



Agenda and General Information

IEEE 802.3

**25 Gb/s Ethernet over a single lane
for server interconnect Study Group**

Mark Nowell, Cisco

San Antonio, Texas, Nov 4-5th, 2014

Agenda

- Welcome and Introductions
- Approve Agenda
- Approve Minutes
- Reflector and Web
- Ground Rules
- IEEE
 - Structure, Bylaws and Rules
 - Call for Patents
 - IEEE Standards Process
- Goals for this meeting
- Big Ticket Items
- Presentations
- Motions and Closing Business
- Future Meetings

Study Group Decorum



- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (December 2013 IEEE-SA Standards Board Ops Manual 5.3.3.5)
- Photography or recording by permission only (December 2013 IEEE-SA Standards Board Ops Manual 5.3.3.4)
- 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

Reflector and Web

- To subscribe to the 25Gb/s Ethernet Study Group reflector, send an email to:

ListServ@ieee.org

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

subscribe stds-802-3-25G <yourfirstname> <yourlastname>

end

- Send 25Gb/s Ethernet reflector messages to:

stds-802-3-25G@listserv.ieee.org

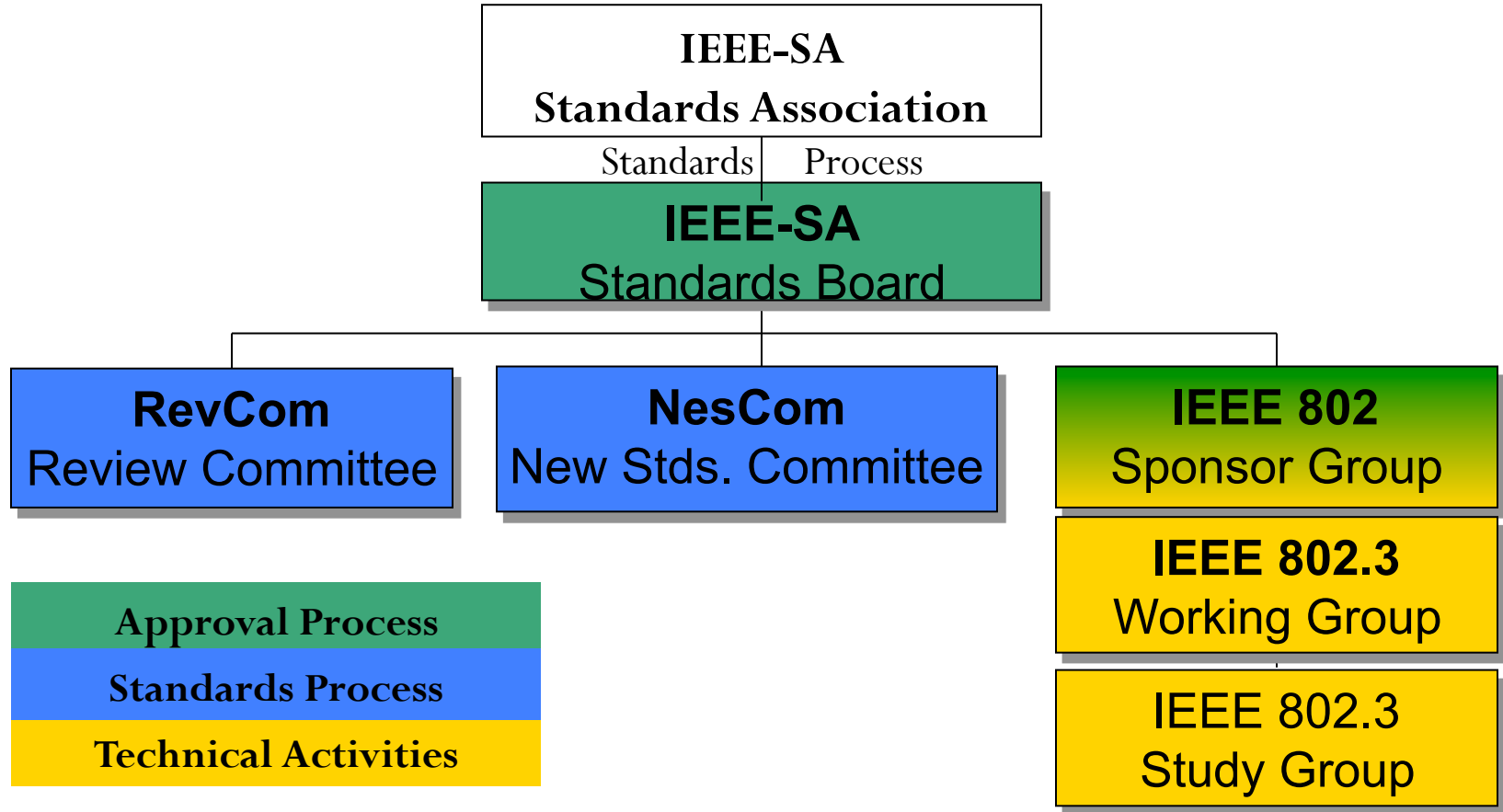
- Study Group web page URL:

<http://www.ieee802.org/3/25GSG/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
- NO product pitches
- NO corporate pitches
- NO prices!!!
 - This includes costs, ASPs, etc. no matter what the currency

IEEE Structure



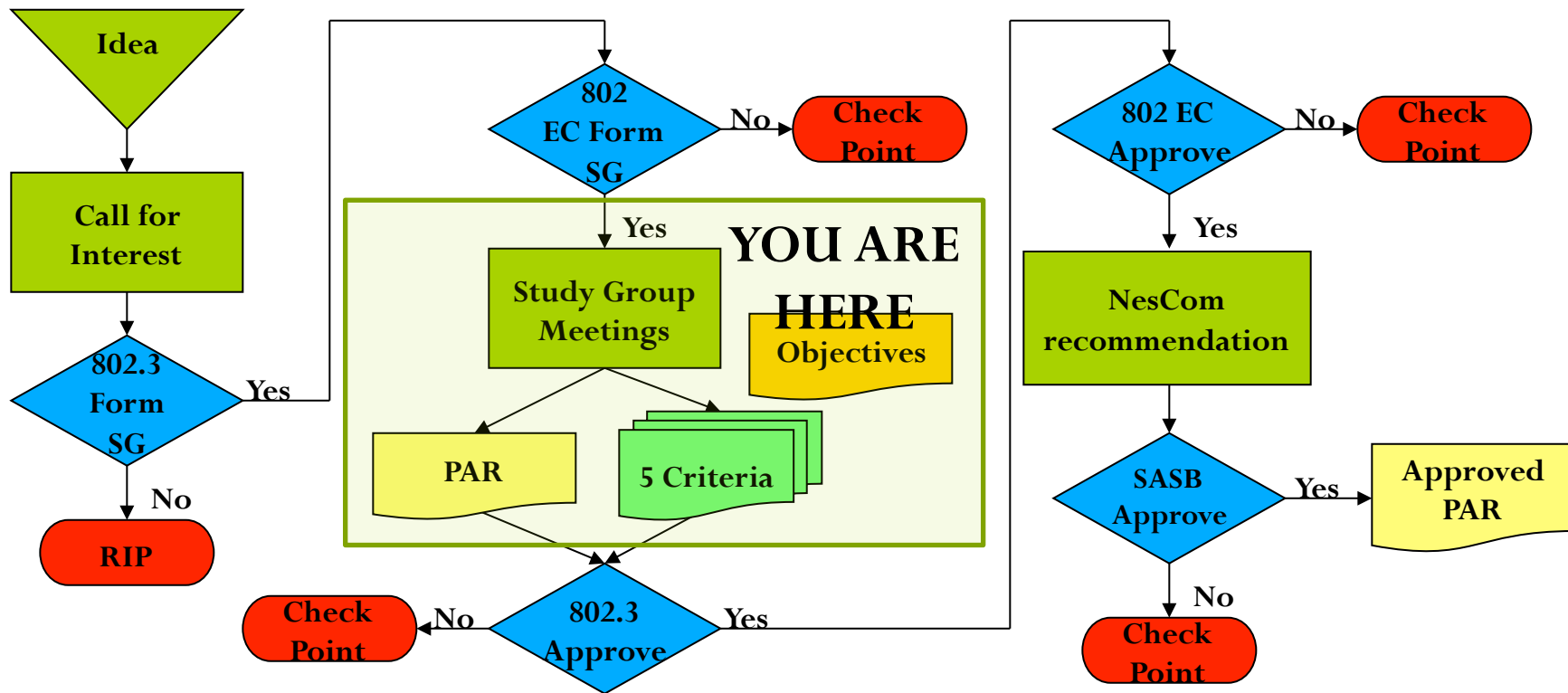
Important Bylaws and Rules

- **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

Guidelines for IEEE-SA Meetings

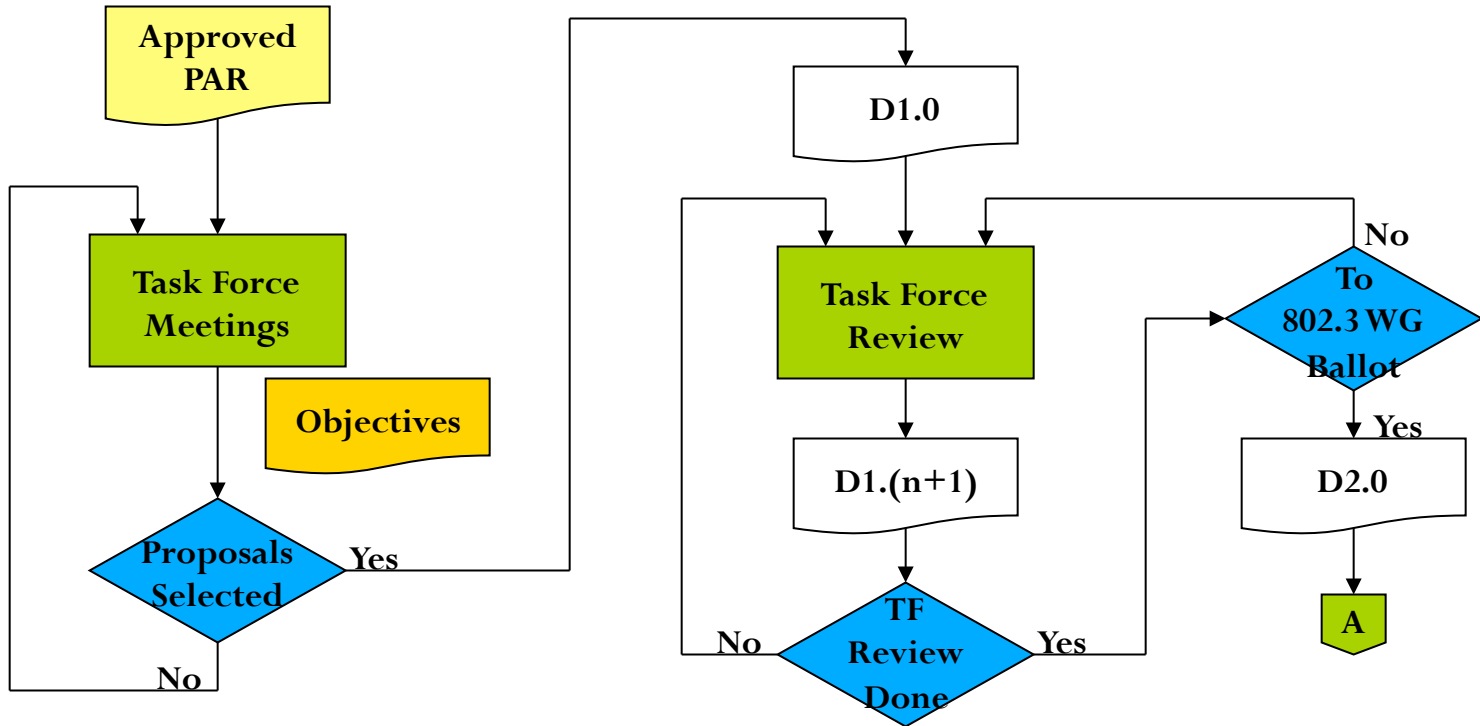
- **All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.**
- **Don't discuss the interpretation, validity, or essentiality of patents/ patent claims.**
- **Don't discuss specific license rates, terms, or conditions.**
 - Relative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

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

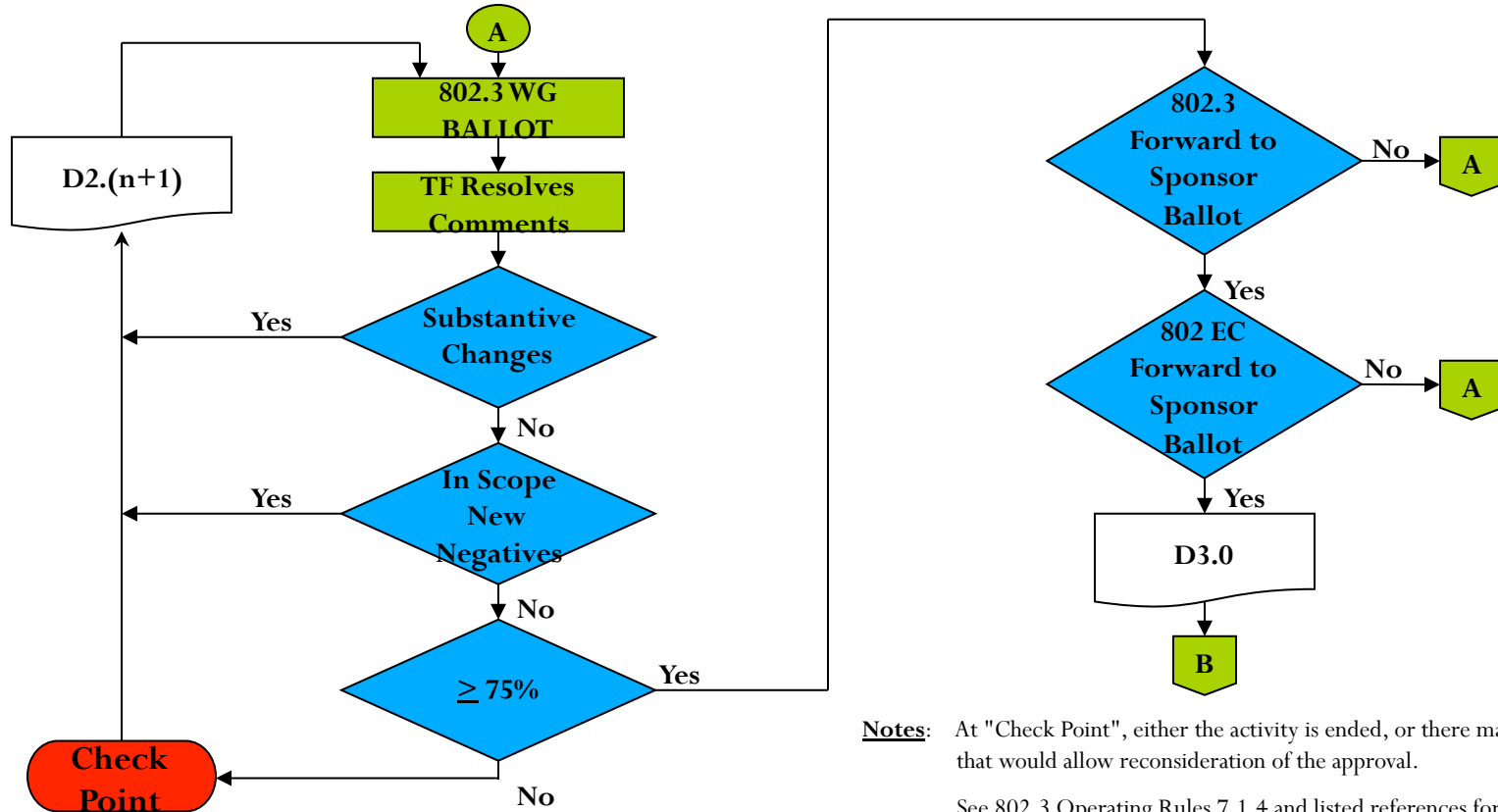


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

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



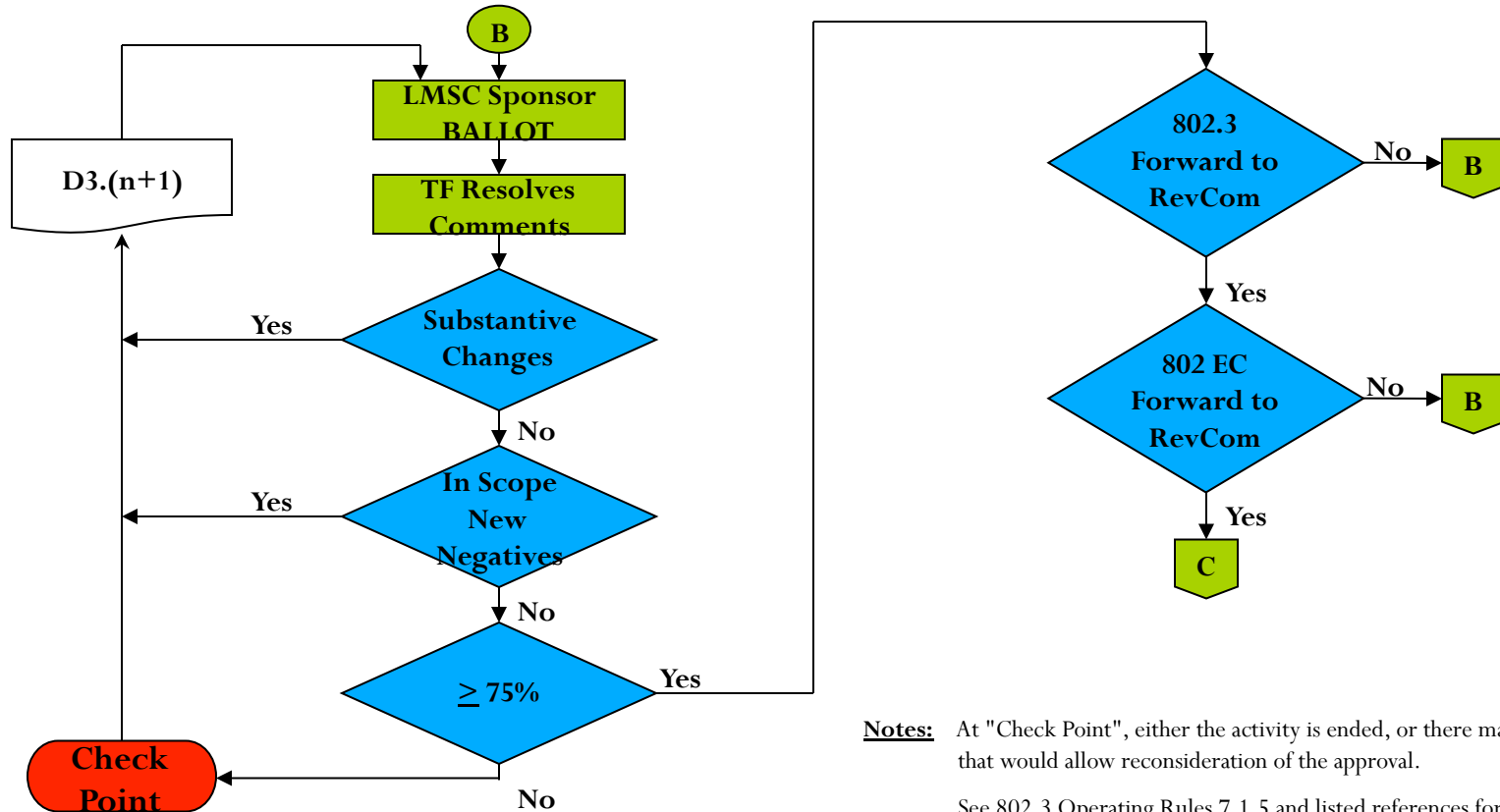
Overview of IEEE 802.3 Standards Process (3/5) – Working Group Ballot Phase



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

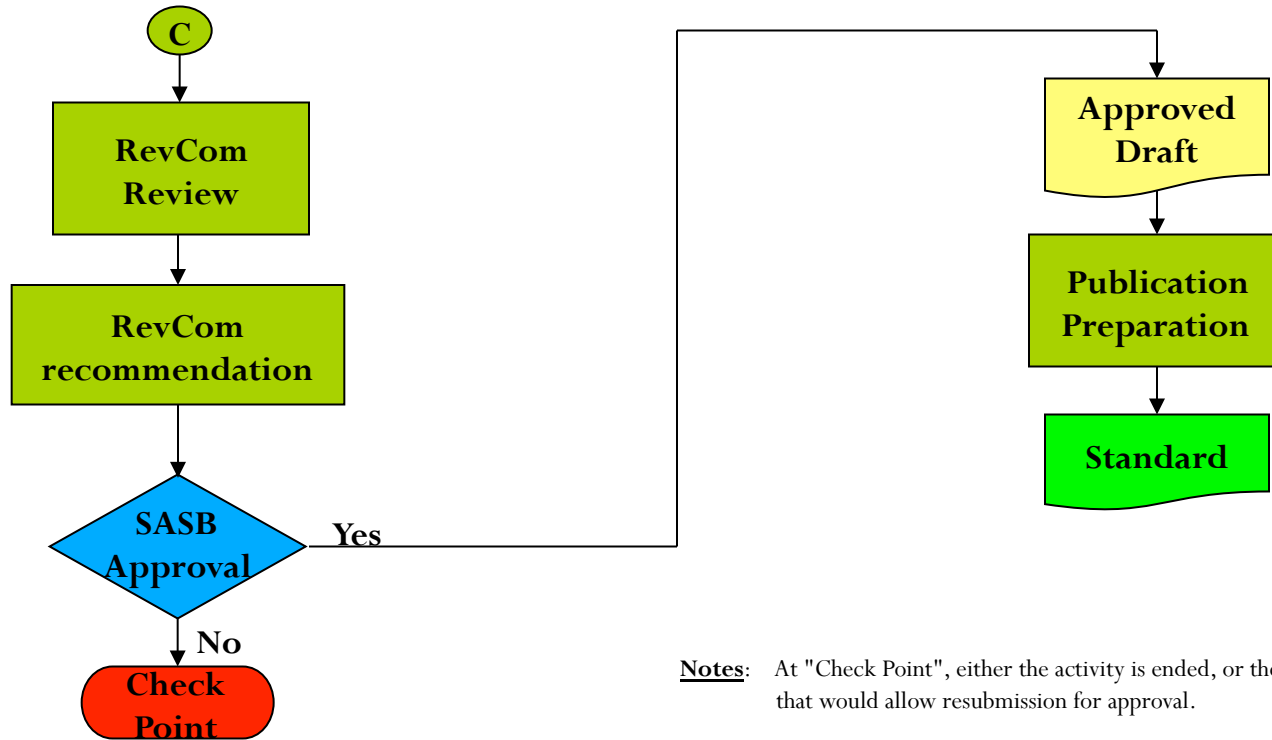
Overview of IEEE 802.3 Standards Process (4/5)- Sponsor Ballot Phase



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 resubmission for approval.

Attendance

- Tutorial Material on attendance tool
 - http://iee802.org/3/minutes/attendance_procedures.pdf
- Access details
 - URL: <http://imat.ieee.org/>
 - PW: ***

The Study Group

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

- Not a goal – choosing a solution.

Request for Formation of Study Group (as per July 2014 Plenary Motion)

Request that the IEEE 802.3 WG form a study group to develop a PAR and CSD for:

25 Gigabit/s Ethernet over a single lane for server interconnects

M: Mark Nowell

S: Howard Frazier

Procedural (>50%)

Y: 61 N: 0 A: 5

25 Gb/s Ethernet Sept Interim Meeting summary

- Excellent progress:
 - Full set of objectives adopted
 - All Criteria for Standards Development responses completed and adopted
 - Project Authorization Request completed and adopted
- Congratulations to the study group for excellent use of ad hocs to enable discussion and build consensus
 - Unanimous motions throughout SG meeting!!

Objectives adopted by Study Group

- Support a MAC data rate of 25 Gb/s
- Support full-duplex operation only
- Preserve the Ethernet frame format utilizing the Ethernet MAC
- Preserve minimum and maximum FrameSize of current IEEE 802.3 standard
- Support a BER of better than or equal to 10^{-12} at the MAC/PLS service interface (or the frame loss ratio equivalent)
- Support optional Energy-Efficient Ethernet operation
- Define a single-lane 25 Gb/s PHY for operation over a printed circuit board backplane consistent with channels specified in IEEE Std 802.3bj-2014 Clause 93 *Y:74 N:0 A:3*
- Define a single-lane 25 Gb/s PHY for operation over links consistent with copper twin axial cables, with lengths up to at least 3m *Y:62 N:0 A:14*
- Define a single-lane 25 Gb/s PHY for operation over links consistent with copper twin axial cables, with lengths up to at least 5m *Same motion as 3m objective*
- Define a single-lane 25 Gb/s PHY for operation over MMF consistent with IEEE P802.3bm Clause 95 *Y:75 N:0 A:3*
- Provide appropriate support for OTN *Y:71 N:0 A:9*

Y:83 N:0 A:1

CSD responses

- All CSD responses adopted
- See http://www.ieee802.org/3/25GSG/25GE_CSD_0914_adopted.pdf
 - Managed Objects *Y:63 N:0 A:0*
 - Coexistence *Y:61 N:0 A:1*
 - Broad Market Potential *Y:72 N:0 A:0*
 - Compatibility *Y:62 N:0 A:0*
 - Distinct Identity *Y:62 N:0 A:0*
 - Technical Feasibility *Y:75 N:0 A:0*
 - Economic Feasibility *Y:71 N:0 A:0*

Project Authorization Request

- PAR form was edited “live” and pdf was generated and adopted
- See http://www.ieee802.org/3/25GSG/25GE_PAR_final_110914.pdf
 - Motion to adopt passed: *Y:53 N:0 A:0*

Next Steps (admin)

- Approvals during Plenary meeting @ 802.3 Working Group and 802 EC
 - Comments from other 802 groups will need to be reviewed and responded to during the week.
- PAR Approval at NESCOM on Dec 9th
 - Pre-submittal complete
- If all goes well... P802.3by Task Force first meeting will be January 2015

Feedback so far from other WG chairs

5.2b Scope of the project

- Current:
 - Define Ethernet Media Access Control (MAC) parameters, physical layer specifications, and management parameters for the transfer of Ethernet format frames at 25 Gb/s for server to switch interconnections.
- Proposed
 - *This amendment defines* Ethernet Media Access Control (MAC) parameters, physical layer specifications, and management parameters for the transfer of Ethernet format frames at 25 Gb/s for server to switch interconnections.

Stakeholders for the Standard

- Current:
 - Stakeholders identified to date include, but are not limited to, users and producers of systems and components for data centers.
- Proposed:
 - Stakeholders ~~identified to date include, but are not limited to,~~ *include* users and producers of systems and components for data centers.

Next Steps (technical)

Until January 2015, we remain in Study Group mode and therefore are unable to make any decisions.

- However, we can continue to explore topics, refine proposals, build consensus, so that we are able to make decisions quickly once we become Task Force.
- Ad hocs, Plenary meetings will all be used

Big ticket items

Significant leverage available of previous 25Gb/s technical specification work. Therefore focus should be on agreeing on approach first.

- Overall architecture approach
- Twin-axial cable specification approach
 - Cable reaches, host losses, FEC operation and Auto-neg

} Ad hoc meetings
are excellent for
this

Goals for the meeting

- @ Study Group
 - Review set of objectives for the project
 - Review responses for the CSD (Criteria for Standards Development)
 - Review PAR
 - Review presentations towards developing Task Force proposals
 - Review Feedback from other 802 WG and respond
- @ 802.3 Working Group
 - Adopt 25GbE Study Group Objectives, CSD and PAR

Big ticket items

- Review, update and approve Objectives, CSD, PAR @ SG
- Adopt @ WG

Presentations – Tues Nov 4th

<u>Time</u>	<u>Presenter</u>	<u>Affiliation</u>	<u>Title</u>	<u>File Name</u>	<u>Duration</u>
8:30 AM	Mark Nowell	Cisco	Agenda and General Information	agenda_25GE_01_1114.pdf	0:45
9:15 AM	Matt Brown	APM	25GE Study Group Architecture Ad-hoc report	brown_25GE_01_1114.pdf	0:15
9:30 AM	Brad Booth	Microsoft	Architectural Thoughts – 25G Interconnect	booth_25GE_01_0914.pdf	0:45
10:15 AM			Break		0:20
10:35 AM	Eric Baden	Broadcom	25G Ethernet Layering and Gaps	baden_25GE_01_1114.pdf	0:45
11:20 AM	William Lo	Marvell	Sub-Layering for 25GbE	lo_25GE_01_1114.pdf	0:30
11:50 AM	Adee Ran	Intel	RS-FEC synchronization for 25 Gb/s and beyond	ran_25GE_02_1114.pdf	0:30
12:20 PM			Lunch		1:00
1:20 PM	Jonathan King	Finisar	Towards a 25G MMF baseline proposal	king_25GE_01_1114.pdf	0:10
1:30 PM	Kent Lusted	Intel	Nomenclature Consensus Building	lusted_25GE_01_1114.pdf	0:20
1:50 PM	Tom Palkert	Molex	Direct attach copper 3 and 5m S parameters	palkert_25GE_01_1114.pdf	0:20
2:10 PM	Adee Ran	Intel	Path to a baseline proposal for copper and backplane PMD clauses	ran_25GE_01_1114.pdf	0:30
2:40 PM			Break		0:20
3:00 PM	Rich Mellitz	Intel	Channel Budgeting	mellitz_25GE_01_1114.pdf	0:20
3:20 PM	Erdem Matoglu	Amphenol	Measurement Results of up to 3m QSFP-to-4SFP Breakout Cables for Non-FEC 25Gbps/lane Server Connection	matoglu_25GE_01_1114.pdf	0:20
3:40 PM	Chris DiMinico	MC Comm./ Panduit	Considerations for 25 Gb/s Cable Assembly and Channel Specifications	diminico_25GE_01_1114.pdf	0:20
4:00 PM	Eric Baden	Broadcom	AN Considerations with 25G Ethernet	baden_25GE_02_1114.pdf	0:30
4:30 PM			Straw Polls and discussion		0:45
5:15 PM			Break		

Note –Times listed are subject to change.

Updated versions will be captured with new filename versions

Presentations – Wed Nov 5th

<u>Time</u>	<u>Presenter</u>	<u>Affiliation</u>	<u>Title</u>	<u>File Name</u>	<u>Duration</u>
8:00 AM	Mark Nowell	Cisco	Discussions, Motions & Closing Business		1:00
9:00 AM			Adjourn		

This can not be moved to Tuesday as we need to wait for feedback from the other 802 Working Groups (due Tues evening), respond to the comments then review and possibly approve/adopt any changes on Wednesday morning.

Note –Times listed are subject to change.

Updated versions will be captured with new filename versions

Future Meetings & Ad hocs

- Ad-hoc meeting plans
 - Single on-going weekly meetings, all topics (will cycle) – agendas will be published. 90 mins. Duration.
 - Wed 8-9:30 Pacific
- See: <http://www.ieee802.org/3/interims/index.html>
- Jan 2015 Interim
 - Atlanta, Ga
 - Week of Jan 12th, 2015
- March 2015 Plenary
 - Berlin, Germany
 - Mar 9-12th, 2015
- May 2015 Interim
 - Pittsburgh, Pa
 - Week of May 18th, 2015
- Anyone interested in hosting a interim meeting contact me or the IEEE 802.3 Executive Secretary Steve Carlson.

Advance Notice:

Depending on Task Force progress in January (and March) Meetings, we may consider an extra interim meeting if it would beneficially help schedule.

Thank You!