Higher Speed Ethernet Update

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Peering BOF XIV

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Per IEEE-SA Standards Board Operations Manual, January 2005

At lectures, symposia, seminars, or educational courses, an individual presenting information on IEEE standards shall make it clear that his or her views should be considered the personal views of that individual rather than the formal position, explanation, or interpretation of the IEEE.
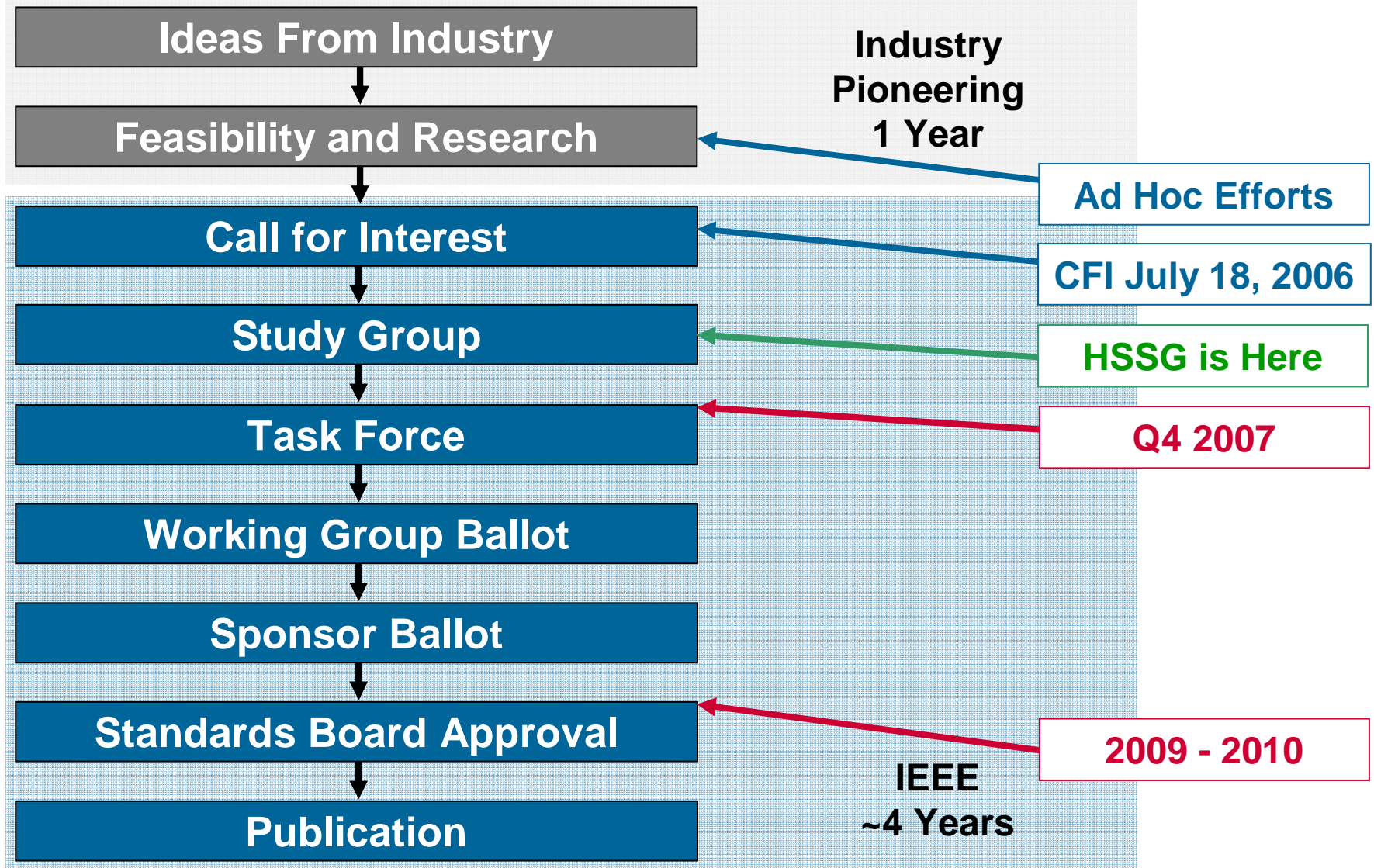
Higher Speed Ethernet - Technology Pull, Not Push

- **End users from many different markets are asking for 100 GbE today**
  - IXs
  - ISPs
  - Content
  - R&E and HPCC

- **Already getting media attention and mention by C-level execs**

- **Participation in the HSSG by end users has never been this high**
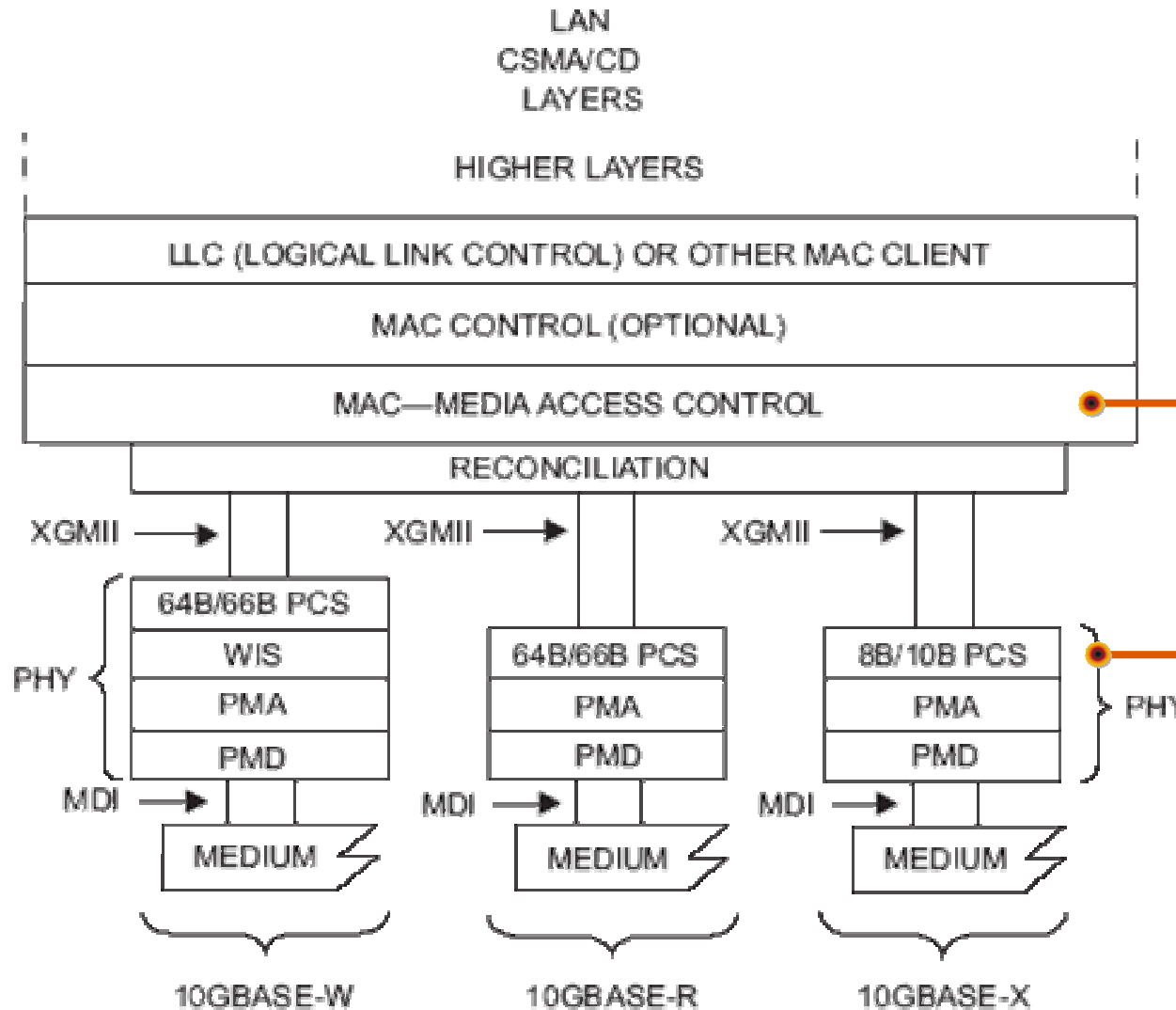 - Thanks for your support…

Higher Speeds Drive Density (or, Why Should I Care?)

- **100 GbE will benefit everyone**
  - Even if you don't need it
  - Requires a fundamental advance in technology

- **Drives 10 GbE port density up and cost down**

- **Possible line-rate combinations**
  - 1 x 100 GbE port
  - 10 x 10 GbE ports
  - 100 x 1 GbE ports
  - And even more oversubscribed port density…

- **Your bandwidth requirements and port densities are growing, not shrinking**

Birth of an IEEE Standard:
It Takes About 5 Years

Ideas From Industry	**Industry Pioneering 1 Year**
↓	
Feasibility and Research	←

Ad Hoc Efforts

Call for Interest	←

CFI July 18, 2006

Study Group	←

HSSG is Here

Task Force	←

Q4 2007

Working Group Ballot

Sponsor Ballot

Standards Board Approval ←

2009 - 2010

IEEE ~4 Years

Publication

HSSG Focus

LAN
CSMA/CD
LAYERS

HIGHER LAYERS

LLC (LOGICAL LINK CONTROL) OR OTHER MAC CLIENT

MAC CONTROL (OPTIONAL)

MAC—MEDIA ACCESS CONTROL

RECONCILIATION

XGMII →   XGMII →   XGMII →

PHY { 64B/66B PCS
       WIS
       PMA
       PMD

       64B/66B PCS
       PMA
       PMD

       8B/10B PCS
       PMA   } PHY
       PMD

MDI →   MDI →   MDI →

MEDIUM   MEDIUM   MEDIUM

10GBASE-W   10GBASE-R   10GBASE-X

MAC data rate objective and architectural issues

PHY objectives

- Types
- Reaches

MDI - Medium Dependant Interface
PCS - Physical Coding Sublayer
PHY - Physical Layer Device
PMA - Physical Medium Attachment
PMD - Physical Medium Dependent
WIS - WAN Interface Sublayer
XGMII - 10 Gigabit Media Independent Interface

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Summary of Adopted Objectives (Requires 75% Approval)

Objective	Votes (Yes / No / Abstain)
Nov 16, 2006 Interim	
Support full-duplex operation only	All 73 / 0 / 4
Preserve the 802.3 / Ethernet frame format at the MAC Client service interface	All 76 / 0 / 6
Preserve minimum and maximum FrameSize of current 802.3 Std	All 74 / 0 / 4
Support a speed of 100 Gb/s at the MAC/PLS interface	All 67 / 9 / 14 802.3 26 / 6 / 11
Support at least 10km on SMF	All 86 / 0 / 4 802.3 40 / 0 / 4
Support at least 100 meters on OM3 MMF	All 61 / 3 / 27 802.3 33 / 2 / 13
Jan 19, 2007 Interim	
Support a BER better than or equal to 10^{-12} at the MAC/PLS service interface	All 68 / 0 / 4
Support at least 40km on SMF	All 38 / 10 / 32 802.3 12 / 6 / 16

All: All people in the room, 802.3: Registered 802.3 voters

Next Step: Becoming a Task Force

- The HSSG must answer the 5 Criteria
    - Broad Market Potential
    - Compatibility
    - Distinct Identity
    - Technical Feasibility
    - Economic Feasibility

- The tough one – "Broad Market Potential"
    - Questions per IEEE 802
        - Broad sets of applications
        - Multiple vendors and numerous users
        - Balanced cost (LAN versus attached stations)
    - Issues
        - Desktop success (volumes much less than GbE)
        - 10 GbE volumes haven't met projections
    - Your input is needed here…!

IEEE 802.3 HSSG
Reflector and Web Page

- To subscribe to the HSSG reflector, send mail to:

  ListServ@ieee.org

  with the following in the body of the message:

  > subscribe stds-802-3-hssg <your first name> <your last name>

  > end

- HSSG web page URL:

  http://grouper.ieee.org/groups/802/3/hssg/index.html

Future HSSG Meetings

- **IEEE 802 Plenary**

  http://www.ieee802.org/meeting/future_meetings.html
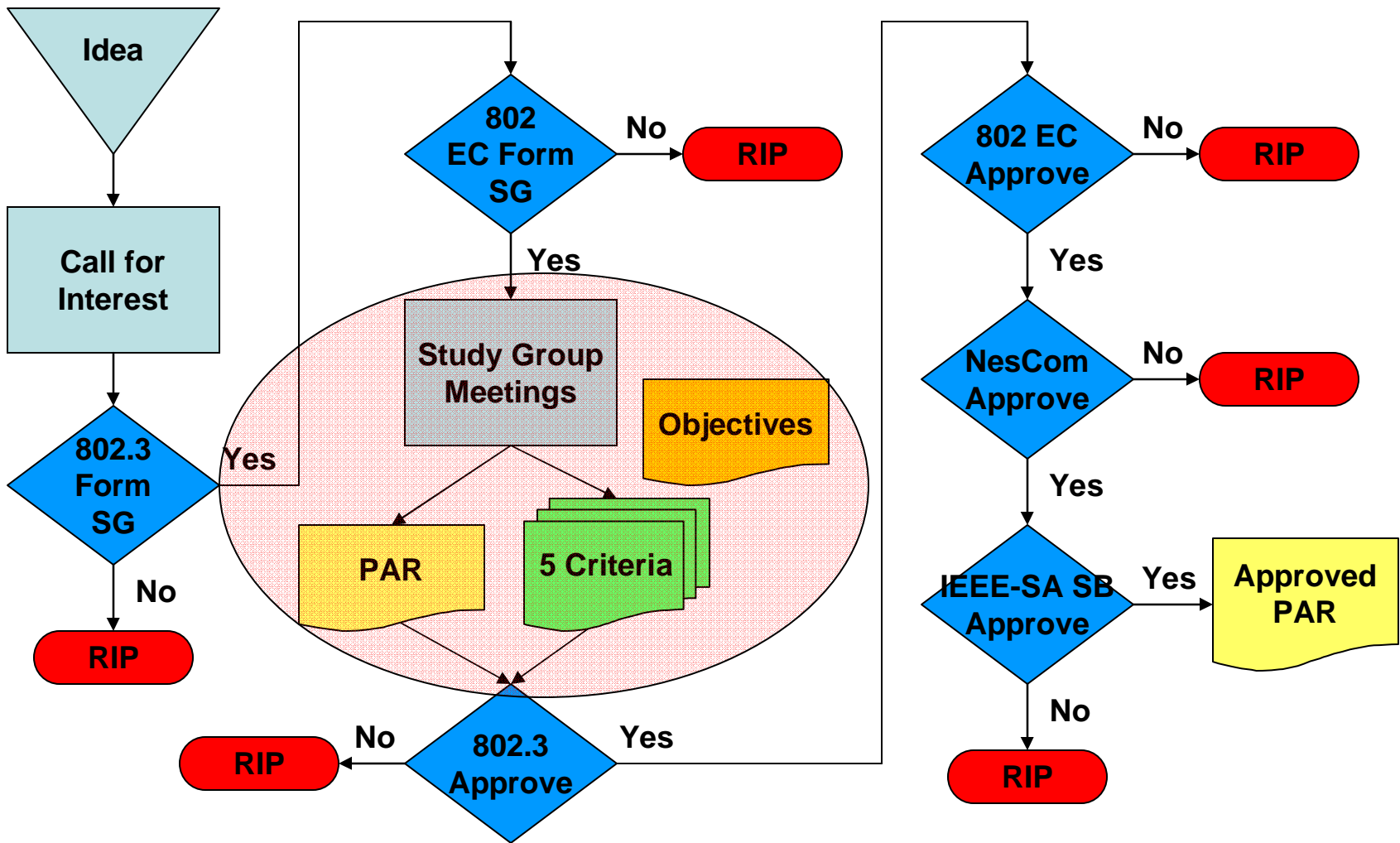
  - March 11 – 16, 2007

    Orlando, FL, USA

- **IEEE 802.3 Interims**

  http://grouper.ieee.org/groups/802/3/interims/index.html

  - April 17 – 19 or April 24 - 26, 2007

    Ottawa, Canada

  - May 28 – 31, 2007

    Geneva, Switzerland

Thank You

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IEEE Standards Process (1/4)

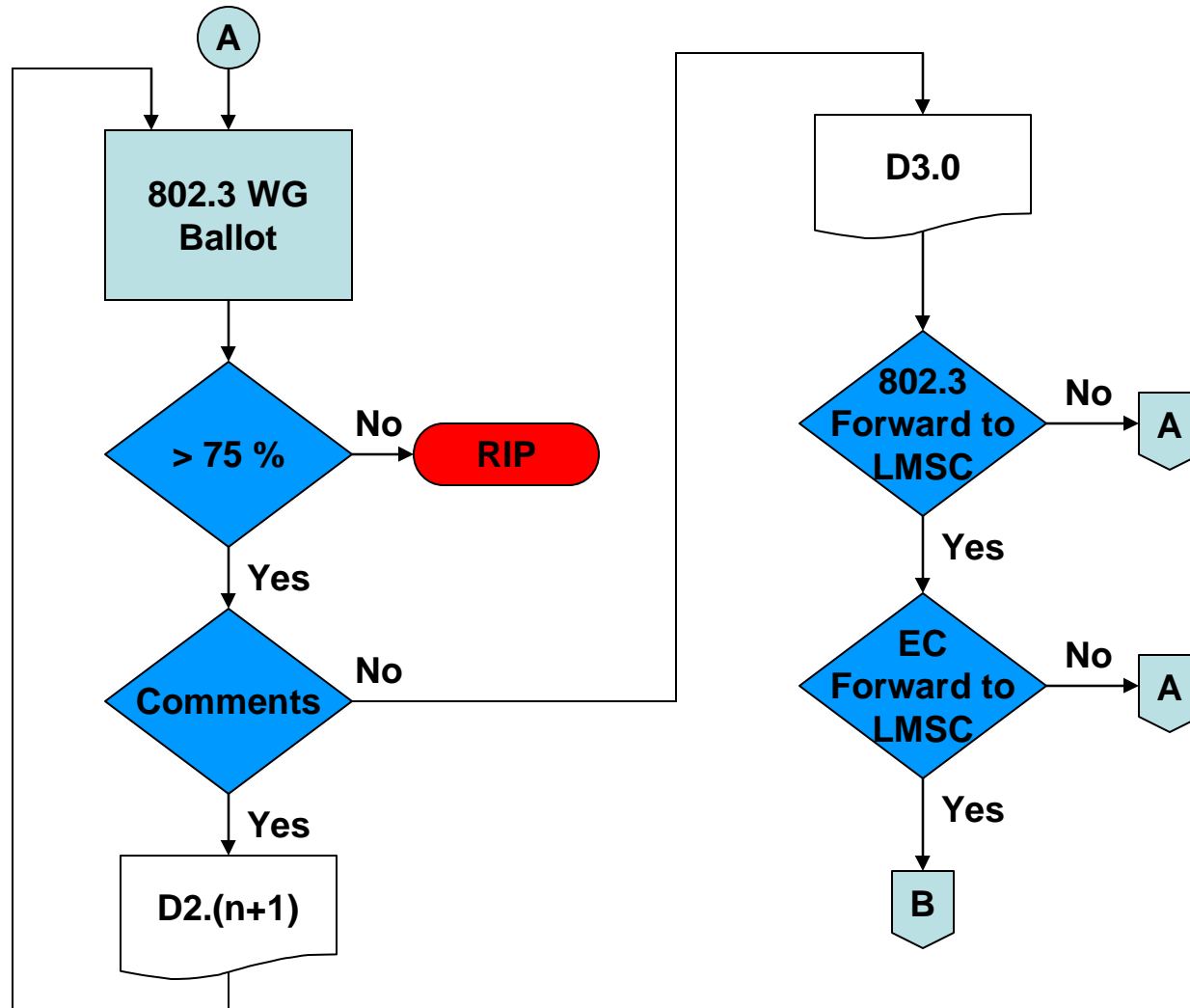# IEEE Standards Process (2/4)
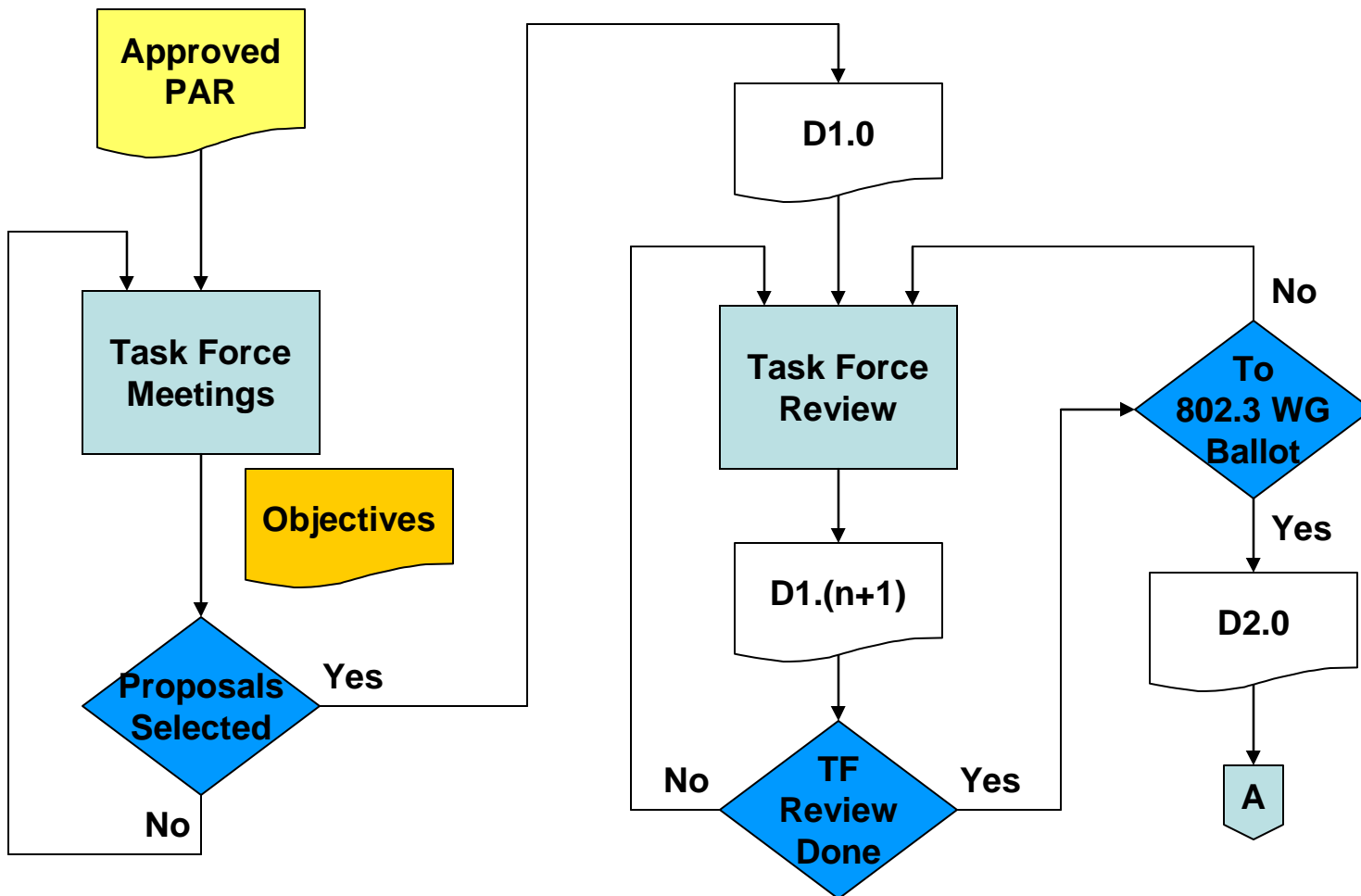
IEEE Standards Process (3/4)

IEEE Standards Process (4/4)