

Joint ITU-T/IEEE Workshop on Next Generation Optical Access Systems

IEEE 802 Standards Overview

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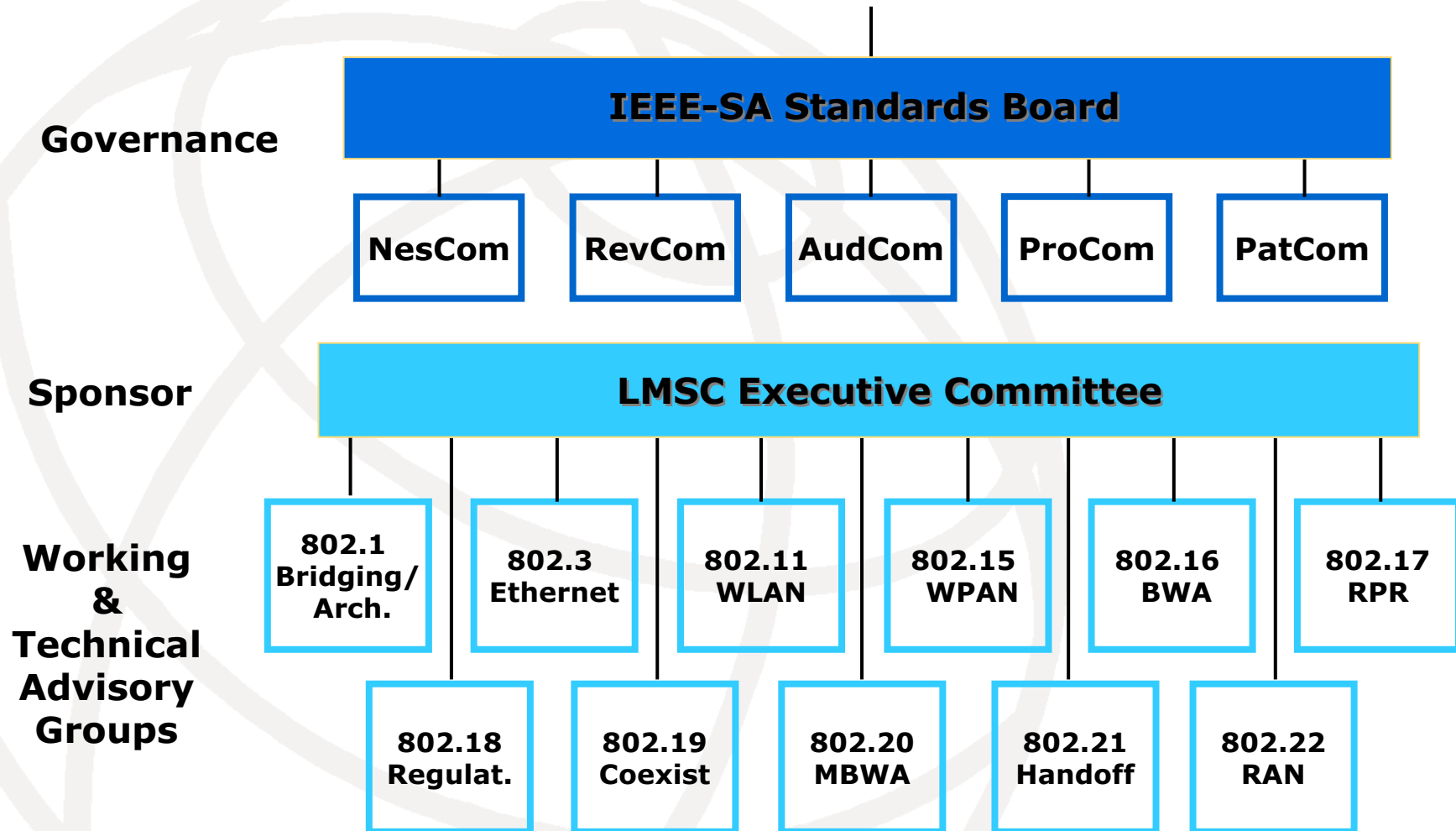
General Disclaimer

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IEEE 802 LAN/MAN Standards Committee

- The IEEE 802 LAN/MAN Standards Committee develops Physical and MAC Interface Standards for application in Personal Area, Local Area, Metropolitan Area and Regional Area Network equipment
- Since its beginning in 1980, IEEE 802 has continued to expand networking capabilities:
 1. Common concepts are maintained across IEEE 802 network types
 2. Ability to bridge (switch) frames between different speeds and network types
 3. Leverage success to enable new applications and markets

IEEE 802 LMSC Organization



A project may be assigned to a Task Group or Task Force within a WG

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IEEE 802 LMSC Organization

		Personal, Home & Enterprise			Service Provider	
Working Group		1m	10m	100m	1km	10km
M/E	802.1	Bridging Technologies				
M/E	802.3	10M,100M,1G,10G,40G,100G				
M/E	802.11	11M,54M,600M				
E	802.15	100K,1M, 50M				
E	802.16				1M-20M	
M	802.17				1G, 10G	
N	802.20				1M-20M	
N	802.21			Media Independent Handover Services		
N	802.22				1M-10M	

Maturity: N = New, E = Emerging, M = Mature

Wired

Wireless



**IEEE 802
Technical Advisory Groups**

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IEEE 802.18

Radio Regulatory TAG

- IEEE 802.18, the Radio Regulatory Technical Advisory Group (RR-TAG), is responsible for actively monitoring ongoing radio regulatory activities, at both the national and international levels
- IEEE 802 currently has 6 Working Groups with projects on standards for radio-based systems
 1. IEEE 802.11 (WLAN)
 2. IEEE 802.15 (WPAN)
 3. IEEE 802.16 (WMAN)
 4. IEEE802.20 (Wireless Mobility)
 5. IEEE 802.21 (Handoff/Interoperability Between Networks)
 6. IEEE 802.22 (WRAN)

IEEE 802.19 Coexistence TAG

- The IEEE 802.19 Coexistence Technical Advisory Group (TAG) will:
 1. Develop and maintain policies defining the responsibilities of 802 standards developers to address issues of coexistence with existing standards and other standards under development
 2. Offer assessments to the Executive Committee (EC) regarding the degree to which standards developers have conformed to those conventions
 3. The TAG may also develop coexistence documentation of interest to the technical community outside 802



IEEE 802 Working Groups

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IEEE 802.1 Higher Layer LAN Protocols Working Group

■ The IEEE 802.1 Working Group develops standards and recommended practices in:

1. 802 LAN/MAN architecture
2. Internetworking among 802 LANs
3. 802 Security
4. 802 overall network management
5. Compatibility with higher layer protocols

■ The 802.1 working group has a number of active projects within its four task groups:

1. Interworking
2. Security
3. Audio/Video Bridging
4. Congestion Management

IEEE 802.3 Ethernet Working Group

■ The IEEE 802.3 Working Group develops standards for CSMA/CD (Ethernet) LANs. Current activities include:

1. Increase amount of power that can be distributed over select twisted pair interfaces
2. 10 Gigabit Passive Optical Networks
3. Increasing speed of operation
4. Improving energy efficiency of Ethernet connected equipment

IEEE 802.11

Wireless LAN Working Group

■ The IEEE 802.11 working group standardizes wireless local area networks (WLANs). Current activities include:

1. Increasing speed of operation
2. Mesh networking
3. Interfaces for national and regional frequency bands
4. Application to vehicular environments
5. Enhancements to manageability
6. Enhanced capabilities for audio/video applications

IEEE 802.15

Wireless Personal Area Network Working Group

■ The IEEE 802.15 WPAN Working Group develops standards for wireless personal area networks. 802.15 has a number of active projects as listed below:

1. Increasing speed of operation
2. Lower cost and lower power interfaces
3. Medical body area network
4. Application to vehicular environments
5. Mesh networking
6. Interfaces for national and regional frequency bands

IEEE 802.16

Broadband Wireless Access

Working Group

■ The IEEE 802.16 Working Group on Broadband Wireless Access Standards develops standards and recommended practices to support the development and deployment of broadband Wireless Metropolitan Area Networks

1. Fixed and mobile enhancements
2. Multi-hop relays
3. Conformance and co-existence
4. Manageability

IEEE 802.17

Resilient Packet Ring Working Group

- The IEEE 802.17 Resilient Packet Ring Working Group (RPRWG) develops standards to support the development and deployment of Resilient Packet Ring networks in Local, Metropolitan, and Wide Area Networks for resilient and efficient transfer of data packets at rates scalable to many gigabits per second.
- These standards build upon existing Physical Layer specifications, and develop new PHYs where appropriate.

IEEE 802.20

Mobile Broadband Wireless Access

- IEEE 802.20, the Mobile Broadband Wireless Access Working Group (MBWA), is developing the specification for an efficient packet based air interface that is optimized for the transport of IP based services. The goal is to enable worldwide deployment of affordable, ubiquitous, always-on and interoperable multi-vendor mobile broadband wireless access networks that meet the needs of business and residential end user markets.
- This standard will specify the physical and medium access control layers of an air interface for interoperable mobile broadband wireless access systems, operating in licensed bands below 3.5 GHz, optimized for IP-data transport, with peak data rates per user in excess of 1 Mbps. It supports various vehicular mobility classes up to 250 Km/h in a MAN environment and targets spectral efficiencies, sustained user data rates and numbers of active users that are all significantly higher than achieved by existing mobile systems.

IEEE 802.21

Media Independent Handoff WG

- IEEE 802.21, the Media Independent Handoff Working Group, is developing standards to enable handover and interoperability between heterogeneous network types including both 802 and non 802 networks.

IEEE 802.22

Wireless Regional Area Networks WG

- IEEE 802.22, the Working Group on Wireless Regional Area Networks ("WRANs"), is developing a standard for a cognitive radio-based PHY/MAC/air_interface for use by license-exempt devices on a non-interfering basis in spectrum that is allocated to the TV Broadcast Service.