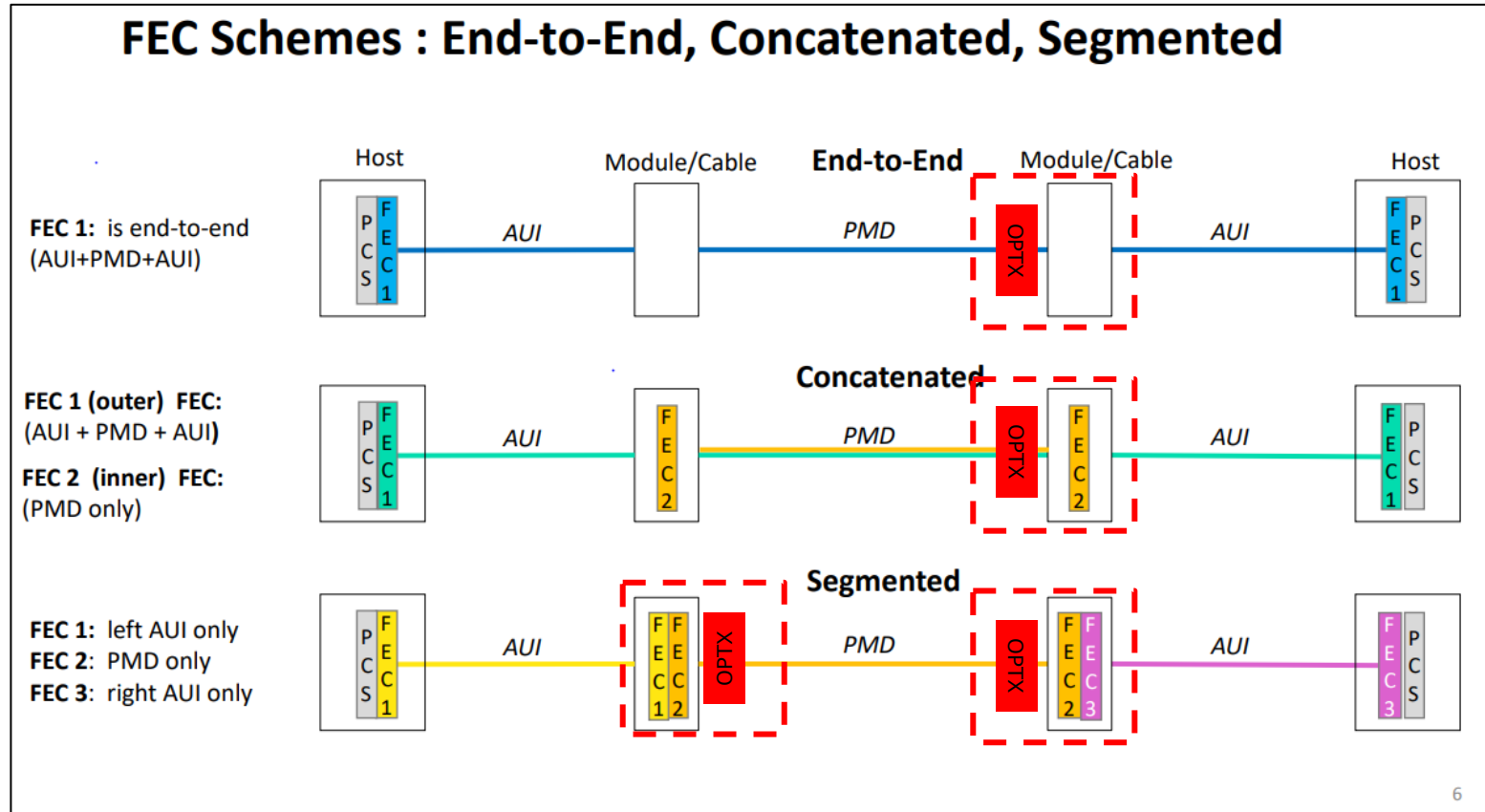# Optics input into the FEC discussion

Mark Nowell, Cisco

Mark Gustlin, Cisco

FEC discussion underway

FEC Schemes : End-to-End, Concatenated, Segmented

FEC 1: is end-to-end
(AUI+PMD+AUI)

End-to-End

Host — PCS FEC1 — AUI — Module/Cable — PMD — OPTX Module/Cable — AUI — FEC1 PCS — Host

Concatenated

FEC 1 (outer) FEC:
(AUI + PMD + AUI)

FEC 2 (inner) FEC:
(PMD only)

Host — PCS FEC1 — AUI — FEC2 — PMD — OPTX FEC2 — AUI — FEC1 PCS — Host

Segmented

FEC 1: left AUI only
FEC 2: PMD only
FEC 3: right AUI only

Host — PCS FEC1 — AUI — FEC1 FEC2 OPTX — PMD — OPTX FEC2 FEC3 — AUI — FEC3 PCS — Host

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From: shrikhande_3df_01a_220203.pdf

Depending on FEC scheme the implementation of optical PMDs <u>will differ</u>

It isn't a wait-and-see situation for optics experts.

FEC scheme decisions depend on inputs from optics experts

Implementation overlays

Optics inputs into the FEC discussion

<u>What do we know:</u>
- Segmented FEC will be supported in architecture due to 40 km objective

<u>What do we need to figure out:</u>
- What is the optimum FEC architecture for the rest?
- Will current targets from 100 Gb/s need to change:
    - <u>AUI</u>: **Pre-FEC** 1E-5 **Errors:** burst (likely to change)
    - <u>Optics:</u> **Pre-FEC** 2.4E-4 **Errors:** Random error model (need to change?)
- Every pluggable module has a DSP in it. The FEC decisions will impact these implementations.
    - Segmented FEC
        - Added functionality into the DSP (power, complexity), latency
    - Concatenated FEC
        - Added functionality into the DSP (power, complexity), interoperability
    - E2E FEC
        - Optional for inclusion into DSP for monitoring/link partitioning. Does FEC choice impact DSP power complexity
- Some strategies allow a reach-dependent FEC approach.
- Sensitivities to different FEC choices that could increase the signaling rate

Initial understanding of pre-FEC targets and error processes for all PMDs needed as soon as possible
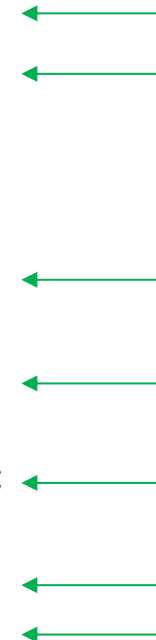
Working towards an P802.3df baseline
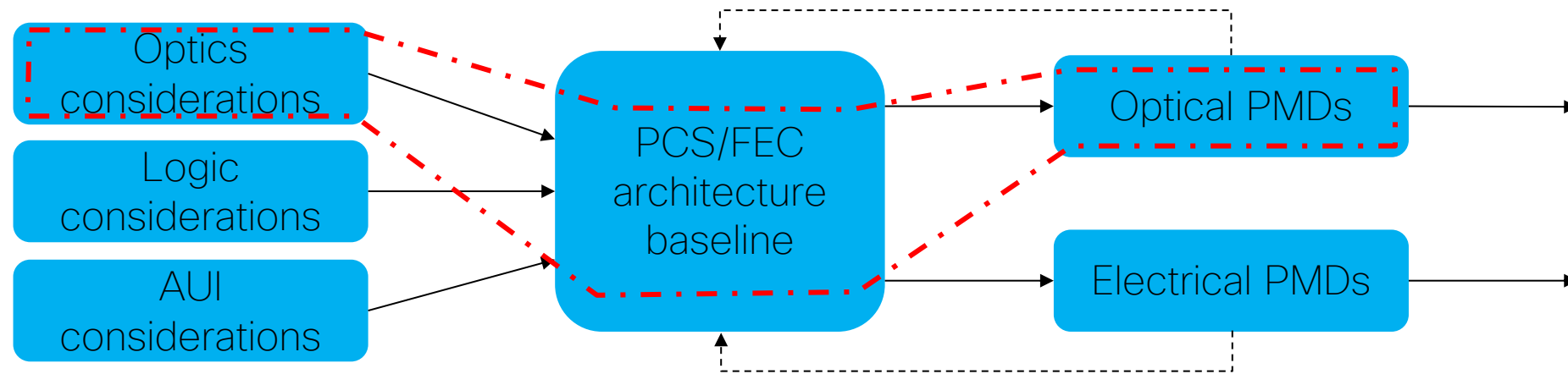
- Strong interest to start defining PMD baseline specifications

- Need to define PCS/FEC architecture first

- But locking this down depends on inputs around the optical considerations

Summary

- The P802.3df Task Force needs to start gathering preliminary optical inputs in order to define the FEC schemes per PHY
- Alternative is living with the assumptions that are made
- Getting to baselines on optical PMDs will be gated by FEC decisions