

CONNECTING AT THE SPEED OF LIGHT

# Coherent In Passive Optical Networks

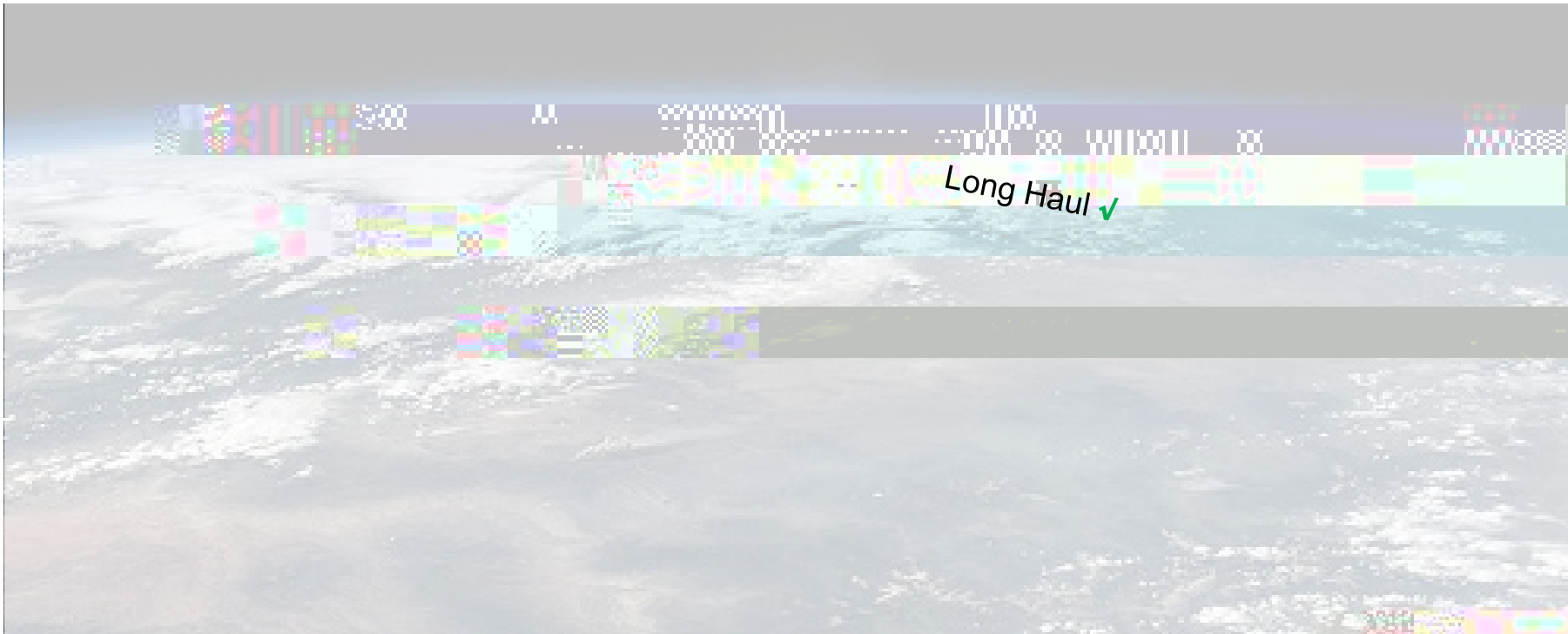
OptiNet 2023

Fenghai Liu

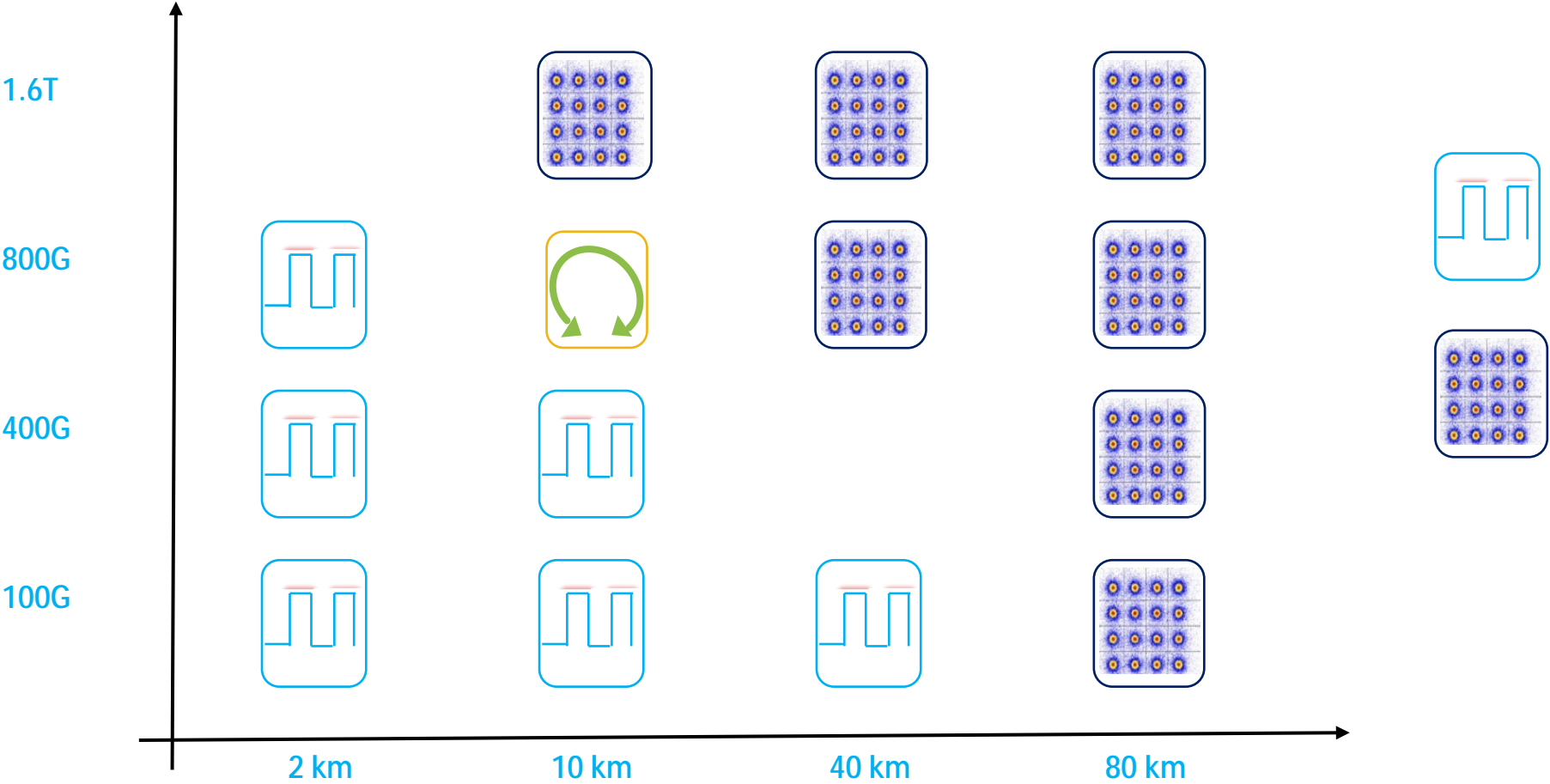
June 2023



# Optical Coherent Networks Continue to Expand



# IM-



# Edge & Access Network – W5e3ccccccccccc.2eler DWDM(k B)-.

- Existing solutions
  - 100G LR4/ER4/ZR4
  - Nx10G DWDM
- Coherent solutions
  - Hot Pluggable
  - Fixed Wavelength or DWDM
  - 100G/200G/400G





# Trend of Passive Optical Network Technologies



Courtesy of CableLabs®







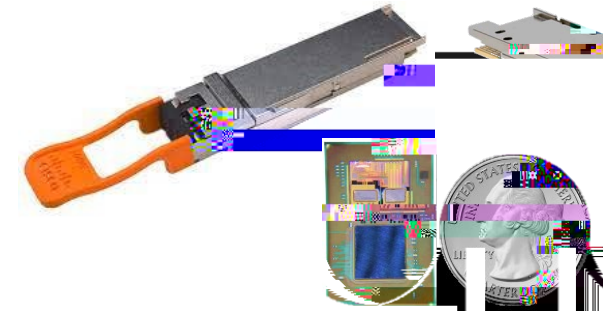


# New Applications Opened by Coherent PON



# Moving into PON: Coherent Ready?

- Fits into small hot pluggable module
  - Innovations from high-density photonic integration (SiP and InP)
  - Innovations from advanced packaging (3D OE-MCM, ICTROSA)
- Low power consumption
  - Smaller CMOS node: 4nm/3nm
  - Low power Driver/TIA and laser designs
  - Co-design on RF signal paths
- Cost competitive
  - High level of vertical integration
  - High-volume packaging
  - Low-cost laser (fixed or narrow tuning range)
- Single fiber Bi-directional transmission
  - Tunable Coherent BiDi DCO available today
  - Need further cost/size reduction
- Operation in I-temp outdoor environment
  - Coherent DCO available today
  - Need further cost/size/power reduction
- Burst mode reception
  - Standardization and Implementation





# Thank You

