

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

Dallas Fort Worth, TX

March 11, 2003

Brad Booth, Chair
Architect, Intel Communications Group

Agenda

- **Welcome and Introductions**
- **Select Recording Secretary**
- **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 (as per CFI)

- **10 Gigabit Ethernet over unshielded twisted pair (UTP) copper cabling to 100 m**
- **10 Gigabit Ethernet MAC and media independent interface as specified in IEEE 802.3ae™**
- **UTP copper cabling is assumed to be a 4 pair, Category 5 or better copper cable**

Goals for this Meeting

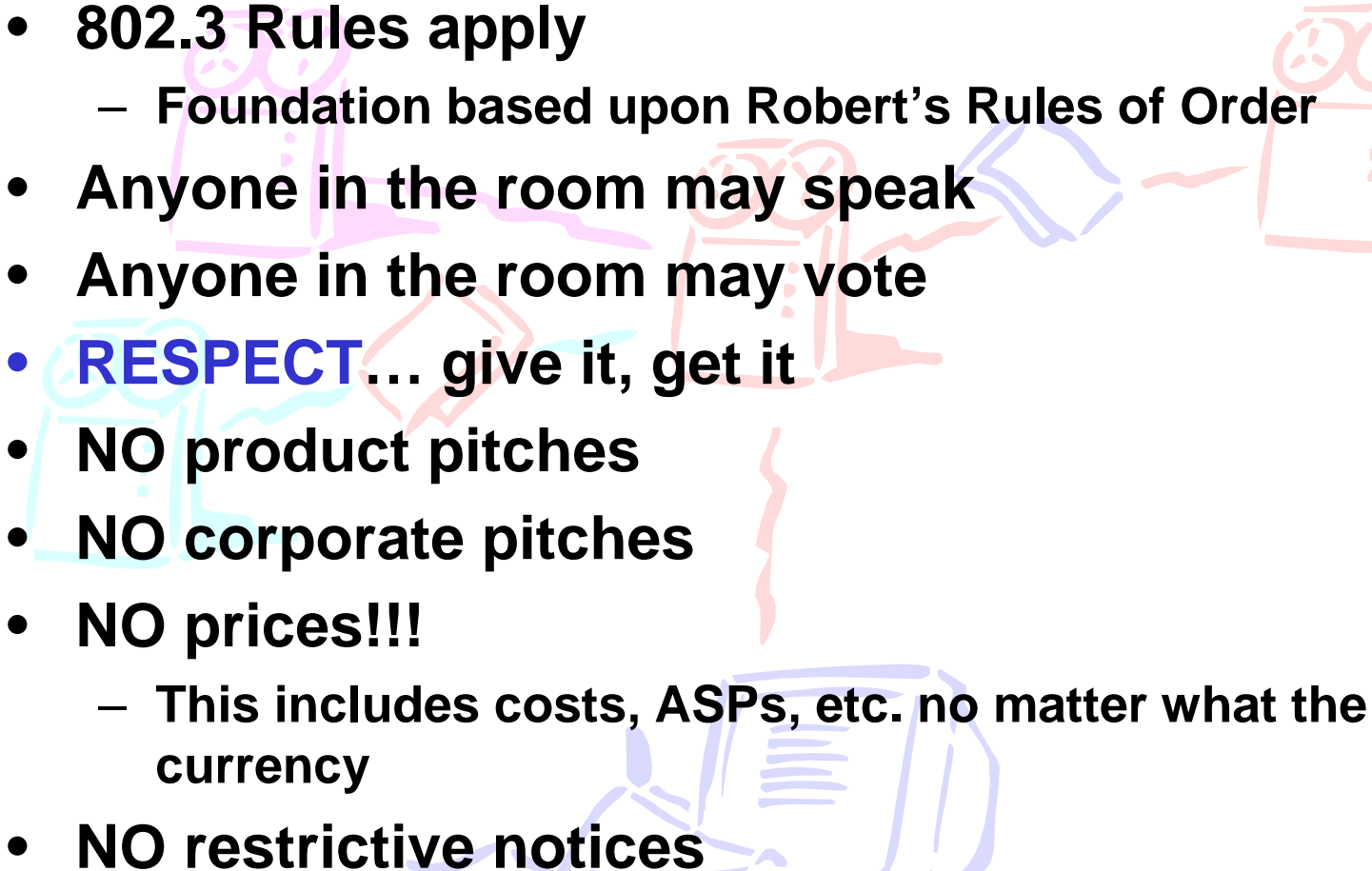
- **Hear presentations concerning:**
 - Need for 10GBASE-T project in IEEE 802.3
 - Justification in terms of the 5 criteria (aka the critters)
 - Goals and objectives for a project
- **Start developing consensus on:**
 - Project Approval Request (PAR)
 - 5 Criteria responses
 - 10GBASE-T Objectives

Reflector and Web

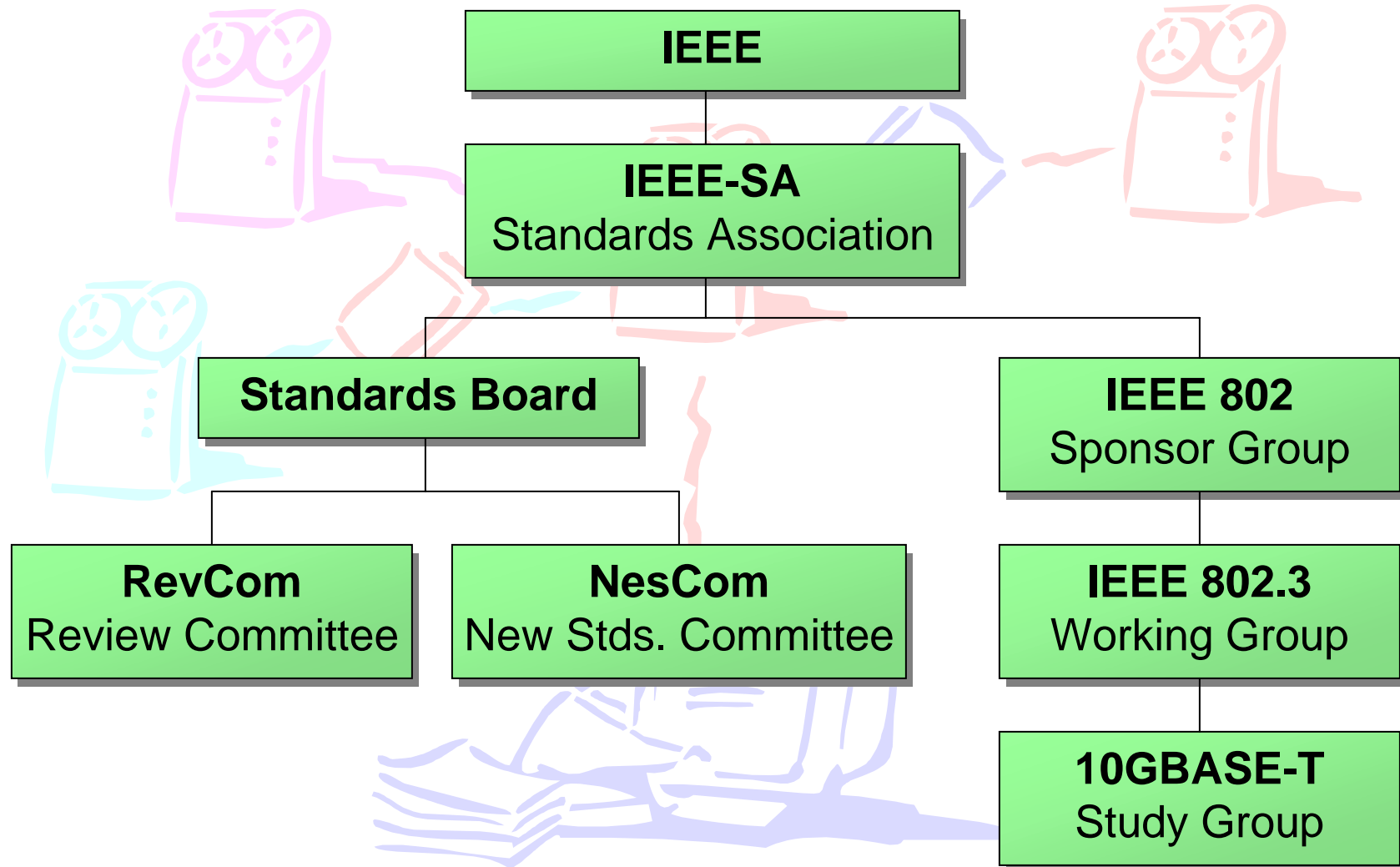
- To subscribe to any of the 10GBASE-T reflectors send an email to:
majordomo@ieee.org
with the following in the body of the message:
subscribe stds-802-3-10GBT <your email address>
subscribe stds-802-3-10GBT-Modeling <your email address>
subscribe stds-802-3-10GBT-Cabling <your email address>
- 10GBASE-T 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

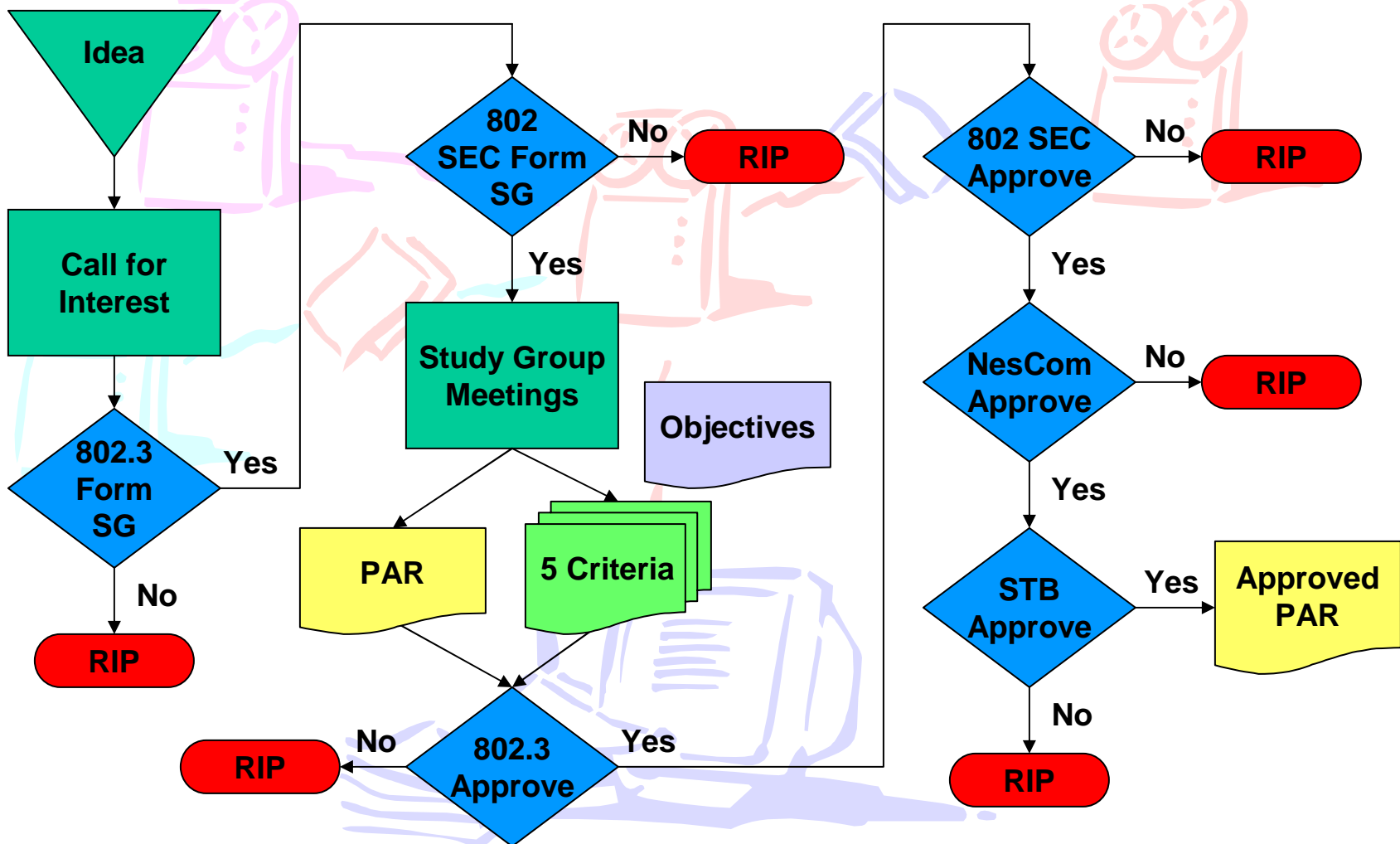
Inappropriate Topics for IEEE WG Meetings

- 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.

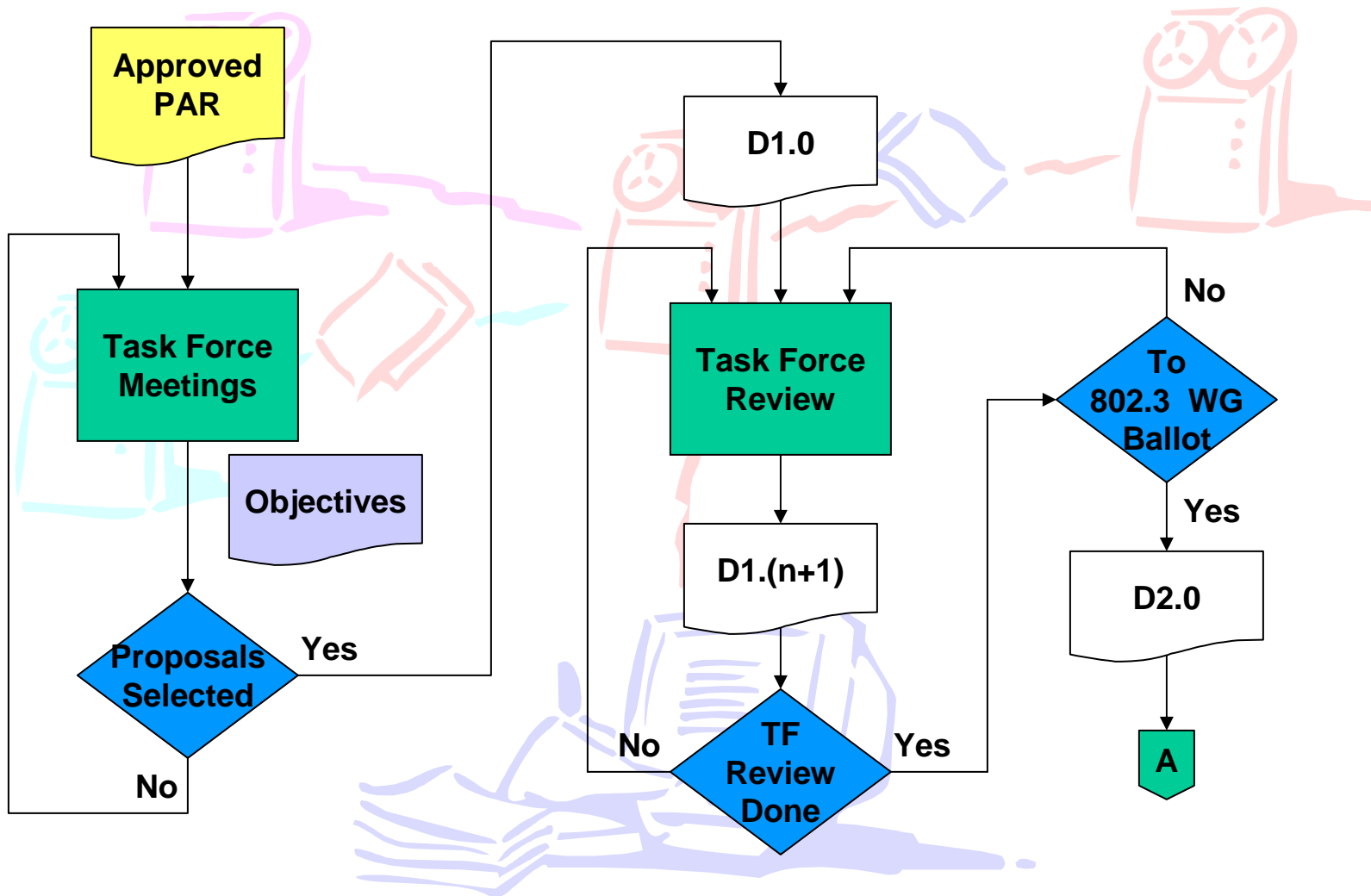
**If you have questions,
contact the IEEE Patent Committee Administrator
at patcom@ieee.org**

Approved by IEEE-SA Standards Board – December 2002

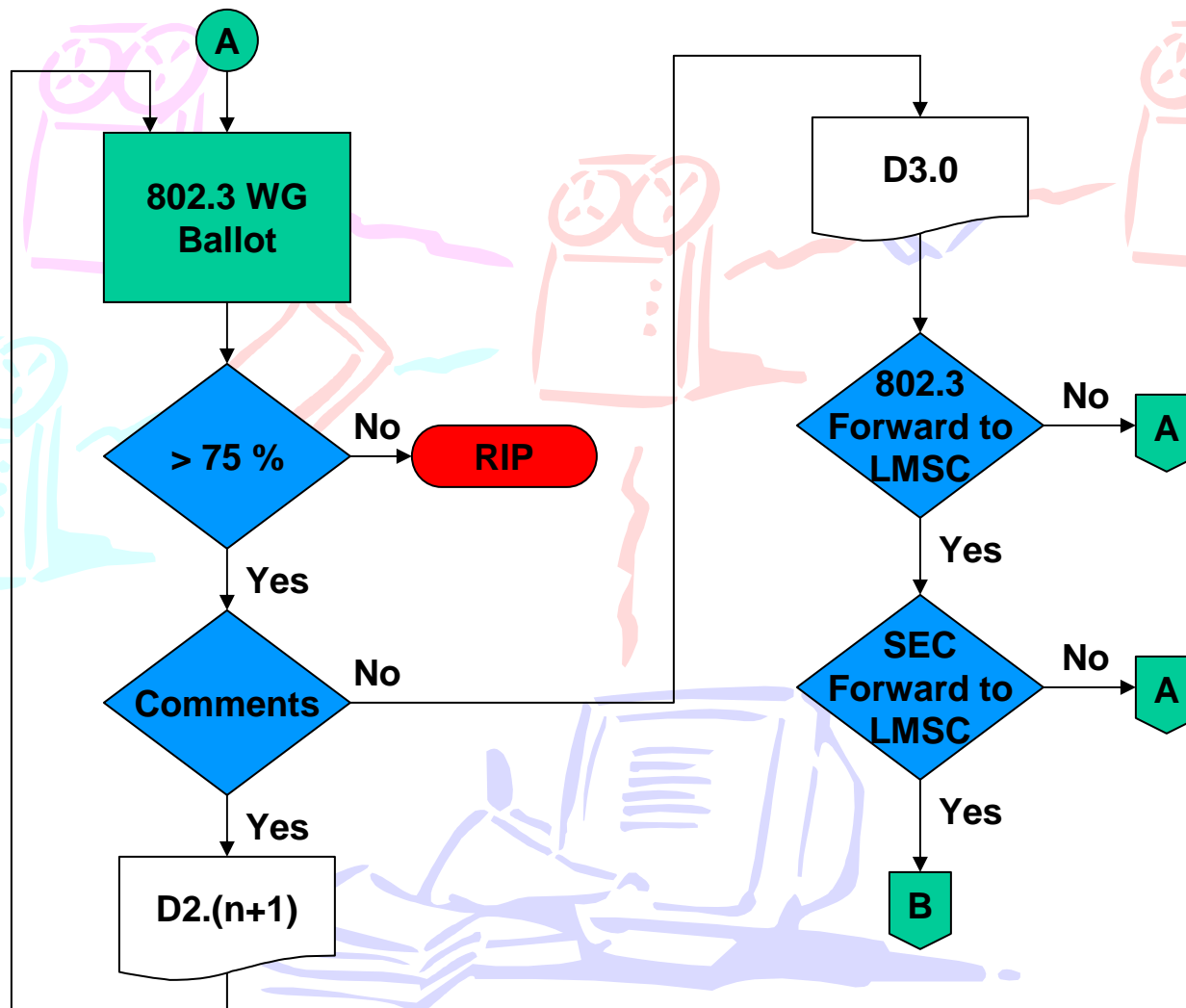
IEEE Standards Process



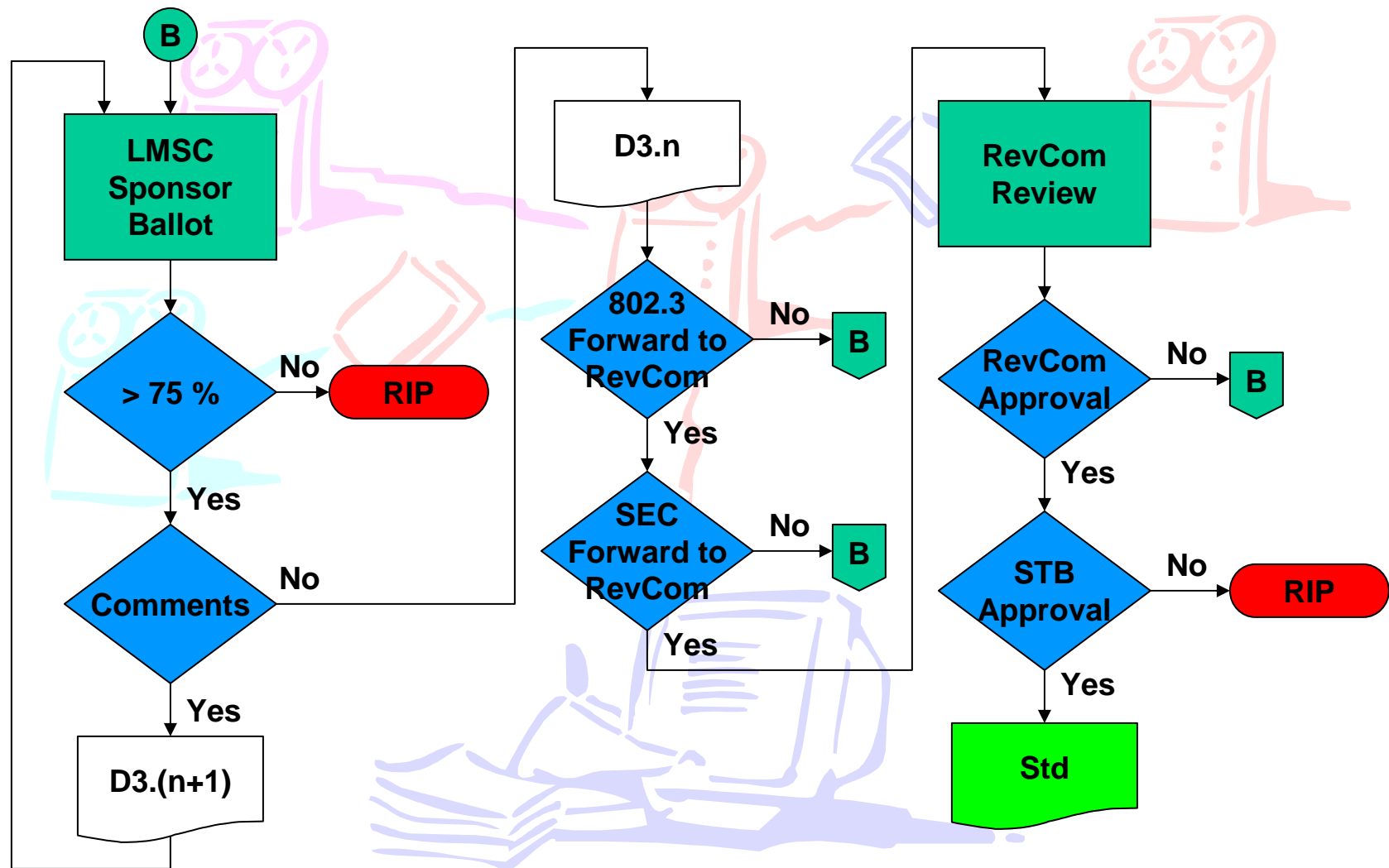
IEEE Standards Process (cont.)



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

Interim Meeting

- **January 9-10, 2003**
- **Vancouver, BC, Canada**
- **Hosted by IEEE 802**
- **Fairmont Hotel Vancouver**
- **80+ attendees**
- **17 presentations**
 - **Market requirements**
 - **Cabling**
 - **Alien crosstalk**
 - **Auto-negotiation**
 - **Line coding**

Results from Interim

- Addressed informal communication from IEC-46C-W7
- SG decided to co-locate in May with CX4 and not go to South Korea
- SG decided to co-locate in September with EFM in Italy
- Two ad hocs formed:
 - Cabling: led by Chris DiMinico, MC Communications
 - PHY Modeling: led by Bill Jones, SolarFlare
- Straw poll
 - Support for auto-negotiation in 10GBASE-T was unanimous

PAR

- **Title**
 - What are we calling this
- **Scope**
 - The focus: Ethernet LANs
- **Purpose**
 - Why do we want to do this
- **Drafted once we have consensus on what to standardize**

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



IEEE P802.3ae Objectives (Example)

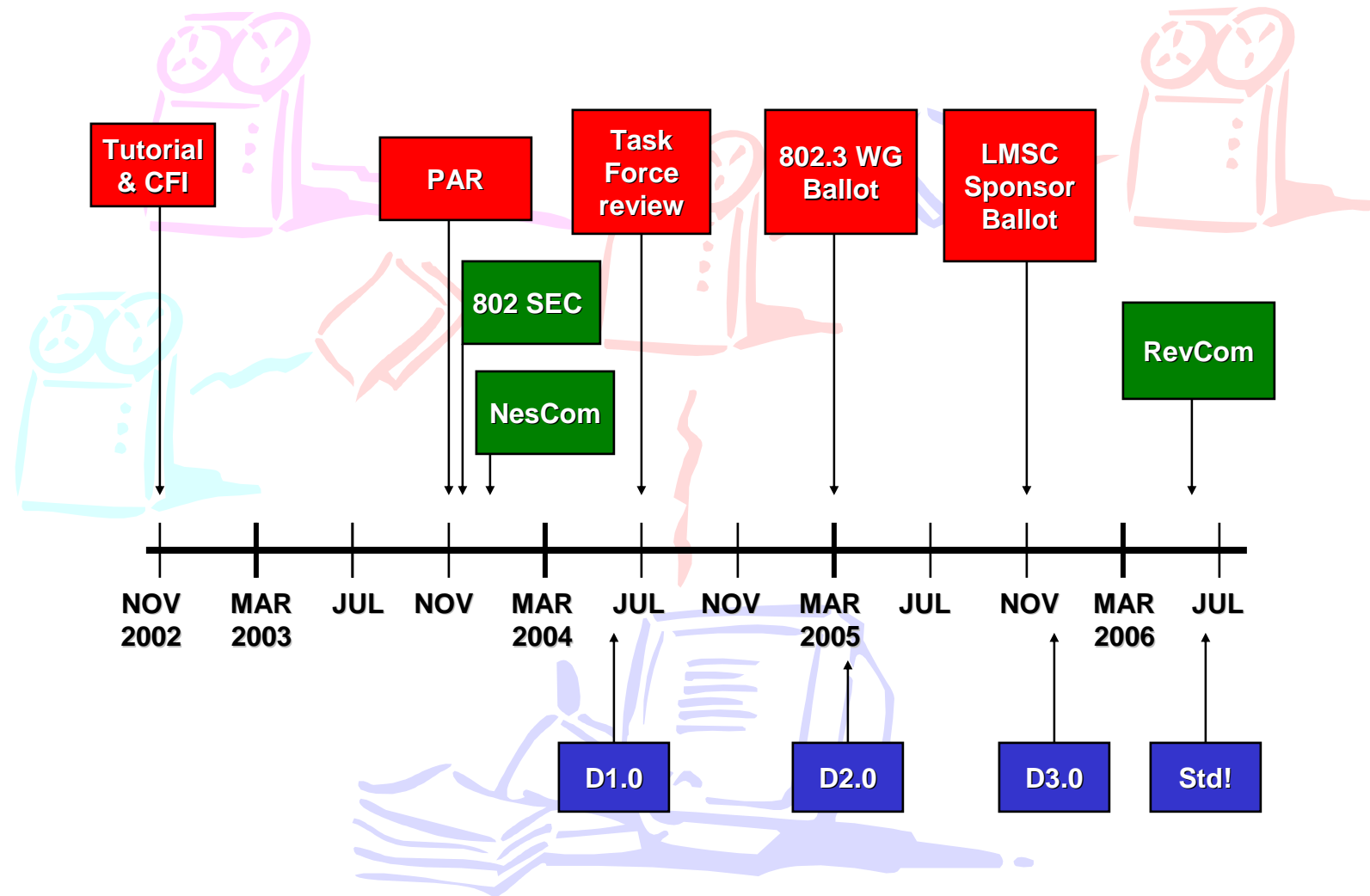
- **Preserve the 802.3/Ethernet frame format at the MAC Client service interface**
- **Meet 802 Function Requirements, with the possible exception of Hamming Distance**
- **Preserve min. and max. frame size of current 802.3 Std.**
- **Support full duplex operation only**
- **Support star-wired local area networks using point-to-point links and structured cabling topologies**
- **Specify an optional Media Independent Interface (MII)**
- **Support proposed Std. 802.3ad (Link Aggregation)**
- **Support a speed of 10.000 Gb/s at the MAC/PLS service interface**





IEEE P802.3ae Objectives (Example)

- **Support two families of PHYs:**
 - A LAN PHY, operating at a data rate of 10.000 Gb/s
 - A WAN PHY, operating at a data rate compatible with the payload rate of OC-192c/SDH VC-4-64c
- **Define a mechanism to adapt the data rate of the MAC/PLS service interface to the data rate of the WAN PHY**
- **Provide Physical Layer specifications which support link distances of:**
 - At least 300 m over installed MMF
 - At least 65 m over MMF
 - At least 2 km over SMF
 - At least 10 km over SMF
 - At least 40 km over SMF
- **Support fiber media selected from the second edition of ISO/IEC 11801 (802.3 to work with SC25/WG3 to develop appropriate specifications for any new fiber media)**

10GBASE-T Possible Timeline



Plan for the Week (cont.)

	MON	TUE	WED	THU	FRI
08:00	SEC		Cabling Ad Hoc		
08:30		10GBT Opening		10GBT Closing & Motion Madness	
09:00		10GBT Presentations			
09:30					
10:00					
10:30	Break	10GBT Presentations	Lunch		
11:00	802 Plenary			Lunch	
11:30					
12:00	Lunch	Lunch	Lunch		
13:00	802.3 Plenary	10GBT Presentations	Lunch	802.3 Plenary	SEC
13:30					
14:00					
14:30					
15:00					
15:30					
16:00					
16:30					
17:00					
17:30					
18:00	Dinner	Dinner	Time Off		
18:30	Tutorial #1a		Social Reception		
19:30	Tutorial #1b				
20:30	Tutorial #1c				
21:00		Tutorial #3			
21:30					

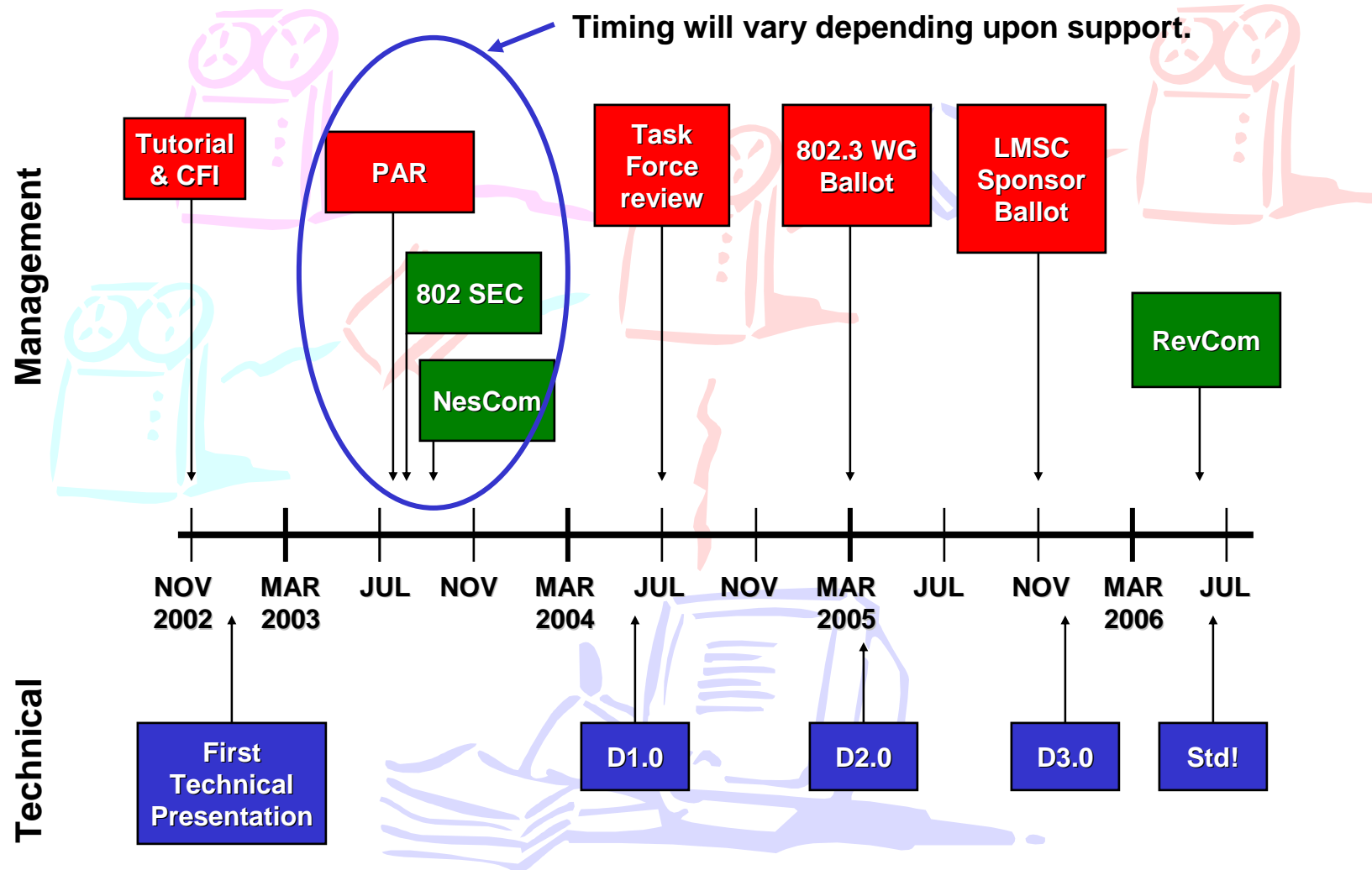
Liaison Letter & Ad Hoc Reports

- **Liaison letter received from ISO/IEC JTC 1 / SG 25 / WG 3**
 - Urging the use of Class E (CAT6) or better cabling
- **PHY Modeling Ad Hoc Report**
 - William Jones, SolarFlare
- **Cabling Ad Hoc Report**
 - Chris DiMinico, MC Communications

Presentations

- **Dinh Thuyen; 10GBASE-T Transformer Model**
- **Joseph Babanezhad; 10GBASE-T Line Signaling**
- **William Jones; A Survey of Commercially Available ADC Technology**
- **Joseph Babanezhad; ADC Jitter**
- **Scott Powell; EMI, Channel Characteristics and Alien Crosstalk Results**
- **Trent Hayes; Evaluation of Alien Crosstalk in CAT5e and CAT6 Installations**
- **PJ Sallaway; Feasibility Study of 10GBASE-T on Cat-5e/-6 Cabling**
- **Larry Cohen; Cabling Ad Hoc CAT5e Measurements**
- **Larry Cohen; Alien Crosstalk Measurements**
- **Alan Flatman; Copper Cabling Market Update**
- **Terry Cobb; Cabling Choice**
- **George Eisler; 10GBASE-T PAR 5 Criteria Draft**
- **Paul Vanderlaan; Alien Crosstalk and Network Performance**
- **Terry Cobb; Experimental Cat6 Cable**

10GBASE-T Timeline Update



Future Interim Meetings

- **May 21-22, 2003:**
 - Sheraton Harborside Hotel, Portsmouth, NH
 - Hosted by MC Communications
 - 10GBT: 20 (+5-10)



- **September, 2003:**
 - Portonovo, Italy
 - Hosted by Aethra
 - Details to be disclosed later
 - 18 (+5)



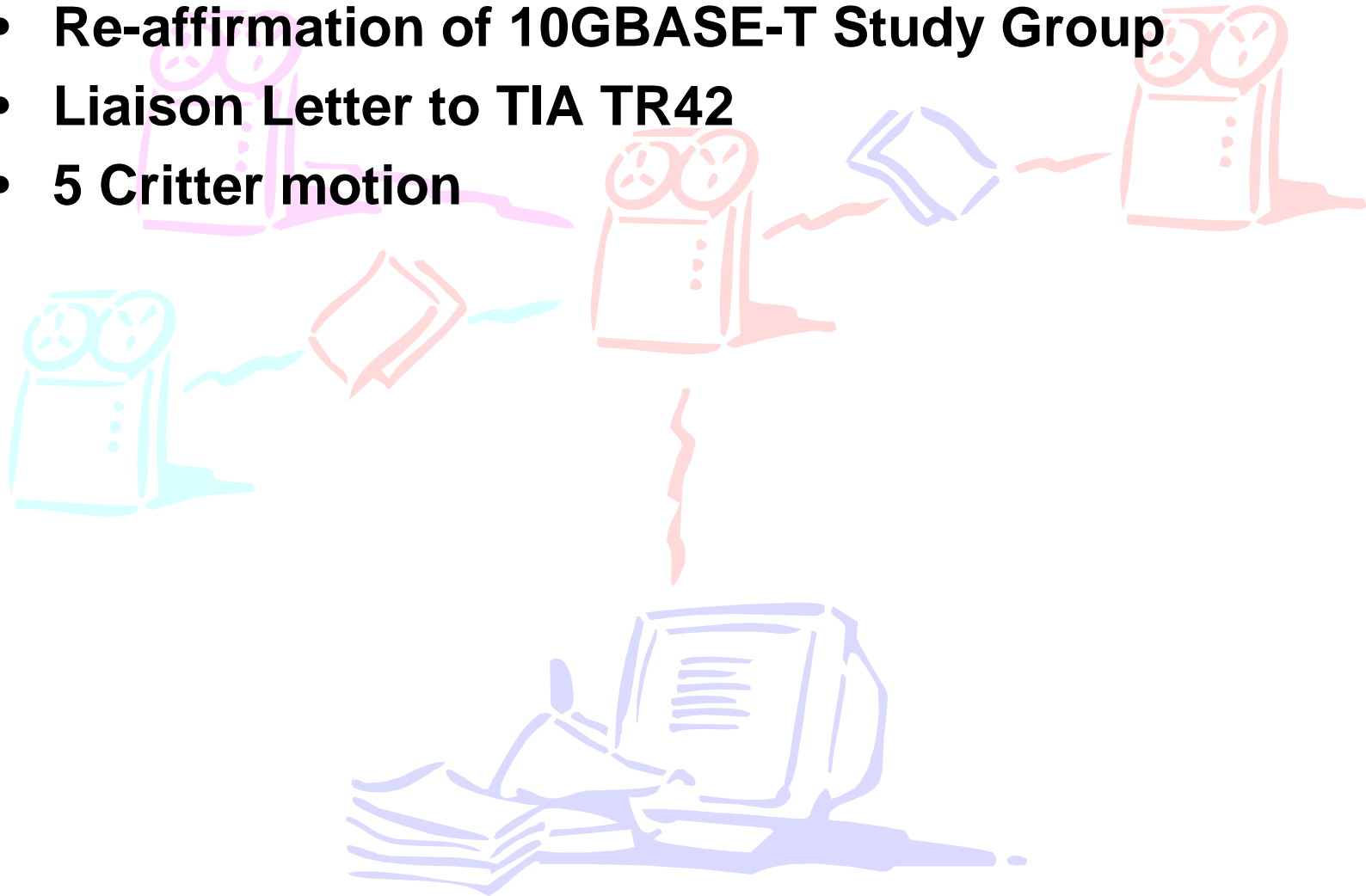
Future Plenary Meetings

- **July 20-25, 2003:**
 - San Francisco, CA
 - Hyatt Regency
- **November 9-14, 2003:**
 - Albuquerque, NM
 - Hyatt Regency
 - Limited rooms!!



Motion Madness

- Re-affirmation of 10GBASE-T Study Group
- Liaison Letter to TIA TR42
- 5 Critter motion



Motion #1

- **Move that:**
The 10GBASE-T Study Group requests that 802.3 take the appropriate steps to secure the extension of the Study Group's existence to encompass the 802 Plenary meeting of November 2003.
- **Moved: G. Eisler**
- **Seconded: A. Flatman**
- **Technical (>75%)**
- **All: Y: 33 N: 0 A: 0 PASSES**
- **802.3: Y: 10 N: 0 A: 0 PASSES**

Motion #2

- **Move that:**
The 10GBASE-T Study Group adopt as a baseline for the 5 Criteria presentation eisler_2_0303.pdf.
- **Moved: G. Eisler**
- **Seconded: G. Zimmerman**
- **Technical (>75%)**
- **All: Y: 41 N: 0 A: 0**
- **802.3: Y: 10 N: 0 A: 0**



Motion #3

- **Move that:**
The 10GBASE-T Study Group Chair requests that the 802.3 Chair forward the following liaison request (properly formatted) to TIA TR42.

The 802.3 working group of the IEEE LAN-MAN Standards Committee has initiated a study group to investigate 10 Gigabit Ethernet operation on 4-pair 100 ohm Class D or better copper cabling as specified in ISO/IEC 11801 2nd edition. The investigation includes characterization of the Class D or better channel performance extending beyond the frequencies currently specified in ISO/IEC 11801 2nd Edition. The initial range of interest for frequency characterization is: $1 \text{ MHz} \leq f \leq 625 \text{ MHz}$. In addition, the study group is investigating alien crosstalk impairments. The study group would appreciate the assistance of TR42 in this effort. The information provided will be utilized in simulation modeling to validate the technical feasibility.

- **Moved: P. Thaler**
- **Seconded: J. Babanezhad**
- **Technical (>75%)**
- **All: Y: 36 N: 0 A: 2**
- **802.3: Y: 9 N: 0 A: 1**

Adjourn

