Welcome!

IEEE P802.3bn EPoC PHY Task Force
Plenary Meeting
San Antonio, Texas, USA

Agenda and General Information

IEEE P802.3bn EPoC PHY Task Force

Mark Laubach
laubach@broadcom.com

San Antonio, Texas

November 13th - 15th, 2012

Agenda

- Welcome and Introductions
- Review and approve October 28/29 Minutes
- Goals for this meeting
- Reflector and Web, Task Force Private Area
- Ground Rules
- IEEE
  - Structure, Bylaws and Rules
  - Call for Patents
  - Affiliation
- Liaisons and Communications -> (None)
- Review Task Force Progress
- Presentations
- Approve Agenda
- Closing Business
- Future Meetings

REVIEW / APPROVE MINUTES

28-29 October, Hangzhou, China

Task Force Decorum

- Photography or recording by permission only (2010 SASB Op Manual 5.3.3.4)
- Cell phone ringers off
- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (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

Goals for the meeting

- Reports from ad hoc committees
  - With face-to-face time as can be scheduled during or outside of TF agenda
- Presentations
- Timeline adoption
- Straw Polls and Motions

Reflector and Web

- Method 1: To subscribe to the EPoC reflector, send an email to:
  - *ListServ@ieee.org*

  with the following in the body of the message (do not include "<>"):
  - *subscribe* **stds-802-3-epoc** *<yourfirstname> <yourlastname>*
  - *end*

- Method 2: Visit Task Force web page URL:
  - **http://www.ieee802.org/3/bn**
  - **Follow link: "Subscribing and unsubscribing to the e-mail reflector"**
  - **Follow link: "ListServ web interface"**

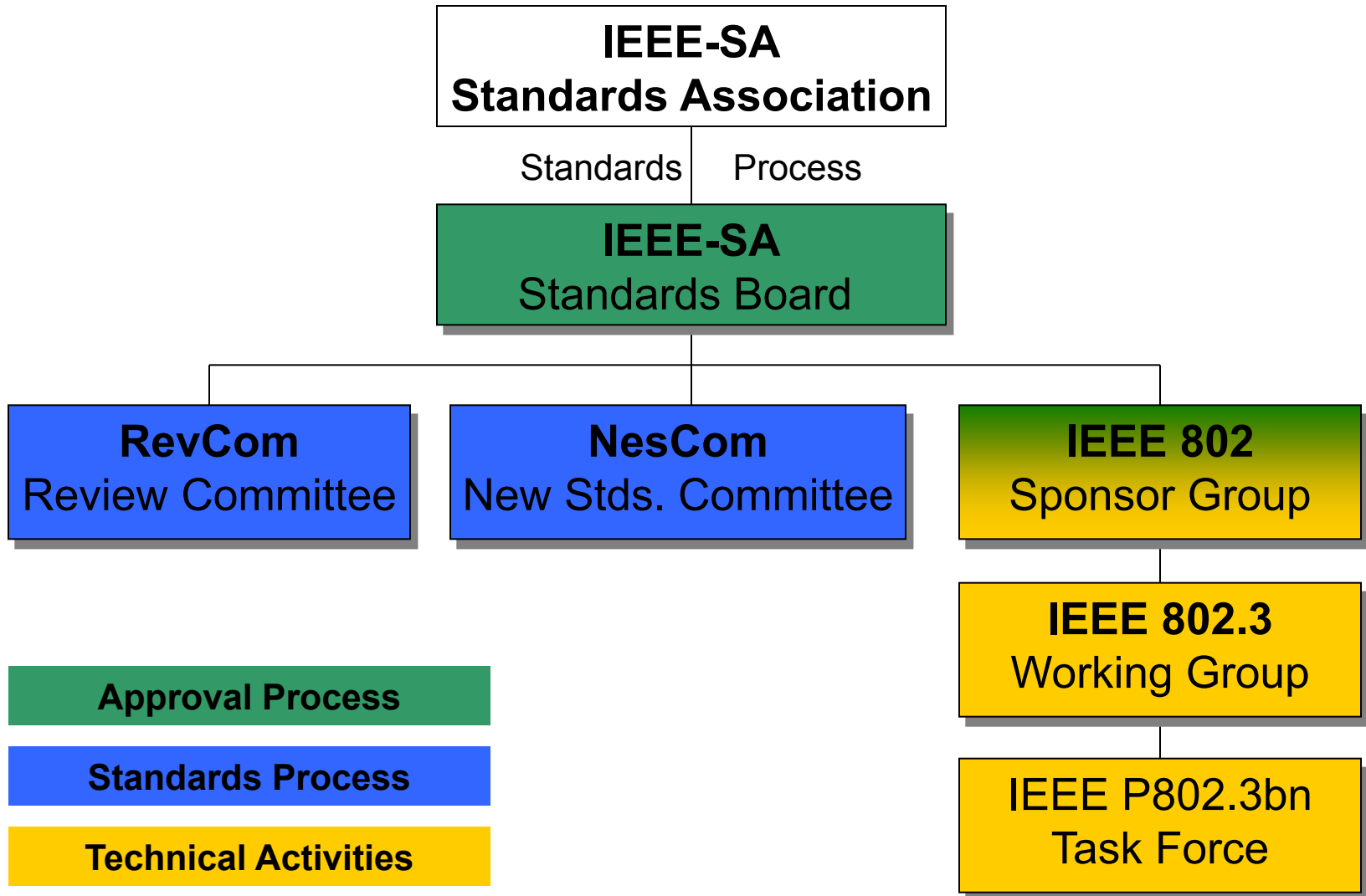- Send EPoC email reflector messages To:
  - **stds-802-3-epoc@***listserv.ieee.org*

Task Force Private Area

- URL: http://www.ieee802.org/3/bn/private
  - Username: 802.3bn
  - Password: FaST4CoAX

- Write it down…

- Note - The draft, and any other content, is posted for your review only, and neither the content nor access information should be copied or redistributed to others in violation of document copyrights.

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

IEEE-SA
Standards Association

Standards | Process

IEEE-SA
Standards Board

RevCom
Review Committee

NesCom
New Stds. Committee

IEEE 802
Sponsor Group

IEEE 802.3
Working Group

IEEE P802.3bn
Task Force

Approval Process

Standards Process

Technical Activities

Participants, Patents, and Duty to Inform

All participants in this meeting have certain obligations under the IEEE-SA Patent Policy.

- **Participants [Note: Quoted text excerpted from IEEE-SA Standards Board Bylaws subclause 6.2]:**
    - **"Shall inform the IEEE (or cause the IEEE to be informed)" of the identity of each "holder of any potential Essential Patent Claims of which they are personally aware" if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents**
        - **"Personal awareness" means that the participant "is personally aware that the holder may have a potential Essential Patent Claim," even if the participant is not personally aware of the specific patents or patent claims**
    - **"Should inform the IEEE (or cause the IEEE to be informed)" of the identity of "any other holders of such potential Essential Patent Claims" (that is, third parties that are not affiliated with the participant, with the participant's employer, or with anyone else that the participant is from or otherwise represents)**
- **The above does not apply if the patent claim is already the subject of an Accepted Letter of Assurance that applies to the proposed standard(s) under consideration by this group**
- **Early identification of holders of potential Essential Patent Claims is strongly encouraged**
- **No duty to perform a patent search**

25 March 2008 (updated 29 March 2011)

◆IEEE

Patent Related Links

All participants should be familiar with their obligations under the IEEE-SA Policies & Procedures for standards development.

Patent Policy is stated in these sources:

IEEE-SA Standards Boards Bylaws

http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6

IEEE-SA Standards Board Operations Manual

http://standards.ieee.org/develop/policies/opman/sect6.html#6.3

Material about the patent policy is available at

http://standards.ieee.org/about/sasb/patcom/materials.html

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

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

25 March 2008 (updated 29 March 2011)

Call for Potentially Essential Patents

- If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance:

  - Either speak up now or

  - Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible or

  - Cause an LOA to be submitted

◆IEEE

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 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.**

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.

◆IEEE

Affiliation

- IEEE-SA Standards Board By-Laws, Section 5.2.1.5
    - (http://standards.ieee.org/guides/bylaws/sect5.html)
- Disclosure of Affiliation
    - "Every member and participant in a working group, Sponsor ballot, or other standards development activity shall disclose his or her affiliation."
- What is "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."
- Affiliation and 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."

Attendance

- Tutorial Material on attendance tool
  - http://ieee802.org/3/minutes/mar11/0311_imat.pdf

- URL: https://imat.ieee.org
  - IEEE account login and password required
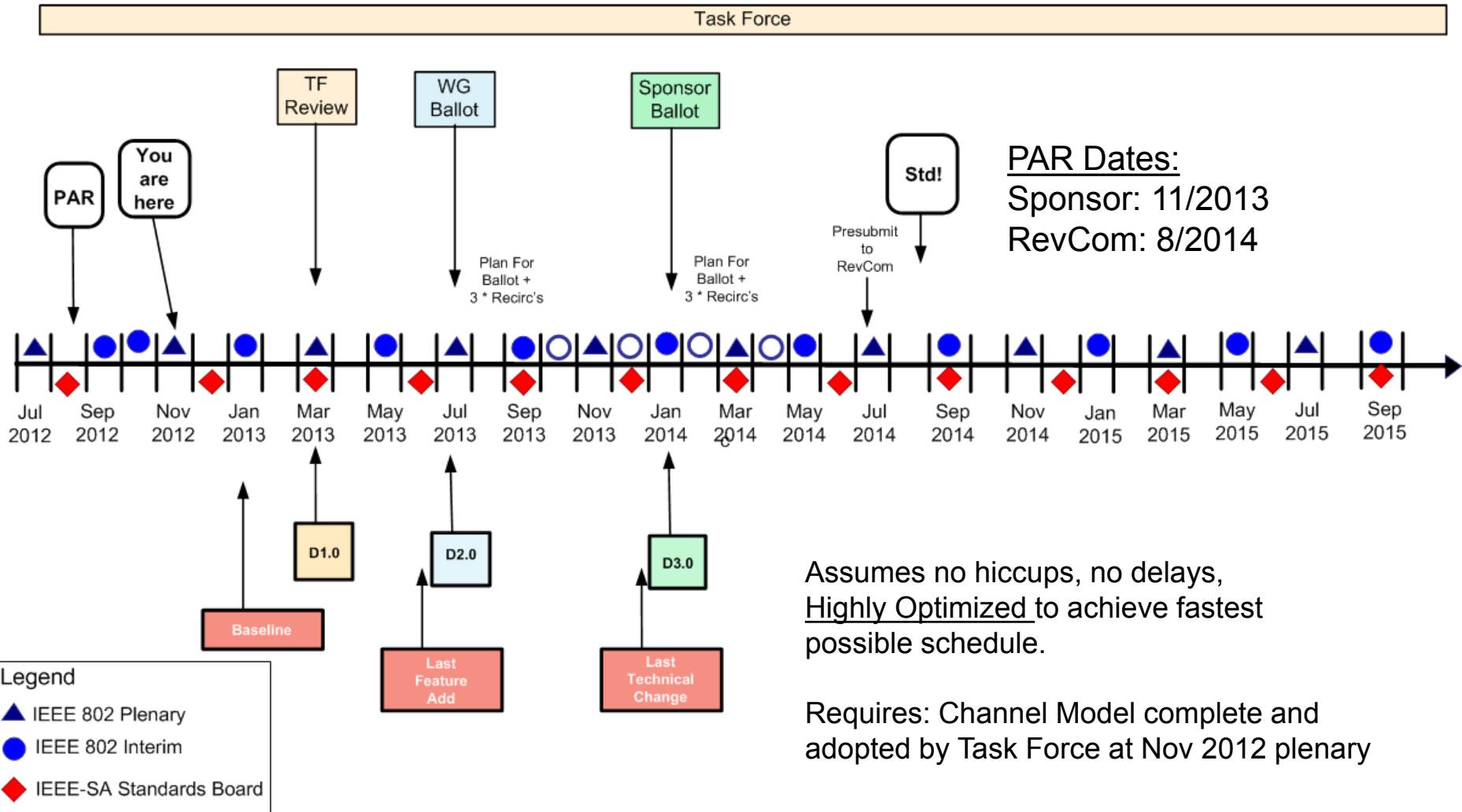 - Sign in to "Attendance Tool"

TASK FORCE REVIEW

IEEE P802.3bn EPoC PHY Approved Project Documents

- ## PAR

  - http://www.ieee802.org/3/bn/P802_3bn_PAR_300812_approved.pdf

- ## 5 Criteria

  - http://www.ieee802.org/3/bn/EPoC_5Criteria_200712_approved.pdf

- ## Objectives

  - http://www.ieee802.org/3/bn/EPoC_objectives_190712_approved.pdf

IEEE P802.3bn Timeline ("aggressive")

Presented in Geneva, review, update, and adoption during November Plenary, 2012

PAR Dates:
Sponsor: 11/2013
RevCom: 8/2014

Assumes no hiccups, no delays, Highly Optimized to achieve fastest possible schedule.

Requires: Channel Model complete and adopted by Task Force at Nov 2012 plenary

Technical Motions Approved, 27-28 Geneva

#	Motion Text	Motion #
1	Study support for configurable power saving mechanism for EPoC interface(s), technical details for further study.	5
2	Adopt OFDM for downstream EPoC PHY.	6
3	Adopt OFDMA for upstream EPoC PHY.	7
4	Adopt LDPC for downstream inner code. There is no decision on outer code at this time.	8
5	Support exclusion of one or more OFDM subcarriers.	10
6	Support multiple downstream modulations orders up to 4096QAM, support multiple upstream modulation orders up to 1024QAM.	11
7	In the downstream use OFDM channels of 192 MHz with OFDM sampling frequency of integer multiples of 10.24 MHz.	12
8	The standard shall support the ability for higher capacity by combining multiple 192 MHz OFDM channels.	14

Decision history at: http://www.ieee802.org/3/bn/public/decisions/decisions.html

ad hoc Committees

- RF Spectrum
  - Chair: Steve Shellhammer, Qualcomm
- Evaluation Criteria and Requirements
  - Chair: Steve Shellhammer, Qualcomm
- PHY Link
  - Chair: Ed Boyd, Broadcom
- Channel Model
  - Chair: Duane Remein, Huawei

- ad hoc committee areas:
  - http://www.ieee802.org/3/bn/public/

DAILY AGENDA AND PRESENTATIONS

Agenda - Tuesday

Tuesday, November 13 - Start of IEEE Task Force Meeting			Length	Time
Mark Laubach	Broadcom	Agenda and General Information	0:45	9:00 AM
Steve Shellhammer	Qualcomm	ad hoc report: Evaluation Criteria and Requirements	0:20	9:45 AM
Steve Shellhammer	Qualcomm	ad hoc report: RF Spectrum	0:20	10:05 AM
Duane Remein	Huaweii	ad hoc report: Channel Model	0:20	10:25 AM
Break			0:10	10:45 AM
Ed Boyd	Broadcom	ad hoc report: PHY Link	0:20	10:55 AM
Avi Kliger	Broadcom	Link up and PHY Link Channel	0:45	11:15 AM
Nicola Varanese	Qualcomm	PHY Control Channel and PHY Initialization Procedures	0:45	12:00 PM
Lunch			1:00	12:45 PM
David Law	HP	Potential IEEE P802.3bn architecture	0:30	1:45 PM
Andrea Garavaglia	Qualcomm	Further Details on TDD	0:30	2:15 PM
Ed Boyd	Broadcom	Upstream Mapping	0:30	2:45 PM
Break			0:15	3:15 PM
David Barr	Entropic	Bonding at PHY-Layer	0:30	3:30 PM
Avi Kliger	Broadcom	On the complexity of PHY Bonding	0:30	4:00 PM
Steve Shellhammer	Qualcomm	Channel Bonding Sublayer	0:45	4:30 PM
Break for Day - Recess IEEE TF meeting until 9AM Wednesday				5:15 PM
Steve Shellhammer	Qualcomm	Face-to-Face: RF Spectrum	0:45	

Agenda - Wednesday

			Length	Time
Ed Boyd	Broadcom	Face-to-face: PHY Link ad hoc	1:00	8:00 AM
Wednesday, November 14 - Start of IEEE Task Force Meeting			Length	Time
Marek Hajduczenia	ZTE	EPoC PHY and MAC proposal	0:50	9:00 AM
Ed Mallette	Brighthouse Networks	Bright House Networks Downstream SNR Characterization (DOCSIS Carriers)	0:20	9:50 AM
Jorge Salinger and Matt Schmitt	Comcast, CableLabs	Possible Deployment and Growth Scenarios for EPoC	0:30	10:10 AM
Break			0:15	10:40 AM
Matt Schmitt	CableLabs	Motivations for Investigating Multiple MCS for EPoC	0:30	10:55 AM
Eugene Dai	Cox Communications	Choice of Modulation Profiles for EPoC	0:30	11:25 AM
Ed Boyd	Broadcom	Multiple downstream profile implications	0:45	11:55 AM
Lunch			1:00	12:40 PM
Juan Montojo, Andrea Garavaglia and Patrick Stupar	Qualcomm	Feature Matrix and Specification impact	0:30	1:40 PM
Andrea Garavaglia and Juan Montojo	Qualcomm	Adaptive Modulation and Coding	0:45	2:10 PM
Hal Roberts	Calix	Homeworx Lessons" Subtitle: What can we learn from the first deployment of OFDMA on HFC?	0:30	2:55 PM
Marek Hajduczenia	ZTE	MAC Efficiency Issues	0:30	3:25 PM
Duane Remein	Huawei	Efficiency	0:15	3:55 PM
Break			0:15	4:10 PM
Juan Montojo, Christian Pietsch	Qualcomm	OFDM Numerology	0:30	4:25 PM
Break for Day - Recess IEEE Task Force meeting until 9AM Thursday				4:55 PM
Duane Remein	Huawei	Face-to-face: Channel Model	0:45	

Agenda - Thursday

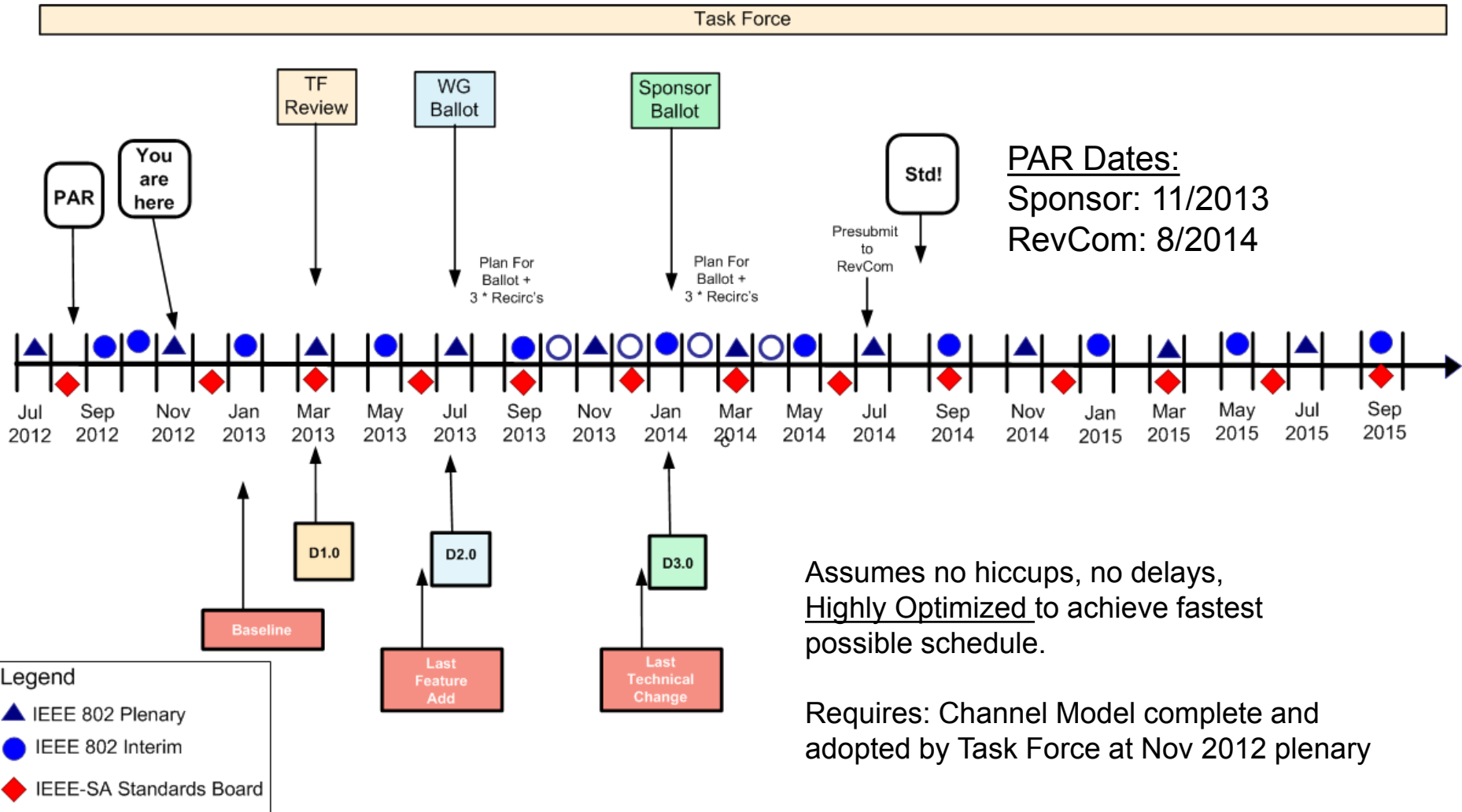| Thursday, November 14			Length	Time
Mark Laubach	Broadcom	Timeline Adoption	1:00	9:00 AM
Mark Laubach	Broadcom	Polls and Motions	1:30	10:00 AM
Mark Laubach	Broadcom	Closing	0:20	11:30 AM
Adjourn - by 12Noon to permit time for lunch and IEEE 802.3 WG plenary start				11:50 AM

TIMELINE ADOPTION

Consensus Challenge Items
From Geneva Meeting

- RF Bandwidth (RF Spectrum) *
- FDD Downstream is OFDM/OFDMA
- Bonding approach for downstream
- Rate adaptation, which layer and how
- FEC / Interleaving (error performance) (req: channel model)
- MPCP Changes
- Adaptive Bit Rate Loading
- PHY Link *
- Complexity of hardware scaling with "bandwidth"
- How we are going to do TDD
- Coding Efficiency gains vs cost
- Synchronization in terms of time / frequency (mobile backhaul)

- OFDM Numerology / FFT Size / Symbol Size / CP size (req: channel model)
- Framing Structure
- MAC layer efficiency
- PHY layer efficiency
- Energy Efficiency
- Subcarrier group

IEEE P802.3bn Timeline ("aggressive")

Presented in Geneva, review, update, and adoption during November Plenary, 2012

PAR Dates:
Sponsor: 11/2013
RevCom: 8/2014

Assumes no hiccups, no delays, Highly Optimized to achieve fastest possible schedule.

Requires: Channel Model complete and adopted by Task Force at Nov 2012 plenary

STRAW POLLS AND MOTIONS

CLOSING SESSION

Future IEEE P802.3bn Meetings

- See: http://www.ieee802.org/3/interims/index.html

- January week of 21st, 2013 - 802.3 Interim
  - Phoenix, Arizona
- March 18th – 21st, 2013 – 802 Plenary
  - Orlando, Florida
- Week of May 13, 2013 – Joint P802.3/802.1 interim
  - Victoria, BC, Canada

- Anyone interested in hosting a interim meeting contact the Chair or the IEEE 802.3 Executive Secretary Steve Carlson.

Future Meetings

I will attend the January interim _____
I probably will attend the January interim ____
I probably will not attend the January interim ____
I will not attend an January interim _____

I will attend the March plenary _____
I probably will attend the March plenary ____
I probably will not attend the March plenary ____
I will not attend an March plenary _____

Thank You!