Making Sense out of ILT

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Introduction

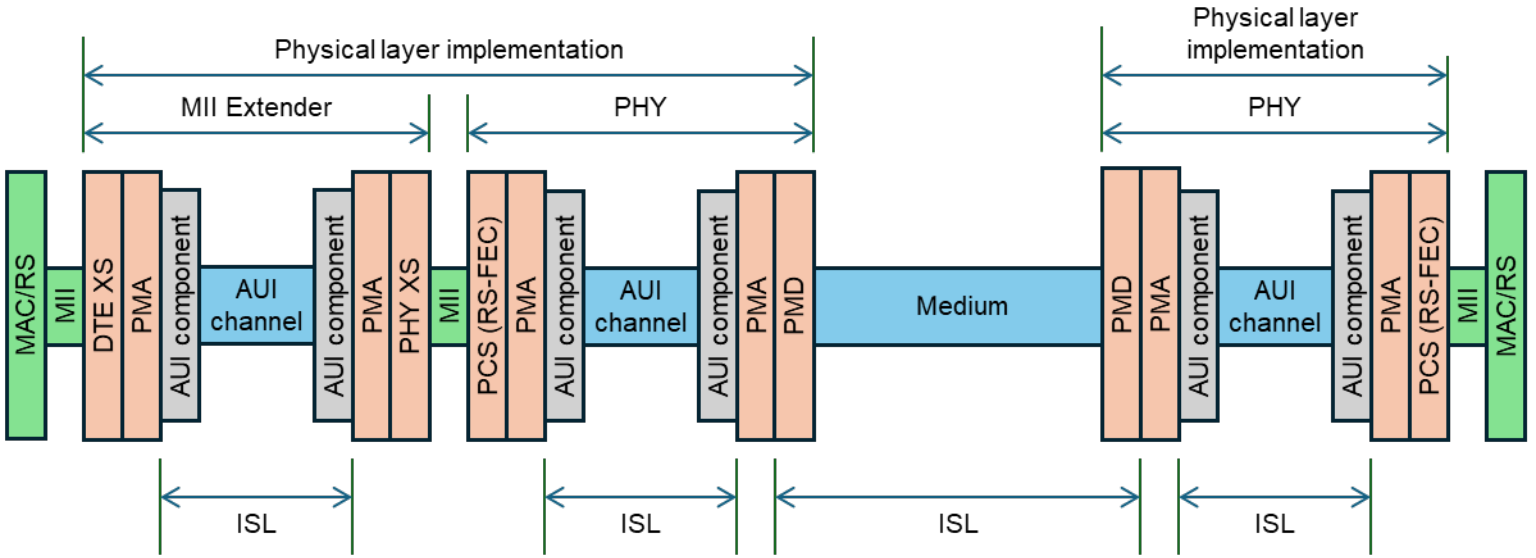
- IEEE P802.3dj introduces the concept of Inter-sublayer link training
  - Powerful functionality
  - The IEEE P802.3dj Task Force needs to take care to define ILT clearly to enable rapid adoption and deployment
- Review of ILT in IEEE P802.3dj D2.0
  - Complex and spread out among clauses
  - Authors needed to review specification methodology
  - Authors proposal is for the minimal amount of change

Annex 178B: ILT Conventions

Inter-sublayer link (ISL)

A physically instantiated link between a pair of adjacent sublayers. The ISL may be an xAUI-n between a pair of PMA sublayers within the same Physical Layer implementation or a pair of PMDs and the medium between.

A picture is worth a 1000 words (provide clarity!). Consider adding to 178B.3

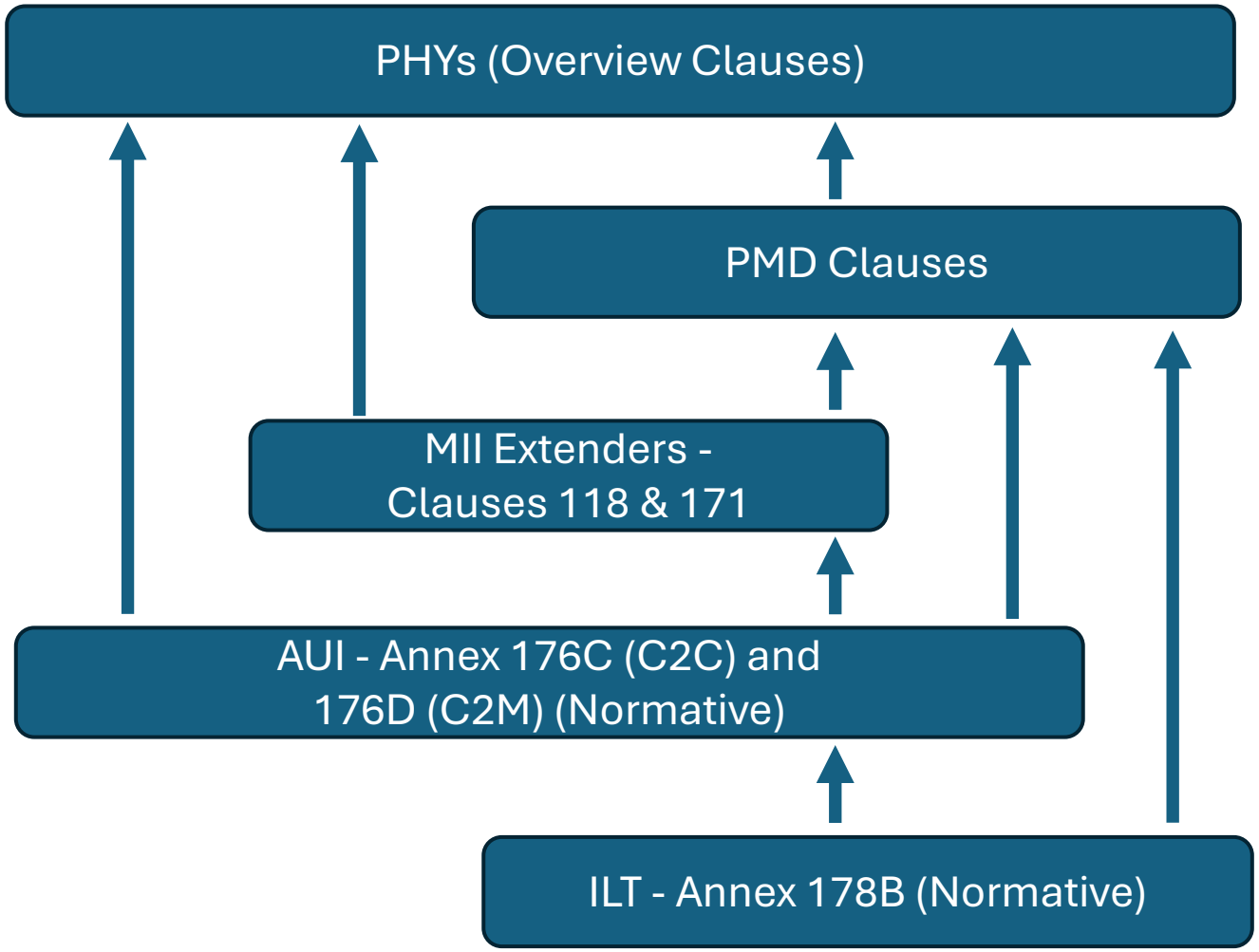


Introductory Clauses Summarizing ILT

- 116.2.9 defines ILT is supported by the following PHY types:
  - 200GBASE-KR1, 200GBASE-CR1, 200GBASE-DR1, 200GBASE-DR1-2, 400GBASE-KR2, 400GBASE-CR2, 400GBASE-DR2, and 400GBASE-DR2-2
- 169.2.10 defines ILT is supported by the following PHY types:
  - 800GBASE-KR4, 800GBASE-CR4, 800GBASE-DR4, 800GBASE-FR4-500, 800GBASE-DR4-2, 800GBASE-FR4, and 800GBASE-LR4
- 174.2.12 defines ILT is supported by the following PHY types:
  - 1.6TBASE-KR8, 1.6TBASE-CR8, 1.6TBASE-DR8, and 1.6TBASE-DR8-2

- Observations:
  - A PHY may support ILT based on the AUI implementation or PMD
    - Note – a PHY may support ILT even if the PMD doesn't
  - As an extender is above a PHY, a Physical Layer implementation may support ILT if the extender supports ILT (based on AUI using 200 Gb/s per lane) and the PHY doesn't.

Graphical View - ILT Specification Methodology (D2.0)



Introductory clauses summarize PHYs that support ILT: 116.2.9, 169.2.10,174.2.12 (See next page)

Subclauses specifies normative support of ILT for PMD:
KR - 178.8.9; CR – 179.8.9; DR – 180.5.12; DR-2 – 181.5.12;
FR-500 – 182.5.12; FR4 / LR4: 183.5.12

For MII Extenders, normative specificizes:
Table 118-a : 200 Gb/s based AUI's > 200GMII Extender
Table 118-b: 200 Gb/s based AUI's > 400GMI Extender
Table 171-1: 200 Gb/s based AUI's > 800GMII Extender
Table 171-1a: 200 Gb/s based AUI's > 1.6TMII Extender

176C.3 Functional specification – "… a C2C component shall provide the inter-sublayer link training (ILT) function…"
176D.3 Functional specification – "… a C2M component shall provide the inter-sublayer link training (ILT) function…"

Normative specifications
"178B.4 ILT function in AUI components and PMDs"

Introductory Clauses – Suggested Rewording (Editorial License encouraged)

- Change ILT / PHY support statements in introductory clauses as follows:

- 116.2.9, 3rd paragraph
  - Physical layer implementations support ILT if any of the following is included:
    - PMDs: 200GBASE-KR1, 200GBASE-CR1, 200GBASE-DR1, 200GBASE-DR1-2, 400GBASE-KR2, 400GBASE-CR2, 400GBASE-DR2, or 400GBASE-DR2-2
    - AUIs: 200GAUI-1 C2C, 200GAUI-1 C2M, 400GAUI-2 C2C, and 400GAUI-2 C2M

- 169.2.10, 2nd paragraph
  - Physical layer implementations support ILT if any of the following is included:
    - PMDs: 800GBASE-KR4, 800GBASE-CR4, 800GBASE-DR4, 800GBASE-FR4-500, 800GBASE-DR4-2, 800GBASE-FR4, or 800GBASE-LR4
    - AUIs: 800GAUI-4 C2C or 800GAUI-4C2M

NOTE – This means a LR1 / ER1 / or ER1-20 physical layer implementation could support ILT via the AUIs, not the PMD

- 174.2.12 , 2nd paragraph
  - Physical layer implementations support ILT if any of the following is included:
    - PMDs: 1.6TBASE-KR8, 1.6TBASE-CR8, 1.6TBASE-DR8, or 1.6TBASE-DR8-2
    - AUIs: 1.6TGAUI-8C2C or 1.6TGAUI-8 C2M