IEEE 802 LAN/MAN STANDARDS COMMITTEE (LMSC)

CRITERIA FOR STANDARDS DEVELOPMENT (CSD)

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1. IEEE 802 criteria for standards development (CSD)

The CSD documents an agreement between the WG and the LMSC that provides a description of the project and the LMSC's requirements more detailed than required in the PAR. The CSD consists of the project process requirements, 1.1, and the 5C requirements, 1.2.

1.1 Project process requirements

1.1.1 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.

c) This project will use method c). The amendment defines a profile and relies on the base standard IEEE Std 802.1AS and the already defined managed objects.

1.1.2 Coexistence

A WG proposing a wireless project shall prepare a Coexistence Assessment (CA) document unless it is not applicable.

d) Will the WG create a CA document as part of the WG balloting process as described in Clause 13? (yes/no)
e) If not, explain why the CA document is not applicable.

d) No.

e) This project is not a wireless project; therefore, a Coexistence Assessment is not applicable.

1.2 5C requirements

1.2.1 Broad market potential

Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:

f) Broad sets of applicability.
g) Multiple vendors and numerous users.

f) IEEE Std 802.1DG specifies a TSN profile for automotive networks that require deterministic communication and precise time synchronization.

Time synchronization is a fundamental requirement for:
- Advanced driver assistance systems (ADAS)
- Autonomous driving systems
- Sensor fusion
- Time-aware networking and scheduling
- Audio
- Road noise canceling system

IEEE Std 802.1DG currently allows multiple time synchronization mechanisms, which can lead to inconsistencies across implementations. Establishing a common baseline based on IEEE Std 802.1AS provides a consistent and interoperable foundation for IEEE Std 802.1DG deployments. IEEE Std 802.1DG is explicitly defined as an automotive-specific profile.

g) The automotive Ethernet ecosystem includes:
- Automotive OEMs
- Tier-1 suppliers
- Semiconductor vendors
- Network equipment vendors
- Tool and test vendors

These stakeholders integrate multi-vendor components into a single system, where interoperable time synchronization is essential.

1.2.2 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.

h) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?
i) If the answer to a) is no, supply the response from the IEEE 802.1 WG.

h) Yes, this standard will comply with IEEE Std 802, IEEE Std 802.1AS and IEEE Std 802.1Q.

The review and response is not required if the proposed standard is an amendment or revision to an existing standard for which it has been previously determined that compliance with the above IEEE 802 standards is not possible. In this case, the CSD statement shall state that this is the case.

1.2.3 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.

No other IEEE 802 standard defines a time synchronization profile for automotive networks. IEEE Std 802.1DG so far only a list of different mechanisms as examples. This creates the risk of market fragmentation.

1.2.4 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:

j) Demonstrated system feasibility.
k) Proven similar technology via testing, modeling, simulation, etc.

j) IEEE Std 802.1AS is already widely implemented in automotive Ethernet devices and systems, including switches, endpoints, and system-on-chip platforms.

k) It has been validated through:
- Commercial deployments
- Silicon implementations
- System integration in automotive environments

The proposed amendment builds on these proven technologies without introducing fundamentally new mechanisms.

1.2.5 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:

l) Known cost factors.
m) Balanced costs.
n) Consideration of installation costs.
o) Consideration of operational costs (e.g., energy consumption).
p) Other areas, as appropriate.

l) The amendment primarily introduces profile constraints and clarifications, resulting in minimal implementation cost.
m) No significant changes to hardware are required, and the existing balance between infrastructure and attached systems is maintained.
n) The amendment does not introduce changes that affect installation practices.
o) Improved interoperability reduces system integration effort, validation cost, and long-term maintenance overhead.
p) The amendment supports long-term ecosystem stability by reducing fragmentation and avoiding vendor-specific synchronization approaches.