

Agenda and General Information

IEEE 802.3
Next Generation
100Gb/s Optical Ethernet Study Group

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Applied Micro
Newport Beach, California USA – 01/24/2012

Agenda

- *Appointment of Recording Secretary*
- Welcome and Introductions
- Approve Minutes of November Meeting
- Approve Agenda
- Goals for this meeting
- 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

Study Group Decorum



- Photography or recording by permission only (5.3.3.4)
- Cell phone ringers off
- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (2008 SASB Op Manual 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 (enforcement procedures)

Goals for the meeting

- Finalize Objectives (3 motions)
 - MMF objective?
 - Electrical 4x interface for host systems?
 - SMF objective?
- Motion approving the final list of objectives
- Motion approving the 5 criteria responses
- Motion approving the PAR
- Motion requesting 802.3 approve the PAR and 5 Criteria and forward to SEC
- Establish Work-load for Waikoloa

Reflector and Web

- To subscribe to the *Next Generation 100Gb/s Optical Ethernet* reflector, send an email to: ListServ@ieee.org

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

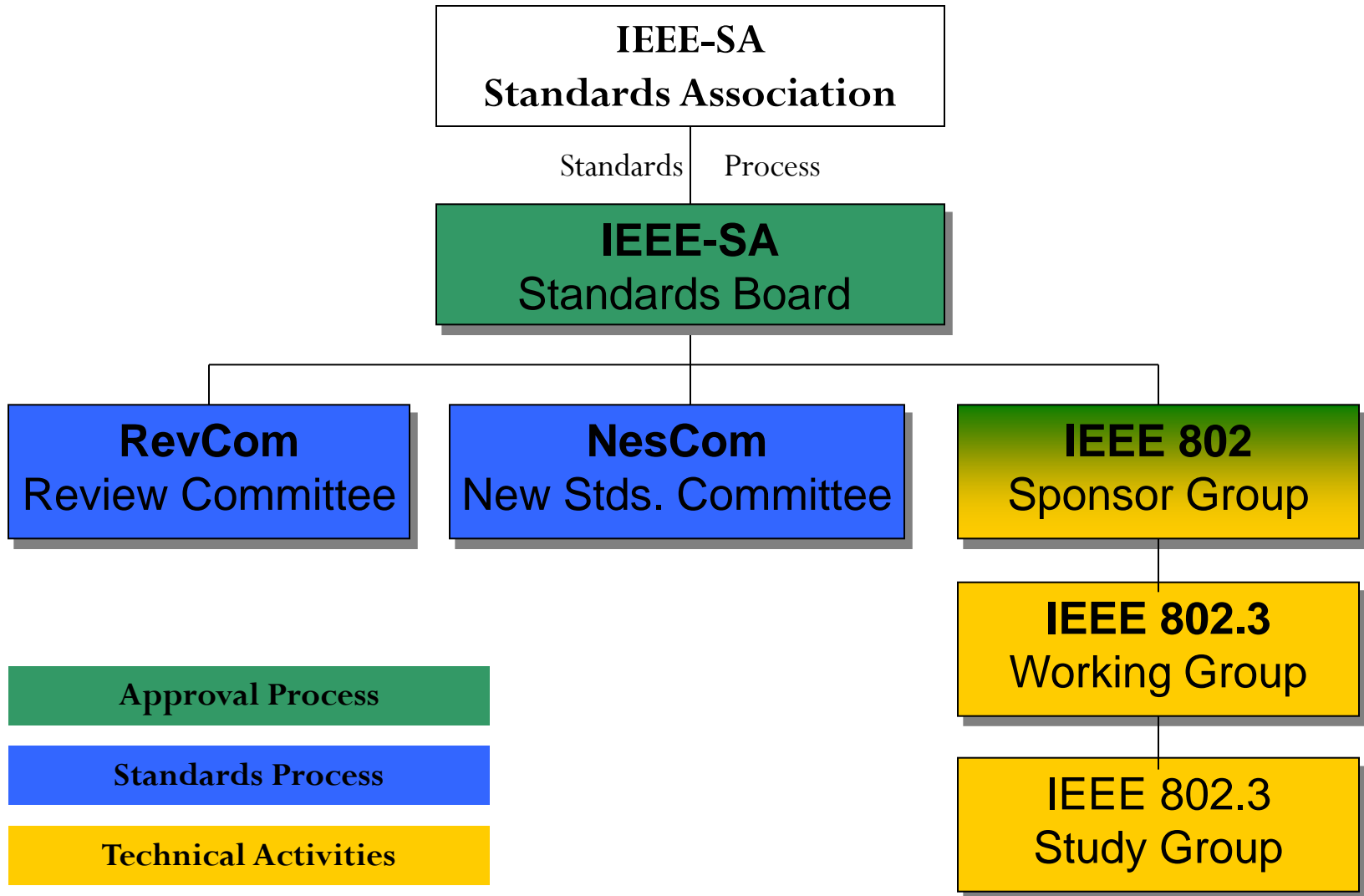
**subscribe stds-802-3-100GNGOPTX <yourfirstname> <yourlastname>
end**

- Send *Next Generation 100Gb/s Optical Ethernet* reflector messages to:
STDS-802-3-100GNGOPTX@LISTSERV.IEEE.ORG
- Study Group web page URL:
<http://www.ieee802.org/3/100GNGOPTX/index.html>

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 – Do unto others...
- 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

- **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
- **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
- **IEEE 802.3 Working Group Operating Rules**
http://ieee802.org/3/rules/P802_3_rules.pdf

Guidelines for IEEE-SA Meetings

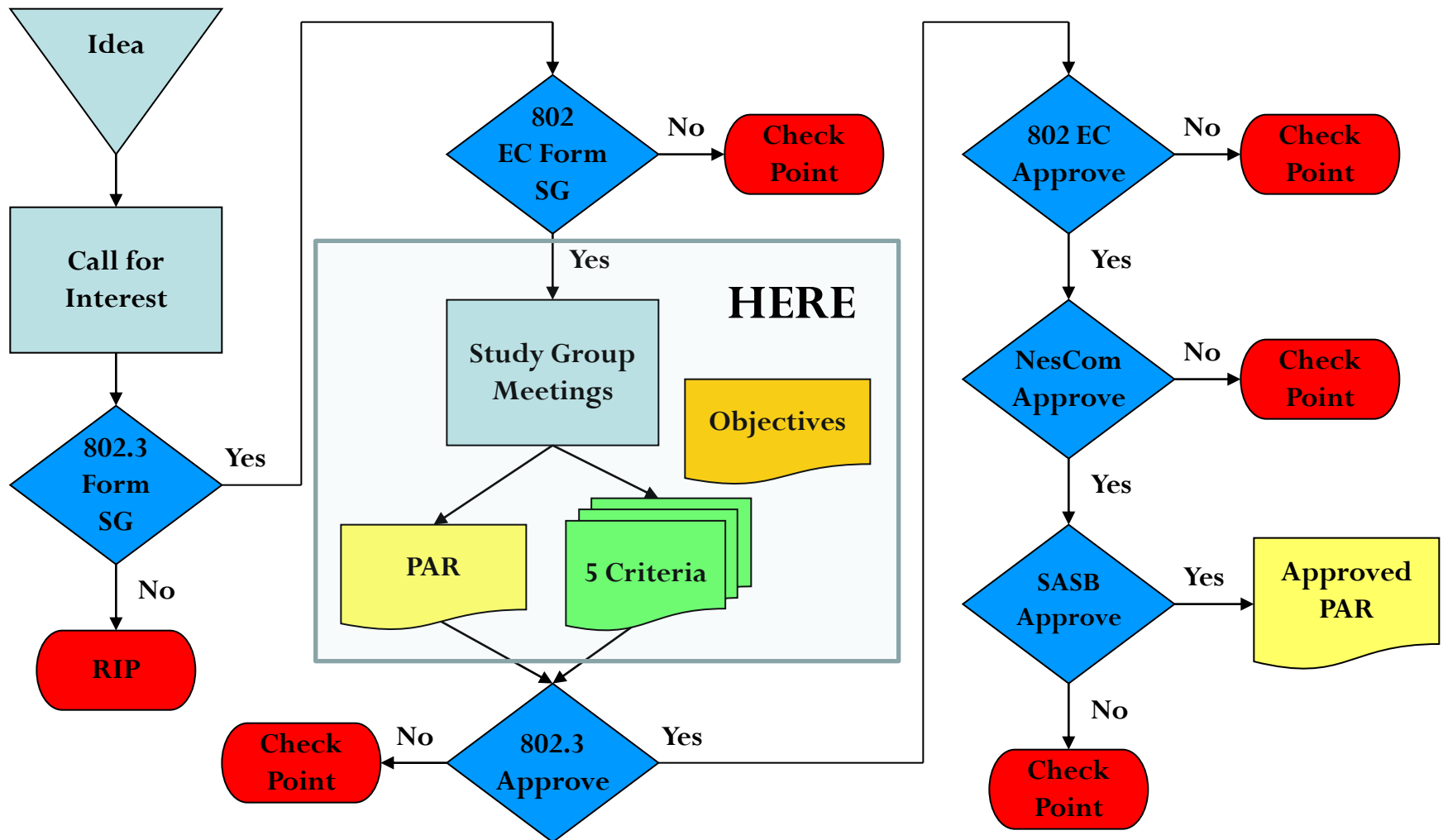
- | All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.
- | Don't discuss the interpretation, validity, or essentiality of patents/patent claims.
- | Don't discuss specific license rates, terms, or conditions.
 - | Relative costs, 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.

If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at patcom@ieee.org or visit <http://standards.ieee.org/about/sasb/patcom/index.html>

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.

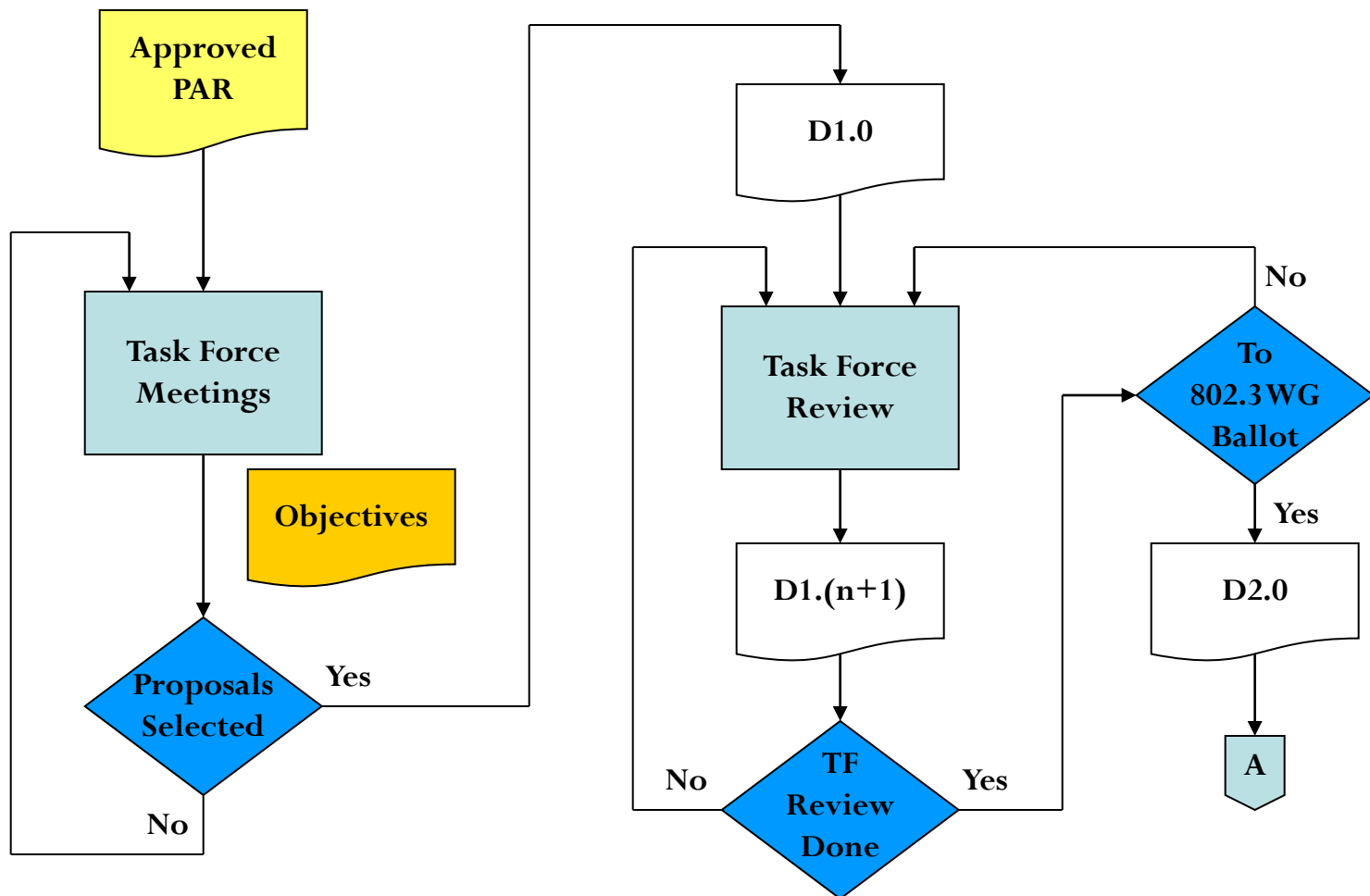
This slide set is available
at <https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.ppt>

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

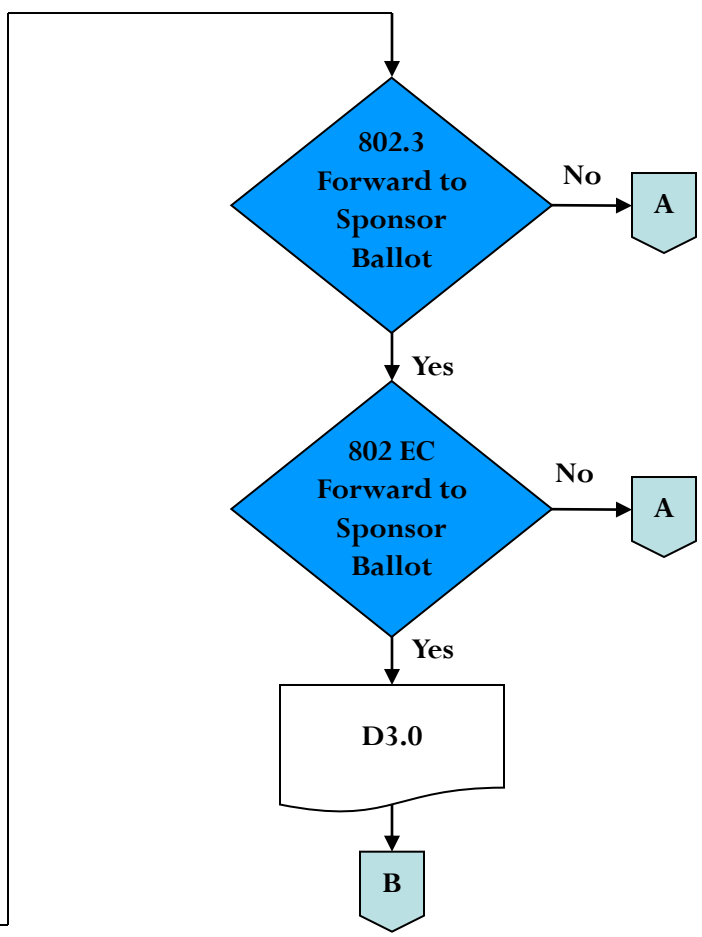
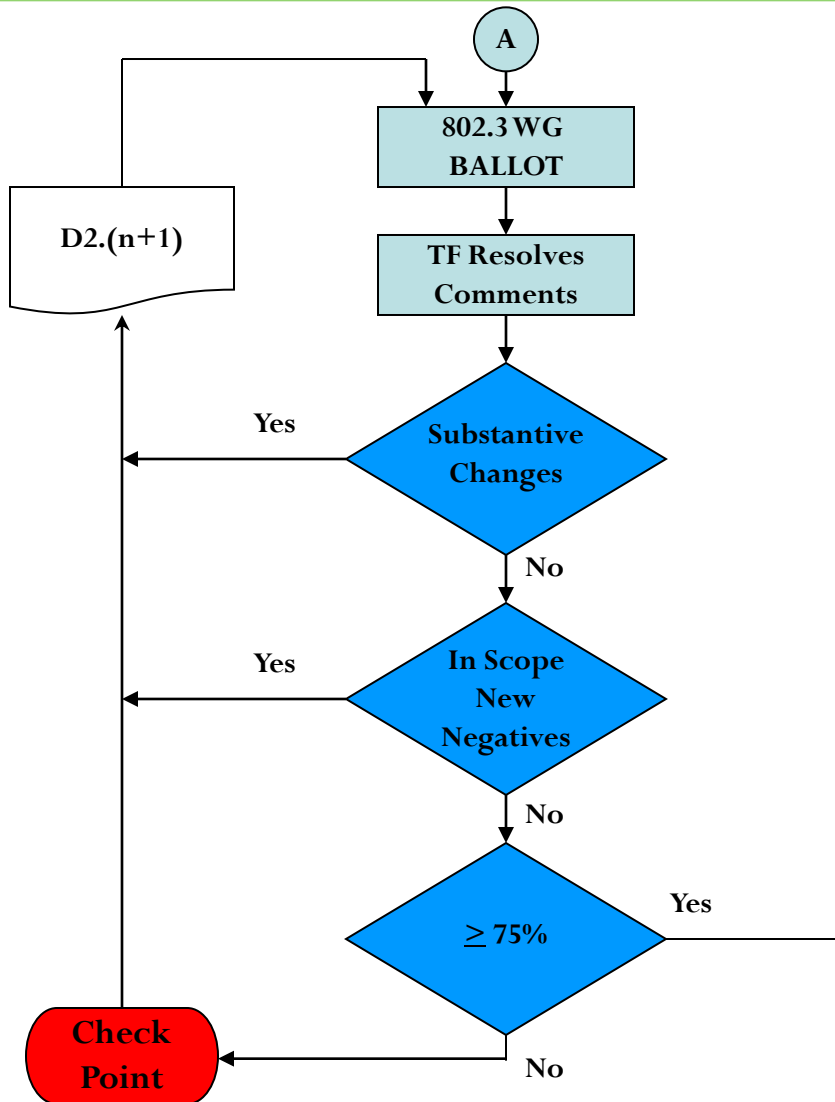


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

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

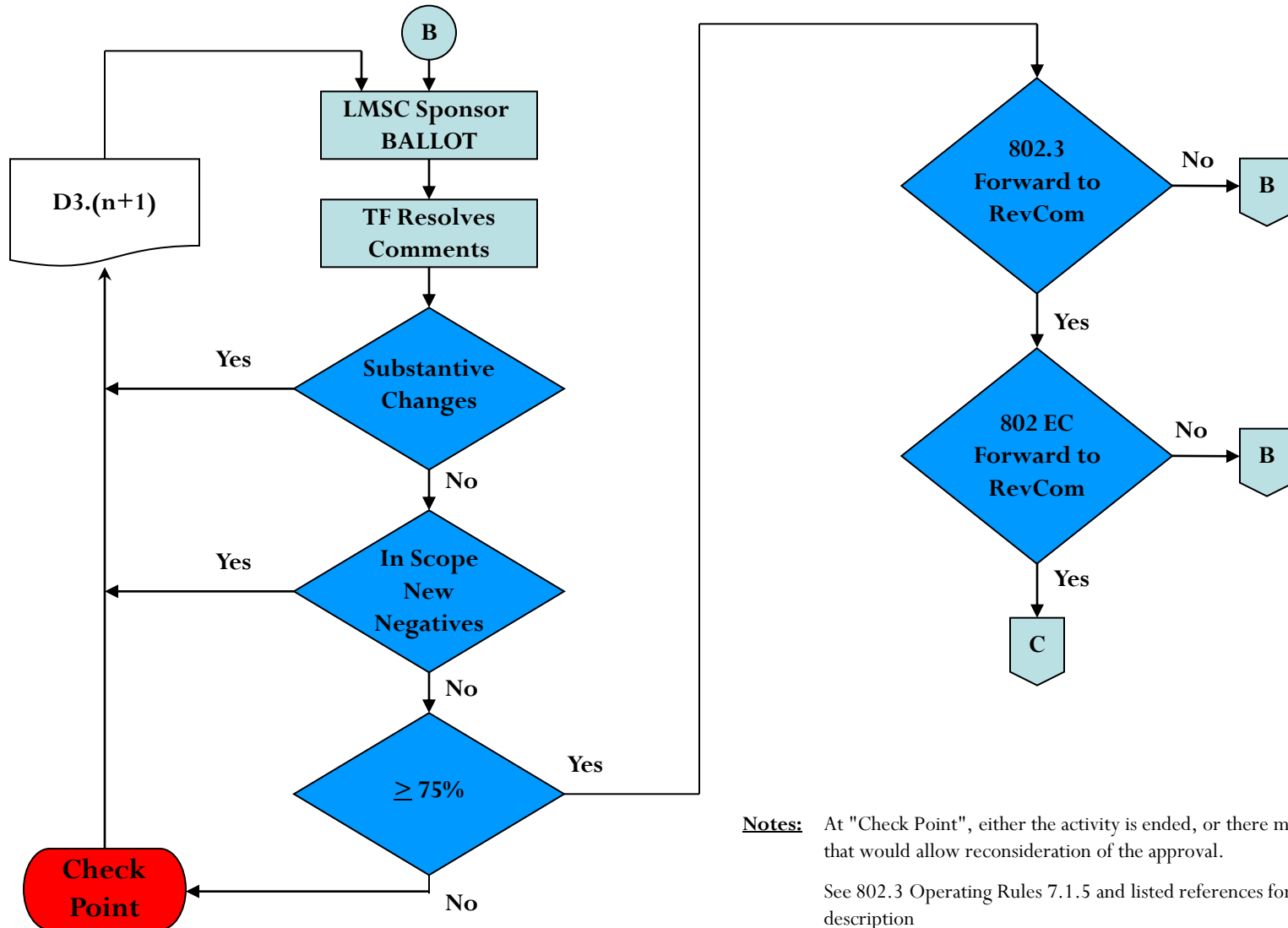


Overview of IEEE 802.3 Standards Process (3/5) – Working Group Ballot Phase



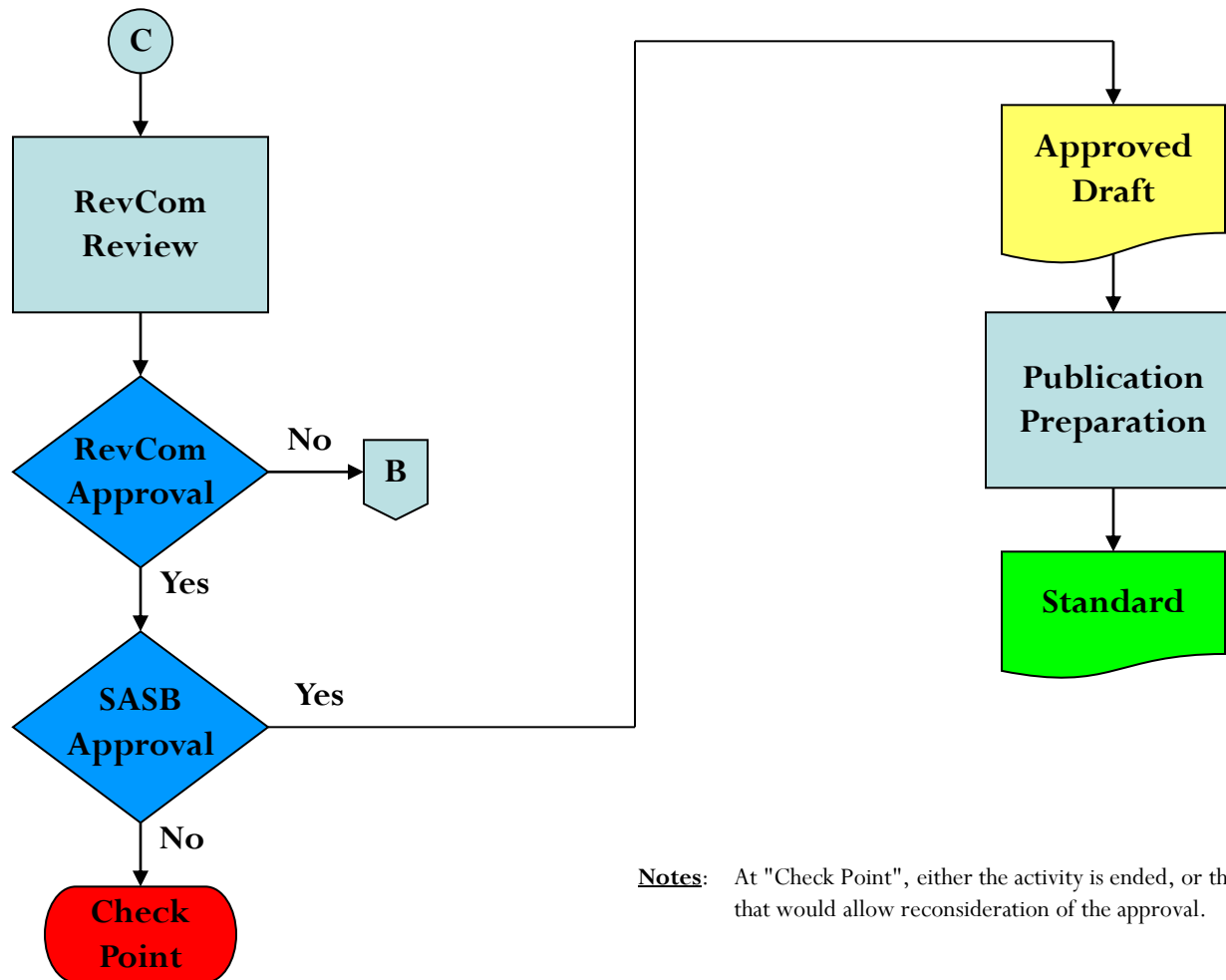
Notes: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.
 See 802.3 Operating Rules 7.1.4 and listed references for complete description

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.

The Study Group

- Normal function is to draft a complete PAR and Five Criteria Response
- Provide a plenary week tutorial to the LMSC <if appropriate>.
- Gain approval at the WG 802.3, 802 SEC, IEEE NesCom and IEEE-SA Standards Board.
- SG only exists for 6 months
 - Extensions can be requested
 - Voted on by 802.3
 - Ratified by SEC
- Development of Objectives helps set the goals for the Task Force
- Consensus (>75%) required to move forward

- Not a goal – choosing a solution.

Request for Formation of Study Group (as per July 2011 Plenary Motion)

Move the IEEE 802.3 Working Group
authorizes the formation of a study group
for “***Next Generation 100 Gigabit Optical
Ethernet***”

Development of Objectives

Example # 1 – IEEE P802.3ba Objectives

- 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 better than or equal to 10^{-12} at the MAC/PLS service interface
- Provide appropriate support for OTN
- Support a MAC data rate of 40 Gb/s
- Provide Physical Layer specifications which support 40 Gb/s operation over:
 - at least 10km on SMF
 - at least 100m on OM3 MMF
 - at least 7m over a copper cable assembly
 - at least 1m over a backplane
- Support a MAC data rate of 100 Gb/s
- Provide Physical Layer specifications which support 100 Gb/s operation over:
 - at least 40km on SMF
 - at least 10km on SMF
 - at least 100m on OM3 MMF
 - at least 7m over a copper cable assembly

Development of Objectives

Example # 2 – IEEE P802.3bg Objectives

- Preserve the IEEE 802.3 / Ethernet frame format utilizing the IEEE 802.3 MAC
- Preserve minimum and maximum FrameSize of current IEEE 802.3 standard
- Support a BER better than or equal to 10^{-12} at the MAC/PLS service interface
- Support a MAC data rate of 40 Gb/s
- Use the 40GBASE-R PCS and PMA
- Use only existing electrical and logical interfaces from IEEE Std 802.3 as modified by IEEE P802.3ba
- Provide Physical Layer specification which support 40 Gb/s operation over at least 2 km on SMF.
- Provide optical compatibility with existing carrier 40Gb/s client interfaces (OTU3/STM-256/OC-768/40G POS).

Development of Objectives

Example # 3 – IEEE P802.3bj Objectives

- 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.

Project Documentation

- PAR
 - Title – What are we calling this project?
 - Scope – What is the focus of the project?
 - Purpose – Why do we want to do this?
- 5 Criteria
 - Broad Market Potential
 - Compatibility with IEEE Std. 802.3
 - Distinct Identity
 - Technical Feasibility
 - Economic Feasibility

Liaisons and Communications

- **Joint P802.3bj/100G Optical SG Joint Session**
 - No joint meetings in Newport Beach
 - Notification via reflector that 802.3bj is voting on baseline proposals
 - Common-interest presentations allotted to Wed PM, Thu AM
- **OIF**
 - Ongoing communications between OIF and IEEE 802.3 initiated by IEEE P802.3ba project
 - In regards to OIF CEI-25G-LR, CEI-28G-SR, CEI-28G-VSR
 - Currently being operated through 802.3 Working Group and delegated to NG100GOPTX Study Group
- **ITU-T**
 - Proposed liaison activity to ensure alignment.

Attendance

- Tutorial Material on attendance tool
 - http://ieee802.org/3/minutes/nov11/1111_imat.pdf
- URL <https://seabass.ieee.org/imat/>

Tuesday Presentations

Tuesday 24-Jan-2012

Note –Times listed are subject to change.

Presentation Time	Presenter	Affiliation	Title	Filename
8:00	Dan Dove	Applied Micro	Agenda & Objectives of Meeting	dove_01_0112_NG100GOPTX.pdf
8:20	Dan Dove	Applied Micro	Proposed Five Criteria Responses	dove_02_0112_NG100GOPTX.pdf
8:40	Pete Anslow	Ciena	Objectives for Next Generation 100GbE Optical Interfaces	anslow_01_0112_NG100GOPTX.pdf
9:15	Chris Cole	Finisar	100Gb/s SMF Standards Broad Market Potential Observations	cole_01_0112_NG100GOPTX.pdf
9:50	Paul Kolesar	Commscope	Solution Set Analyzer Update	kolesar_01_0112_NG100GOPTX.pdf
10:35	BREAK			
10:50	John Petrilla	Avago	100G SR4 vis-à-vis SR10 and other considerations	petrilla_01_0112_NG100GOPTX.pdf
11:15	Jonathan King	Finisar	100G Next Gen Optics MMF ad hoc meetings review	king_01_0112_NG100GOPTX.pdf
11:50	Jonathan King	Finisar	Supporting material for a 100Gb/s MMF Objective	king_02_0112_NG100GOPTX.pdf
12:35	Lunch			
13:35	Robert Lingle	Ofsoptics	Experimental Studies of VCSEL-MMF Transmission Impairments at 850nm	lingle_01_0112_NG100GOPTX.pdf
14:05	Robert Lingle	Ofsoptics	Towards Large-Scale Modeling of Equalized MMF-VCSEL Links at 25Gbps	lingle_02_0112_NG100GOPTX.pdf
14:35	Robert Lingle	Ofsoptics	Reliability and Emerging Capabilities of 1060nm VCSELs	lingle_03_0112_NG100GOPTX.pdf
15:05	BREAK			
15:20	Ali Ghiasi	Broadcom	Measured Results of 25.78G VCSEL over OM3 Fiber with and Without Equalization	ghiasi_01_0112_NG100GOPTX.pdf
15:55	Ali Ghiasi	Broadcom	Simulations of 100G-SR4 link	ghiasi_02_0112_NG100GOPTX.pdf
16:40	Scott Kipp	Brocade	Low Cost 100GbE Links	kipp_01_0112_NG100GOPTX.pdf
17:15	Andre Szczepanek	Inphi	Feasibility of Transimpedance Amplifiers and CDRs	szczepanek_01_0112_NG100GOPTX.pdf
17:40	John Petrilla	Avago	Mid Range (MR) definition, comparisons and reach objective	petrilla_02_0112_NG100GOPTX.pdf
18:05	RECESS Till 8am			

Wednesday Presentations

Wednesday 25-Jan-2012

Note –Times listed are subject to change.

Presentation Time	Presenter	Affiliation	Title	Filename
8:00	Dan Dove	Applied Micro	Resumption of meeting/introductions	
8:10	Sudeep Bhoja	Broadcom	Study of PAM modulation for 100GE over a single laser	bhoja_01_0112_NG100GOPTX.pdf
8:55	Jon Anderson	Opnext	Feasibility of 1300nm parallel optical transceiver for 100Gb/s Ethernet short reach SMF interconnects	anderson_01_0112_NG100GOPTX.pdf
9:25	Jon Anderson	Opnext	Proposal for 100G PHY SMF objective	anderson_02_0112_NG100GOPTX.pdf
9:55	Gary Nicholl	Cisco	Economic Feasibility for NG 100G SMF Objective	nicholl_01_0112_NG100GOPTX.pdf
10:30	BREAK			
10:50	Ali Ghiasi	Broadcom	Power and Complexity of 100G-SR4 implementations	ghiasi_03_0112_NG100GOPTX.pdf
11:25	Winston Way	Neophotonics	100GE over SMF using 4x10G DML TOSA and 4x25Gb/s linear equalizers	way_01_0112_NG100GOPTX.pdf
12:00	Andre Szczepanek	Inphi	OIF-28G-VSR Channel Simulations	szczepanek_02_0112_NG100GOPTX.pdf
12:35	Lunch			
13:35	Andre Szczepanek	Inphi	The case for a 10dB CAUI-4	szczepanek_03_0112_NG100GOPTX.pdf
14:10	Piers Dawe	Iptronics	CDRs, FEC, power and reach	dawe_01_0112_NG100GOPTX.pdf
14:45	Gary Nicholl	Cisco	More Thoughts on FEC	traverso_01_0112_NG100GOPTX.pdf
15:20	BREAK			
15:35	Study Group		Motion Madness	
17:45	Dan Dove	Applied Micro	Wrap-Up	dove_03_0112_NG100GOPTX.pdf

Internet Access

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: **feddc3ae**

Special thanks to the Ethernet Alliance for hosting this meeting

Future Meetings

- See: <http://www.ieee802.org/3/interims/index.html>
- **Monday, March 12th through Thursday, March 15th, 2012**
 - Hilton Waikoloa Village
 - Big Island, Hawaii
 - USA
 - ***** Co-located Interim Meeting with 802.3bj on Monday 8a – 12p *****
- **Monday, May 14th through Thursday, May 17th, 2012**
 - IEEE P802.3 interim session
All IEEE 802.3 Task Force and Study Groups will meet
 - Hosted by Cisco
 - **Venue TBD**
- **Monday, July 16th through Thursday, July 19th, 2012**
 - IEEE 802 plenary
 - Grand Hyatt Manchester
 - San Diego, CA
- Anyone interested in hosting a meeting contact me.

Thank You!