



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

Agenda and General Information

Ottawa, ON

September 29, 2004

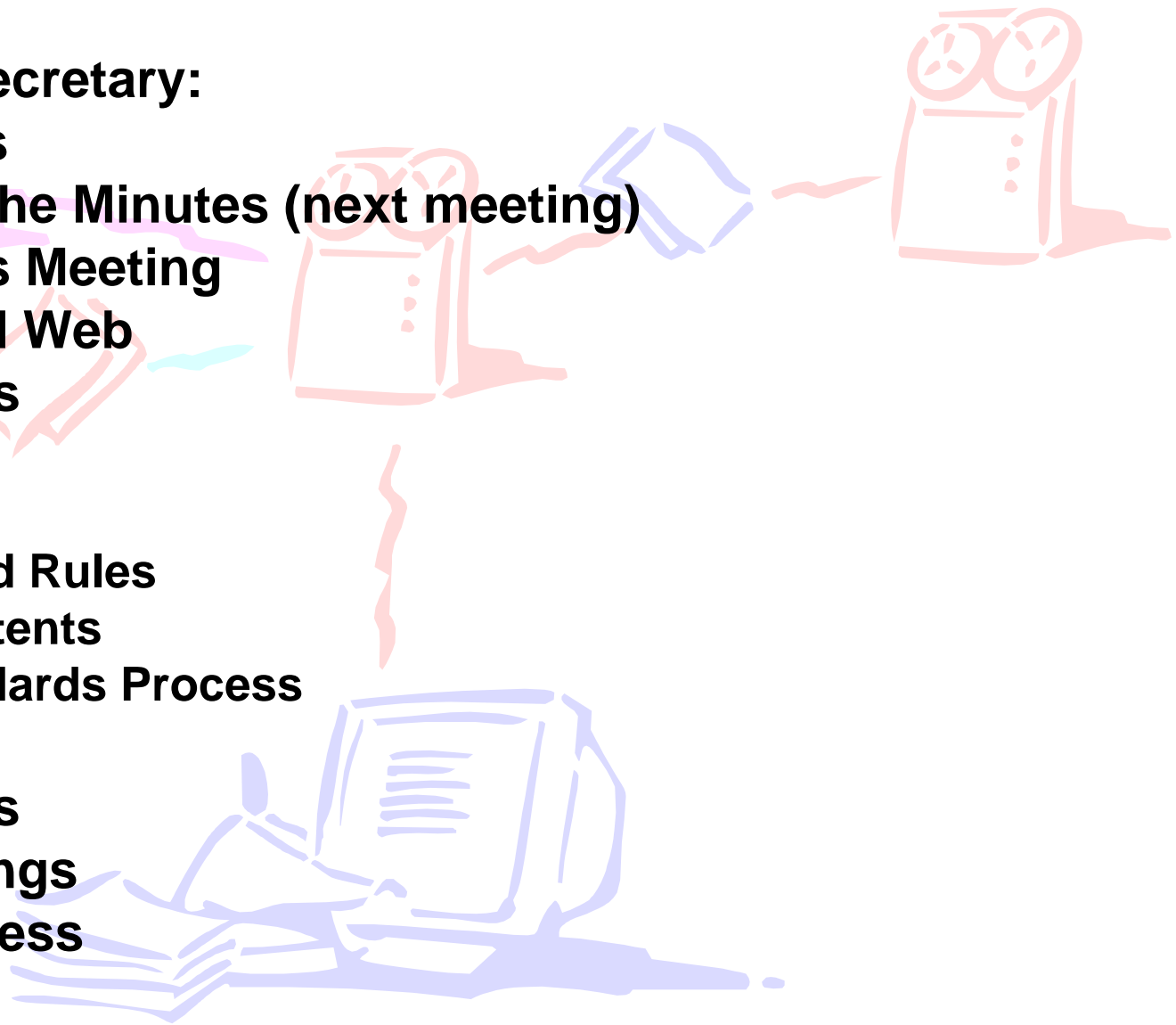
Brad Booth, Task Force Chair

Please Put Cell Phones on Stun!!



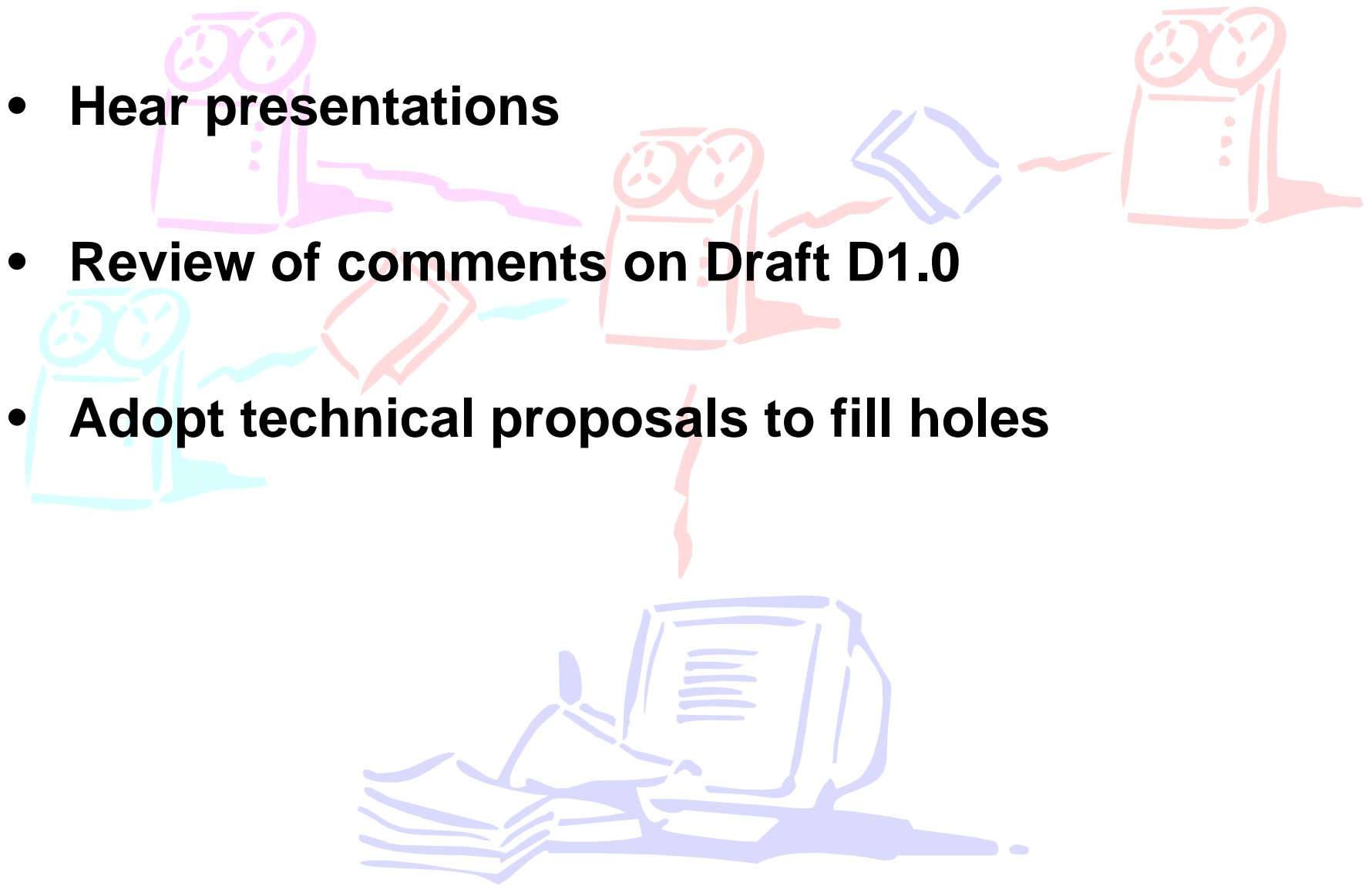
Agenda

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



Goals for this Meeting

- **Hear presentations**
- **Review of comments on Draft D1.0**
- **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:

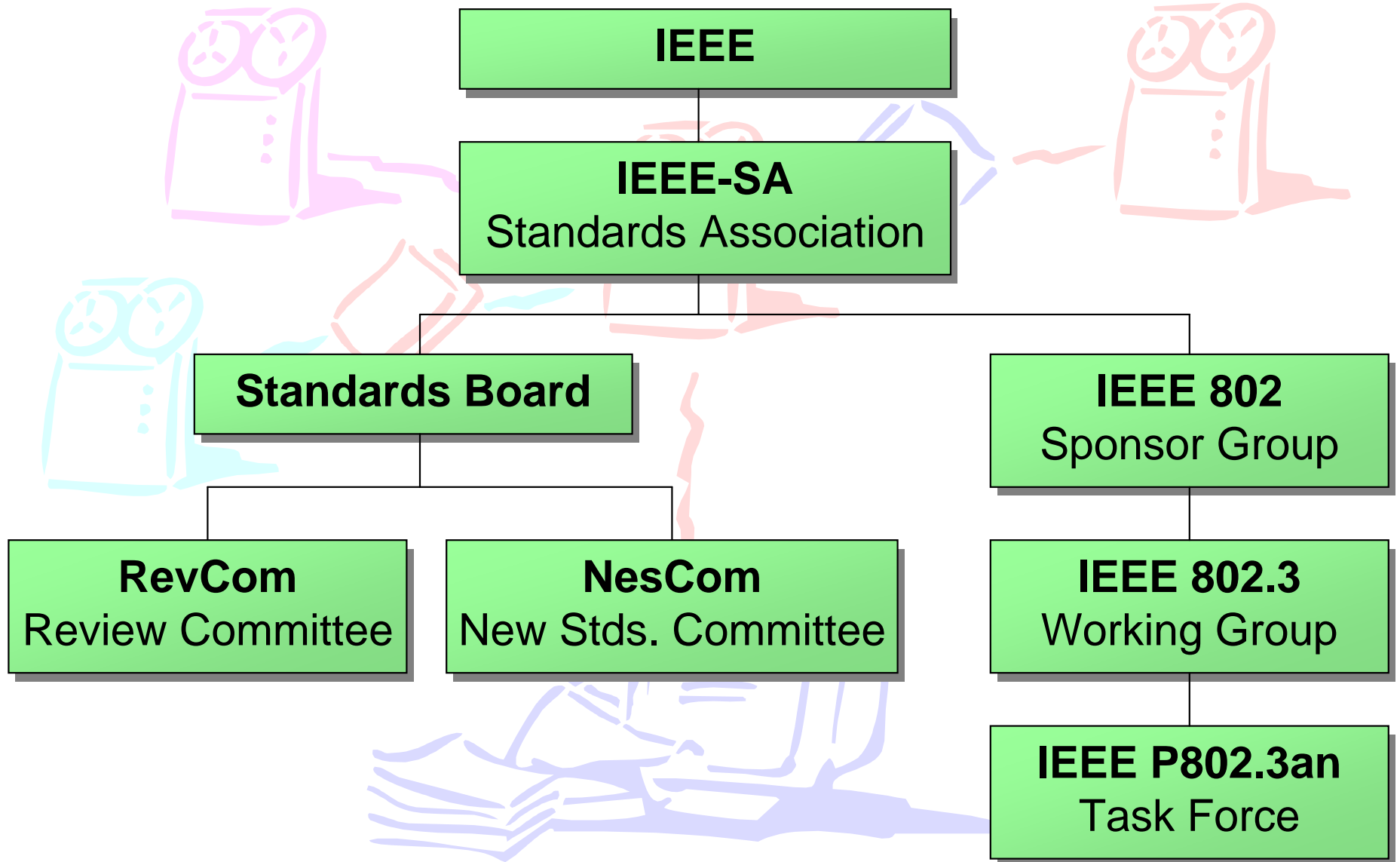
subscribe stds-802-3-10GBT Brad Booth
end

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

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)

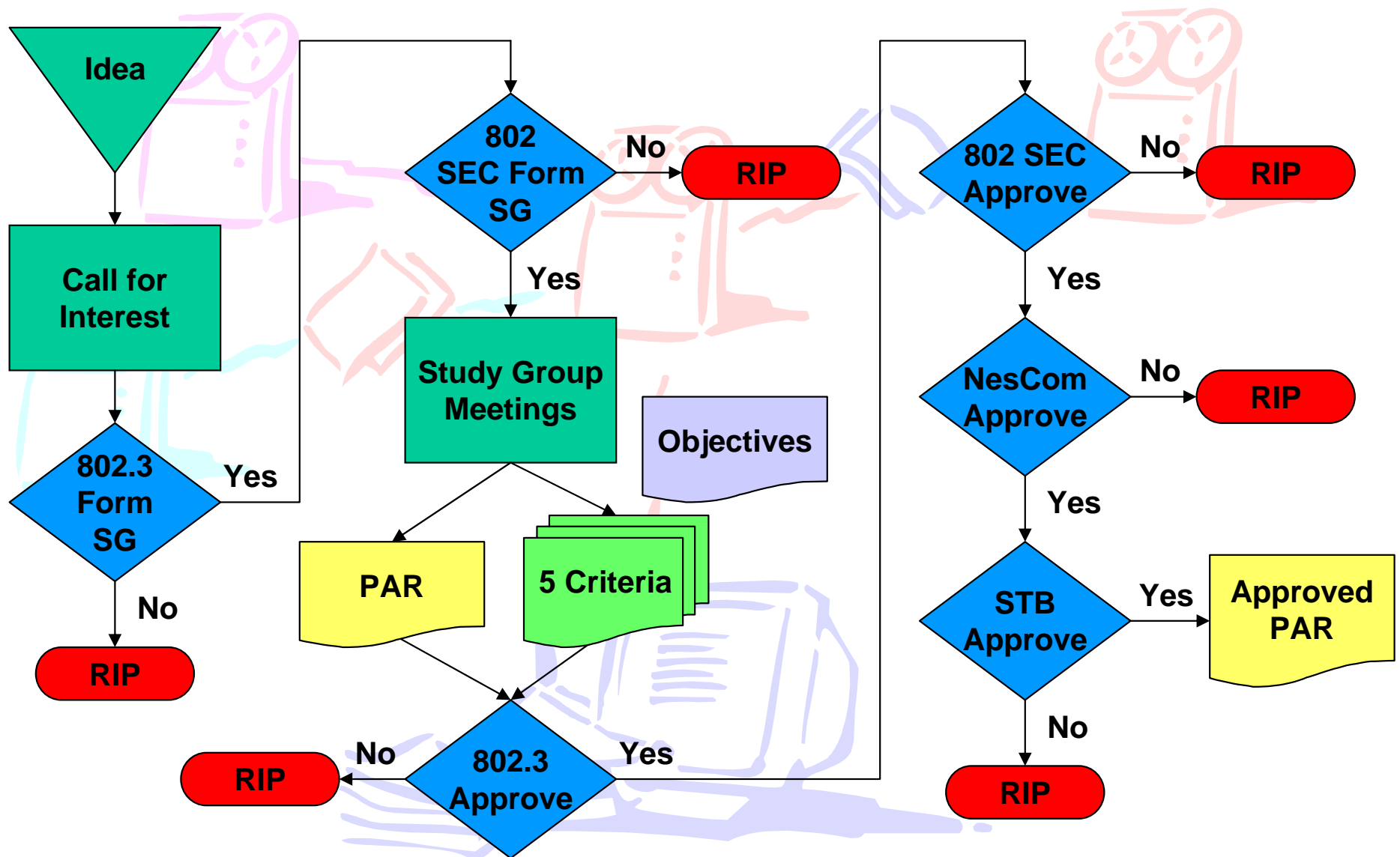
Inappropriate Topics for IEEE WG Meetings

- **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.**

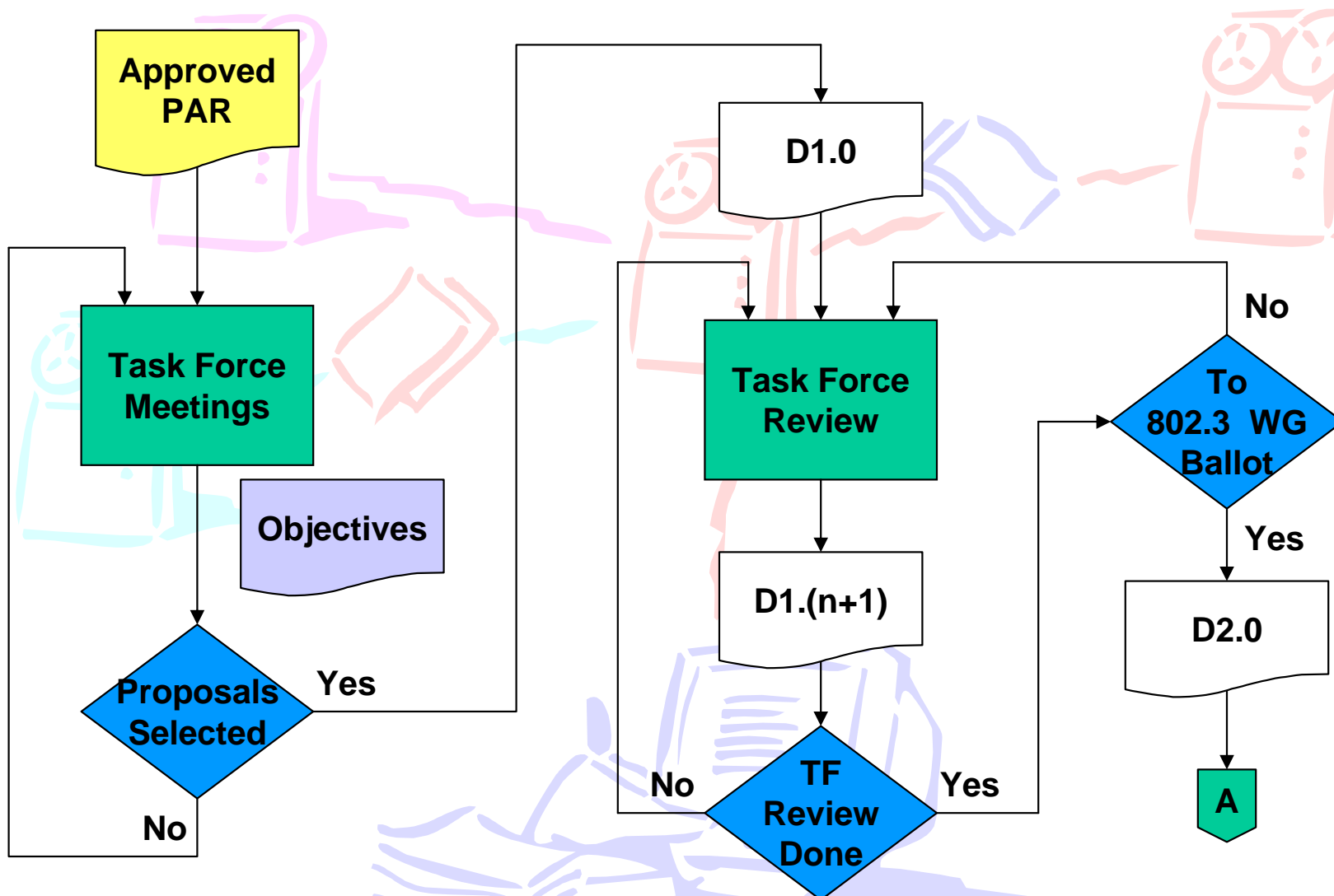
If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at patcom@ieee.org or visit <http://standards.ieee.org/board/pat/index.html>

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

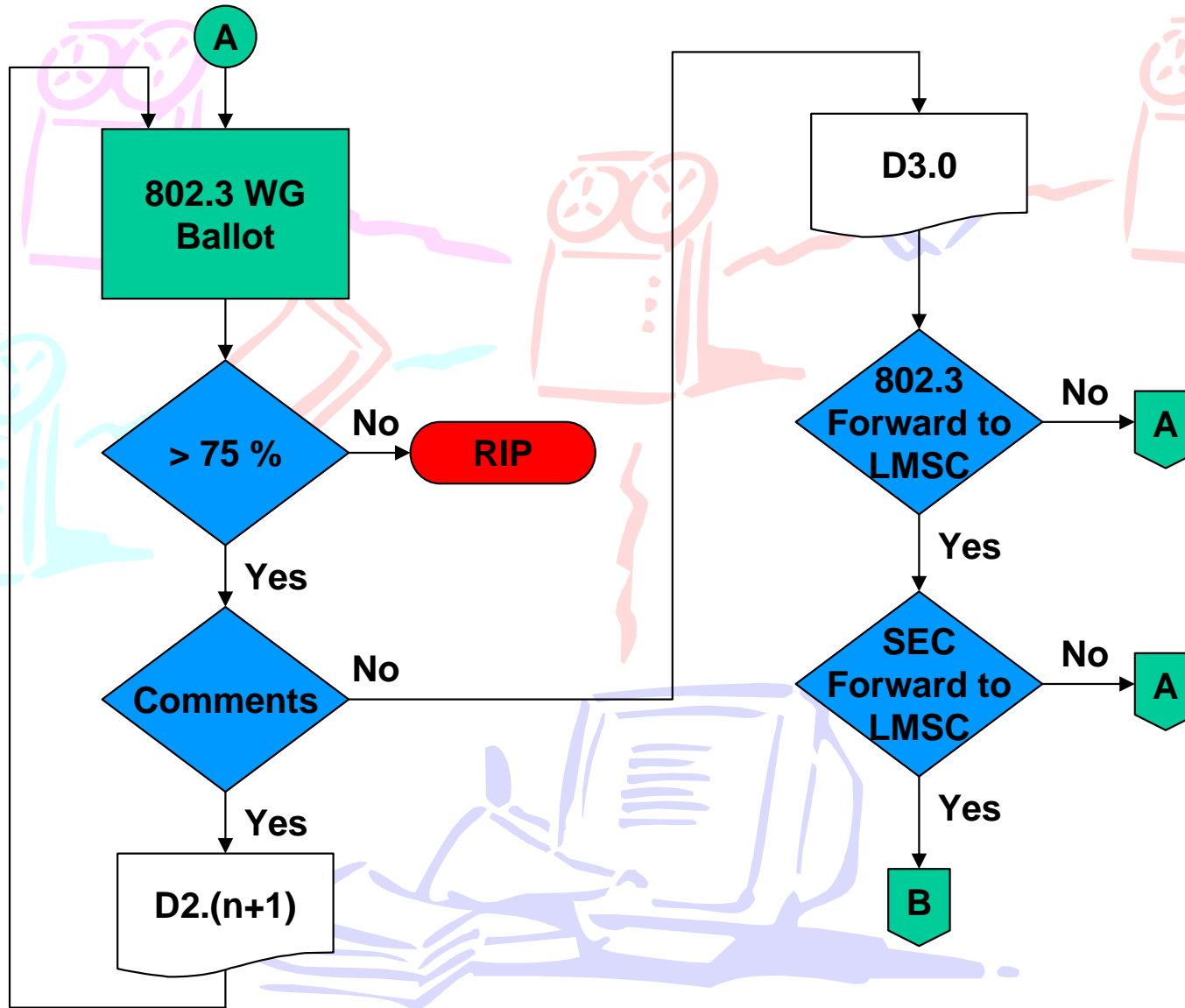
IEEE Standards Process



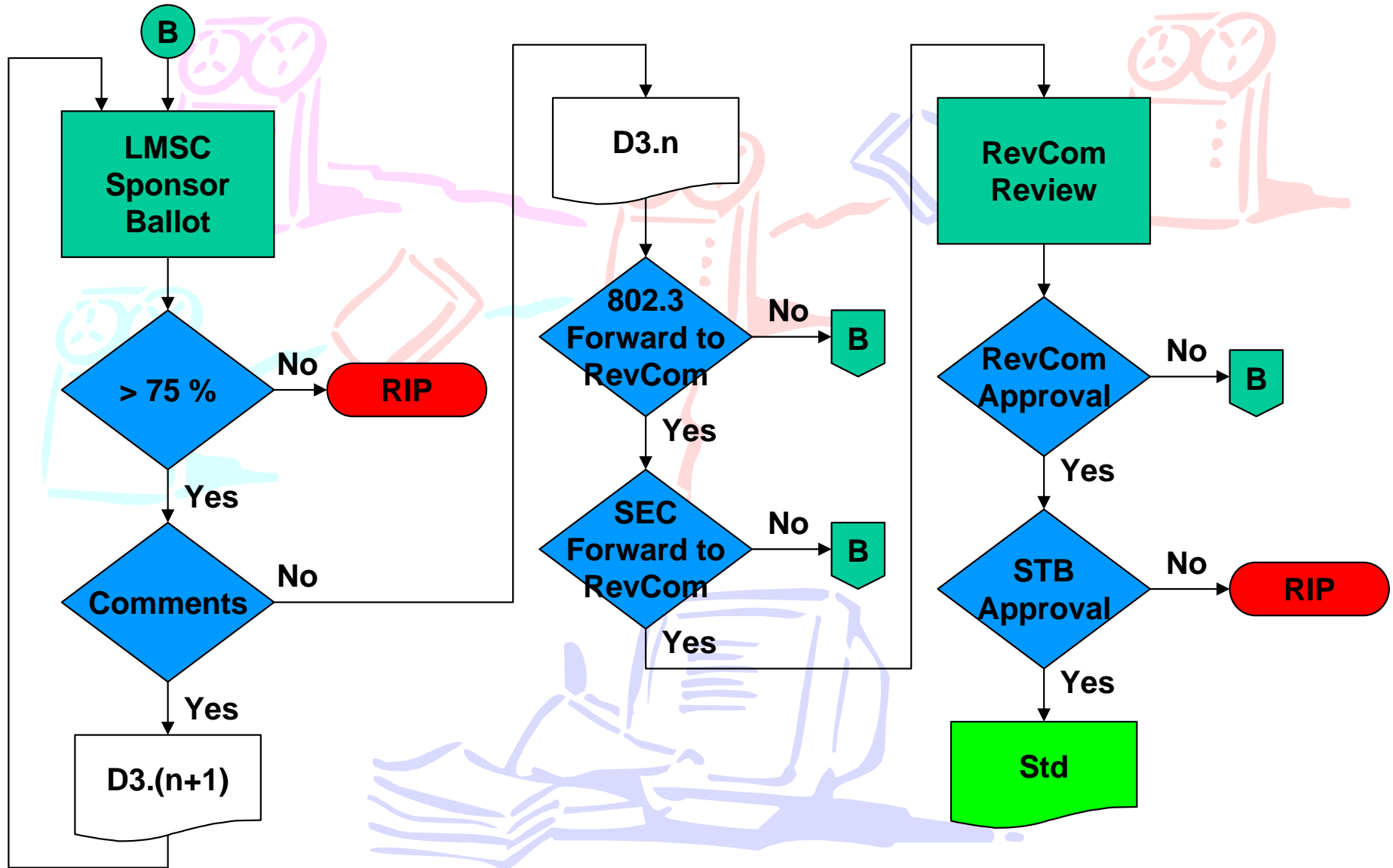
IEEE Standards Process (cont.)



IEEE Standards Process (cont.)



IEEE Standards Process (cont.)



P802.3an Objectives

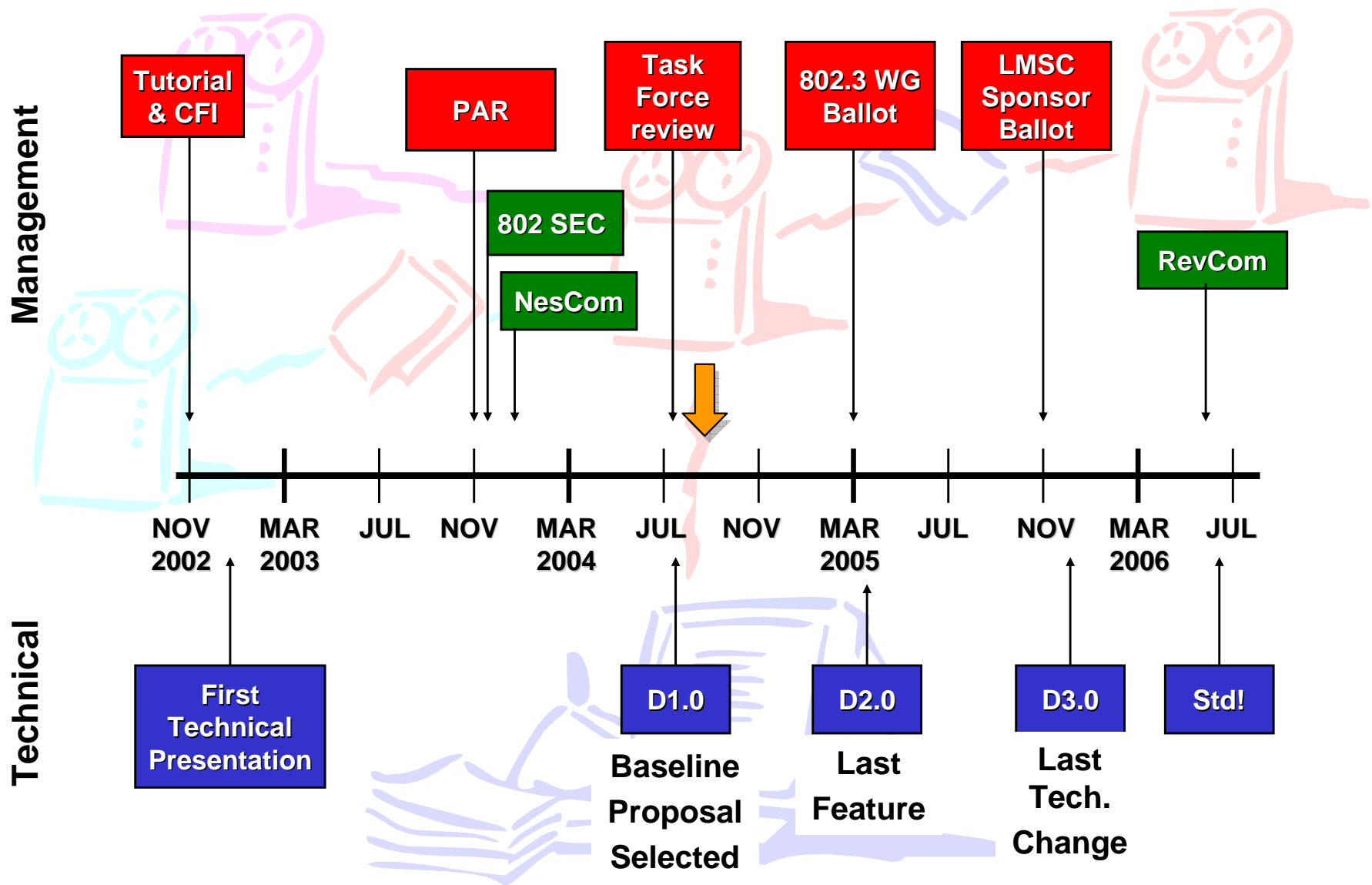
- **Preserve the 802.3/Ethernet frame format at the MAC Client service interface**
- **Preserve min. and max. frame size of current 802.3 Std.**
- **Support full duplex operation only**
- **Support star-wired local area networks using point-to-point links and structured cabling topologies**
- **Support 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



Reports

- **Liaison from ISO/IEC JTC 1 / SG 25 / WG 3**
 - None at this meeting
- **Liaison from TIA TR42**
 - Presentation from Val Rybinski
- **Editor's report**

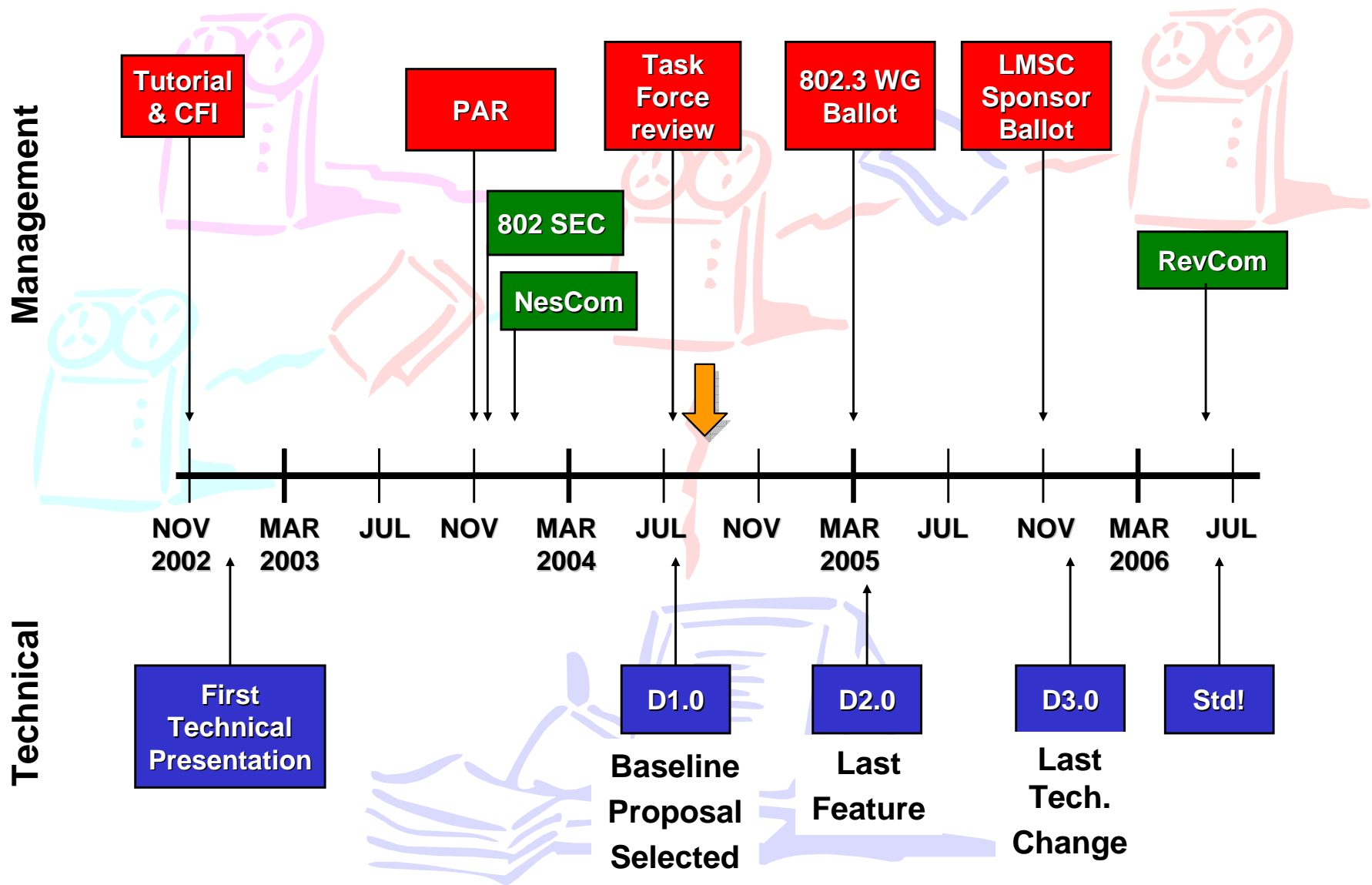
Presentations

- ***A Comparative Study the Proposed LDPC Codes; Jose Tellado (for Darish Dabiri)***
- ***On The Need For Precoder Updates In Data Mode: Laboratory Results; William Jones***
- ***LDPC Evaluation for 10GBT; Chine-Hsin Lee***
- ***800MHz 12D PAM12 Mapping and Frame Structure Proposal; Brett McClellan***
- ***Pipelining Tomlinson-Harashima Precoders; Keshab Parhi***
- ***4-Channel Sampling Considerations for 10GBASE-T; Scott Powell***
- ***Is ~800Ms/s the Optimum Symbol Rate for 10GBASE-T?; Sailesh Rao***
- ***Update on the LDPC 4D-PAM8 Proposal for 10GBASE-T; Sailesh Rao***
- ***Issues with the PAM12 proposal and derivatives; Sailesh Rao***
- ***Performance evaluation of low latency LDPC code; Katsutoshi Seki***
- ***Startup protocol for 10GBASE-T; Katsutoshi Seki***
- ***800Mbaud PHY for 10GBase-T; Jose Tellado***
- ***Improving Auto-Negotiation Efficiency Next Page Extension; Pat Thaler***
- ***10GBASE-T Coding and Modulation: 128-DSQ + LDPC; Gottfried Ungerboeck***

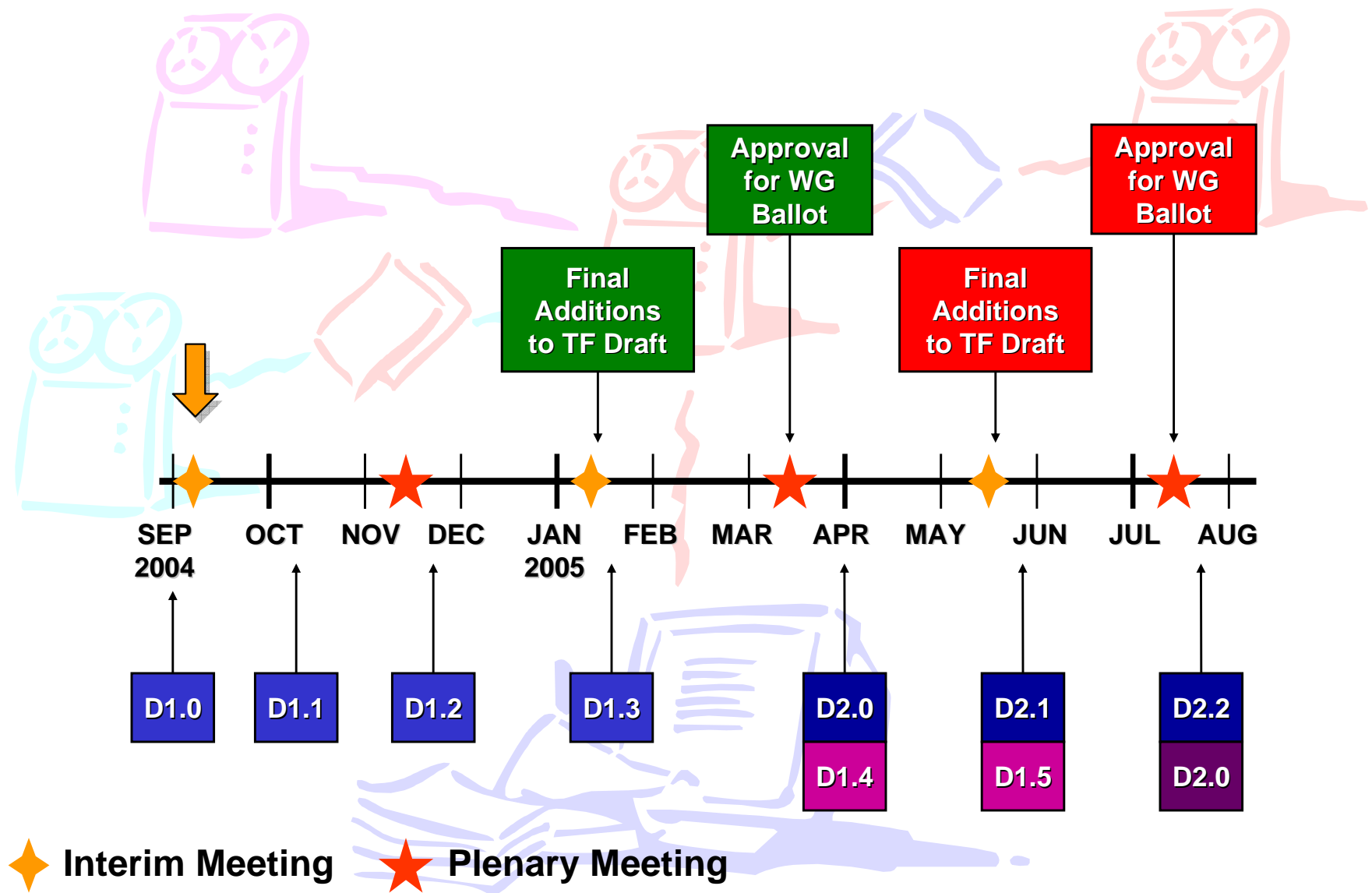
Future Meetings

- **Nov 2004 Plenary:**
 - Week of the 15th
 - San Antonio, TX
 - Wyndam St. Anthony
- **January 2004 Interim:**
 - In the works
 - Tentative host: IEEE 802
 - Location: Vancouver, BC

P802.3an Timeline



P802.3an Timeline

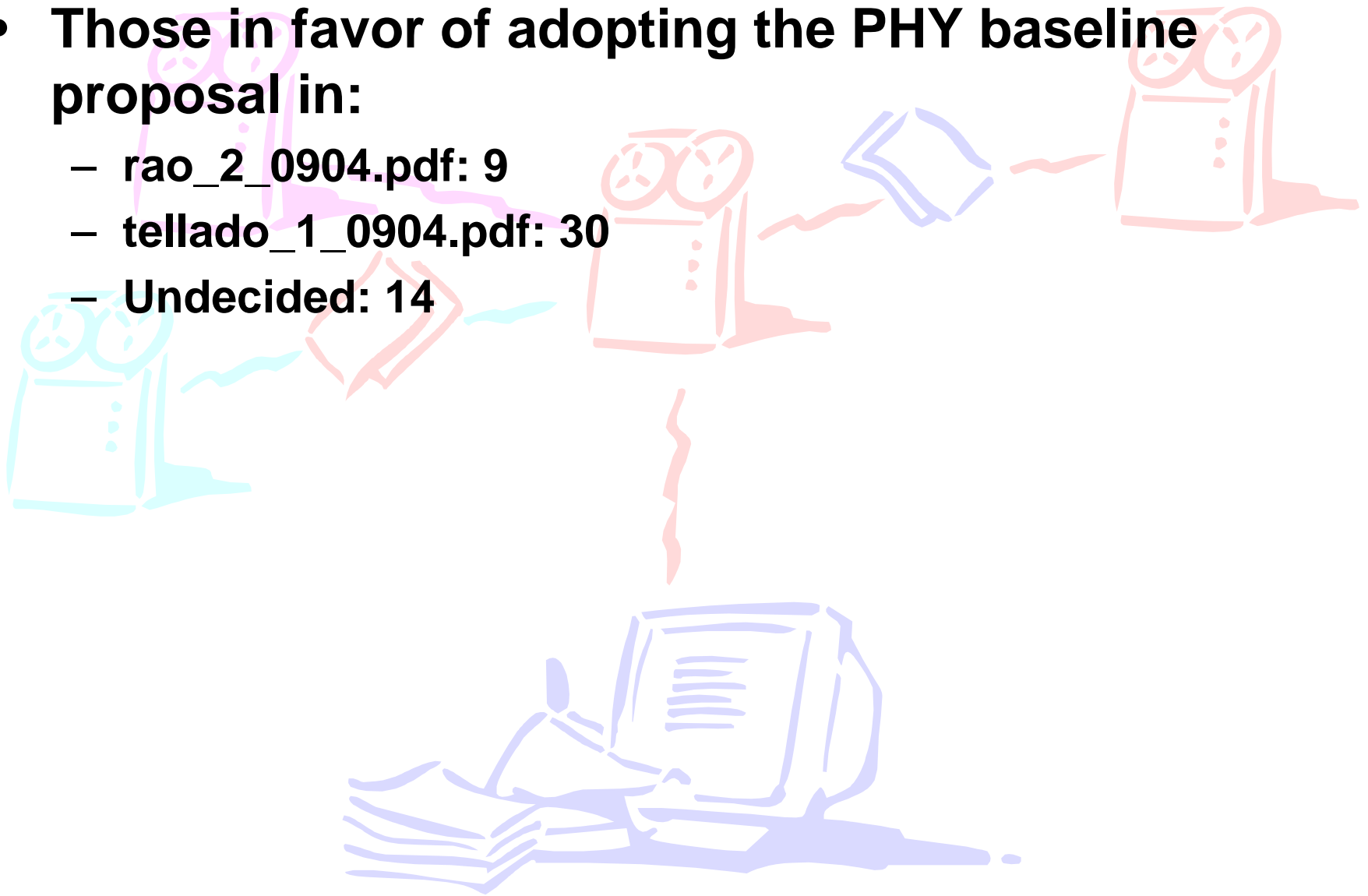


Straw Polls



Proposals

- Those in favor of adopting the PHY baseline proposal in:
 - rao_2_0904.pdf: 9
 - tellado_1_0904.pdf: 30
 - Undecided: 14



Constellation

- **Those in favor of adopting PAM8 as the baseline constellation.**
 - Y: 10
 - U: 16
- **Those in favor of adopting PAM12 as the baseline constellation.**
 - Y: 23
 - U: 13
- **Those in favor of adopting 128-DSQ as the baseline constellation.**
 - Y: 8
 - U: 22

Constellation

- **Those in favor of adopting PAM12 as the baseline constellation.**
 - Y: 30
 - N: 9
- **Those in favor of adopting PAM8 as the baseline constellation.**
 - Y: 10
 - N: 31
- **Those in favor of adopting 128-DSQ as the baseline constellation.**
 - Y: 13
 - N: 9

LDPC

- Those in favor of an LDPC-2048 family as the baseline LDPC.
 - Y: 6
 - N: 24
- Those in favor of an LDPC-1024 family as the baseline LDPC.
 - Y: 34
 - N: 6
- Those in favor of:
 - LDPC (1024, 833):
 - LDPC (1024, 827):
 - LDPC (1024, 821):
 - LDPC (1024, 809):

Auto-negotiation

- **Adopt thaler_1_0904.pdf as a baseline for next page extension for 802.3an auto-negotiation.**
 - Y: 23
 - N: 0
- **Adopt tighter FLP burst to burst tolerance for 802.3an (8 us converted to 8 ms).**
 - Y: 25
 - N: 5



Motion Madness



Consensus

- **Move that the Task Force take motions on straw polls that have gained consensus.**
 - M: T. Dineen
 - S: H. Barrass
 - Procedural (>50%)
 - TF: Y: 25 N: 17 A:
 - Motion **PASSES**

Constellation

- **Task Force adopt PAM12 as the baseline constellation.**
 - **M: T. Dineen**
 - **S: G. Eisler**
 - **Technical ($\geq 75\%$)**
 - **TF: Y: 34 N: 10 A: 14**
 - **.3: Y: 16 N: 2 A: 8**
 - **Motion PASSES**

LDPC

- **Task Force adopt the LDPC-1024 family as the baseline LDPC.**
 - M: T. Dineen
 - S: G. Zimmerman
 - Technical ($\geq 75\%$)
 - TF: Y: 32 N: 15 A: 9
 - .3: Y: 15 N: 5 A: 4
 - Motion FAILS

Auto-negotiation

- Move that the Task Force adopt next page extension of thaler_1_0904.pdf as the baseline for 802.3an auto-negotiation next pages.
 - M: H. Barrass
 - S: P. Thaler
 - Technical ($\geq 75\%$)
 - TF: Y: 23 N: 5 A: 21
 - .3: Y: 16 N: 4 A: 7
 - Motion **PASSES**



Augmented Class E

- Move that the Task Force adopt the following objective and forward for approval to the 802.3 WG:
 - “100 m on four pair Augmented Class E balanced copper cabling as specified in Clause 55.7.”
 - M: T. Cobb
 - S: R. Mei
 - Technical ($\geq 75\%$)
 - TF: Y: 19 N: 6 A: 19
 - .3: Y: 11 N: 4 A: 4
 - **PASSES**

Motion: Modulation, Equalization, and Coding

- **10GBASE-T adopt:**
 - 800 Msymbols/s modulation rate
 - Small number of selectable precoders specified by rational transfer functions
 - 4 or less LDPC code blocks per 10GBASE-T PCS frame
 - Moved by: Scott Powell
 - Seconded by: J. Tellado
 - Technical ($\geq 75\%$)
 - TF Members: Y: 38 N: 11 A: 5
 - 802.3 Voters: Y: 21 N: 1 A: 4
 - Motion **PASSES**
 - Divide: (S. Rao, J. Jover) Y: 16 N: 28 (**FAILS**)

64B/65B

- **Move that the Task Force adopt 64B/65B as the method of PCS encapsulation as the basis for further work.**
 - **M: J. Tellado**
 - **S: H. Barrass**
 - **Technical ($\geq 75\%$)**
 - **TF: Y: 37 N: 8 A: 9**
 - **.3: Y: 21 N: 2 A: 3**
 - **Motion PASSES**

THP adaption

- **Move that the Task Force adopt that the THP shall not be changed after start-up.**
 - **M: J. Tellado**
 - **S: S. Powell**
 - **Technical ($\geq 75\%$)**
 - **TF: Y: acclimation N: A:**
 - **.3: Y: acclimation N: A:**
 - **Motion PASSES**



FLP

- Move that the Task Force adopt transmit FLP burst to FLP burst timing of the range 8.0 to 8.5 ms for 802.3an.
 - M: P. Thaler
 - S: G. Zimmerman
 - Technical ($\geq 75\%$)
 - TF: Y: 24 N: 3 A: 17
 - .3: Y: 14 N: 3 A: 6
 - Motion PASSES

12D PAM12 mapping

- Move that the Task Force adopt as a baseline the 12D PAM12 mapping described on pages 6-10 in [mcclellan_1_0904.pdf](#).
 - M: B. McClellan
 - S: G. Zimmerman
 - Technical ($\geq 75\%$)
 - TF: Y: 30 N: 14 A: 9
 - .3: Y: 17 N: 3 A: 5
 - Motion FAILS



Precoder

- **Move that the Task Force adopt at most 8 precoding functions.**
 - M: S. Powell
 - S: J. Tellado
 - Technical ($\geq 75\%$)
 - TF: Y: N: A:
 - .3: Y: N: A:
 - Motion Passes/Fails (POSTPONED)
- **Motion to postpone until November plenary.**
 - M: G. Zimmerman, S: C. Di Minico
 - TF: Y: 27 N: 11 A: 11
 - Procedural ($>50\%$)
 - Motion **PASSES**

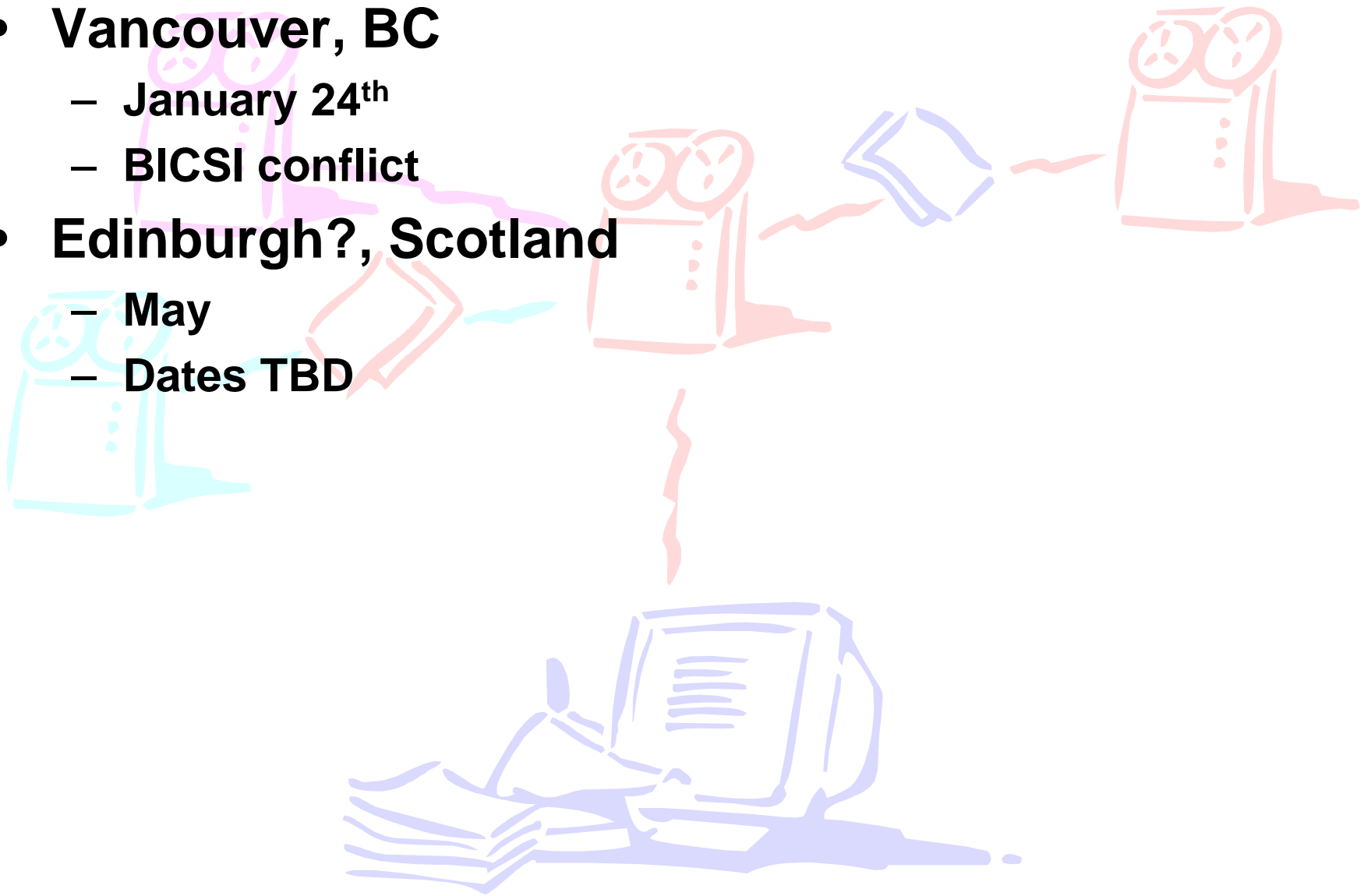
D1.1

- **Move that the Editor generate D1.1 for Task Force review.**
 - **M: H. Barrass**
 - **S: M. McConnell**
 - **Procedural (>50%)**
 - **TF: Y: acclimation N: A:**
 - **Motion PASSES**



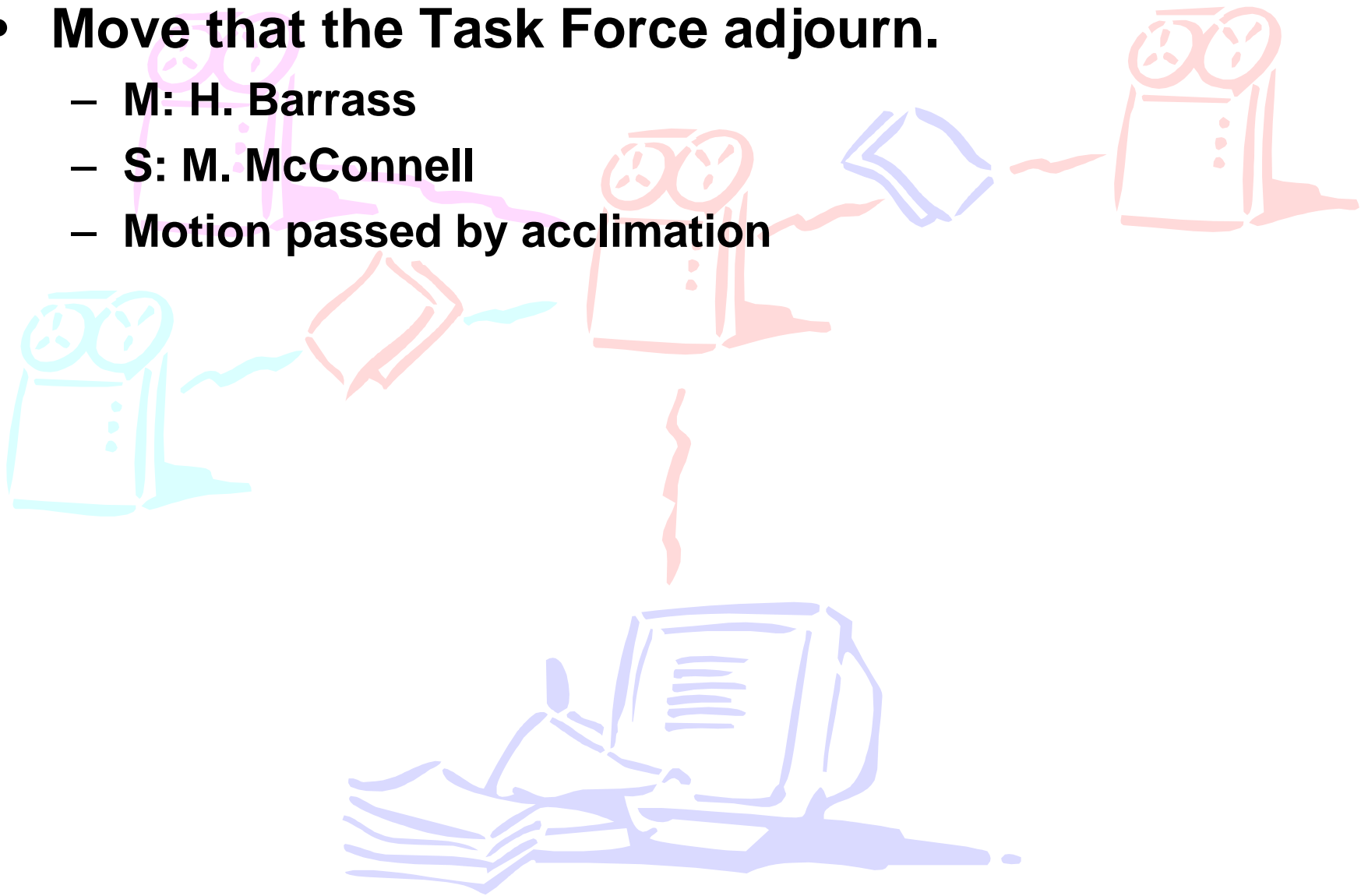
Interims

- **Vancouver, BC**
 - January 24th
 - BICSI conflict
- **Edinburgh?, Scotland**
 - May
 - Dates TBD



Adjourn

- **Move that the Task Force adjourn.**
 - M: H. Barrass
 - S: M. McConnell
 - **Motion passed by acclamation**



Adjourn

