Development of Project Documentation

IEEE 802.3 Beyond 400 Gb/s Ethernet Study Group Electronic May 2021 Session

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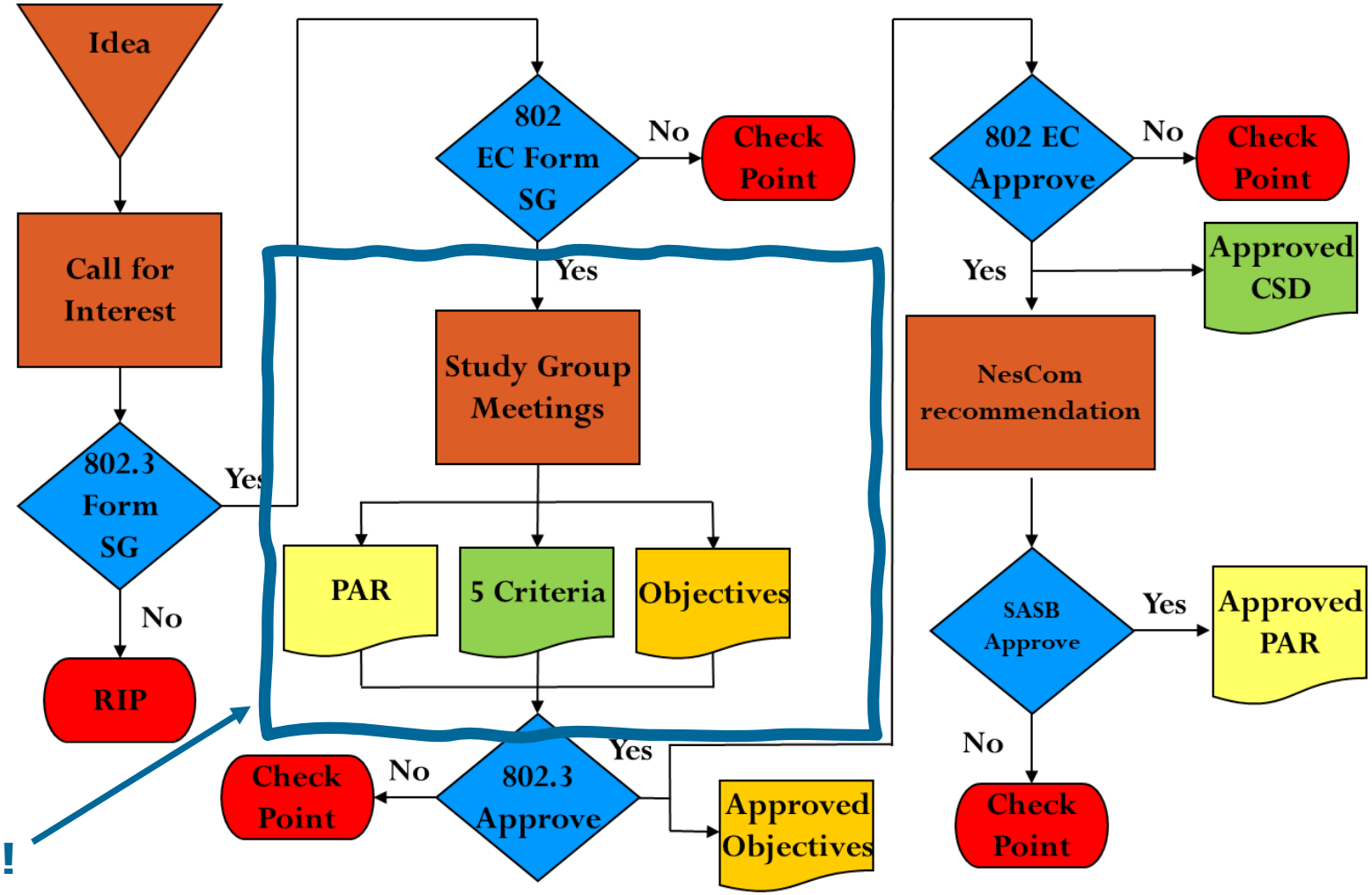
Overview of IEEE 802.3 Standards Process (1/5)- Study Group Phase



We are here!

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

- Adopted by B400G SG, Apr 2021
- Approval by 802.3 WG Pending

- Support a MAC data rate of 800 Gb/s
- Support full-duplex operation only
- Preserve the Ethernet frame format utilizing the Ethernet MAC
- Preserve minimum and maximum FrameSize of current IEEE 802.3 standard
- Define a physical layer specification that supports 800 Gb/s operation over 8 pairs of MMF with lengths up to at least 50 m
- Define a physical layer specification that supports 800 Gb/s operation over 8 pairs of MMF with lengths up to at least 100 m
- Define a physical layer specification that supports 800 Gb/s operation over 8 pairs of SMF with lengths up to at least 500 m
- Define a physical layer specification that supports 800 Gb/s operation over 4 pairs of SMF with lengths up to at least 500 m
- Define a physical layer specification that supports 800 Gb/s operation over 4 pairs of SMF with lengths up to at least 2 km
- Define a physical layer specification that supports 800 Gb/s operation over 4 wavelengths over a single SMF in each direction with lengths up to at least 2 km
- Define a physical layer specification that supports 800 Gb/s operation over a single SMF in each direction with lengths up to at least 10 km
- Define a physical layer specification that supports 800 Gb/s operation over a single SMF in each direction with lengths up to at least 40 km

Objectives – Going Forward

- Reformatting of existing objectives (see next page)
- 800 Gb/s Related Objectives
  - BER
  - Other Physical Layer Objectives?
  - Electrical Interfaces?
- 1.6 Tb/s Related Objectives ?
- 200 / 400 Gb/s Objectives?
  - 4 pair / 4 lambda based objectives were adopted

Suggested Reformatting of Existing Objectives

- Support a MAC data rate of 800 Gb/s
- Support full-duplex operation only
- Preserve the Ethernet frame format utilizing the Ethernet MAC
- Preserve minimum and maximum FrameSize of current IEEE 802.3 standard
- Define a physical layer specification that supports 800 Gb/s operation:
  - over 8 pairs of MMF with lengths up to at least 50 m
  - over 8 pairs of MMF with lengths up to at least 100 m
  - over 8 pairs of SMF with lengths up to at least 500 m
  - over 4 pairs of SMF with lengths up to at least 500 m
  - over 4 pairs of SMF with lengths up to at least 2 km
  - over 4 wavelengths over a single SMF in each direction with lengths up to at least 2 km
  - over a single SMF in each direction with lengths up to at least 10 km
  - over a single SMF in each direction with lengths up to at least 40 km

Key Critters to Address

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) Known cost factors.
b) Balanced cost factors.
c) Consideration of installation costs.
d) Consideration of operational costs (e.g., energy consumption).
e) Other areas, as appropriate.

Observations

- Need to draft responses to criteria – and ensure all claims can be supported
- 10 km / 40 km @ 800 Gb/s Objectives
  - Technical feasible?
  - Economical feasible?
  - Supporting presentations?

PAR

- Project Title
- Project Date
- Project Scope
- Project Contingency
- Project Need
- Stakeholders

- Challenging to draft response to these questions given current state of objectives

Summary

- As noted in dambrosia_b400g_01_210426 – estimated date to submit project documentation package is Oct 5, 2021 (exact date pending)
- Objectives need to be finalized
- For July 2021 Session, the following is desirable
  - Draft PAR
  - Draft CSD Responses