



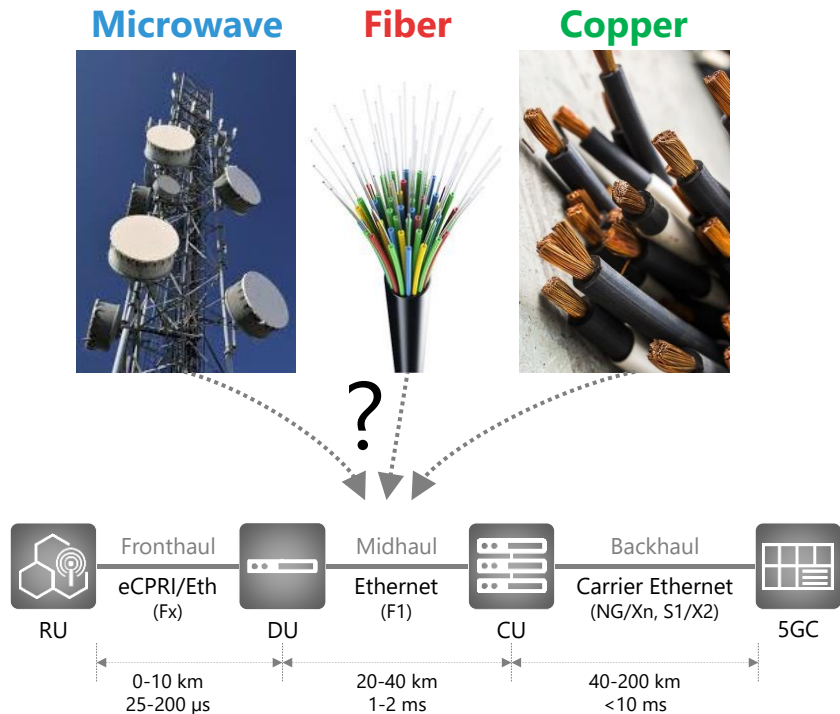
Open optical edge connecting mobile access networks

ECOC'22 WS: Moving from optical components in RAN to optical components for RAN

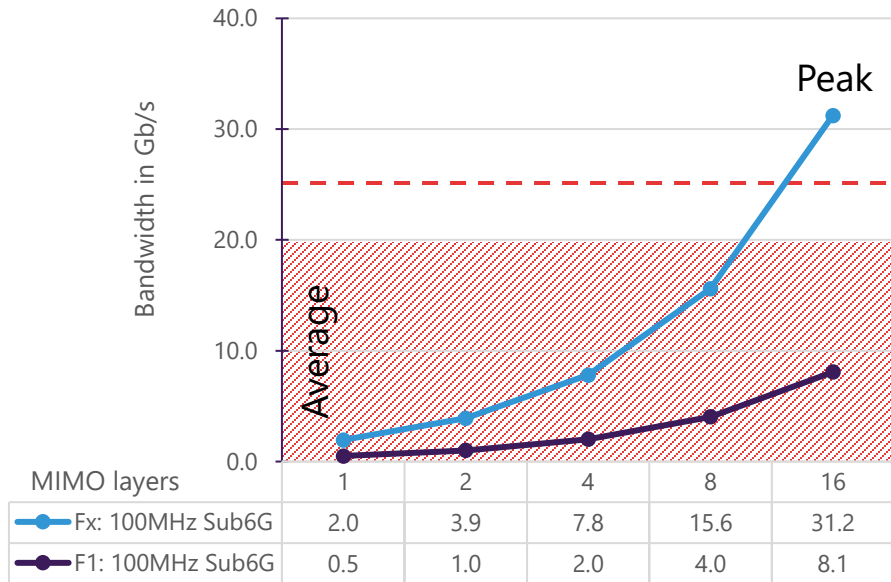
Jim Zou, Global Business Development



Fixed x-haul transport for 5G RAN



Single sector DL transport bandwidth (peak)



Source: O-RAN Alliance

Optical fiber connectivity is the key to flexible capacity growth

Transmission technologies

What are the optical layer options?

Wavelength windows

- C-band vs O-band
- Fixed vs tunable



Modulation

- DML, EML, MZM, ...
- NRZ, PAM-x, DMT, CAP, ...
- IM/DD vs coherent



Parallelism

- Dark fibers
- CWDM vs DWDM
- TDM vs FDM



(Digital) signal processing

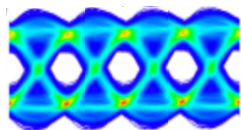
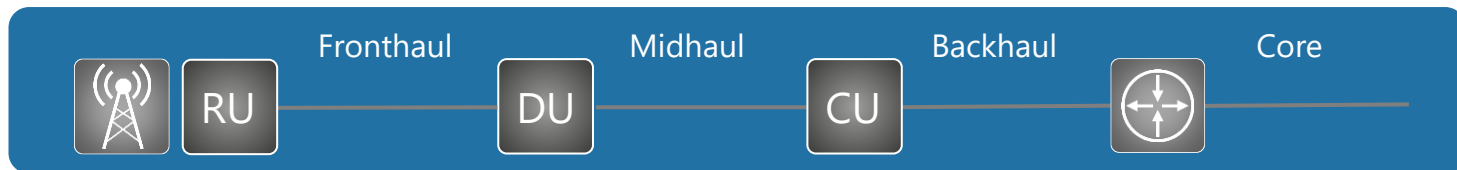
- Advanced modulation formats
- Equalization, shaping, EDC, ...
- FEC



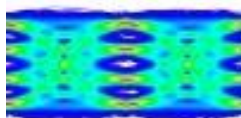
Pragmatic approach is needed between cost and performance

What's next?

Optical transmission evolution

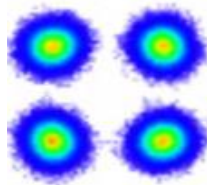


Direct-detect 10G

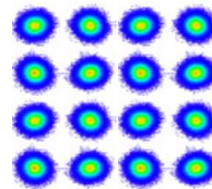


Direct-detect 25G

Coherent Edge 100G



Coherent 400G



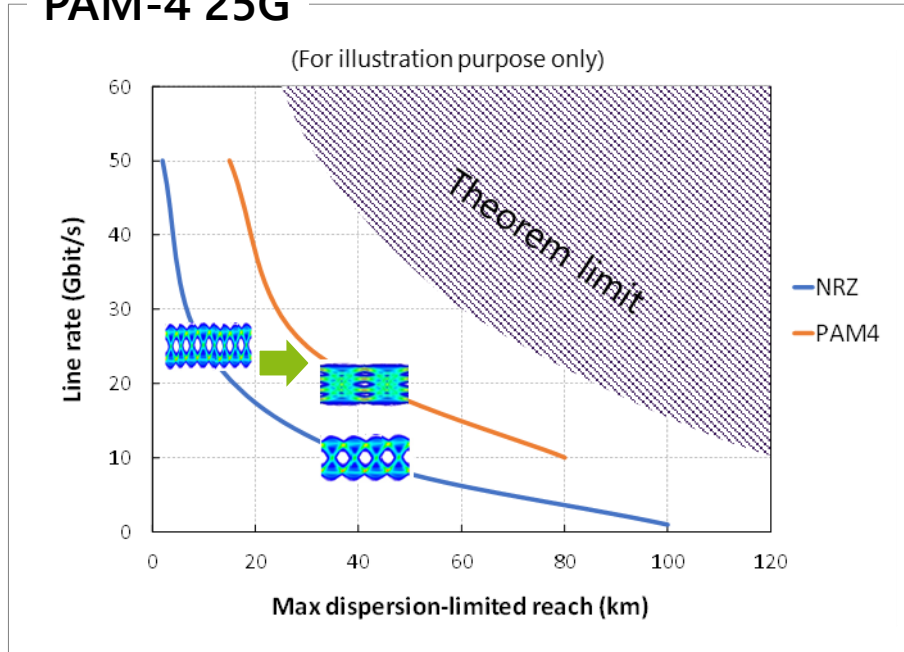
Lower reach
Lower complexity and cheaper

Longer reach
Higher performance

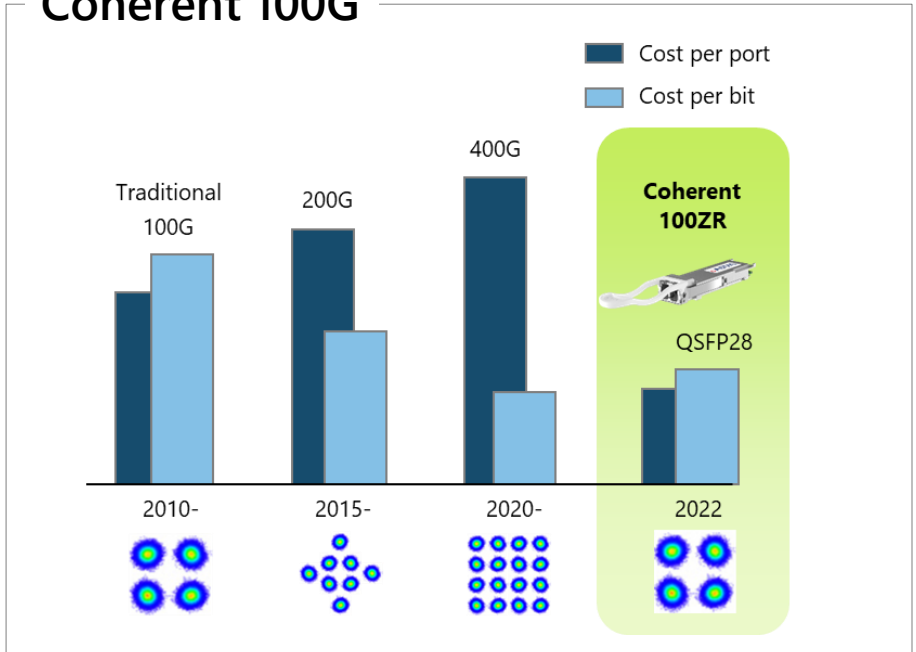
Purpose-built solutions

For optical edge/access interface

PAM-4 25G



Coherent 100G



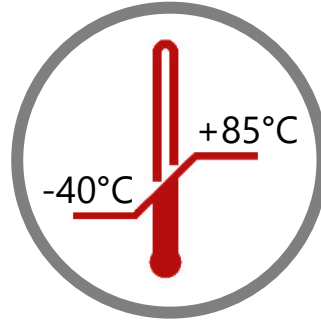
Close the gap between IM/DD and coherent

Important aspects of RAN deployments

Power consumption



Industrial temperature



Module cost



Module latency



**25G
Direct Detect**

3W max

Achievable

Cost-effective

Minor KR4-FEC latency

**100ZR
Coherent**

5-6W max

Achievable

**Relatively
Expensive**

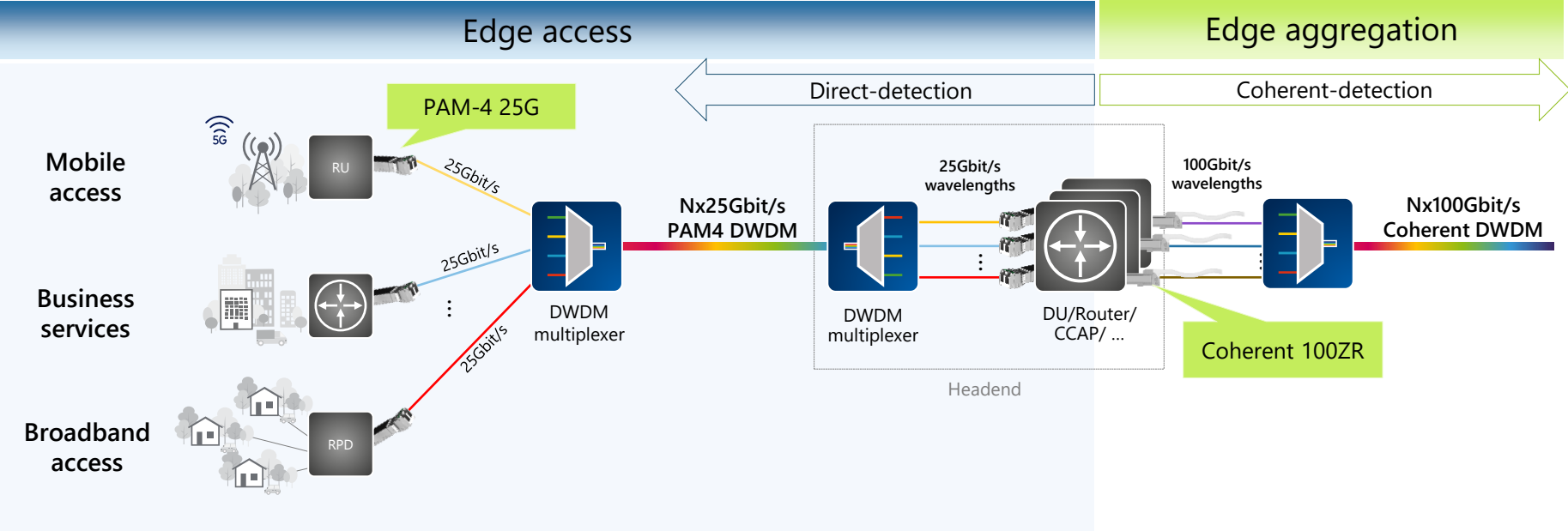
**Optimized latency
through DSP/FEC**

**“Coherent slicing”
not viable**



**Too high-power consumption for SFP28 or even QSFP28
QSFP-DD/CFPx inefficient and expensive for only 25G-100G**

Summary



Access always appreciates simple and cost-efficient solution



Thank you / Vielen Dank / 谢谢

jzou@adva.com

IMPORTANT NOTICE

The content of this presentation is strictly confidential. ADVA is the exclusive owner or licensee of the content, material, and information in this presentation. Any reproduction, publication or reprint, in whole or in part, is strictly prohibited. The information in this presentation may not be accurate, complete or up to date, and is provided without warranties or representations of any kind, either express or implied. ADVA shall not be responsible for and disclaims any liability for any loss or damages, including without limitation, direct, indirect, incidental, consequential and special damages, alleged to have been caused by or in connection with using and/or relying on the information contained in this presentation. Copyright © for the entire content of this presentation: ADVA.