




IEEE 802.3 Higher Speed Study Group

Agenda and General Information

Geneva, Switzerland
May, 2007



Agenda

- Welcome and Introductions
- Appoint/Volunteer Recording Secretary
- Approve Agenda
- Approve Meeting Minutes
- Goals for this Meeting
- Ground Rules
- Reflector and Web
- IEEE
 - Structure
 - Bylaws and Rules
 - Call for Patents
 - IEEE Standards Process
- Presentations
- Discussion and Motions
- Future Meetings

IEEE 802.3 HSSG Organization

- Study Group Chair:
 - John D'Ambrosia (jdambrosia@force10networks.com)
- Web Master
 - Frank Chang (ychang@vitesse.com)

- “Reach” Ad Hoc Chair
 - Andy Moorwood (amoorwood@extremenetworks.com)
- “Fiber Optic” Ad Hoc Chair
 - Dan Dove (dan.dove@hp.com)

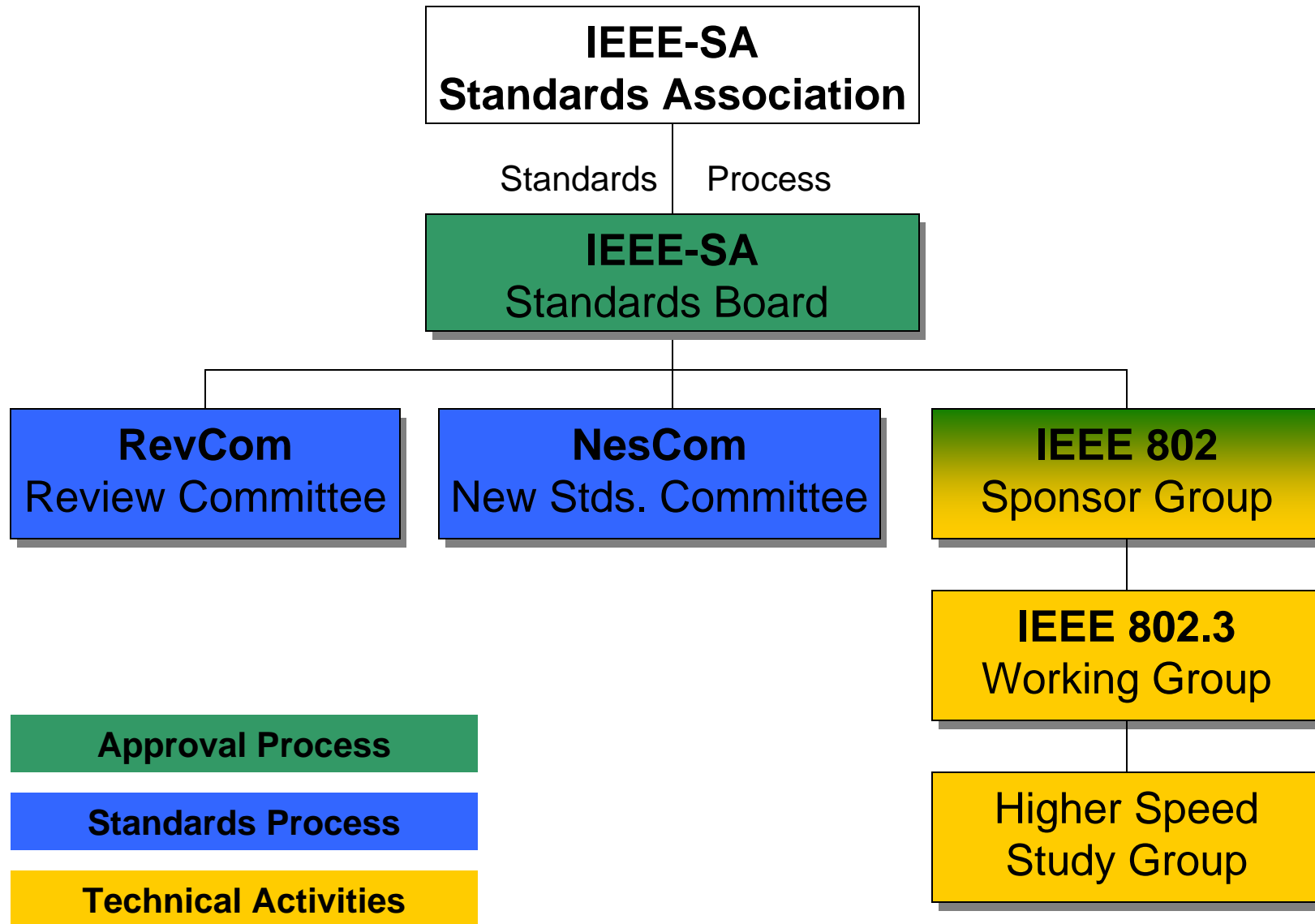
Goals for this Meeting

- Hear presentations related to objectives and 5 Criteria
- Finalize HSSG Objectives
- Finalize number of recommended PAR
- Project Authorization Requests
 - Completion and Approval of “PAR A”
 - Project Authorization Request
 - 5 Criteria Responses
 - If there is new PAR, complete and approve :
 - Project Authorization Request (PAR)
 - 5 Criteria Responses
- Tutorial Preparations

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
- NO restrictive notices

IEEE Structure



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>
- LAN/MAN Standards Committee (LMSC) Policies and Procedures:
 - <http://ieee802.org/policies-and-procedures.pdf>
- IEEE 802.3 Working Group Operating Rules:
 - http://ieee802.org/3/rules/P802_3_rules.pdf

Highlights of the *IEEE-SA Standards Board* *Bylaws* on Patents in Standards

- **Participants have a duty to tell the IEEE if they know (based on personal awareness) of potentially Essential Patent Claims they or their employer own**
- **Participants are encouraged to tell the IEEE if they know of potentially Essential Patent Claims owned by others**
 - This encouragement is particularly strong as the third party may not be a participant in the standards process
- **Working Group required to request assurance**
- **Early assurance is encouraged**
- **Terms of assurance shall be either:**
 - Reasonable and nondiscriminatory, with or without monetary compensation; or,
 - A statement of non-assertion of patent rights
- **Assurances**
 - Shall be provided on the IEEE-SA Standards Board approved LOA form
 - May optionally include not-to-exceed rates, terms, and conditions
 - Shall not be circumvented through sale or transfer of patents
 - Shall be brought to the attention of any future assignees or transferees
 - Shall apply to Affiliates unless explicitly excluded
 - Are irrevocable once submitted and accepted
 - Shall be supplemented if Submitter becomes aware of other potential Essential Patent Claims
- **A “Blanket Letter of Assurance” may be provided at the option of the patent holder**
- **A patent holder has no duty to perform a patent search**
- **Full policy available at <http://standards.ieee.org/guides/bylaws/sect6-7.html#6>**

IEEE-SA Standards Board Bylaws on Patents in Standards

6.2 Policy

IEEE standards may be drafted in terms that include the use of Essential Patent Claims. If the IEEE receives notice that a [Proposed] IEEE Standard may require the use of a potential Essential Patent Claim, the IEEE shall request licensing assurance, on the IEEE Standards Board approved Letter of Assurance form, from the patent holder or patent applicant. The IEEE shall request this assurance without coercion.

The Submitter of the Letter of Assurance may, after Reasonable and Good Faith Inquiry, indicate it is not aware of any Patent Claims that the Submitter may own, control, or have the ability to license that might be or become Essential Patent Claims. If the patent holder or patent applicant provides an assurance, it should do so as soon as reasonably feasible in the standards development process. This assurance shall be provided prior to the Standards Board's approval of the standard. This assurance shall be provided prior to a reaffirmation if the IEEE receives notice of a potential Essential Patent Claim after the standard's approval or a prior reaffirmation. An asserted potential Essential Patent Claim for which an assurance cannot be obtained (e.g., a Letter of Assurance is not provided or the Letter of Assurance indicates that assurance is not being provided) shall be referred to the Patent Committee.

A Letter of Assurance shall be either:

- a) A general disclaimer to the effect that the Submitter without conditions will not enforce any present or future Essential Patent Claims against any person or entity making, using, selling, offering to sell, importing, distributing, or implementing a compliant implementation of the standard; or
- b) A statement that a license for a compliant implementation of the standard will be made available to an unrestricted number of applicants on a worldwide basis without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination. At its sole option, the Submitter may provide with its assurance any of the following: (i) a not-to-exceed license fee or rate commitment, (ii) a sample license agreement, or (iii) one or more material licensing terms.

IEEE-SA Standards Board Bylaws on Patents in Standards

Copies of an Accepted LOA may be provided to the working group, but shall not be discussed, at any standards working group meeting.

The Submitter and all Affiliates (other than those Affiliates excluded in a Letter of Assurance) shall not assign or otherwise transfer any rights in any Essential Patent Claims that are the subject of such Letter of Assurance that they hold, control, or have the ability to license with the intent of circumventing or negating any of the representations and commitments made in such Letter of Assurance.

The Submitter of a Letter of Assurance shall agree (a) to provide notice of a Letter of Assurance either through a Statement of Encumbrance or by binding any assignee or transferee to the terms of such Letter of Assurance; and (b) to require its assignee or transferee to (i) agree to similarly provide such notice and (ii) to bind its assignees or transferees to agree to provide such notice as described in (a) and (b).

This assurance shall apply to the Submitter and its Affiliates except those Affiliates the Submitter specifically excludes on the relevant Letter of Assurance.

If, after providing a Letter of Assurance to the IEEE, the Submitter becomes aware of additional Patent Claim(s) not already covered by an existing Letter of Assurance that are owned, controlled, or licensable by the Submitter that may be or become Essential Patent Claim(s) for the same IEEE Standard but are not the subject of an existing Letter of Assurance, then such Submitter shall submit a Letter of Assurance stating its position regarding enforcement or licensing of such Patent Claims. For the purposes of this commitment, the Submitter is deemed to be aware if any of the following individuals who are from, employed by, or otherwise represent the Submitter have personal knowledge of additional potential Essential Patent Claims, owned or controlled by the Submitter, related to a [Proposed] IEEE Standard and not already the subject of a previously submitted Letter of Assurance: (a) past or present participants in the development of the [Proposed] IEEE Standard, or (b) the individual executing the previously submitted Letter of Assurance.

IEEE-SA Standards Board Bylaws on Patents in Standards

The assurance is irrevocable once submitted and accepted and shall apply, at a minimum, from the date of the standard's approval to the date of the standard's withdrawal.

The IEEE is not responsible for identifying Essential Patent Claims for which a license may be required, for conducting inquiries into the legal validity or scope of those Patent Claims, or for determining whether any licensing terms or conditions are reasonable or non-discriminatory.

Nothing in this policy shall be interpreted as giving rise to a duty to conduct a patent search. No license is implied by the submission of a Letter of Assurance.

In order for IEEE's patent policy to function efficiently, individuals participating in the standards development process: (a) shall inform the IEEE (or cause the IEEE to be informed) of the holder of any potential Essential Patent Claims of which they are personally aware and that are not already the subject of an existing Letter of Assurance, owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents; and (b) should inform the IEEE (or cause the IEEE to be informed) of any other holders of such potential Essential Patent Claims that are not already the subject of an existing Letter of Assurance.

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 fixing product prices, allocation of customers, or dividing 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/board/pat/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.

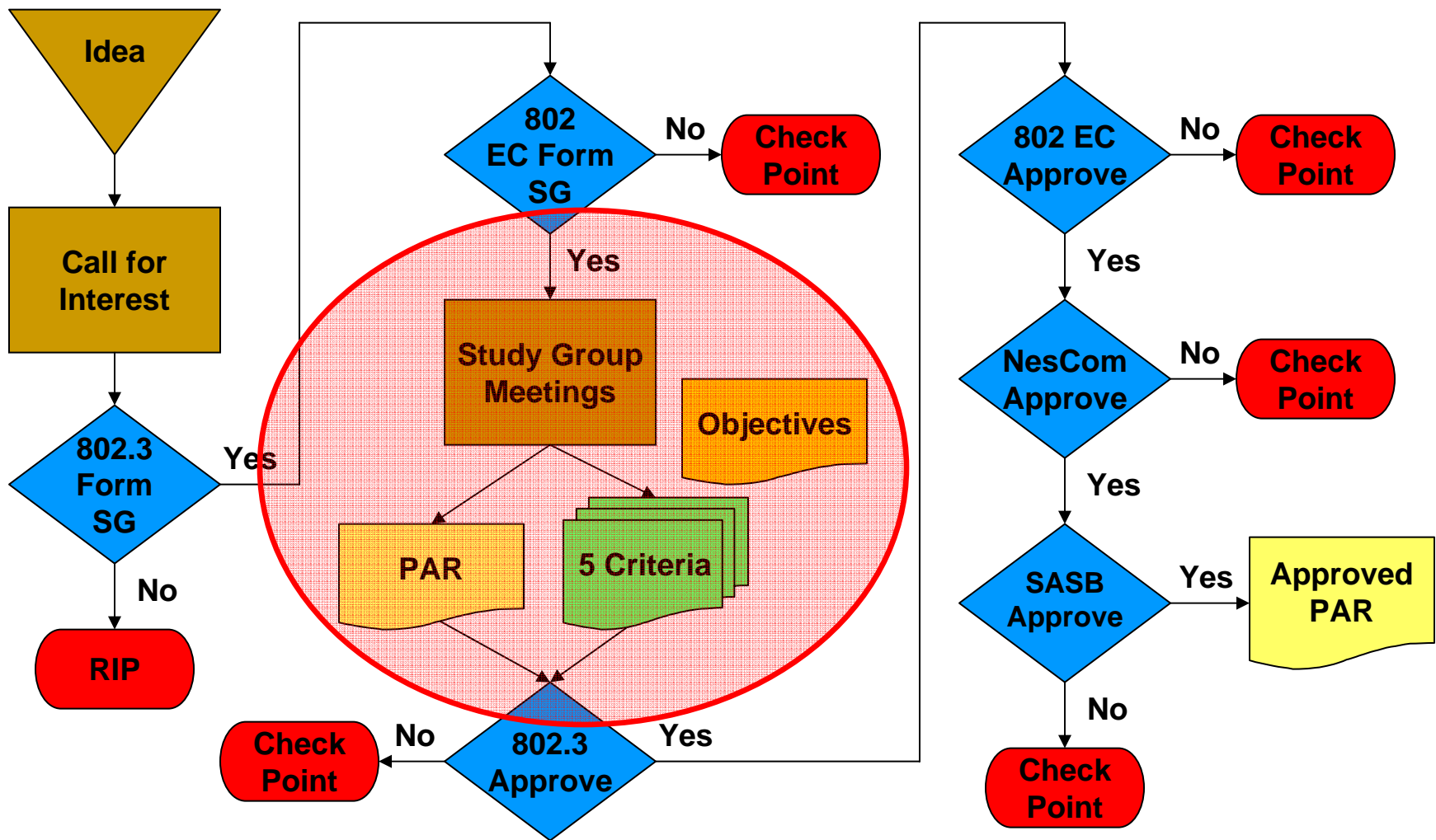
This slide set is available at <http://standards.ieee.org/board/pat/pat-slideset.ppt>

The Study Group

- Normal function is to draft a complete PAR and Five Criteria
- Provide a plenary week tutorial to the LMSC.
- 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

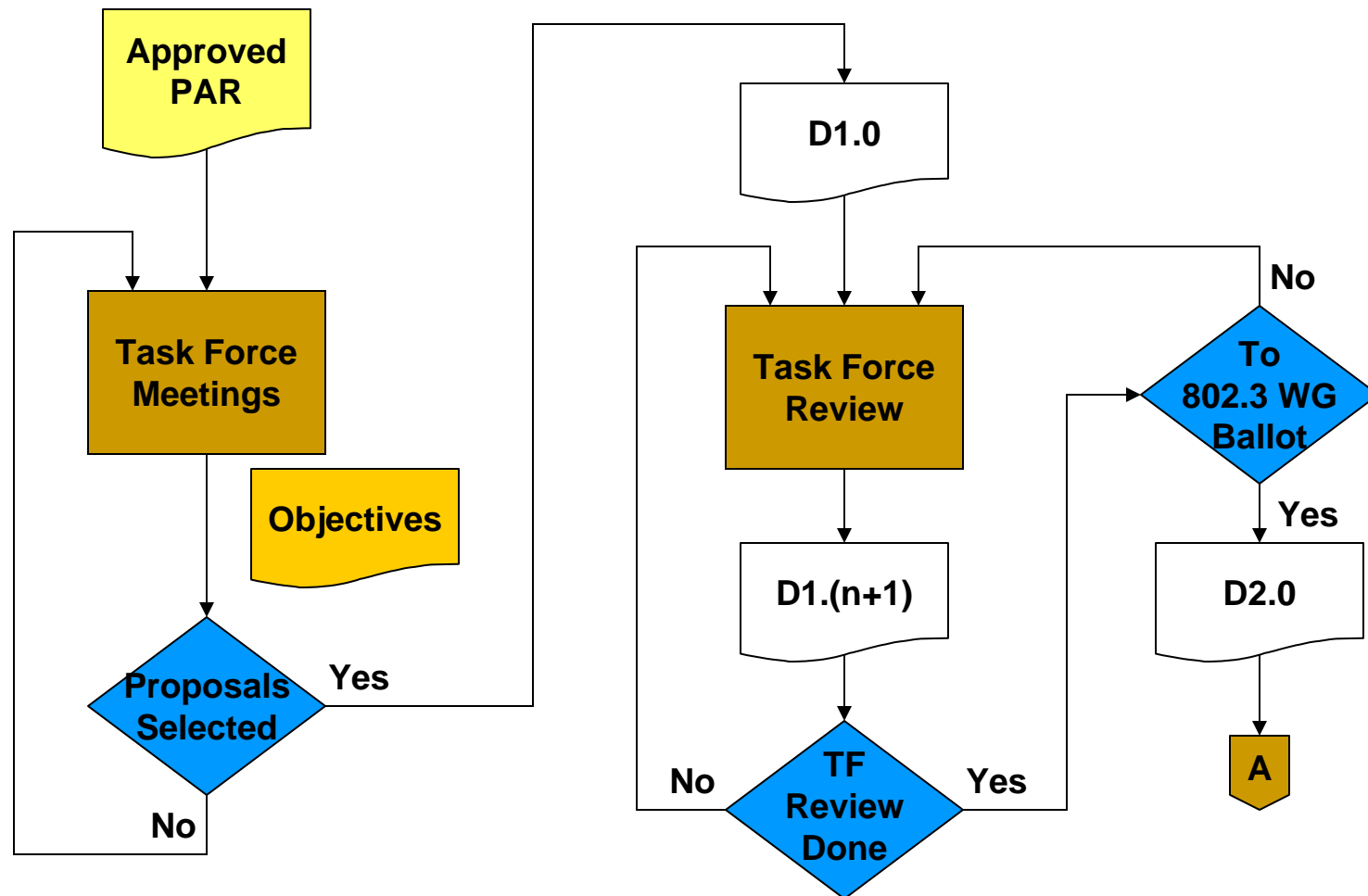
- Not a goal – choosing a solution.

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

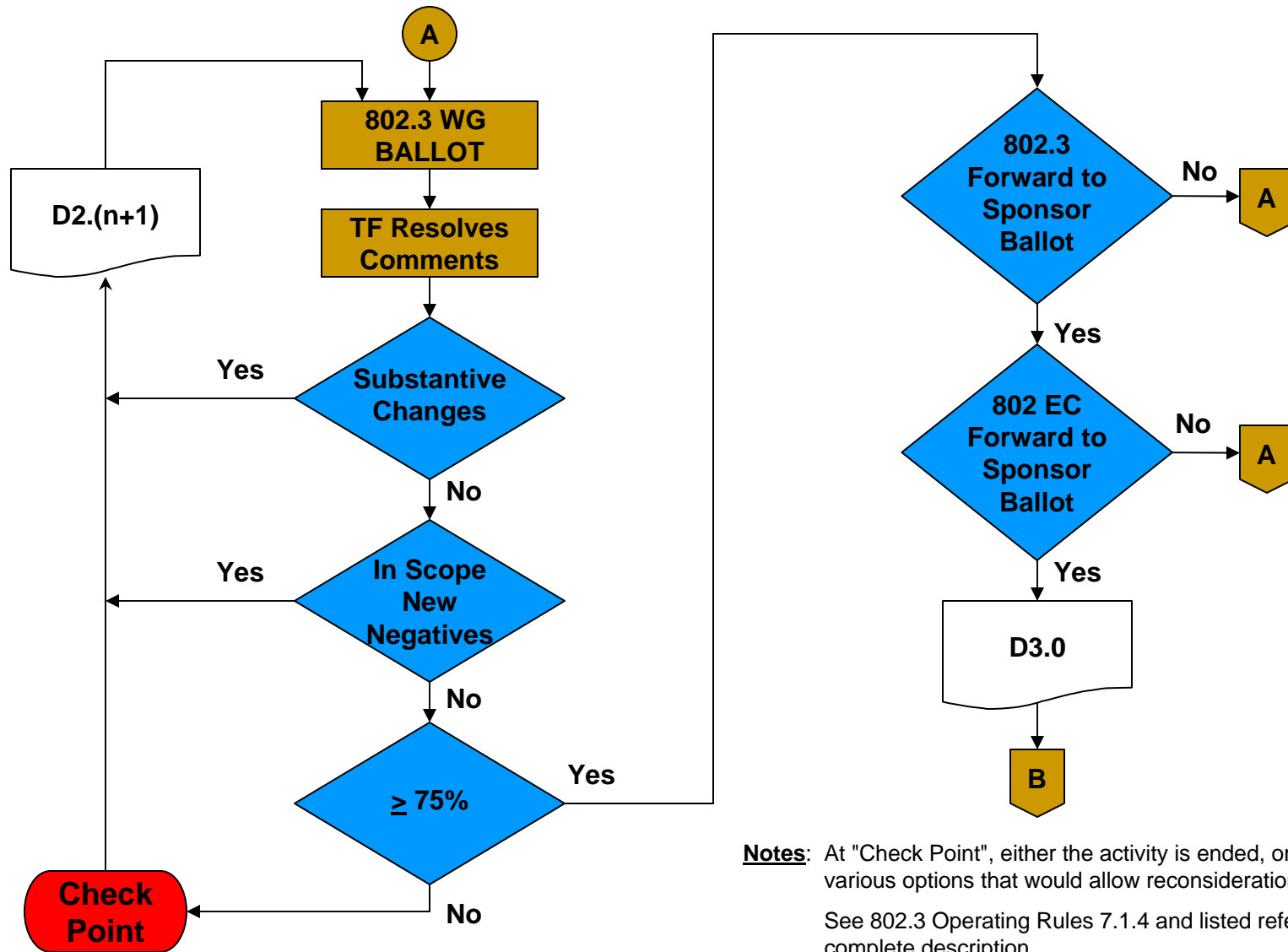


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

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

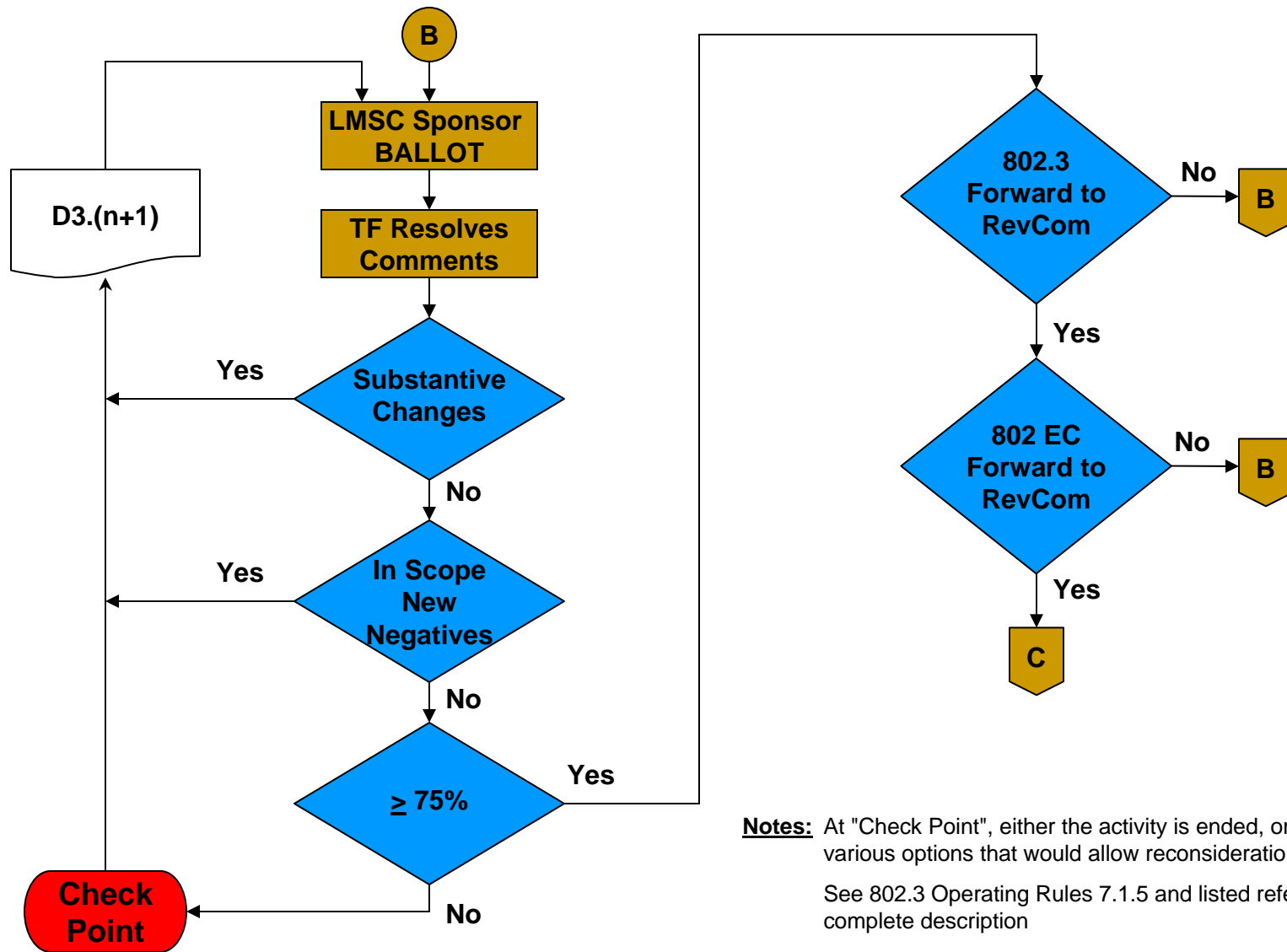


Overview of IEEE 802.3 Standards Process (3/5) - Working Group Ballot Phase



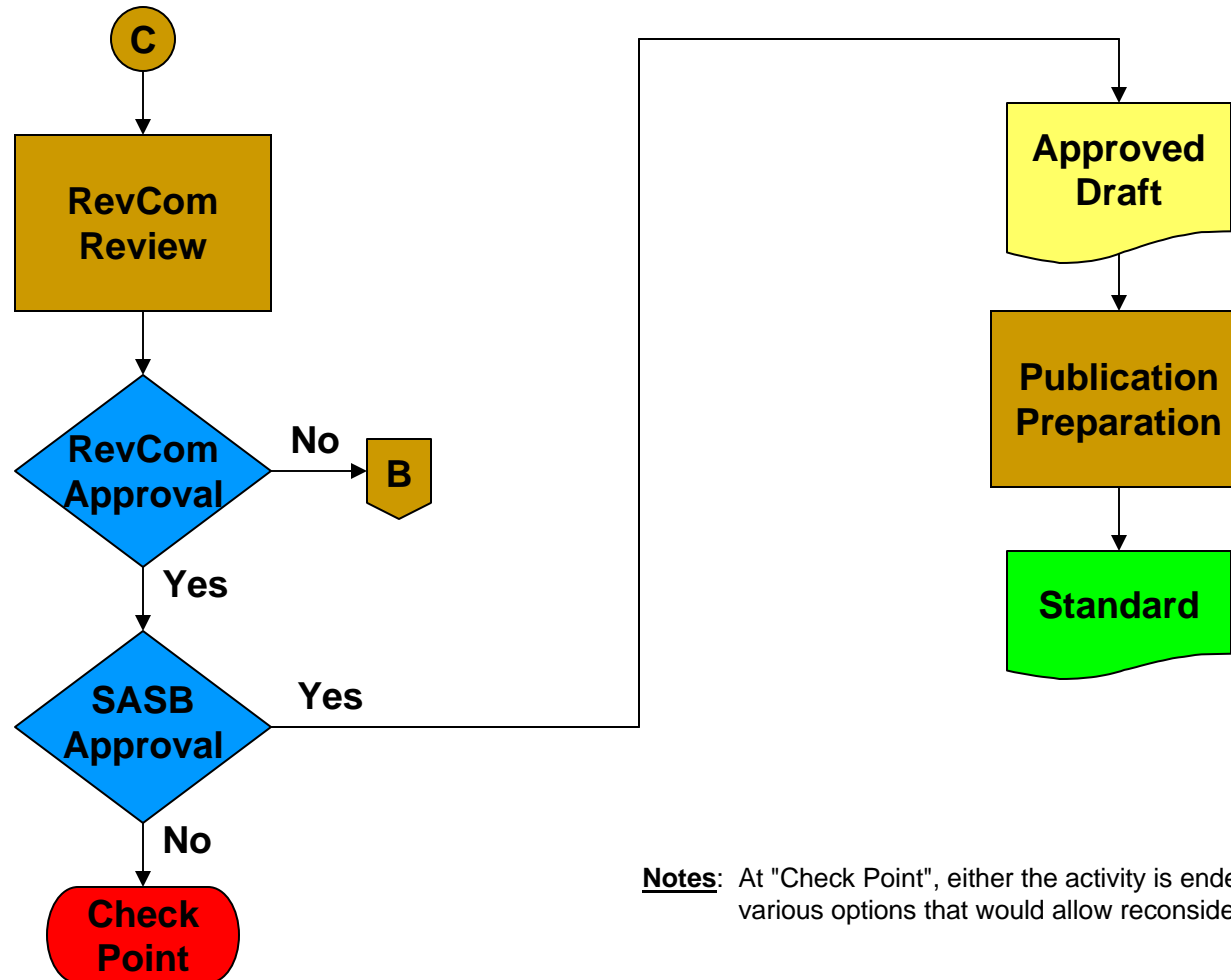
Notes: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval. See 802.3 Operating Rules 7.1.4 and listed references for complete description

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.

Request for Formation of HSSG (as per July '06 Plenary Motion)

Move the IEEE 802.3 Working Group requests formation of a “Higher Speed Study Group” to evaluate definition of greater than 10 Gb/s MAC data rate and related PHY capability to IEEE Std 802.3. The Study Group may recommend one or more PARs.

HSSG Objectives

- Support full-duplex operation only (approved 11/16/06: All 73/0/4)
- Preserve the 802.3 / Ethernet frame format at the MAC Client service interface (approved 11/16/06: All 76/0/4)
- Preserve minimum and maximum FrameSize of current 802.3 Std (approved 11/16/06: All 74/0/4)
- Support a speed of 100 Gb/s at the MAC/PLS interface (approved 11/16/06: All 67/9/14, 802.3 26/4/11)
- Support at least 10km on SMF. (approved 11/16/06: All 86/0/4, 802.3 40/0/4)
- Support at least 100 meters on OM3 MMF. (approved 11/16/06, All 61/3/27, 802.3 33/2/13)
- Support a BER better than or equal to 10^{-12} at the MAC /PLS service interface. (approved 1/19/07, All 68/0/4).
- Support at least 40-km on SMF. (approved 1/19/07, All 38/10/32, 802.3 12/6/16).
- To support at least 10m over a copper cable assembly. (approved 4/19/07, All 51/0/15, 802.3 23/0/7)

Updated Apr 21, 2007

HSSG PAR A

- Objectives ([http://grouper.ieee.org/groups/802/3/hssg/PAR-A/HSSG PAR A Objectives 0407.pdf](http://grouper.ieee.org/groups/802/3/hssg/PAR-A/HSSG_PAR_A_Objectives_0407.pdf))
 - Support full-duplex operation only
 - Preserve the 802.3 / Ethernet frame format at the MAC Client service interface
 - Preserve minimum and maximum FrameSize of current 802.3 Std
 - Support a speed of 100 Gb/s at the MAC/PLS interface
 - Support at least 10km on SMF.
 - Support at least 100 meters on OM3 MMF.
 - Support a BER better than or equal to 10^{-12} at the MAC /PLS service interface.
 - Support at least 40-km on SMF.
 - To support at least 10m over a copper cable assembly.

- PAR – Working Draft
 - [http://grouper.ieee.org/groups/802/3/hssg/PAR-A/HSSG PARA PAR WD 0507.pdf](http://grouper.ieee.org/groups/802/3/hssg/PAR-A/HSSG_PARA_PAR_WD_0507.pdf)

- Critters – Working Draft
 - [http://grouper.ieee.org/groups/802/3/hssg/PAR-A/HSSG PARA 5C WD 0407.pdf](http://grouper.ieee.org/groups/802/3/hssg/PAR-A/HSSG_PARA_5C_WD_0407.pdf)

HSSG “PAR A” (Working Draft, 1/2)

■ Title -

- IEEE Standard for Information Technology - Telecommunications and Information Exchange Between Systems - Local and Metropolitan Area Networks – Specific Requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications – Amendment: Media Access Control Parameters, Physical Layers and Management Parameters for 100 Gb/s Operation

■ Scope –

- Define 802.3 Media Access Control (MAC) parameters, physical layer specifications, and management parameters for the transfer of 802.3 format frames at 100 Gb/s.

HSSG “PAR A” (Working Draft, 2/2)

■ Purpose

- The purpose of this project is to extend the 802.3 protocol to an operating speed of 100 Gb/s in order to provide a significant increase in bandwidth while maintaining maximum
- compatibility with the installed base of 802.3 interfaces, previous investment in research and development, and principles of network operation and management. The project is to provide for the interconnection of equipment satisfying the distance requirements of the intended applications.

■ Need

- The project is necessary to provide a solution for applications that have been demonstrated to need bandwidth beyond the existing capabilities. These include data center, internet exchanges, high performance computing and video on demand delivery.

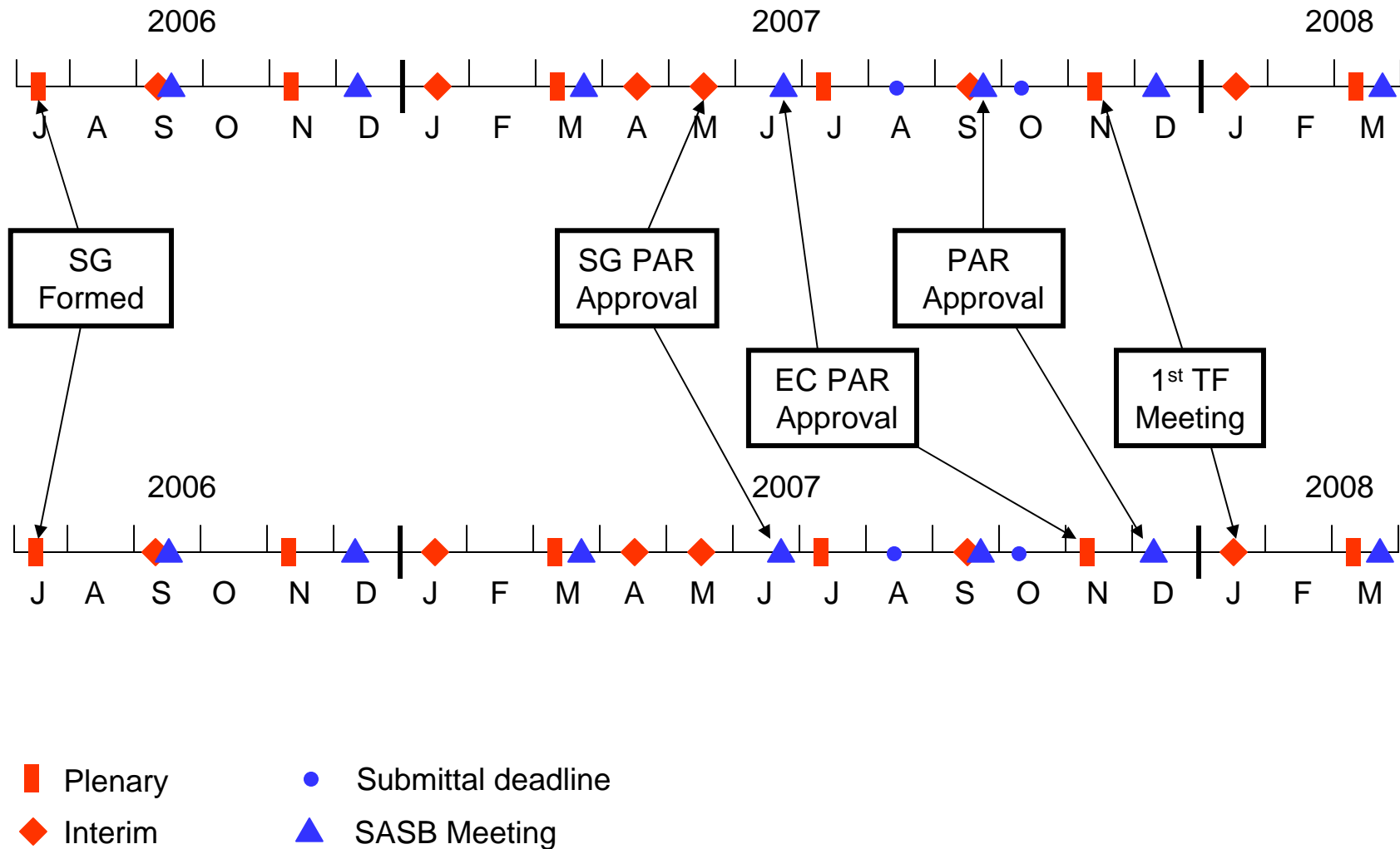
Checkpoint Review

- Decision on 40G objective
- How should the group proceed?
 - Super Project – everything in one PAR
 - Initial Super Project - Split out efforts that lag
 - Study and define all PARs simultaneously
- Alternative mechanisms for “serial PARs”
 - 802.3 WG Chair email to HSSG reflector -
<http://grouper.ieee.org/groups/802/3/hssg/email/msg00519.html>

Study Group Schedule

- January, 2007 Interim Meeting
 - Draft Objectives
- March, 2007 Plenary Meeting
 - Complete Objectives (if not complete from Jan)
 - Draft PAR & 5 Criteria
 - Prepare for Tutorial in July
- April, 2007 Interim Meeting
 - Complete PAR & 5 Criteria
- May, 2007 Interim Meeting
 - Complete PAR & 5 Criteria
 - Submit draft to 802 SEC (30 day circulation requirement for 802 EC – June 16)
 - Tutorial Preparation (45 day minimum to request tutorial session (first come – first serve) – June 1)
- July, 2007 Plenary Meeting
 - Execute PAR approval process
 - 802.3 Approve PAR for forwarding to 802 SEC
 - 802 SEC approve and forward to NesCom
- August, 2007
 - Submit PAR to NesCom
- September, 2007
 - If HSSG exists, then it will meet at the September Interim
 - NesCom: Approve PAR
 - IEEE-SA Standards Board Approve PAR
- November 2007 Plenary Meeting
 - First official Task Force Meeting

What if we don't approve PAR this week?



PAR dates

- July LMSC PAR consideration
 - Jun 1 Tutorial request deadline
 - Jun 15 EC submittal deadline
 - Aug 17 NesCom submittal deadline
 - Sep 27 SASB meeting – PAR approval

- November LMSC PAR consideration
 - Sep 28 Tutorial request deadline
 - Oct 12 NesCom submittal deadline
 - Oct 12 EC submittal deadline
 - Nov 16 Unprecedented 4th SG extension
 - Dec 5 SASB meeting – PAR approval

Presentations – Monday, 5/28

Time	Presenter	Affiliation	Title	File Name
1:00 PM			Agenda and General Information	agenda_01_0507.pdf
1:40 PM	John Jaeger	Infinera	HSSG Presentation Mapping to 5 Criteria Responses	jaeger_02_0507.pdf jaeger_02_0507.xls
2:00 PM	Chris Cole	Finisar	Technical & Economic Feasibility of 40km SMF 100GE Transceivers	cole_01_0507.pdf
2:30 PM	Ramon Gutierrez	Institute of Engineering, UNAM	Technical Feasibility of 4x25 Gb/s PMD for 40km at 1310nm using SOAs	gutierrez_01_0507.pdf
3:00 PM	Wenbin Jiang	JDSU	4 x 25 G WDM of 200 GHz Grid for Both 10 km & 40 km Distance Objectives	jiang_01_0507.pdf
3:30 PM	Break			
3:50 PM	Chris DiMinico	MC Comumunications	Higher Speed Copper Ethernet	diminico_01_0507.pdf
4:15 PM	Howard Frazier	Broadcom	Modifications to IEEE 802.3 HSSG objectives to include 40 G	frazier_02_0507
4:35 PM	Howard Frazier	Broadcom	Modifications to IEEE 802.3 HSSG PAR to include 40 G	frazier_04_0507
4:55 PM	Howard Frazier	Broadcom	40 Gb/s Ethernet 5 Criteria Responses	frazier_03_0507
5:25 PM	Break			
5:45 PM	Scott Kipp	Brocade	40 Gigabit Ethernet Answers	kipp_01_0507.pdf
6:15 PM	Shimon Muller	Sun	Link Aggregation: A Server Perspective	muller_01_0507.pdf
6:45 PM			Discussion (Straw Polls)	

Note – Order of presentations and times listed are subject to change.

Presentations – Tuesday, 5/29

Time	Presenter	Affiliation	Title	File Name
9:00 AM			Day's Opening Comments	
9:15 AM	Ad Bresser	KPN	Requirements from an operator perspective	bresser_01_0507.pdf
9:45 AM	Ron Luijten	IBM	Market Potential for 100 Gb/s and 40 Gb/s Ethernet in HPC Applications	pepeljogoski_01_0507.pdf
10:10 AM	Howard Frazier	Broadcom	Evolution from 10G to 40G & 100G	frazier_01_0507
10:40 AM	Break			
10:40 AM	Ilango Ganga	Intel	40GbE for Blade Server and ATCA Systems	ganga_01_0507.pdf
11:05 AM	Schelto van Doorn	Intel	40GbE Host Controller Economics	vandoorn_01_0507.pdf
11:30 AM	Schelto van Doorn	Intel	Cost analysis of 40G & 100G MMF variants	kolesar_01_0507.pdf
12:00 PM	Lunch			
1:15 PM	John Jaeger	Infinera	100G & 40G Market Timing & Broad Industry Support	jaeger_01_0507.pdf
1:35 PM	John Jaeger	Infinera	100GbE or 40GbE – which represents a compelling market opportunity?	jaeger_03_0507.pdf
1:55 PM	Gary Nicholl	Cisco	100G versus '40G and 100G' or Single Rate versus Dual Rate	nicholl_01_0507.pdf
2:25 PM	Dan Dove	HP	40G, 100G Ethernet or Both - How do we proceed?	dove_01_0507.pdf
2:55 PM	Break			
3:15 PM	Osamu Ishida	NTT	IFS Stretch for WAN	ishida_01_0507.pdf
3:40 PM	Trey Malpass	Huawei	Enabling 100G Transport (PHY Layer OAM Objective)	melpass_01_0507.pdf
4:10 PM			Discussion (Straw Polls / Motions)	
5:30 PM	Break			
5:50 PM			Discussion (Straw Polls / Motions)	

Note – Order of presentations and times listed are subject to change.

Wednesday, 5/30, Thursday, 5/31

Wednesday 30-May-07

Time	Presenter	Affiliation	Title	File Name
9:00 AM			Day's Opening Comments	
9:15 AM			Discussion (Straw Polls / Motions)	
10:30 AM	Break			
10:50 AM			Discussion (Straw Polls / Motions)	
12:00 PM	Lunch			
2:00 PM			Tentative - Discussion / working session	
4:30 PM				
6:00 PM			Tentative - Discussion (Straw Polls / Motions)	

Thursday 31-May-07

Time	Presenter	Affiliation	Title	File Name
9:00 AM			Day's Opening Comments	
9:15 AM			Discussion (Straw Polls / Motions)	
10:30 AM	Break			
10:50 AM			Discussion (Straw Polls / Motions) & Closing Business	
12:00 PM	Adjourn			

Note – Order of presentations and times listed are subject to change.

Voting privileges

- The rules regarding obtaining and maintaining that privilege are found here:
<http://www.ieee802.org/3/rules/member.html>

- To become a voter:
 - Complete and current contact information recorded in the Working Group 802.3 database.
 - You must attend and sign attendance book for at least 75% of sessions of two 802.3 WG plenary meetings (within the last four)
 - Full attendance at a two-day 802.3 WG Interim can be substituted for one Plenary
 - Request to become a voter during the opening or closing Plenary meeting when solicited by the Chair from the “potential voters list”

Remember to Declare Your Affiliation

- From the IEEE SA Standards Board By-laws

- **5.2.1.5 Disclosure of affiliation** (<http://standards.ieee.org/guides/bylaws/sect5.html#5.2.1.5>)

- Every member and participant in a working group, Sponsor ballot, or other standards development activity shall disclose his or her affiliation. An individual is deemed "affiliated" with any individual or entity that has been, or will be, financially or materially supporting that individual's participation in a particular IEEE standards activity. This includes, but is not limited to, his or her employer and any individual or entity that has or will have, either directly or indirectly, requested, paid for, or otherwise sponsored his or her participation. Failure to disclose every such affiliation may result in complete or partial loss of rights to participate in IEEE-SA activities. An individual is not excused from compliance with this policy by reason of any claim of a conflicting obligation (whether contractual or otherwise) that prohibits disclosure of affiliation.

- From the IEEE SA Standards Board Operations Manual

- **5.3.3.1 Disclosure of affiliation** (<http://standards.ieee.org/guides/opman/sect5.html#5.3.3.1>)

- Each participant's affiliation shall be disclosed at any working group or project meeting. The chair or the chair's delegate shall inform the meeting of the requirement for disclosure of affiliation (see [5.2.1.5](#) of the *IEEE-SA Standards Board Bylaws*). This shall be via a sign-in (e.g., sign-in sheet, electronic sign-in, verbal disclosure, or electronic communication) that provides for disclosure of employer and any other affiliation, a reminder of the definition of affiliation, and possible penalties for non-compliance.

Whenever an individual is aware that the ownership of his or her employer or other affiliation may be material to the process, or when the Sponsor or the IEEE-SA Standards Board requests, that individual shall also declare the "ultimate parent entity" of their affiliation. The ultimate parent entity is an entity that directly or indirectly, through one or more intermediaries, controls the entity identified as the individual's affiliation. For the purposes of this definition, the term "control" and its derivatives, with respect to for-profit entities, means the legal, beneficial or equitable ownership, directly or indirectly, of more than fifty percent (50%) of the capital stock (or other ownership interest, if not a corporation) of an entity ordinarily having voting rights. "Control" and its derivatives, with respect to nonprofit entities, means the power to elect or appoint more than fifty percent (50%) of the Board of Directors of an entity.

- **5.3.3.2 False or misleading disclosure** (<http://standards.ieee.org/guides/opman/sect5.html#5.3.3.2>)

- A meeting attendee who fails to disclose affiliation shall not accrue any membership rights, including rights of or towards voting membership, until such disclosures have been made. The chair shall review the adequacy of disclosures. Failure to disclose affiliation, or materially false or misleading disclosure of affiliation, shall result in loss of membership privileges and may also result in loss of other participation privileges within the IEEE-SA for such participants and any affiliated entities

Future Meetings

- July 2007 IEEE 802 Plenary
 - July 16 – 19
 - Hyatt Regency
 - San Francisco, CA, USA



Thank You!

