IEEE 802.3 Criteria for Standards Development (CSD)

The IEEE 802 Criteria for Standards Development (CSD) are defined in Clause 14 of the IEEE 802 LAN/MAN Standards Committee (LMSC) Operations Manual. The criteria include project process requirements ("Managed Objects") and 5 Criteria (5C) requirements. The 5C are supplemented by subclause 7.2 'Five Criteria' of the 'Operating Rules of IEEE Project 802 Working Group 802.3, CSMA/CD LANs'.

The following are the CSD Responses in relation to the IEEE P802.3dk PAR

Items required by the IEEE 802 CSD are shown in Black text and supplementary items required by IEEE 802.3 are shown in **blue** text.

Continued

Bidirectional higher speed PHY CSD's

Revision history

- 6 Sep 2022 Prepared Frank Effenberger
- 14 Sep 2022 Minor edits at meeting
- 5 Oct 2022 Minor edits at meeting

Managed Objects

Describe the plan for developing a definition of managed objects. The plan shall specify one of the following:

a) The definitions will be part of this project.

b) The definitions will be part of a different project and provide the plan for that project or anticipated future project.

c) The definitions will not be developed and explain why such definitions are not needed.

- The definition of protocol independent managed objects, to be included in Clause 30 of IEEE Std 802.3, will be part of this project.
- In addition, it is expected that the protocol-specific definition of managed objects will be added in a future amendment to IEEE Std 802.3.2 for Ethernet YANG Data Model Definitions.

Coexistence

A WG proposing a wireless project shall demonstrate coexistence through the preparation of a Coexistence Assurance (CA) document unless it is not applicable.

a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13?

b) If not, explain why the CA document is not applicable

- A CA document is not applicable because the proposed project is not a wireless project.

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.

- Broadband access providers widely deploy bidirectional access optics for a variety of applications, such as:
  - Fiber To The (FTT) Building
  - FTTBusiness
  - FTTHome
  - FTTWireless
- There are multiple vendors of optical sub-assemblies, modules, and systems that support bidirectional optics at the rates of interest
- There are many potential user groups
  - Traditional telco and cable system operators
  - Wireless infrastructure providers
  - Municipal and independent operators
  - Subscribers

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

- As an amendment to IEEE Std 802.3, the proposed project shall comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q.
- The proposed amendment will conform to the IEEE Std 802.3 MAC.
- The project will include a protocol independent specification of managed objects.

Distinct Identity

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.

Substantially different from other IEEE 802.3 specifications / solutions.

- This project's objectives are similar to already existing Ethernet PHYs that use duplex single mode fiber; however, the key difference is that this project uses bidirectional transmission on a single fiber
- This project's objectives are similar to already existing 802.3cp Ethernet PHYs that employ bidirectional transmission; however, this project aims to develop higher speed PHYs
- Therefore, this project has a distinct identity from all other IEEE 802 LMSC standards or approved projects

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.

- System feasibility
  - The basic technologies for greater than 50 Gb/s capable of transmission over at least 10 km and at least 40 km of single mode fiber are sufficiently well established
  - Bidirectional transmission based on wavelength division duplexing is well established
  - This project is a combination of both these techniques
- Proven similar technology
  - Several vendors already manufacture higher speed bidirectional modules
- Confidence in reliability
  - This technology is well established and there have been no reliability issues reported

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.

- As traffic load increases, higher speed transmission will be more efficient
- Bidirectional transmission improves the cost balance between the fiber and the PHYs by halving the number of fibers required, increasing the efficiency of existing fiber deployments
- Bidirectional optics should represent only a minor increase in cost over the dual-fiber versions of the same speed, due to the inclusion of the diplexer
- Installation costs should be better than dual-fiber, as single fiber reduces complexity
- Operational costs should be quite similar to dual-fiber
- Bidirectional optics will reuse the PMA and PCS from existing PHYs, also reducing costs