

# Agenda and General Information

IEEE P802.3cg 10 Mbps Single Pair Ethernet  
Task Force

George Zimmerman (Chair)

CME Consulting, Inc.

Vancouver, BC, Canada, March 13-16, 2017

# Agenda

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- Appointment of Recording Secretary
- Welcome and Introductions
- Approve Agenda
- Approve January Task Force Minutes
- Goals for this meeting
- Big Ticket Items
- Reflector and Web
- Ground Rules
- IEEE
  - Structure, Bylaws and Rules
  - Call for Patents
  - IEEE Standards Process
- Liaisons and Communications
- Presentations
- Motions and Closing Business
- Future Meetings

# Task Force Decorum

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- Photography or recording by permission only (December 2014 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 2014 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

# Study Group Decorum



- Photography or recording by permission only (December 2014 IEEE-SA Standards Board Ops Manual 5.3.3.2)
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# Goals for the meeting

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- Joint session with IEEE 802.3 Multi-Gig Automotive Study Group
- Continue to work on selection of a set of baseline proposals
  - Hear proposals for 1000m link segment proposal
  - Hear proposals on 15m (including Automotive) link segment
  - Hear proposals on Automotive multi-drop PHY and link segment
  - Hear updates on PHY analysis & Powering
- Hear and respond if necessary to TR42 liaison on single pair efforts
- Lay the ground work for the next meeting

# Big ticket items

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- Understand our overlap with NGAUTO
- Baseline Link Segments
- Lay the foundation for PHY baselines
- Begin to define powering scenarios
- Multi-drop - !?!?

# Reflector and Web

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- To subscribe to the 10 Mbps Single-Pair Ethernet 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-802-3-10SPE-<yourfirstname> <yourlastname>

*end*

***THIS IS THE SAME REFLECTOR WE USED FOR STUDY GROUP – YOU DO NOT HAVE TO RE-SUBSCRIBE***

- Send 10 Mbps Single-Pair Ethernet Task Force reflector messages to:  
**STDS-802-3-10SPE @listserv.ieee.org**
- Task Force web page URL: (NEW WEB PAGE FOR TASK FORCE)  
[www.ieee802.org/3/cg](http://www.ieee802.org/3/cg)

# Task Force Private Area

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- PRIVATE AREA Defined
- URL: <http://www.ieee802.org/3/cg/private>
  - Username: <<>>
  - Password: <<>>
- 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.



# 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/>

# Participation in IEEE 802 Meetings

November 2016

IEEE Participation Requirements

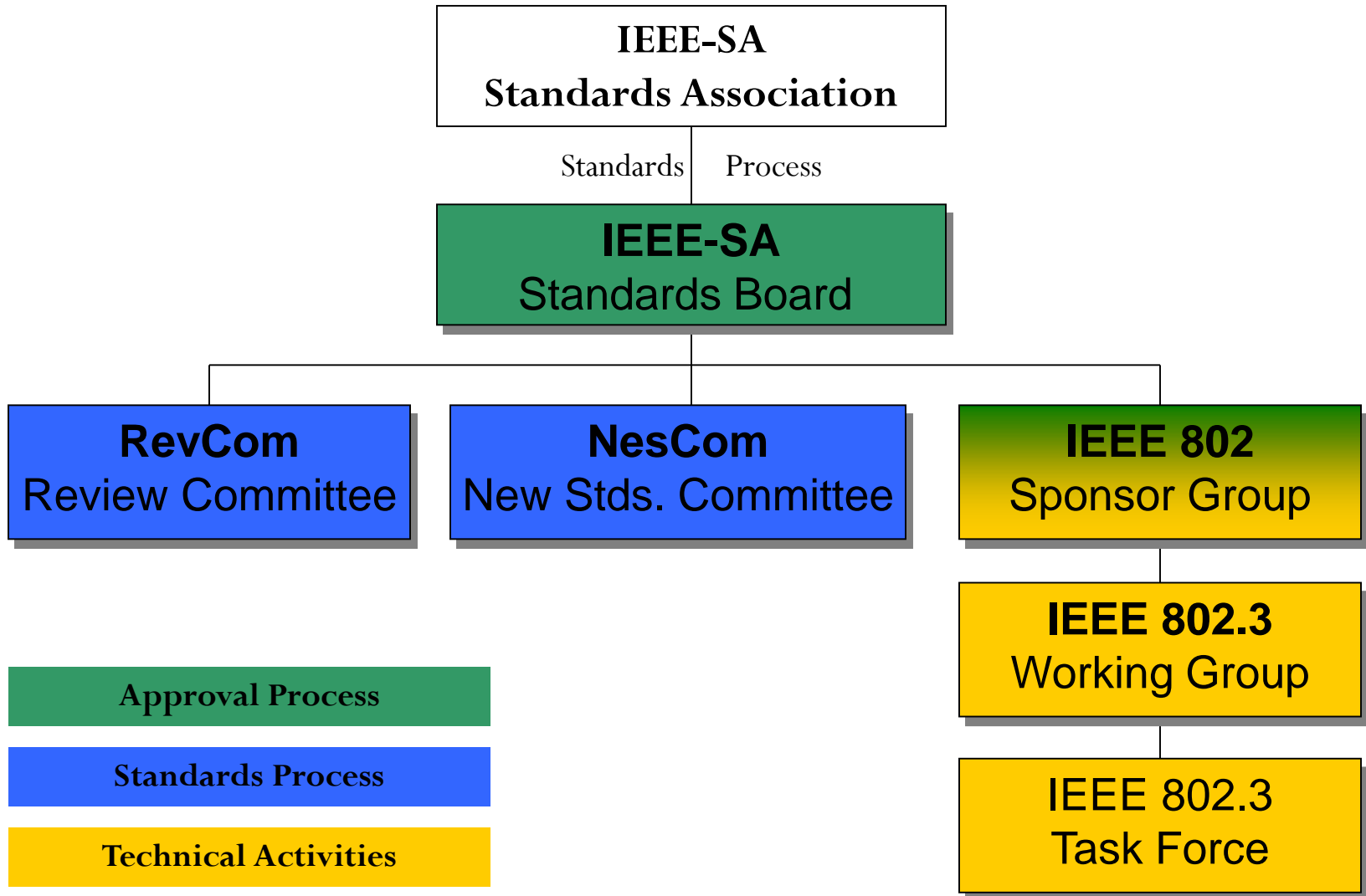
All participation in IEEE 802 Working Group meetings is on an individual basis

- *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”.*  
([http://ieee802.org/PNP/approved/IEEE\\_802\\_WG\\_PandP\\_v19.pdf](http://ieee802.org/PNP/approved/IEEE_802_WG_PandP_v19.pdf) section 4.2.1)
- You have an obligation to act and vote as an individual and not under the direction of any other individual or group. Your obligation to act and vote as an individual applies in all cases, regardless of any external commitments, agreements, contracts, or orders.
- You 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 [http://ieee802.org/PNP/approved/IEEE\\_802\\_WG\\_PandP\\_v19.pdf](http://ieee802.org/PNP/approved/IEEE_802_WG_PandP_v19.pdf) section 3.4.1, 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.

Policy: IEEE 802 Executive Committee

# 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**  
<http://standards.ieee.org/about/sasb/audcom/pnp/LMSC.pdf>
- **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)

# 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:**
  - The 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 the IEEE is not aware. Additionally, neither the 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.



15 March 2015

(Optional to be shown)

# Participants, Patents, and Duty to Inform

All participants in this meeting have certain obligations under the IEEE-SA Patent Policy.

- Participants [Note: Quoted text excerpted from IEEE-SA Standards Board Bylaws subclause 6.2]:
  - “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
  - “Should inform the IEEE (or cause the IEEE to be informed)” of the identity of “any other holders of potential Essential Patent Claims” (that is, third parties that are not affiliated with the participant, with the participant’s employer, or with anyone else that the participant is from or otherwise represents)
- The above does not apply if the patent claim is already the subject of an Accepted Letter of Assurance that applies to the proposed standard(s) under consideration by this group
- Early identification of holders of potential Essential Patent Claims is strongly encouraged
- No duty to perform a patent search

# Patent Related Links

All participants should be familiar with their obligations under the IEEE-SA Policies & Procedures for standards development.

Patent Policy is stated in these sources:

IEEE-SA Standards Boards 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) or visit <http://standards.ieee.org/about/sasb/patcom/index.html>

This slide set is available at  
<https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.ppt>





# Call for Potentially Essential Patents

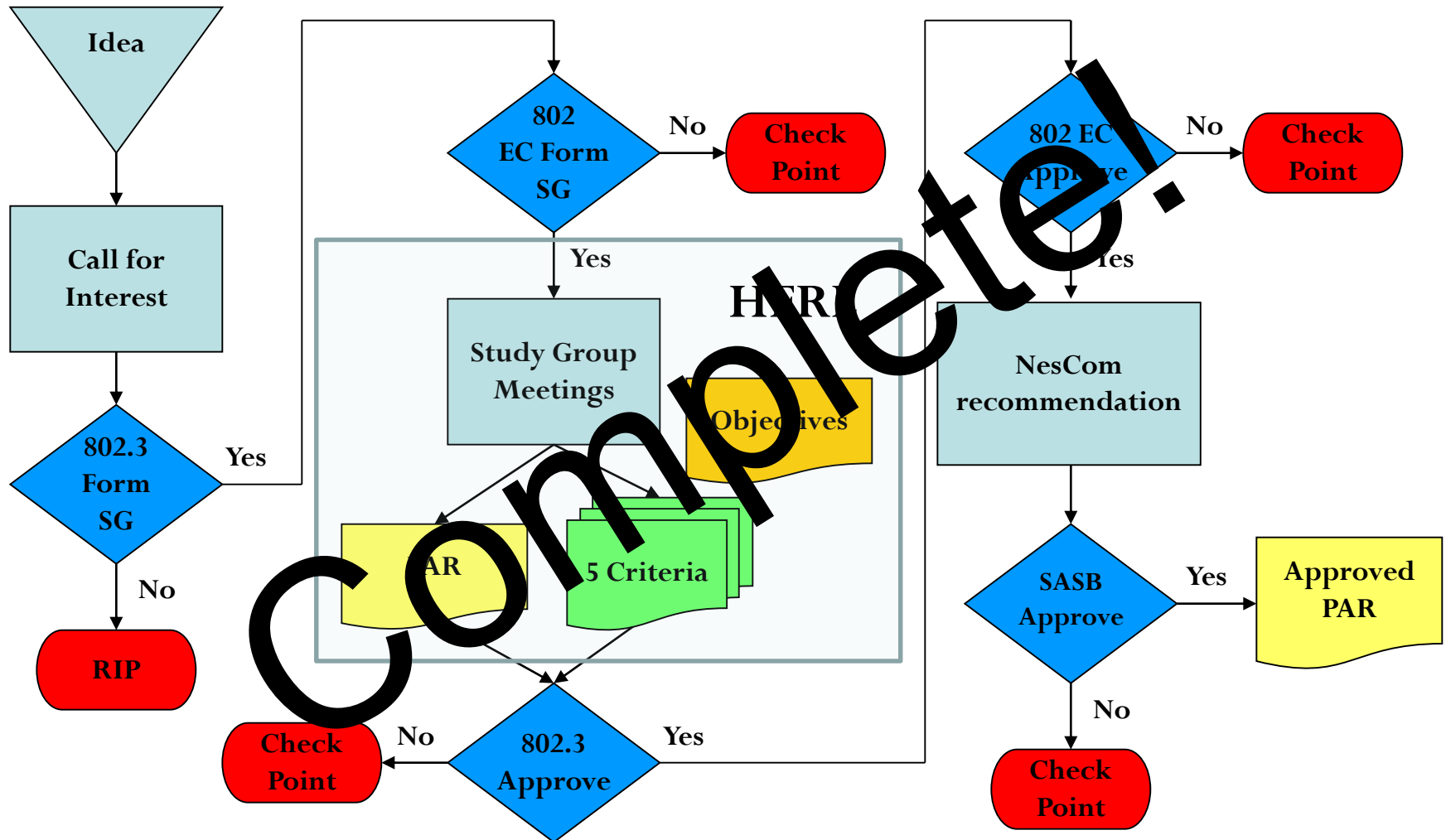
- If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance:
  - Either speak up now or
  - Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible or
  - Cause an LOA to be submitted

# 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, including licensing costs of essential patent claims, of different technical approaches may be discussed in standards development meetings.
      - Technical considerations remain 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.**

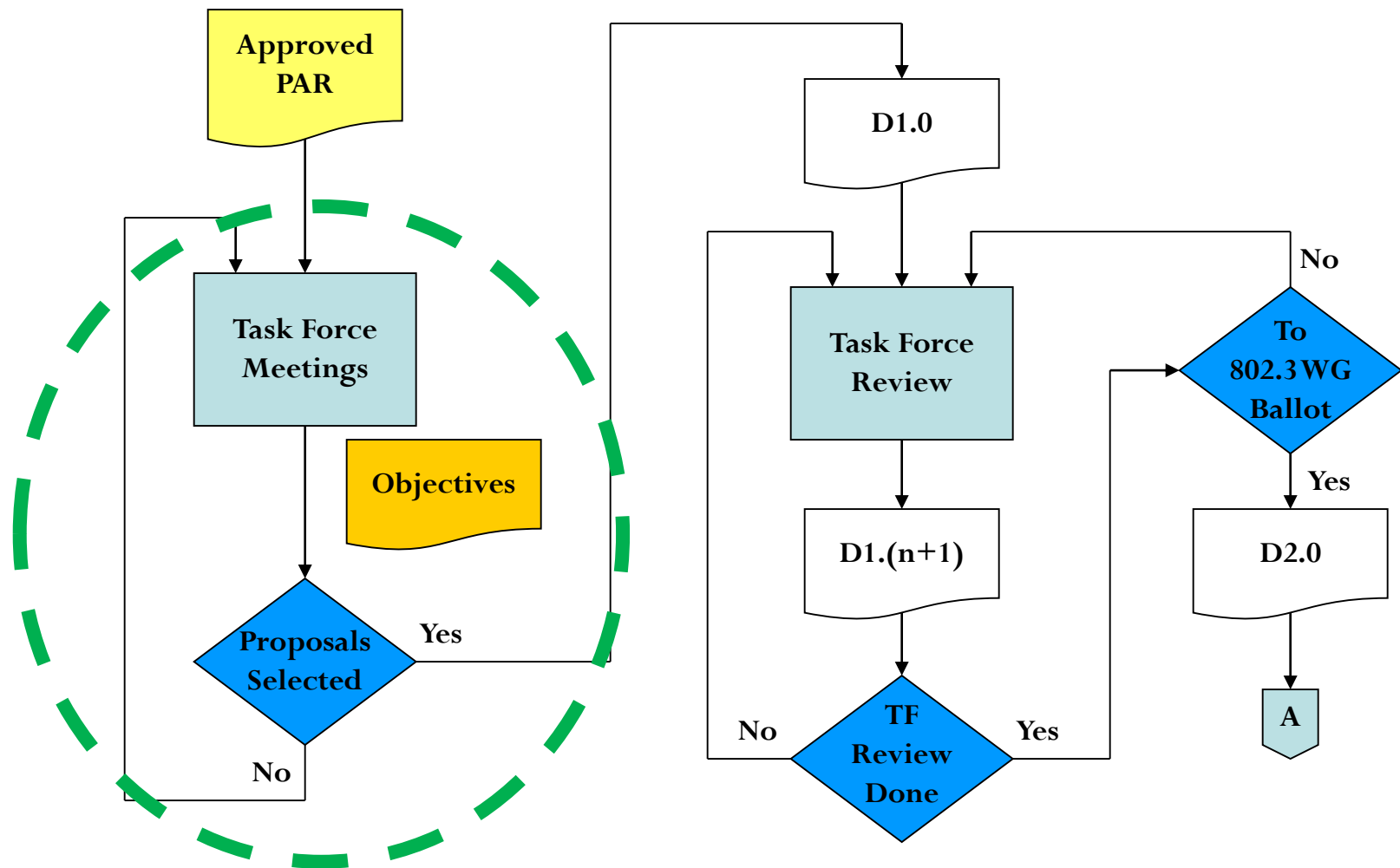
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See *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and “Promoting Competition and Innovation: What You Need to Know about the IEEE Standards Association’s Antitrust and Competition Policy” for more details.

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

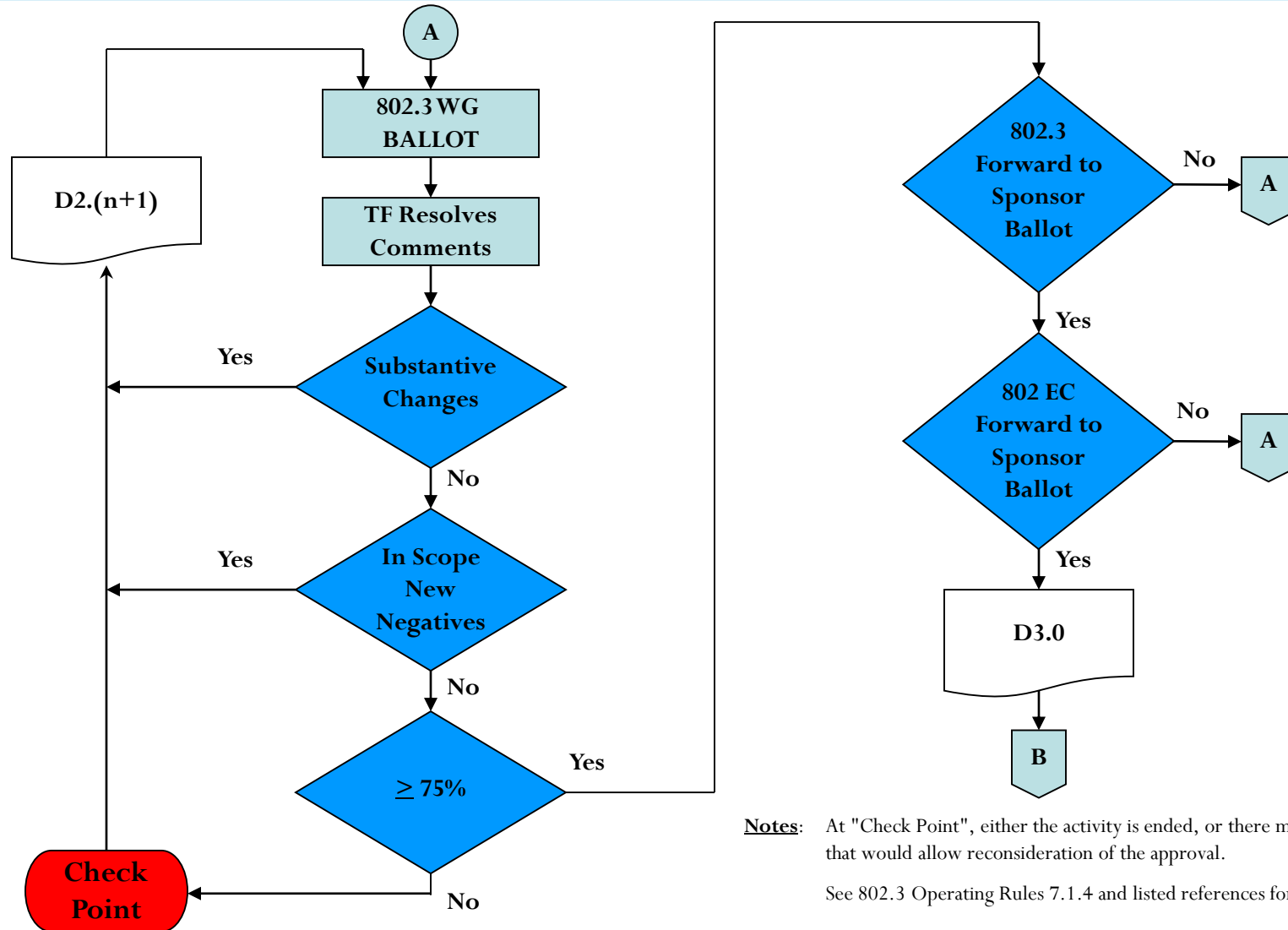


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

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



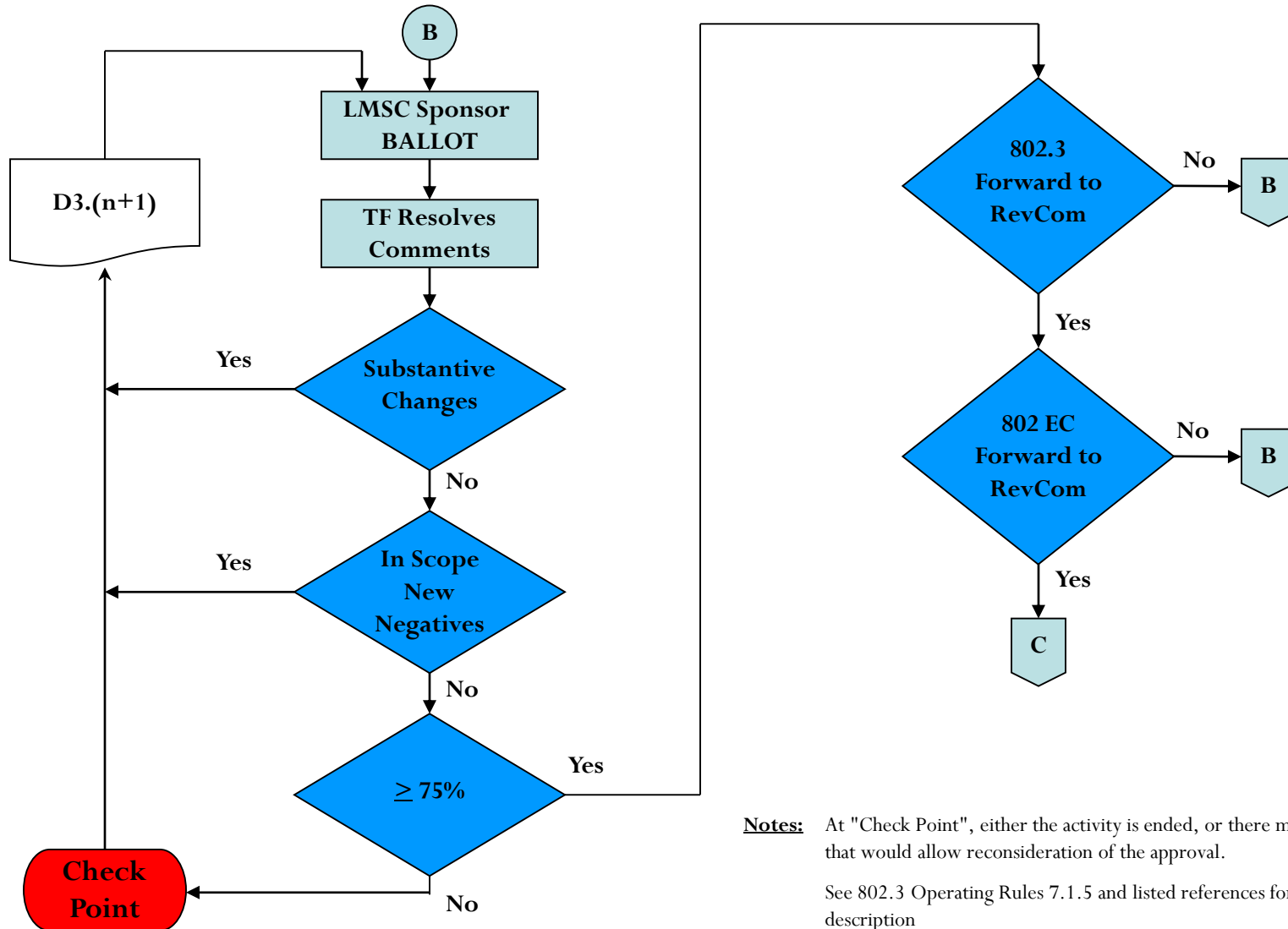
# Overview of IEEE 802.3 Standards Process (3/5) – Working Group Ballot Phase



**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 7.1.4 and listed references for complete description

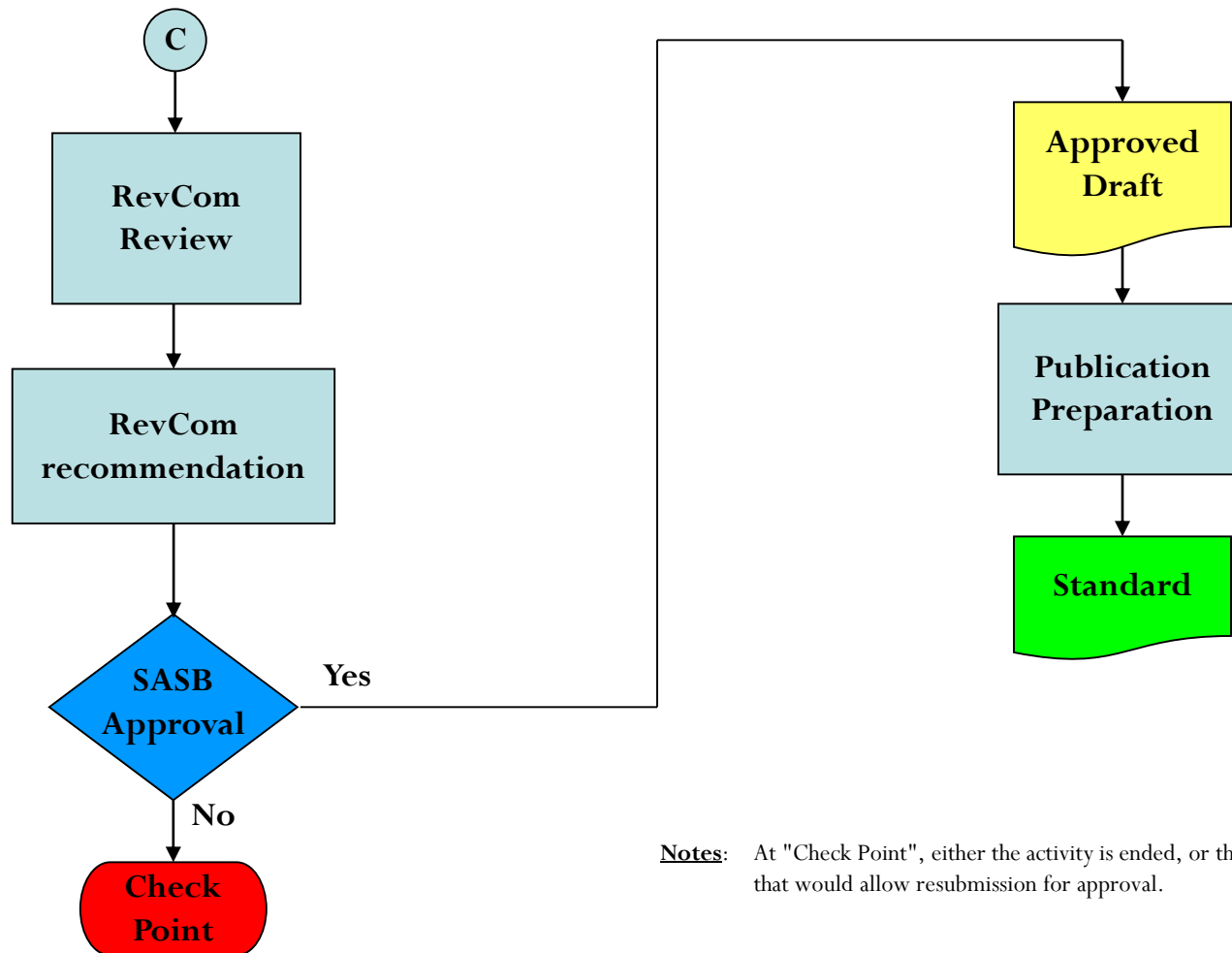
# Overview of IEEE 802.3 Standards Process (4/5)- Sponsor Ballot Phase



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

See 802.3 Operating Rules 7.1.5 and listed references 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.

# Liaisons and Communications

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- [TIA TR42.7 Liaison to IEEE 802.3 regarding single-pair Ethernet](#)
- [ISO/IEC JTC1 SC25 to IEEE 802.3 on 1-pair cabling](#)



# IEEE P802.3cg 10Mbps Single-Pair Ethernet Approved Project Documents

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- PAR

- [http://www.ieee802.org/3/cg/IEEE\\_P802\\_3cg\\_PAR\\_071216.pdf](http://www.ieee802.org/3/cg/IEEE_P802_3cg_PAR_071216.pdf)

- 5 Criteria

- <https://mentor.ieee.org/802-ec/dcn/16/ec-16-0153-00-00EC-ieee-p802-3cg-draft-csd.pdf>

- Objectives

- [http://www.ieee802.org/3/cg/objectives\\_10SPE\\_111016.pdf](http://www.ieee802.org/3/cg/objectives_10SPE_111016.pdf)

# IEEE P802.3cg Adopted Objectives

## Approved by 802.3 11/10/16 (1)

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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 a speed of 10 Mb/s at the MAC/PLS service interface.
4. Do not preclude meeting FCC and CISPR EMC requirements
5. Support for optional single-pair Auto-Negotiation
6. Support optional Energy Efficient Ethernet
7. Support 10 Mb/s operation in automotive environments (e.g. EMC, temperature) over single balanced twisted-pair cabling.
8. Support 10 Mb/s operation in industrial environments (e.g. EMC, temperature) over single balanced twisted-pair cabling.
9. Do not preclude the ability to survive automotive and industrial fault conditions (e.g. shorts, over voltage, EMC, ISO16750)
10. Do not preclude working within an Intrinsically Safe device and system as defined in IEC 60079

# IEEE P802.3cg Adopted Objectives

## Approved by 802.3 11/10/16 (2)

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11. Define the performance characteristics of a link segment and a PHY to support operation over this link segment with single twisted pair supporting up to four inline connectors using balanced cabling for up to at least 15 m reach
12. Define the performance characteristics of a link segment and a PHY to support point-to-point operation over this link segment with single twisted pair supporting up to 10 inline connectors using balanced cabling for up to at least 1 km reach
13. Support fast-startup operation using predetermined configurations which enables the time from power\_on\*\*=FALSE to a state capable of transmitting and receiving valid data to be less than 100ms
14. Maintain a bit error ratio (BER) at the MAC/PLS service interface of less than or equal to  $10^{-10}$  on link segments up to at least 15m, and  $10^{-9}$  on link segments up to at least 1km
15. Specify one or more optional power distribution techniques for use over the 10 Mb/s single balanced twisted-pair link segments, in conjunction with 10 Mb/s single balanced twisted-pair PHYs, in the automotive and industrial environments

# IEEE P802.3cg 10 Mbps Single-Pair Ethernet Potential Timeline

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- ✓ January 2017 – First Task Force meeting
  - Refine objectives, begin foundational work for baselines
- March 2017 – Finalize objectives
  - March-May (build consensus on baseline features)
- May 2017 – baseline proposal review (Draft 0.1 skeleton produced)
- July 2017 – Draft 0.2 produced for Task Force review
- September 2017 – baselines selected, draft 1.0 for Task Force Review
- November 2017 – last technical feature introduced
  - D1.1 (Nov), D1.2 (Jan 2018), possible D1.3 (Feb 2018 extra off-cycle interim)
- March 2018 – Draft 2.0, enter working group ballot.
  - 2 recircs on WG ballot D 2.1 (May), D2.2 (July)
- Sept 2018/Nov 2018 – D3.0 – enter Sponsor ballot
  - (likely slip one meeting to November 2018)
  - D3.1 (Nov/Jan), D3.2 (Jan/Mar 2019) recirculations
- March/June 2019 Standards Board approval

# Presentations (Joint Opening)

Title	Presenters(s)	Affiliation(s)	Approx Time
Agenda	George Zimmerman, Chair, IEEE P802.3cg Task Force	CME Consulting/(ADI, Aquantia, BMW, Cisco, Commscope, LTC)	1:30-2:15PM
Agenda	Steven Carlson, Chair, IEEE 802.3 Multi-gig Automotive Study Group	High Speed Design, Inc./ Robert Bosch GmbH	
Liaison Reports: TIA TR42, ISO/IEC JTC1 SC25 WG3, ODVA	Valerie Maguire, TR42 Liaison Alan Flatman, ISO/IEC Liaison David Brandt, ODVA Liaison	Siemon Company LAN Technologies/Indep. Rockwell Automation	2:15-2:45
802.3cg Ad Hoc Report	Peter Jones & George Zimmerman	Cisco & CME Consulting	2:45-2:55
NGAUTO Ad Hoc Report	George Zimmerman	CME Consulting	2:55-3:05
<b>Afternoon Break (3:00-3:30)</b>			
<b>Joint Work Discussion</b>			
Overlap between NGAUTO and 10SPE	Steve Carlson	High Speed Design, Inc. / Robert Bosch GmbH	3:35-4:05
	George Zimmerman	CME Consulting, Inc.	
The Road to Draft 1.0	George Zimmerman	CME Consulting, Inc.	4:05-4:25
Lessons from Existing Multi-Drop Networks	Steve Carlson	High Speed Design	4:25-5PM
<b>(END OF DAY ONE – MONDAY – 5)</b>			

# Presentations (802.3cg)

All day Tuesday, possibly into Wed. AM – times will vary

Title	Presenters(s)	Affiliation(s)	Approx Time
Link Segment			
Length vs. IL-bandwidth vs. Wire Gauge	Sterling Vaden & George Zimmerman	Surtec & CME Consulting/...	8:00-8:20AM
Link Segment Baseline Proposal Industrial Applications	Chris Diminico	MC Communications/Panduit	8:20-8:40AM
Additional 1000m link base line proposals	Dieter Schicketanz & Matthias Fritsche	Reutlingen Univ. & Harting	8:40-9AM
Analysis of connector S-parameters for 10SPE	Eric DiBiaso	TE Connectivity	9:00-9:30AM
First considerations for the 10Mbps@15m channel	Michael Kaindl & Kirsten Matheus Stefan Buntz & Marc Schreiner	BMW Daimler	9:30-10:00AM
Morning Break (10-10:30)			
MultiDrop			
First considerations for the 10Mbps@15m multidrop	Michael Kaindl & Kirsten Matheus Stefan Buntz & Marc Schreiner	BMW Daimler	10:30-11
PHY Considerations and Proposals			
Intrinsically Safe Proposal	Steffen Graber	Pepperl+Fuchs	11:00-11:30
Matlab model for 4B3T PHY Proposal	Steffen Graber	Pepperl+Fuchs	11:30-12:00
Lunch Break (12-1:30)			
PHY Considerations and Proposals			
Evaluation board for 4B3T PHY proposal	Steffen Graber	Pepperl+Fuchs	1:30-2
Noise Environment for PHY proposal evaluation	Steffen Graber	Pepperl+Fuchs	2:00-2:30
Generic 1-pair Topology Considerations	Masood Shariff	Commscope	2:30-2:50
Afternoon Break (3-3:30)			
Powering			
Optional Power Distribution Concept	Chris Diminico	MC Communications/Panduit	3:30-3:50
Use cases			
Non-industrial Use Cases	Jon Lewis	Dell	3:50-4:20
Multidrop Ethernet for In-cabinet applications	David Brandt	Rockwell Automation	4:20-5:00

## 802.3cg Proposed Consensus Building (Wed)

Title	Presenters(s)	Affiliation(s)	Approx Time
<b>Morning Session 1: 8-10 – Multidrop ad hoc</b>			
<b>Morning Break (10-10:30)</b>			
<b>Morning Session 2: 10:30-12 Noise Environment ad hoc</b>			
<b>Lunch Break (12-1:30)</b>			
<b>Afternoon Session 1: 1:30-2 Liaisons ad hoc</b>			
<b>Afternoon Break (3-3:30)</b>			

# Presentations (Joint, Closing Day)

Title	Presenters(s)	Affiliation(s)	Approx Time
Agenda	George Zimmerman, Chair, IEEE P802.3cg Task Force	CME Consulting / (ADI, Aquantia, BMW, Cisco, Commscope, LTC)	8-8:15AM
Agenda	Steve Carlson, Chair, IEEE 802.3 MultiGig Automotive Ethernet Study Group	High Speed Design / Robert Bosch GmbH	8:15-8:30
<b>Liaisons and Next Steps</b>			
Noise environment ad hoc report	George Zimmerman	CME Consulting, etc.	8:30-8:40
Multidrop ad hoc report	Kirsten Matheus	BMW	8:40-8:50
Motions & Straw Polls	all		8:50-10
<b>Morning Break (10-10:30)</b>			
Liaisons ad hoc report (including motions)	Masood Shariff	Commscope	10:30-10:50
The road forward– future ad hocs, champions, timelines and tracks – discussion (slides may document meeting discussion)	George Zimmerman (Chair)	CME Consulting / ADI, Aquantia, BMW, Cisco, Commscope, LTC	10:50-11:05
Additional Straw Polls, Closing Business	All		11:05-11:15



# Future Meetings

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- See: <http://www.ieee802.org/3/interims/index.html>
- May 2017 802.3 Interim
  - New Orleans, LA USA (Intercontinental Hotel)
  - May 22 – May 26 2017 (our meeting days TBD)
- July 2017 802 Plenary
  - Berlin, Germany (Estrel)
  - July 10 – July 13 2017
- September 802.3 Interim
  - Offer by Corning in Charlotte, NC
  - Sept 11 – Sept 15 (our meeting days TBD)
- Anyone interested in hosting a interim meeting contact me or the IEEE 802.3 Executive Secretary [Steve Carlson](#).

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# Thank You!