CSD Requirements – Distinct Identity, Technical and Economic Feasibility

IEEE 802.3

ISAAC Study Group

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Introduction

- This presentation relates to the drafting/refinement of the text required for IEEE 802.3 Criteria for Standards Development (CSD)

- This presentation presents thoughts on the following aspects
  - Distinct Identity
  - Technical Feasibility
  - Economic Feasibility

Distinct Identity

> **Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes <u>and for each one describe why the proposed project is substantially different.</u>**
>
> **Substantially different from other IEEE 802.3 specifications/solutions.**

- Suggestion
  - There are no IEEE 802.3 standards that support multigigabit data rates in one direction, but are limited to 100 Mbps maximum data in the opposite direction
  - The project may define multiple PHYs, but will define only a single PHY for each rate and link reach using shielded balanced-pair and unbalanced media (Note: Is Coaxial media the right terminology?)
  - There are no reconciliation sublayers in IEEE Std 802.3 that support connecting PHYs with asymmetric data rate to the MAC without an additional MAC control sublayer.

Is the following needed?

- Identification of project with similar scope – 802.3ch
- Description of why proposed project is substantially different
  - 802.3ch PHYs support data rates up to 2.5 Gbps, 5 Gbps or 10 Gbps simultaneously in both directions
  - "2.5GBASE-T1, 5GBASE-T1, and 10GBASE-T1 are designed to operate over a single shielded balanced pair of conductors that meet the requirements specified in this subclause" (Note: Text copied from 149.7)

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.**

- Suggestion
  - The proposed project will build on the array of Ethernet component and system design experience, and the broad knowledge base of Ethernet network operation.
  - Asymmetric operation over electrical media has been proven both technically and operationally at rates up to 10 Gb/s over targeted media. (Note: presentations are being made regarding TDD, FDD & FDX. Do we need additional presentations in the study group?)
  - Component, PHY, cabling, and systems subject matter experts have presented data on the feasibility of the necessary components for this project relevant to applications. Approaches that leverage existing technologies have been provided. (Note: Need cabling presentation?)
  - 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).
Other areas, as appropriate.

- Suggestion
  - Ethernet interfaces in the target data rate and reach range defined by this project will maintain a favourable 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 and expertise 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 Automotive networks to Asymmetrical Ethernet links is anticipated to result in a significant improvement in system cost/performance.

Thank You!