP and roaming handover time etc.

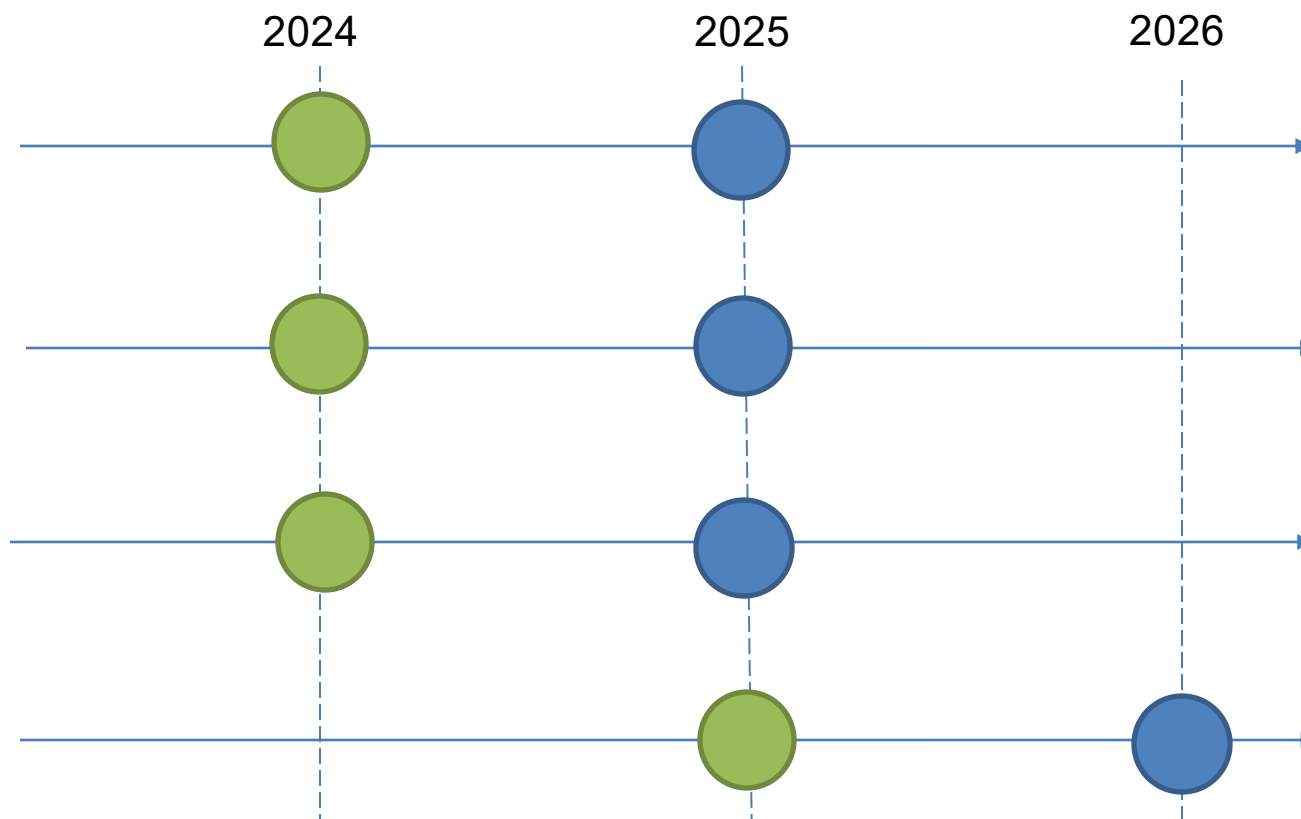
CCSA FTTR specification roadmap – wireless related



CCSA FTTR standards – FTTR equipment

In CCSA, FTTR equipment specifications are divided into two classes: Residential equipment and Business equipment, with technical requirements and testing methods established for each class.

- Std: Technical requirements for residential equipment
- Std: Test method for residential equipment
- Std: Technical requirements for business equipment
- Std: Test method for business equipment



Next step for FTTR standards in CCSA

- Technical aspect:
 - Standard for FTTR evolution, e.g. to specify the requirements for multi rate co-existence and smooth evolution.
 - Standard to specify the requirements and test method for FTTR remote powering
- Equipment aspect:
 - Specification for new form FTTR equipment, e.g.
 - FTTR unit integrated with NAS functions、IPTV set-top box and/or AI neural processing units etc.
- Future scenarios to study:
 - FTTR acting as an entry of AI home
 - FTTR acting as the center to coordinate the home appliance and IoT devices.

Thanks