



Agenda and General Information

IEEE 802.3

P802.3cz Multi-Gigabit Optical Automotive Ethernet
Task Force

Robert M. (Bob) Grow
RMG Consulting / KDPOF
Virtual Plenary, 14 July 2020

Agenda

- Welcome
- Confirm Recording Secretary – Luis Manuel Torres Cantón
- Approve Agenda
- Approve 9 June interim TF teleconference minutes (consent agenda)
- Reflector and Web
- Ground Rules
- IEEE
 - Structure, Bylaws and Rules
 - Call for Patents
 - IEEE Standards Process
- Presentations
- Motions and closing business
- Future meetings

Teleconference Decorum



- An officer is permitted to make an audio or slideshow recording of this meeting exclusively for the purpose of generating minutes which shall not be copied or distributed. **IEEE 802.3 meetings do not use this option.** Recording of the proceedings by any other participant or observer, in part or in whole, via any means, is prohibited. (January 2020 IEEE-SA Standards Board Ops Manual 5.3.3.2)
- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (January 2020 IEEE-SA Standards Board Ops Manual 5.3.3.3)
- Please mute when not speaking to the group
- Please observe proper decorum in meetings

Reflector and Web

- To subscribe to the Multi-Gigabit Optical Automotive Ethernet (OMEGA) reflector, send an email to:

ListServ@ieee.org

with the following in the body of the message (do not include “<>”):

subscribe stds-802-3-OMEGA <yourfirstname> <yourlastname>
end

- Send Multi-Gigabit Optical Automotive Ethernet (OMEGA) reflector messages to:

stds-802-3-omega@listserv.ieee.org

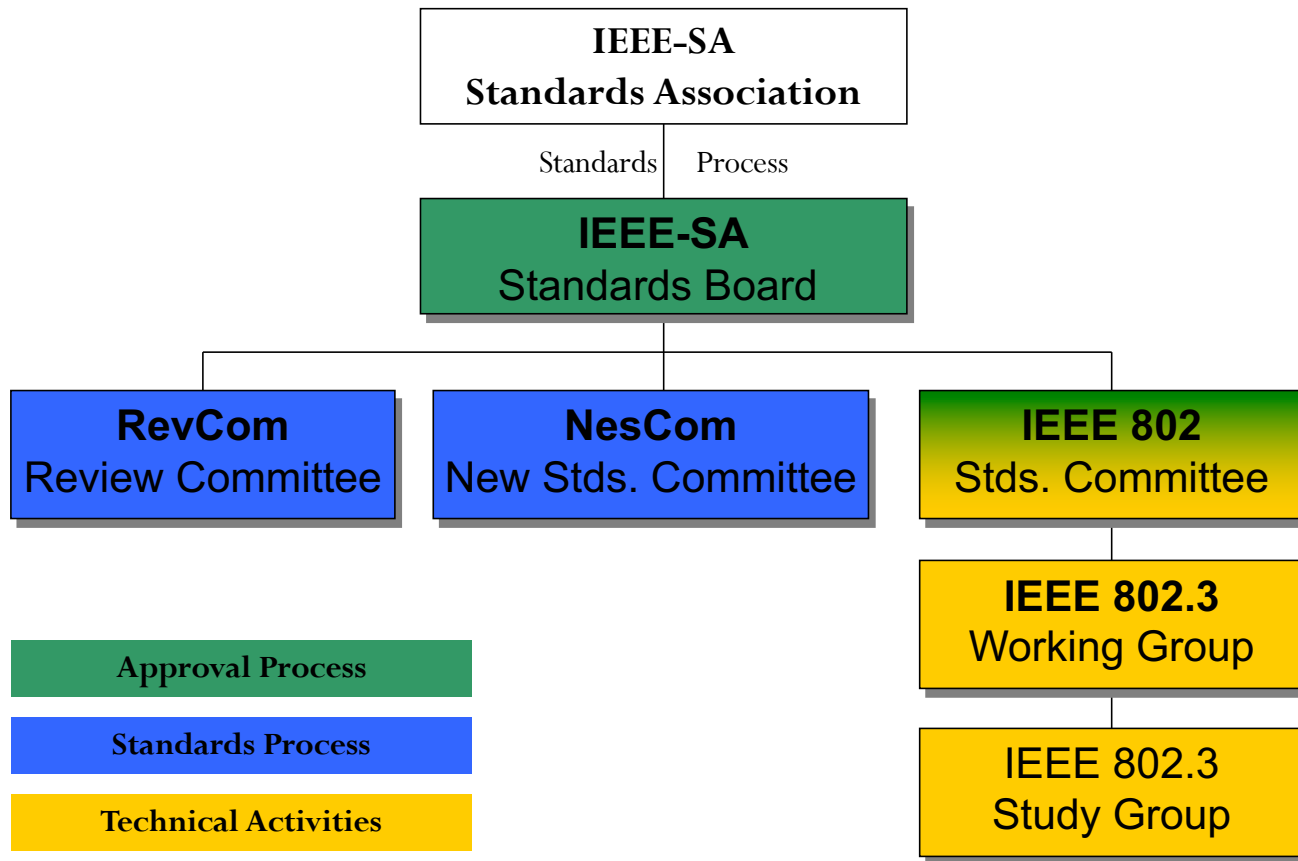
- Task Force web page URL (yet to be set up):

<http://www.ieee802.org/3/cz/index.html>

Ground Rules

- Based upon IEEE 802.3 Rules
 - Foundation based upon Robert's Rules of Order
 - Anyone in the room may speak
 - Anyone in the room may vote
- **RESPECT**... give it, get it
- NO product pitches
- NO corporate pitches
- NO prices!!!
 - This includes costs, ASPs, etc. no matter what the currency
- NO restrictive notices

IEEE Structure



Important Bylaws and Rules

- **IEEE-SA Operations Manual**
http://standards.ieee.org/develop/policies/sa_opman/
- **IEEE-SA Standards Board Bylaws**
<http://standards.ieee.org/develop/policies/bylaws/>
- **IEEE-SA Standards Board Operations Manual**
<http://standards.ieee.org/develop/policies/opman/>
- **IEEE 802 LAN/MAN Standards Committee (LMSC) Policies and Procedures**
<https://ieee.app.box.com/v/PandP-LMSC>
- **IEEE 802 LAN/MAN Standards Committee (LMSC) Operations Manual**
<http://www.ieee802.org/devdocs.shtml>
- **IEEE 802 LAN/MAN Standards Committee (LMSC) Working Group (WG) Policies and Procedures**
<http://www.ieee802.org/devdocs.shtml>
- **IEEE 802.3 Working Group Operating Rules**
http://ieee802.org/3/rules/P802_3_rules.pdf

Instructions for the WG Chair

The IEEE-SA strongly recommends that at each WG meeting the chair or a designee:

- **Show slides #1 through #4 of this presentation**
- **Advise the WG attendees that:**
 - IEEE's patent policy is described in Clause 6 of the *IEEE-SA Standards Board Bylaws*;
 - Early identification of patent claims which may be essential for the use of standards under development is strongly encouraged;
 - There may be Essential Patent Claims of which IEEE is not aware. Additionally, neither IEEE, the WG, nor the WG Chair can ensure the accuracy or completeness of any assurance or whether any such assurance is, in fact, of a Patent Claim that is essential for the use of the standard under development.
- **Instruct the WG Secretary to record in the minutes of the relevant WG meeting:**
 - That the foregoing information was provided and that slides 1 through 4 (and this slide 0, if applicable) were shown;
 - That the chair or designee provided an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) of which the participant is personally aware and that may be essential for the use of that standard
 - Any responses that were given, specifically the patent claim(s)/patent application claim(s) and/or the holder of the patent claim(s)/patent application claim(s) that were identified (if any) and by whom.
- The WG Chair shall ensure that a request is made to any identified holders of potential essential patent claim(s) to complete and submit a Letter of Assurance.
- It is recommended that the WG Chair review the guidance in *IEEE-SA Standards Board Operations Manual* 6.3.5 and in FAQs 14 and 15 on inclusion of potential Essential Patent Claims by incorporation or by reference.

Note: **WG** includes Working Groups, Task Groups, and other standards-developing committees with a PAR approved by the IEEE-SA Standards Board.

(Optional to be shown)

02 January 2018



Participants have a duty to inform the IEEE

- Participants **shall** inform the IEEE (or cause the IEEE to be informed) of the identity of each holder of any potential Essential Patent Claims of which they are personally aware if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
- Participants **should** inform the IEEE (or cause the IEEE to be informed) of the identity of any other holders of potential Essential Patent Claims

**Early identification of holders of potential
Essential Patent Claims is encouraged**

Ways to inform IEEE

- Cause an LOA to be submitted to the IEEE-SA (patcom@ieee.org); or
- Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible; or

- **Speak up now and respond to this Call for Potentially Essential Patents**
If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance, please respond at this time by providing relevant information to the WG Chair

Other guidelines for IEEE WG meetings

- **All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.**
 - **Don't discuss the interpretation, validity, or essentiality of patents/patent claims.**
 - **Don't discuss specific license rates, terms, or conditions.**
 - Relative costs of different technical approaches that include relative costs of patent licensing terms may be discussed in standards development meetings.
 - **Technical considerations remain the primary focus**
 - **Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.**
 - **Don't discuss the status or substance of ongoing or threatened litigation.**
 - **Don't be silent if inappropriate topics are discussed ... do formally object.**

For more details, see *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and *Antitrust and Competition Policy: What You Need to Know* at <http://standards.ieee.org/develop/policies/antitrust.pdf>

INSTRUCTIONS FOR CHAIRS OF STANDARDS DEVELOPMENT ACTIVITIES

At the beginning of each standards development meeting the chair or a designee is to:

- Show the following slides (or provide them beforehand)
- Advise the standards development group participants that:
- IEEE SA's copyright policy is described in Clause 7 of the IEEE SA Standards Board Bylaws and Clause 6.1 of the IEEE SA Standards Board Operations Manual;
- Any material submitted during standards development, whether verbal, recorded, or in written form, is a Contribution and shall comply with the IEEE SA Copyright Policy;
- Instruct the Secretary to record in the minutes of the relevant meeting:
- That the foregoing information was provided and that the copyright slides were shown (or provided beforehand).

IEEE SA COPYRIGHT POLICY

By participating in this activity, you agree to comply with the IEEE Code of Ethics, all applicable laws, and all IEEE policies and procedures including, but not limited to, the IEEE SA Copyright Policy.

- Previously Published material (copyright assertion indicated) shall not be presented/submitted to the Working Group nor incorporated into a Working Group draft unless permission is granted.
- Prior to presentation or submission, you shall notify the Working Group Chair of previously Published material and should assist the Chair in obtaining copyright permission acceptable to IEEE SA.
- For material that is not previously Published, IEEE is automatically granted a license to use any material that is presented or submitted.

IEEE SA COPYRIGHT POLICY

- The IEEE SA Copyright Policy is described in the IEEE SA Standards Board Bylaws and IEEE SA Standards Board Operations Manual
 - IEEE SA Copyright Policy, see
 - Clause 7 of the IEEE SA Standards Board Bylaws
<https://standards.ieee.org/about/policies/bylaws/sect6-7.html#7>
 - Clause 6.1 of the IEEE SA Standards Board Operations Manual
<https://standards.ieee.org/about/policies/opman/sect6.html>
- IEEE SA Copyright Permission
 - <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/permissionltrs.zip>
- IEEE SA Copyright FAQs
 - <http://standards.ieee.org/faqs/copyrights.html/>
- IEEE SA Best Practices for IEEE Standards Development
 - http://standards.ieee.org/develop/policies/best_practices_for_ieee_standards_development_051215.pdf
- Distribution of Draft Standards (see 6.1.3 of the SASB Operations Manual)
 - <https://standards.ieee.org/about/policies/opman/sect6.html>

Participant behavior in IEEE-SA activities is guided by the IEEE Codes of Ethics & Conduct

- All participants in IEEE-SA activities are expected to adhere to the core principles underlying the:
 - [IEEE Code of Ethics](#)
 - [IEEE Code of Conduct](#)
- The core principles of the IEEE Codes of Ethics & Conduct are to:
 - *Uphold the highest standards of integrity, responsible behavior, and ethical and professional conduct*
 - *Treat people fairly and with respect, to not engage in harassment, discrimination, or retaliation, and to protect people's privacy.*
 - *Avoid injuring others, their property, reputation, or employment by false or malicious action*
- The most recent versions of these Codes are available at <http://www.ieee.org/about/corporate/governance>

Participants in the IEEE-SA “*individual process*” shall act independently of others, including employers

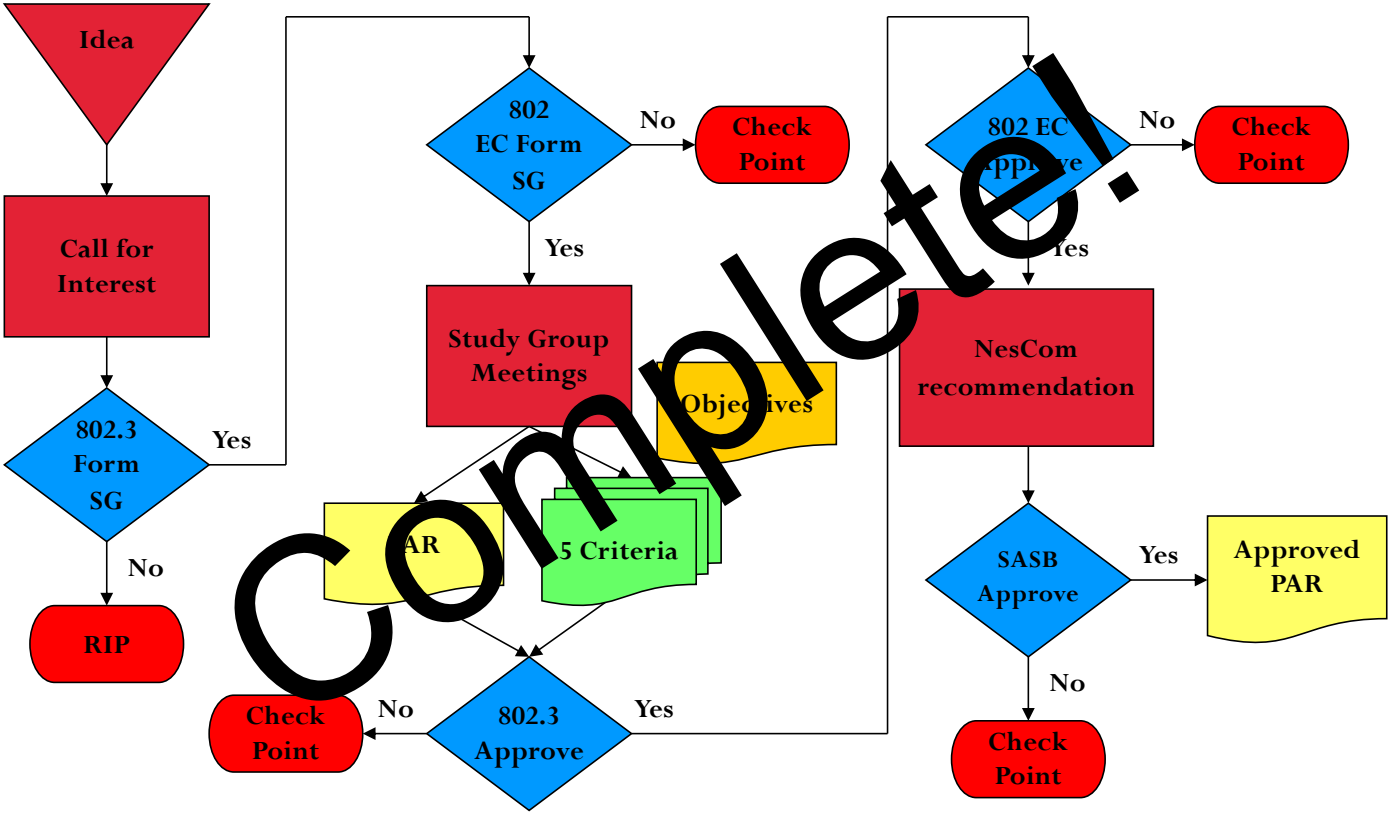
- The [IEEE-SA Standards Board Bylaws](#) require that “*participants in the IEEE standards development individual process shall act based on their qualifications and experience*”
- This means participants:
 - **Shall act & vote** based on their personal & independent opinions derived from their expertise, knowledge, and qualifications
 - **Shall not act or vote** based on any obligation to or any direction from any other person or organization, including an employer or client, regardless of any external commitments, agreements, contracts, or orders
 - **Shall not direct** the actions or votes of other participants or retaliate against other participants for fulfilling their responsibility to act & vote based on their personal & independently developed opinions
- By participating in standards activities using the “*individual process*”, you are deemed to accept these requirements; if you are unable to satisfy these requirements then you shall immediately cease any participation

Approved by SASB in June 2019

IEEE-SA standards activities shall allow the fair & equitable consideration of all viewpoints

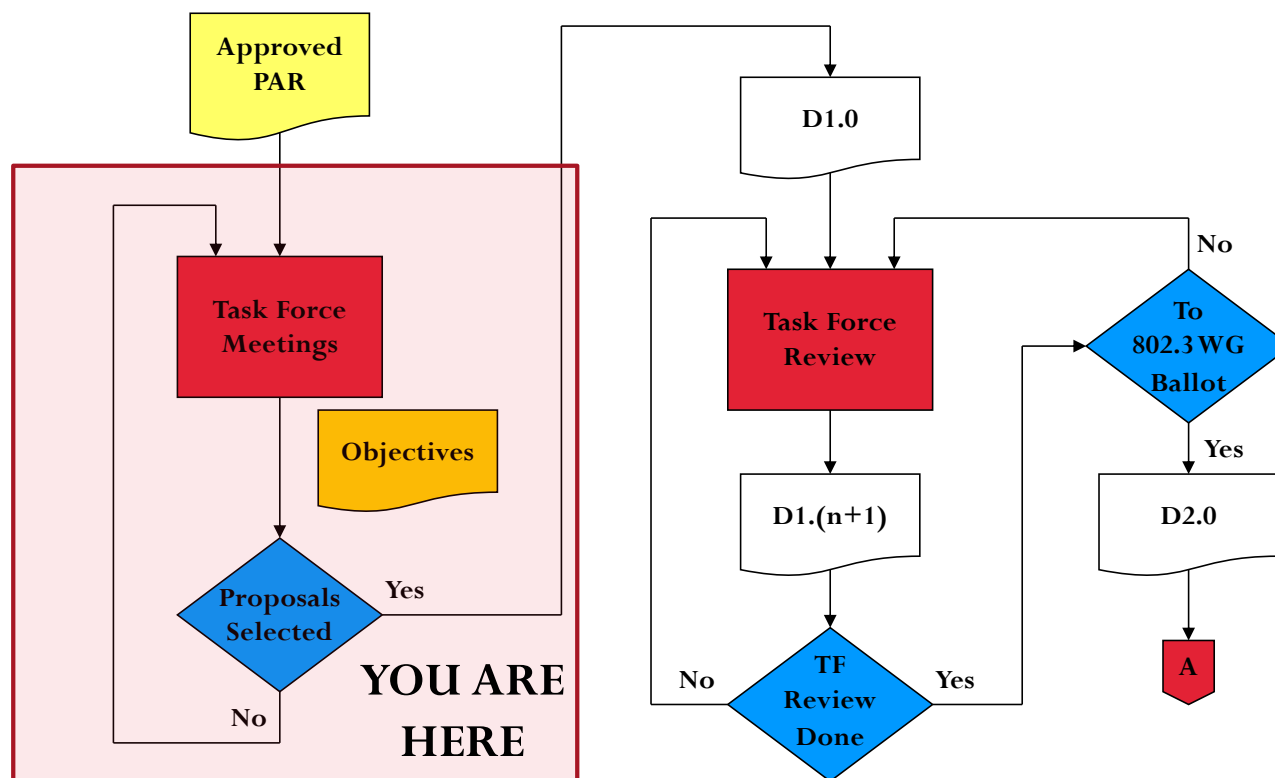
- The [IEEE-SA Standards Board Bylaws](#) (clause 5.2.1.3) specifies that “*the standards development process shall not be dominated by any single interest category, individual, or organization*”
 - This means no participant may exercise “*authority, leadership, or influence by reason of superior leverage, strength, or representation to the exclusion of fair and equitable consideration of other viewpoints*” or “*to hinder the progress of the standards development activity*”
- This rule applies equally to those participating in a standards development project and to that project’s leadership group
- Any person who reasonably suspects that dominance is occurring in a standards development project is encouraged to bring the issue to the attention of the Standards Committee or the project’s IEEE-SA Program Manager

Overview of IEEE 802.3 Standards Process (1/5)- Study Group Phase

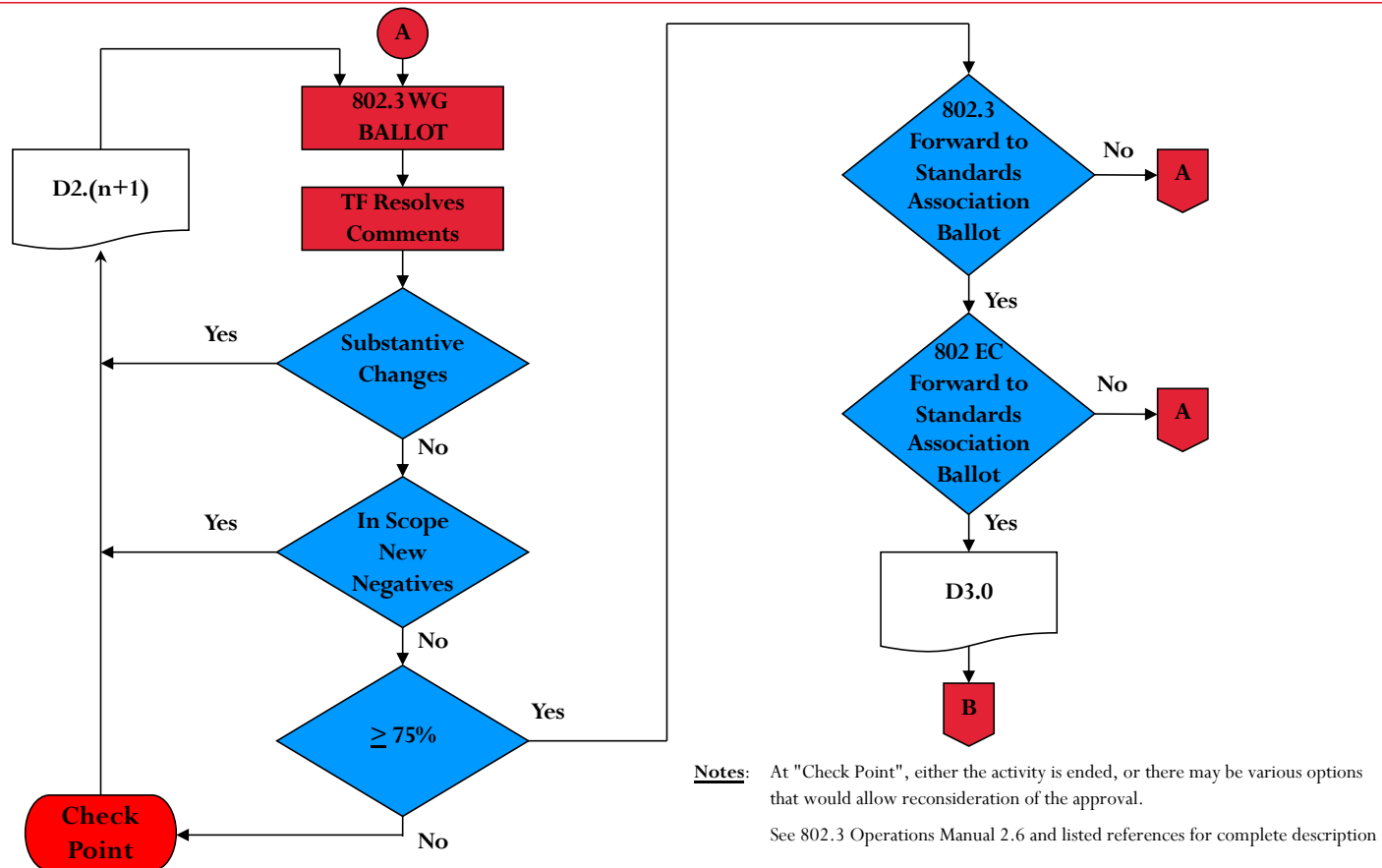


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

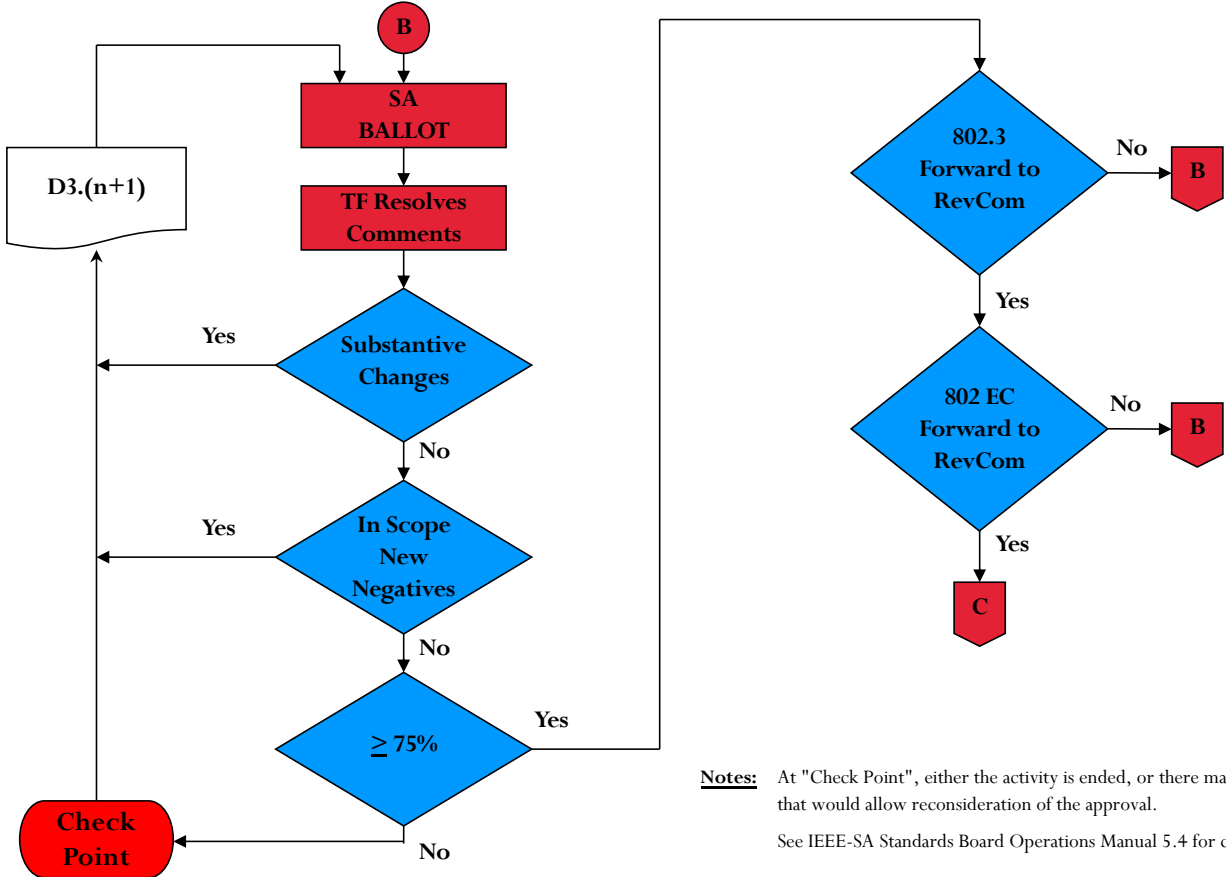
Overview of IEEE 802.3 Standards Process (2/5) – Task Force Comment Phase



Overview of IEEE 802.3 Standards Process (3/5) – Working Group Ballot Phase

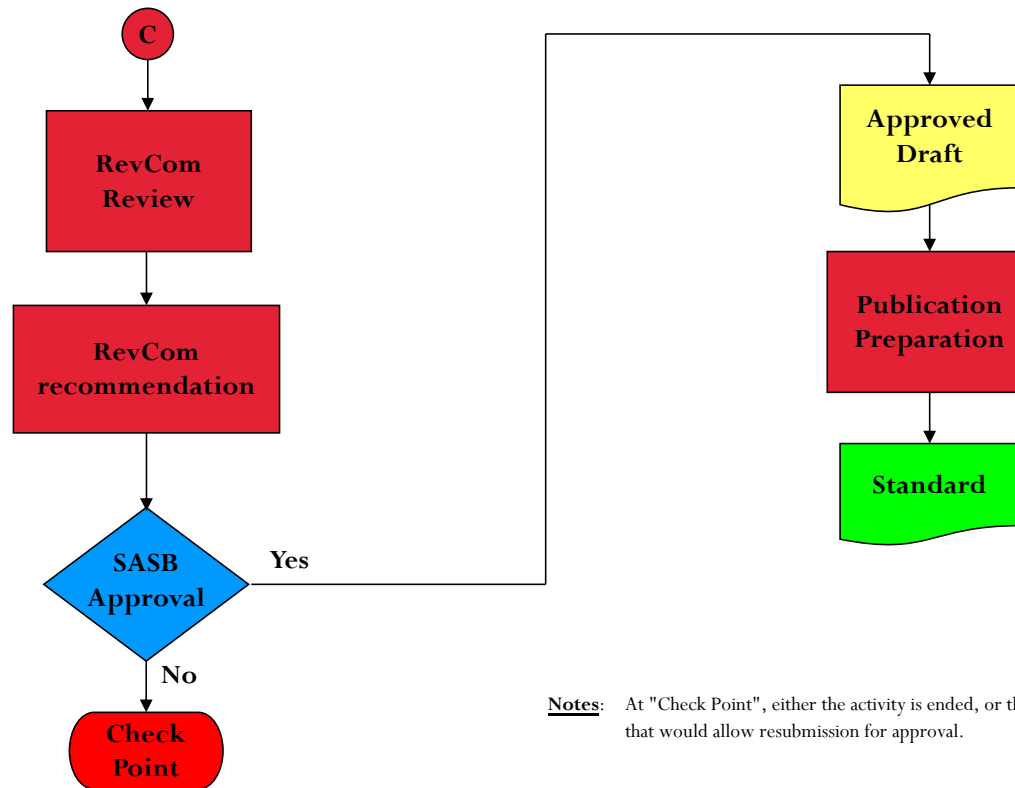


Overview of IEEE 802.3 Standards Process (4/5)- IEEE Standards Association (SA) Ballot Phase



Notes: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.
See IEEE-SA Standards Board Operations Manual 5.4 for complete description

Overview of IEEE 802.3 Standards Process (5/5) – Final Approvals / Standard Release



Notes: At "Check Point", either the activity is ended, or there may be various options that would allow resubmission for approval.

Why OMEGA?

Multi-Gigabit Optical Automotive Ethernet

OMEGA

A diagram consisting of five red arrows pointing downwards from the words 'Multi-Gigabit Optical Automotive Ethernet' to the word 'OMEGA'. The arrows originate from the 'M', 'O', 'O', 'A', and 'E' of the top phrase and converge on the 'O', 'M', 'E', 'G', and 'A' of the bottom phrase.

Liaisons and Communications

- None

Action Items

- None

IEEE P802.3cz Multi-Gigabit Optical Automotive Ethernet Approved Project Documents

- PAR
 - http://www.ieee802.org/3/cz/P802d3cz_PAR.pdf
- CSD (5 Criteria)
 - <https://mentor.ieee.org/802-ec/dcn/20/ec-20-0095-00-ACSD-p802-3cz.pdf>
- Objectives
 - http://www.ieee802.org/3/cz/P802d3cz_objectives_01_0520.pdf
 -

Approved Objectives (1 of 3)

1. Preserve the IEEE 802.3/Ethernet frame format at the MAC client service interface
2. Preserve minimum and maximum frame size of the current IEEE 802.3 standard
3. Support full duplex operation only
4. Define optional startup procedure which enables the time from power_on=FALSE to a state capable of transmitting and receiving valid data to be less than 100ms
5. Support data rates of 2.5 Gb/s, 5 Gb/s, 10 Gb/s, 25 Gb/s, and 50 Gb/s at the MAC/ PLS service interface
6. Support optional Energy Efficient Ethernet optimized for automotive applications
7. Support operation in automotive environments (e.g., EMC, temperature)
8. Do not preclude meeting FCC and CISPR EMC requirements

Draft Objectives (2 of 3)

9. Define the performance characteristics of an automotive link segment and an optical PHY to support 2.5 Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least 40 m on at least one type of automotive optical cabling
10. Define the performance characteristics of an automotive link segment and an optical PHY to support 5 Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least 40 m on at least one type of automotive optical cabling
11. Define the performance characteristics of an automotive link segment and an optical PHY to support 10 Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least 40 m on at least one type of automotive optical cabling
12. Define the performance characteristics of an automotive link segment and an optical PHY to support 25 Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors for at least 40 m on at least one type of automotive optical cabling
13. Define the performance characteristics of an automotive link segment and an optical PHY to support 50 Gb/s point-to-point operation over this link segment supporting up to 2 inline connectors for at least 15 m on at least one type of automotive optical cabling

Draft Objectives (3 of 3)

14. Support a Bit Error Ratio better than or equal to 10^{-12} at the MAC/PLS service interface (or the frame loss ratio equivalent)

Creating a draft

- Compile editorial team – We now have a volunteer for TF Chief Editor, Luis Manuel Torres Cantón
 - There are opportunities for others willing to help as editors
- Task Force adopts baseline proposals ($\geq 75\%$ consensus)
- Editor incorporates adopted baselines into the draft
 - Start with existing clause as the template for a new clause where appropriate
 - Incorporate baseline as changes to an existing clause where appropriate
- Begin TF review of the draft
- Adopt additional baselines and add text to the draft until technically complete

Personal observations on our objectives

- We have objectives for five data rates (more than any other 802.3 project)
 - We have the option to define multiple PCS/PMD/media options for any of the data rates (aMAUtype in clause 30)
 - Each set of specifications has to meet CSD requirements
- Each MAUtype will need the specifications for:
 - Reference or define an xMII for the rate which is usually paired with ...
 - Reference or select a Physical Coding Sublayer (PCS)
 - Reference or select Physical Medium Dependent (PMD) specifications, including PMA plus cable and connector requirements
- It will be good if we can use common sublayer specifications for multiple data rates

Personal observations (2)

- It is unlikely the TF will adopt a proposal unless it is clear how it can satisfy an objective(s)
 - For example, adopting a fiber type is unlikely unless TF members are confident there is at least one PCS, PMA and PMD when combined with the fiber type will work to satisfy at least one data rate objective
- It is much more likely the TF will adopt a set of proposals that satisfy at least one data rate objective and all other non-data rate objectives

Choosing technical solutions

- A proven approach is to adopt baseline proposals (a presentation or set of presentations) that satisfy one or more objective(s), or specifies a sublayer for multiple objectives
 - The original Ethernet standard started with a baseline
 - A joint proposal from participants employed by Digital Equipment Corporation, Intel Corporation and Xerox Corporation
 - Commonly known as “DIX Ethernet” or “Blue Book Ethernet”
 - Subsequent data rate increases similarly proposed blue book sets of proposals.
 - Now we adopt a set of base line proposals.

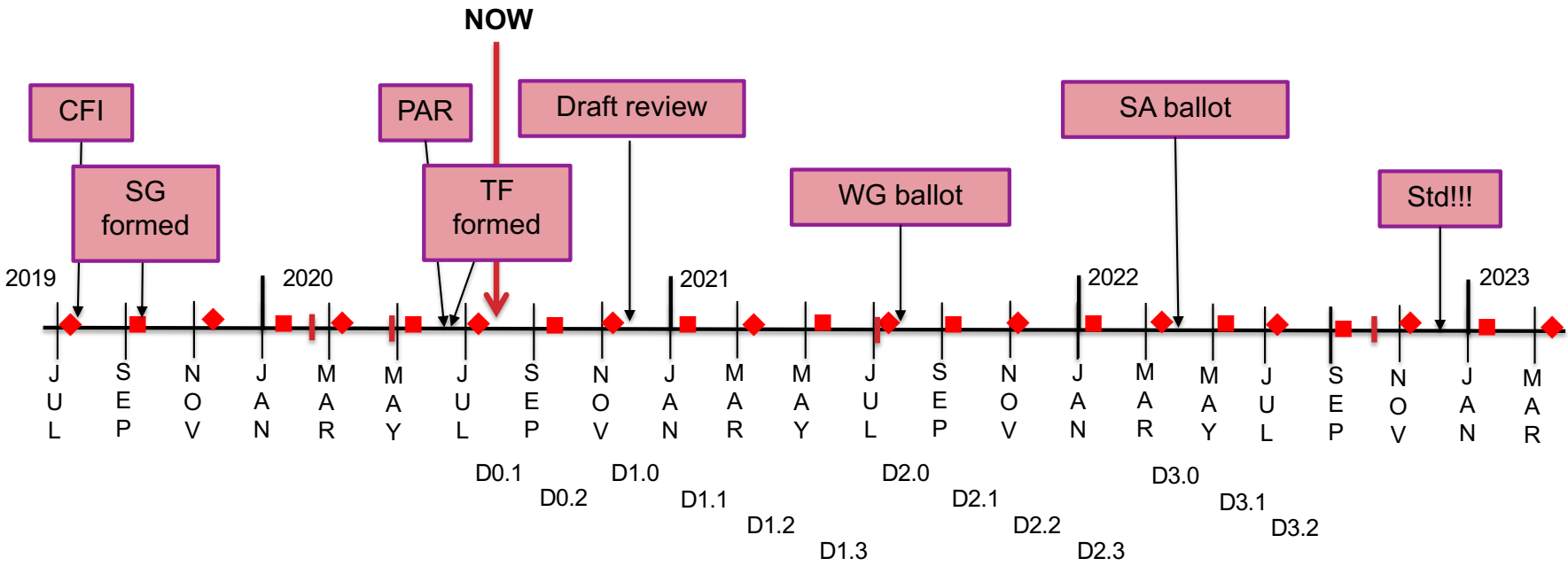
Choosing technical solutions (2)

- A baseline proposal must:
 - Address one or more objectives
 - Have enough detail to allow an editor to write draft text without having to infer technical material
 - Minimal TBDs (to be determined) items in proposal
- It is okay to have competing baseline proposals
- A complete set of baseline proposals will satisfy all of our objectives

Why does 802.3 have timelines for projects?

- It is good management practice
 - Motivation to keep a schedule
 - Helps evaluate progress
- It helps other projects and WG leadership plan
 - Amendment order
 - When we can fit in a revision project
- We want to have a realistic timeline

Possible IEEE P802.3cz Multi-Gigabit Optical Automotive Ethernet Timeline



Presentations

Title	Presenter(s)/Author(s)	Affiliation(s)
Agenda and General Information	Robert Grow	RMG Consulting / KDPOF
Test methods for VCSEL characterization	Rubén Pérez-Aranda	KDPOF
Characterization report of Vendor A VCSELS	Rubén Pérez-Aranda	KDPOF
Characterization report of Vendor B VCSELS	Rubén Pérez-Aranda	KDPOF
Characterization report of Vendor C VCSELS	Rubén Pérez-Aranda	KDPOF
Characterization report of Vendor D VCSELS	Rubén Pérez-Aranda	KDPOF

Motions

- TBD

Future meetings

- Every second week TF teleconferences between plenaries*
- 21-25 Sep. 2020 – 802.3 interim meetings, Kansas City, MO, USA
- 9-12 Nov. 2020 – 802 plenary session, Bangkok, Thailand
- 18-22 Jan. 2021 – 802.3 interim meetings, TBD
- 15-18 Mar. 2021 – 802 plenary session, Denver, CO, USA

*802.3 and subgroup teleconference information can be found at:
<http://www.ieee802.org/3/calendar.html>



Thank You!