

# **Agenda and General Information**

## **IEEE 802.3 Beyond 400 Gb/s Ethernet Study Group Electronic March 2021 Session**

**John D'Ambrosia,  
Chair, IEEE 802.3 Beyond 400 Gb/s Ethernet Study Group  
Futurewei, U.S. Subsidiary of Huawei  
01 Mar 2021 Electronic Meeting**

# IEEE 802.3 Beyond 400 Gb/s Ethernet Study Group Electronic March 2021 Session

- Please sign into IMAT to record of Interim Teleconference Meeting attendance
- Draft Agenda
  - Approve Agenda
  - Approval Minutes – Feb Session 2021
    - [https://www.ieee802.org/3/B400G/public/21\\_02/minutes\\_b400g\\_a\\_2102\\_unapproved.pdf](https://www.ieee802.org/3/B400G/public/21_02/minutes_b400g_a_2102_unapproved.pdf)
  - Review IEEE SA Policies (<http://ieee802.org/3/policies.html> / included)
    - IEEE SA Pre-PAR Patent Policy
    - IEEE SA Participation Policy
    - IEEE SA Copyright Policy
  - Goals for this Session
  - Future Meetings
  - 3/1/21 Presentations (detailed next page)
  - Break
  - 3/15/21 Presentations (detailed next page)
  - Break
  - 3/22/21 Presentations (detailed next page)
  - Break
  - 3/29/21 Presentations (detailed next page)
  - Future Meetings Update

\* Note – additional slides covering procedures and IEEE-SA Policies are in Backup

# Mar 2021 Session Presentations

## ■ 3/1/21 Presentations

- **Impact of Going Beyond 400G, Brad Booth**
- **Requirement for Beyond 400 GbE, Haojie Wang**
- **Beyond 400G – End User Considerations, Rob Stone**
- **Defining the "Beyond 400 Gb/s Ethernet" Project, John D'Ambrosia**
- **Discussion / Straw polls (Time permitting)**

## ■ 3/15/21 Presentations

- **BER objective for Beyond 400GbE, Xinyuan Wang**
- **Considerations on 100m objectives for B400G, Peter Stassar**
- **Proposed Objectives for Parallel PMDs, Robert Lingle**
- **OTN support for Beyond 400 Gb/s Ethernet, Steve Trowbridge**
- **Discussion / Straw polls (Time permitting)**

## ■ 3/22/21 Presentations

- **Appropriate 5 Criteria, Chris Cole**
- **800GbE Optics Options, Scott Schube**
- **PMA lane versus PCS frame FEC and the resulting impact on guaranteeing performance at transceiver module / host PCB interface, Jim Theodoras**
- **Evolutionary path to B400G PMDs, Ali Ghiasi**
- **224G PAM Signaling, Louis (Yuchun) Lu**
- **Discussion / Straw polls (Time permitting)**

## ■ 3/29/21 Presentations

- **On the Technical Feasibility of 200G/Lane Chip-to-Module, Ilya Lyubomirsky**
- **200G per Lane for beyond 400GbE, Cedric Lam**
- **Optical PMD Considerations for 200G Lanes, Vipul Bhatt**
- **Feasibility of 200 Gb/s per lane electrical interfaces, Adam Healey**
- **Discussion / Straw polls (Time permitting)**

# Meeting 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. (Jan 2019 IEEE-SA Standards Board Ops Manual 5.3.3.2)**
- **Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (Jan 2019 IEEE-SA Standards Board Ops Manual 5.3.3.3)**
- **Cell phone ringers off**
- **Please observe proper decorum in meetings**
- **Please mute your self when not speaking**

# Goals For This Session

- **Consider Objectives**
- **Consider input to CSD responses**
  - **Broad Market Potential**
  - **Technical Feasibility**
  - **Economic Feasibility**
  - **Distinct Identity**
  - **Compatibility**
- **Consider project documentation**

# Future Meetings

## ■ April 2021 Session

- Meeting #1 – Apr 1, 2021 – 10am to 1pm ET
- Meeting #2 - Apr 5, 2021 – 10am to 1pm ET
- Agenda of meeting will be straw polls / motions, based on March 21 Session

## ■ May 2021 Session

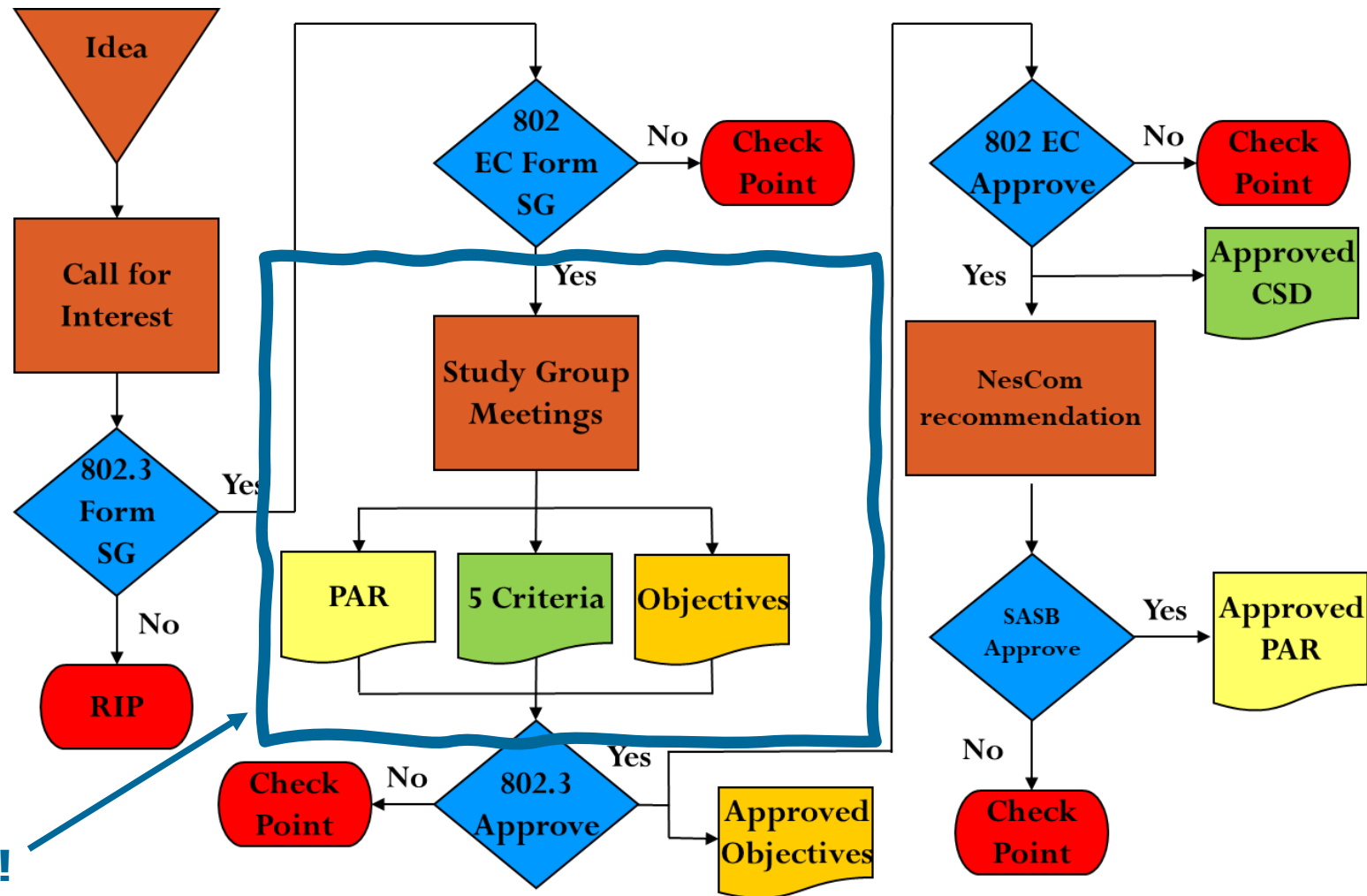
- To be planned based on presentation requests
- Confirmed Date – May 17 (10am to 1pm ET)
- Other candidate dates for sessions– Apr 26, May 3, May 24 (10am to 1pm ET)

## ■ Presentation Requests May 2021 Session

- Apr 14, 2021 AoE

## ■ Presentation Submissions – 72 hours prior to start of assigned meeting

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



**We are here!**

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

**THANK YOU!**





# BACKUP



# IEEE 802.3 Beyond 400 Gb/s Ethernet Study Group Reflector & Web

## ■ Study Group Organization

- John D'Ambrosia, Chair, Study Group
- Tom Issenhuth, Secretary, Study Group

## ■ Study Group web and reflector information

- Reflector: <https://www.ieee802.org/3/B400G/reflector.html>
- Home page: <https://www.ieee802.org/3/B400G/index.html>

## ■ Study Group meeting information may be found on:

- Public page: <https://www.ieee802.org/3/B400G/public/index.html>
- 802.3 Calendar: <https://www.ieee802.org/3/calendar.html>

# IEEE 802.3 Operations Manual – Voting

[[https://www.ieee802.org/3/rules/P802\\_3\\_rules.pdf](https://www.ieee802.org/3/rules/P802_3_rules.pdf)]

## ■ 4.4.1 Voting at Study Group Meetings

**Any person attending a Study Group meeting may participate in SG discussions, make motions and vote on all motions (including recommending approval of a PAR and five criteria) if the person feels qualified to do so.**

# 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**

# The Role of the Chair

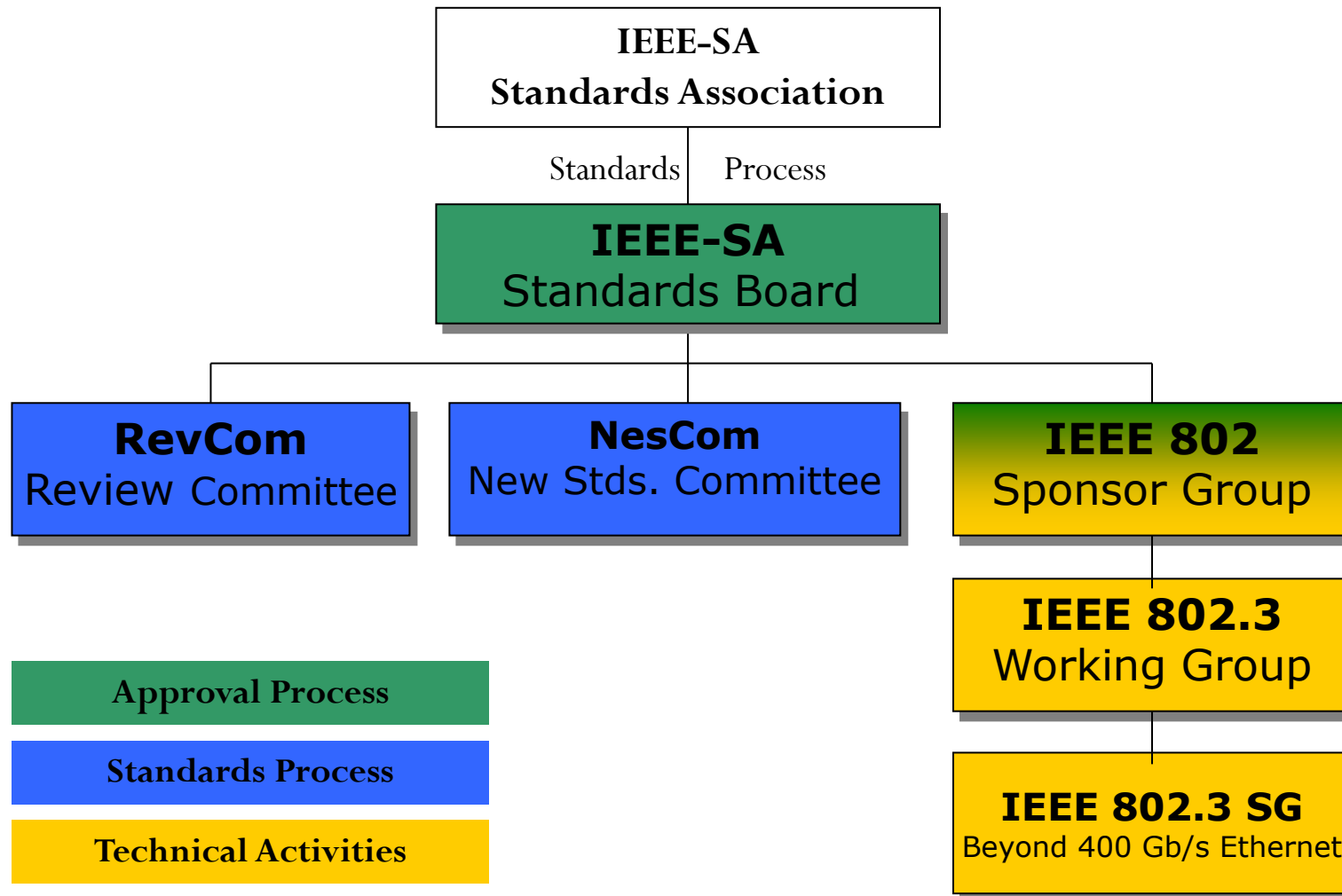
- **Per the IEEE 802.3 Ethernet WG Operations Manual**  
([http://www.ieee802.org/3/rules/P802\\_3\\_rules.pdf](http://www.ieee802.org/3/rules/P802_3_rules.pdf))

- **The operation of the TF has to be balanced between democratic procedures that reflect the desires of the TF members and the TF Chair's responsibility to produce a draft standard, recommended practice, or guideline in a reasonable amount of time for review and approval by the WG. Robert's Rules of Order shall be used in combination with these operating rules to achieve this balance.**
- **The full responsibilities of the chair are specified in 3.4.3 Task Force Chair's Responsibilities.**

- **Reminders –**

- **We are a contribution driven organization. It should not be assumed by anyone that work will just get done without contributions to drive it. Areas not moving forward will be brought to the attention of the Study Group for consideration on how to address.**
- **Individual standards activities within the WG are, at the discretion of the WG, carried out by Task Forces (TF) operating under, and reporting to, the WG.**

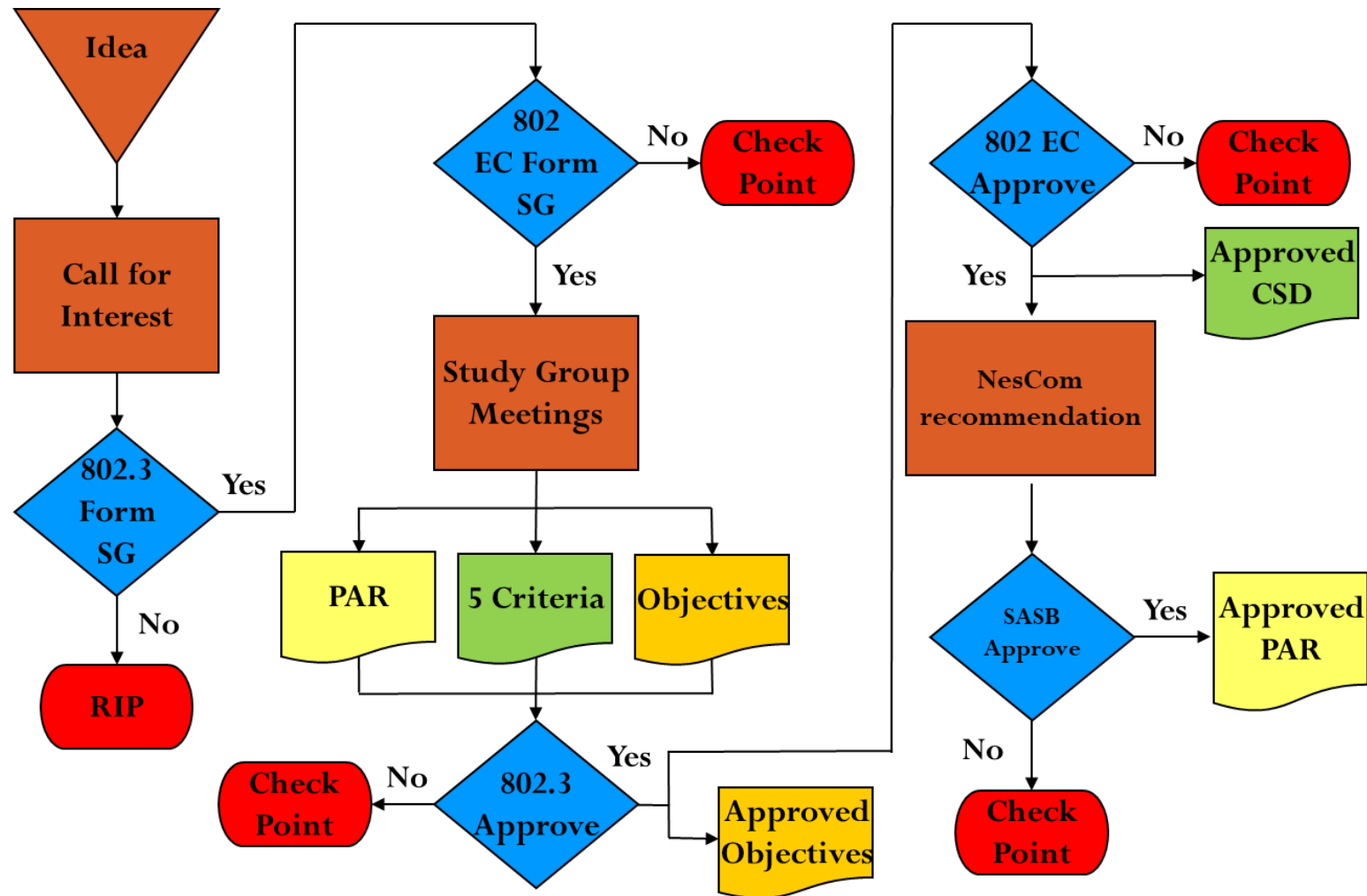
# IEEE Structure



# Important Bylaws, Rules, and References

- **IEEE-SA Operations Manual**  
[http://standards.ieee.org/develop/policies/sa\\_opman/](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](http://ieee802.org/3/rules/P802_3_rules.pdf)
- **“Promoting Competition and Innovation: What You Need to Know about the IEEE Standards Association's Antitrust and Competition Policy”**  
<http://standards.ieee.org/develop/policies/antitrust.pdf>

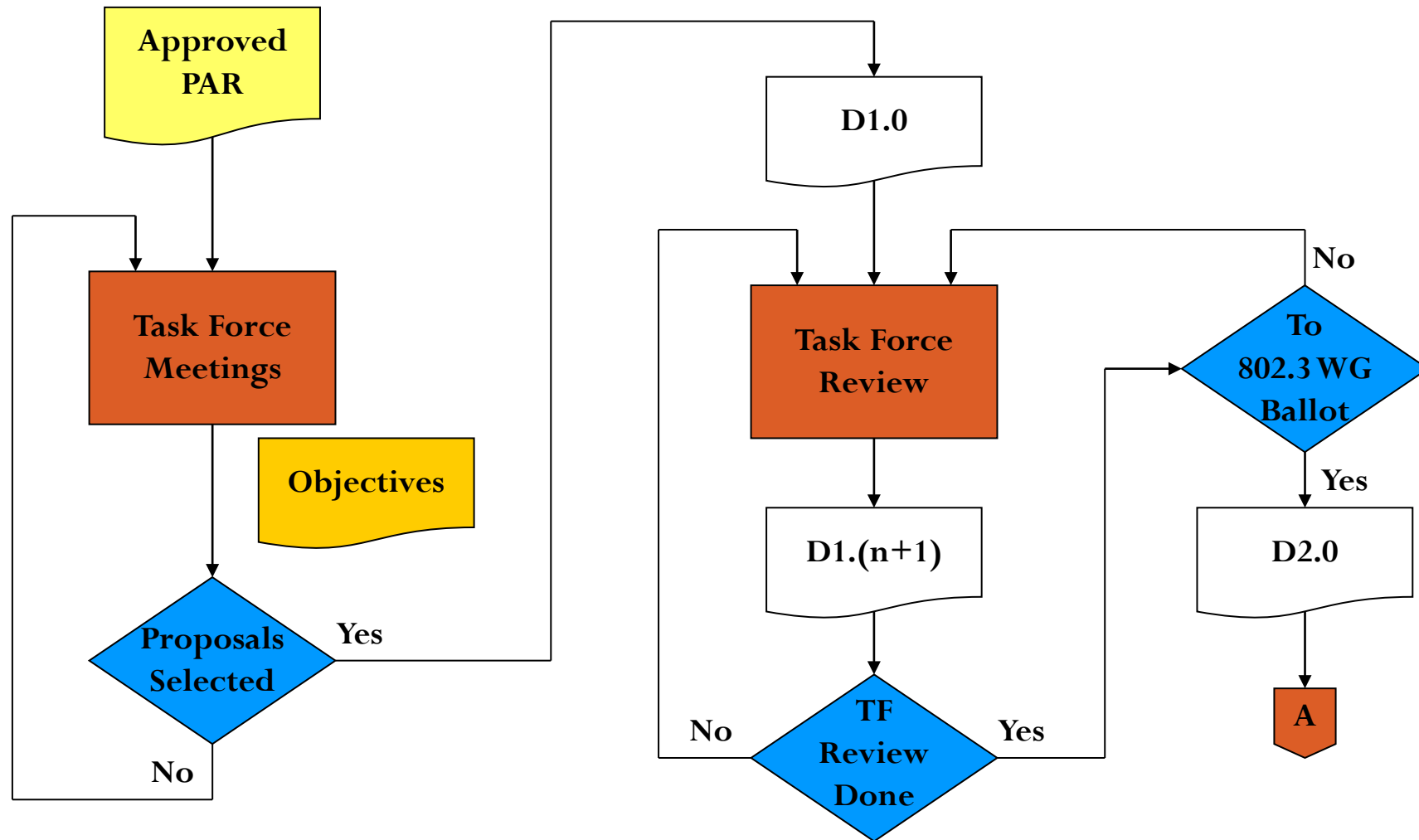
# Overview of IEEE 802.3 Standards Process (1/5)- Study Group Phase



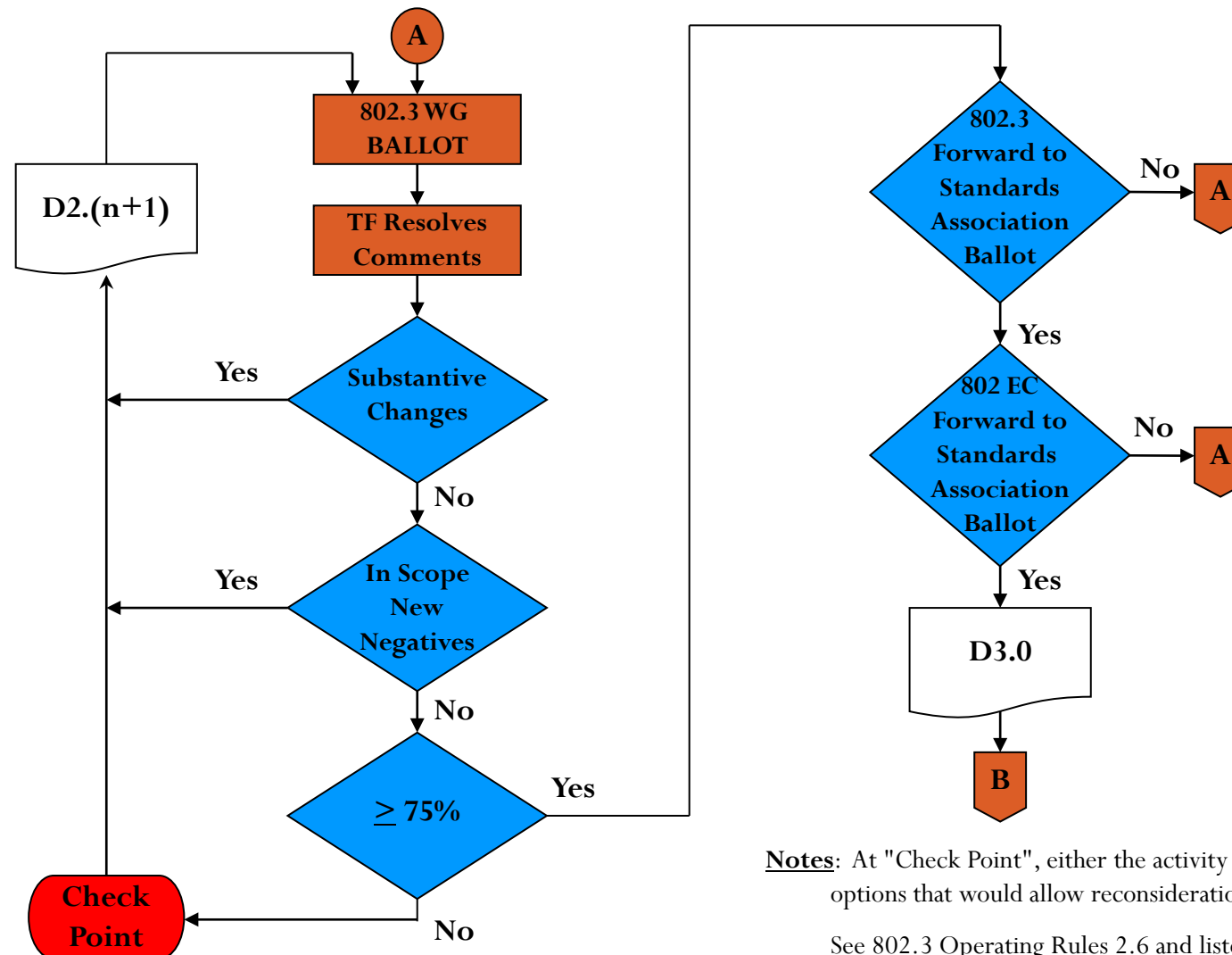
Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.



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



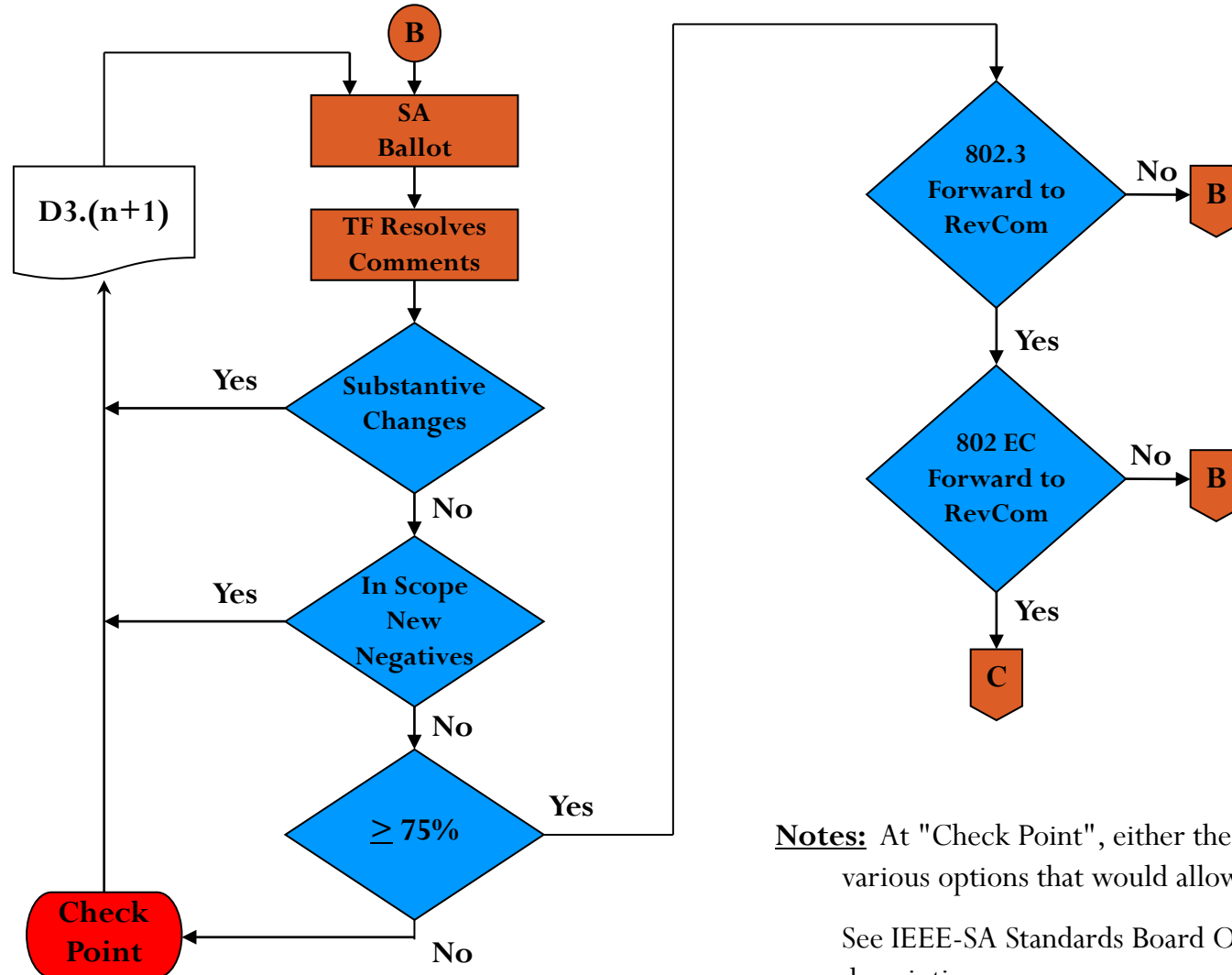
# Overview of IEEE 802.3 Standards Process (3/5) – Working Group Ballot Phase



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

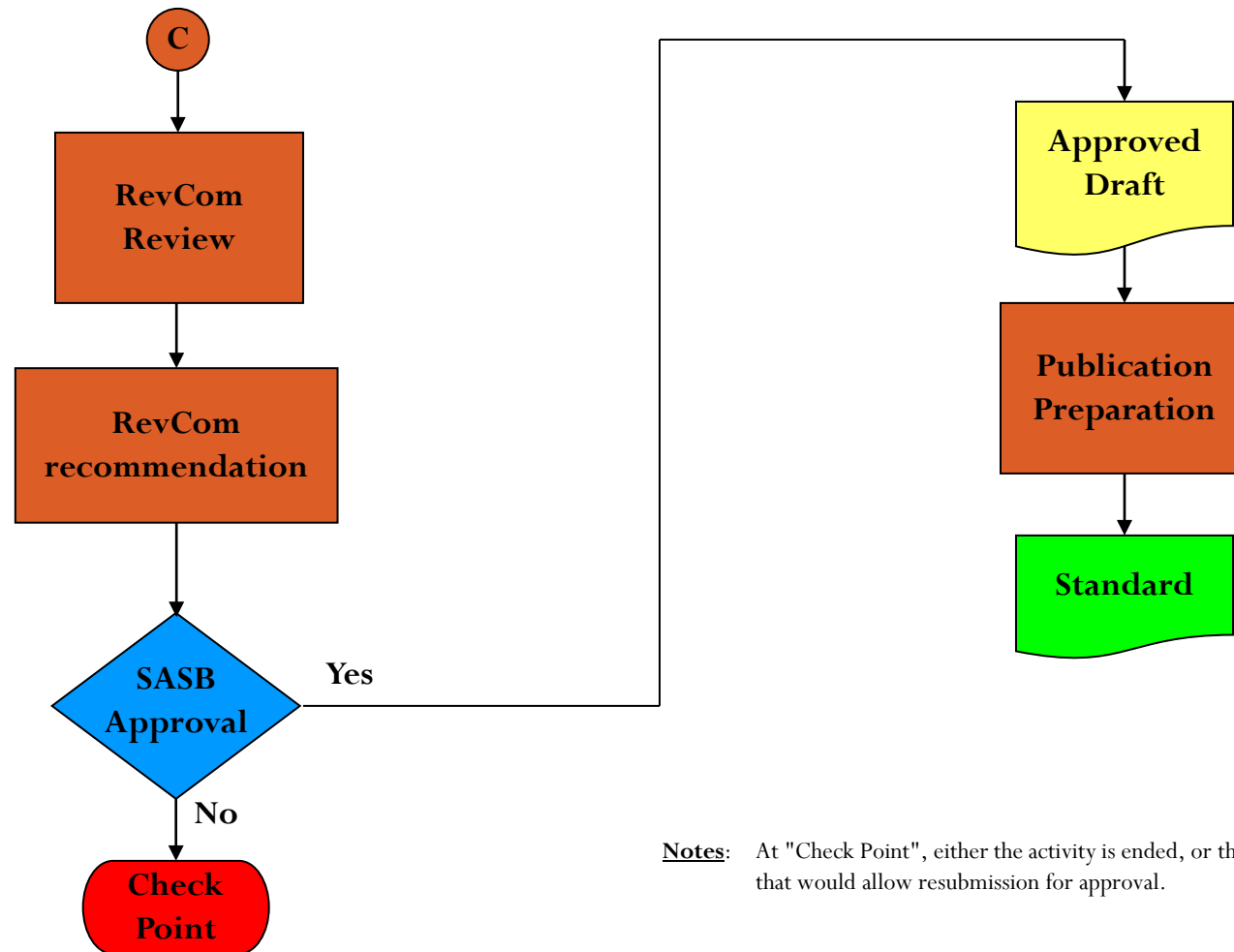
See 802.3 Operating Rules 2.6 and listed references for complete description

# Overview of IEEE 802.3 Standards Process (4/5)- Sponsor 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 Operation 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.

# IEEE SA POLICIES

# Guidelines for IEEE-SA 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.

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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>

If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at [patcom@ieee.org](mailto:patcom@ieee.org)

# **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](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>

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## 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>

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## 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

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## 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