

# 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 P802.3xx 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.

# Managed Objects

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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.
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- The definition of protocol independent managed objects will be part of this project.
  - In addition it is expected that the definition of SNMP managed objects, through reference to the protocol independent managed objects provided by this project, will be added in a future amendment to, or revision of, IEEE Std 802.3.1 IEEE Standard for Management Information Base (MIB) Definitions for Ethernet.

# Coexistence

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**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.

- **Broad Sets of Applications:**
  - 10 Mbit/s Automotive Ethernet will enable replacement of multiple legacy links, with lower cost and throughput requirements than 100Mbit/s automotive Ethernet, furthering consolidation of legacy in-car networks in a homogeneous architecture.
  - 10Mbit/s Industrial Ethernet will enable networks in a number of market segments in industrial automation, with lower cost and greater applicability than 100Mb/s single-pair Ethernet or 10Mb/s two-pair Ethernet..
- The proposed standard will improve the favorable cost balance for these applications by operating over single twisted pair balanced cabling.
- Multiple vendors and numerous users
  - At the Call for Interest, 79 individuals from 55 companies indicated they would support this project. These included companies from industrial automation, building automation, automotive, automotive OEMs, silicon, infrastructure, cabling, connector, and test equipment vendors, (among others)
- Data presented at the CFI indicate a substantial market potential, e.g., the prediction for 2019 is 165 million total ports/year.

# 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**
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- As a PHY amendment to IEEE Std 802.3, the proposed project will remain in conformance with IEEE Std 802, IEEE Std 802.1AC, and IEEE Std 802.1Q.
  - As a PHY amendment to IEEE Std 802.3-2015, the proposed project will use MII, and follow the existing format and structure of IEEE 802.3 MIB definitions by providing protocol-independent specification of managed objects.
  - The proposed amendment will conform to the IEEE 802.3 MAC.
  - The project will include a protocol independent specification of managed objects with SNMP management capability to be provided in the future by an amendment to or revision of IEEE P802.3.1.

# Distinct Identity

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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.

- There is no IEEE 802.3 standard that supports Ethernet over one balanced twisted pair at an operating speed of 10 Mb/s.
- The project may define multiple PHYs, but will define only a single PHY per maximum link segment distance.
- IEEE P802.3bu only defines powering with physical parameters compatible with 100M and 1000M operation, the new proposed standard will define optional parameters to support new 10 Mb/s operation and distances.

# 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.
- The proposed project will build on the array of Ethernet component and system design experience, and the broad knowledge base of Ethernet network operation.
  - Full-duplex operation over unshielded twisted pair has been proven both technically and operational in deployments at rates from 100Mb/s on up to 40Gb/s, all in excess of 10Mb/s.
  - Component vendors, including PHY vendors, cabling vendors and systems vendors have presented data on the feasibility of the necessary components for this project. Proposals which leverage existing technologies have been provided.
  - The reliability of Ethernet components and systems can be projected in the target environments with a high degree of confidence.

# 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.
- The 10 Mb/s Single Twisted Pair Ethernet interface will maintain a favorable cost balance for applications operating over twisted pair copper cables.
  - As a PHY project providing rate reduction over a single twisted pair, and extending the single-pair Ethernet networking to longer-reach and lower-cost applications, there would likely be no difference in direct costs for infrastructure vs. attached stations.
  - The cost factors for Ethernet components and systems are well known. The proposed project may introduce new cost factors which can be quantified.
  - The reduction in the number of legacy networks requiring specialized components, expertise, and gateways in the targeted markets will result in a significant drop in both installation and operational costs.
  - Prior experience in the development of other twisted pair copper physical layer specifications for Ethernet indicates that the specifications developed by this project will entail a reasonable cost for the resulting performance.
  - Overall costs are minimized by introducing Ethernet network architecture, management, and software into the automotive environment.