

Process and Problems

**IEEE 802.3 100Gb/s Ethernet Electrical Backplane and
Twinaxial Copper Cable Assemblies Study Group**

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Project Documentation

- Objectives
- Project Authorization Request
- 5 Criteria Response
 - Broad Market Potential
 - Compatibility with IEEE Std. 802.3
 - Distinct Identity
 - Technical Feasibility
 - Economic Feasibility
- Determining objectives is critical step
- Will impact critter responses

Critical Objectives

- What will be the Backplane Reach?
- What will be the Cu Cable Reach?

- Reach has been the historical objective, but channel parameters are what really matters

- Will impact Critter responses
 - Broad Market Potential
 - Technical Feasibility
 - Economic Feasibility

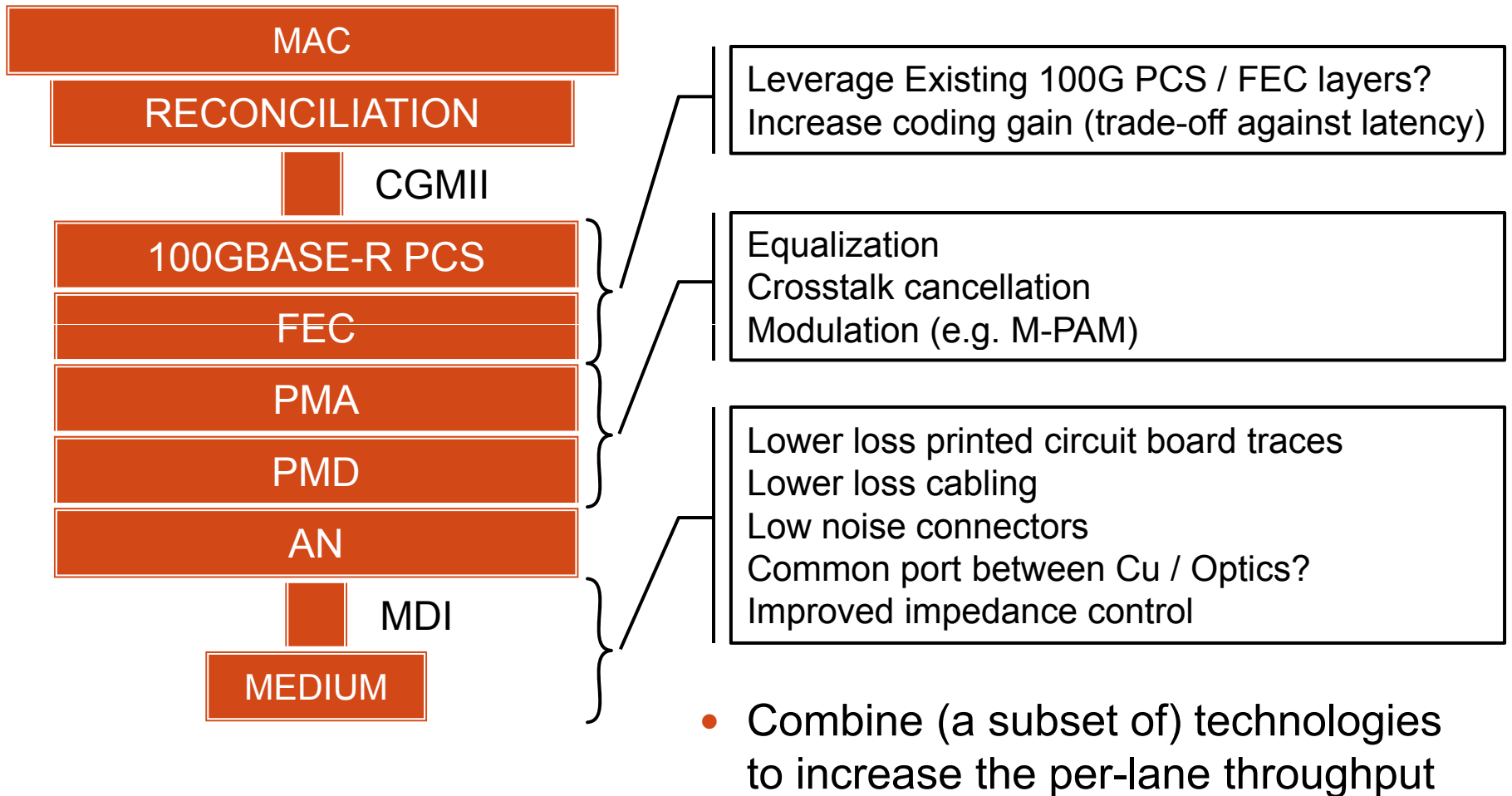
IEEE P802.3ap Historical Perspective

- Width of 10GBASE-KX4 based on need for interoperability between industry available XAUI Backplane solutions
- End-to-end channel recommendations, based on 2 connector / 1m system, could be applied to any topology
- What were the big problems?
 - The channel
 - Availability of channel data
 - In Study Group – not significant debate over reach
 - In Task Force
 - How bad (loss, crosstalk, return loss) were we targeting
 - HVM versus what can be done
 - Informative vs Normative channel model
 - Modulation Bakeoff
 - NRZ vs PAM-4 vs Duo-binary (PR2) vs Partial Response (PR4)
 - Defining the parameters for the simulations
- My expectations
 - Channels - Same issues will arise
 - Modulation bakeoff expected again

IEEE P802.3ba Historical Perspective

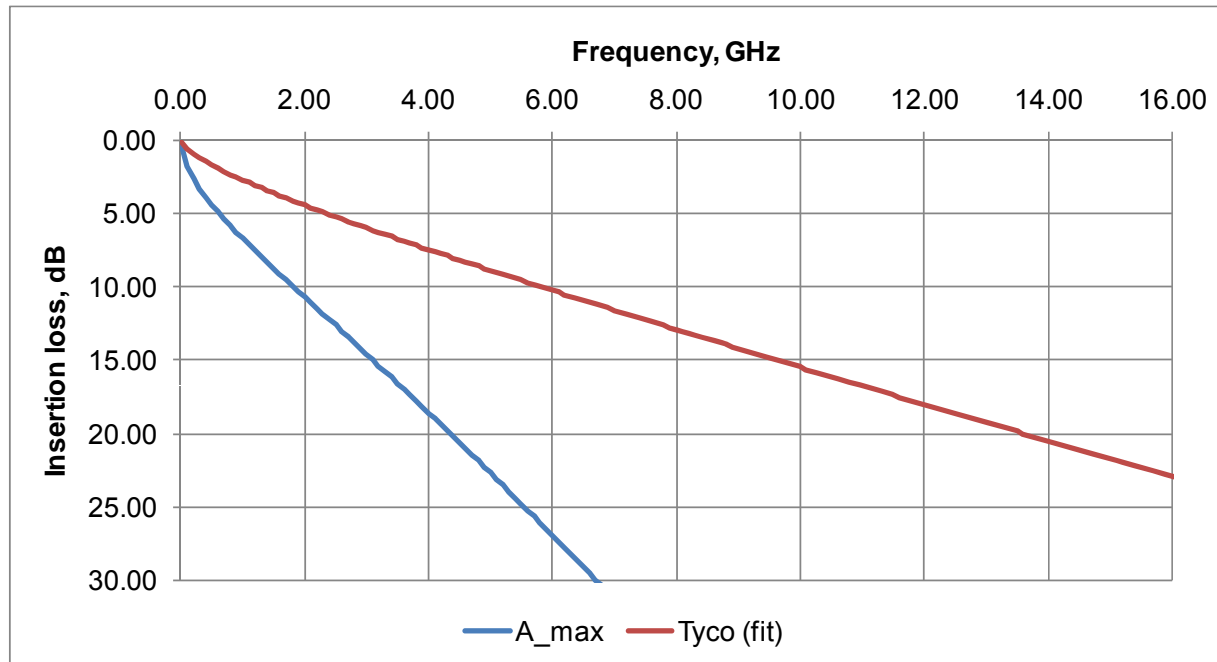
- 40GbE Backplane leveraged 10GBASE-KR (channel and modulation)
- 40GBASE-CR4 / 100GBASE-CR10
 - Reach
 - Common port for Cu / Optics solutions
 - Host Board channel
 - Common port
 - Development of compliance board test-fixturing
 - Project management issue
 - Budget
 - Host board (commonality between –CR and PPI drove $\approx 4''$ reach per host board)
 - Cable reach (10m > 7m)
- My Expectations
 - 100GbE Backplane is part of our study group
 - Cable Reach – key objective
 - Common port discussions
 - Host Board discussions
 - Will a common solution drive backplane and Cu cabling?
 - Backwards compatibility between 40G and 100G will be desirable

Options



Based on material used with permission from Adam Healey, LSI.

Channel Thoughts



Data from CFI - http://www.ieee802.org/3/100GCU/public/nov10/CFI_01_1110.pdf

- KR channels (Amax) vs scaled KR channels
 - Rate of operation
 - What will be width of interface - 100GBASE-KR”n”
- Debate between broad market potential and technical feasibility

Questions to Consider for Determining Objectives

- What will be the targeted reaches
 - Broad market potential?
 - Technical feasibility?
 - Economic feasibility?
- Modulation discussions / analysis
- Width of interface?
- For Cu cabling –
 - Port commonality or Cu only port?
 - MDI?
- Channel –
 - Examine relevant topologies as basis for reach objectives (channel parameters)
- Single solution for backplane and cu cable?