IEEE P802.3ap
Backplane Ethernet Task Force
Agenda and General Information

Portland, OR
July 13, 2004

Agenda

- Welcome and Introductions
- Approve agenda
- Approve meeting minutes
- Goals for this Meeting
- Task Force Organization
- Reflector and Web
- Ground Rules
- IEEE
    - Structure
    - Bylaws and Rules
    - Call for Patents
    - IEEE Standards Process
- Presentations
- Future Meetings
- Motion Madness

Goals for this Meeting

- Begin development of Draft 1.0.
    - Develop plan and identify any gaps.

- Hear presentations.

- Build confidence in channel limits (and identify areas where corrections are required).

- Identify candidate architectures for 10Gb/s Serial PHY and Auto-Negotiation.

Task Force Organization

- **Task Force Chair**
  - Adam Healey (ahealey@agere.com)

- **Task Force Secretary**
  - John D'Ambrosia (john.dambrosia@tycoelectronics.com)

- **Chief Editor**
  - Schelto van Doorn (schelto.vandoorn@intel.com)

- **Channel Model Ad Hoc Chair**
  - Joel Goergen (joel@force10networks.com)

Reflector and Web

- To subscribe to the IEEE P802.3ap Backplane Ethernet Task Force reflector send an email to:
  - *listserv@ieee.org*

  with the following in the <u>body of the message</u>:
  - *subscribe stds-802-3-blade <yourfirstname> <yourlastname>*

  For complete instructions on reflector usage, subscription, and unsubscription:
  - *http://ieee802.org/3/ap/reflector.html*

- IEEE P802.3ap Task Force web page:
  - *http://www.ieee802.org/3/ap/*

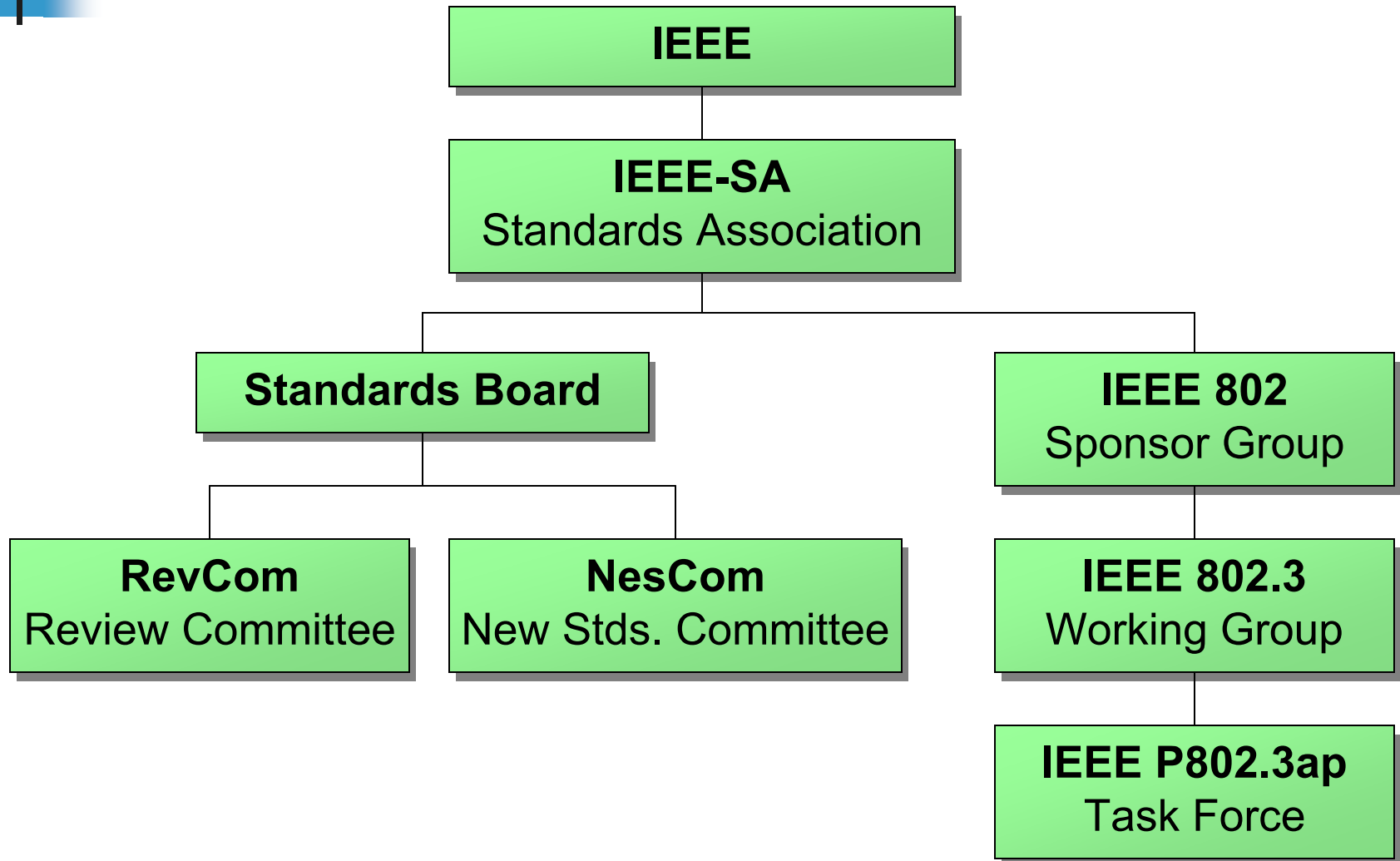- Channel Model Ad Hoc web page:
  - *http://www.ieee802.org/3/ap/public/channel_adhoc*

Ground Rules

- 802.3 Rules apply
  - 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

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                    ┌─────────────────────┐
                    │        IEEE         │
                    └─────────────────────┘
                              │
                    ┌─────────────────────┐
                    │      IEEE-SA        │
                    │ Standards Association│
                    └─────────────────────┘
                              │
          ┌───────────────────┴───────────────────┐
┌───────────────────┐                   ┌───────────────────┐
│  Standards Board  │                   │     IEEE 802      │
└───────────────────┘                   │   Sponsor Group   │
          │                             └───────────────────┘
    ┌─────┴─────┐                                 │
┌─────────┐ ┌──────────────┐            ┌───────────────────┐
│ RevCom  │ │   NesCom     │            │    IEEE 802.3     │
│ Review  │ │ New Stds.    │            │   Working Group   │
│Committee│ │ Committee    │            └───────────────────┘
└─────────┘ └──────────────┘                      │
                                        ┌───────────────────┐
                                        │  IEEE P802.3ap    │
                                        │    Task Force     │
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Bylaws and Rules

- Bylaws of the IEEE Standards Association (IEEE-SA):

  http://standards.ieee.org/sa/sa-bylaws.pdf

- Bylaws of the IEEE-SA Standards Board:

  http://standards.ieee.org/guides/bylaws/sb-bylaws.pdf

- IEEE LAN/MAN Standards Committee (LMSC) Operating Rules:

  http://www.ieee802.org/rules.pdf

- IEEE 802.3 Working Group Operating Rules:

  http://www.ieee802.org/3/rules/

IEEE-SA Standards Board Bylaws on Patents in Standards

6. Patents

IEEE standards may include the known use of patent(s), including patent applications, provided the IEEE receives assurance from the patent holder or applicant with respect to patents essential for compliance with both mandatory and optional portions of the standard. This assurance shall be provided without coercion and prior to approval of the standard (or reaffirmation when a patent becomes known after initial approval of the standard). This assurance shall be a letter that is in the form of either

a) A general disclaimer to the effect that the patentee will not enforce any of its present or future patent(s) whose use would be required to implement the proposed IEEE standard against any person or entity using the patent(s) to comply with the standard or

b) A statement that a license will be made available without compensation or under reasonable rates, with reasonable terms and conditions that are demonstrably free of any unfair discrimination

This assurance shall apply, at a minimum, from the date of the standard's approval to the date of the standard's withdrawal and is irrevocable during that period.

Approved by IEEE-SA Standards Board – December 2002

Inappropriate Topics for IEEE WG Meetings

- Don't discuss licensing terms or conditions

- Don't discuss product pricing, territorial restrictions or market share

- Don't discuss ongoing litigation or threatened litigation

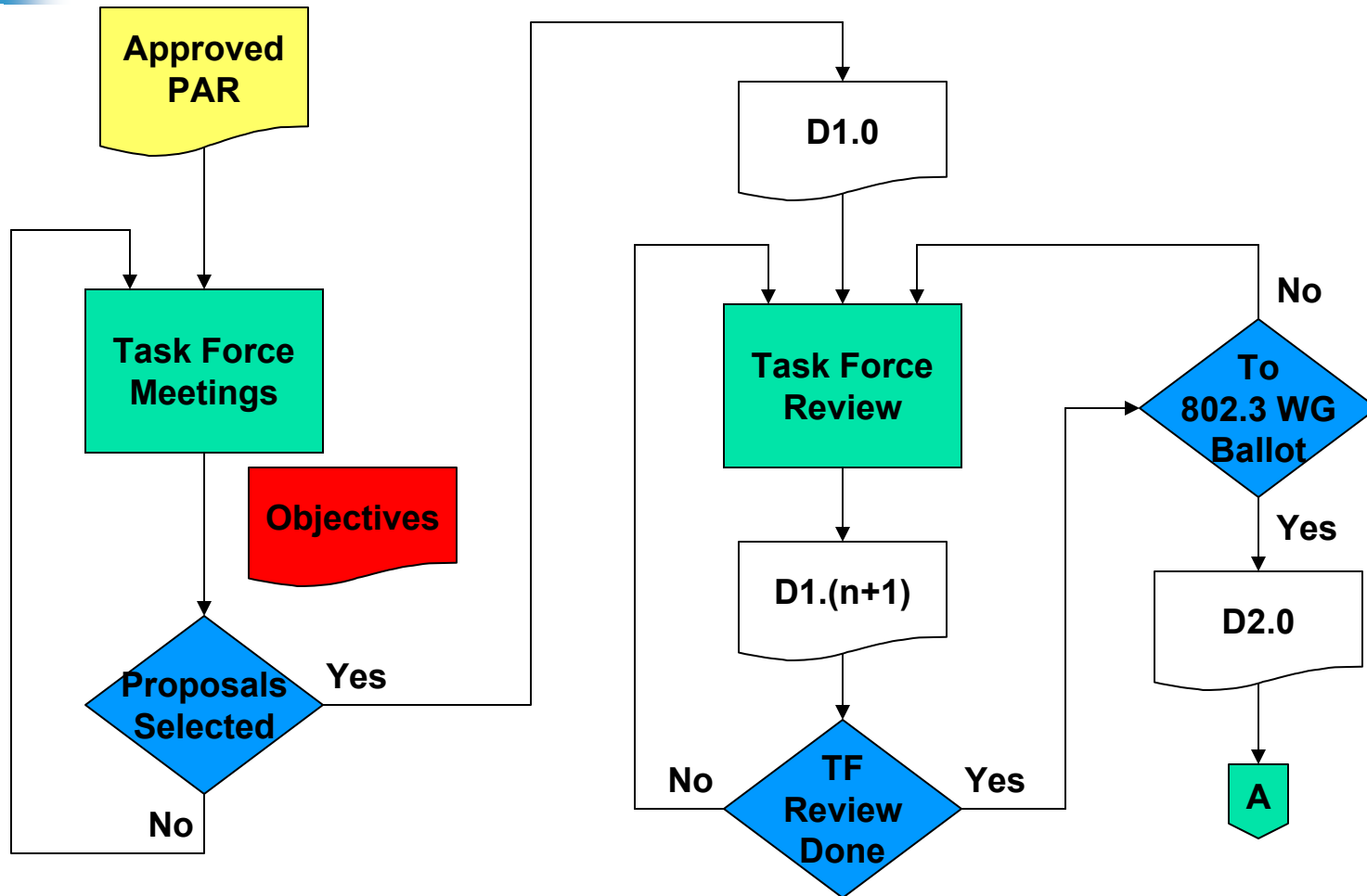- Don't be silent if inappropriate topics are discussed… do formally object.

If you have questions, contact the IEEE Patent Committee Administrator at patcom@ieee.org
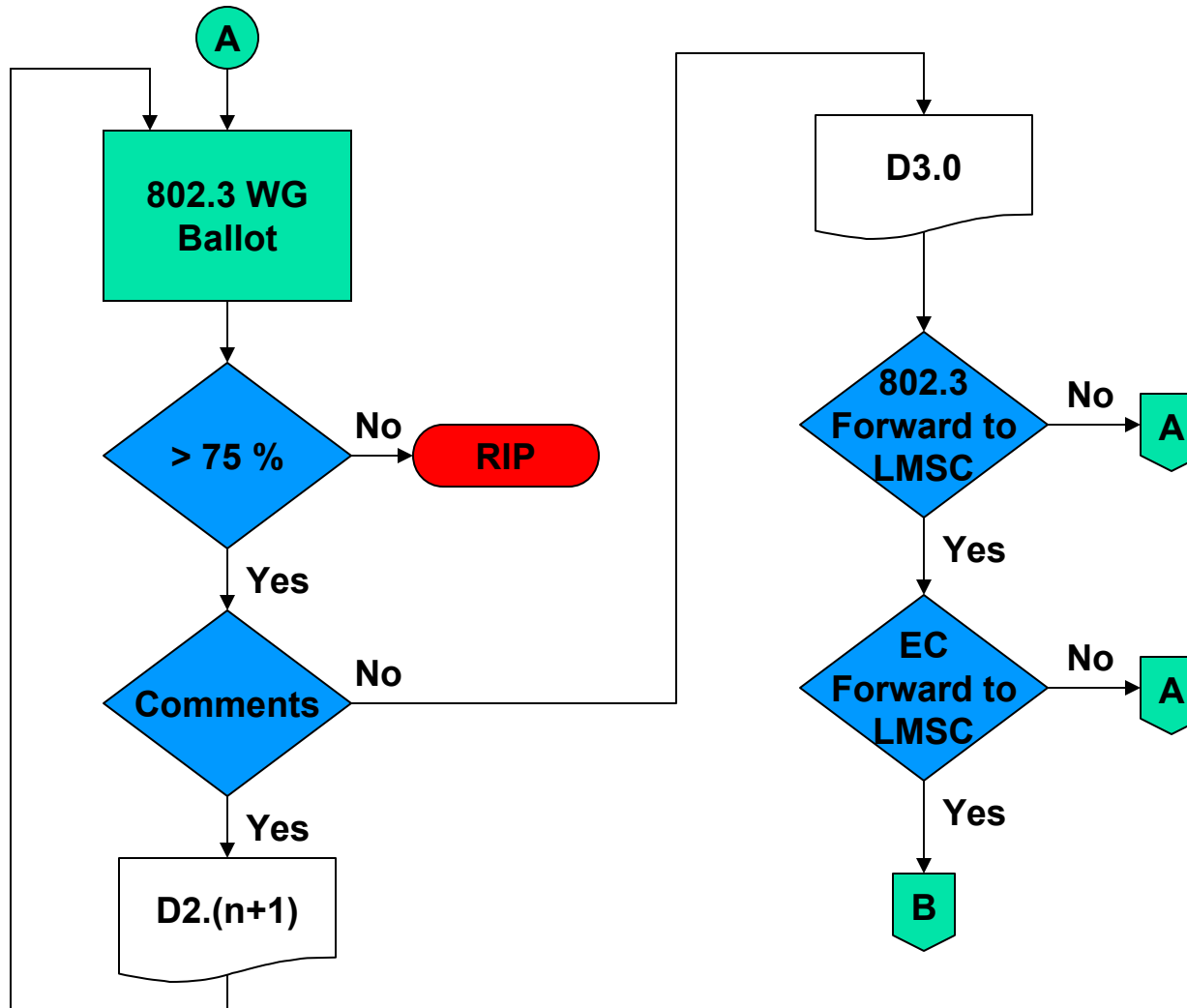
Approved by IEEE-SA Standards Board – December 2002
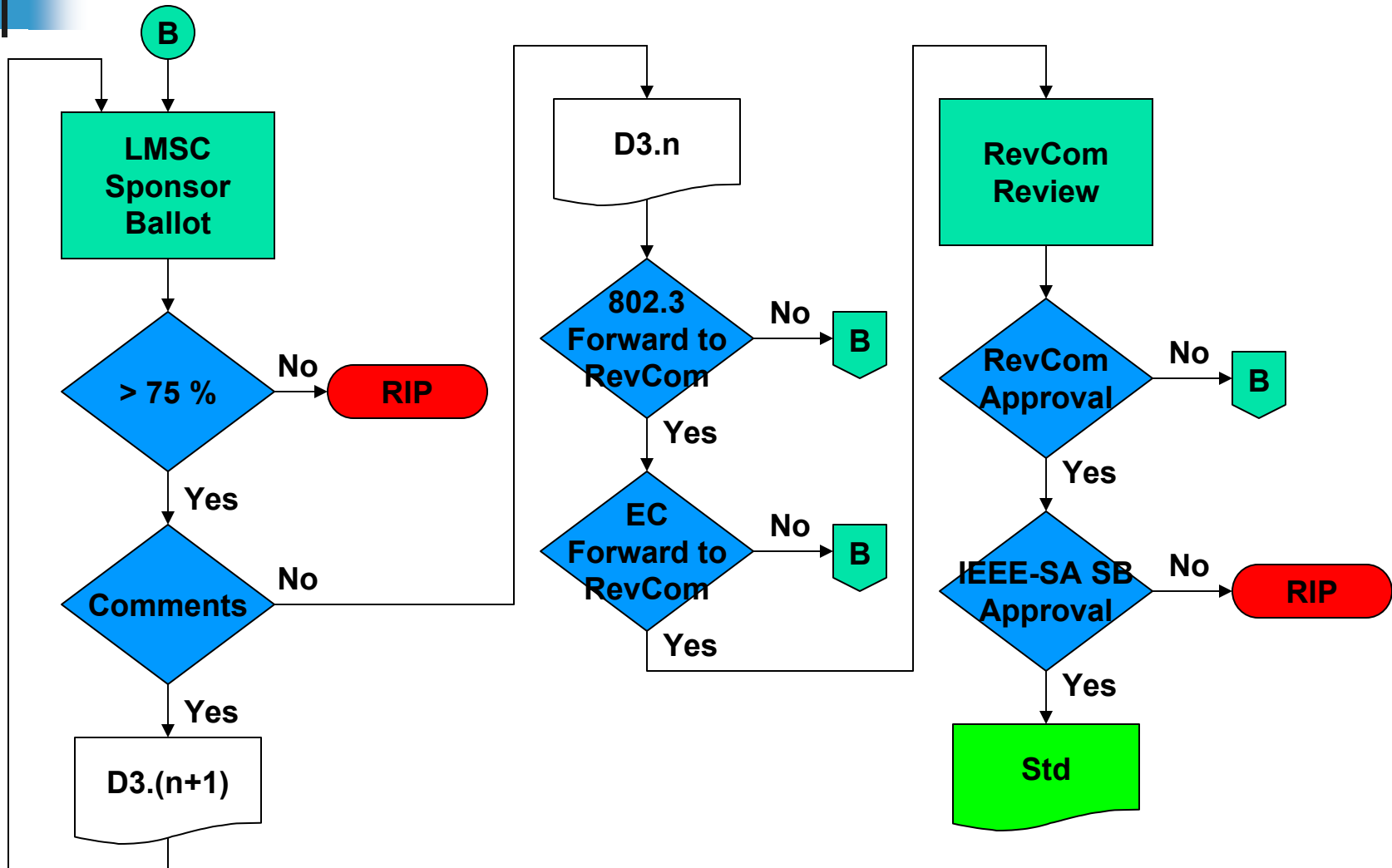
IEEE Standards Process
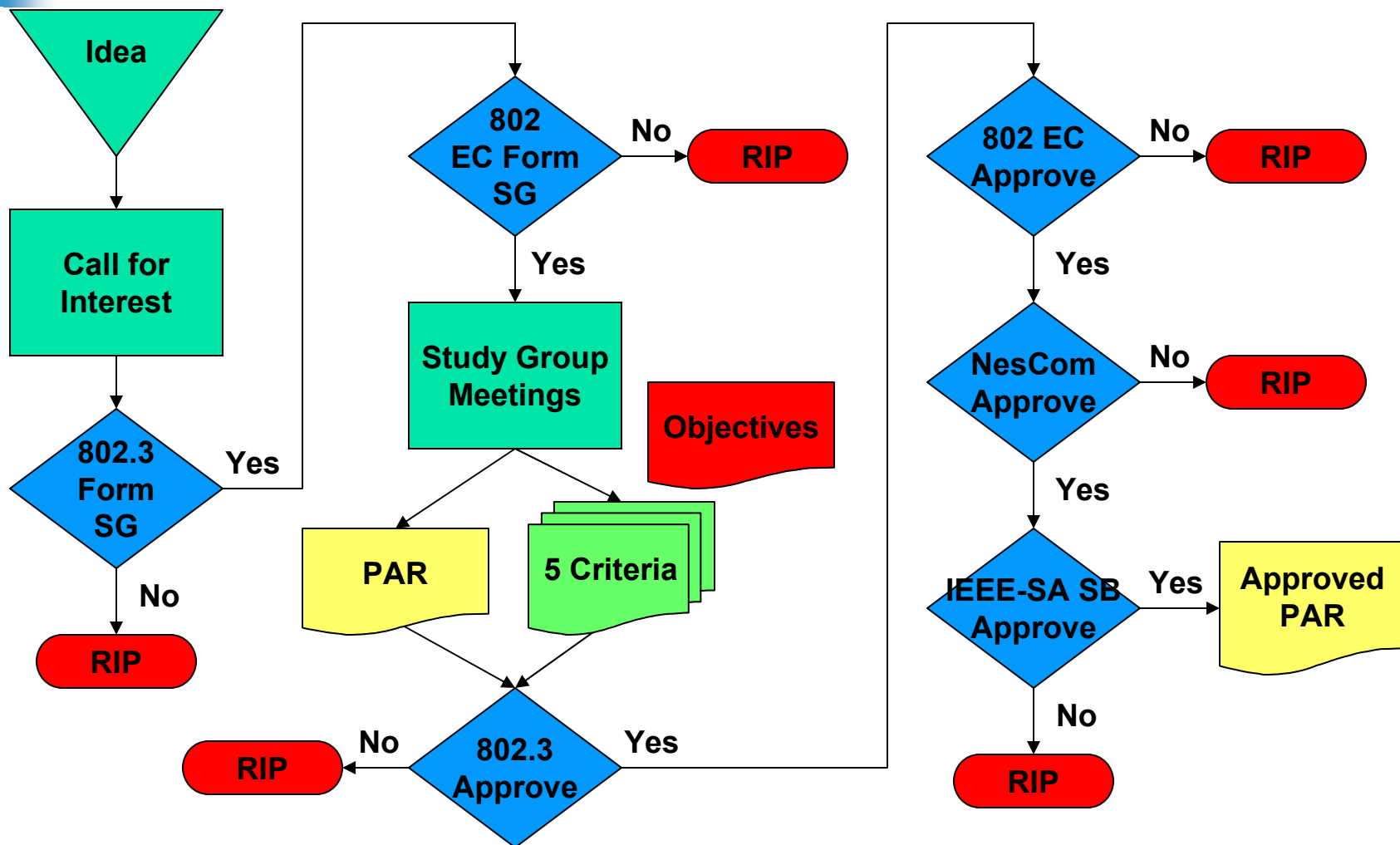
IEEE Standards Process (cont.)

IEEE Standards Process (cont.)

IEEE Standards Process (cont.)

IEEE P802.3ap Task Force Documents

- Approved PAR

    http://standards.ieee.org/board/nes/projects/802-3ap.pdf

- 5 Criteria

    http://ieee802.org/3/ap/802_3_ap_5criteria.pdf

- Objectives

    http://ieee802.org/3/ap/802_3_ap_objectives.pdf

IEEE P802.3ap Objectives

- **Preserve the 802.3/Ethernet frame format at the MAC Client service interface.**

- **Preserve min. and max. frame size of current 802.3 Std.**

- **Support existing media independent interfaces.**

- **Support operation over a single lane across 2 connectors over copper traces on improved FR-4 for links consistent with lengths up to at least 1m.**

  - **Define a 1 Gb/s PHY**
  - **Define a 10 Gb/s PHY**

- **Consider auto-negotiation.**

- **Support BER of 10^-12 or better.**

- **Meet CISPR/FCC Class A.**

Important Result from the May Interim

- Motion: Move to augment the existing 802.3ap objectives to include defining a 4-lane 10Gb/s PHY for operation over the 802.3ap channel model.

  Add the following bullet to the objectives:
  - Define a 4-lane 10Gb/s PHY for operation over the 802.3ap channel model.

- Technical (75%)
- Moved – Jeff Lynch
- Seconded – David Koenen
- All (Y/N/A): 32/10/3
- 802.3 (Y/N/A): 11/1/1
- MOTION PASSES

The Snag: Distinct Identity

Substantially different from other 802 and 802.3 specifications

**One unique solution for problem**

Easy for document reader to select relevant spec.

- The current 802.3 specification does not explicitly cover backplane transmission. XAUI is for chip-to-chip applications. 10GBASE-CX4 is for box-to-box (cabling) applications. 1000BASE-X has no electrical specification, and 1000BASE-CX is specified for coaxial cable.

- <u>The standard will define at most one PHY for 1Gb/s operation and at most one PHY for 10Gb/s operation.</u>

- The specification will be done in a format consistent with the IEEE document requirements thus making it easy for implementers to understand and design to.

- The proposed specification will use copper media similar to other high speed networking technologies (Fibre Channel, IB4X) but does so with the IEEE 802.3 MAC as the over-riding layer which will result in higher compatibility and lower cost for Ethernet systems.

IEEE P802.3ap Timeline
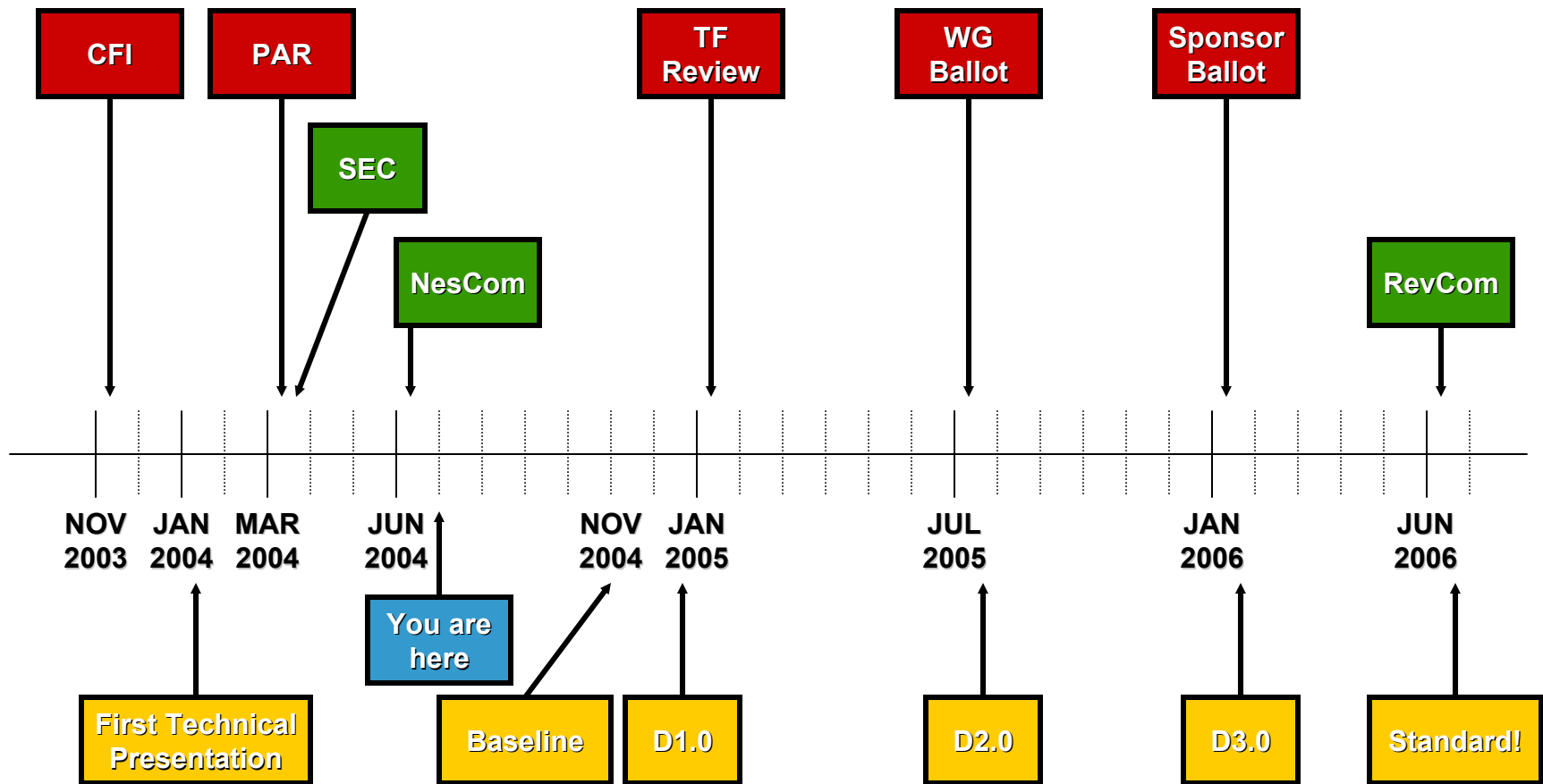
Timeline Detail
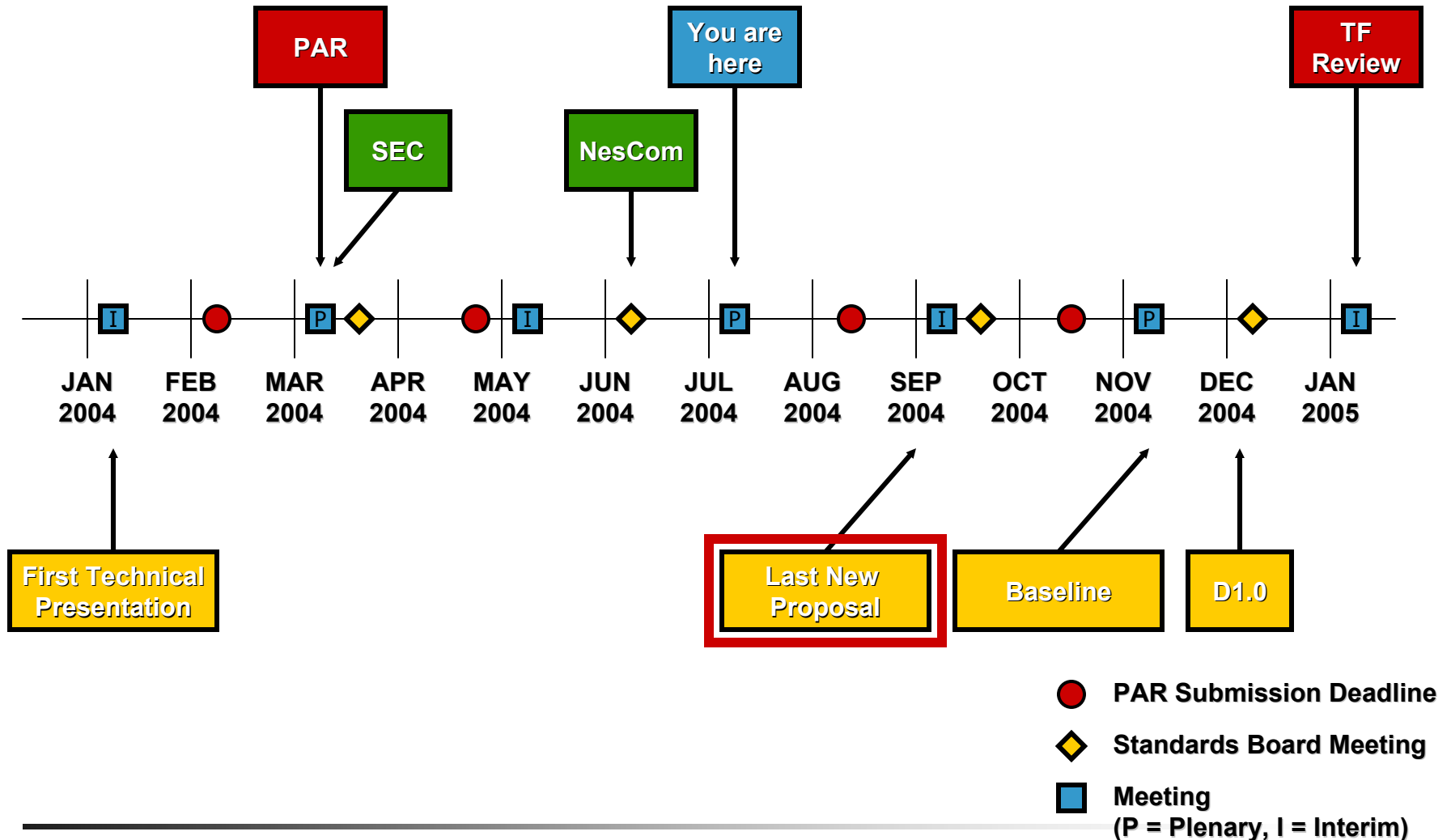
Presentations: Tuesday 7/13

8:30 AM		**Agenda and General Information**	**0:25**
8:55 AM	Mandich	System Vendor Requirements for 10Gb/s Backplane	0:30
9:25 AM	Goergen	Backplane Channel Ad Hoc Recommendations	0:40
10:05 AM	Goergen	FR-4 Definition III	0:25
10:30 AM		**Break**	**0:15**
10:45 AM	Goergen	Channel Compliance to Proposed: Test Cards	0:40
11:25 AM	Moore	Specifying a Channel Through Impulse Response	0:30
11:55 AM		**Lunch**	**1:05**
1:00 PM	Peters	AdvancedTCA channel data and comparisons to proposed channel model	0:30
1:30 PM	Anderson	S-params for IEEE Channel Ad Hoc	0:30
2:00 PM	Seemann	Further Channel Model Data	0:30
2:30 PM	McCallum	A Migration Path from 6.25Gb/s Operation to 10Gb/s Operation	0:20
2:50 PM		**Break**	**0:15**
3:05 PM	Kim	Compatibility Negotiation Considerations	0:40
3:45 PM	Szczepanek	Serdes Compatible FLP AN Proposal	0:30
4:15 PM	Ghiasi	Serdes Compatible Auto-Negotiation for Backplane Ethernet	0:25
4:40 PM	Ganga	802.3ap Auto-Negotiation with Clause 28 State Machines	0:45
5:25 PM		**Break**	

Presentations: Wednesday 7/14

8:30 AM	Kim	New Base Page/Selector Field Proposal	0:30
9:00 AM	Moore	Receiver Testing Using Interference Tolerance Measurements	0:20
9:20 AM	Waschura	Thoughts on testing of devices with 10^-15 confidence using test times historically used for 10^-12.	0:45
10:05 AM	Altmann	Power & Complexity Discussion Guidelines	0:30
10:35 AM		**Break**	**0:15**
10:50 AM	Anderson	Signaling Analysis Using IEEE Channel Ad Hoc Templates	0:20
11:10 AM	Abler	PAM-4 versus NRZ Signaling: "Basic Theory"	0:45
11:55 AM		**Lunch**	**1:05**
1:00 PM	Liu	A Comparison of NRZ and PAM-4 Using the IEEE Channel Model	0:20
1:20 PM	Warke	A Study of NRZ Signaling Over Proposed IEEE Ethernet Backplane	0:20
1:40 PM	Brunn	Edge-Equalized NRZ	0:20
2:00 PM	Brink	Comparison of PAM-4 and NRZ signaling based on measurements from a dual-mode device	0:45
2:45 PM		**Break**	**0:15**
3:00 PM	Brink	Proposal for 10Gb/s single-lane PHY based on PAM-4 signaling	0:45
3:45 PM	Sinsky	10Gb/s Duobinary Signaling over Electrical Backplanes	0:30
4:15 PM	Barazande-Pour	Crosstalk and Receiver Equalization for 10G Serial Ethernet	0:45
5:00 PM	Healey	To-Do List	0:20
5:20 PM		**Break**	

Future Meetings

- September 2004 Interim
  - ???

- November 2004 Plenary
  - Week of November 14.
  - San Antonio, TX
  - Hyatt Regency

Adjourn

Thank You!