



**IEEE 802.3**  
**10GBASE-T Study Group**  
**Agenda and General Information**

**Portsmouth, NH**

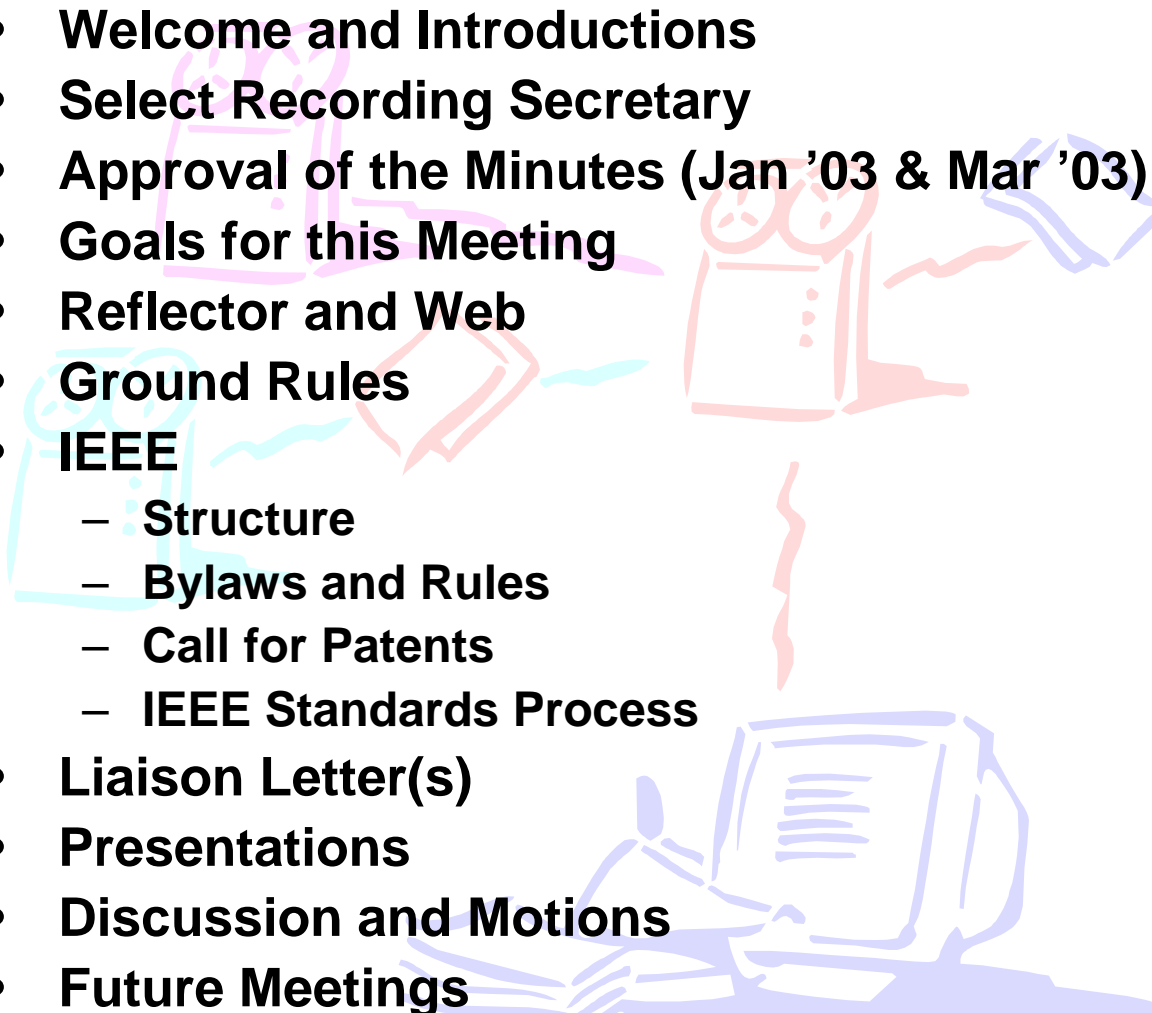
**May 21, 2003**



**Brad Booth, Chair**  
**Architect, Intel Communications Group**

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# Agenda

- **Welcome and Introductions**
  - **Select Recording Secretary**
  - **Approval of the Minutes (Jan '03 & Mar '03)**
  - **Goals for this Meeting**
  - **Reflector and Web**
  - **Ground Rules**
  - **IEEE**
    - **Structure**
    - **Bylaws and Rules**
    - **Call for Patents**
    - **IEEE Standards Process**
  - **Liaison Letter(s)**
  - **Presentations**
  - **Discussion and Motions**
  - **Future Meetings**
- 

# 10GBASE-T

- **10 Gigabit Ethernet over horizontal structured, twisted-pair copper cabling**
- **10 Gigabit Ethernet MAC and media independent interface as specified in IEEE 802.3ae™, 2002**
- **Copper cabling is assumed to be ISO/IEC-11801:2002 Class D or better copper cable**

# Goals for this Meeting

- **Hear presentations concerning:**
  - Need for 10GBASE-T project in IEEE 802.3
  - Justification in terms of the 5 criteria (aka the critters)
  - Goals and objectives for a project
- **Start developing consensus on:**
  - Project Approval Request (PAR)
  - 5 Criteria responses
  - 10GBASE-T Objectives

# Reflector and Web

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

*[majordomo@ieee.org](mailto:majordomo@ieee.org)*

with the following in the body of the message:

*[subscribe stds-802-3-10GBT <your email address>](#)*

*[subscribe stds-802-3-10GBT-Modeling <your email address>](#)*

*[subscribe stds-802-3-10GBT-Cabling <your email address>](#)*

- 10GBASE-T Study Group web page URL:

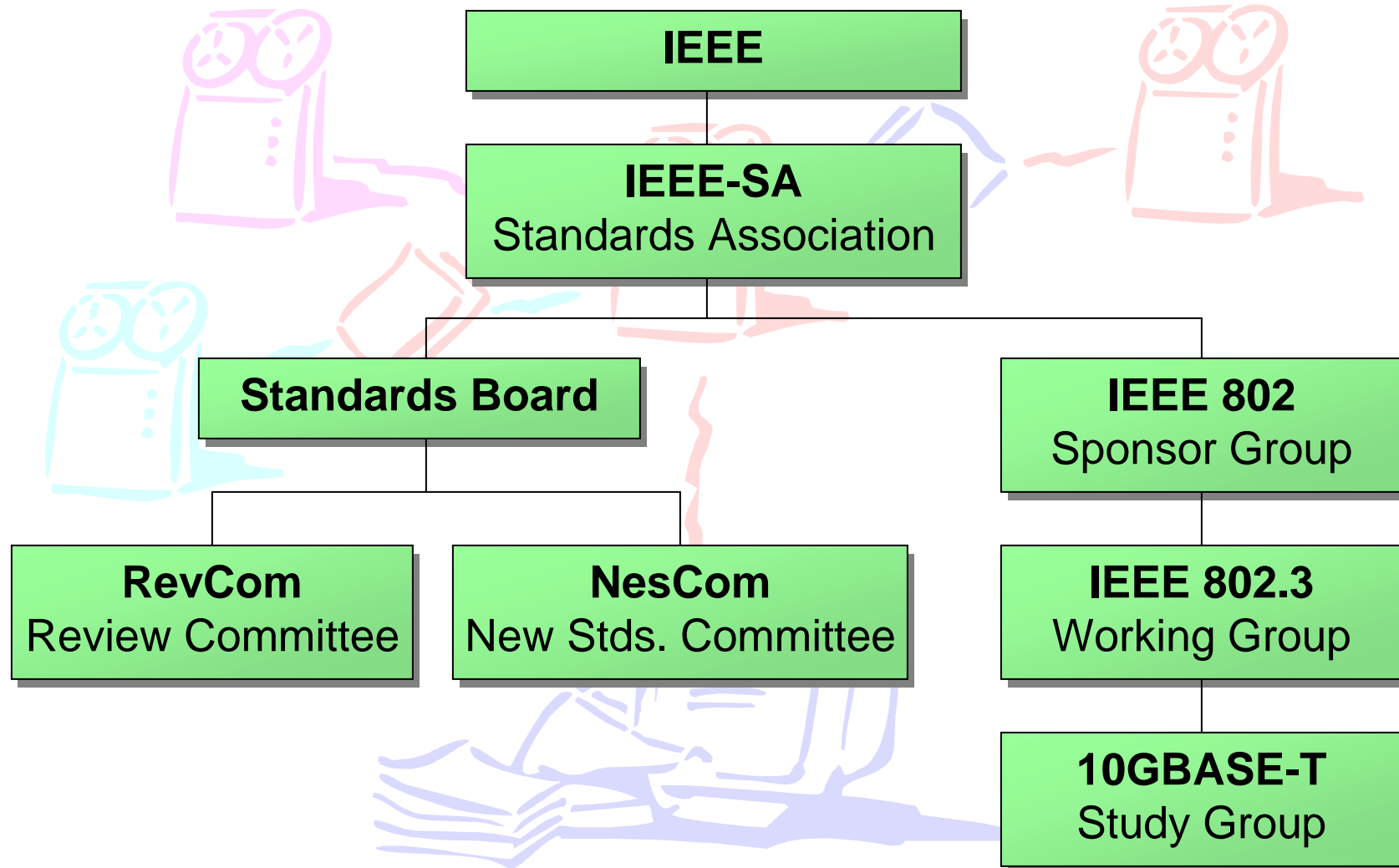
*<http://www.ieee802.org/3/10GBT/>*



# 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 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

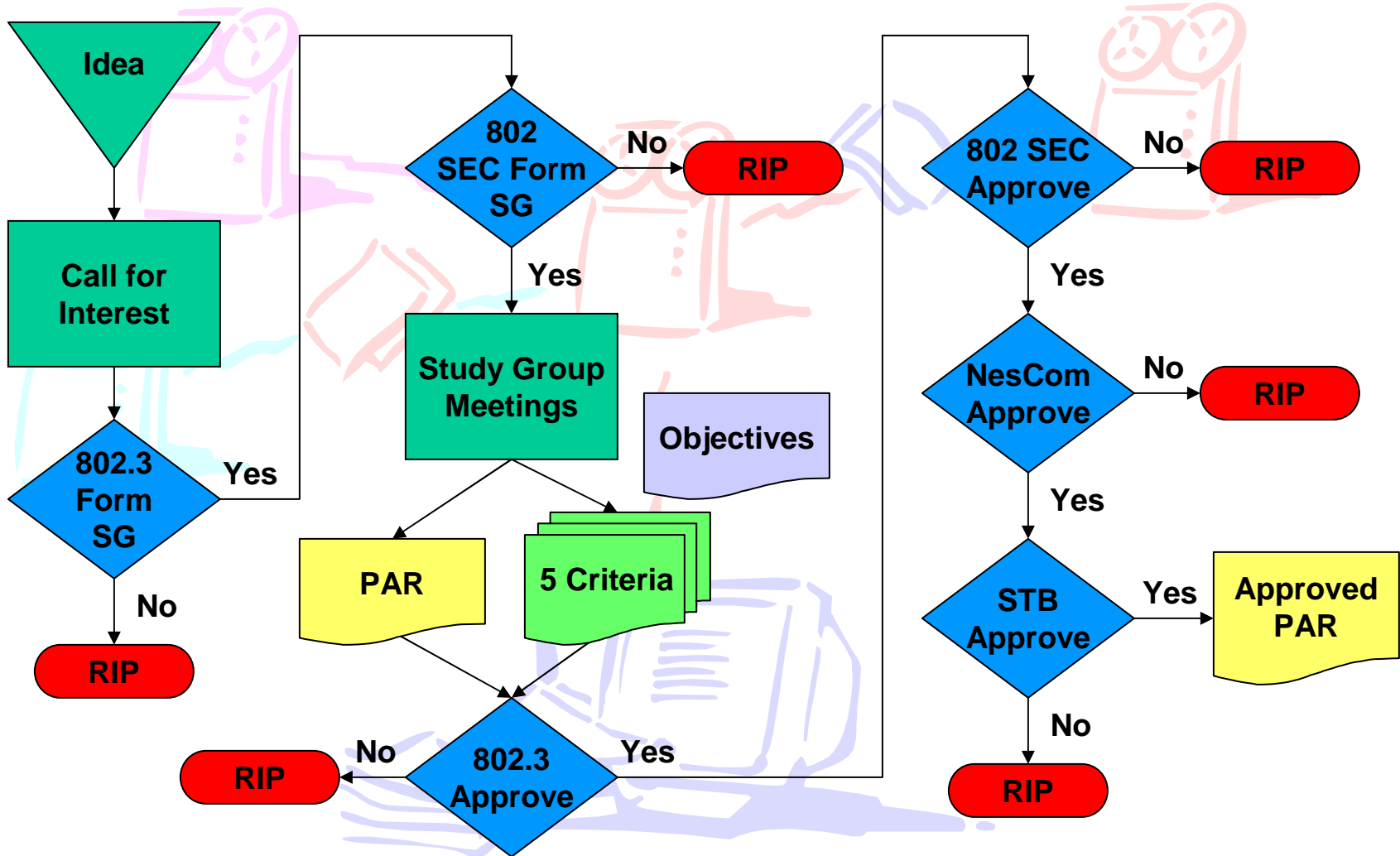
# Inappropriate Topics for IEEE WG Meetings

- 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.

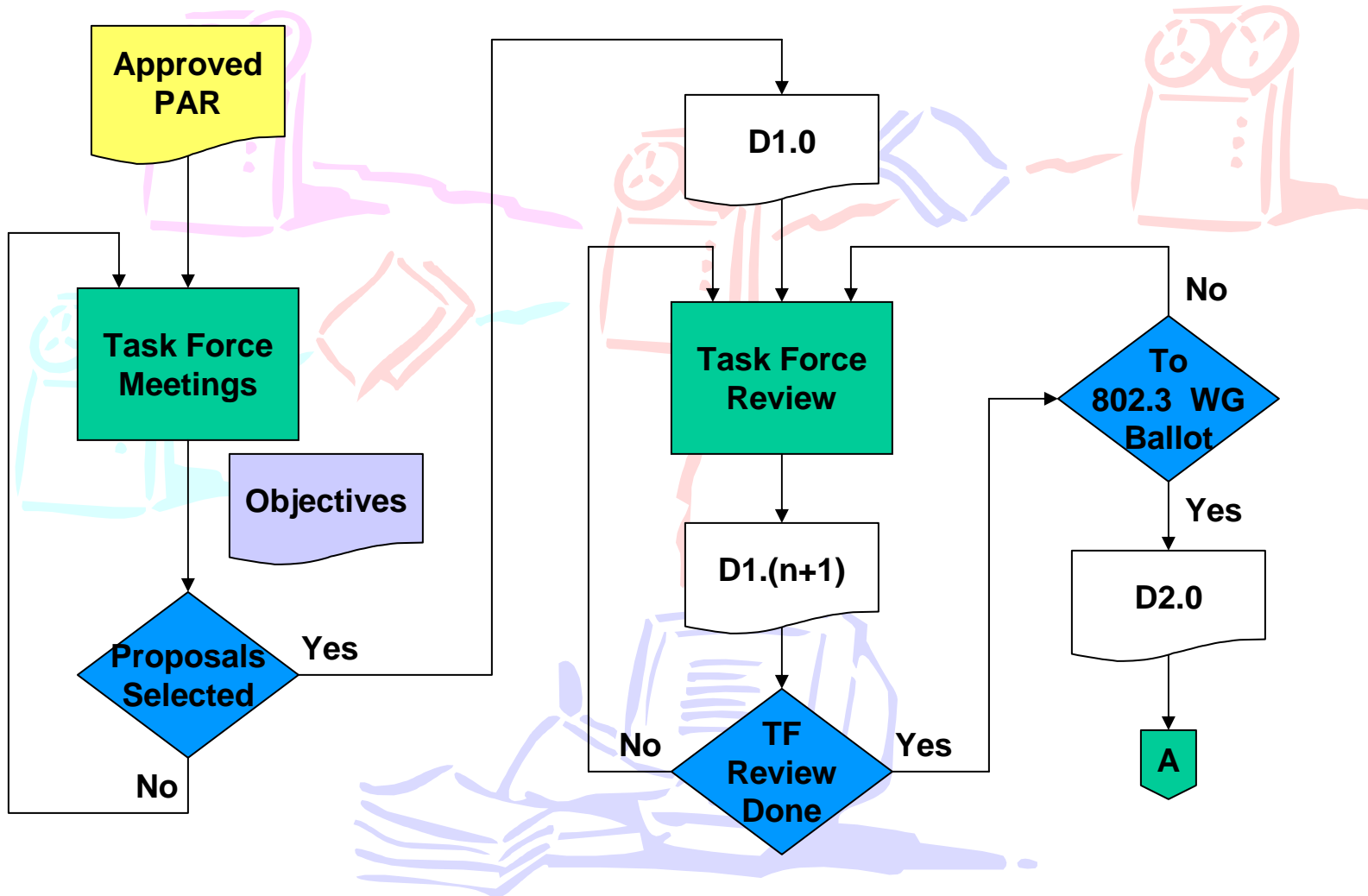
**If you have questions,  
contact the IEEE Patent Committee Administrator  
at [patcom@ieee.org](mailto:patcom@ieee.org)**

Approved by IEEE-SA Standards Board – December 2002

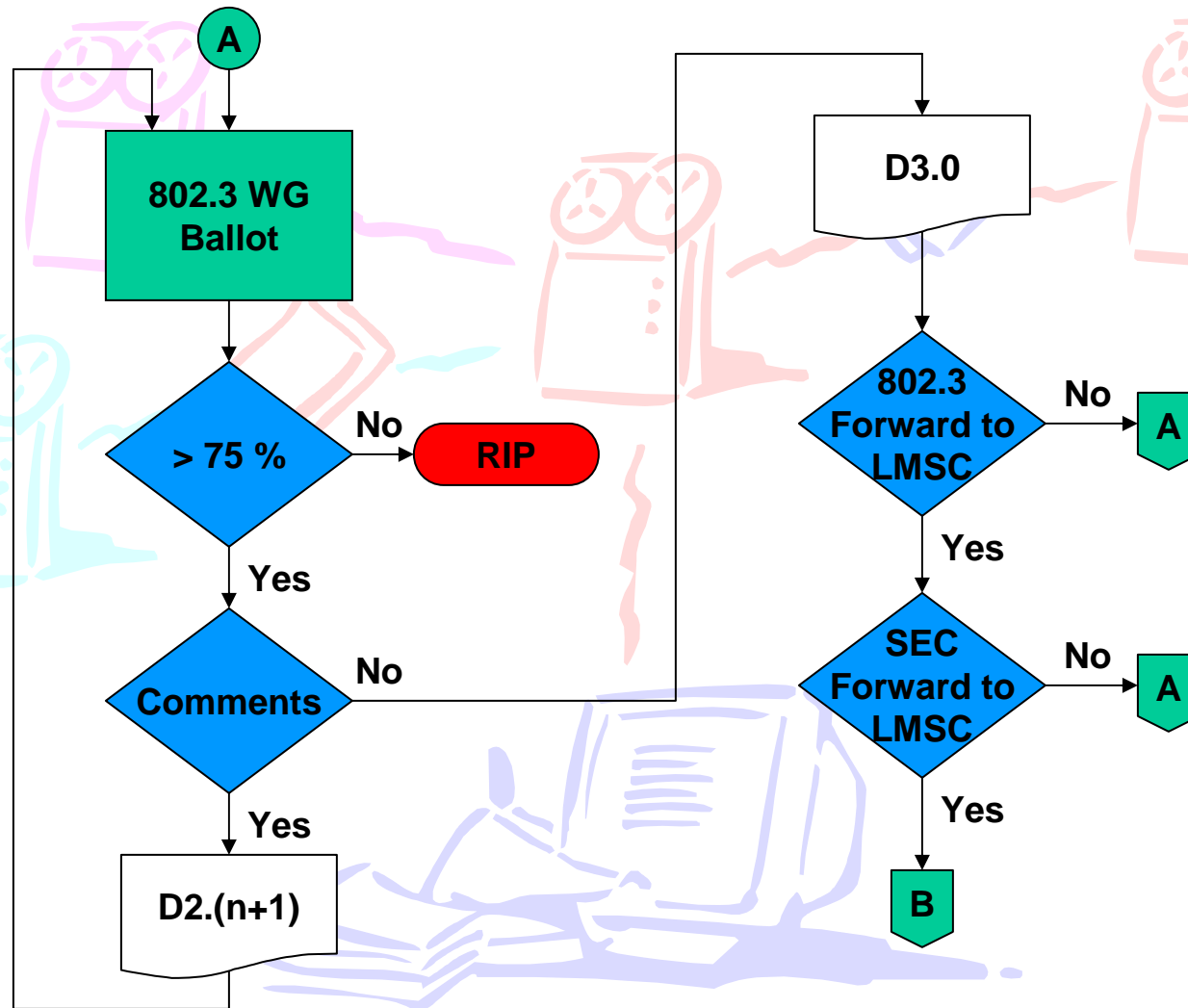
# IEEE Standards Process



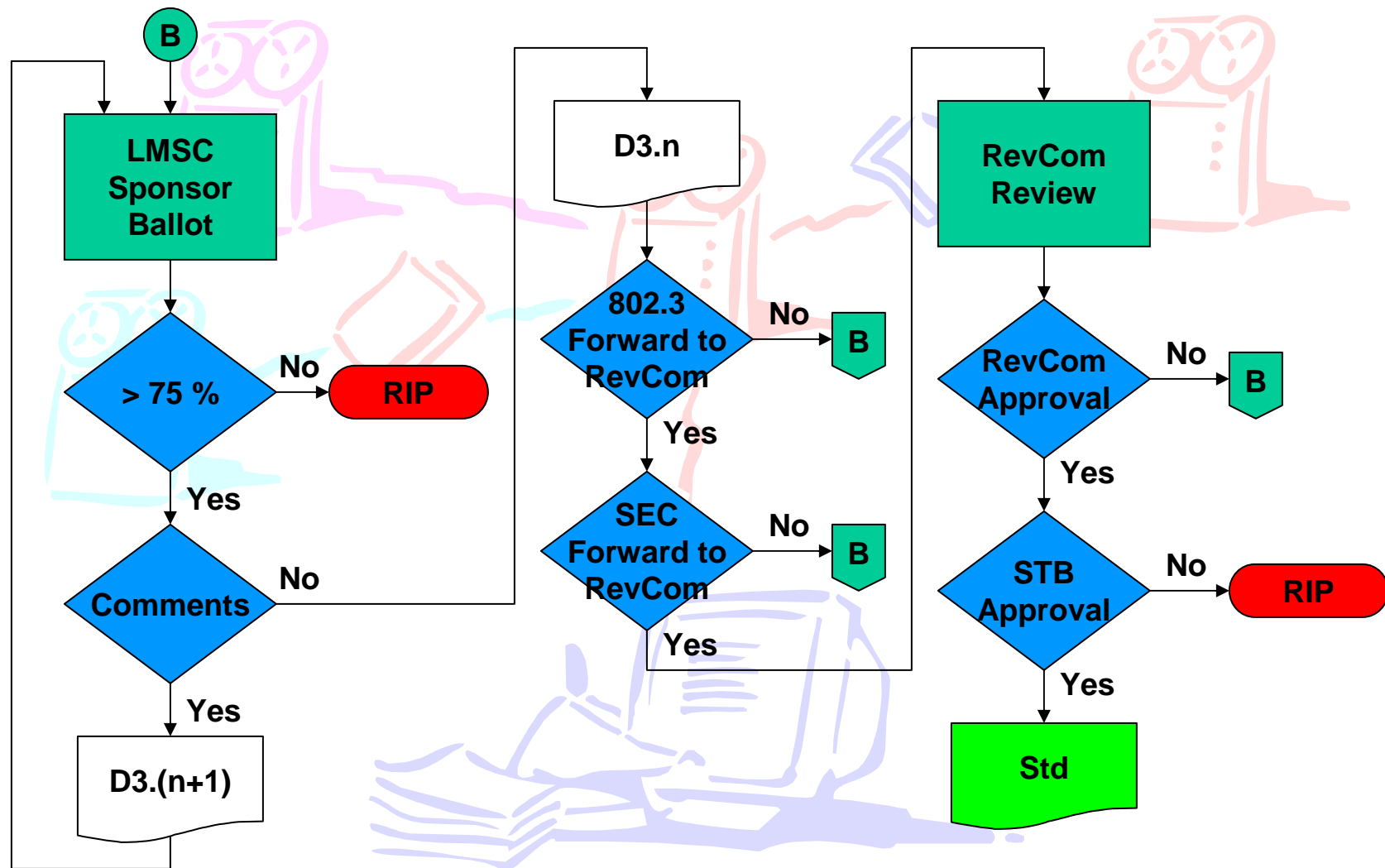
# IEEE Standards Process (cont.)



# IEEE Standards Process (cont.)



# IEEE Standards Process (cont.)



# Study Group

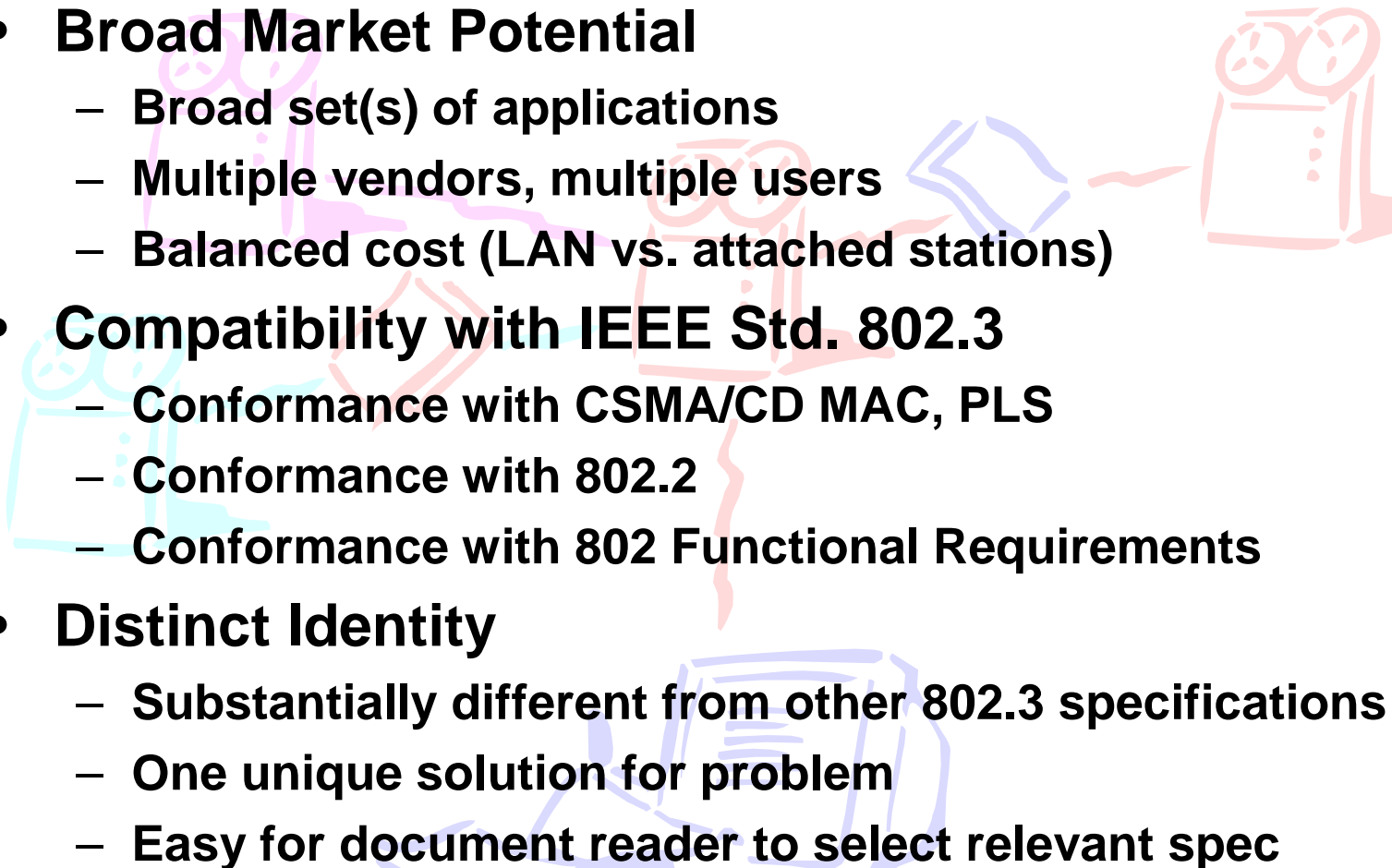
- **Function is to draft a PAR and 5 Criteria**
- **Gain approval at WG 802.3, 802 SEC, IEEE NesCom and IEEE Stds. Board**
- **SG only exists for 6 months**
  - Extensions can be requested... voted on by 802.3, ratified by SEC
- **Development of Objectives help set the goals for the Task Force**
  - Some are as simple as using the Ethernet frame format
  - Others, like reach and cabling, can be more complicated
- **Education and consensus**
  - Education helps build consensus
  - Consensus (> 75%) required to move forward

# PAR

- **Title**
  - What are we calling this
- **Scope**
  - The focus: Ethernet LANs
- **Purpose**
  - Why do we want to do this
- **Draft to be presented on Thursday**



# 5 Criteria

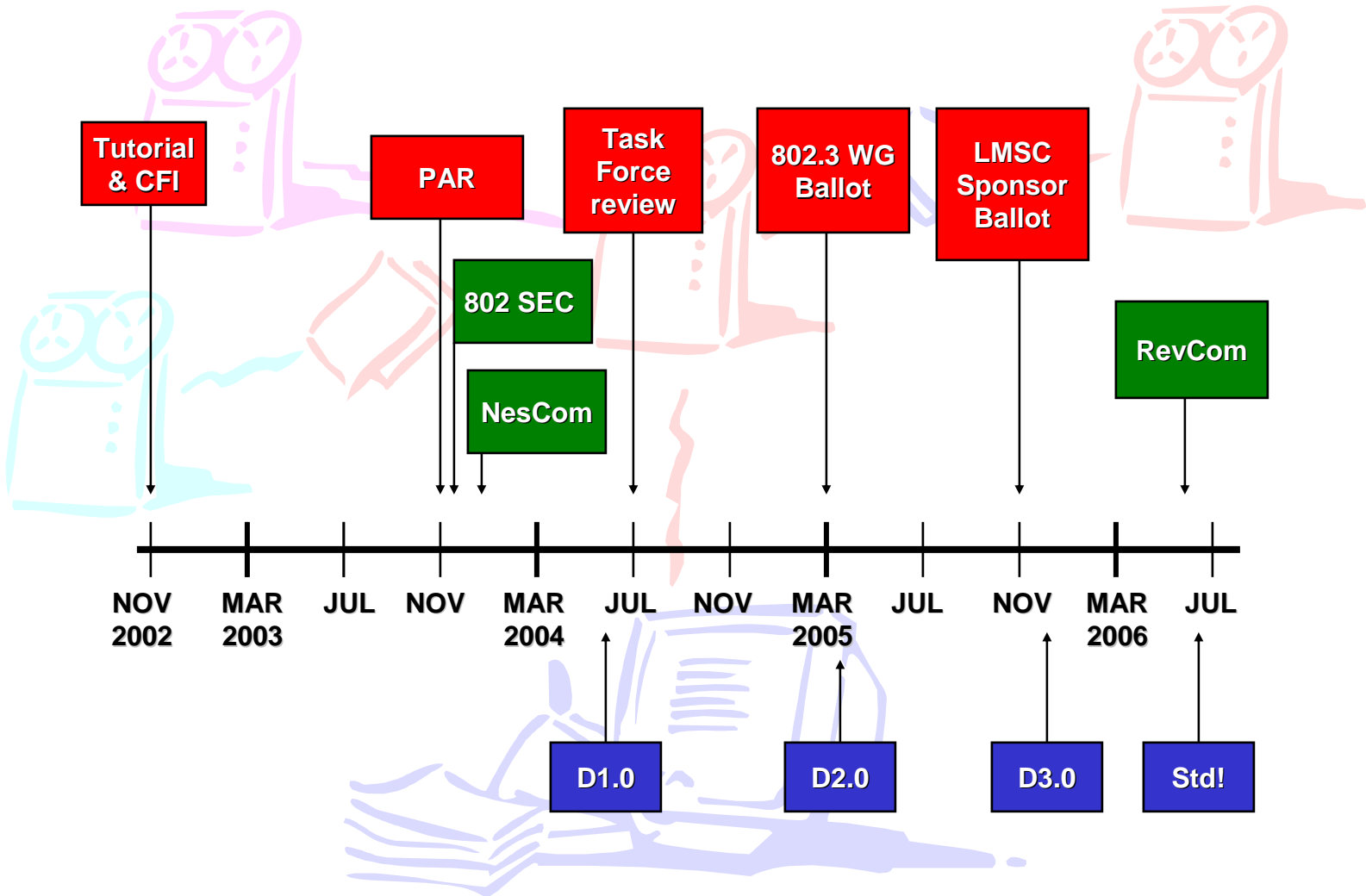
- **Broad Market Potential**
    - Broad set(s) of applications
    - Multiple vendors, multiple users
    - Balanced cost (LAN vs. attached stations)
  - **Compatibility with IEEE Std. 802.3**
    - Conformance with CSMA/CD MAC, PLS
    - Conformance with 802.2
    - Conformance with 802 Functional Requirements
  - **Distinct Identity**
    - Substantially different from other 802.3 specifications
    - One unique solution for problem
    - Easy for document reader to select relevant spec
- 

## 5 Criteria (cont.)

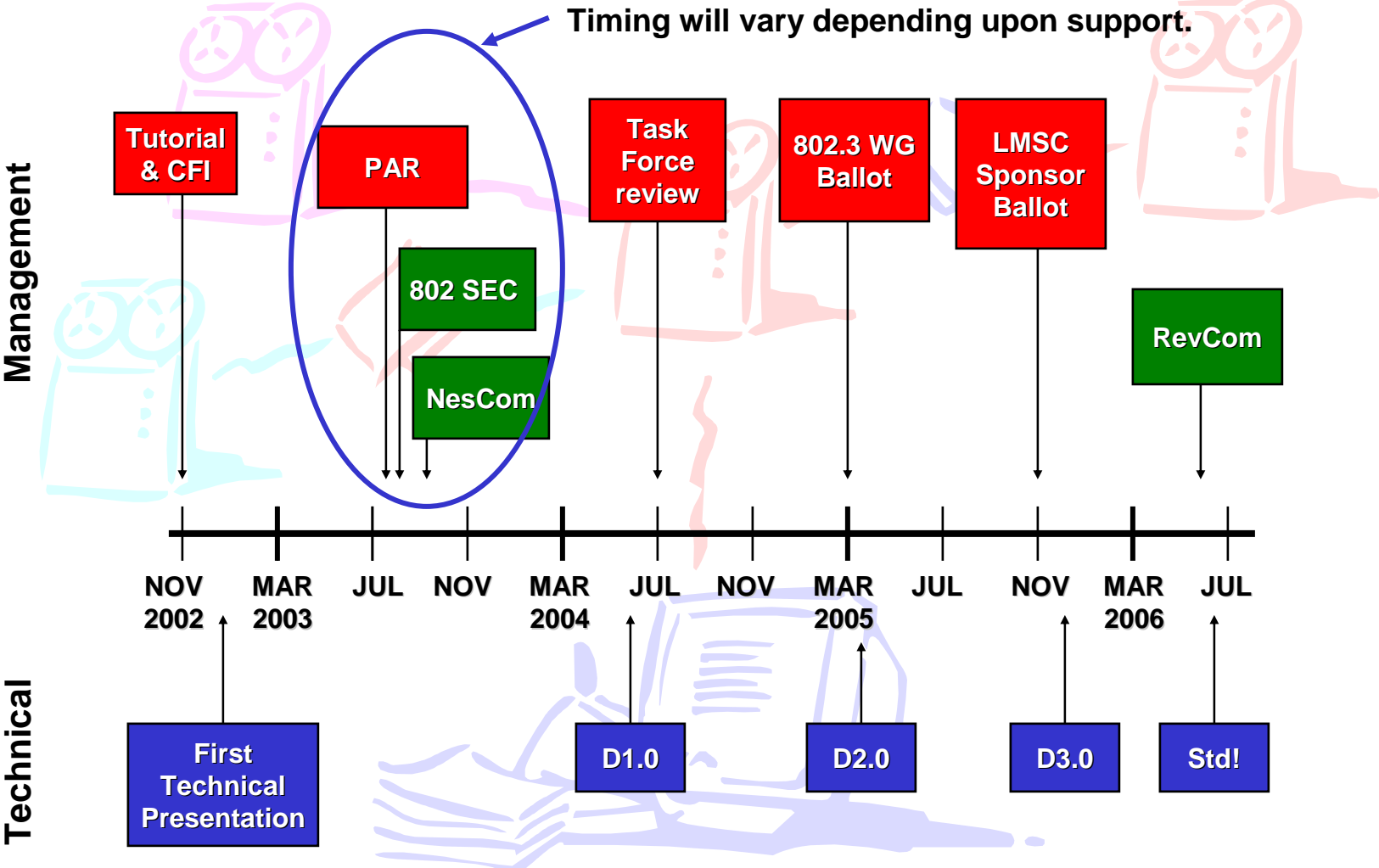
- **Technical Feasibility**
  - Demonstrated system feasibility
  - Proven technology, reasonable testing
  - Confidence in reliability
- **Economic Feasibility**
  - Cost factors known, reliable data
  - Reasonable cost for performance
  - Total installation costs considered



# 10GBASE-T Timeline #1



# 10GBASE-T Timeline #2



# Liaison Letter & Ad Hoc Reports

- **Liaison letter received from ISO/IEC JTC 1 / SG 25 / WG 3**
  - Urging the use of Class E (CAT6) or better cabling
  - Need to work on formulating a response
- **PHY Modeling Ad Hoc Report**
  - William Jones, SolarFlare
- **Cabling Ad Hoc Report**
  - Chris DiMinico, MC Communications
- **CENELEC Report**
  - Alan Flatman
- **Screened Category 6**
  - Alan Flatman

# Presentations

- **5 Criteria Comments, Brad Booth**
- **10GBASE-T Technical Feasibility, Brad Booth**
- **Technical Feasibility of 10GBE Over Copper: Measurements, Models and Capacity, Bijit Halder**
- **10GBASE-T: How much capacity is enough?, Ze'ev Roth**
- **10GBASE-T Channel Criteria, PJ Sallaway**
- **10GBASE-T Line Signaling, Joseph Babanezhad**
- **System SNR Budget Analysis for 10GBASE-T, Albert Vareljian**
- **Class D, E and F Channel Performance to 625 MHz, Randy Below**
- **Data Center Background Noise Measurements, Chris Pagnanelli**
- **Background Noise, Terry Cobb**
- **Alien Crosstalk Measurements and Performance in Conduit Configuration, Larry Cohen**
- **Alien Crosstalk Measurements and Performance Under Different Installation Practices, Chris Pagnanelli**
- **Alien Crosstalk Measurements and Performance in Screened Cat 5e Cable, Larry Cohen**
- **Performance of Ad Hoc Cat5e Models with Preliminary Cat5e Alien Model, Chris Pagnanelli**
- **Performance of Ad Hoc Cat6 Models with Experimental Avaya Alien Model, William Jones**

# Future Meetings

- **July 20-25, 2003:**
  - IEEE 802 Plenary
  - San Francisco, CA
  - Hyatt Regency



- **September, 2003:**
  - Portonovo, Italy
  - Interim meeting
  - Hosted by Aethra
  - Details to be disclosed later



# Motion Madness





# Motion #1

- **Move that:**

The following text be added to the Technical Feasibility:  
“As a proof of technical feasibility, the Task Force will provide a simulation-based working model of the link for all Task Force and Working Group members prior to the draft entering Working Group ballot.”

- **Moved: B. Booth**
- **Seconded: A. Flatman**
- **Technical (>75%)**
- **All: Y: 37 N: 0 A: 2 PASSES**
- **802.3: Y: 12 N: 0 A: 1 PASSES**

# Motion #2

- **Move that:**  
**The Study Group adopt the following objectives:**
  - Preserve the 802.3/Ethernet frame format at the MAC Client service interface
  - Meet 802 Function Requirements, with the possible exception of Hamming Distance
  - 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
- **Moved: S Muller**
- **Seconded: W Diab**
- **Technical (>75%)**
- **All: Y: 36 N: 0 A: 0 PASSES**
- **802.3: Y: 11 N: 0 A: 0 PASSES**

# Motion #3

- **Move that:**  
**The Study Group adopt the following objectives:**
  - **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 100 m over 4-connector structured 4-pair, twisted-pair copper cabling**
- **Moved: R Hays**
- **Seconded: A Flatman**
- **Technical (>75%)**
- **All: Y: 31 N: 1 A: 7 PASSES**
- **802.3: Y: 7 N: 2 A: 2 PASSES**

# Motion #4

- **Move that:**  
**The Study Group adopt the following objectives:**
  - To not support 802.3ah (EFM) OAM unidirectional operation
  - Support coexistence with 802.3af
- **Moved: S Muller**
- **Seconded: W Diab**
- **Technical (>75%)**
- **All: Y: 29 N: 0 A: 6 PASSES**
- **802.3: Y: 10 N: 0 A: 1 PASSES**

# Motion #5

- **Move that:**  
**The Study Group adopt the following objectives:**
  - **Support Clause 28 auto-negotiation**
- **Moved: S AbuGhazaleh**
- **Seconded: R Hays**
- **Technical (>75%)**
- **All: Y: 37 N: 0 A: 0 PASSES**
- **802.3: Y: 11 N: 0 A: 0 PASSES**

# Motion #6

- **Move that: The models used for all categories of cabling should be scaled to the specified channel equations for the respective categories up to their specified frequency limits as defined in ISO 11801-2002 for all parameters (including insertion loss).**
- **Moved: Luc Adriaenssens**
- **Second: Eric Lawrence**
- **Technical (>75%)**
- **All: Y: N: A:**
- **802.3: Y: N: A:**
- **Motion to Table to July Meeting. M: C. DiMinico S: S AbuGhazaleh**
- **Procedural (>50%)**
- **All: Y: 20 N: 12 A: 2 **PASSES****

# Adjourn

