



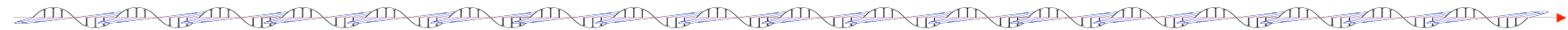
# Agenda and General Information

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

Dan Dove

Applied Micro

San Diego, USA – 16, 19 July 2012

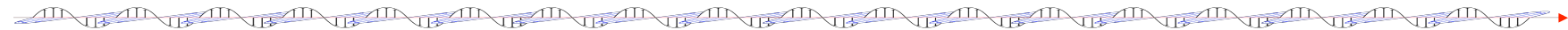




# Agenda

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- *Appointment of Recording Secretary*
- Welcome and Introductions
- Approve Agenda
- Approve Minutes of May Meetings (interim)
- 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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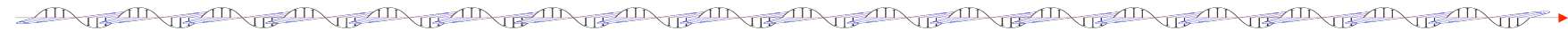
- Photography or recording by permission only (5.3.3.4)
- Cell phone ringers off
- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (2008 SASB Op Manual 5.3.3.5)
- Wear your badges at all times in meeting areas
  - Help the hotel security staff improve the general 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
- Respond to comments received on our PAR and Five Criteria Responses
- Motions & Discussion
  - Note: this should be our last SG meeting, but we will have a motion to request an extension “just in case”.





# 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 “<>”):

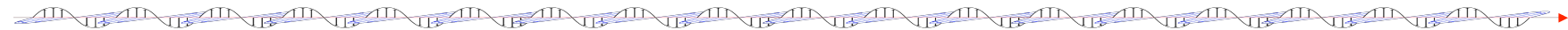
**subscribe** stds-802-3-100Goptx <yourfirstname> <yourlastname>  
**end**

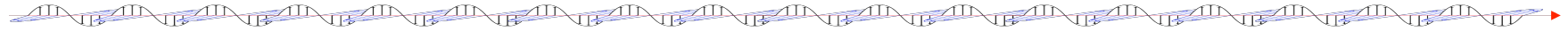
- Send *Next Generation 40 Gb/s and 100 Gb/s Optical Ethernet* reflector messages to:

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

- Study Group web page URL:

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

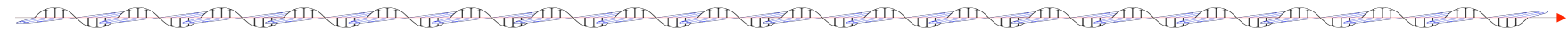




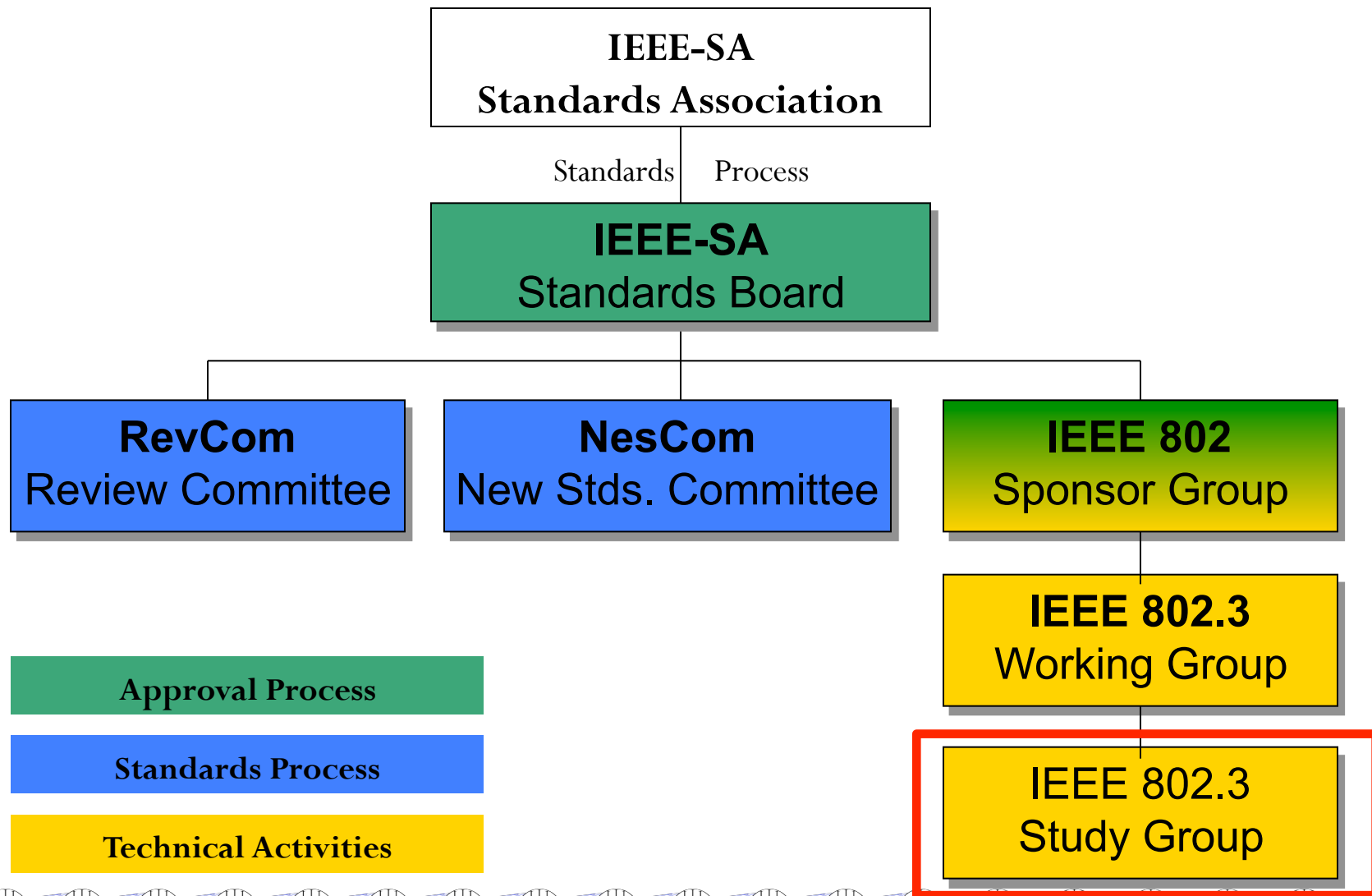
# Ground Rules

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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 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)





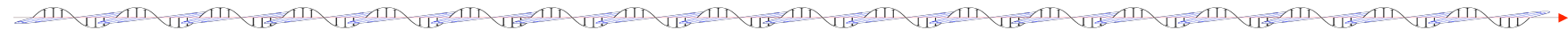
# Guidelines for IEEE-SA Meetings

- **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.**

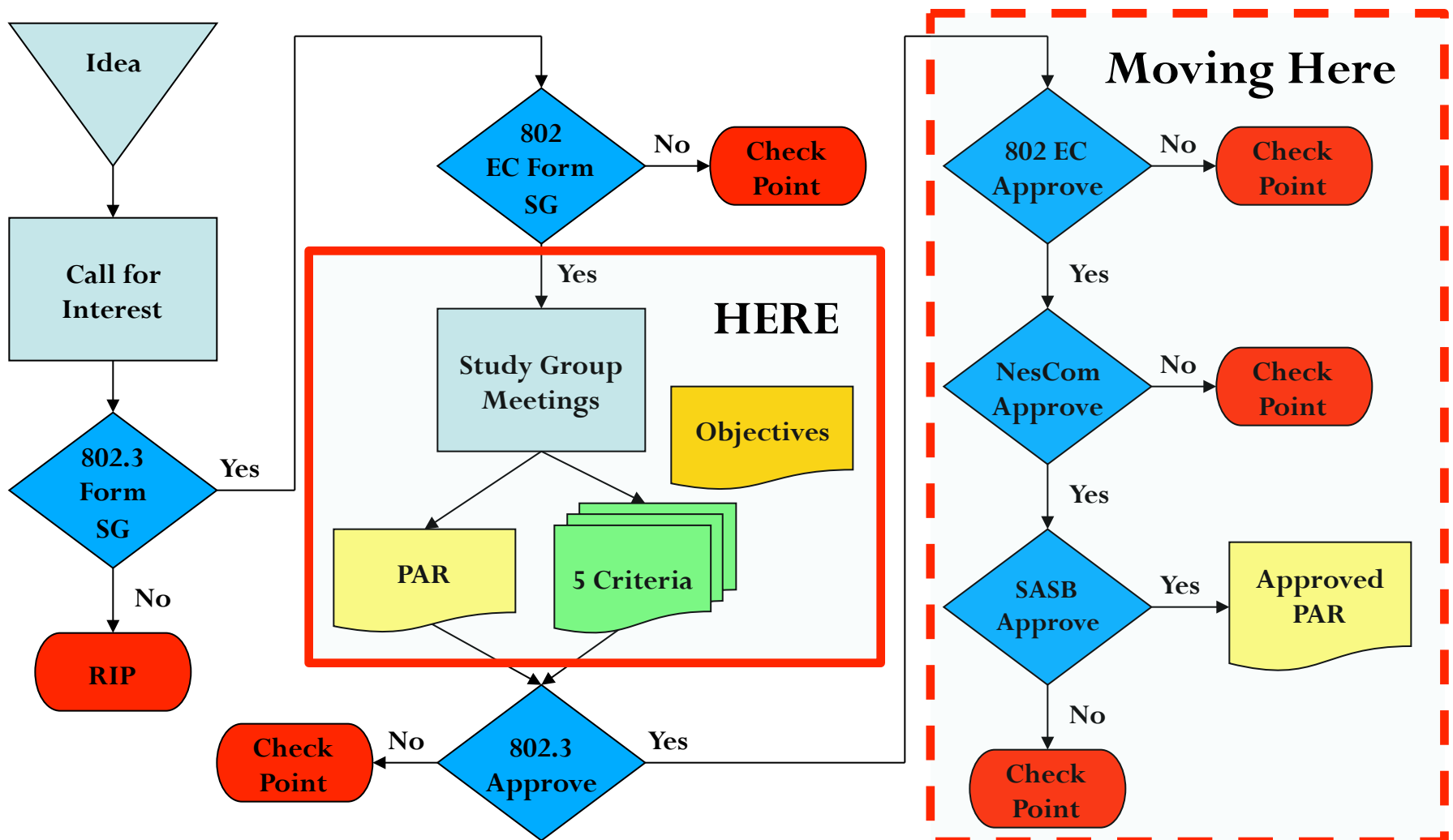
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If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at [patcom@ieee.org](mailto:patcom@ieee.org) or visit <http://standards.ieee.org/about/sasb/patcom/index.html>

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>

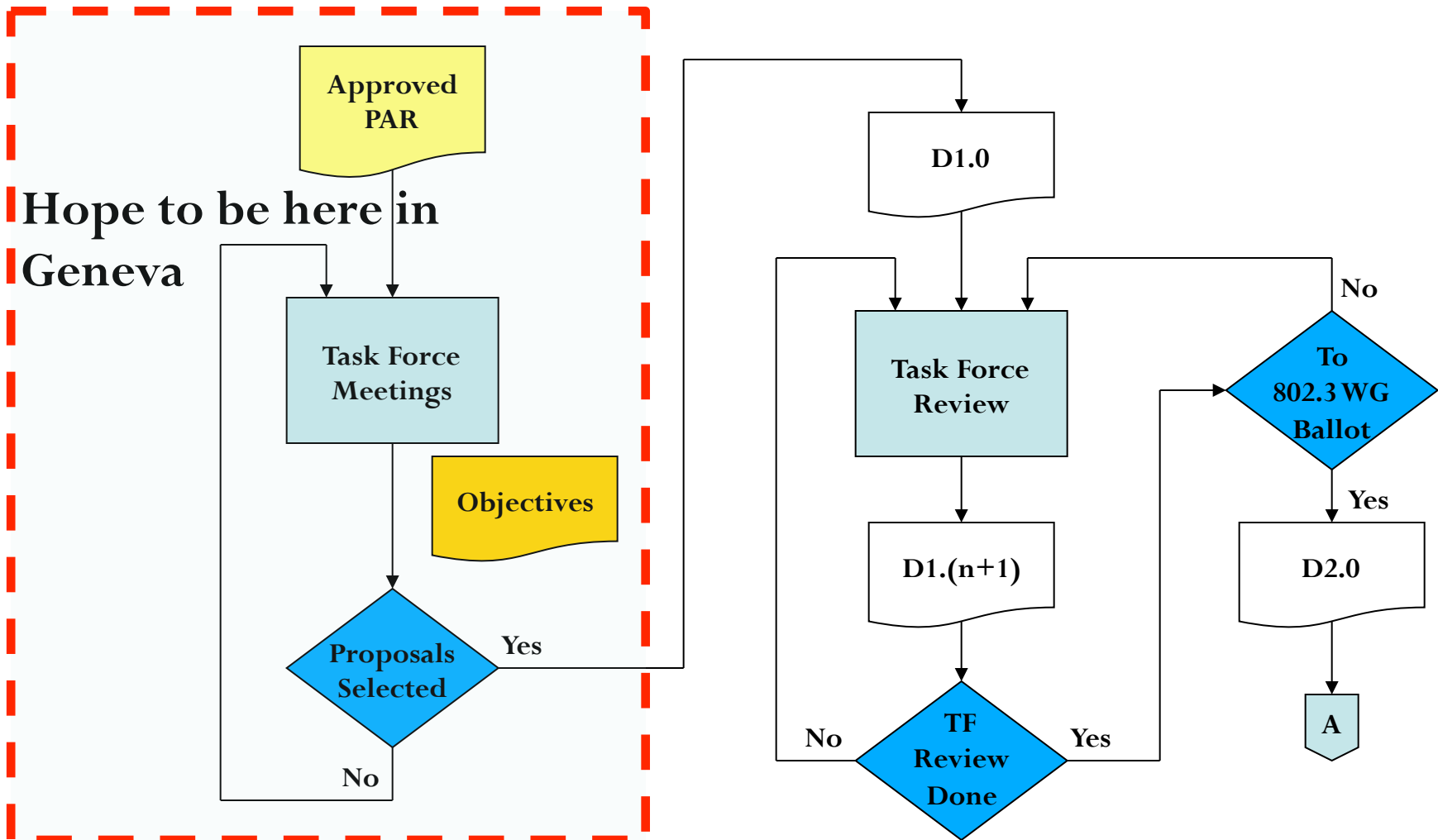


# Overview of IEEE 802.3 Standards Process (1/5)- Study Group Phase

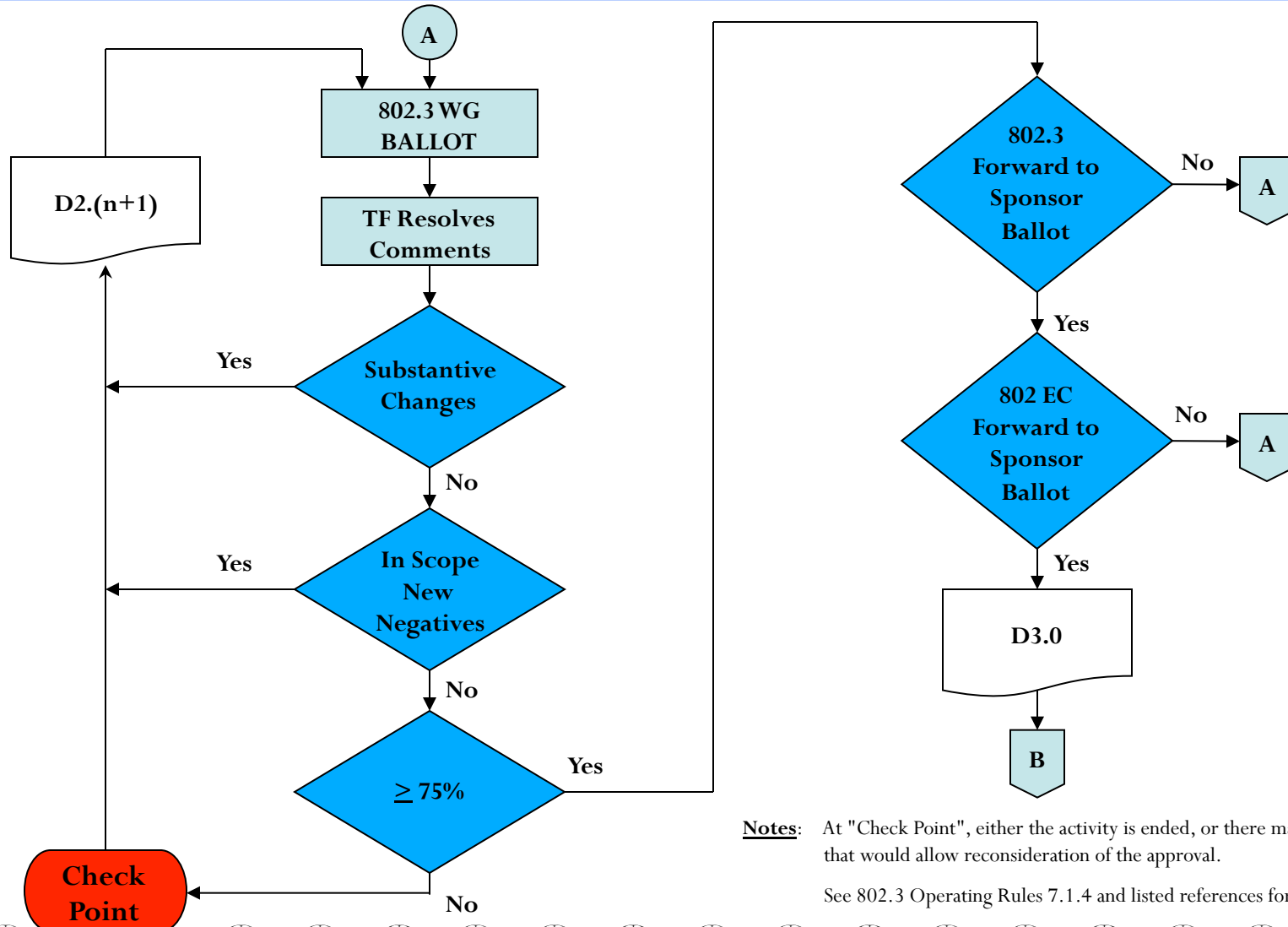


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

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



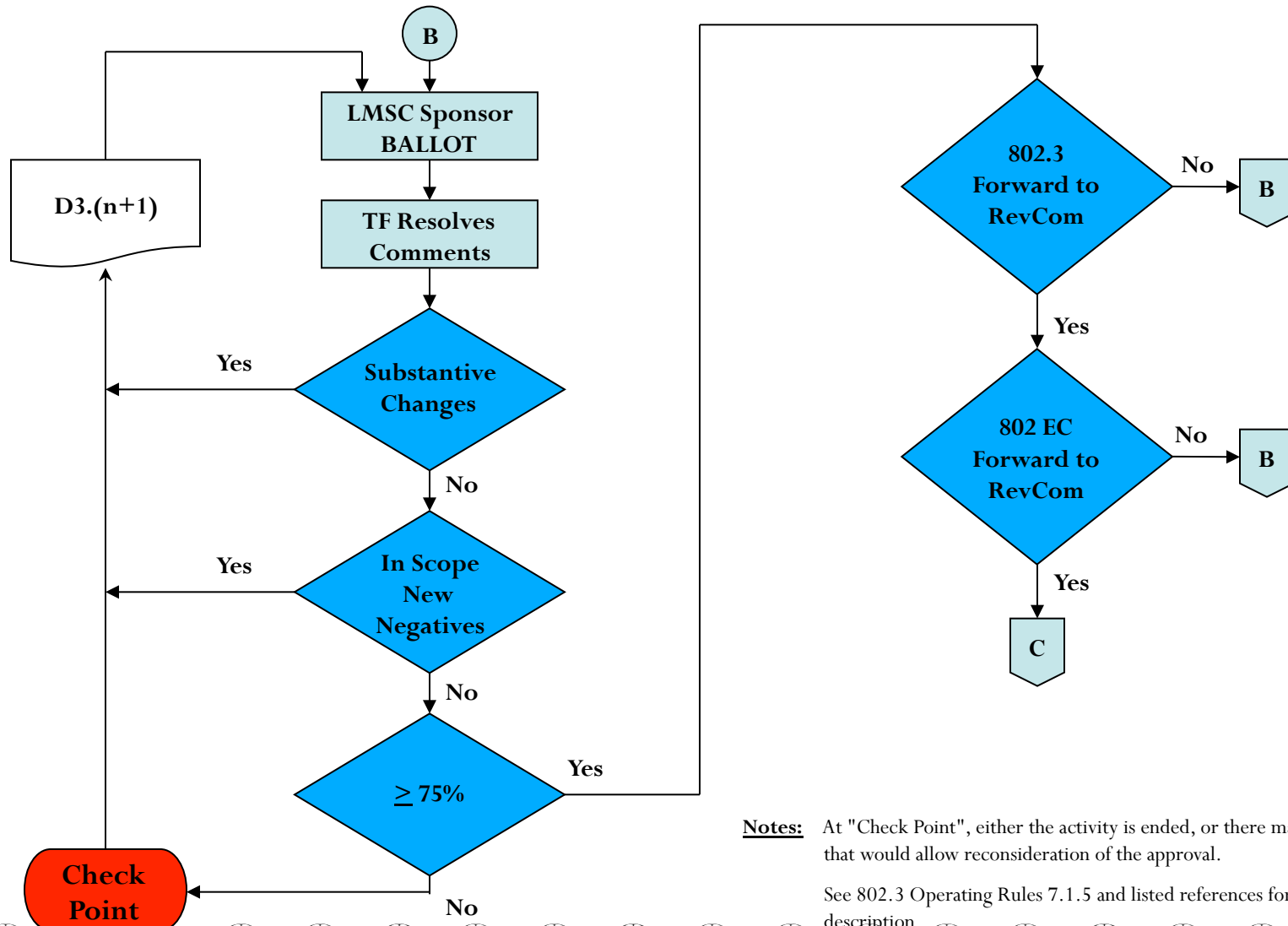
# Overview of IEEE 802.3 Standards Process (3/5) – Working Group Ballot Phase



**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

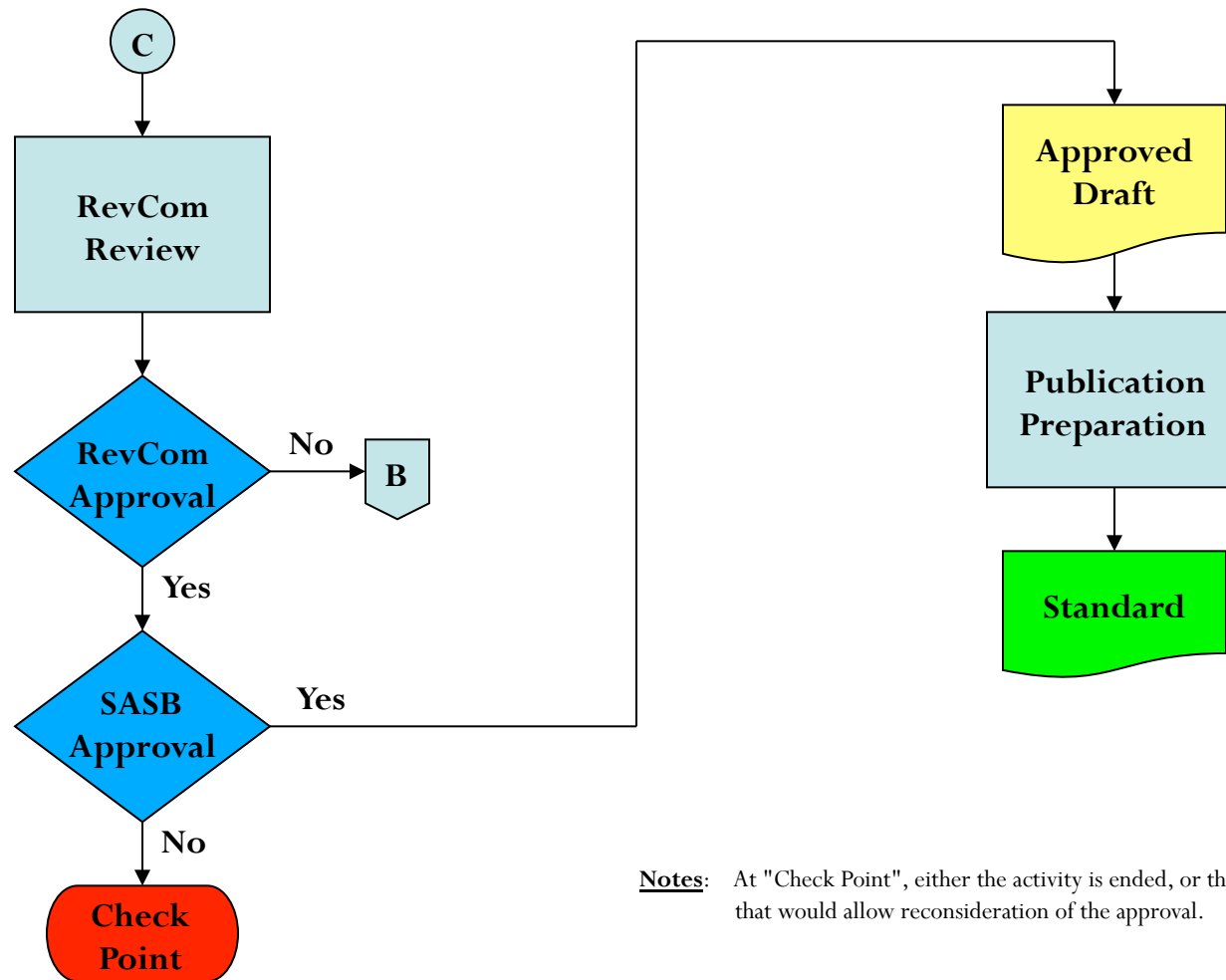
# Overview of IEEE 802.3 Standards Process (4/5)- Sponsor Ballot Phase



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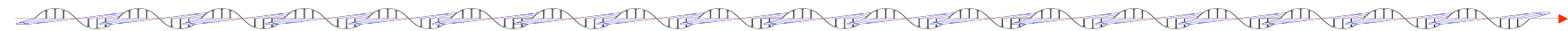
Move the IEEE 802.3 Working Group authorizes the formation of a study group for

***“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”***





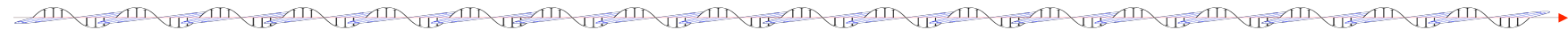


# Development of Objectives

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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

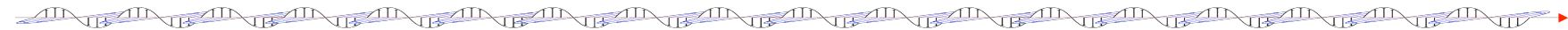


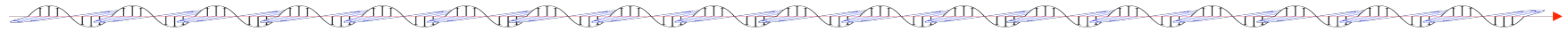


# Project Documentation

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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

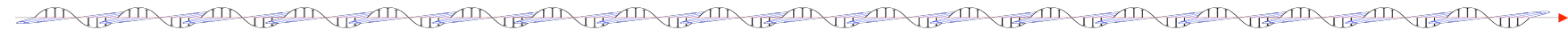




# Liaisons and Communications

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- **Joint P802.3bj/100G Optical SG Joint Session**
  - 8:30am on Tuesday, 17 July 2012
- **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

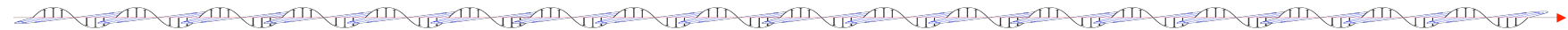




# Attendance

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- Tutorial Material on attendance tool
  - [http://iee802.org/3/minutes/nov11/1111\\_imat.pdf](http://iee802.org/3/minutes/nov11/1111_imat.pdf)
- Please sign-up for this meeting on IMAT
  - URL <https://murphy.events.ieee.org/imat/index>
  - Password = \*\*\*\*\* (case sensitive)
- Please sign the attendance sheet
  - If you fail to sign in through IMAT, this will be used to determine your presence.





# Tuesday Presentations

Tuesday 17- July-2012

Note –Times listed are subject to change.

Tuesday		Start Time	8:30	Discussion Time	15
Presentation Time	Duration	Presenter	Affiliation	Title	Filename
8:30		John Petrilla	Avago	100G SR4 FEC & Legacy (p802.3bj common-time)	petrilla_01_0712.pdf
		Ali Ghiasi	Broadcom	CAUI-4 Application Requirements (p802.3bj common-time)	ghiasi_02_0712.pdf
		Chris Cole	Finisar	802.3bj 2nd MDI Proposal (p802.3bj common-time)	cole_01_0712.pdf
		Merrick Moeller	Amphenol	CFP4 modeled performance (p802.3bj common-time)	mcsorley_01_0712.pdf
10:00	25	BREAK			
10:25	15	Dan Dove	Applied Micro	Introductions, Review SG Operation	dove_01_0712_optx.pdf
10:40	15	Tom Issenhuth	Microsoft	100GE Fiber and Optics Options	issenhuth_01_0712_optx.pdf
11:10	15	Wael Diab	Broadcom	LLDP for EEE: Tutorial from 802.3az and potential uses in Next Generation 40Gb/s and 100Gb/s Optical Ethernet?	diab_01_0712_optx.pdf
11:40	15	Mike Bennett	LBNL	EEE for 40G & 100G NGOPTX: Open items and objective proposal	bennett_01_0712_optx.pdf
12:10	60	Lunch			
13:10	10	Jonathan King	Finisar	Status Report - MMF Adhoc	king_02_0712_optx.pdf
13:35	30	Petar Pepejugoski	IBM	Dynamic Behavior of Mode Partition Noise in MMF	pepeljugoski_01_0712_optx.pdf
14:20	20	Jonathan King	Finisar	FEC for 100GBASE-SR4	king_01_0712_optx.pdf
14:55	20	BREAK			
15:15	15	Liang Qiu	Berk-Tek	Implementation Options for 150m 100GBASE-SR4 links	qiu_01_0712_optx.pdf
15:45	15	Robert Lingle, Jr.	OFSOptics	Issues with Modeling Mode-Partition Noise (MPN) in VCSEL-MMF Links	lingle_01_0712_optx.pdf
16:15	15	Abhijit Sengupta	Commscope	Measurements of VCSEL Mode Delays & Implications for System Performance	sengupta_01_0712_optx.pdf
16:15	15	Martin Schell	Heinrich-Hertz-Institute	Externally Modulated Laser for PAM at 28 GBaud	schell_01_0712_optx.pdf
16:45	15	Kai Cui	Huawei	Low cost 25G PAM-4 solution for Next-gen 100GE PMD	cui_01_0712_optx.pdf
17:15	0	RECESS Till 9:00am			

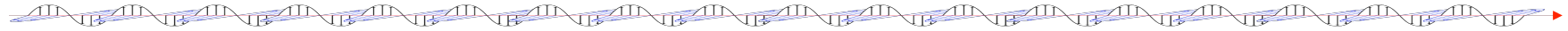


# Wednesday Presentations

Wednesday 18-July-2012

Note –Times listed are subject to change.

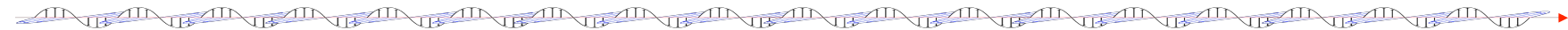
Wednesday Presentation Time	Duration	Start Time	Presenter	Affiliation	Title	Discussion Time	Filename
9:00	15	9:00	Dan Dove	Applied Micro	Introductions, Review SG Operation	15	dove_01_0712_optx.pdf
9:15	20		Arlon Martin	Kotura	WDM PICs for 100 G nR4 Using Silicon Photonics.		martin_01_0712_optx.pdf
9:50	20		Gary Nicholl	Cisco	Update on Advanced Modulation for a Low Cost Single Mode Fiber PMD		nicholl_01_0712_optx.pdf
10:25	20		BREAK				
10:45	20		Tom Palkert	Luxtera	Relative Costs of PSM4 and LR4 Links		palkert_01_0712_optx.pdf
11:20	20		Andy Weirich	OneChip Photonics	WDM PICs for Optical Interfaces		weirich_01_0712_optx.pdf
11:55	60		Lunch				
12:55	15		Jonathan Ingham	University of Cambridge	Multipulse Modulation Schemes for 100 Gigabit Ethernet		ingham_01_0712_optx.pdf
13:25	15		David Lewis	JDSU	PAM SMF transmitter testing		lewis_01_0712_optx.pdf
13:55	25		Ali Ghiasi	Broadcom	Investigation of the 100 GbE Serial PMDs Based on Advance Modulation		ghiasi_01_0712_optx.pdf
14:35	20		BREAK				
14:55	60		Study Group		Review & Respond to PAR and 5C response comments		
15:55	60		Study Group		Motions & Discussion		
16:55	0		Adjourn				



# Future Meetings

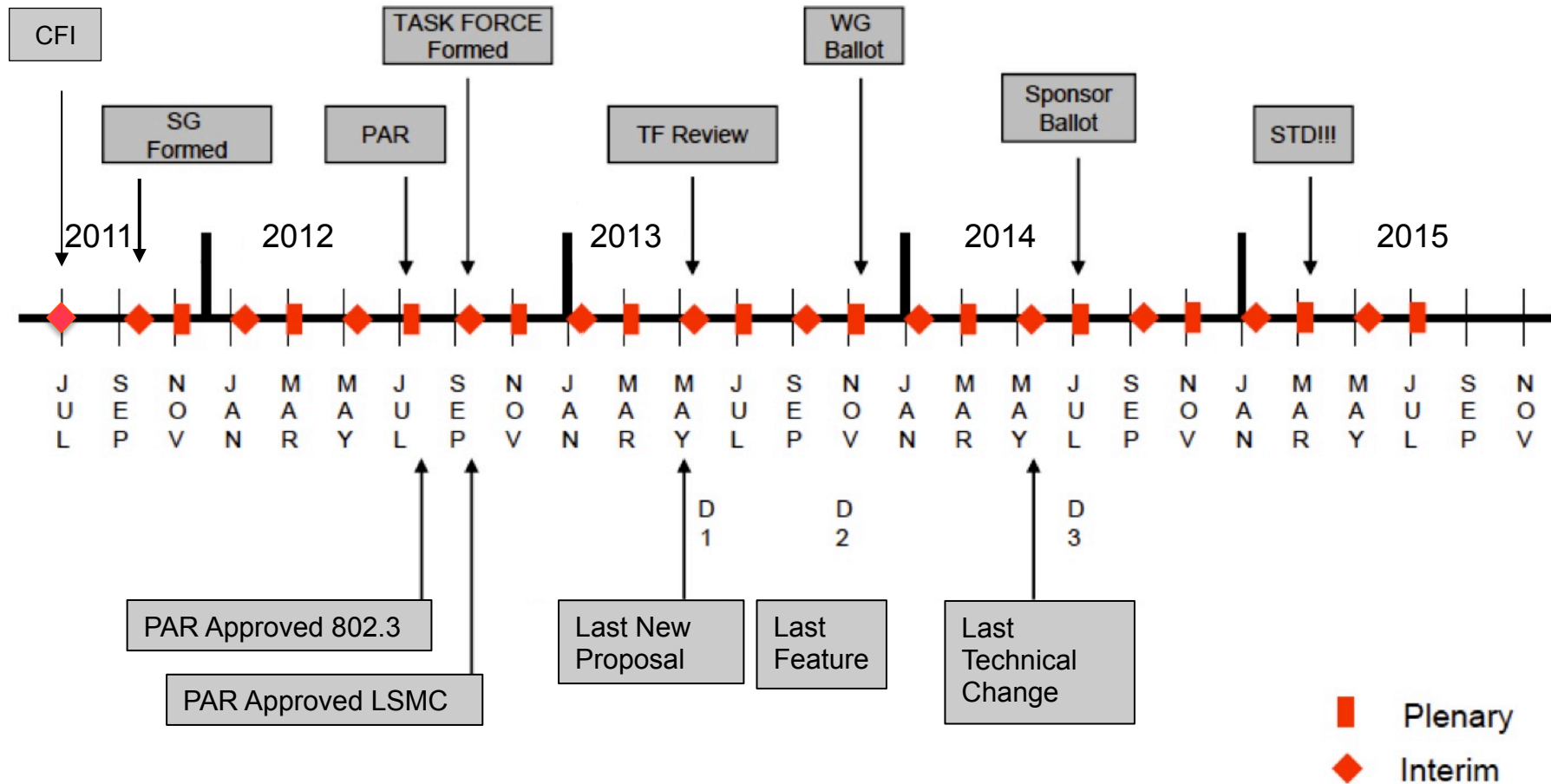
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- See: <http://www.ieee802.org/3/interims/index.html>
- **Saturday September 22<sup>nd</sup>**
  - Joint ITU-T / IEEE P802.3 Joint Workshop
  - Hosted by Geneva, CH
- **Monday September 24<sup>th</sup> through Friday, September 28, 2012**
  - IEEE P802.3 interim session
    - All IEEE 802.3 Task Force and Study Groups will meet
  - Hosted by Geneva, CH
- **Monday, November 12<sup>th</sup> through Thursday, November 15<sup>th</sup>, 2012**
  - IEEE 802 plenary
  - Grand Hyatt San Antonio
  - San Antonio, TX
  - USA
- Anyone interested in hosting a meeting contact Steve Carlson.





# Proposed Timeline (Strawman – To be Approved at first TF Meeting)







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# Thank You!

