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 4.5 'Criteria for Standards Development' of the 'IEEE 802.3 Ethernet Working Group Operations Manual'.

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

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.

Coexistence

A WG proposing a wireless project shall prepare a Coexistence Assessment (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? (yes/no)

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

- No. 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:
  - The Study Group has heard presentations representing use cases in process control, industrial automation, building automation, and renewable energy for greater than 10 Mb/s, long-reach, single-pair PHYs.
- Multiple vendors and numerous users:
  - At a call for interest, 26 individuals from 24 companies indicated they would support greater than 10 Mb/s Single Pair Ethernet. The responding individuals represented individuals associated with industrial automation, building automation, ~~automotive, automotive OEMs~~, silicon, infrastructure, cabling, connector, and test equipment technology.
  - Straw polls held in the study group indicated expected support from
- Substantial market potential:
  - The study group has heard presentations representing market opportunities of > 10 M ports / year in multiple automation markets

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

- The proposed amendment will remain in conformance with IEEE Std 802, IEEE Std 802.1AC, and IEEE Std 802.1Q
- The proposed amendment will conform to the IEEE full duplex 802.3 MAC and provide new physical layer specifications for inclusion in IEEE Std 802.3.

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.

- There is no IEEE 802.3 standard supporting operation on single-pair media at speeds greater than 10 Mb/s for greater than 40 meters.
- The PHYs specified by this amendment will be specified to operate on a single balanced pair medium at distances of up to at least xxx m.*(greater than 100m?)*
- The project may define multiple PHYs, but will define only a single PHY for each rate, media, and link reach combination. *(delete if no 1000 Mb/s)*

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 electrical media has been proven both technically and operationally at rates up to 2500 Mb/s per balanced pair (10GBASE-T).
- Component vendors, including PHY vendors, cabling vendors, and systems vendors have presented data on the feasibility of the necessary components for this project relevant to long-reach automation applications. Approaches that leverage existing technologies have been provided.
  - Specifically, the study group has heard presentations on demonstrations of 100 Mb/s operation at greater than 100m on single balanced pair media
- 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) 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.

- Ethernet interfaces in the target data rate and reach range defined by this project will maintain a favorable cost-performance balance.
- The cost factors for Ethernet components and systems are well known. The proposed project may introduce new cost factors which can be quantified.
- Prior experience in the development of other physical layer specifications for Ethernet indicates that the specifications developed by this project will entail a reasonable cost for the resulting performance.
- The reduction in the number of legacy networks requiring specialized components, expertise, and gateways in the targeted markets is anticipated to result in a significant drop in both installation and operational costs.
- Overall costs are anticipated to be minimized by introducing Ethernet network architecture, management, and software into the target environments.
- Migrating ~~intra-system control, automotive, and~~ building and industrial automation networking to Ethernet is anticipated to result in a significant improvement in system cost/performance.