



**IEEE P802.3an Task Force
(10GBASE-T)**

Agenda and General Information

San Antonio, TX

November 16-18, 2004

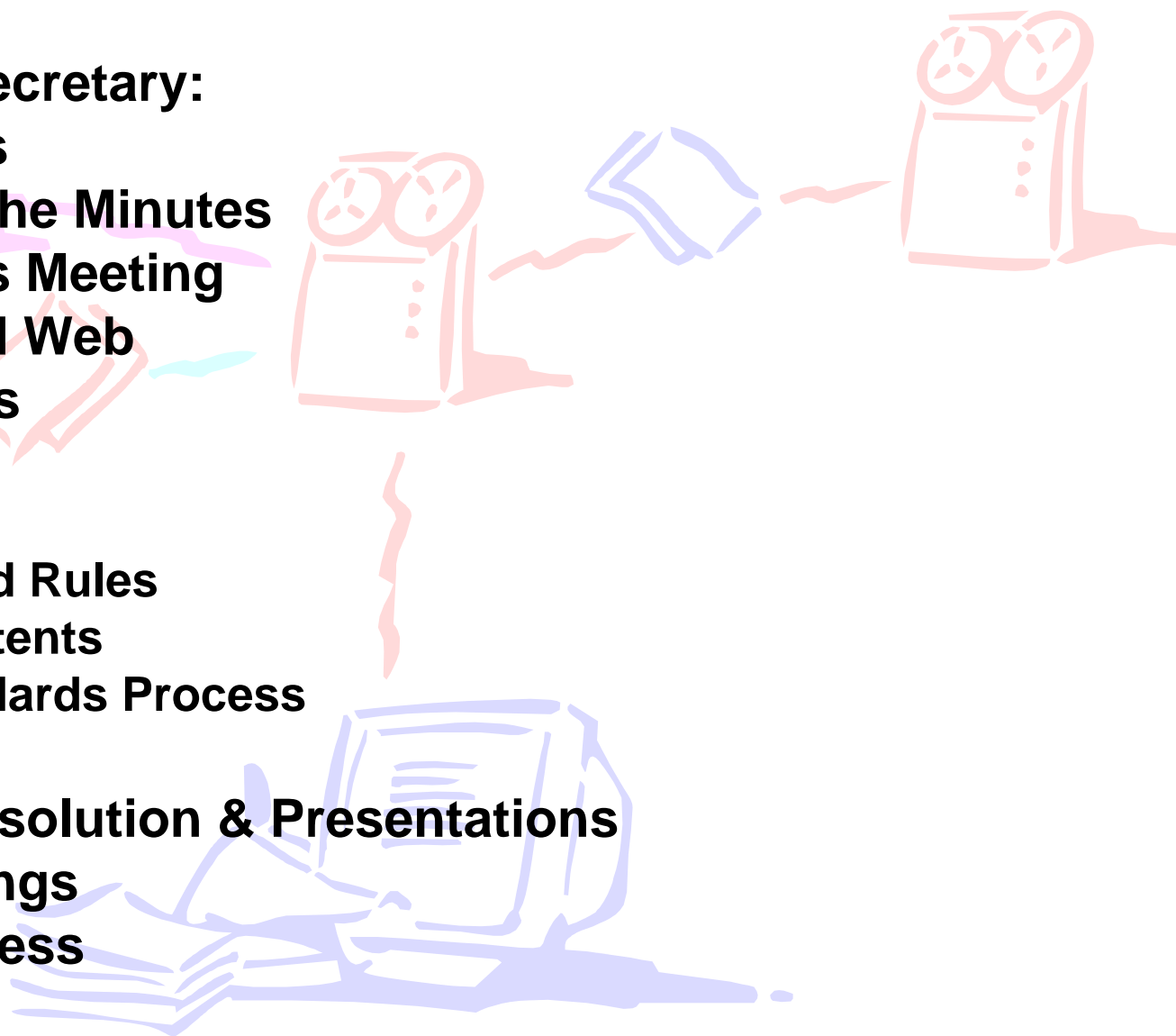
Brad Booth, Task Force Chair

Please Put Cell Phones on Stun!!



Agenda

- **Welcome**
- **Recording Secretary:**
- **Introductions**
- **Approval of the Minutes**
- **Goals for this Meeting**
- **Reflector and Web**
- **Ground Rules**
- **IEEE**
 - **Structure**
 - **Bylaws and Rules**
 - **Call for Patents**
 - **IEEE Standards Process**
- **Reports**
- **Comment Resolution & Presentations**
- **Future Meetings**
- **Motion Madness**



Goals for this Meeting

- **Review of comments on Draft D1.1**
 - Hear presentations related to comments
- **Time permitting: Uncommented presentations**
- **Adopt technical proposals to fill holes**



Reflector and Web

- To subscribe to any of the 10GBASE-T reflectors send an email to:

listserv@ieee.org

with the following in the body of the message:

subscribe stds-802-3-10GBT <your name>
end

subscribe stds-802-3-10GBT-Modeling <your name>
end

subscribe stds-802-3-10GBT-Cabling <your name>
end

for example:

subscribe stds-802-3-10GBT Brad Booth
end

- P802.3an Task Force web page URL:
<http://www.ieee802.org/3/an/>

Private Area

- **URL:**
 - www.ieee802.org/3/an/private/

- **Access**
 - Userid: 802.3an
 - Password: *****

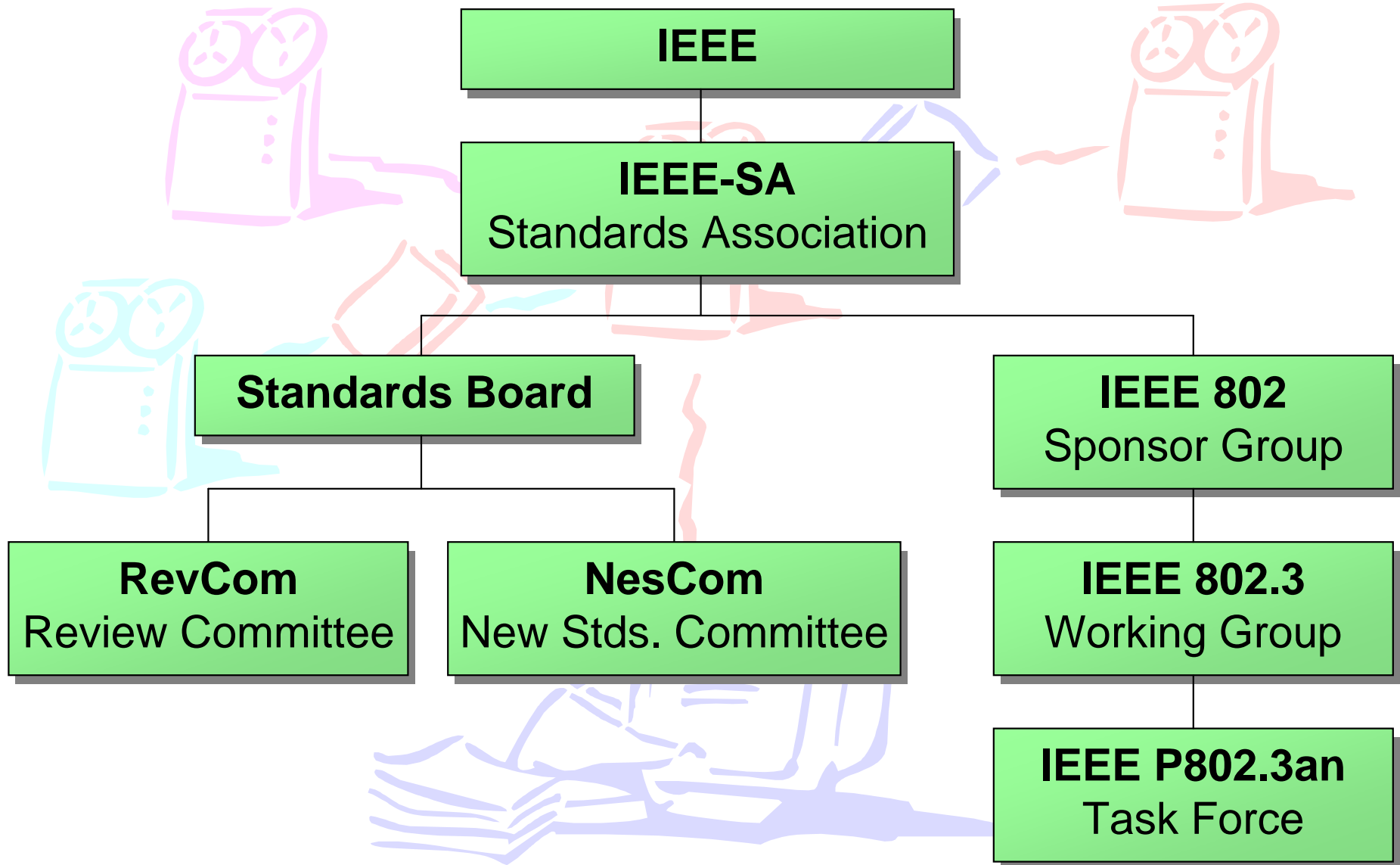
- **Write it down!!**



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



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 essential patents and patent applications provided the IEEE receives assurance from the patent holder or applicant with respect to patents whose infringement is, or in the case of patent applications, potential future infringement the applicant asserts will be, unavoidable in a compliant implementation of either mandatory or optional portions of the standard [essential patents]. This assurance shall be provided without coercion and prior to approval of the standard (or reaffirmation when a patent or patent application 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 either mandatory or optional portions of the proposed IEEE standard against any person or entity complying with the standard; or
- b) A statement that a license for such implementation 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 – March 2003 (Revised February 2004)

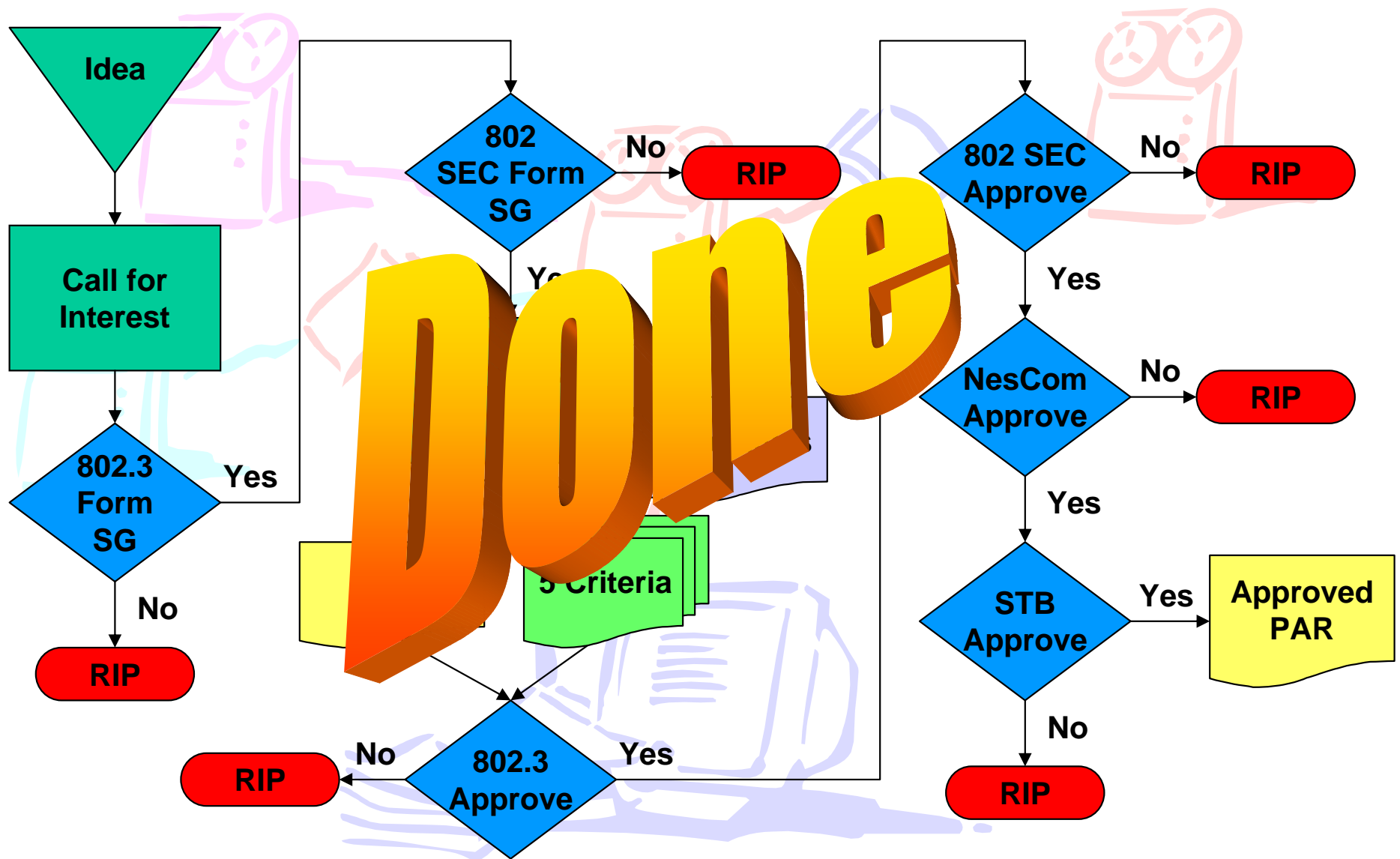
Inappropriate Topics for IEEE WG Meetings

- **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.**

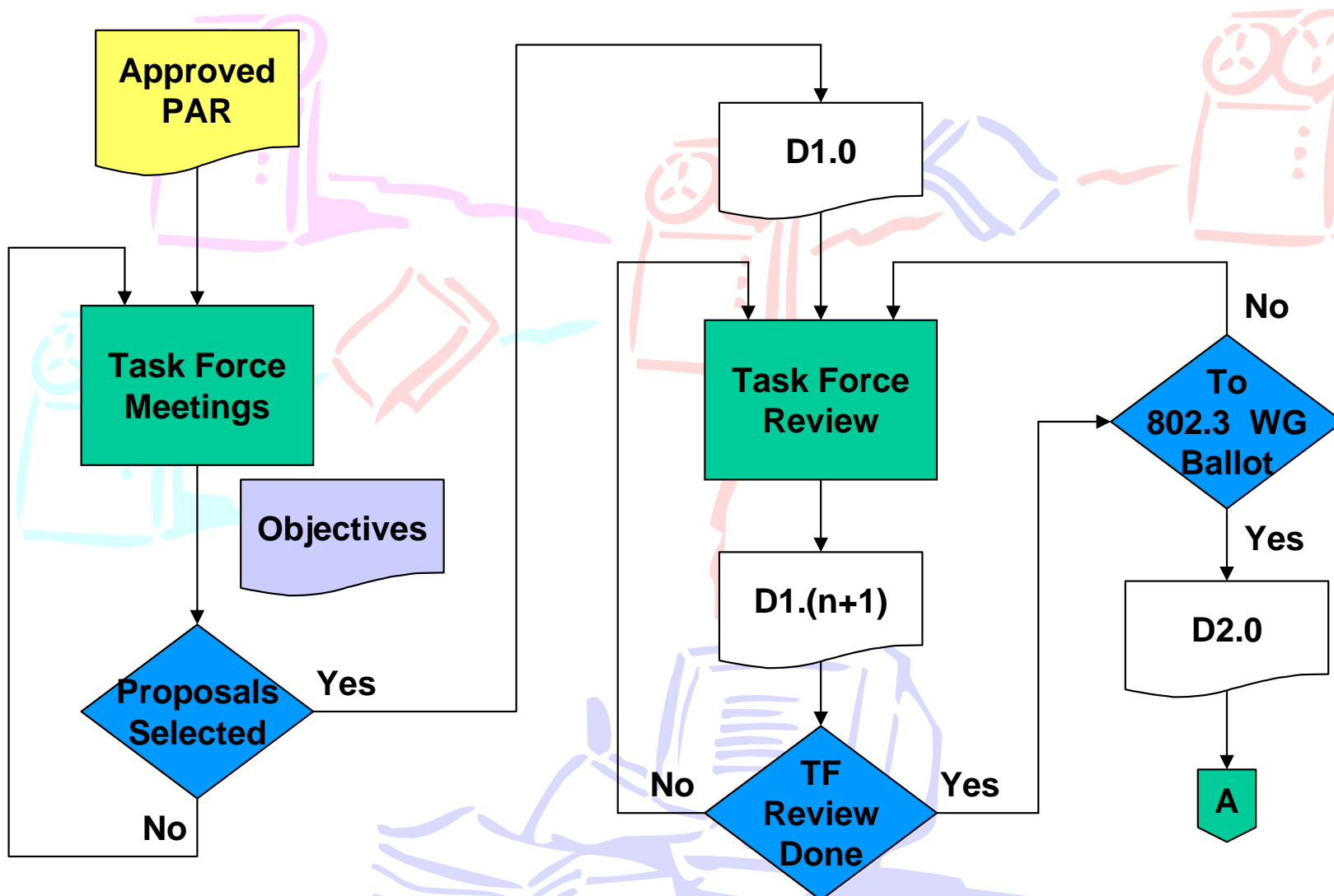
If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at patcom@ieee.org or visit <http://standards.ieee.org/board/pat/index.html>

Approved by IEEE-SA Standards Board – March 2003 (Revised February 2004)

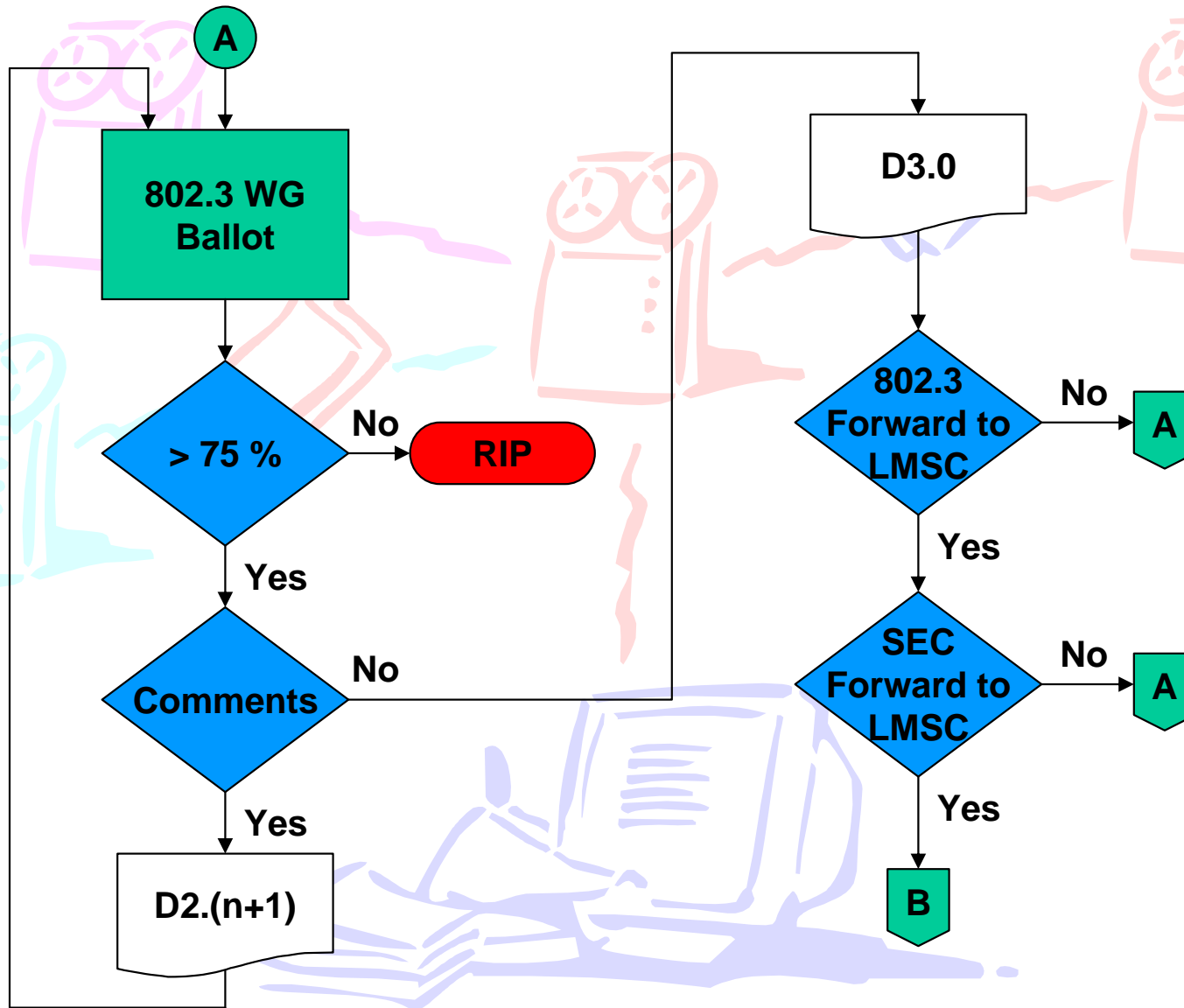
IEEE Standards Process



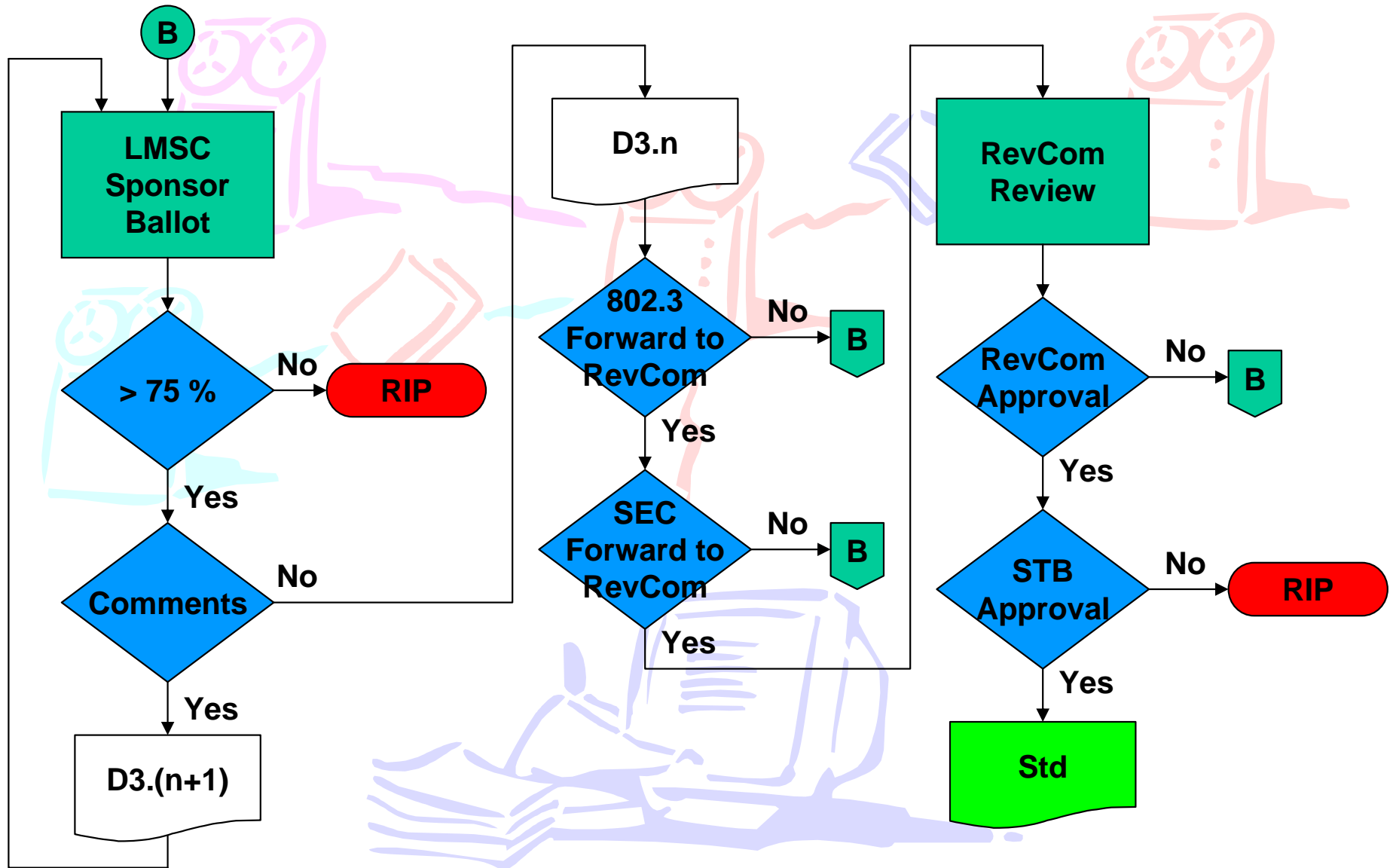
IEEE Standards Process (cont.)



IEEE Standards Process (cont.)



IEEE Standards Process (cont.)



P802.3an Objectives

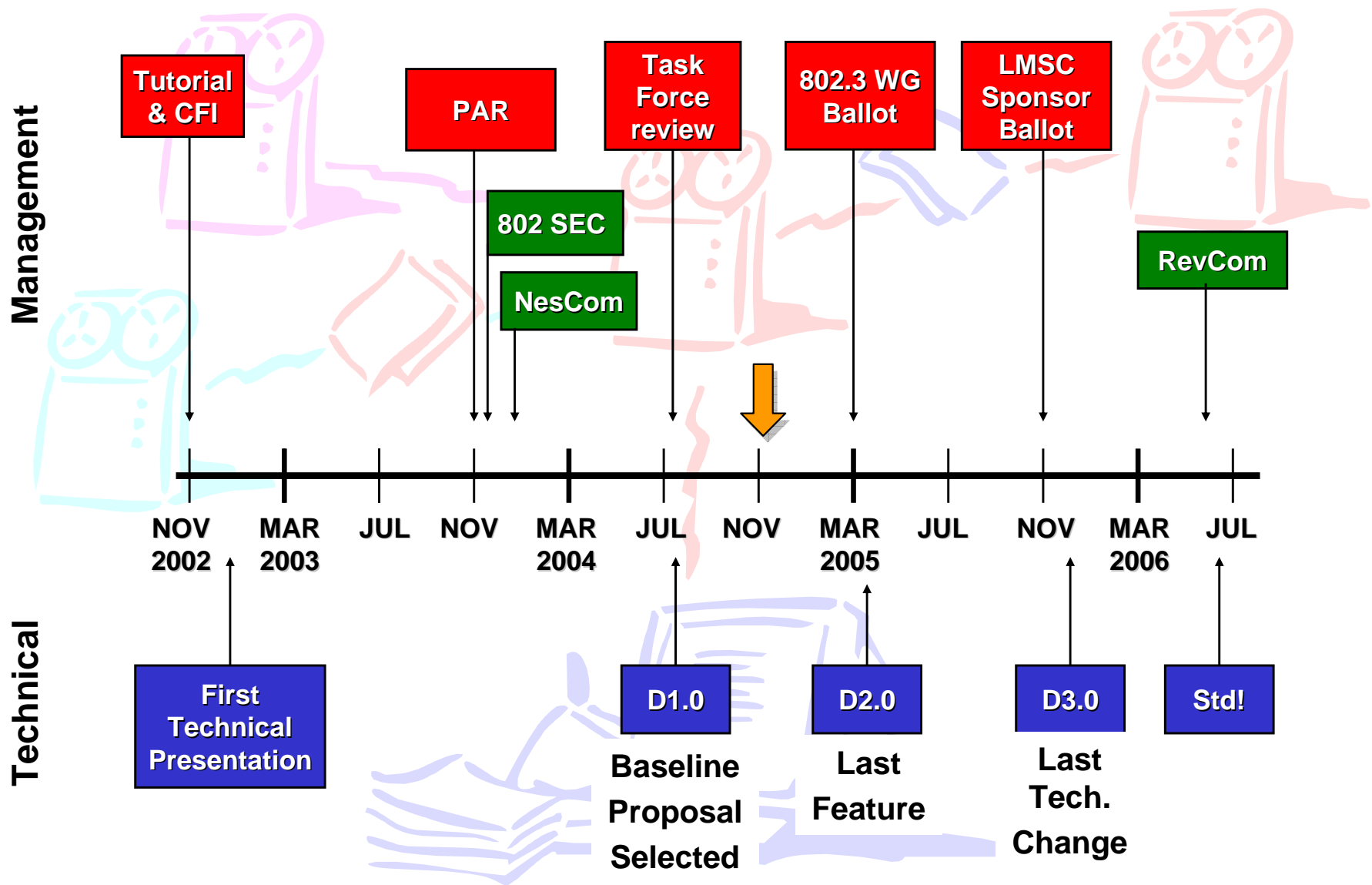
- **Preserve the 802.3/Ethernet frame format at the MAC Client service interface**
- **Preserve min. and max. frame size of current 802.3 Std.**
- **Support full duplex operation only**
- **Support star-wired local area networks using point-to-point links and structured cabling topologies**
- **Support a speed of 10.000 Gb/s at the MAC/PLS service interface**
- **Select copper media from ISO/IEC 11801:2002, with any appropriate augmentation to be developed through work of 802.3 in conjunction with SC25/WG3**
- **Support Clause 28 auto-negotiation**
- **Support coexistence with 802.3af**
- **To not support 802.3ah (EFM) OAM unidirectional operation**
- **Meet CISPR/FCC Class A**

P802.3an Objectives (cont.)

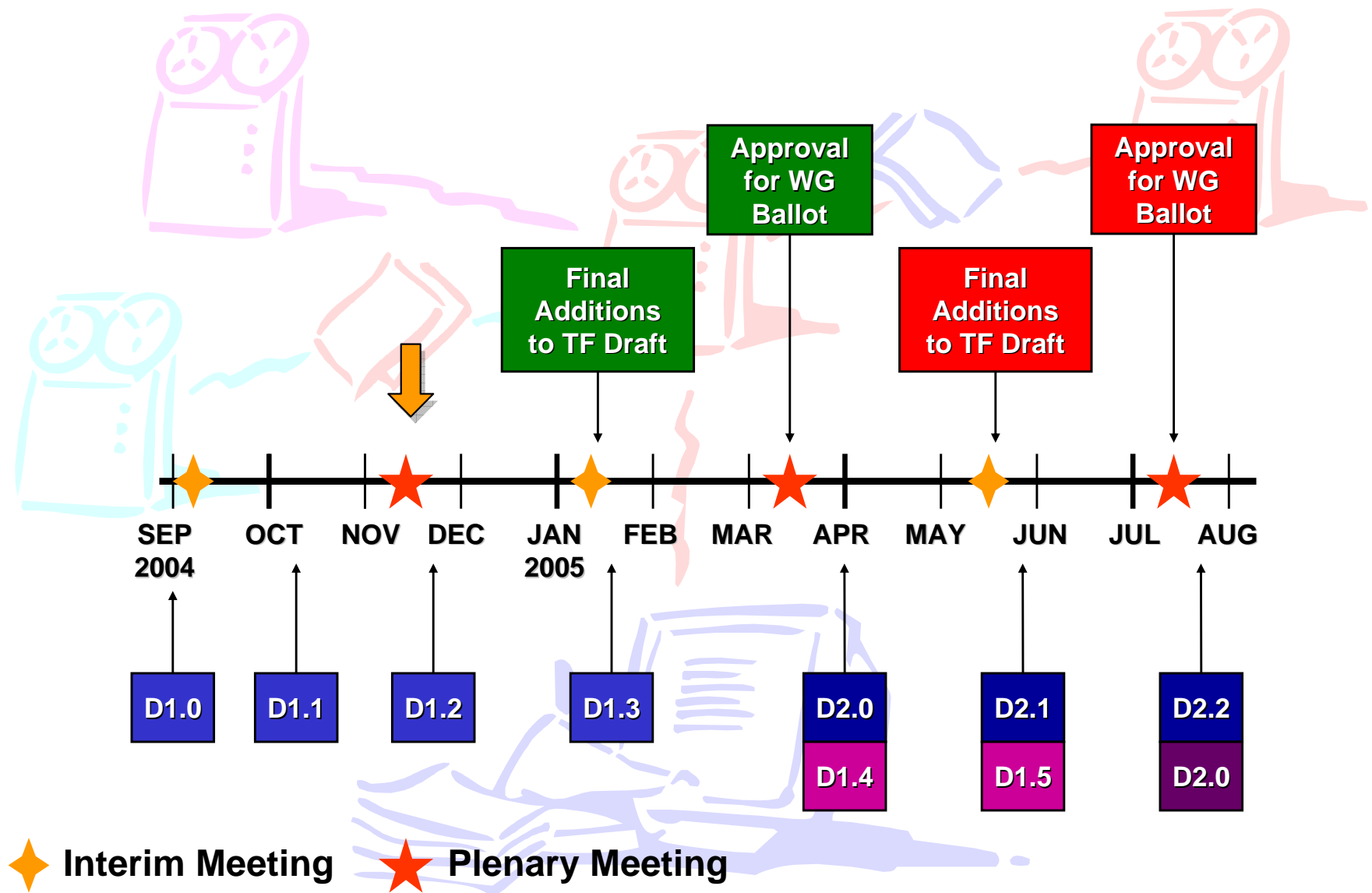
- Support operation over 4-connector structured 4-pair, twisted-pair copper cabling for all supported distances and Classes
- Define a single 10 Gb/s PHY that would support links of:
 - At least 100 m on four-pair Class F balanced copper cabling
 - At least 55 m to 100 m on four-pair Class E balanced copper cabling
- Support a BER of 10^{-12} on all supported distances and Classes



P802.3an Timeline



P802.3an Timeline Magnified



Reports

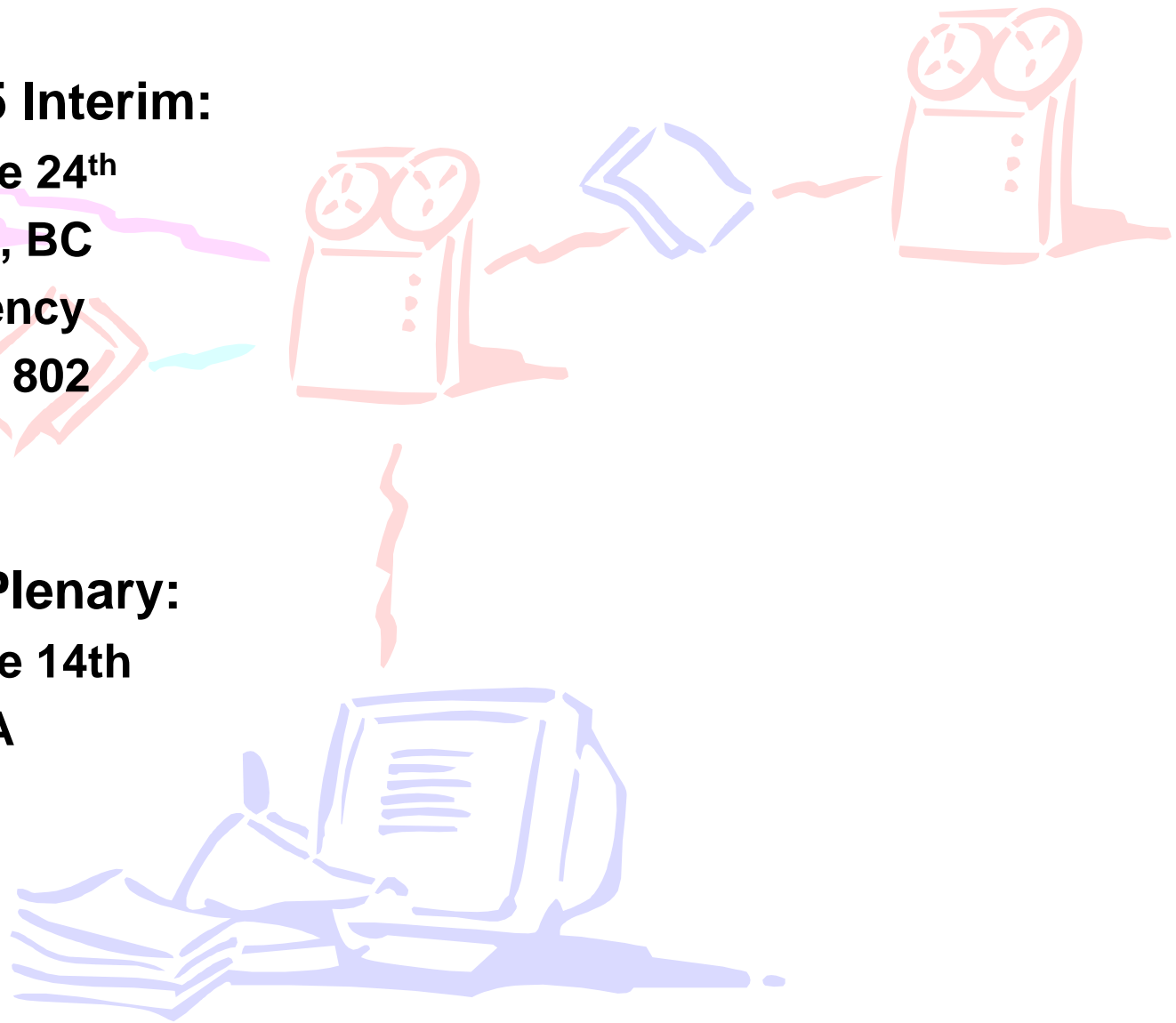
- **Liaison from ISO/IEC JTC 1 / SG 25 / WG 3**
 - No liaison letter from WG 3
- **Liaison from TIA TR42**
 - Presentation from Val Rybinski
- **Editor's report**

Comment Resolution/Presentations

- *Updates on 10GBase-T Magnetics*; Thuyen Dinh
- *Startup protocol for 10GBASE-T*; Katsutoshi Seki
- *Notes on a posteriori probability (APP) metrics for LDPC*; Raju Hormis
- *PAM12 LDPC-CRC Framing*; Dariush Dabiri, Brett McClellan
- *800 Ms/s PHY for 10GBASE-T: Coding, Framing, Mapping*; Sailesh Rao
- *PAM2 Training Frame Alignment Proposal*; Brett McClellan
- *On Loop Timing and 10GBASE-T*; Scott Powell
- *10GBASE-T Modulation & Coding, Set of Fixed Precoders, and Start-up*; Gottfried Ungerboeck
- *Method of Transmitter Characterization for 800Mbaud PAM12 System*; Hiroshi Takatori
- *System SNR vs Pre-Coder Choise*; Albert Vareljian
- *10GBASE-T Tx PSD Mask Proposal*; Chris Pagnanelli
- *Performance of N=4 THPs with Power Backoff*; Glenn Golden

Future Meetings

- **January 2005 Interim:**
 - Week of the 24th
 - Vancouver, BC
 - Hyatt Regency
 - Host: IEEE 802
- **March 2004 Plenary:**
 - Week of the 14th
 - Atlanta, GA



Motions



TX Spec.

- Move to maintain time domain transmitter pulse specifications in the draft.
- M: G. Zimmerman
- S: G. Eisler
- Technical ($\geq 75\%$)
- TF: Y: 10 N: 15 A: 19
- 802.3: Y: 4 N: 12 A: 12
- **FAILS**
- Time domain transmitter pulse specifications will be removed from the draft.

Motion: Transmit Power Levels

- **10GBASE-T adopt:**
 - 8 TX Power levels: PTmax, PTmax-2dB, PTmax -4dB, PTmax -6dB, PTmax -8dB, PTmax -10dB, PTmax -12dB, PTmax -14dB. With method of selection to be specified.
 - Moved by: Scott Powell
 - Seconded by: Jose Tellado
 - Technical ($\geq 75\%$)
- **Task Force Members: Y: 40 N: 0 A: 9**
- **PASSES**



Motion: Start-up

- **10GBASE-T adopt:**
 - Master and Slave training sequences based on polynomials presented in seki_2_0904.pdf. Finite segments thereof cyclically repeated, frame length tbd.
 - Random seeds for Master and Slave training sequences determined during auto-negotiation
 - The training sequences sent over the 4 pairs represent shifts of the base sequences generated by the above polynomial, as in clause 40 and seki_2_0904.pdf.
 - The training sequence for pair A will every 256th bit flipped aligned with the PHY framing
 - Info fields exchanged periodically during start-up to determine power levels and THP coefficient settings, communicate decision SNR, receiver status, and signal transition to data mode.
- Moved by: Katsutoshi Seki
- Seconded by: Gottfried Ungerboeck
- Technical ($\geq 75\%$)
- Task Force Members: Y: 38 N: 0 A: 6
- **PASSES**

Motion: Brickwall

- Move that the Task Force adopt a brickwall exclusion mask in the TX PSD mask from 1 MHz to 330 MHz at -82 dBm (4 dB below) without power backoff.
- M: A. Vareljian
- S: H. Scull
- Technical ($\geq 75\%$)
- TF: Y: N: A:
- 802.3:
- PASSES/FAILS
- Motion to postpone until the next meeting.
- M: G. Zimmerman
- S: T. Cobb
- Procedural ($>50\%$)
- TF: Y: 27 N: 3 A: 17
- **Postponed**

Motion:

- Move that the TF adopt the Measure Setup (slide 2) of takatori_1_1104.pdf as the baseline for transmitter characterization.
- M: A. Vareljian
- S: H. Scull
- Technical ($\geq 75\%$)
- TF: Y: 5 N: 16 A: 21
- **FAILS**



Motion: Augmented Objective

- Move to remove the separate objective for 100 m augmented Cat 6 approved at the September 2004 interim meeting **since it is now incorporated in the present objectives.**
- M: T. Cobb
- S: A. Flatman
- Technical ($\geq 75\%$)
- TF: Y: N: A:
- PASSES/FAILS
- Hostile amendment in blue.
- M: L. Adriaenssens S: T. Cobb
- TF: Y: 17 N: 10 A: 17 Technical ($\geq 75\%$) **FAILS**

Motion: Augmented Objective

- **Original motion:**
- **Move to remove the separate objective for 100 m augmented Cat 6 approved at the September 2004 interim meeting.**
- **M: T. Cobb**
- **S: A. Flatman**
- **Technical ($\geq 75\%$)**
- **TF: Y: 26 N: 0 A: 19**
- **PASSES**



TIA Liaison Letter Motion

- Move that the Task Force approve and forward the tia_1_1104 liaison letter to 802.3.
- M: H. Barrass
- S: A. Flatman
- Procedural (>50%)
- TF Voters: Y: by voice N: A:
- **PASSES**



ISO/IEC Liaison Letter Motion

- Move that the Task Force approve and forward the iso_1_1104 liaison letter to 802.3.
- M: H. Barrass
- S: V. Rybinski
- Procedural (>50%)
- TF Voters: Y: by voice N: A:
- **PASSES**



D1.2

- Move that the Editor generate draft D1.2 for Task Force review.

- M: J. Tellado

- S: A. Flatman

- Procedural (>50%)

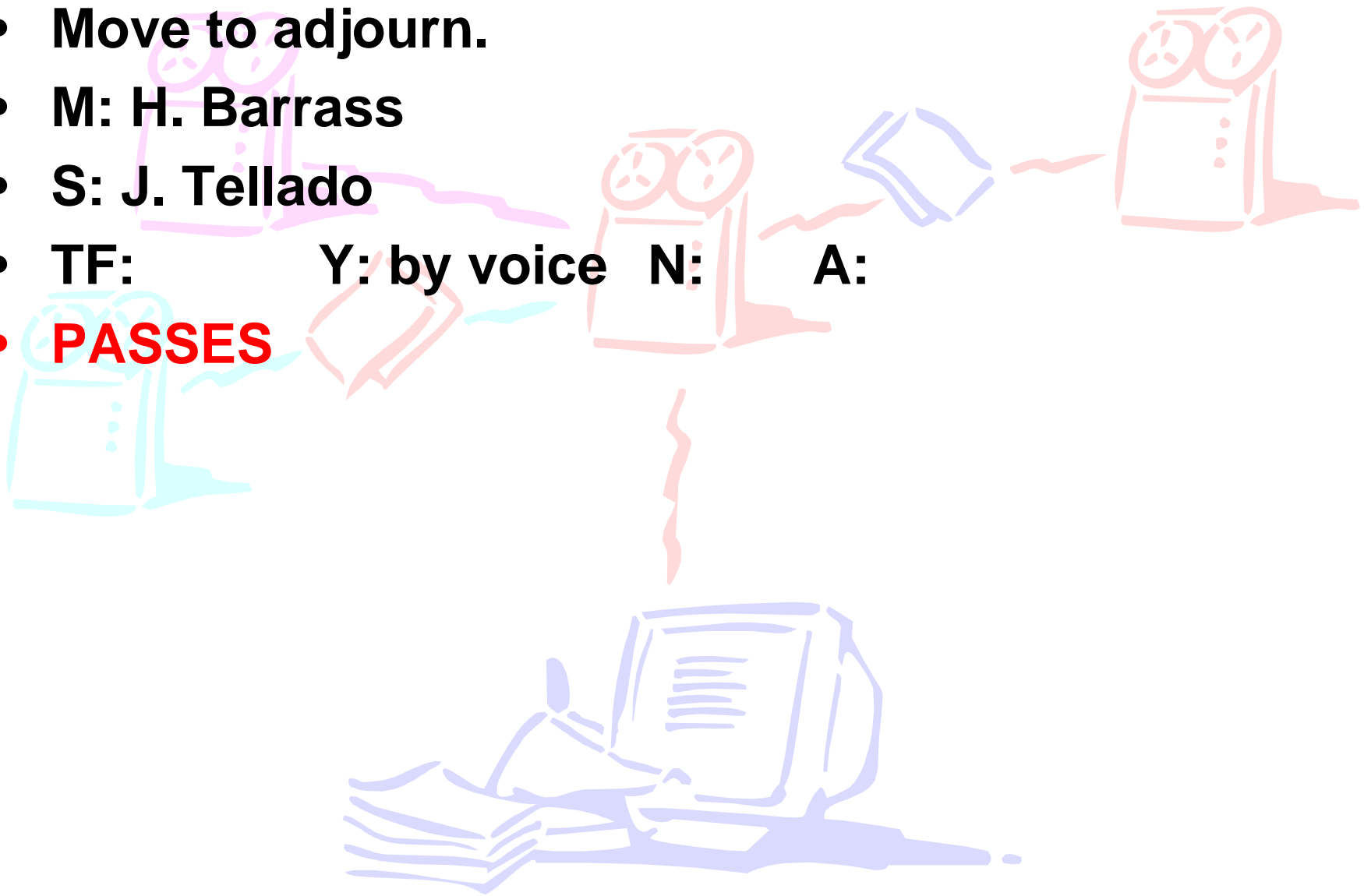
- TF: Y: by voice N: A:

- **PASSES**



Adjourn

- Move to adjourn.
- M: H. Barrass
- S: J. Tellado
- TF: Y: by voice N: A:
- **PASSES**



Adjourned



Thank You!