IEEE 802.3az
Energy Efficient Ethernet

Open Questions for the Task Force

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Time to shift our focus

- Our job is to work on writing the standard for energy efficient Ethernet
  - The first milestone will be to complete draft 1.0 of the specification
  - If we can accomplish this coming out of the March 2008 meeting, we will be on track for completion of the standard in November 2009
    - This would coincide with completion of the current Energy Star specification for energy savings on computers
  - As much as I would like to see us finish in November, 2009
    - The most import thing is to produce a good standard

IEEE 802.3az Objectives

- Define a mechanism to reduce power consumption during periods of low link utilization for the following PHYs
  - –100BASE-TX (Full Duplex)
  - –1000BASE-T (Full Duplex)
  - –10GBASE-T
  - –10GBASE-KR
  - –10GBASE-KX4
- Define a protocol to coordinate transitions to or from a lower level of power consumption
- The link status should not change as a result of the transition

IEEE 802.3az Objectives

- No frames in transit shall be dropped or corrupted during the transition to and from the lower level of power consumption
- The transition time to and from the lower level of power consumption should be transparent to upper layer protocols and applications
- Define a 10 megabit PHY with a reduced transmit amplitude requirement such that it shall be fully interoperable with legacy 10BASE-T PHYsover 100 m of Class D (Category 5) or better cabling to enable reduced power implementations.
- Any new twisted-pair and/or backplane PHY for EEE shall include legacy compatible auto negotiation

Questions

- What is the maximum transition time?
- What are the alternatives to frame-based communication to cause speed changes?
- How do we achieve transparency with upper layers?
- How will a EEE PHY communicate with the control policy and visa versa?
- How much energy will be used by a "fast start" PHY?
- How much energy will be used by a "subset" PHY?
- What metrics should we use to measure energy use?

Questions

- What will the designation be for EEE capable PHYs?
  - append an E?
    - e.g. 10BASE-TE, 100BASE-TE, 1000BASE-TE, 10GBASE-TE, 10GBASE-KRE, 10GBASE-KX4E

Clauses we need to work on

- 1 – Introduction
- 5 - Layer Management
- 14 - 10BASE-T
  - Annex A (possibly if we need to add references for metrics, etc.)
  - Annex B (should we do something like this) ?

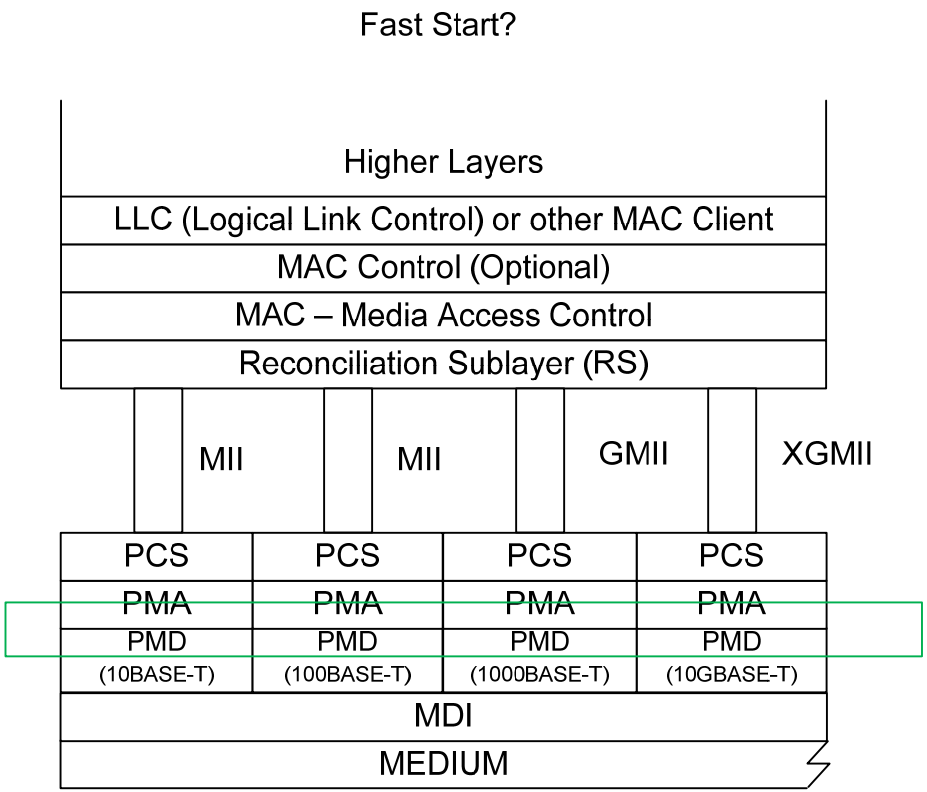
Clauses we need to work on

- 28 – Auto-negotiation
  - Annex 28A ?
  - Annex 28B (Technology Ability) ?
  - Annex 28C (define new message code, PHY ID, etc)
  - Annex 28D (define new extensions) ?
- 30 - Management
  - Maybe Annexes 30A-C

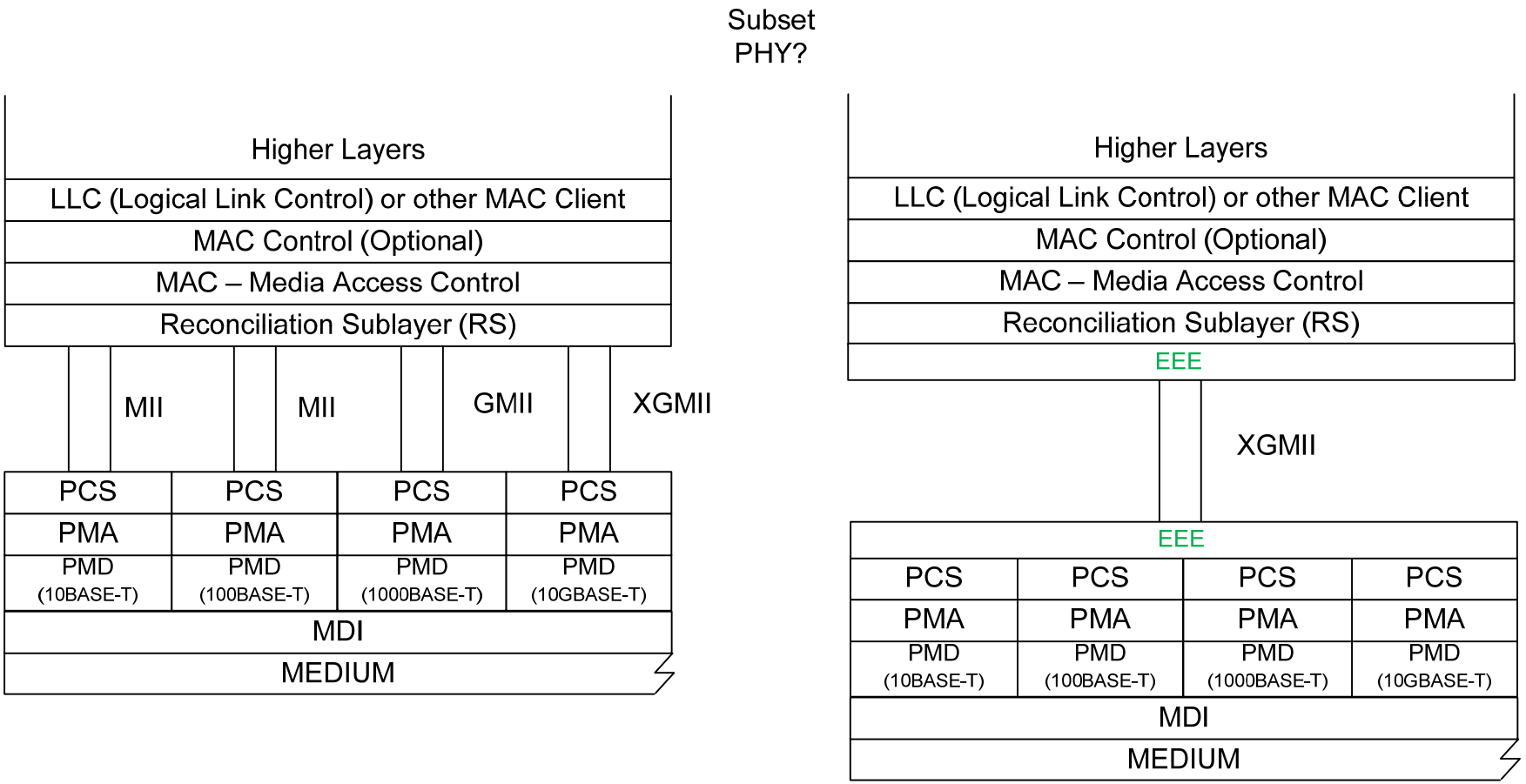
Clauses we need to work on

- 37 -1000BASE-X Auto-negotiation
  - Uses */C/* ordered_sets. */C/* ordered_sets which are “directly analogous to FLP Bursts as defined in Clause 28”
- 70-73 Backplane
- XX? New clause for Energy Efficient Ethernet

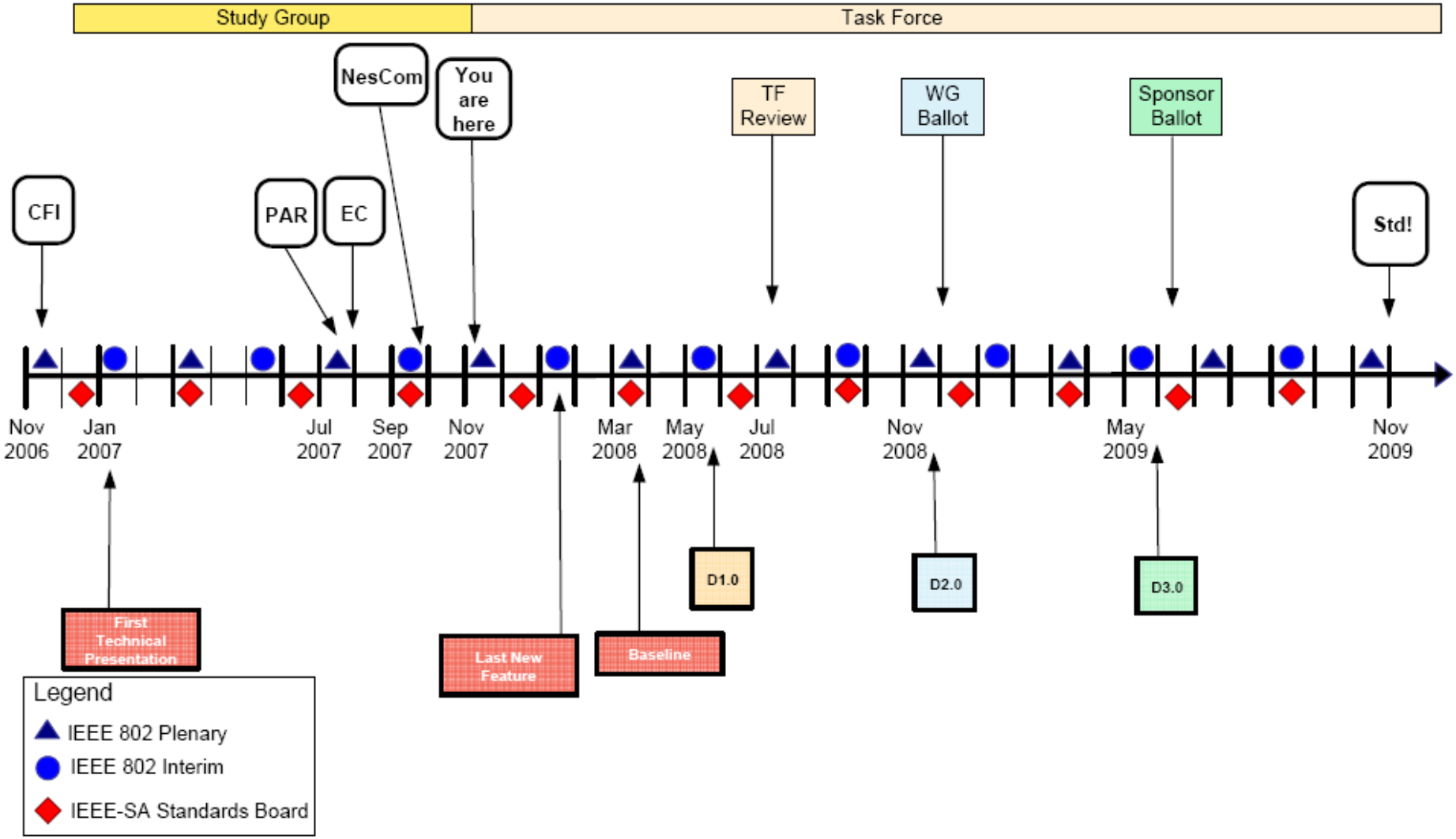
Layer models depends on technology choice



Layer models depends on technology choice



A possible 802.3az timeline



Thank You!