Review of the 5 Criteria

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Outline

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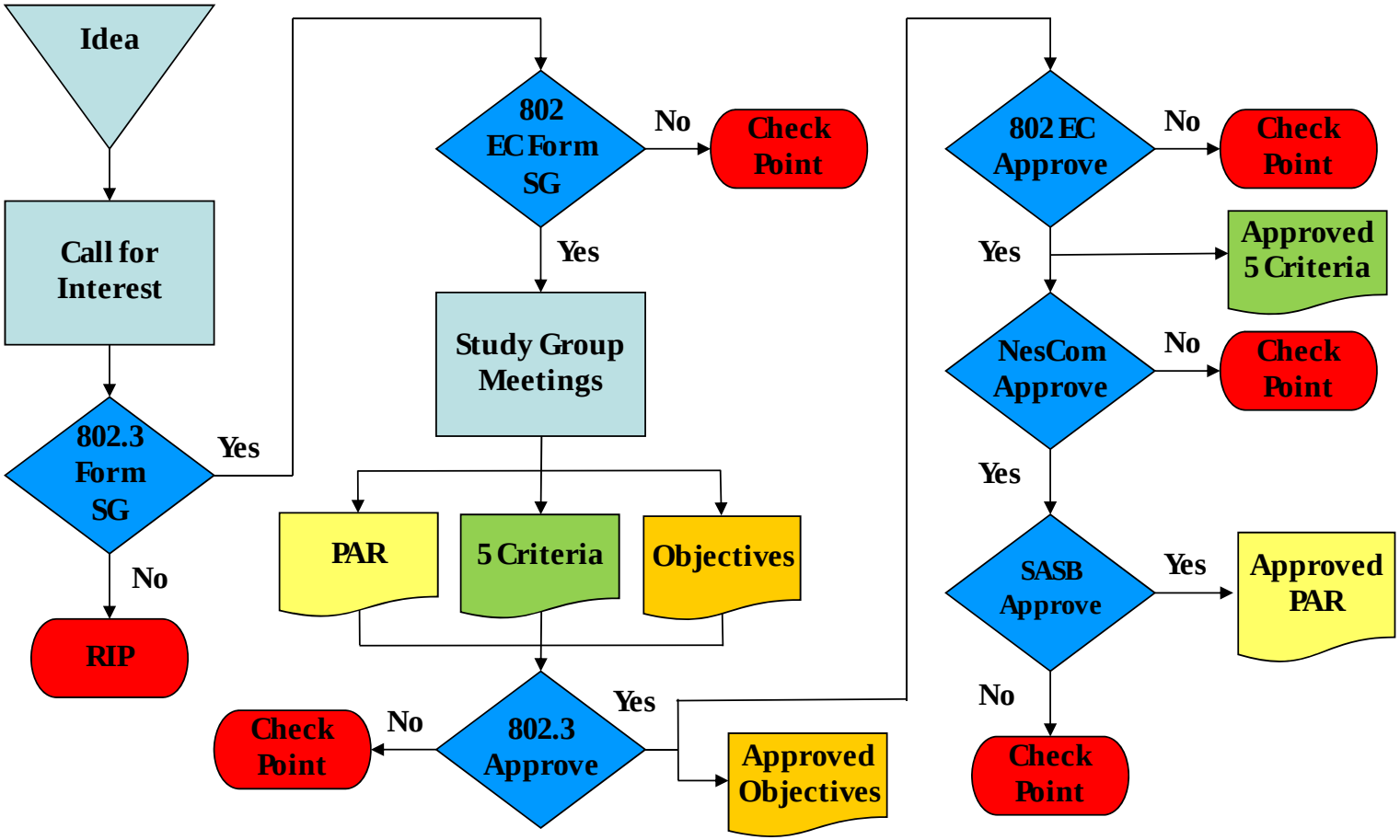
Introduction



Note: At "Check Point", either the activity is ended, or there may be various options that would allow reconsideration of the approval.

Approval Requirements

	Study Group	Working Group	802 EC	IEEE-SA Std Board
Project Authorization Request (PAR)	√	√	√	√
Criteria for Standards Development (including 5 Criteria)	√	√	√	
Objectives	√	√		

Audience

- The 5 criteria are drafted and approved by a study group
- They are reviewed and approved (individually) by the working group
- They are subject to review and approval by each and every other working group in IEEE 802®
- They are reviewed and approved by the IEEE 802 executive committee

Purpose

- The 5 criteria are used to evaluate proposed projects
- They are used to filter out projects that are not appropriate for standardization in IEEE 802
- They are unique to IEEE 802
- They are one of the reasons why IEEE 802 standards are relatively successful
- They help perpetuate the “IEEE 802 culture”
- The 5C's have been supplemented to make the "CSD"s

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 P802.3**??** 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.

COMMON RESPONSES:

- The definition of protocol independent managed objects 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 an IEEE 802.3 Standard for Management.

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

COMMON RESPONSE (FOR 802.3):

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

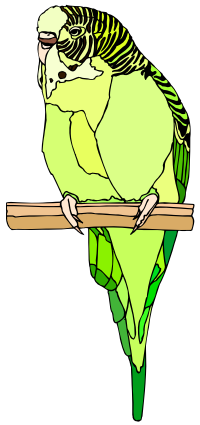
The 5 Critters

Broad Market Potential

Compatibility

Distinct Identity

Technical Feasibility



Economic Feasibility

Broad Market Potential

- A standards project authorized by IEEE 802 LMSC shall have a broad market potential. Specifically, it shall have the potential for:
  a) Broad sets of applicability.
  b) Multiple vendors and numerous users.

Compatibility

- IEEE 802 LMSC defines a family of standards. All standards should be in conformance : 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. In order to demonstrate compatibility with this criterion, the Five Criteria statement must answer the following questions.
  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 a 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

Distinct Identity

Old Critter Wording:

- Each IEEE 802 LMSC standard shall have a distinct identity. To achieve this, each authorized project shall be:
  a) Substantially different from other IEEE 802 LMSC standards.
  b) One unique solution per problem (not two solutions to a problem).
  c) Easy for the document reader to select the relevant specification.
  d) Substantially different from other IEEE 802.3 specifications/solutions

NEWER CSD Wording:

- Each IEEE 802 LMSC standard shall have a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the propposed project is substantially different.

Additionally for IEEE 802.3 - identify that the solution is:

Substantially different from other IEEE 802.3 specifications/solutions

Technical Feasibility

- Each proposed IEEE 802 LMSC standard shall provide evidence that a 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.

Economic Feasibility

Old Critter Wording:

- For a project to be authorized, it shall be able to show economic feasibility (so far as can reasonably be estimated) for its intended applications. At a minimum, the proposed project shall show:
  a) Known cost factors, reliable data
  b) Reasonable cost for performance
  c) Consideration of installation costs

NEWER CSD Wording:

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.

Guidelines for responses

- Respond to each criterion on a separate slide
- Repeat the criterion verbatim at the top of each slide
- Respond to each point of the criterion
- Be prepared to defend every word of the responses
- Responses must be specific

Guidelines for responses

- Responses must be succinct
- Responses must be honest
- A project must satisfy all 5 of the criteria simultaneously
- Track the project against the criteria as the project progresses
- Update them as necessary, and get them re-approved

Reaffirmation of CSD Requirements

After initial approval of CSD, subsequent reaffirmations of the CSD are required

- Prior to submission for Working Group Ballot
- Prior to submission for Sponsor Ballot
- Prior to submission to RevCom

It is a valid for a member of the balloting pool to submit comments during WG / Sponsor Ballots that questions a draft meeting a 5 Criteria Response.

The CSD is a living document.

Summary

- The CSDs (5 criteria) are an important output of a study group, along with the PAR and objectives
- Presentations should address the CSDs
- Be thorough and exercise due diligence

Successful examples

- 802.3.1 Ethernet MIB definitions
  http://www.ieee802.org/3/maint/public/frazier_2_0908.pdf
- 802.3ba 40G/100G
  http://www.ieee802.org/3/ba/PAR/P802.3ba_5C_0908.pdf
- 802.3av 10G-EPON
  http://www.ieee802.org/3/av/tf_docs/10gepon_5criteria_0506.pdf
- 802.3ah EFM
  http://www.ieee802.org/3/efm/public/jul01/presentations/par_1_0701.pdf
- 802.3ae 10 Gigabit Ethernet
  http://www.ieee802.org/3/ae/criteria.pdf

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 Mb/s single-pair Ethernet in the automotive market will enable replacement of multiple legacy protocols with Ethernet, taking advantage of lower cost and throughput requirements than 100 Mb/s automotive Ethernet, furthering consolidation of legacy in-car networks in a homogeneous architecture.
  - 10 Mb/s single-pair Ethernet in the industrial market will enable replacement of multiple legacy protocols with Ethernet in a number of market segments in industrial automation, with greater applicability than 100 Mb/s single-pair Ethernet and lower system cost than 10 Mb/s two-pair Ethernet.
- 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.
- 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

- 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, the proposed project will use MII, and follow the existing format and structure of IEEE 802.3 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. In addition, it is expected that the protocol-specific definition of managed objects will be added in a future amendment to an IEEE 802.3 Standard for Management.

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 that supports Ethernet over a single 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.
- The new proposed standard will define optional power delivery supporting the new 10 Mb/s single-pair operation and distances. In contrast, IEEE P802.3bu only defines power delivery with physical parameters compatible with 100BASE-T1, 1000BASE-T1, or without a data entity.

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 a balanced twisted pair has been proven both technically and operationally in deployments at rates from 2 Mb/s up to 10 Gb/s.
- Single-pair power delivery has been proven technically feasible under IEEE P802.3bu. Implementation of single-pair powering for this project is feasible using a range of existing technologies.
- 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 defined by this project 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 will be a balance of 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.
- 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.
- 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.
- Overall costs are minimized by introducing Ethernet network architecture, management, and software into the automotive environment.
- Migrating automotive and automation networking to Ethernet results in a significant improvement in system price/performance.