



# Agenda and General Information

IEEE P802.3bj 100 Gb/s Backplane and  
Copper Cable Task Force

John D'Ambrosia

Dell

Newport Beach, CA, USA

Interim: Jan 26 – 27, 2012

# Agenda

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- Welcome and Introductions
- Approve Agenda
- Approve Nov 2011 Minutes
- Goals for this meeting
- Reflector and Web
- Ground Rules
- IEEE
  - Structure
  - Bylaws and Rules
  - Call for Patents
  - IEEE Standards Process
- Review of Action Items
- Liaisons and Communications
- Presentations
- Motions and Closing Business
- Future Meetings

# Task Force Decorum

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- Photography or recording by permission only (2010 SASB Op Manual 5.3.3.4)
- Cell phone ringers off
- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (5.3.3.5)
- 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

# Internet Access

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- The Fairmont has three separate networks: Guest Room, Lobby, and Meeting Rooms. The meeting host provides Internet access in the meeting room area only. The only way to get free Internet access in the lobby and guest room is to sign up for Fairmont Presidents Club (FPC) at <https://www.fairmont.com/fpc/>
- The network in the meeting room is set up with support for a limited number of IP addresses. Please, use the guest/lobby network for your smartphones and tablets.
- Please use the following Internet access information when working in the Meeting Rooms:
  - SSID: **Fairmont\_Meeting**
  - Group code: **xxxxxx**
- **Special thanks to the Ethernet Alliance for hosting this meeting**

# Attendance

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- Tutorial Material on attendance tool
  - [http://ieee802.org/3/minutes/nov11/1111\\_imat.pdf](http://ieee802.org/3/minutes/nov11/1111_imat.pdf)
- URL (Valid for this meeting only)
  - be <https://seabass.ieee.org/imat/>
  - Session access code – xxxxxx
- Also – remember the sign-in book!

# Goals for the meeting week

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- Hear Technical Presentations
- Start the Decision Making Process
- Lay the ground work for the next meeting

# Reflector and Web

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- To subscribe to the 100GCU 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-802-3-100GCU <yourfirstname> <yourlastname>](#)***  
***[end](#)***

- Send 100GCU reflector messages to:

**[STDS-802-3-100GCU@listserv.ieee.org](mailto:STDS-802-3-100GCU@listserv.ieee.org)**

- Task Force web page URL:

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

# Task Force Private Area

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- URL: <http://www.ieee802.org/3/bj/private/index.html>
  - Username: xxxxxx
  - Password: xxxxxxxx
- 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.

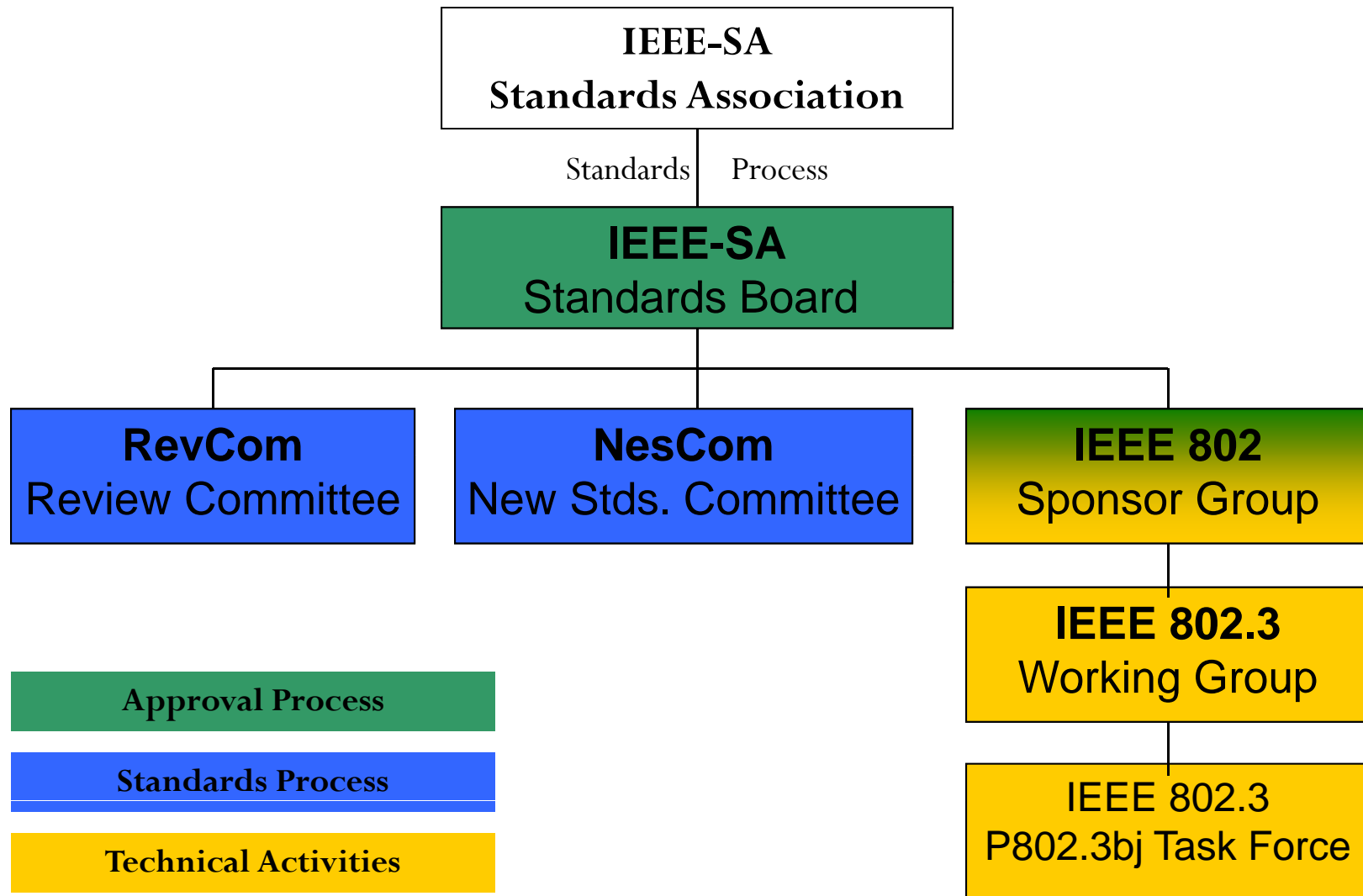


# Ground Rules

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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

# IEEE Structure



# Important Bylaws and Rules

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- **IEEE-SA Operations Manual**  
<http://standards.ieee.org/sa/sa-om.pdf>
- **IEEE-SA Standards Board Bylaws**  
<http://standards.ieee.org/guides/bylaws/sb-bylaws.pdf>
- **IEEE-SA Standards Board Operations Manual**  
<http://standards.ieee.org/guides/opman/sb-om.pdf>
- **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/PNP/2010-07/IEEE\\_802\\_LMSC\\_OM\\_approved\\_100716.pdf](http://www.ieee802.org/PNP/2010-07/IEEE_802_LMSC_OM_approved_100716.pdf)
- **IEEE 802 LAN/MAN Standards Committee (LMSC) Working Group (WG) Policies and Procedures**  
[http://www.ieee802.org/PNP/2010-07/IEEE\\_802\\_LMSC\\_WG\\_PandP\\_approved\\_100716.pdf](http://www.ieee802.org/PNP/2010-07/IEEE_802_LMSC_WG_PandP_approved_100716.pdf)
- **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 consistent with the ANSI patent policy and 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 12 and 12a 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.



25 March 2008 (updated 29 March 2011)

(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
    - “Personal awareness” means that the participant “is personally aware that the holder may have a potential Essential Patent Claim,” even if the participant is not personally aware of the specific patents or patent claims
  - “Should inform the IEEE (or cause the IEEE to be informed)” of the identity of “any other holders of such 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

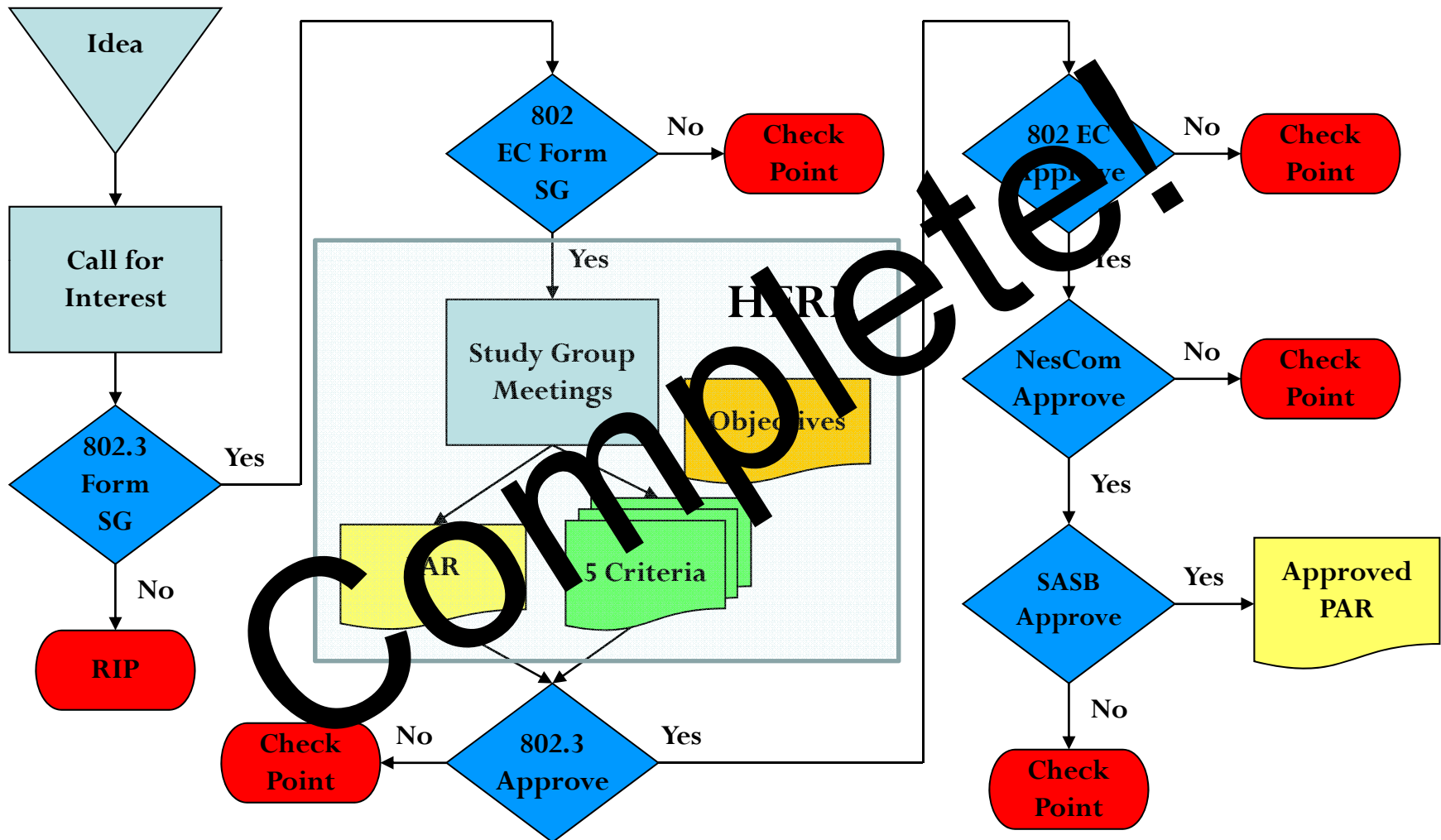
# Other Guidelines for IEEE WG Meetings

- **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.

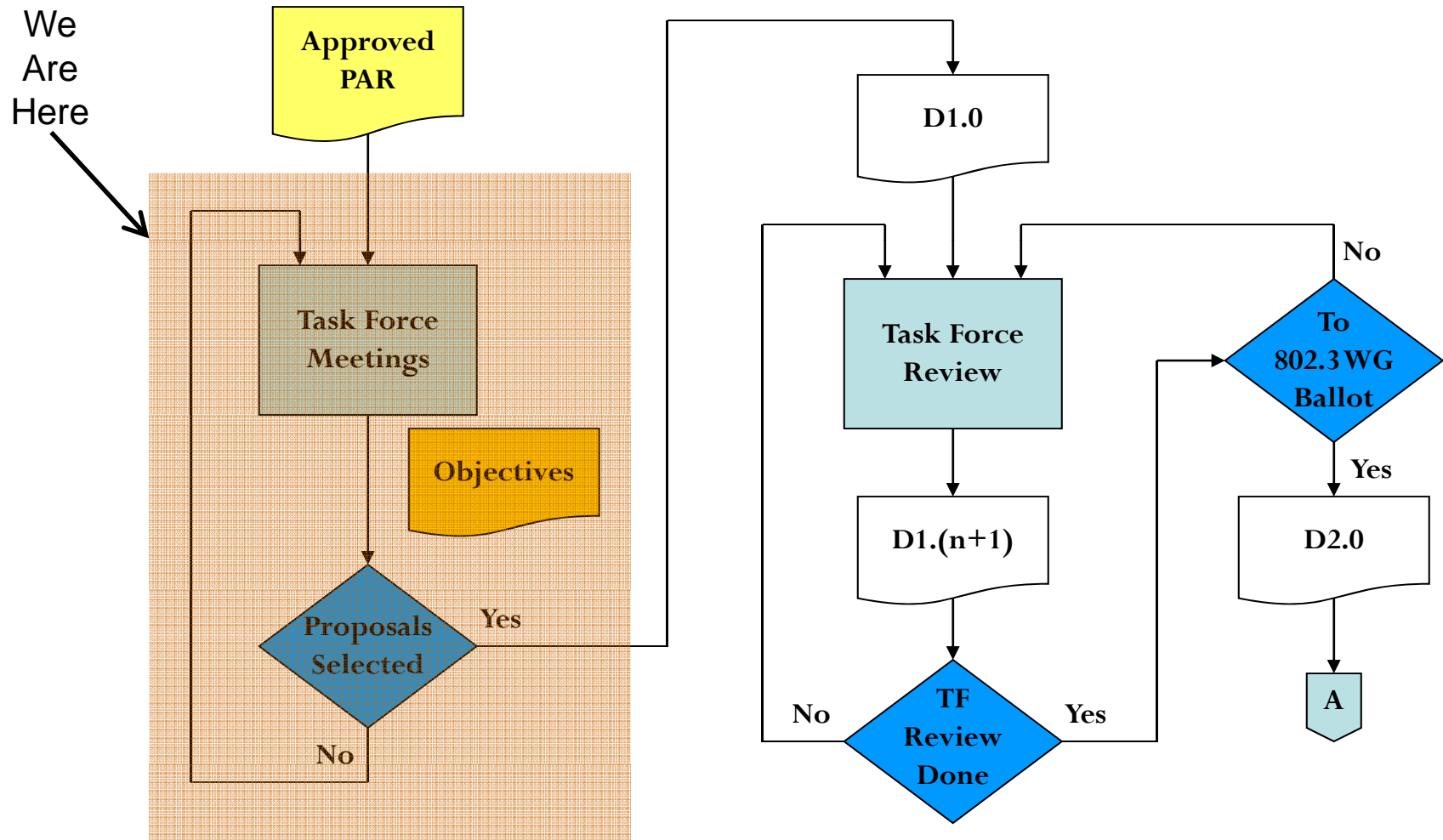


# Overview of IEEE 802.3 Standards Process (1/5)- Study Group Phase

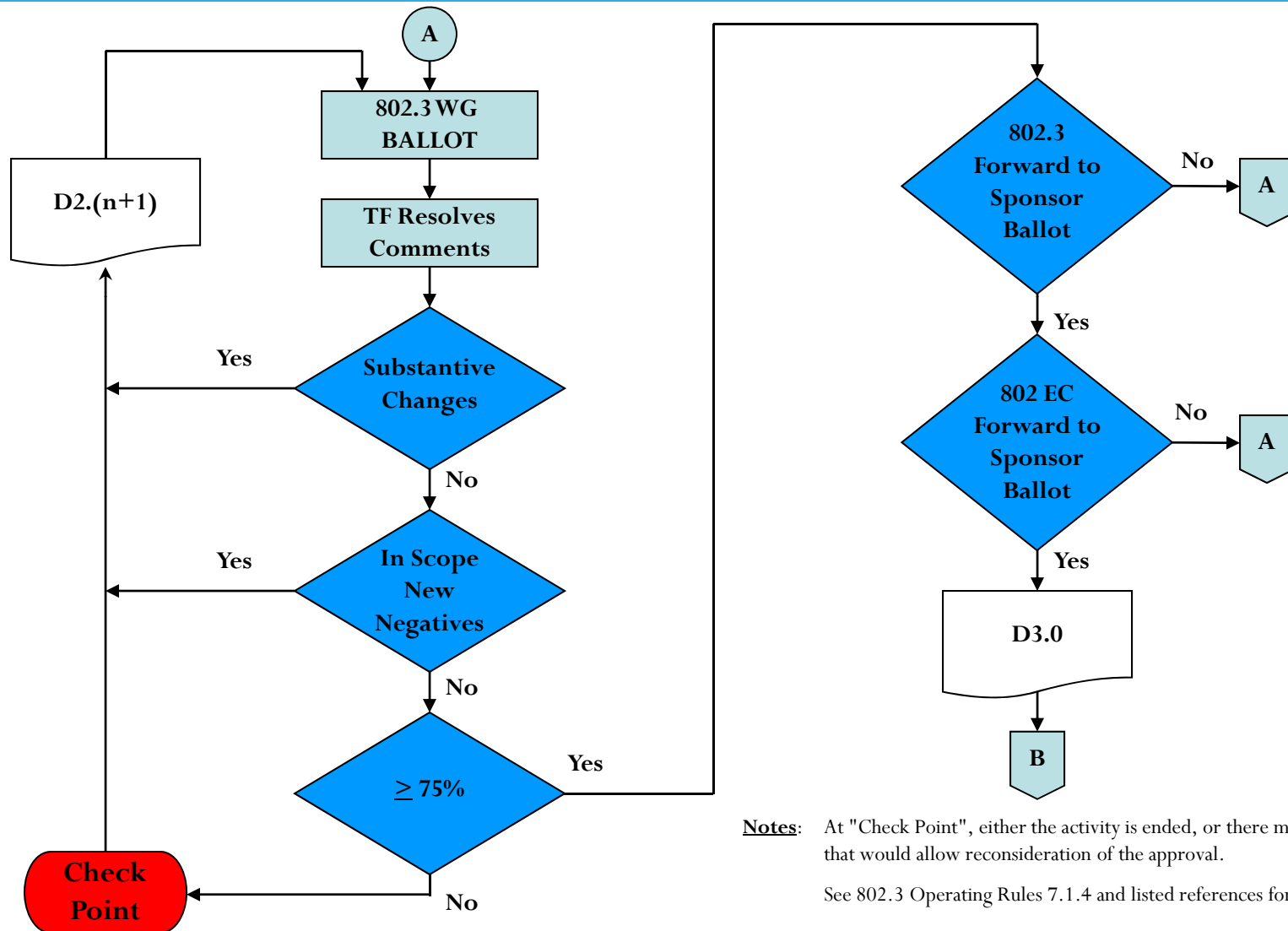


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

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



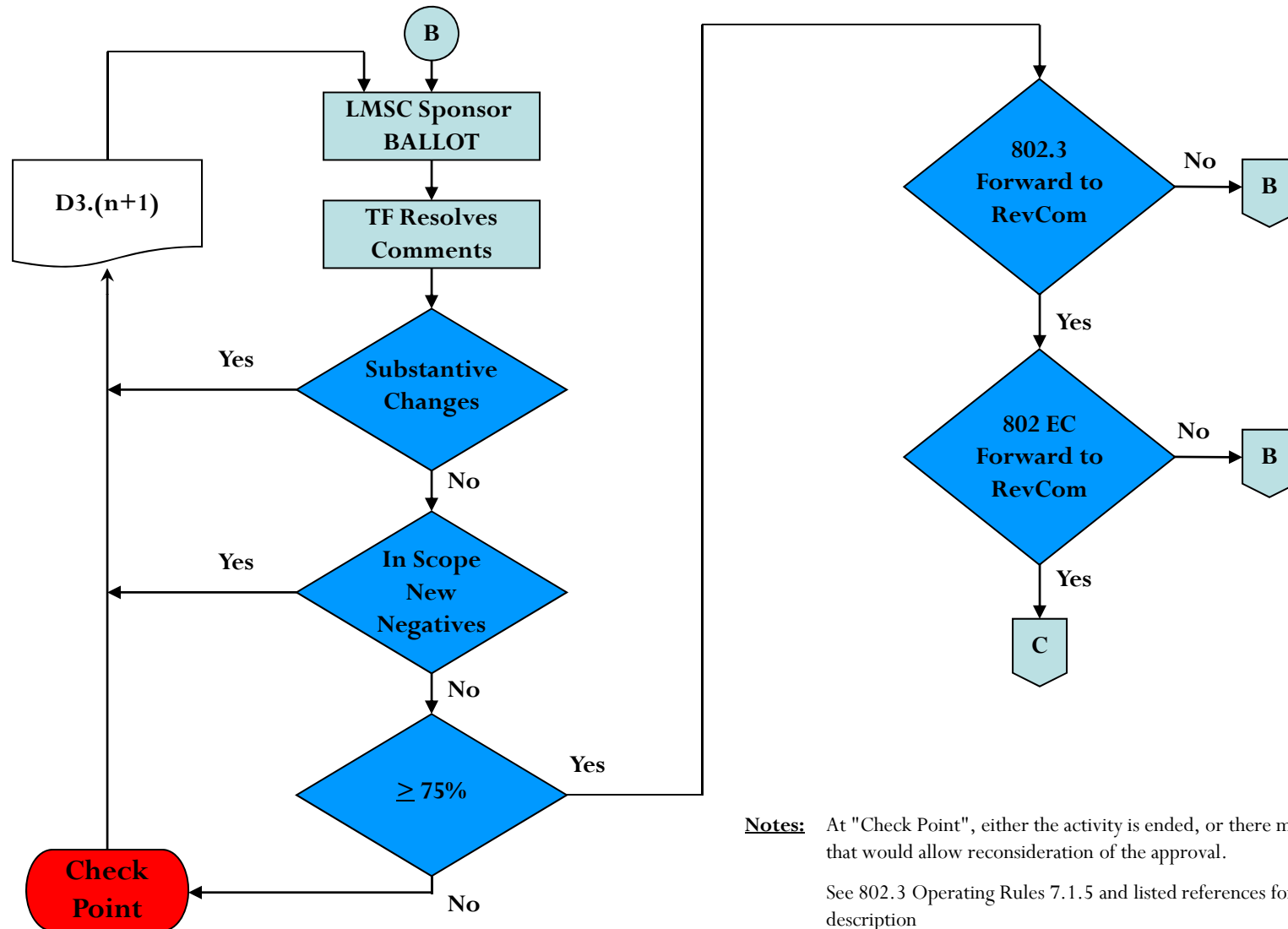
# Overview of IEEE 802.3 Standards Process (3/5) – Working Group Ballot Phase



**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

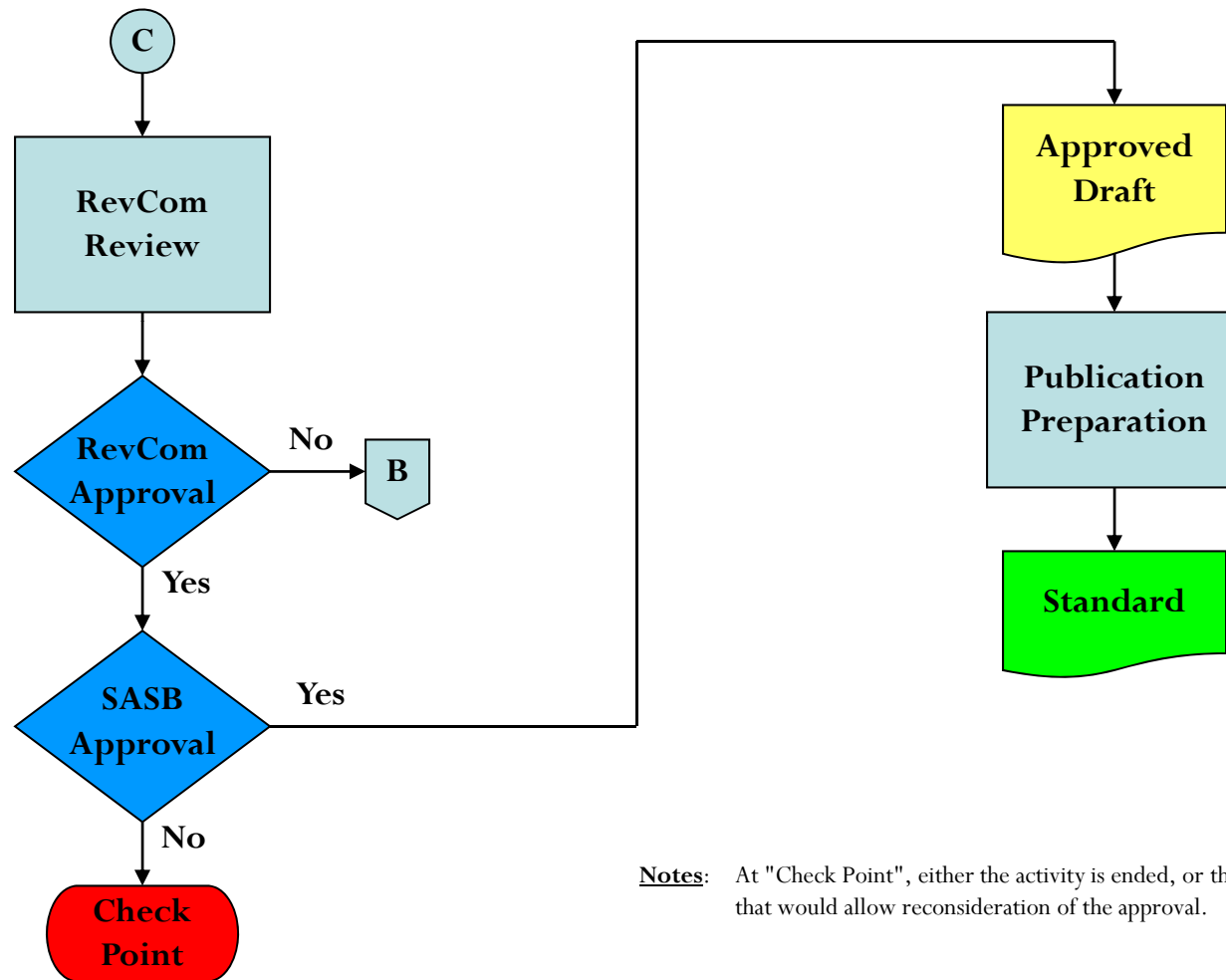
# Overview of IEEE 802.3 Standards Process (4/5)- Sponsor Ballot Phase



**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 reconsideration of the approval.

# IEEE P802.3bj 100 Gb/s Backplane and Copper Cable Task Force Project Documents

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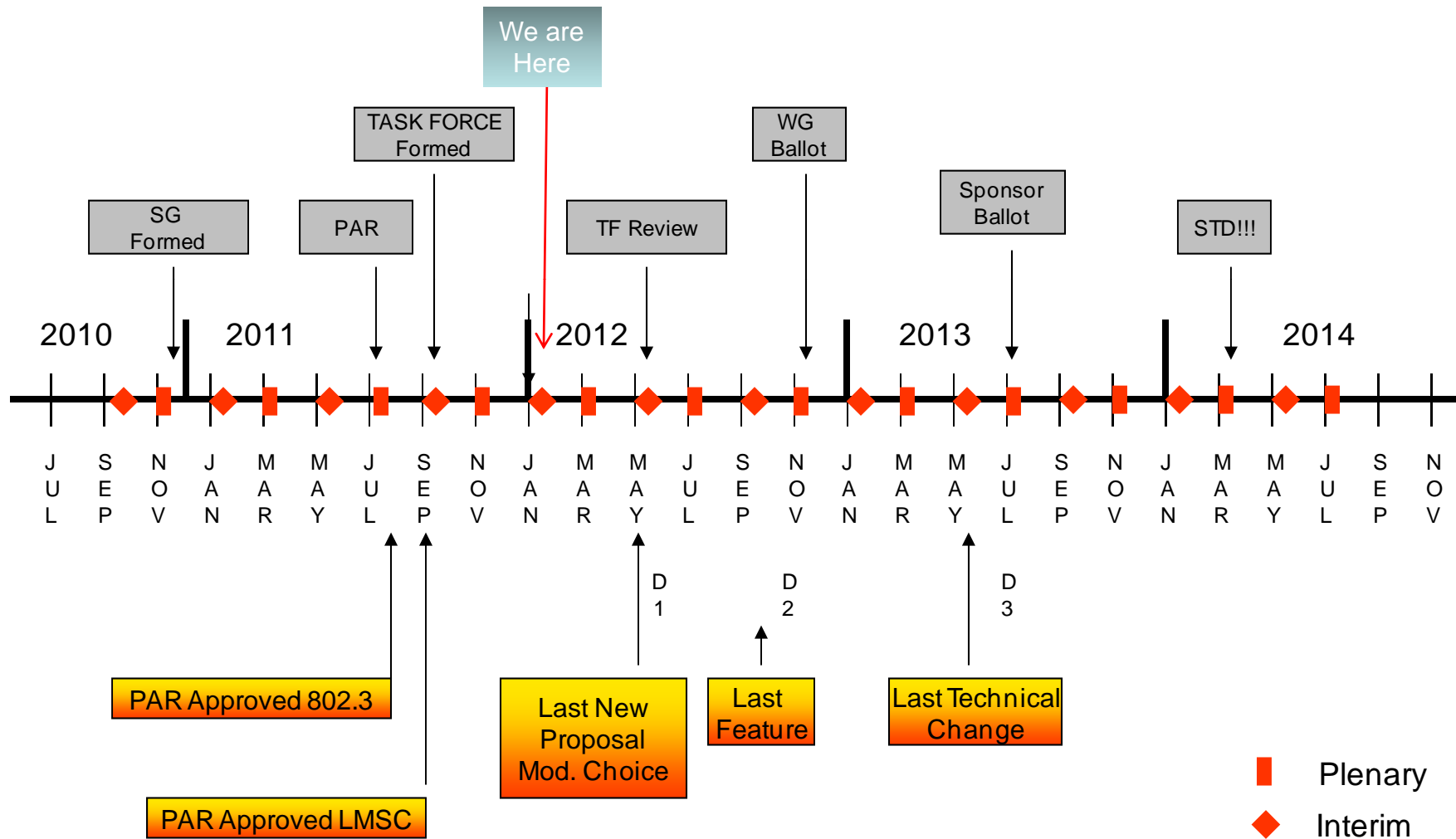
- PAR
  - [http://www.ieee802.org/3/bj/PAR\\_approved\\_0911.pdf](http://www.ieee802.org/3/bj/PAR_approved_0911.pdf)
- 5 Criteria
  - [http://www.ieee802.org/3/bj/5C\\_0911.pdf](http://www.ieee802.org/3/bj/5C_0911.pdf)
- Objectives
  - [http://www.ieee802.org/3/bj/objectives\\_1111.pdf](http://www.ieee802.org/3/bj/objectives_1111.pdf)
- Adopted Timeline
  - [http://www.ieee802.org/3/bj/timeline\\_0911.pdf](http://www.ieee802.org/3/bj/timeline_0911.pdf)

# IEEE P802.3bj Task Force Objectives

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- Support full-duplex operation only
- Preserve the 802.3 / Ethernet frame format utilizing the 802.3 MAC
- Preserve minimum and maximum FrameSize of current 802.3 standard
- Support a BER of better than or equal to  $10^{-12}$  at the MAC/PLS service interface
- Define a 4-lane 100 Gb/s backplane PHY for operation over links consistent with copper traces on “improved FR-4” (as defined by IEEE P802.3ap or better materials to be defined by the Task Force) with lengths up to at least 1m.
- Define a 4-lane 100 Gb/s PHY for operation over links consistent with copper twin-axial cables with lengths up to at least 5m.
- To define optional Energy-Efficient Ethernet operation for 100G Backplane and Twinaxial cable PHYs specified in P802.3bj

# Adopted Timeline



[http://www.ieee802.org/3/bj/timeline\\_0911.pdf](http://www.ieee802.org/3/bj/timeline_0911.pdf)



# Action Items

Volunteer	Action	Date Assigned	Status
Adam Healey	Update spreadsheet to add name & affiliation, FEC parameters, and simulation tool used. Also update example reference.	9/13/2011	pending
Joel Goergen	Provide loss calculator spreadsheet to group	9/13/2011	Done, presented by Beth K. at Nov'11 plenary.
Ed Sayre	Provide channel data for legacy backplanes with updated line cards.	9/14/2011	pending
Ali Ghiasi	Ali to send update presentation correcting proposed HCB trace loss (page 3)	9/14/2011	Done
Joel Goergen	Provide relative cost analysis of board technologies/materials based on Goergen_02_0911.pdf	9/14/2011	pending
Joel Goergen	Provide topology definition/relative frequencies of interest spreadsheet	9/14/2011	pending
Joel Goergen	Provide update of surface roughness calculation in Goergen_02_0911	9/14/2011	pending
Chris Cole	Present CFP4 MSA update to 802.3bj at November meeting. (Note 1)	9/14/2011	Update provided by N. Tracy
New Action Items, November			
John D'Ambrosia	Reach out to test & measurement vendors for contributions on measurement techniques	11/7/2011	
John D'Ambrosia	Post updated version of dambrosia_02_1111.pdf	11/8/2011	DONE
Mounir Meghelli	Provide update/correction to PAM 4 crosstalk in beukema_01_1111.pdf.	11/9/2011	
Mounir Meghelli	Post channel data used in beukema_01_1111.pdf	11/9/2011	
Roy Cideciyan	Send updated version of cideciyan_01a_1111.pdf	11/9/2011	
Beth Kochuparambil	Provide updated tool with surface roughness, provide recommendation for benchmark loss/unit length metric based upon the adopted definition of improved FR-4; hold conference call	11/10/2011	DONE

# Liaisons and Communications

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- Liaison from OIF
  - Regarding OIF-28G-VSR Project
  - IEEE 802.3 WG Chair assigned to IEEE 802.3 Next Generation 100 Gb/s Optical Ethernet Study Group
  - Work closely with IEEE P802.3bj TF

# Presentations (Thurs)

Time	Presenter	Affiliation	Title	File Name
8:00 AM	John D'Ambrosia	Dell	Agenda and General Information	agenda_01_0112.pdf
8:30 AM	Chris DiMinico	MC Communications / LEONI	IEEE 802.3bj Test Points and Parameters 100 Gb/s Copper Cable	diminico_01_0112.pdf
9:00 AM	Ryan Latchman	Mindspeed	Host Loss Consensus activities	latchman_01_0112.pdf
9:15 AM	Joe Beers	GCE	Discussion regarding Insertion Loss Variation	beers_01_0112.pdf
9:45 AM	Elizabeth Kochuparambil	Cisco	Proposal for Defining Material Loss	kochuparambil_01_0112.pdf
10:15 AM			Break	
10:30 AM	Chris Cole	Finisar	PAM-N Tutorial Material	cole_02_0112.pdf
11:00 AM	Mike Dudek	QLogic	Baseline Proposal for 100G Backplane Specification Using PAM-2	dudek_01_0112.pdf
11:30 AM	Mounir Meghelli	IBM	Line Signaling Performance Comparison on Emerson Channel	meghelli_01_0112.pdf
12:00 PM			Lunch	
1:15 PM	Jitendra Mohan	TI	Approach for Supporting Legacy Channels Per IEEE 802.3bj Objective	mohan_01_0112.pdf
1:45 PM	Vasu Parthasarathy	Broadcom	PAM4 digital receiver performance and feasibility	parthasarathy_01_0112.pdf
2:15 PM	Matt Brown	APM	100G backplane PAM4 PHY encoding	brown_01_0112.pdf
2:45 PM	Dariush Dabiri	APM	MLSD Performance with Partially Terminated Trellis'	dabiri_01_0112.pdf
3:15 PM			Break	
3:35 PM	Adee Ran	Intel	Analog Receiver Performance Comparison of PAM-4 and PAM-2	ran_01_0112.pdf
4:05 PM	Hiroshi Takatori	Huawei	100G Signaling Options over Backplane Classes	takatori_01_0112.pdf
4:35 PM	Howard Frazier	Broadcom	Two Markets, Two Channels, Two PHYs	frazier_01_-112.pdf
5:05 PM	Mark Nowell	Cisco	System Vendors: Thoughts on Two PHY Approach	nowell_01_0112.pdf
5:35 PM	Joel Goergen	Cisco	Design Process and Technical Thoughts on a Two Channel PHY Approach	goergen_01_0112.pdf
6:05 PM	Rich Mellitz	Intel	100Gb/s Backplane/PCB Ethernet: Two Channel Model and Dual PHY Proposal	mellitz_01_0112.pdf
6:35 PM			Discussions - Straw Polls	
7:00 PM			Break	

Note –Times listed are subject to change.

# Presentations (Fri)

Time	Presenter	Affiliation	Title	File Name
8:00 AM	John D'Ambrosia	Dell	Agenda and General Information	agenda_01_0112.pdf
8:10 AM	Mark Gustlin	Xilinx	FEC Options	gustlin_01_0112.pdf
8:40 AM	Roy Cideciyan	IBM	MTTFPA Estimation for 100 Gb/s Backplane and Copper Cable	cideciyan_01_0112.pdf
9:10 AM	Arthur Marris	Cadence	Proposal for 802.3bj Auto-Negotiation	marris_01_0112.pdf
9:40 AM	Oren Sela	Mellanox	Power Considerations for 100GBASE-KR4 PHY	sela_01_0112.pdf
10:10 AM			Break	
10:30 AM	Mark Gustlin	Xilinx	EEE Support for 100 Gb/s	gustlin_02_0112.pdf
11:00 AM	Pete Anslow	Ciena	Rapid Alignment Marker Performance	anslow_01_0112.pdf
11:30 AM	Hugh Barrass	Cisco	Options for EEE in 100G	barrass_01_0112.pdf
12:00 PM			Lunch	
1:15 PM	Charles Moore	Avago	Signal Integrity Specs, Baseline Proposal	moore_01_0112.pdf
1:45 PM	Pavel Zivny	Tektronix	Test Points and Fixtures for 802.3bj backplane	zivny_01_0112.pdf
2:15 PM	Adam Healey	LSI	Chief Editor's Report	healey_01_0112.pdf
2:35 PM			Discussion & Motions	
3:00 PM			Break	
3:15 PM			Discussion & Motions (Continued)	
4:45 PM			Closing Business	
5:00 PM			Adjourn	

Note –Times listed are subject to change.

# Future Meetings

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- See: <http://www.ieee802.org/3/interims/index.html>
- March 2012 Plenary
  - Date: week of March 11
  - Location: Hilton Waikoloa Village, Waikoloa, HI USA
  - Note – IEEE 802.3 Next Gen 100G Ethernet Optical SG will hold adjacent / co-located interim on Monday morning intended as joint time to work on common issues with IEEE P802.3bj
- May 2012 Interim (Hosted by Cisco)
  - Date: Week of May 14
  - Location: TBD
- July 2012 Plenary
  - Date: Week of July 16
  - Location: Grand Hyatt Manchester, San Diego, CA, USA
- Sept 2012 Interim (Hosted by ITU)
  - Date: Week of Sept 24
  - Location: Geneva, CH
- Nov 2012 Plenary
  - Date: Week of Nov 12
  - Location, Grand Hyatt, San Antonio, San Antonio, TX, USA
- Anyone interested in hosting a meeting contact me.



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# Thank You!