



# Agenda and General Information

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

Dan Dove

Applied Micro

Minneapolis, Minnesota USA – 15, 16 May 2012

# Agenda

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- *Appointment of Recording Secretary*
- Welcome and Introductions
- Approve Minutes of March Meetings (interim and plenary)
- 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

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- 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

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- Presentation of material relevant to our objectives
- Presentation of material relevant to our Project Authorization Request and Five Criteria Responses
- Finalize PAR and Five Criteria Responses
- Motions & Discussion

# Reflector and Web

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- To subscribe to the *Next Generation 40 Gb/s and 100 Gb/s Optical Ethernet* 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-802-3-100GNGOPTX <yourfirstname> <yourlastname>  
**end**

- Send *Next Generation 40 Gb/s and 100 Gb/s Optical Ethernet* reflector messages to:

**STDS-802-3-100GNGOPTX@LISTSERV.IEEE.ORG**

- Study Group web page URL:

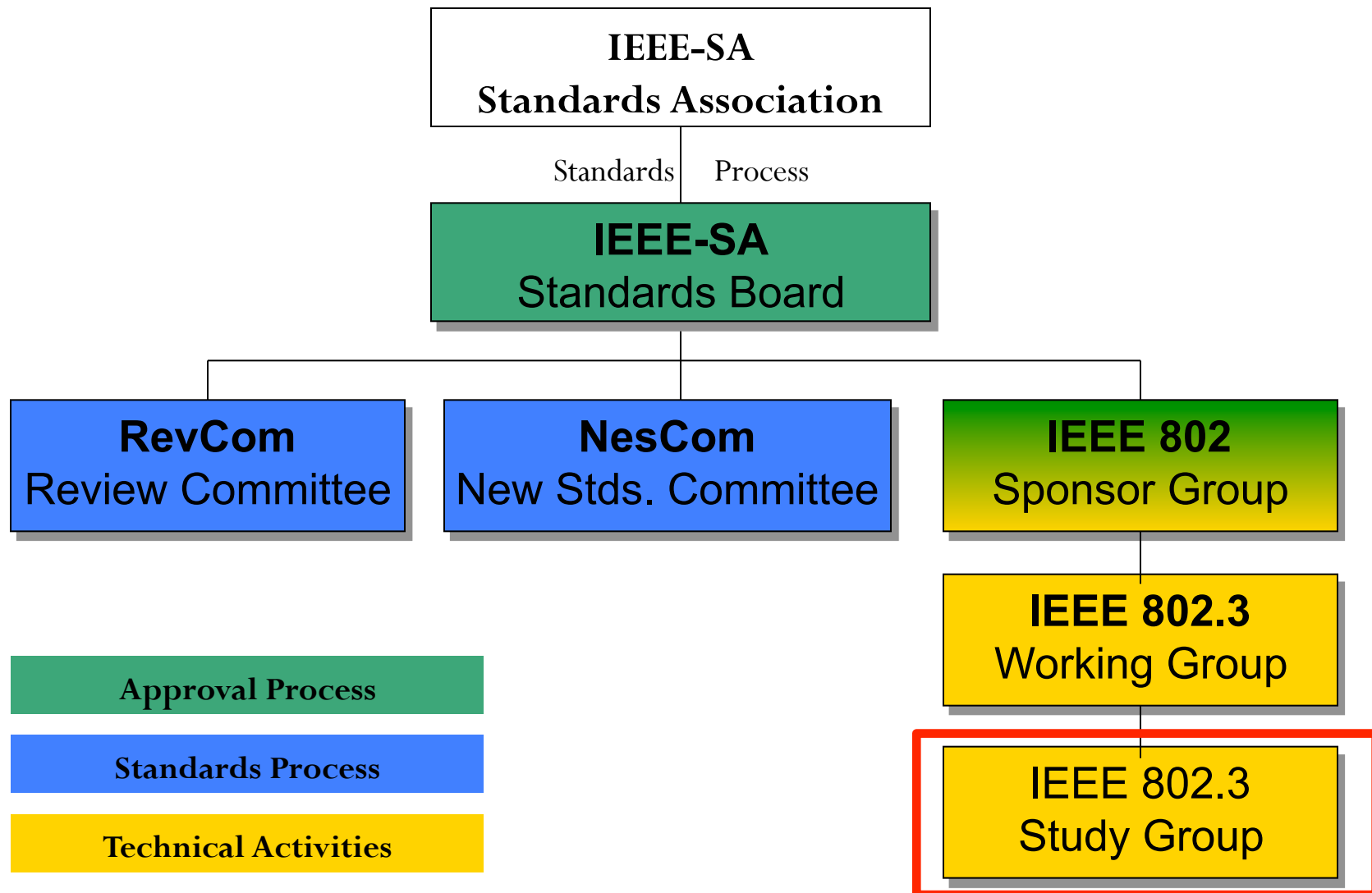
**<http://www.ieee802.org/3/100GNGOPTX/index.html>**

# Ground Rules

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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 – Do unto others...
- NO product pitches (ex: "LightZippyDoo is the best!")
- NO corporate pitches (ex: "We Illuminate Up Your Networks!")
- 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)



# Guidelines for IEEE-SA Meetings

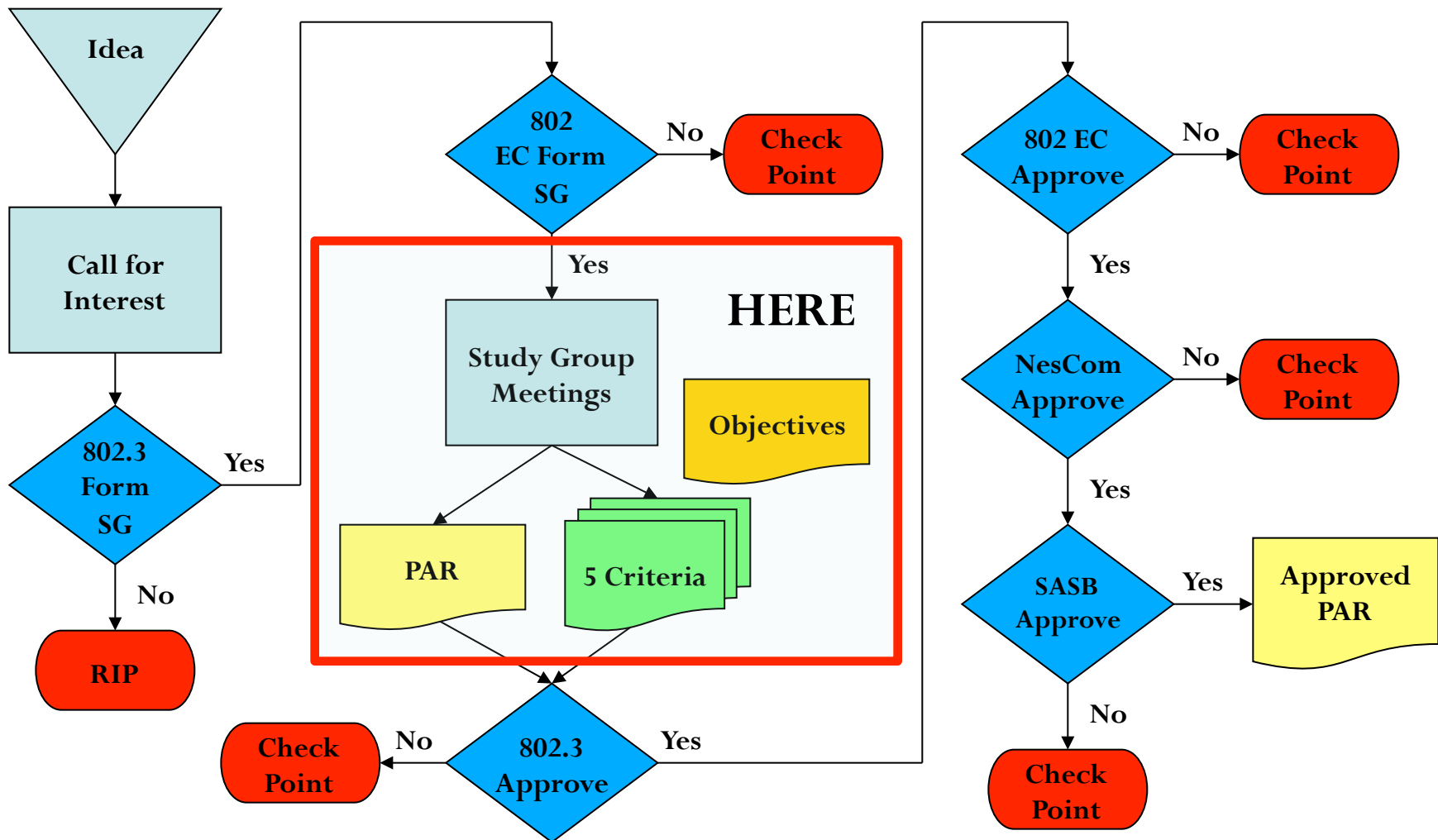
- **All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.**
- **Don't discuss the interpretation, validity, or essentiality of patents/patent claims.**
- **Don't discuss specific license rates, terms, or conditions.**
  - Relative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

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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>

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.

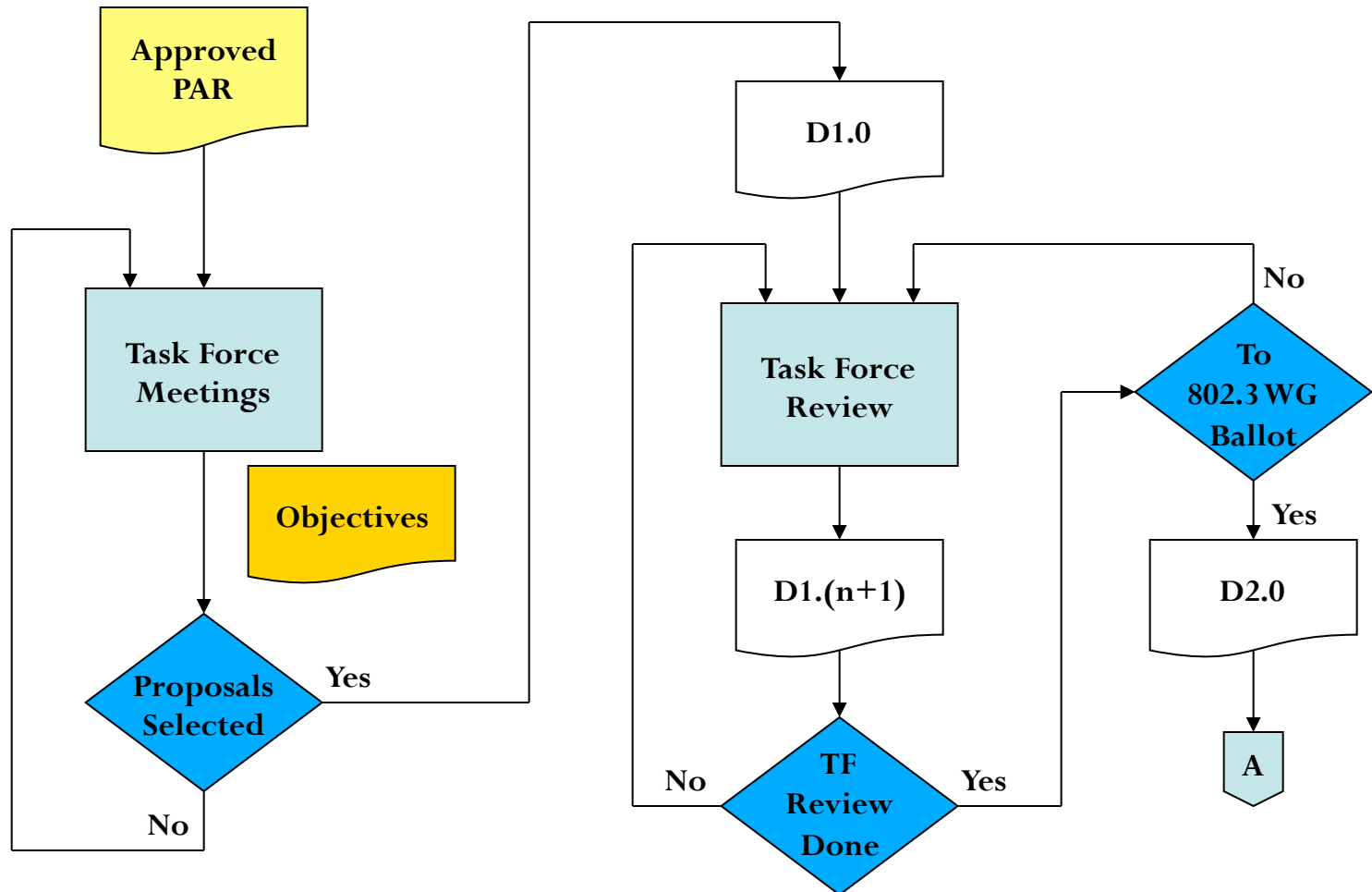
This slide set is available  
at <https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.ppt>

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

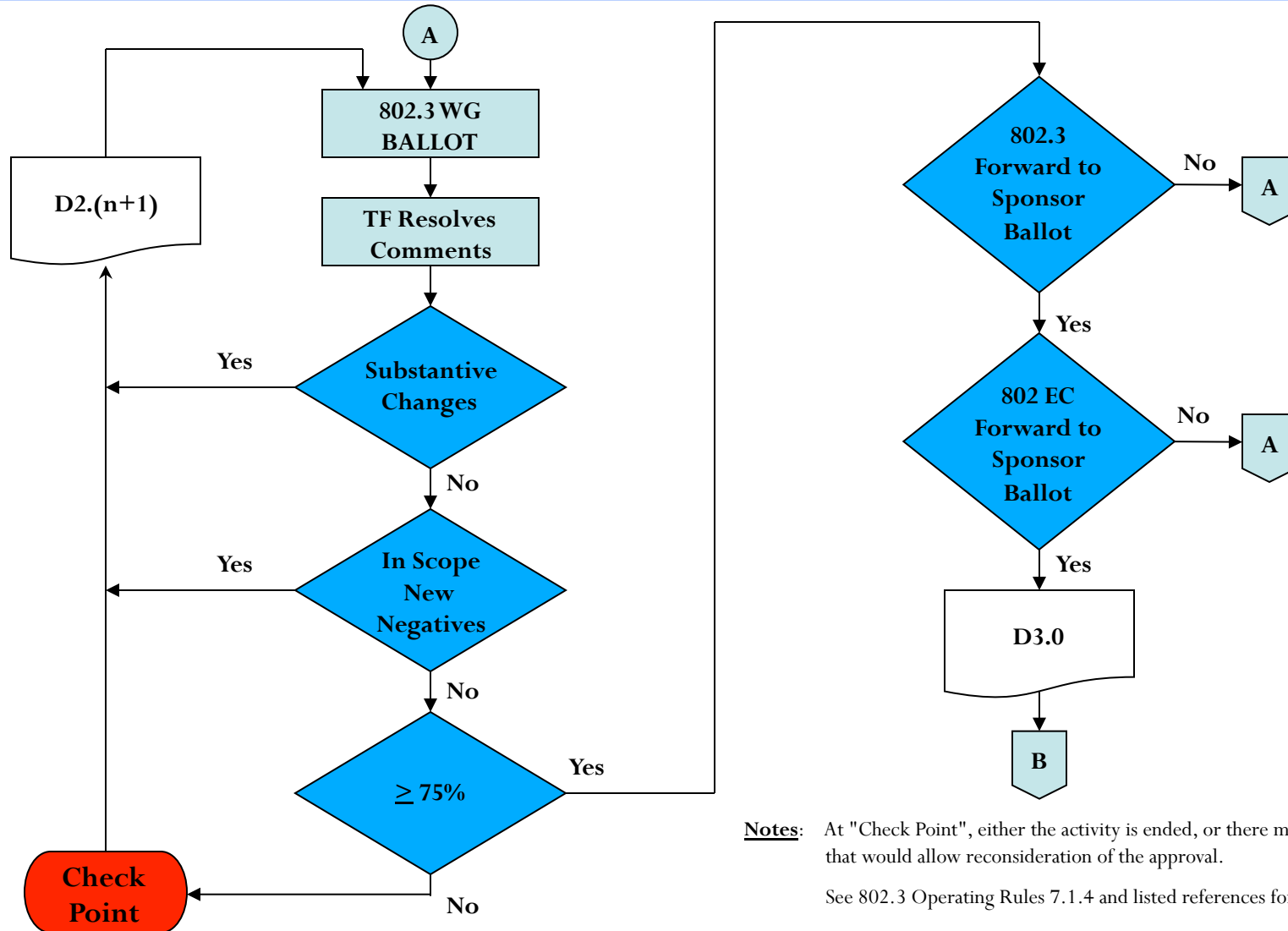


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

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



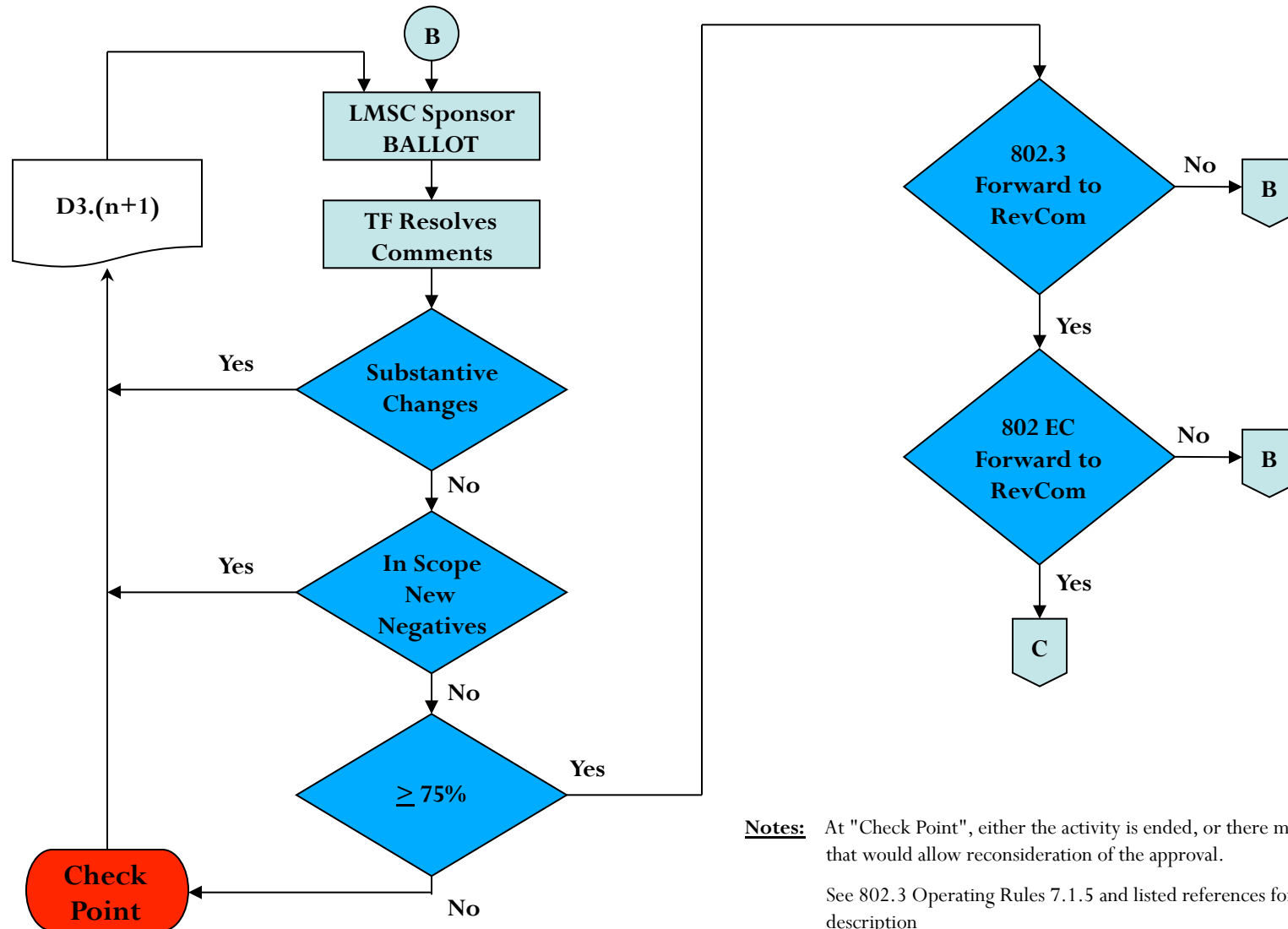
# Overview of IEEE 802.3 Standards Process (3/5) – Working Group Ballot Phase



**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

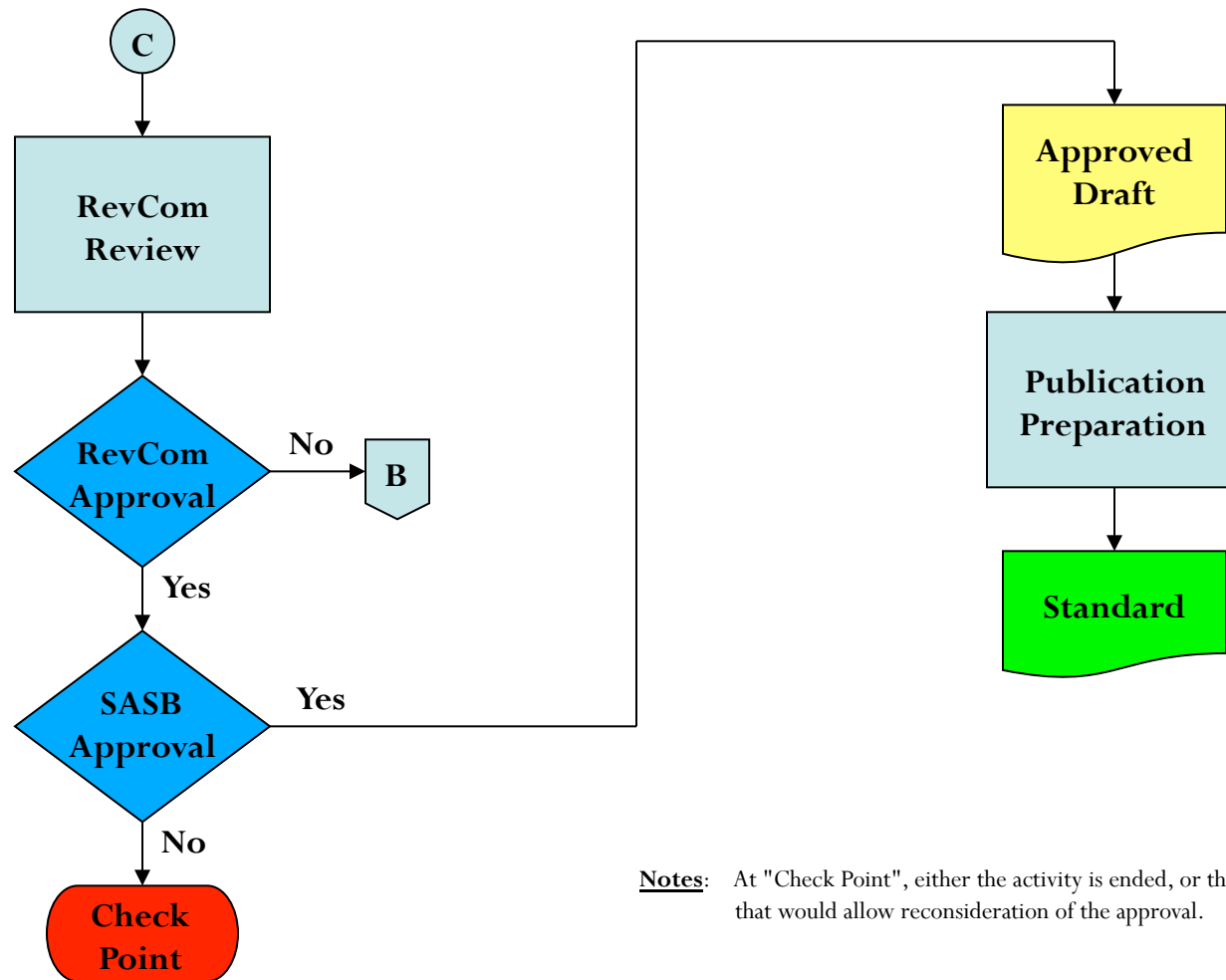
# Overview of IEEE 802.3 Standards Process (4/5)- Sponsor Ballot Phase



**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

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- 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)

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Move the IEEE 802.3 Working Group authorizes the formation of a study group for

***“Next Generation 100 Gigabit Optical Ethernet”***

Scope Expanded in March 2012 Plenary

Move that the scope of the “Next Generation 100Gb/s Optical Ethernet” Study Group be expanded to be

**“Next Generation 40Gb/s and 100Gb/s Optical Ethernet”**



# Development of Objectives

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## Currently Approved Objectives

- Support full-duplex operation only
- 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
- Provide appropriate support for OTN
- Define re-timed 4-lane 100G PMA to PMA electrical interfaces for chip to chip and chip to module applications
- Define a 40 Gb/s PHY for operation over at least 40 km of SMF
- Define a 100 Gb/s PHY for operation up to at least 500 m of SMF
- Define a 100 Gb/s PHY for operation up to at least 100 m of MMF
- Define a 100 Gb/s PHY for operation up to at least 20 m of MMF

# Project Documentation

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- 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

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- **Joint P802.3bj/100G Optical SG Joint Session**
  - None this meeting
- **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
    - Approve IC to OIF prepared by SG Chair May 10, 2012
- **ITU-T**
  - Proposed liaison activity to ensure alignment.
  - Join Workshop to be held in Geneva, Switzerland in September

# 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)
- Please sign-up for this meeting on IMAT
  - URL <https://seabass.ieee.org/imat/>
- Please sign the attendance sheet

# Tuesday Presentations

Tuesday 15-May-2012

Note –Times listed are subject to change.

Tuesday	Start Time	9:00	Discussion Time	15	
Presentation Time	Duration	Presenter	Affiliation	Title	Filename
9:00	25	Dan Dove	Applied Micro	Introduction, Agenda & Objectives of Meeting	dove_01a_0512_NGOPTX.pdf
9:25	15	Dan Dove	APM	Proposed Five Criteria Responses	dove_02_0512_optx.pdf
9:40	20	Vipul Bhatt	Cisco	PAM MPI: Overview & Recommendations	bhatt_01_0512_optx.pdf
10:15	20	BREAK			
10:35	20	Jonathan Ingham	University of Cambridge	Performance Studies of 100 Gigabit Ethernet Enabled by Advanced Modulation Formats	ingham_01_0512_optx.pdf
11:10	20	David Lewis	JDSU	Update on Bandwidth Requirements for PAM	lewis_01a_0512_optx.pdf
11:45	20	Ali Ghiasi	Broadcom	PAM-8 Optical Simulations	ghiasi_01_0512_optx.pdf
12:20	60	Lunch			
13:20	10	Chris Cole	Finisar	Cabled Fiber Connectivity Relative Costs	cole_01a_0512_optx.pdf
13:45	20	Chris Cole	Finisar	100GE-nR4 ("MR4") Parallel SMF PMD Economic Feasibility	cole_02_0512_optx.pdf
14:20	10	Paul Kolesar	Commscope	Cabling Cost-Centroid Lengths for Simplified Total Cost Comparisons	kolesar_01a_0512_optx.pdf
14:45	10	Gary Nicholl	Cisco	PAM-16 Implementation Update	nicholl_01_0512_optx.pdf
15:10	20	BREAK			
15:30	15	Taichi Kogure	Opnext	Multiple reflected MPI analysis for 100G-PAM8 Transmission	kogure_01_0512_optx.pdf
16:00	15	Song Shang	Semtech	Optical modulation format and direct detection schemes for single carrier PMD	shang_01a_0512_optx.pdf
16:30	10	Francois Tremblay	Semtech	PAMx specs and penalties	tremblay_01a_0512_optx.pdf
16:30	20	Tom Palkert	Luxtera	PSM4 technical feasibility and relative cost updates	palkert_01_0512_optx.pdf
16:55	20	Ali Ghiasi	Broadcom	25.78G VCSEL Link Performance With Worst Case OM3 Fiber	ghiasi_02_0512_optx.pdf
17:30	0	RECESS Till 9:00am			

# Wednesday Presentations

Wednesday 16-May-2012

Note –Times listed are subject to change.

<b>Wednesday</b>		Start Time	9:00	Discussion Time	15
Presentation Time	Duration	Presenter	Affiliation	Title	Filename
9:00	15	Dan Dove	Applied Micro	Introductions, Review SG Operation	
9:15	20	Robert Lingle	OFS Optics	Issues and Progress Toward a Commonly Accepted MMF Link Model	lingle_01_0512_optx.pdf
9:50	15	Jonathan King	Finisar	Benchmarking Spreadsheet MPN Treatments	king_01_0512_optx.pdf
10:20	20	BREAK			
10:40	20	Mike Bennett	LBNL	Energy Efficient Ethernet for 40G and 100G Optical Ethernet	bennett_01_0512_optx.pdf
11:15	45	Michael Lindsay	IEEE	Discussion of Cost in IEEE 802	n/a
12:00	60	Lunch			
13:00	15	Jon Anderson	Opnext	40GBASE-ER4 PMD Specifications Baseline – Working View	anderson_01_0512_optx.pdf
13:30	30	Dan Dove	APM	Proposed PAR Submittal	dove_03_0512_optx.pdf
14:15	20	BREAK			
14:35	145			Motions & Discussion	
17:00	0	Adjourn			

# Future Meetings

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- See: <http://www.ieee802.org/3/interims/index.html>
- **Monday, July 16th through Thursday, July 19th, 2012**
  - IEEE 802 plenary
  - Grand Hyatt Manchester
  - San Diego, CA
- **Monday September 24th through Friday, September 28, 2012**
  - IEEE P802.3 interim session
    - All IEEE 802.3 Task Force and Study Groups will meet
  - Hosted by Geneva, CH
- **Monday, November 12th through Thursday, November 15th, 2012**
  - IEEE 802 plenary
  - Grand Hyatt San Antonio
  - San Antonio, TX
  - USA
- Anyone interested in hosting a meeting contact Steve Carlson.



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Thank You!