SUPI Update

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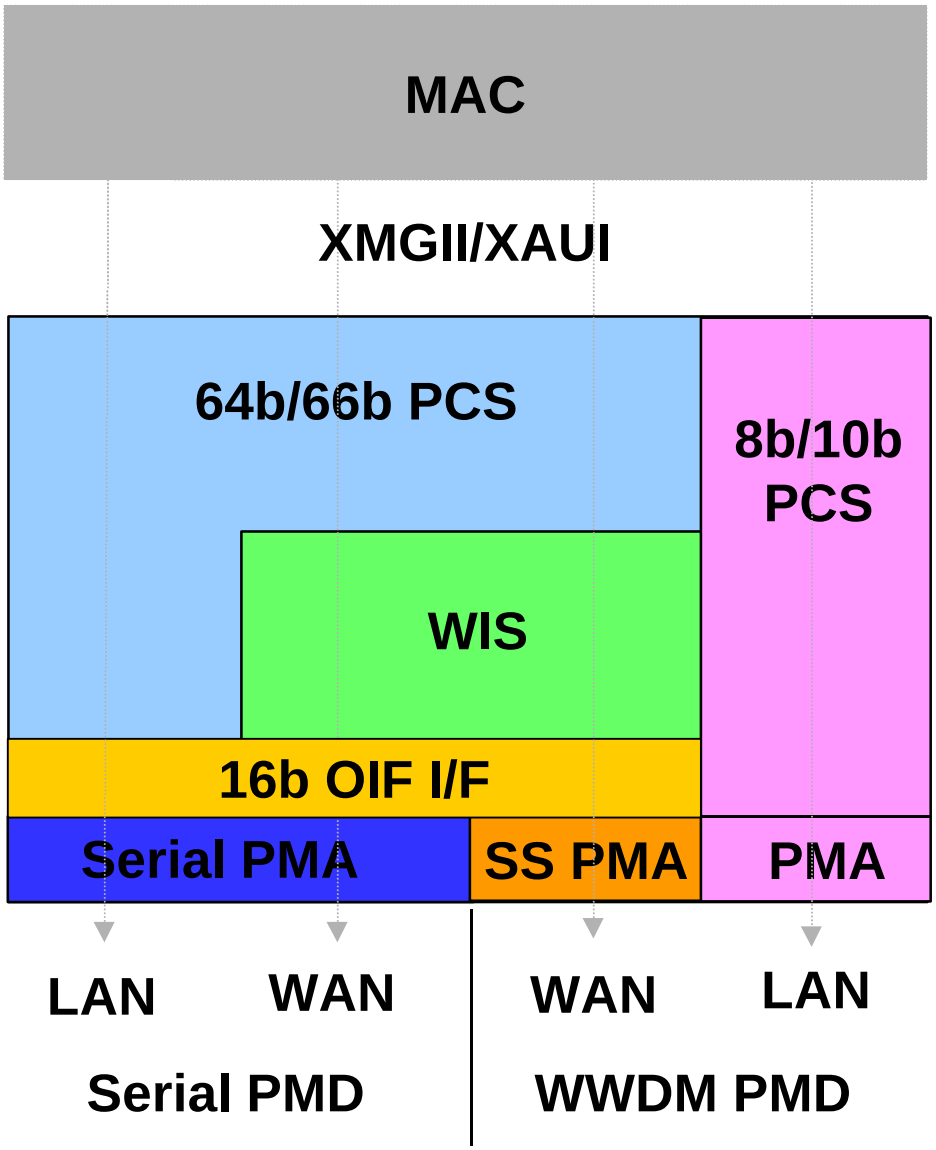
Norival Figueira, Paul Bottorff, David Martin, Tim Armstrong, Bijan Raahemi: ……	Nortel Networks
Howard Frazier:……..	Cisco Systems
Enrique Hernandez (Bell Labs), Nevin Jones (Microelectronics):……	Lucent
Tom Palkert:……	AMCC
Iain Verigin, Stuart Robinson, Tom Alexander, Farzin Firoozmand:……	PMC Sierra
Nader Vijeh:……..	Lantern Communications
Frederick Weniger:……	Vitesse
Shimon Muller:……	Sun Microsystems
Kevin On:……	Infineon Technologies
Richard Dugan:……	Agilent
Nan Chen:……..	Force10 Networks

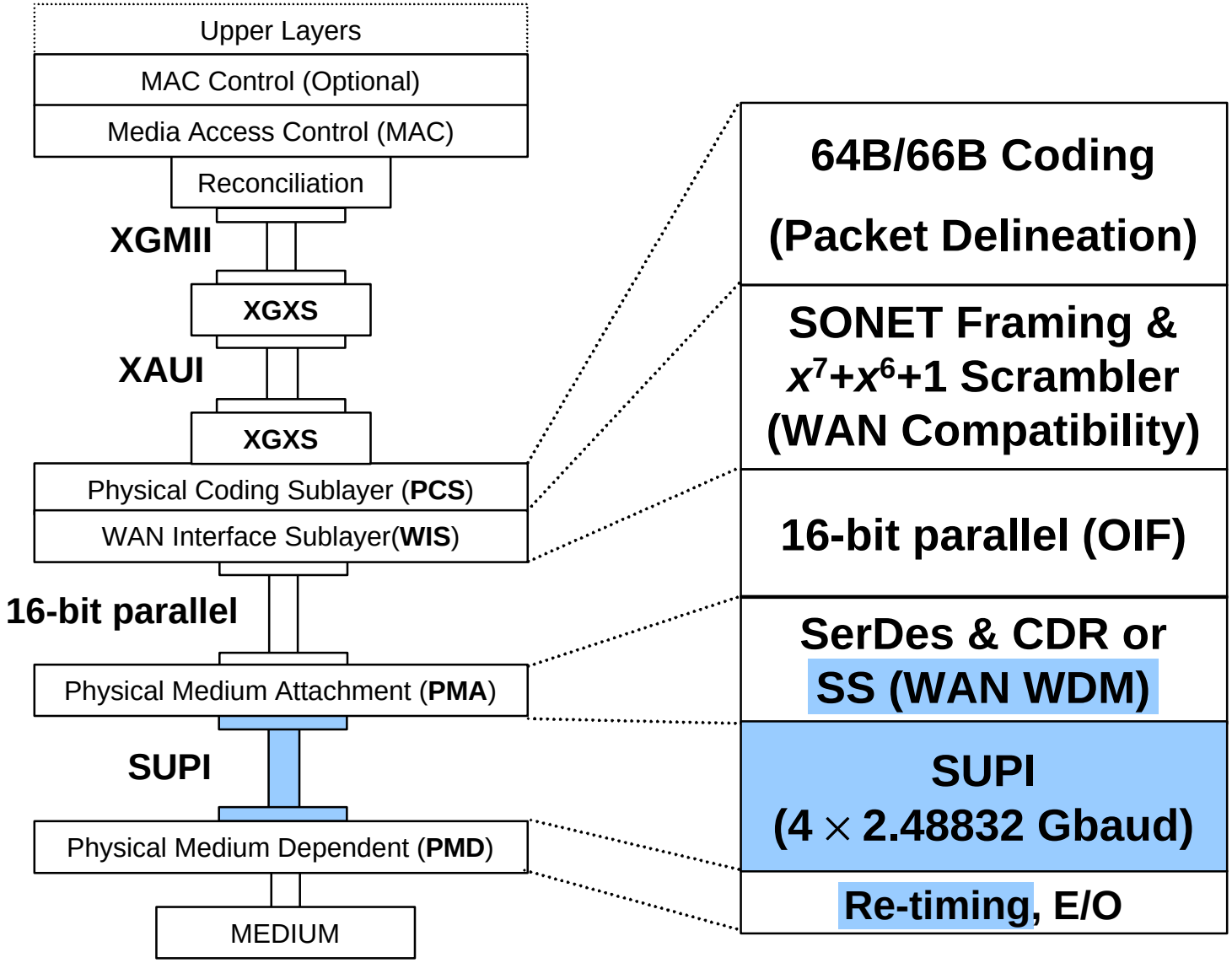
UniPHY Components



Attaching WWDM PMD to WAN PHY

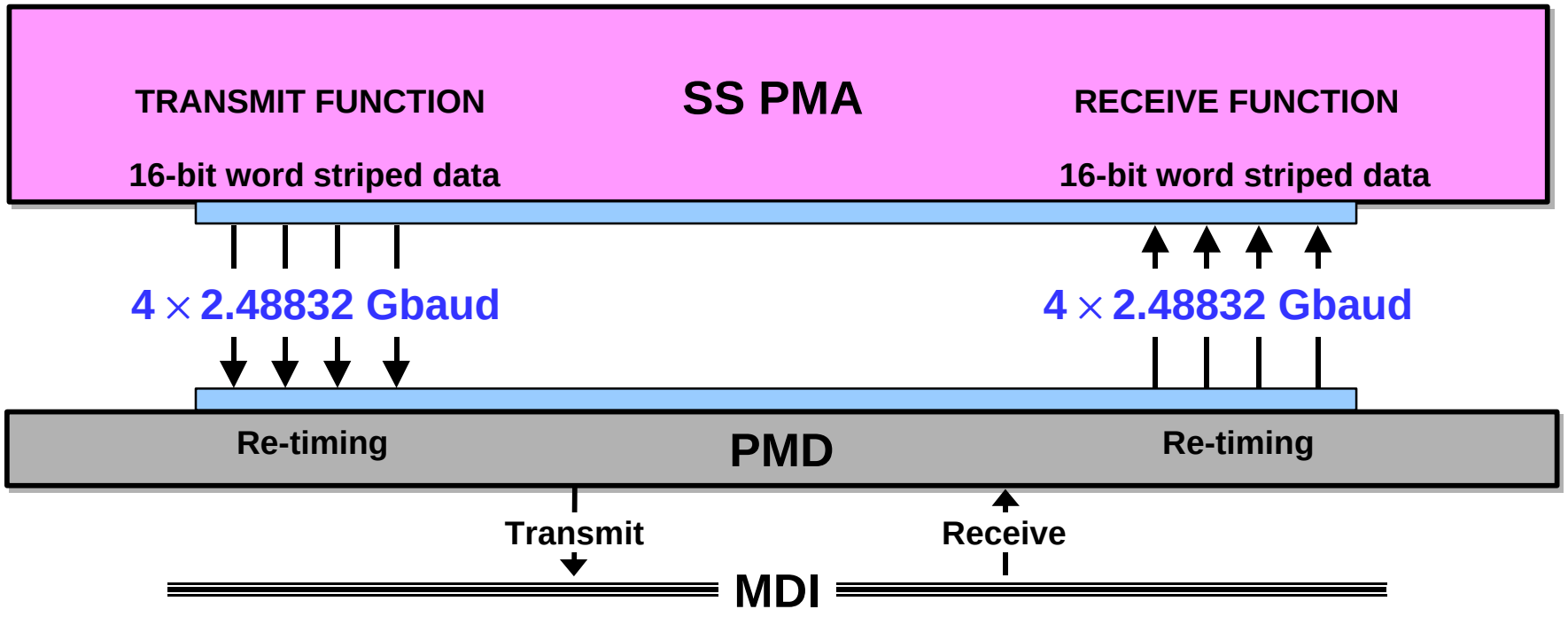
- **XAUI like attachment does not work because WAN PHY data area is pseudo random. WAN PHY data has no frame or gap codes.**
- **To operate on WWDM WAN-PHY must have a PMA function to generate the 4 lanes.**
  - Skew correction is needed between lanes
  - Techniques based on IFG codes can not be used due to the randomization of data

WAN-PHY and UniPHY Layer Model



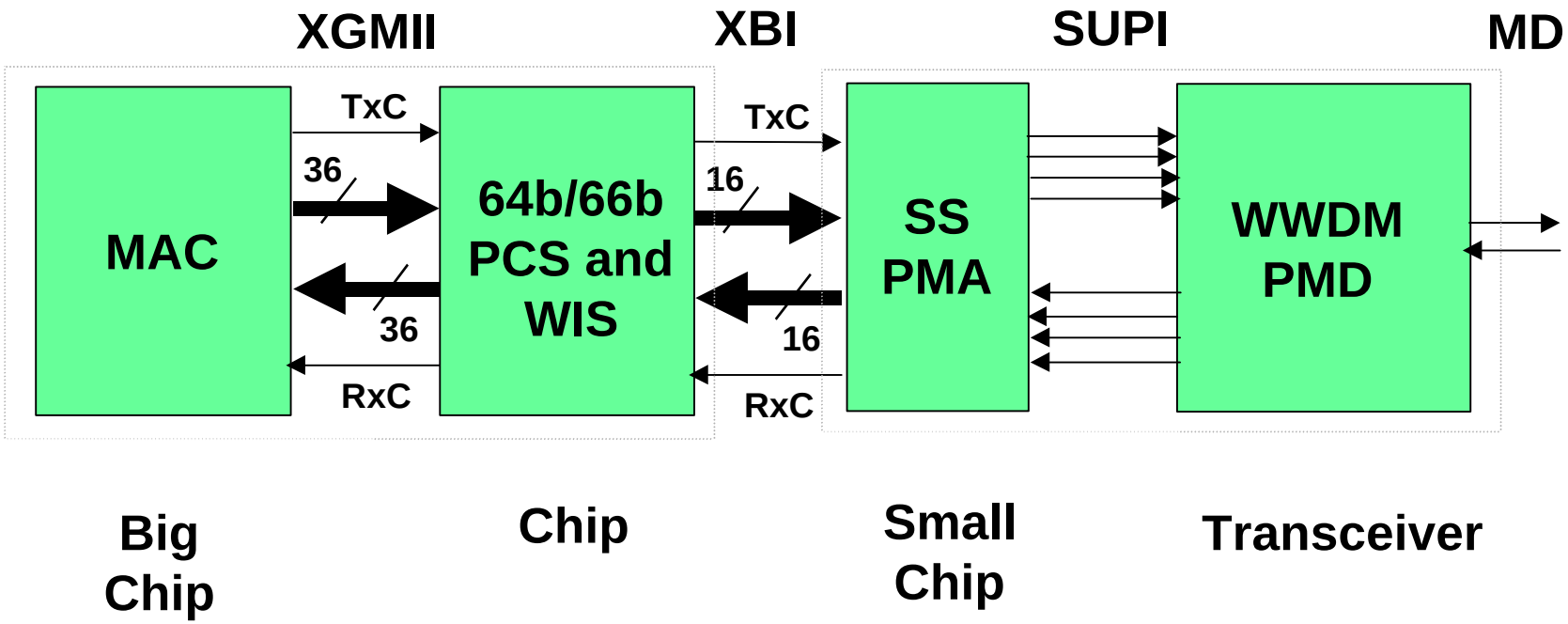
SS = SUPI Sublayer

SUPI (WDM PMD Service Interface)



SS = SUPI Sublayer

SS PMA Implementation Example

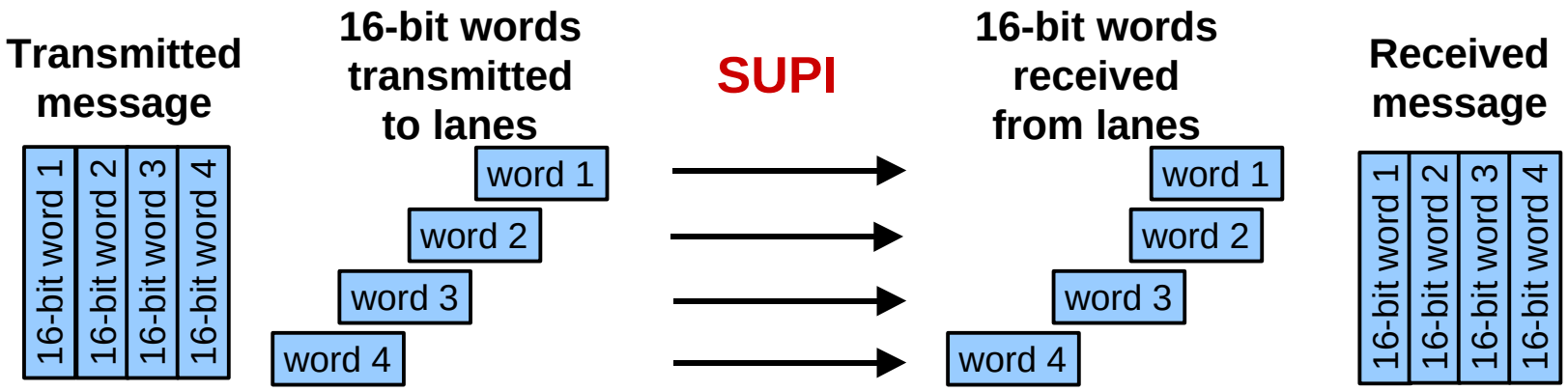


SUPI

- **Used for WWDM and 4× parallel PMDs**
- **Can use a recovered clock to reset jitter**
- **Can provide up to 62.5 usec skew correction**

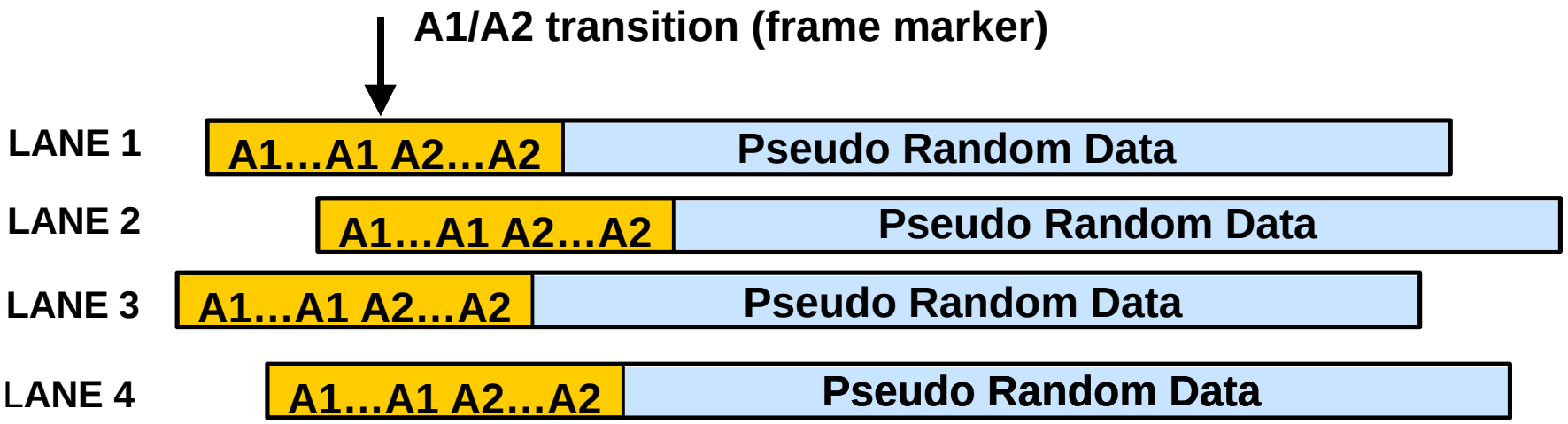
SUPI (cont.)

- **16-bit word striped data transmitted on each lane**
- **Each lane has 1/4 of the (SONET) A1/ A2 framing bytes for lane deskew and synchronization**
  - Word synchronization from A1/A2 transition
  - For fixed lane assignment, allows for large skew

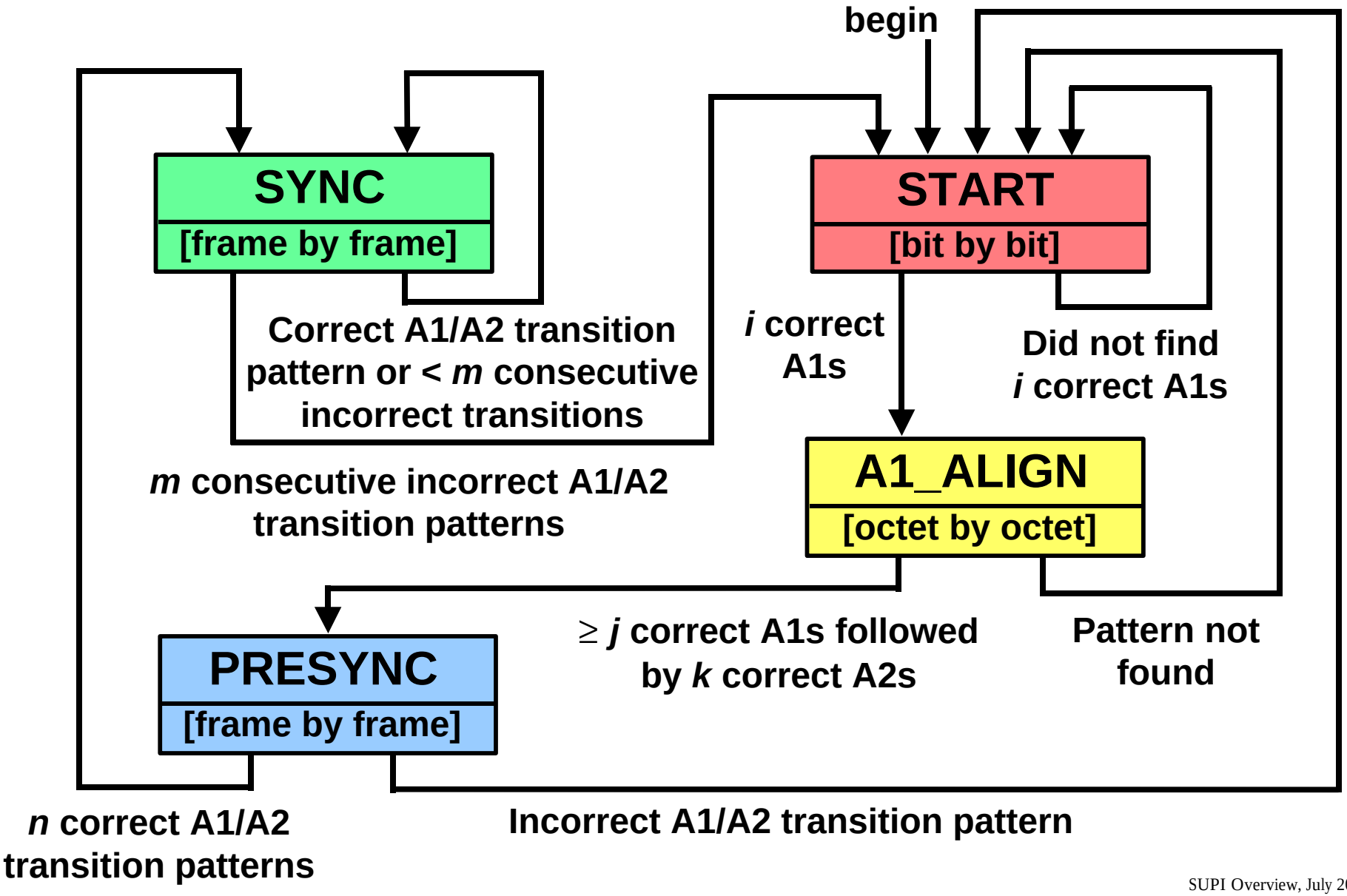


SUPI LANE Deskew

- **Uses A1/A2 transition (i.e., frame marker)**
- **Looks for the A1/A2 framing pattern consistently**
  - Expects it to appear on each lane once every 38880 octets
  - Each lane locks on the synchronization pattern



Lane Sync: State Diagram



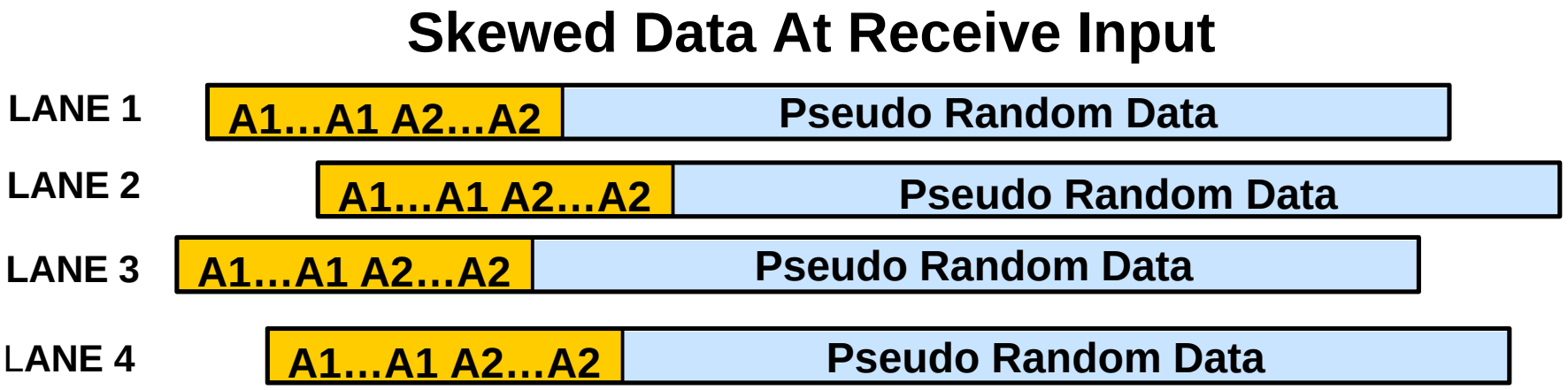
Deskew

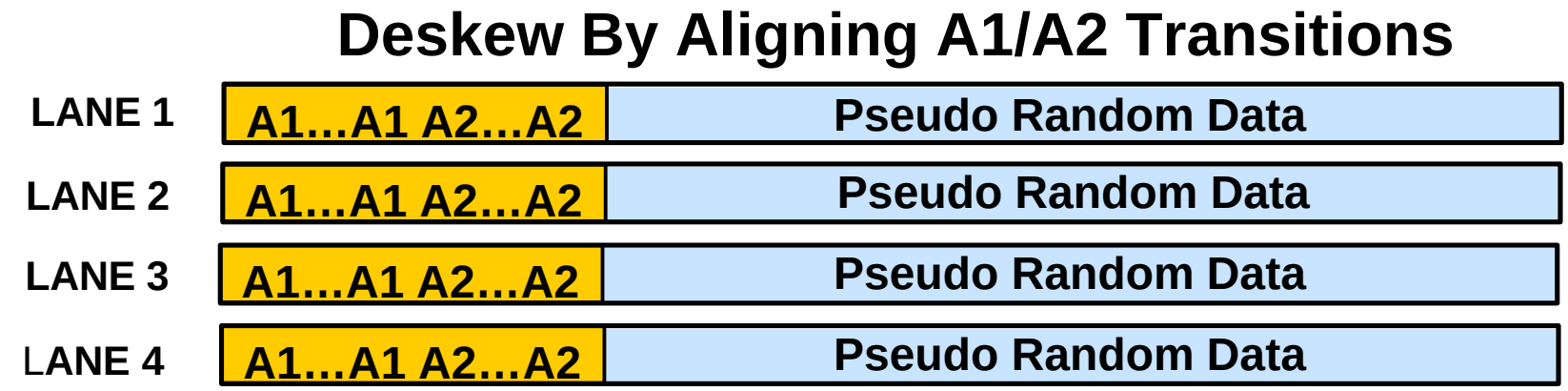
- Skew is imparted by active and passive link elements
- SS PMA deskew accounts for all skew present at the Rx
- Lane deskew performed by alignment to A1/A2 pattern present every 125 usec

Skew Source	#	Skew	Total Skew
SerDes Tx	1	1 UI	1 UI
PCB	2	1 UI	2 UI
Medium	1	<16 UI	<16 UI
SerDes Rx	1	16 UI	16 UI
Total			< 35 UI

- Required deskew is much less than possible 77,760 UI

Deskew Example





- **Uses**

Summary

- **SUPI**
  - WAN WWDM PMD Service Interface
  - 4 × 2.48832 Gbaud
  - 16-bit word striped data transmitted on each lane
  - Each lane has 1/4 of the (SONET) A1/ A2 framing bytes for lane deskew
  - Word synchronization from A1/A2 transition