

# Agenda and General Information

IEEE P802.3cm 400 Gb/s over Multimode Fiber Task Force

Robert Lingle, Jr, Chair  
OFS

Salt Lake City, UT, USA, May 20-21, 2019

# Welcome and introductions

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- Welcome
- Introductions
  - Name, Employer, Affiliation

# Task force 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. (December 2018 IEEE-SA Standards Board Ops Manual 5.3.3.2)
- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (December 2018 IEEE-SA Standards Board Ops Manual 5.3.3.3)
- Cell phone ringers off
- Wear your badges at all times in meeting areas
  - Help the hotel security staff improve the general security of the meeting rooms
  - **PCs HAVE BEEN STOLEN** at previous meetings
  - **DO NOT** assume that meeting areas are secure
- Please observe proper decorum in meetings

# Agenda

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- Welcome and Introductions
- Approve Agenda
- Approve March & April 2019 Minutes
- Goals for this meeting
- Big Ticket Items
- Reflector and Web
- Private Area
- Contacts
- Ground Rules
- Attendance
- IEEE
  - Structure, Bylaws and Rules
  - Call for Patents
  - IEEE Standards Process
- Ad Hoc Report
- Presentations
- Comment resolution – with supporting Presentations
- Liaisons and Communications
- Motions and Closing Business
- Future Meetings

# Approve agenda

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- Any modifications, additions or deletions?
- Move to approve the Agenda for Salt Lake City Interim TF meeting, Slide 2 of [http://www.ieee802.org/3/cm/public/March19/agenda\\_3cm\\_01\\_0519.pdf](http://www.ieee802.org/3/cm/public/March19/agenda_3cm_01_0519.pdf)
- Moved by:                   2nd:
- Motion by voice vote (Procedural > 50%)

# Approve March 11 & April 25, 2019 Minutes

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- Any modifications, additions, deletions or corrections?
- Move to approve meeting minutes, previously posted, for March 11, 2019 IEEE P802.3cm Task Force meetings - Co-Located Interim and TF meeting during Vancouver Plenary:  
[http://www.ieee802.org/3/cm/public/March19/unapproved\\_meeting\\_minutes\\_3cm\\_01b\\_0319.pdf](http://www.ieee802.org/3/cm/public/March19/unapproved_meeting_minutes_3cm_01b_0319.pdf)
- And to approve previously posted April 25, 2019 Ad Hoc meeting minutes:  
[http://www.ieee802.org/3/cm/public/adhoc/unapproved\\_minutes\\_3cm\\_adhoc\\_01\\_042519.pdf](http://www.ieee802.org/3/cm/public/adhoc/unapproved_minutes_3cm_adhoc_01_042519.pdf)
- Moved by:           2nd:
- Motion by voice vote (Procedural > 50%)

# Goals for the meeting

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- Comment resolution for D2.0
- Do the TF work necessary to generate D2.1 from D2.0 and closed comments
- Last technical change
- Take any steps necessary to be able to move to sponsor ballot in July

# Big ticket items

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- Process comments on modal noise
- Respond to comments on aligning specs



# Reflector and web

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- To subscribe to the 400 Gb/s over Multimode Fiber Task Force reflector, send an email to:

[ListServ@ieee.org](mailto:ListServ@ieee.org)

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

*subscribe* **STDS-802-3-NGMMF** *<yourfirstname>* *<yourlastname>*  
*end*

- Send 400 Gb/s over Multimode Fiber Task Force reflector messages to:

[STDS-802-2-NGMMF@listserv.ieee.org](mailto:STDS-802-2-NGMMF@listserv.ieee.org)

- Task Force web page URL:

<http://www.ieee802.org/3/cm/>

# Task force private area

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- URL: <http://www.ieee802.org/3/cm/private/>
  - Username: <<xxxxxx>> (provided at meeting)
  - Password: <<xxxxxxxx>> (provided at meeting)
- Write it down...
- Note - The draft, and any other content, is posted for your review only, and neither the content nor access information should be copied or redistributed to others in violation of document copyrights.

# Task force contacts

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- **Chair:** Robert Lingle, Jr., OFS  
[rlingle@ofsoptics.com](mailto:rlingle@ofsoptics.com)
- **Chief Editor:** Jonathan Ingham, FIT  
[jonathan.ingham@foit-foxconn.com](mailto:jonathan.ingham@foit-foxconn.com)
- **Editor:** Jonathan King, Finisar  
[jonathan.king@finisar.com](mailto:jonathan.king@finisar.com)
- **Recording Secretary:** Mabud Choudhury, OFS  
[mchoudhury@ofsoptics.com](mailto:mchoudhury@ofsoptics.com)

# Ground rules

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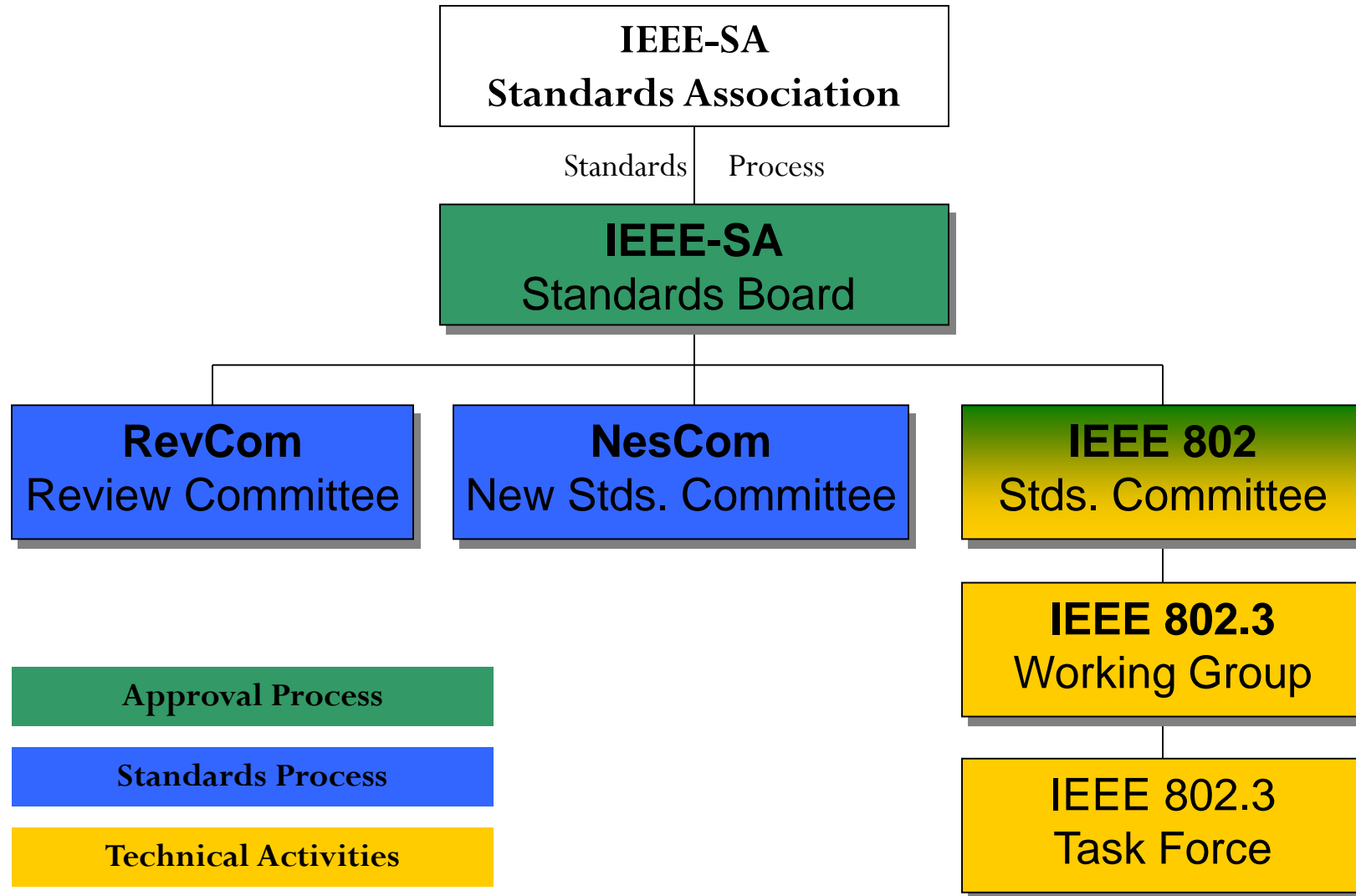
- Based upon IEEE 802.3 Rules
  - Foundation based upon Robert's Rules of Order
  - Anyone in the room may speak
  - Anyone in the room may vote
- **RESPECT**... give it, get it
- NO product pitches
- NO corporate pitches
- NO prices!!!
  - This includes costs, ASPs, etc. no matter what the currency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

# Attendance

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- Tutorial Material on attendance tool
  - [http://ieee802.org/3/minutes/attendance\\_procedures.pdf](http://ieee802.org/3/minutes/attendance_procedures.pdf)
- Access details
  - URL: <http://imat.ieee.org/>
  - (For interim) Password will be provided
- Attendance book
  - Please **ALSO** use the attendance book
  - Keeps track of attendance in room for meeting minutes
  - Used to support requests to verify attendance by chair if IMAT not used

# IEEE structure



# Important bylaws and rules

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- **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)

# 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.

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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>

# Patent-related information

The patent policy and the procedures used to execute that policy are documented in the:

- ***IEEE-SA Standards Board Bylaws***  
(<http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6>)
- ***IEEE-SA Standards Board Operations Manual***  
(<http://standards.ieee.org/develop/policies/opman/sect6.html#6.3>)

Material about the patent policy is available at  
<http://standards.ieee.org/about/sasb/patcom/materials.html>

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

# Participation in IEEE 802 Meetings

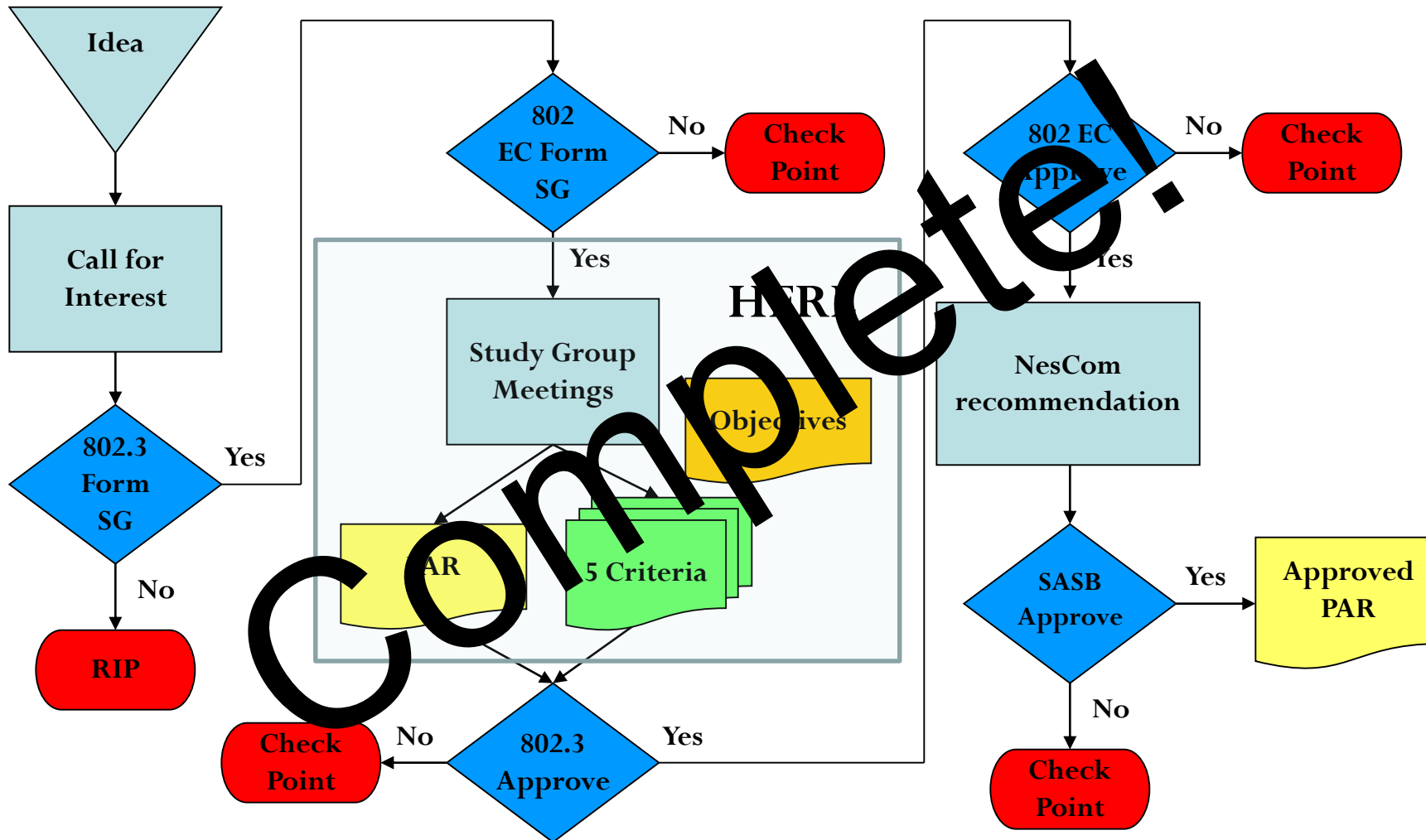
**Participation in any IEEE 802 meeting (Sponsor, Sponsor subgroup, Working Group, Working Group subgroup, etc.) is on an individual basis**

- **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)**
- **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.**

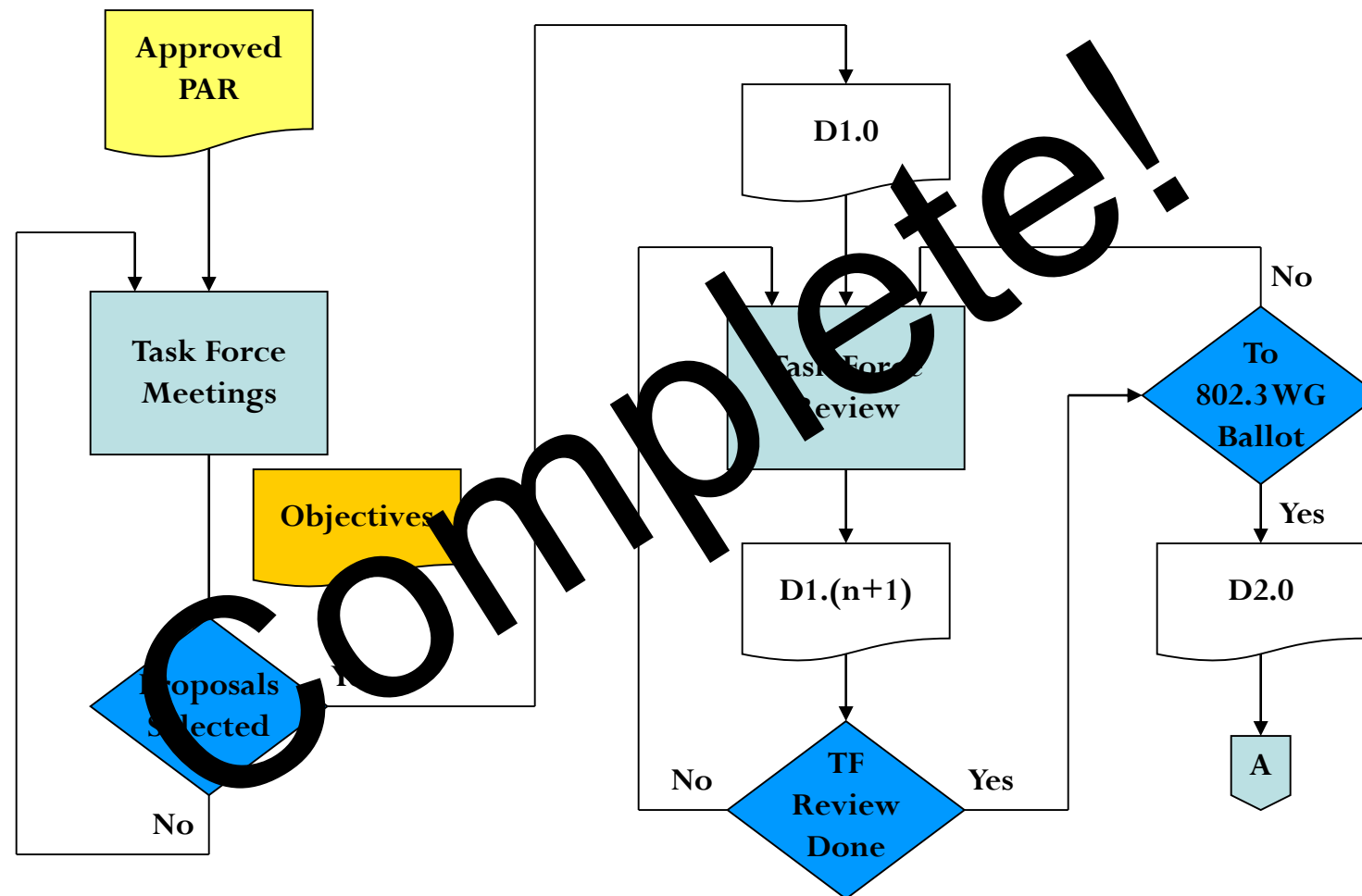
(Latest revision of IEEE 802 LMSC Working Group Policies and Procedures: <http://www.ieee802.org/devdocs.shtml>)

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

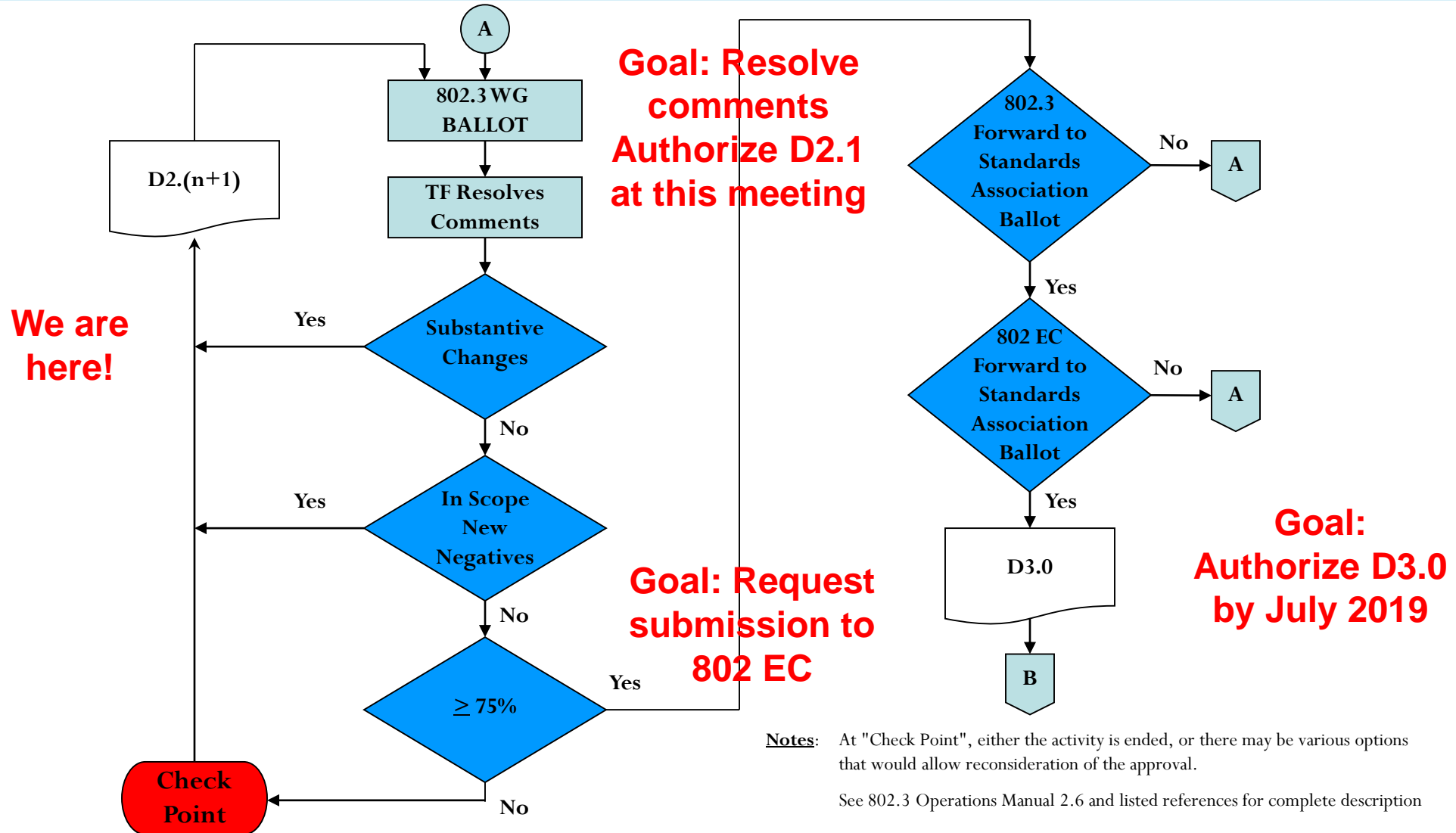


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

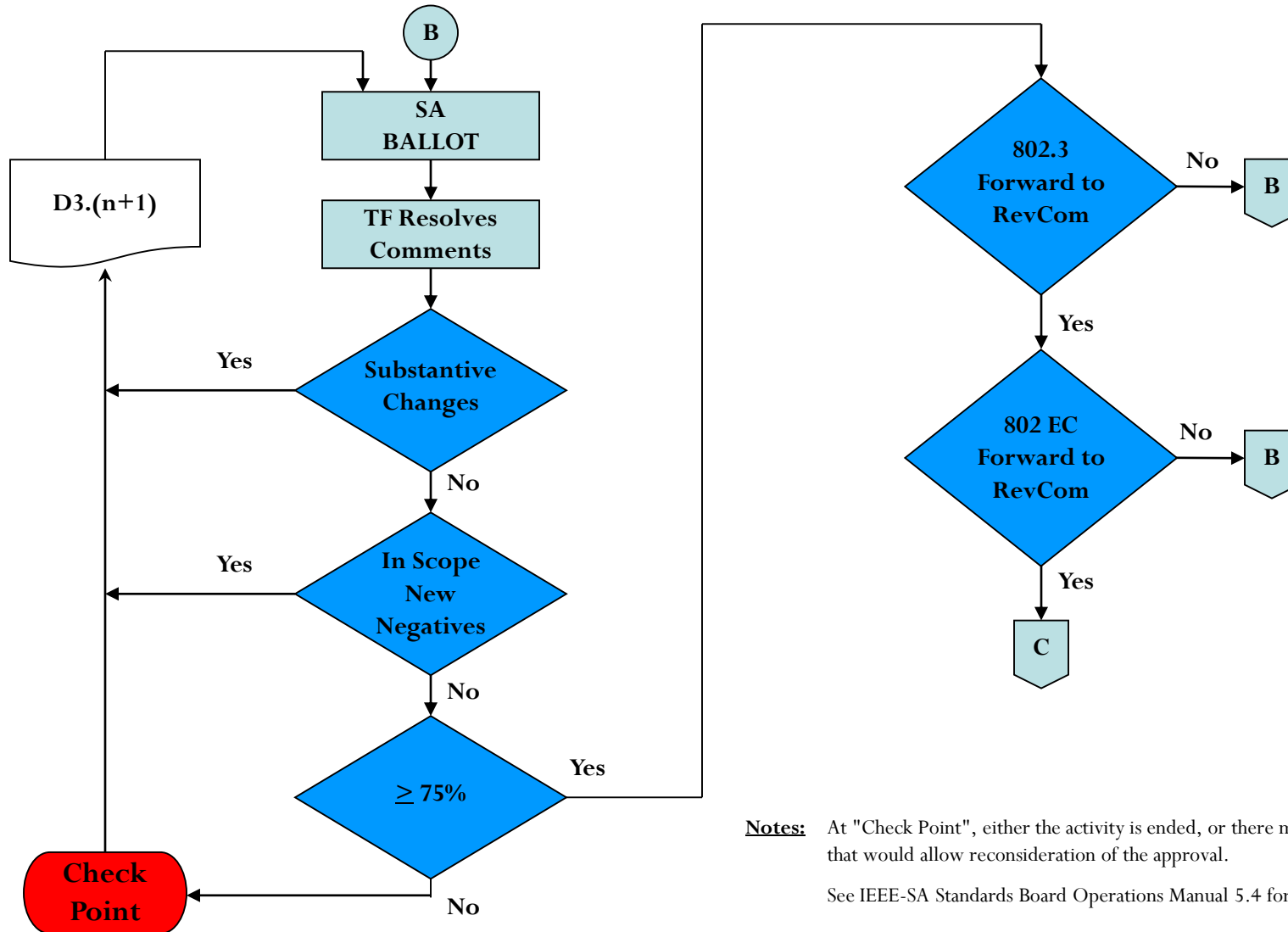
# Overview of IEEE 802.3 Standards Process (2/5) – Task Force Comment Phase



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



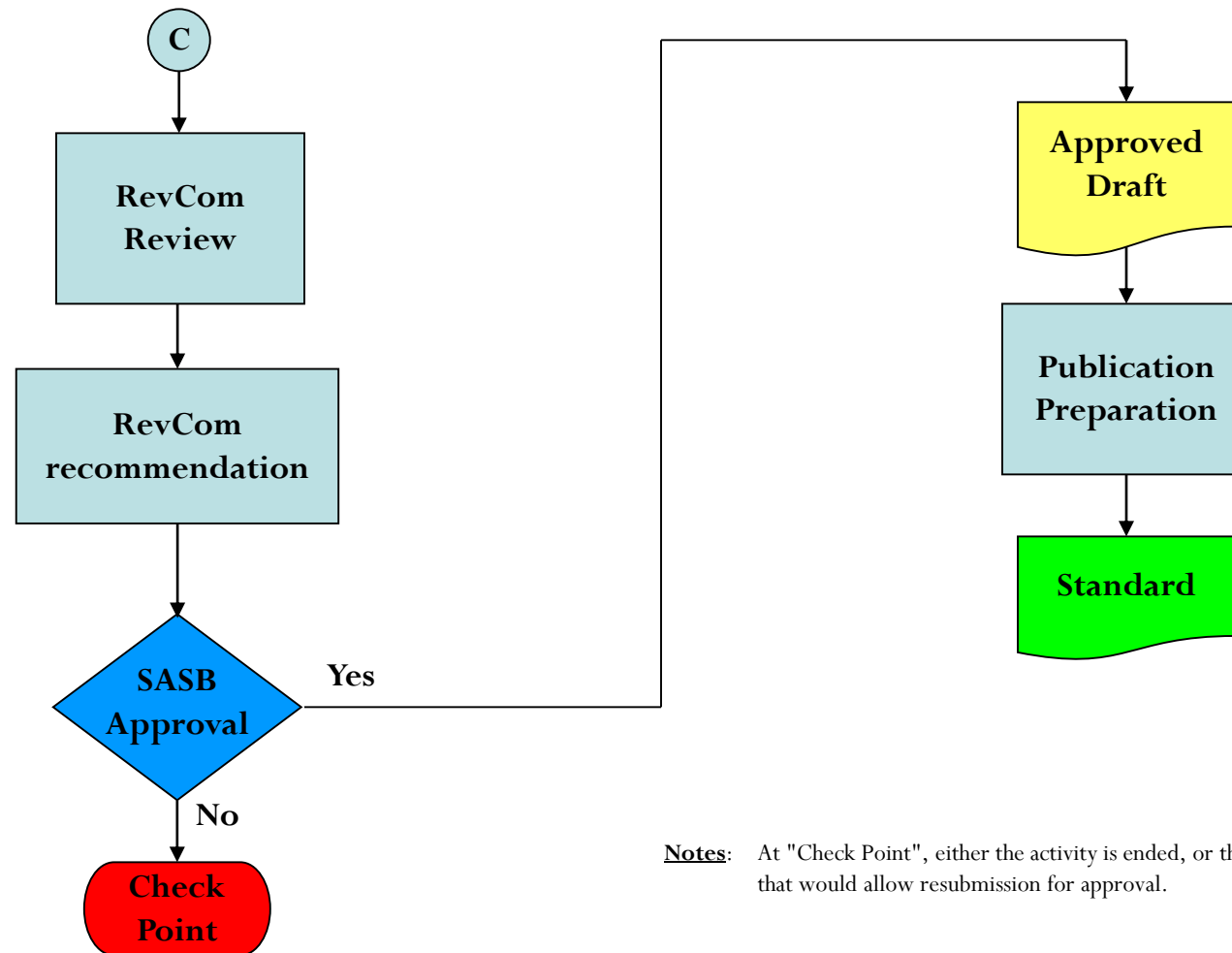
# Overview of IEEE 802.3 Standards Process (4/5)- IEEE Standards Association (SA) Ballot Phase



**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



**Goal: Complete  
not later than  
December 2019**

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

# IEEE P802.3cm 400 Gb/s over Multimode Fiber Task Force Approved Project Documents

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- PAR
  - [http://www.ieee802.org/3/cm/P802\\_3cm\\_PAR\\_140518.pdf](http://www.ieee802.org/3/cm/P802_3cm_PAR_140518.pdf)
- 5 Criteria
  - <https://mentor.ieee.org/802-ec/dcn/18/ec-18-0018-02-00EC-ieee-p802-3cm-draft-csd.pdf>
- Objectives
  - [http://www.ieee802.org/3/cm/Adopted\\_Objectives\\_NGMMF\\_01\\_08mar18.pdf](http://www.ieee802.org/3/cm/Adopted_Objectives_NGMMF_01_08mar18.pdf)

# IEEE P802.3cm 400 Gb/s over Multimode Fiber Task Force Objectives

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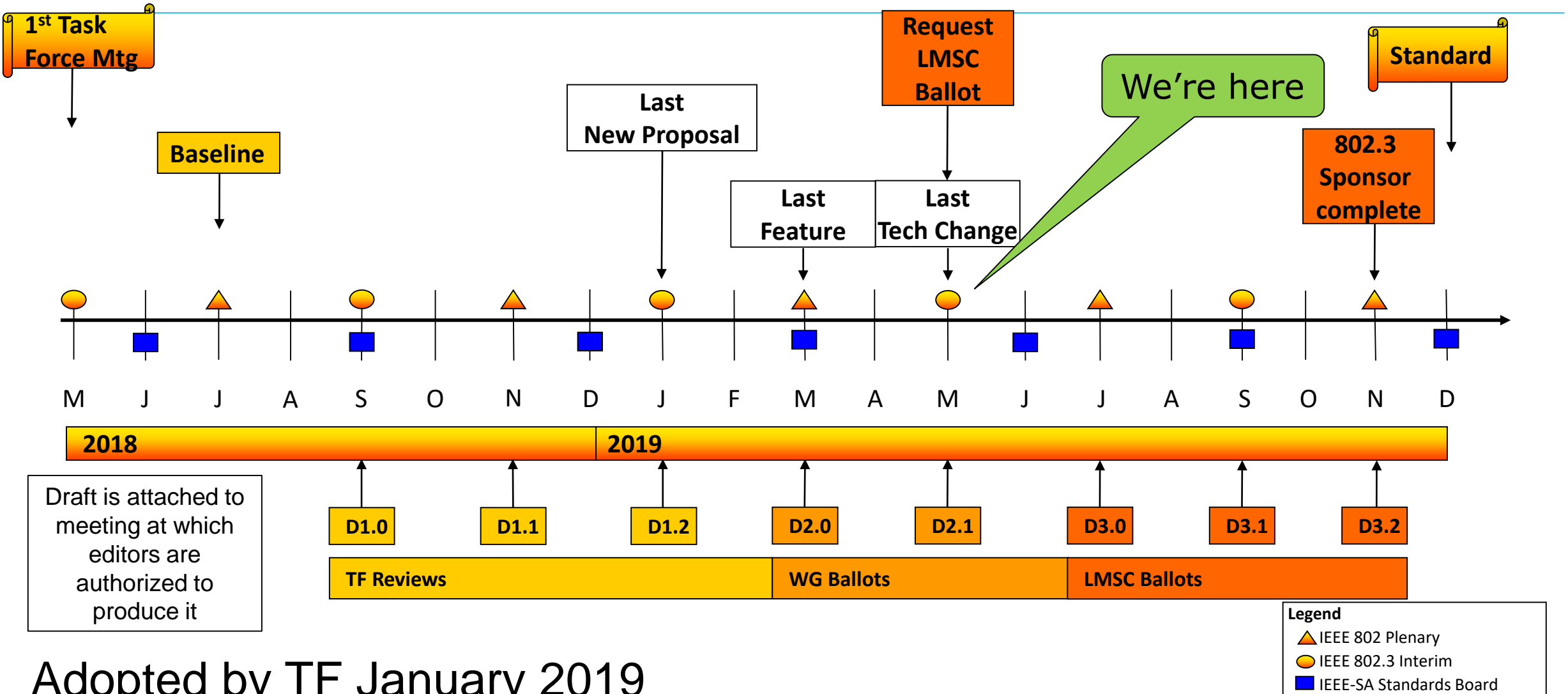
1. Support full-duplex operation only
2. Preserve the Ethernet frame format utilizing the Ethernet MAC
3. Preserve the minimum and Maximum FrameSize of current Ethernet standard
4. Provide appropriate support for OTN
5. Specify optional Energy Efficient Ethernet (EEE) capability
6. Support a BER of better than or equal to  $10^{-13}$  at the MAC/PLS service interface (or the frame loss ratio equivalent)
7. Support a MAC data rate of 400 Gb/s

# IEEE P802.3cm 400 Gb/s over Multimode Fiber Task Force Objectives *(continued)*

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8. Define a physical layer specification that supports 400 Gb/s operation over 8 pairs of MMF with lengths up to at least 100m
9. Define a physical layer specification that supports 400 Gb/s operation over 4 pairs of MMF with lengths up to at least 100m

# IEEE P802.3cm Task Force Timeline



Adopted by TF January 2019

# IEEE P802.3cm 400 Gb/s over Multimode Fiber Task Force Working Group ballot results

- Item 1 - Date the ballot closed:
  - The 1<sup>st</sup> Working Group recirculation ballot on IEEE P802.3cm draft D2.0 closed on 21<sup>st</sup> April 2019 at 11:59 PM AOE.
- Item 2 - Vote tally:

Comments: 58	1 <sup>st</sup> recirculation Draft D2.0			Req %
	#	%	Status	
Abstain	23	17	PASS	< 30
Disapprove with comment	7	-	-	-
Disapprove without comment	0	-	-	-
Approve	107	93	PASS	≥ 75
Ballots returned	133	56	PASS	> 50
Voters	236	-	-	-

# Ad hoc report

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- <http://www.ieee802.org/3/cm/public/adhoc/>
- April 04, 2019: 28 attendees
  - Editors' Update on Draft 2.0. Proposal to have consistency between current 400GBASE-SR4.2 specification (Clause 150 D2.0) and 100G BiDi specification. Further discussion of modal noise penalty allocation.
- April 25, 2019: 21 attendees
  - Editors' Update on Draft 2.0, 58 comments received. Updated proposal for consistency/commonality between 400G-SR4.2 and 100G BiDi; discussion on possibility of combining this proposal with proposed potential increase in MN penalty contributions. Additional detail and curve-fitting from Pepeljugin's 2008 modal noise simulations work to generate additional MN penalty recommendation for 400G-SR4.2. Review of previous proposals to have equations/formulas-based specifications for noise (instead of emphasizing power budget).

# Presentations

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- Agenda and General Information: [agenda\\_3cm\\_01\\_0519](#)
- Editorial report and comment agenda: [ingham\\_3cm\\_02\\_0519](#)
- Modal Noise Penalty for SR4.2. Re: Comment IDs 12, 38, and 39 against D2.0: [sun\\_3cm\\_01\\_0519](#)
- In support of comment #39 to increase allocation for modal noise penalty: [lingle\\_3cm\\_01\\_0519](#)
- Curve fitting to Petar Pepeljugoski's modal noise simulations, supporting P802.3cm d2.0 comment 38: [kolesar\\_3cm\\_01\\_0519](#)
- Proposed change to 400GBASE-SR4.2 specification. Re: Comment ID 29: [ingham\\_3cm\\_01a\\_0519](#)

Note –Times listed are subject to change.



# Liaisons and communications

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- Review IEEE 802.3 Ethernet Working Group DRAFT Liaison Communication to INCITS T11.2 Physical Layer Task Group  
[http://www.ieee802.org/3/cm/public/May19/IEEE\\_802d3\\_to\\_T11-2\\_0519\\_draft\\_P802d3cm\\_May%202019.docx](http://www.ieee802.org/3/cm/public/May19/IEEE_802d3_to_T11-2_0519_draft_P802d3cm_May%202019.docx)
- Provides IEEE P802.3cm project status and D2.1 to INCITS T11.2
- INCITS T11.2, FC-PI-8 project, 128 GFC (Gb/s Fibre Channel), would benefit from having access to P802.3cm draft standards
- Need TF approval and WG approval for the liaison letter

# Schedule for May 20-21

Monday 05/20: Powder Mountain/Solitude (Lobby Level) --> please check online schedule for updates!				Co-located Interim Meeting
Time	Presenter	Affiliation	Title	File Name
8:30 AM	Robert Lingle, Jr	OFS	Agenda & General Information	<a href="#">agenda_3cm_01_0519.pdf</a>
8:45 AM	Jonathan Ingham	FIT	Editorial report and comment agenda	<a href="#">ingham_3cm_02_0519.pdf</a>
9:00 AM	Comment Resolution			
12:00 PM	Lunch			
1:15 PM	Comment Resolution			
5:30 PM	Straw polls, liaison letters & motions			
6:00 PM	Break			
Tuesday 05/21: Powder Mountain/Solitude Lobby Level --> please check online schedule for updates!				March Plenary Meeting
Time	Presenter	Affiliation	Title	File Name
8:00 AM	Robert Lingle, Jr.	OFS	Plan for the Day -- if needed	<a href="#">agenda_3cm_01_0519.pdf</a>
8:15 AM	Comment Resolution -- if needed			
11:30 AM	Straw polls, liaison letters & motions -- if needed			
Noon	Adjourn			

<http://www.ieee802.org/3/interims/may19/schedule.html>

Note –Times listed are subject to change.

# Future meetings

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- See: <http://www.ieee802.org/3/interims/index.html>
- July 2019 Plenary
  - Austria Center, Vienna, Austria
  - July 15-July 18
- September 2019 Interim
  - Westin Indianapolis, Indianapolis, IN USA
  - September 9-13
- November 2019 Plenary
  - Hilton Waikoloa Village, Waikoloa Village, HI USA
  - November 11-14
- Anyone interested in hosting a interim meeting contact me or the IEEE 802.3 Executive Secretary [Steve Carlson](#).

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# Thank You!