Agenda and General Information

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

George Zimmerman (Chair)

CME Consulting, Inc.
Spokane, WA, USA Sept 12-14, 2018

Agenda

- Welcome and Introductions
- Approve Agenda
- Approve Previous 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

- 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 2017 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 2017 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

Goals for the meeting

- Resolve comments on Initial Working Group Ballot

- Prepare draft 2.1 for WG ballot recirculation

Big ticket items

- ## Resolve 739 comments on draft.
  - Resolve EZ & Editorial comments (448 comments)
  - Resolve Big Ticket item groups
    - All: AutoNeg, MDI Connector, Power
    - 10BASE-T1L: Startup/PHY ctl, EEE, Tx Level, PMA Electrical
    - 10BASE-T1S: repeaters/AUI, Safety references
    - PLCA: Scope, State diagram, Priority enhancements
  - Resolve individual comments

Reflector and Web

- To subscribe to the 10 Mbps Single-Pair Ethernet Task Force reflector, send an email to:

  > *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**

Task Force Private Area

- 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.
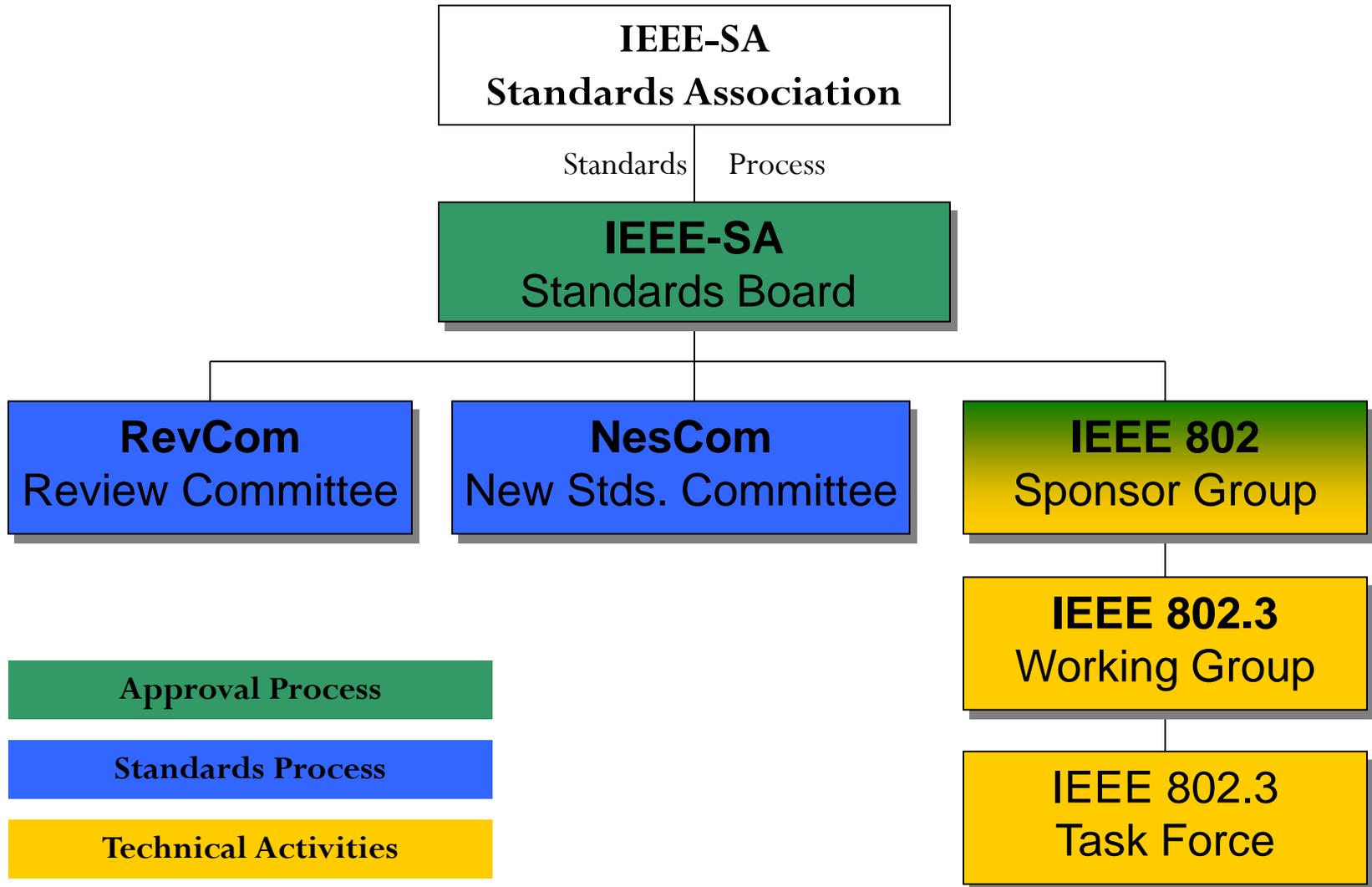
Ground Rules

- 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

- Tutorial Material on attendance tool
  - http://ieee802.org/3/minutes/attendance_procedures.pdf

- Access details
  - URL: http://imat.ieee.org/

IEEE Structure

IEEE-SA
Standards Association

Standards | Process

IEEE-SA
Standards Board

RevCom
Review Committee

NesCom
New Stds. Committee

IEEE 802
Sponsor Group

IEEE 802.3
Working Group

IEEE 802.3
Task Force

Approval Process

Standards Process

Technical Activities

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**
  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

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)

Participants have a duty to inform the IEEE

- **Participants <u>shall</u> 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 <u>should</u> 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

<u>**Slide #1**</u>

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

Slide #2

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

<u>**Slide #3**</u>

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

Slide #4

IEEE 802 Participation Slide, v05

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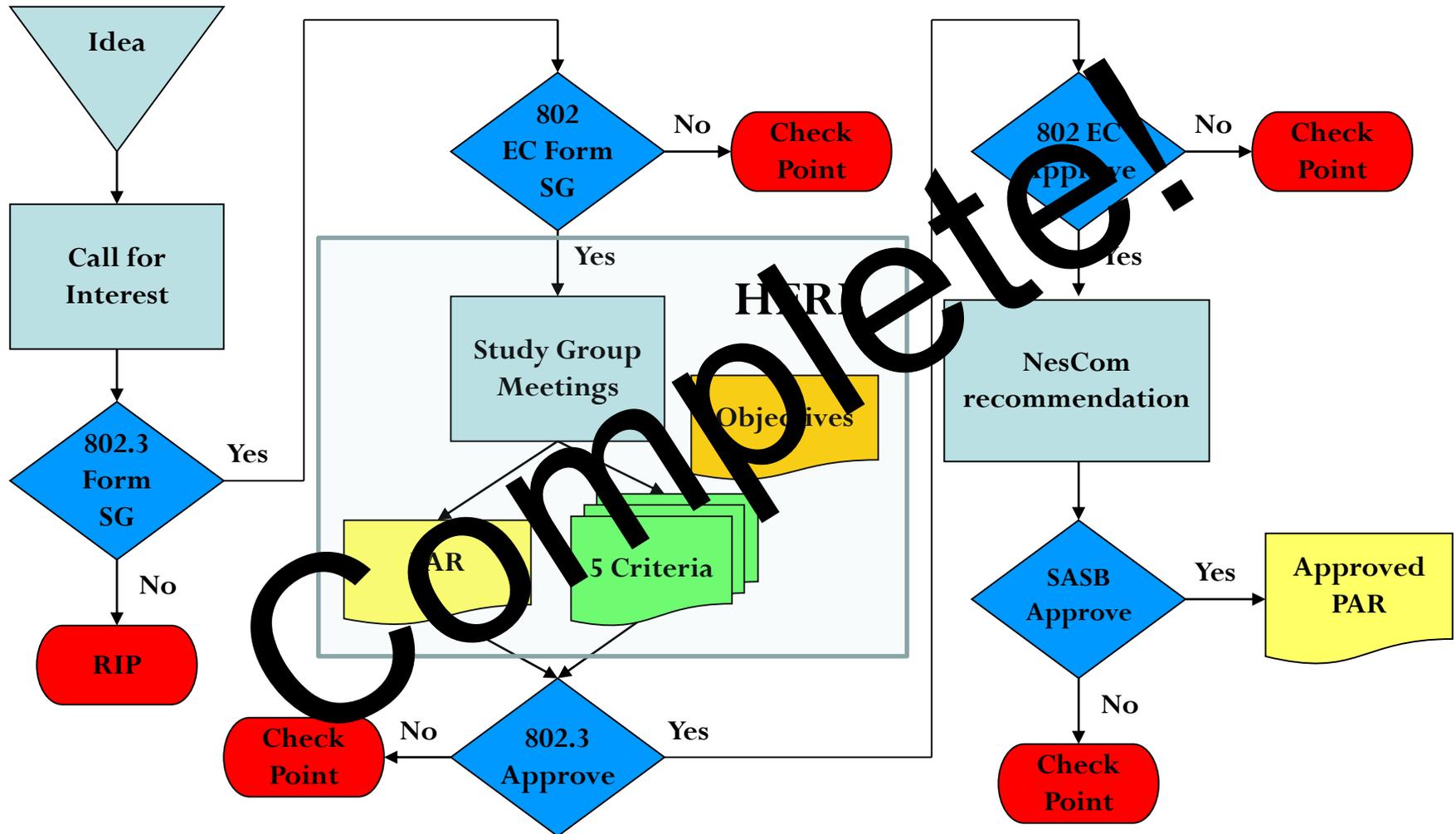
- **Participants in the IEEE standards development individual process shall act based on their qualifications and experience. (https://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf section 5.2.1)**

- **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 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.

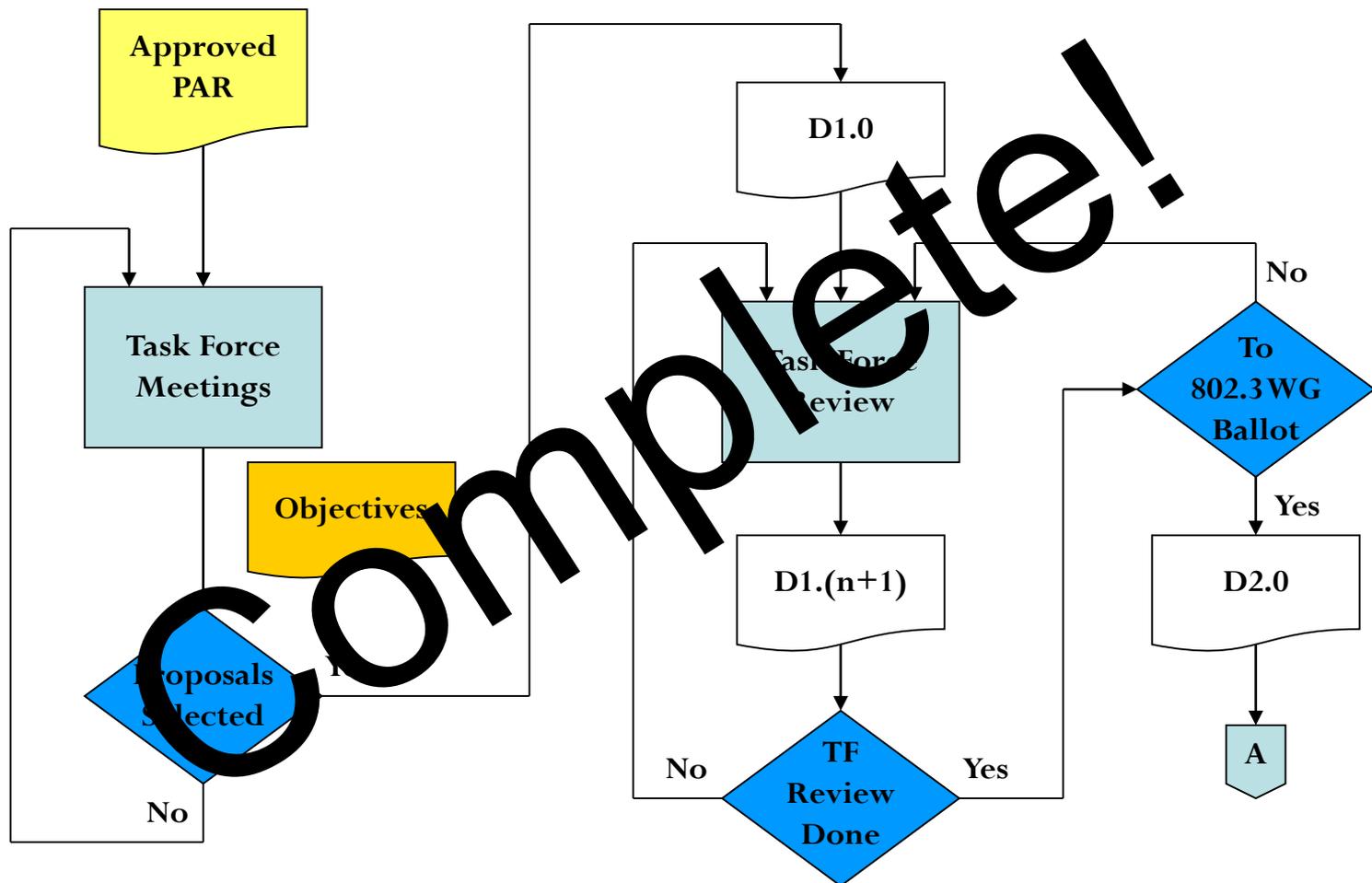(Latest revision of IEEE 802 LMSC Working Group Policies and Procedures: http://www.ieee802.org/devdocs.shtml)
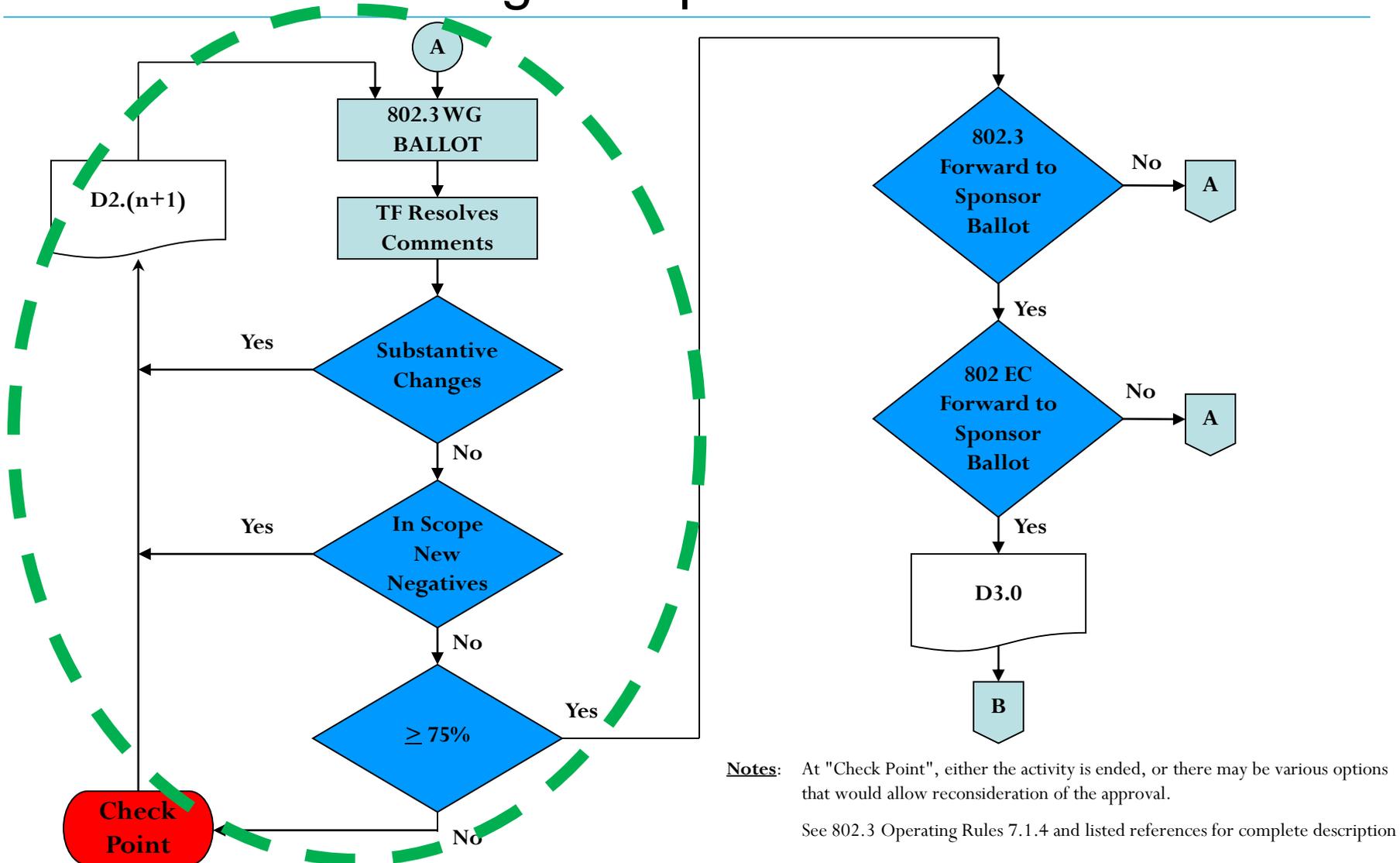
IEEE 802 Executive Committee

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

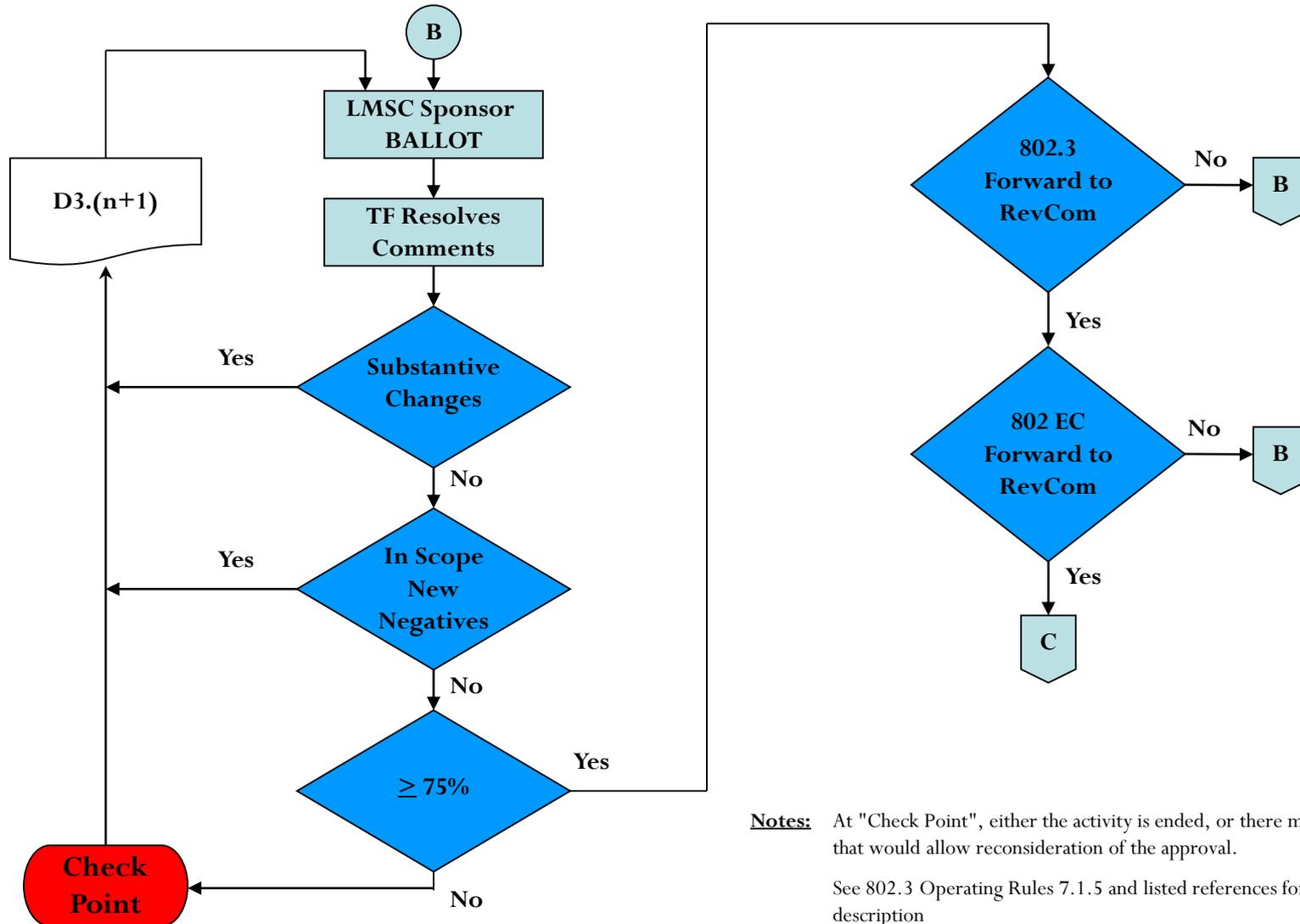# Overview of IEEE 802.3 Standards Process (2/5) – Task Force Comment Phase

Approved PAR → Task Force Meetings → Objectives → Proposals Selected (No) → Task Force Review ← D1.0 → D1.(n+1) → TF Review Done (No/Yes) → To 802.3 WG Ballot (No/Yes) → D2.0 → A

Complete!

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

B

LMSC Sponsor BALLOT

D3.(n+1)

TF Resolves Comments

Substantive Changes — Yes / No

In Scope New Negatives — Yes / No

≥ 75% — Yes / No

Check Point

802.3 Forward to RevCom — No → **B** / Yes

802 EC Forward to RevCom — No → **B** / Yes

C

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

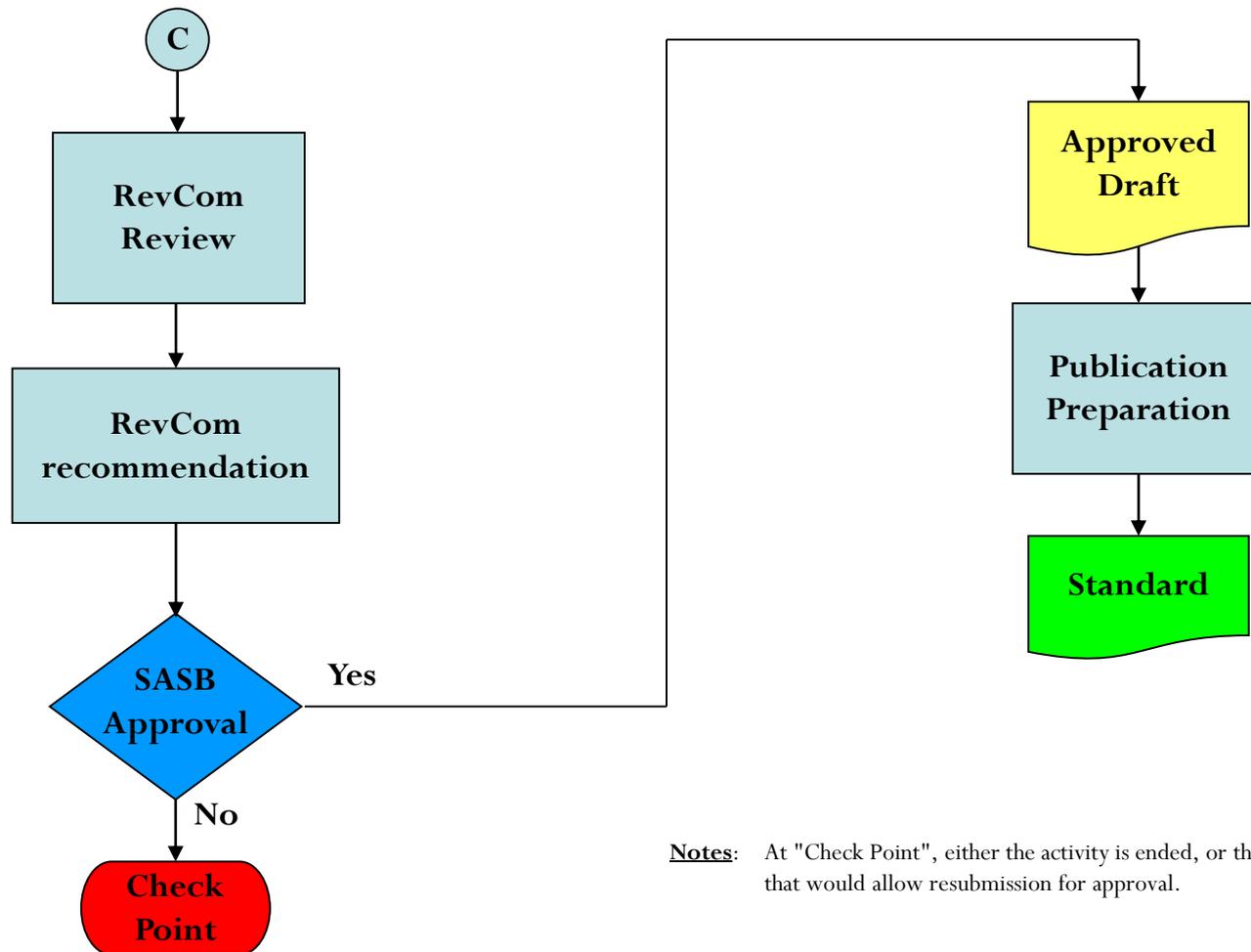See 802.3 Operating Rules 7.1.5 and listed references for complete description

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

- ISO/IEC SC25 WG3 to IEEE 802.3 on connecting hardware for single pair cabling

  - http://www.ieee802.org/3/minutes/sep18/incoming/SC25_WG3_to_IEEE_802d3_1_pair_Aug_2018.pdf

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

- ## PAR

  - http://www.ieee802.org/3/cg/P802_3cg_PAR_140518.pdf

- ## 5 Criteria

  - https://mentor.ieee.org/802-ec/dcn/18/ec-18-0014-02-00EC-ieee-p802-3cg-draft-csd-modifications.pdf

- ## Objectives

  - http://www.ieee802.org/3/cg/objectives_3cg_0318.pdf

Objectives (1 of 3) – approved by 802.3 on 3/8/18

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 single-pair Ethernet operation in automotive environments (e.g. EMC, temperature).
8. Support 10 Mb/s single-pair Ethernet operation in industrial environments (e.g. EMC, temperature).
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

11. Define performance characteristics of the following:
    a. A link segment with a single balanced pair of conductors supporting up to 4 inline connectors for up to at least 15 m reach
    b. A mixing segment with a single balanced pair of conductors supporting up to at least 8 nodes, for up to at least 25 m reach
    c. A link segment with a single balanced pair of conductors supporting up to 10 inline connectors for up to at least 1 km reach
12. Define a PHY:
    a. Supporting point-to-point half-duplex operation over the 15 m link segment
    b. Optionally supporting full-duplex operation over the 15 m link segment
    c. Optionally supporting half-duplex multi-drop operation over the 25 m mixing segment
13. Define a PHY:
    a. Supporting point-to-point full-duplex operation over the 1 km link segment

14. 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

15. Maintain a bit error ratio (BER) at the MAC/PLS service interface of less than or equal to:
    a. 10^{-10} on link segments up to at least 15m
    b. 10-10 on mixing segments up to at least 25m
    c. 10^{-9} on link segments up to at least 1000m

16. Specify one or more optional power distribution techniques for use in conjunction with 10 Mb/s single-pair Ethernet PHYs over one or more of the single-pair segments

A word on Project scope...

- Objectives:
  - 802.3-level, 'major features we will implement to solve the problem'
- Criteria for Standards Development scope
  - 802-level: How our project relates to the market, technology status, our standard, and other standards
- PAR scope
  - IEEE SA-level, lets the world know what we are doing

- Comments & resolutions must be within the project scope!
  - TF or 802.3 voters may propose changes to objectives & CSDs to 802.3. Any changes to the CSD must be proposed to 802 by 802.3, but PAR requires a new CFI and a study group.

PAR Scope

- Specify additions to and appropriate modifications of IEEE Std 802.3 to add 10 Mb/s Physical Layer (PHY) specifications and management parameters for operation, and associated optional provision of power, using a single balanced pair of conductors.

- Operative part: "Physical layer specifications and management parameters"

IEEE P802.3cg 10 Mb/s Single Pair Ethernet
Adopted Timeline (July 2018)

- ✓ January 2017 – First Task Force meeting
- ✓ July 2017 – Objectives Finalized, Draft 0.1 (skeleton), all baselines presented
- ✓ September 2017 – Baselines selected, draft 0.9 for Task Force Review
- ✓ **November 2017 –Last features selected - Task Force Review D1.0,** Nov:D1.0, Jan:D1.1
- ✓ March 2018 –Task Force Review (D1.2)
- ✓ May 2018 – Task Force Review (D1.3)
- ✓ July 2018 – Draft 2.0, request working group ballot

  YOU ARE HERE – Recirculate and resolve comments...

- ➢ **March 2019 – D3.0 – enter Sponsor ballot (2 recircs May'19:D3.1, July'19:D3.2)**

- ➢ **July 2019 – Request approval to proceed to Revcom out of July plenary**

- ➢ **September 2019 Standards Board approval**

Agenda (Multi-day)

Title	Presenters(s)	Affiliation(s)
Agenda	George Zimmerman, Chair, IEEE P802.3cg Task Force	CME Consulting/(ADI, APL Group, Aquantia, BMW, Cisco, Commscope)
802.3cg Ad Hoc Report	Peter Jones	Cisco
Initial Working Group Ballot Comment Resolution		
802.3cg Editor's Report	Valerie Maguire, Chief Editor	Siemon Company
COMMENT RESOLUTION (presentations below) - Big ticket item discussions first - Then detailed comments	Editorial Team	
Presentations related to comments(see next page)		
Motions and Closing Business		
Motions and Straw Polls	All	
Closing Business - Adjournment	All	

Presentations related to comments

BTI Order	Title	Presenter(s)	Affiliation(s)
	AutoNeg		
1	Auto-Negotiation Start Delimiter (01a)	Steffen Graber	Pepperl+Fuchs
	MDI Connector		
3	Update on ISO/IEC SC25 WG3 Connectors	Matthias Fritsche	Harting
4	Copper LC connector interoperability	Antoine Pelletier Masood Shariff Mike Borgman	Intertek CommScope Panduit
	T1L		
11	10BASE-T1L PSD Mask Changes (02a)	Steffen Graber	Pepperl+Fuchs
	10BASE-T1L Jabber State Diagram (03a)	Steffen Graber	Pepperl+Fuchs
8	10BASE-T1L Receive State Diagram (04a)	Steffen Graber	Pepperl+Fuchs
7	10BASE-T1L PHY Control State Diagram (05a)	Steffen Graber	Pepperl+Fuchs
9	10BASE-T1L EEE (06a)	Steffen Graber	Pepperl+Fuchs
10	10BASE-T1L Transmit Amplitude (07b)	Steffen Graber	Pepperl+Fuchs
6	Proposed resolution for Comments 477,478,583 relating to Fast Startup of a T1L PHY	OISÍN Ó CUANACHÁIN	ADI
	T1S (continued next page)		
12	Carrier Detect and Collision Requirements	Geoff Thompson	Independent
13	Introduction to Repeaters	Geoff Thompson	Independent
14	Carrier Sense Usage	Piergiorgio Beruto, Antonio Orzelli	CanovaTech

Presentations related to comments

BTI order	Title	Presenter(s)	Affiliation(s)
	T1S (cont'd)		
2	T1S Autoneg and Link Status indication	Piergiorgio Beruto, Antonio Orzelli	CanovaTech
	10BASE-T1S Jabber Problem	Piergiorgio Beruto, Antonio Orzelli	CanovaTech
	IEEE P802.3cg10BASE-T1S MDI Parallel Inductance (01a)	Scott Griffiths, David Brandt	Rockwell Automation
	PLCA		
	PLCA Status Reporting	Piergiorgio Beruto, Antonio Orzelli	CanovaTech
15	Interworking between PLCA enabled nodes with non-PLCA enabled nodes	Piergiorgio Beruto, Antonio Orzelli	CanovaTech
16	Priority Support for PLCA	Claude Gauthier	NXP
	Unbalanced PLCA Issue (comment 613)	Michael Rentschler, Venkat Iyer, Dixon Chen	Microchip
	Powering		
5	Optional Cable Resistance Measurement	Gitesh Bhagwat, Andy Gardner, Heath Stewart	Analog Devices
	Draft markups with proposed resolutions		
	Clause 22 proposed resolutions	Piergiorgio Beruto	CanovaTech
	Clause 45 proposed resolutions	Piergiorgio Beruto	CanovaTech
	Clause 147 proposed resolutions	Piergiorgio Beruto	CanovaTech
	Clause 148 proposed resolutions	Piergiorgio Beruto	CanovaTech
	Comma markup (comment 390)	Chad Jones	Cisco Systems

Future Meetings

- See: http://www.ieee802.org/3/interims/index.html
- November 802 Plenary: Nov 12-15
  - Bangkok, Thailand - Marriott Marquis Queen's Park
  - Schedule: Plenary meeting – expect to meet Monday – Thursday
- January 802.3 Interim: January 14-18, 2019 (802.3cg days are TBD)
  - Long Beach, CA – Hilton Long Beach

- Expect to decide in Bangkok whether we need an off-cycle interim in February to progress working group ballot.

- Anyone interested in hosting a interim meeting contact me or the IEEE 802.3 Executive Secretary Steve Carlson.

Thank You!