

# IEEE 802.3 Beyond 10km Optical PHYs SG - Discussion of Objectives / CSD

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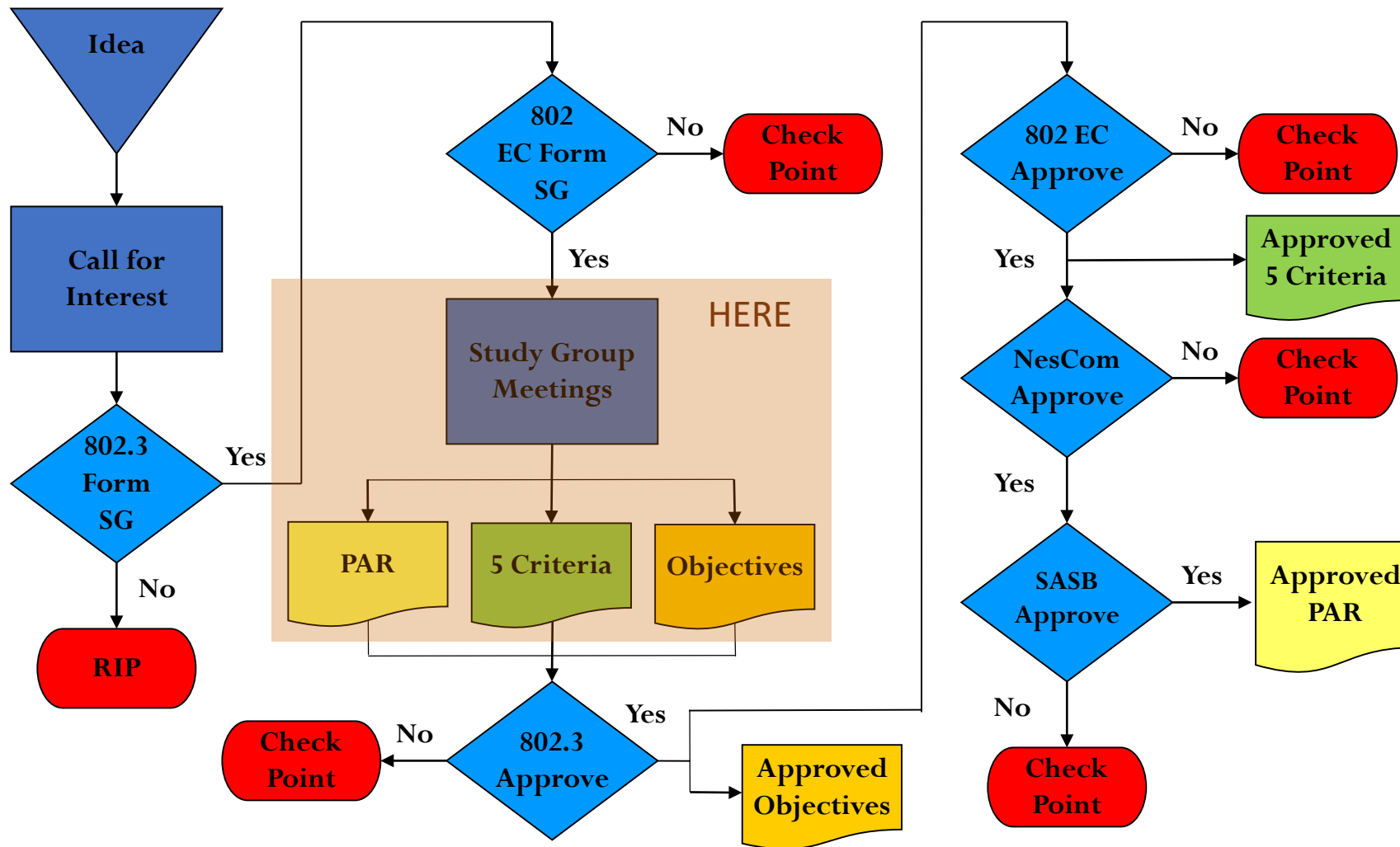
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IEEE 802.3 Sept 2017 Interim

Charlotte, NC, USA

# Overview of IEEE 802.3 Standards Process (1/5)- Study Group Phase

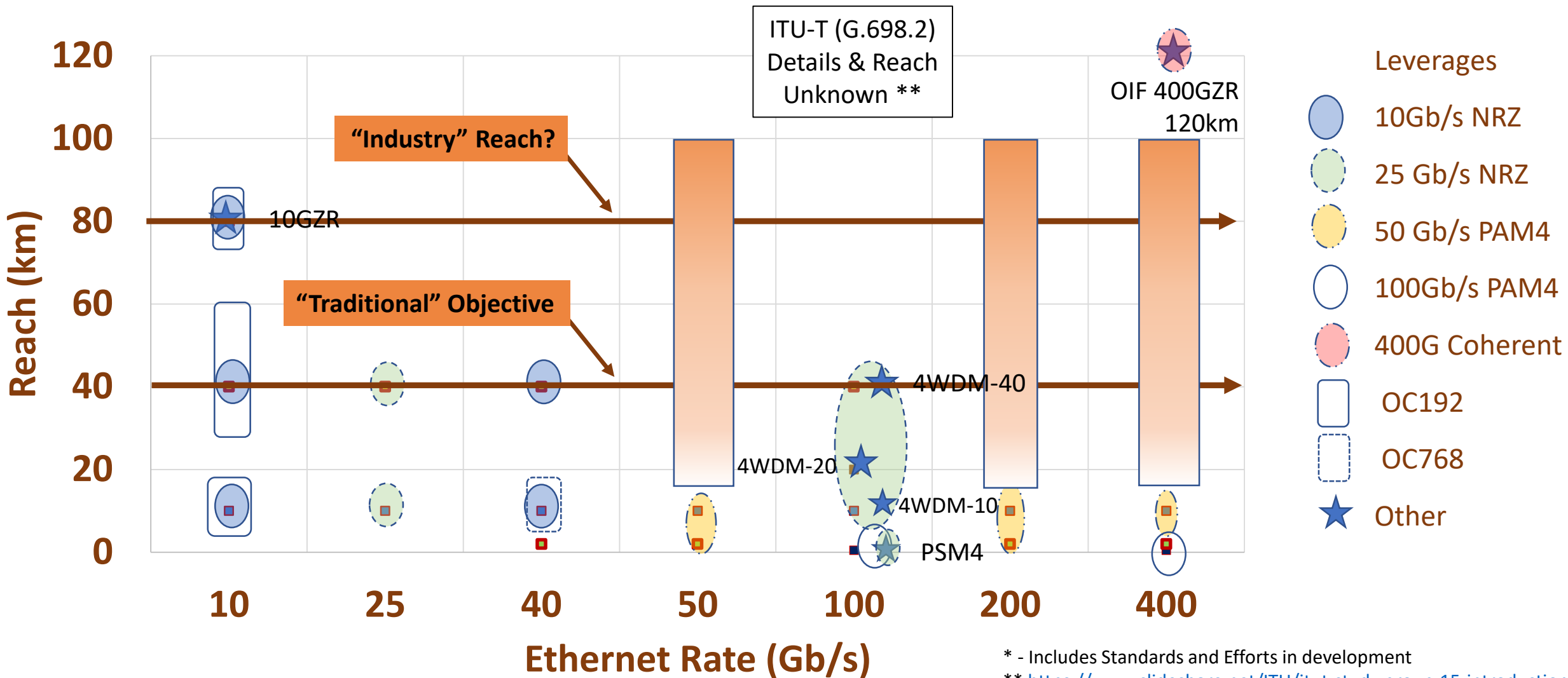


Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

# “Apple Pie” Objectives

- There are some objectives that are typically adopted for a project.
- For example – IEEE P802.3bs  
([http://www.ieee802.org/3/bs/Objectives\\_16\\_0317.pdf](http://www.ieee802.org/3/bs/Objectives_16_0317.pdf))
  - Support full-duplex operation only
  - Preserve the Ethernet frame format utilizing the Ethernet MAC
  - Preserve minimum and maximum FrameSize of current Ethernet standard
  - Provide appropriate support for OTN
  - Specify optional Energy Efficient Ethernet (EEE) capability
  - Support a BER of better than or equal to  $10^{-13}$  at the MAC/PLS service interface (or the frame loss ratio equivalent)
    - NOTE – THE TARGET VALUES ARE USUALLY DEBATED

# The SMF Optical Landscape \*



\* - Includes Standards and Efforts in development  
 \*\* <https://www.slideshare.net/ITU/itut-study-group-15-introduction>.

# Straw Poll #2 (Chicago)

- I would support reach objectives at

- a) 50 Gb/s
- b) 200 Gb/s
- c) 400 Gb/s

- Results

- a) 16 + 21            37
- b) 14 + 20            34
- c) 15 + 22            37

# Straw Poll #3 (Chicago)

- I would support reach objectives targeting

- a) 40km
- b) 80 km
- c) Other\*
- d) Need more information

- Results

- a) 14 + 13                      27
- b) 12 + 7                         19
- c) 5 + 2                          7
- d) 15 + 15                        30

- No data defining further breakdown of reaches has been found to date. Presentations would be useful.
- \*\* Note – reach objectives based on distance or OSNR have been suggested in conversations. Need further presentations.

# Straw Poll #4

- I would support an objective(s) targeting “providing appropriate support for DWDM systems.”

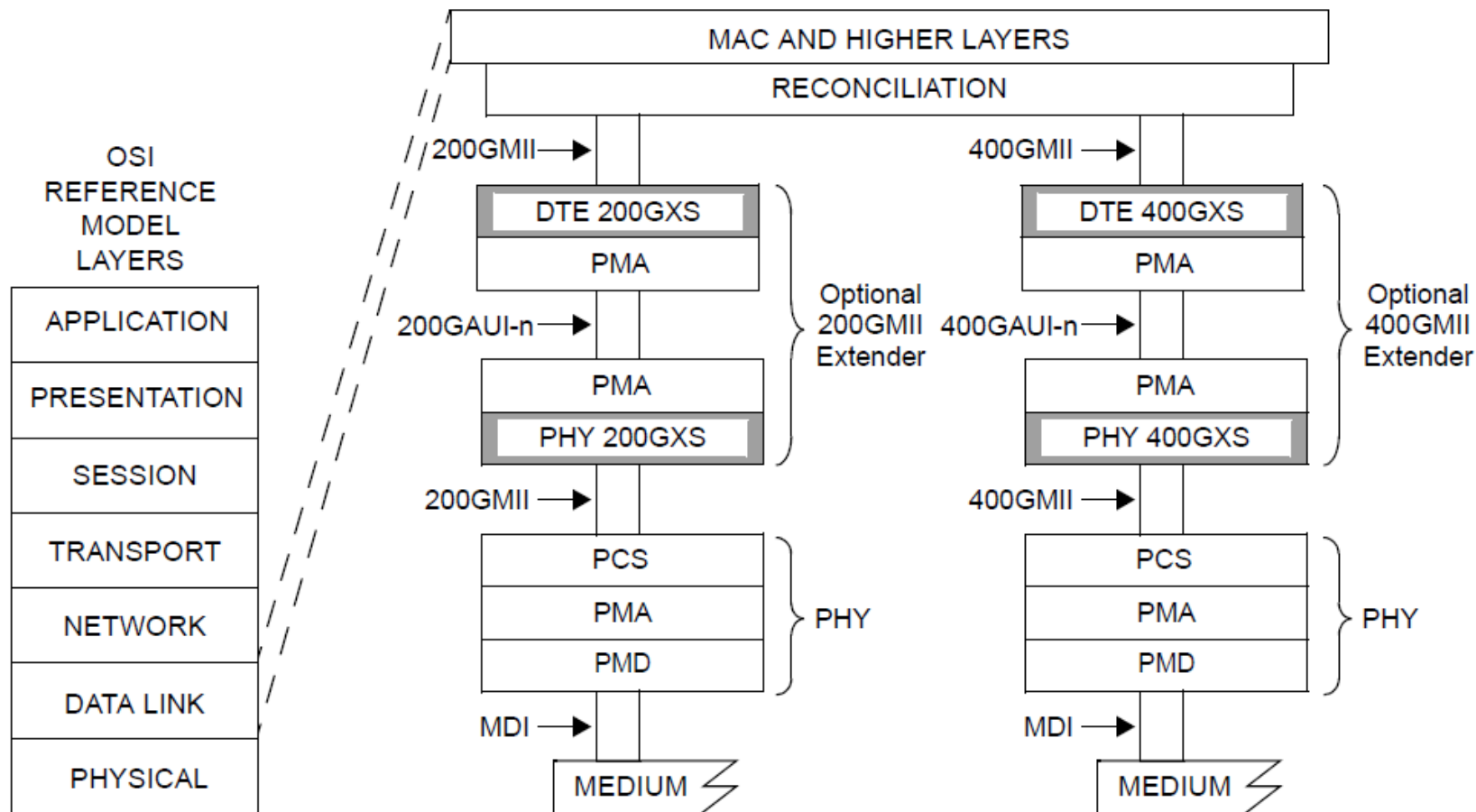
- Results

• Yes	11 + 6	17
• No	0 + 6	6
• Need more information	6 + 12	18

Suggested in

[http://www.ieee802.org/3/B10K/public/17\\_09/villarruel\\_b10k\\_01b\\_0917.pdf](http://www.ieee802.org/3/B10K/public/17_09/villarruel_b10k_01b_0917.pdf)

# Architectural Objectives?



- Electrical Interfaces?
- Use of Optional Extender?
- General Consensus – this is a task force issue.

Figure 118-1—200GXS and 400GXS relationship to the ISO/IEC Open System Interconnection (OSI) reference model and the IEEE 802.3 Ethernet model



# 5 Criteria – Must be addressed (1 of 2)

- **Broad Market Potential**

- Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:
  - a) Broad sets of applicability.
  - b) Multiple vendors and numerous users.

- **Technical Feasibility**

- Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:
  - a) Demonstrated system feasibility.
  - b) Proven similar technology via testing, modeling, simulation, etc.
  - c) Confidence in reliability.

- **Economic Feasibility**

- Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications. Among the areas that may be addressed in the cost for performance analysis are the following:
  - a) Balanced costs (infrastructure versus attached stations).
  - b) Known cost factors.
  - c) Consideration of installation costs.
  - d) Consideration of operational costs (e.g., energy consumption).
  - e) Other areas, as appropriate.

# 5 Criteria – Must be addressed (2 of 2)

- Compatibility

- Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.

- a) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?
- b) If the answer to a) is “no”, supply the response from the IEEE 802.1 WG.
- c) Compatibility with IEEE Std 802.3
- d) Conformance with the IEEE Std 802.3 MAC
- e) Managed object definitions compatible with SNMP

- Distinct Identity

- a) Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.
- b) Substantially different from other IEEE 802.3 specifications / solutions.

# Straw Poll #5 - Broad Market Potential

- I believe there is sufficient evidence of broad market potential for
  - Solutions targeting 50 Gb/s                      Yes                      No
  - Solutions targeting 200 Gb/s                      Yes                      No
  - Solutions targeting 400 Gb/s                      Yes                      No
  - Solutions targeting 40 km                      Yes                      No
  - Solutions targeting 80 km                      Yes                      No
  
- Further presentations for BMP requested.

# Straw Poll #6 – Technical Feasibility

- I believe a PAM4 approach, based on 50 Gb/s PAM4, targeting 40km would be technical feasible at
  - 50 Gb/s                      Yes    18    No    0        Need more info    15
  - 200 Gb/s                    Yes    8     No    0        Need more info    22
  - 400 Gb/s                    Yes    0     No    0        Need more info    32
- Based on Discussions in NG-ECDC, NEA, and with SG Participants, questions were raised about expanding reach of current PAM4 approaches