Newcomer Orientation: Welcome to IEEE 802

http://ieee802.org

2018-07-04

IEEE 802 ec-18-0117-00-00EC
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Introduction to IEEE 802
IEEE 802 LMSC is a standards sponsor of the IEEE-SA and standards committee of the IEEE Computer Society.
IEEE Standards Association (IEEE-SA)

- **Vision**: To be a world-class standards-development organization
- **Mission**: To provide a high-quality, market-relevant standardization environment, respected worldwide

20,000 Standards Developers

160+ Countries Involved

1200+ Active Standards

600+ Standards Under Development

IEEE Standards span a broad spectrum of technologies, such as:

- Aerospace Electronics
- Broadband Over Power Lines
- Broadcast Technology
- Clean Technology
- Cognitive Radio
- Design Automation
- Electromagnetic Compatibility
- Green Technology
- Ethernet/WLAN
- Medical Device Communications
- Nanotechnology
- Organic Components
- Portable Battery Technology
- Power Electronics
- Power & Energy
- Radiation/Nuclear
- Reliability
- Transportation Technology
IEEE 802:
- LAN/MAN Standards Committee (LMSC)

Develops standards, for
- Local Area Networks (LAN),
- Metropolitan Area Networks (MAN),
- Regional Area Networks (RAN),
- Personal Area Networks (PAN),
- Wireless Specialty Networks (WSN), etc.

In operation since March 1980
IEEE 802 standards emphasize the functionality of the lowest two layers of the OSI reference model, and the higher layers as they relate to network management:
- physical layer (PHY, Layer 1)
- data link layer (DLL, Layer 2)

IEEE 802 divides DLL into:
- Medium Access Control (MAC) layer
  - Multiple specifications
- Common logical link control layer (LLC)

IEEE Std 802.1D and 802.1Q specify interworking among IEEE 802 networks by bridging at the MAC layer.

See details in IEEE Std 802
- “IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture”
Key development concepts

- **Project Authorization Request (PAR)**
  - Requesting document that, once approved, authorizes work on a standardization Project
    - Developed as a Request, typically within a WG
    - Reviewed in formal LMSC procedure at a Plenary Session
    - Authorization of the Request is ultimately an SASB decision
    - Authorization assigns the Project to a Sponsor and a WG

- **Working Group (WG)**
  - Responsible for developing standards in an area

- **Task Group (TG) or Task Force (TF)**
  - Subset of WG assigned by WG to develop a project

- **Technical Advisory Group (TAG)**
  - Addresses cross-WG issues; does not develop standards
Industry Connections (IC) Activity
- Activity authorized by IEEE-SA ICCom that may complement, supplement, or be a precursor to IEEE Standards projects, but does not develop IEEE Standards

Call for Interest (CFI)
- Meeting used by some WGs to outline a topic and gauge interest in investigating possible project

Study Group (SG)
- Group chartered to investigate the initiation of a potential project and draft a PAR if appropriate

Criteria for Standards Development (CSD)
- An 802-specific document required to accompany a PAR and more fully describe the project
  - Includes Five Criteria (5C)
    - Broad Market Potential, Compatibility, Distinct Identity, Technical Feasibility, Economic Feasibility
# IEEE 802 Organization

## EXECUTIVE COMMITTEE (EC)

### Working Group/TAG Chairs

<table>
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<th>Working Group/TAG Chairs</th>
<th>Appointed Officers</th>
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<tr>
<td>802.1 WG High Level Interface</td>
<td>1st VICE CHAIR James P.K. Gilb</td>
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<td>Glenn Parsons</td>
<td>2nd VICE CHAIR Roger Marks</td>
</tr>
<tr>
<td>802.3 WG Ethernet David Law</td>
<td>EXECUTIVE SEC. Jon Rosdahl</td>
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<td>RECORDING SEC. John D'Ambrosia</td>
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<td>802.15 WG WSN Bob Heile</td>
<td>TREASURER Clint Chaplin</td>
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<td>802.18 TAG Radio Regulatory Jay Holcomb</td>
<td>MEMBER EMERITUS (non-voting) Geoff Thompson</td>
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<tr>
<td>802.21 WG Media Access independent Services Subir Das</td>
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<tr>
<td>802.22 WG WRAN Apurva Mody</td>
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<td>802.24 WG Vertical Applications Tim Godfrey</td>
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### DISBANDED

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<td>802.2 LLC 802.4 Token Bus 802.6 DQDB 802.7 Broadband TAG 802.9 ISLAN 802.10 Security 802.14 CATV 802.17 Resilient Packet Ring 802.20 MBWA 802.23 Emergency Services</td>
<td>802.16 BWA Roger Marks</td>
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Sessions

- Roughly, a “session” lasts a few days; a “meeting” lasts a few hours

- IEEE 802 Plenary session
  - All WGs and TAGs
  - Each March, July, November
    - http://802world.org/plenary/schedule

- Interim sessions
  - Typically held between Plenary sessions, at discretion of WGs
  - Could include entire WG
  - Could include a set of WGs
    - e.g. Wireless Interim each January, May, September
  - Could include a subset of a WG

- Teleconferences, at discretion of WGs

- IEEE 802 Executive Committee (non-members welcome to join)
  - Plenary week:
    - Monday 08:00-10:30
    - Friday 13:00-18:00
  - Teleconferences
    - February, June, October
# Overview of the Plenary week

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<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
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<td><strong>A M</strong></td>
<td><strong>Some TG/TF meetings</strong></td>
<td><strong>Opening EC newcomer orientation</strong></td>
<td><strong>TG/TF meetings</strong></td>
<td><strong>TG/TF meetings</strong></td>
<td><strong>Some WG closing plenaries</strong></td>
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<td><strong>Some organizational meetings</strong></td>
<td><strong>WG opening plenaries (most)</strong></td>
<td><strong>Some WG midweek plenaries</strong></td>
<td><strong>Some WG closing plenaries</strong></td>
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<td><strong>Remaining WG opening plenaries</strong></td>
<td><strong>TG/TF meetings</strong></td>
<td><strong>Closing EC</strong></td>
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<td><strong>Closing EC</strong></td>
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<td><strong>E v e</strong></td>
<td><strong>IEEE 802 rules review</strong></td>
<td><strong>Tutorials</strong></td>
<td><strong>TG/TF meetings</strong></td>
<td><strong>802 Social reception</strong></td>
<td><strong>Some WG closing plenaries</strong></td>
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IEEE 802 Process
Five Basic Principles

IEEE standards follow a well-defined path from concept to completion, guided by a set of five basic principles:

1. **Due process** - Having highly visible procedures for standards creation and following them. Procedures are set by the IEEE-SA Standards Board, the IEEE Societies that sponsor standards, and the working groups that actually formulate standards.

2. **Openness** - ensures all interested can participate in the IEEE standards development process

3. **Consensus** - A clearly defined percentage of those in a balloting group vote to approve a draft of the standard (specified as 75%)

4. **Balance** – ensures that balloting groups include all interested parties and avoids an overwhelming influence by any one party.

5. **Right of appeal** - allows anyone to appeal a standards development decision at any point, before or after a standard has been approved.

Per: [http://standards.ieee.org/develop/govern.html](http://standards.ieee.org/develop/govern.html)
Options:
• Call for Interest (CFI)
• Interest Group (IG)
• Topic Interest Group (TIG)
• Industry Connections Activity (ICA)
• Informal WG discussion

Adequate interest?

WG investigates potential project; drafts PAR and CSD if appropriate
• Work could be assigned to Study Group (approved by EC)
• EC Study Group can be assigned for potential work outside existing WG

PAR & CSD drafted

Review of PAR and CSD by EC and other WGs at 802 Plenary

If EC approves, forward PAR to NesCom

NesCom & Standards Board review of PAR

Standards Board Authorization, with assignment of WG

Working Group starts development of authorized project
Review input contributions
• Process is flexible

Material selected?

Create and refine draft
• Process is flexible

Draft complete?

Working Group Ballot

Review ballot comments
Modify draft as needed

Recirculate changes and Disapprove comments

≥75% approval
No new Disapprove votes
No changes to draft

Changes or new Disapprove votes
IEEE 802 Standards Development Life Cycle – Part 3

1. WG requests EC approval to forward to Sponsor ballot
   - PAR & CSD Considered

2. Request EC approval to forward to RevCom

3. RevCom approval recommendation

4. SASB approval of submitted draft

5. Prepare for publication

6. EC approval?
   - Changes or new Disapprove votes

7. ≥75% approval
   - No new Disapprove votes
   - No changes to draft

8. Published standard
The current Standard is the original base standard or most recent revision, as modified by subsequent corrigenda (corrections) and amendments.

Example base standards: 801.Q, 802.1AE, 802.3, 802.15.4
Example amendments: 801.Qbu, 802.1AEcg, 802.3bz, 802.15.4t
- Amendment identified by lower-case initials appended to base
- Project identifier is the prospective standard identifier, prepended with “P”

Maintaining the Standard
- Keep the standard current by producing amendments and corrigenda
- Renew the standard by creating revisions
  - incorporating prior amendments and corrigenda
- When the standard is out of date, withdraw it.
Three levels of review/voting occur in IEEE 802 standards development
- The intention is to improve the draft

- Task Group or Task Group review or ballot
  - Requirements vary; may be informal – consult Working Group.

- Working Group Ballot ("WG Letter Ballot")
  - Formal requirements set by LMSC
  - 75% approval threshold
  - comment response and recirculation requirements
  - WG Members have a responsibility to participate

- Sponsor Ballot
  - Formal requirements set by IEEE-SA
  - 75% approval threshold
  - comment response and recirculation requirements
  - Open (no cost) to all interested parties, via IEEE SA-membership
    - IEEE-SA balloting tool is entitled “myBallot”
    - To be in the ballot pool and receive an invitation, must indicate interest
    - To participate in ballot group, must respond to invitation in advance
  - 60-day public review runs concurrently
IEEE 802 Participation
Individual Method

IEEE-SA supports two types of standardization development

- Individual: participants are human beings
- Entity: participants are organizations, such as companies

**IEEE 802 is entirely Individual-based**

- human beings participate as members and in other roles
- companies and other organizations do not participate directly
IEEE 802 Participation Slide

- Will be reviewed during IEEE-SA standards development meetings.
- Explains that participation in any IEEE 802 meeting is on an individual basis.
- Familiarize yourself with next slide, available at:
  - https://mentor.ieee.org/802-ec/dcn/17/ec-17-0093.ppt
Participation in any IEEE 802 meeting (Sponsor, Sponsor subgroup, Working Group, Working Group subgroup, etc.) is on an individual basis

- Participants in the IEEE standards development individual process shall act based on their qualifications and experience. ([https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf](https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf) section 5.2.1)

- IEEE 802 Working Group membership is by individual; “Working Group members shall participate in the consensus process in a manner consistent with their professional expert opinion as individuals, and not as organizational representatives”. ([subclause 4.2.1 “Establishment”, of the IEEE 802 LMSC Working Group Policies and Procedures](http://www.ieee802.org/devdocs.shtml))

- Participants have an obligation to act and vote as an individual and not under the direction of any other individual or group. A Participant’s obligation to act and vote as an individual applies in all cases, regardless of any external commitments, agreements, contracts, or orders.

- Participants shall not direct the actions or votes of any other member of an IEEE 802 Working Group or retaliate against any other member for their actions or votes within IEEE 802 Working Group meetings, see [https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf](https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf) section 5.2.1.3 and the IEEE 802 LMSC Working Group Policies and Procedures, subclause 3.4.1 “Chair”, list item x.

By participating in IEEE 802 meetings, you accept these requirements. If you do not agree to these policies then you shall not participate.

Disclosure of affiliation is required

- An affiliation, as defined in the IEEE-SA Standards Board Bylaws, 5.2.1.5, is an individual deemed "affiliated" with an individual or entity that has been, or will be, financially or materially supporting that individual's participation in a particular IEEE standards activity. This includes, but is not limited to, his or her employer and any individual or entity that has or will have, either directly or indirectly, requested, paid for, or otherwise sponsored his or her participation.
- Disclosed as part of attendance process (inc. IMAT attendance tool)
- Typically stated on written contributions, noted in meetings, and declared for office holders

See IEEE-SA FAQs: Disclosures of Affiliation (https://standards.ieee.org/faqs/affiliation.html)
Acquiring WG membership

- WG members rights are itemized in IEEE 802 LMSC Working Group Policies and Procedures
  - includes right to vote
- “Participation” at a WG session means at least 75% presence.
  - Web-based “IMAT” tool tracks attendance per meeting to calculate participation in a session.
    - Attendance in a meeting of one WG does not generally count toward participation in another WG, though it can in special cases.
- For a new Working Group, persons participating in the initial session become members.
- For an existing Working Group, membership starts when attending a Plenary Session having participated in 2 of the last 4 Plenary Sessions
  - Can substitute 1 intervening Interim Session for a Plenary Session.
  - Depending on Working Group, may require a declaration of intent.
  - Details in IEEE 802 LMSC Working Group Policies and Procedures.
Retaining WG Membership

- Participate in 2 of the last 4 Plenary Sessions.
  - An interim may substitute for 1 of the 2.

- Participate in Working Group Letter Ballots
  - Membership may be lost if two of the last three Working Group letter ballots are not returned, or are returned with an abstention for other than “lack of technical expertise”

- Details in IEEE 802 LMSC Working Group Policies and Procedures
Behavioral guidelines

- Respect others
- NO product pitches
- NO corporate pitches
- NO prices
- Silence electronics
- NO restrictive notices
  - on presentations and communications (including email); material must be openly available and distributable
- NO photographs or recordings: strict prohibition
  - IEEE-SA Standards Board Operations Manual: “Restrictions include, but are not limited to, the usage of audio recording, video recording, and photography by participants or observers. Recording of the proceedings ..., in part or in whole, via any means, is prohibited.” [limited exceptions for recording of minutes]
IEEE-SA Patent Policy

- Will not be reviewed in this newcomer presentation.
- Will be reviewed during IEEE-SA standards development meetings.
- Familiarize yourself with the policy:
  - https://standards.ieee.org/about/sasb/patcom/materials.html
- Review particularly:
  - Patent Slides for Standards Development Meetings
    - includes Call for Potentially Essential Patents
  - Patent Slides for Pre-PAR Meetings
- Slides include coverage of some non-patent guidelines, including antitrust and competition issues.
**Document Resources**

- "Mentor" document server
  - Main repository for input contributions and group documents for EC and most WGs and TAGs
  - Registration and acknowledgement required to upload
    - [https://mentor.ieee.org/802/bp/StartPage](https://mentor.ieee.org/802/bp/StartPage)

- Published IEEE 802 standards
  - Download at no cost, starting 6 months past publication
    - [https://ieeexplore.ieee.org/browse/standards/get-program/page/series?id=68](https://ieeexplore.ieee.org/browse/standards/get-program/page/series?id=68)

- IEEE 802 draft standards
  - These are copyrighted by IEEE and not publicly available for free
    - Shared to the WG members and participants at no cost
    - Consult WG for details
    - May be available for sale to the public
IEEE 802 Procedural Documents

- “IEEE 802 Policies & Procedures and other documents related to standards development”
- [http://ieee802.org/devdocs.shtml](http://ieee802.org/devdocs.shtml)
- Key documents:
  - IEEE 802 Policies & Procedures
  - IEEE 802 Operations Manual
  - IEEE 802 Working Group Policies and Procedures
  - IEEE 802 LMSC Chair's Guidelines
Getting more information

- IEEE 802 home page: key starting point
  - http://ieee802.org

- Contact EC members for more information or help
  - In particular, IEEE 802 Second Vice Chair is responsible to lead mentoring and training
    - Roger Marks <roger@ethair.net>
Email Reflectors

- Email lists, known in IEEE 802 as “reflectors,” are essentially venues for EC and Working Groups
- Many lists are open to subscription; others require WG membership or other WG status
- In most cases, archives are available
- See WG web pages
- IEEE 802 EC Reflector
  - See http://ieee802.org
- IEEE 802 ALL (mainly Plenary Session planning announcements)
  - See https://listserv.ieee.org/cgi-bin/wa?SUBED1=STDS-802-ALL
- Other advertised reflectors (search for 802)
  - See https://listserv.ieee.org/cgi-bin/wa?REPORT&z=3&s=0&9=0
More Resources

- IEEE 802 orientation, including these slides
  - [http://ieee802.org/orientation.shtml](http://ieee802.org/orientation.shtml)

- Session plans, including WG interims
  - [http://ieee802.org/meeting](http://ieee802.org/meeting)

- Tutorials

- EC Members
  - [http://ieee802.org/wgchairs.shtml](http://ieee802.org/wgchairs.shtml)

- “IMAT” meeting attendance logging tool
  - [https://imat.ieee.org/attendance](https://imat.ieee.org/attendance)

- IEEE-SA Sponsor Balloting