

# **Multi-gig Automotive Ethernet PHY Study Group**

## **Project Objectives**

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# Project Documentation

- Objectives
- PAR
- Criteria for Standards Development
  - Managed Objects
  - Coexistence
  - Compatibility with IEEE Std 802.3
  - Distinct Identity
  - Broad Market Potential
  - Technical Feasibility
  - Economic Feasibility

Determining objectives for the future project is a critical step  
Choice of specific objectives impacts responses to CSD

# Project Objectives: History and Tradition

- Project objectives summarize technical objectives for a standards project in the 802.3 Working Group, representing a distilled set of high-level technical requirements created by the 802.3 Study Group, approved by the 802.3 Working Group and then executed by the 802.3 Task Force once formed
  - Individual objectives may be modified by the 802.3 Task Force, subject to approval by the 802.3 Working Group
- Project objectives set expectations for the future work of the 802.3 Task Force, providing a set of measurable requirements to be met by the deliverables produced by the 802.3 Task Force.
  - Examples of objectives include operating speed (bit rate), media type, reach, BER, coexistence, compatibility etc.

# Project Objectives: History and Tradition

- Some other working groups within 802 address such areas in their Project Authorization Request, but the 802.3 Working Group does not typically do so
- Every project undertaken in the 802.3 Working Group since (at least) 1992 has been guided by a set of such project objectives

# Project Objectives: Some Observations

- We have seen other standards bodies get wrapped around the axle writing long “requirements documents” to accomplish what we do with a single slide with a bunch of bullet points:
  - They argue endlessly about the wording, which is like talking about talking about the subject.
  - They seldom write a standard, which is the real “requirements document”
- Project objectives may take different times to produce:
  - Some projects completed their objectives in a single afternoon
  - Other projects took 6 meetings to complete them
- People tend to read too much into the wording, so please, when working on the objectives for this project:
  - Keep the wording brief and simple
  - Remember an objective says what it says, nothing more

# Project Objectives: High Level Guidelines (I)

- Objectives must be succinct
- Objectives must be unambiguous
- Objectives must be technical, but written in plain English
- Objectives must be definitive statements of requirements, not plans for future work, study, or evaluation
- Objectives do not have to identify every minute item of work
- Objectives must endure through the life of the project
- Objectives are problem statements, not solution statements

# Project Objectives: High Level Guidelines (II)

- Consensus building is key
  - Don't start making motions until you have made sure that your proposal is acceptable to the majority of people in the room.
  - Build consensus in advance – this is the key to success
- Offer objectives one at a time, using a motion like this (example):

Move that the Study Group adopt the following objective:  
Provide a BER of 10-12 or better at the MAC/PLS service interface
- All votes on objectives are technical, requiring  $\geq 75\%$  approval
- Sometimes, we try adopting just the form of an objective, before we can reach agreement on the specific values, but this is not a preferred approach and can make the process take longer.

# Project Objectives: Examples(I)

IEEE P802.3bj; 100 Gb/s Backplane and Copper Cable Task Force

## Objectives

- Support full-duplex operation only
- Preserve the 802.3 / Ethernet frame format utilizing the 802.3 MAC
- Preserve minimum and maximum FrameSize of current 802.3 standard
- Support a BER of better than or equal to  $10^{-12}$  at the MAC/PLS service interface
- Define a 4 lane PHY for operation over a printed circuit board backplane with a total channel insertion loss of  $\leq 35$  dB at 12.9 GHz\*\*
- Define a 4 lane PHY for operation over a printed circuit board backplane with a total channel insertion loss of  $\leq 33$  dB at 7.0 GHz\*\*
- Define a 4-lane 100 Gb/s PHY for operation over links consistent with copper twin-axial cables with lengths up to at least 5m.
- To define optional Energy-Efficient Ethernet operation for 100G Backplane and Twinaxial cable PHYs specified in P802.3bj\*

# Project Objectives: Examples(II)

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IEEE P802.3bf; Ethernet Support for the IEEE P802.1AS Time Synchronization Protocol

## Objective

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Provide an accurate indication of the transmission and reception initiation times of certain packets as required to support IEEE P802.1AS.

Approved by IEEE 802.3 WG 11/19/09

# Project Objectives: Examples(III)

## IEEE P802.3az; Energy Efficient Ethernet Task Force

Define a mechanism to reduce power consumption during periods of low link utilization for the following PHYs

- 100BASE-TX (Full Duplex)
- 1000BASE-T (Full Duplex)
- 10GBASE-T
- 10GBASE-KR
- 10GBASE-KX4
- 1000BASE-KX (added July 2008; WG approved Y: 68 N: 0 A: 13)

- Define a protocol to coordinate transitions to or from a lower level of power consumption
- The link status should not change as a result of the transition
- No frames in transit shall be dropped or corrupted during the transition to and from the lower level of power consumption

(All of the above modifications except 1000BASE-KX approved 5/29/07 All: 11/1/0, 802.3: 10/1/0)

- The transition time to and from the lower level of power consumption should be transparent to upper layer protocols and applications  
(Modified 5/30/07 All: 7/0/1, 802.3: 5/0/1)

# Questions?

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Thanks!