CIOE
CHINA INTERNATIONAL
OPTOELECTRONIC
EXPO
SEPTEMBER 4-7, 2019
SHENZHEN CONVENTION & EXHIBITION CENTER · CHINA

800G Pluggable MSA Introduction and Announcement

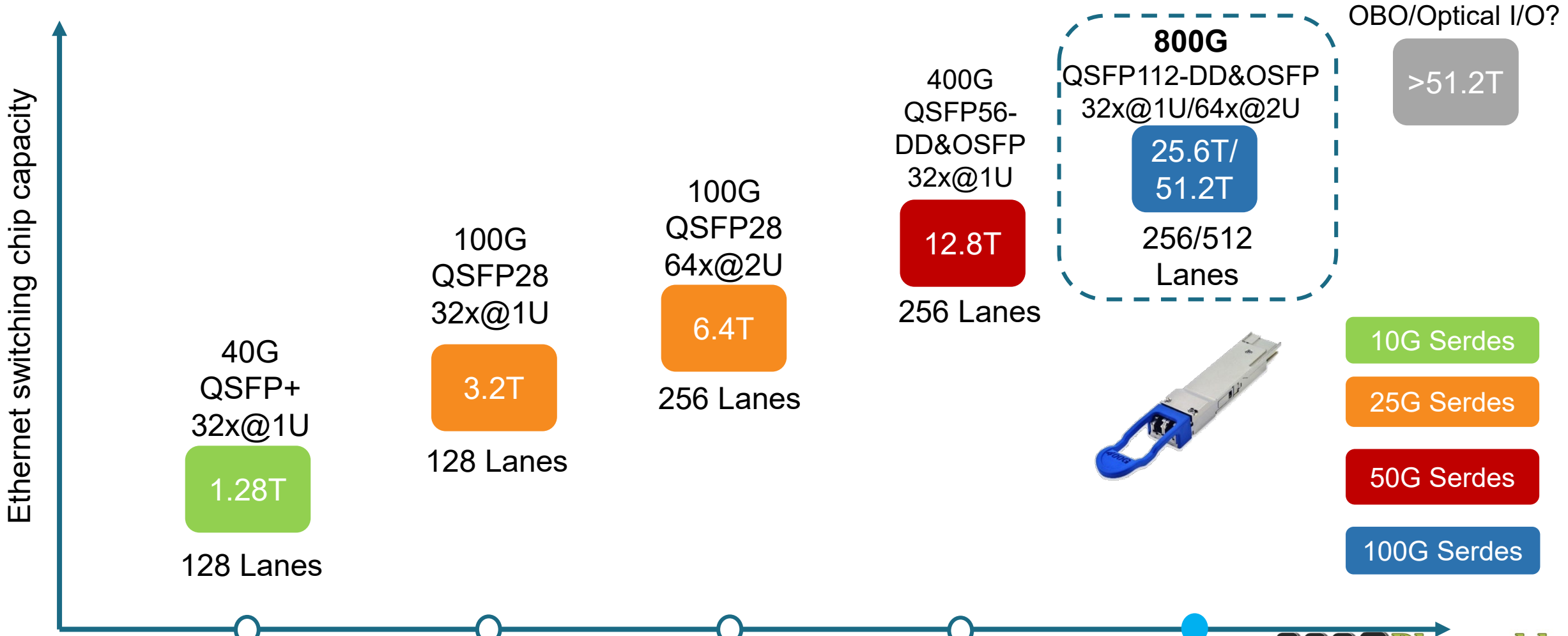
Dr. Maxim Kuschnerov, Huawei

September 5th, 2019

Outline

- Why 800G
- Ethernet optical module market
- MSA targets
- Evolution of pluggable datacom optics
- 800G module interfaces
- Technical feasibility
- Pluggables vs. on-board & co-packaged optics
- Key milestones
- MSA members

Why 800G: Scaling of the switch capacity



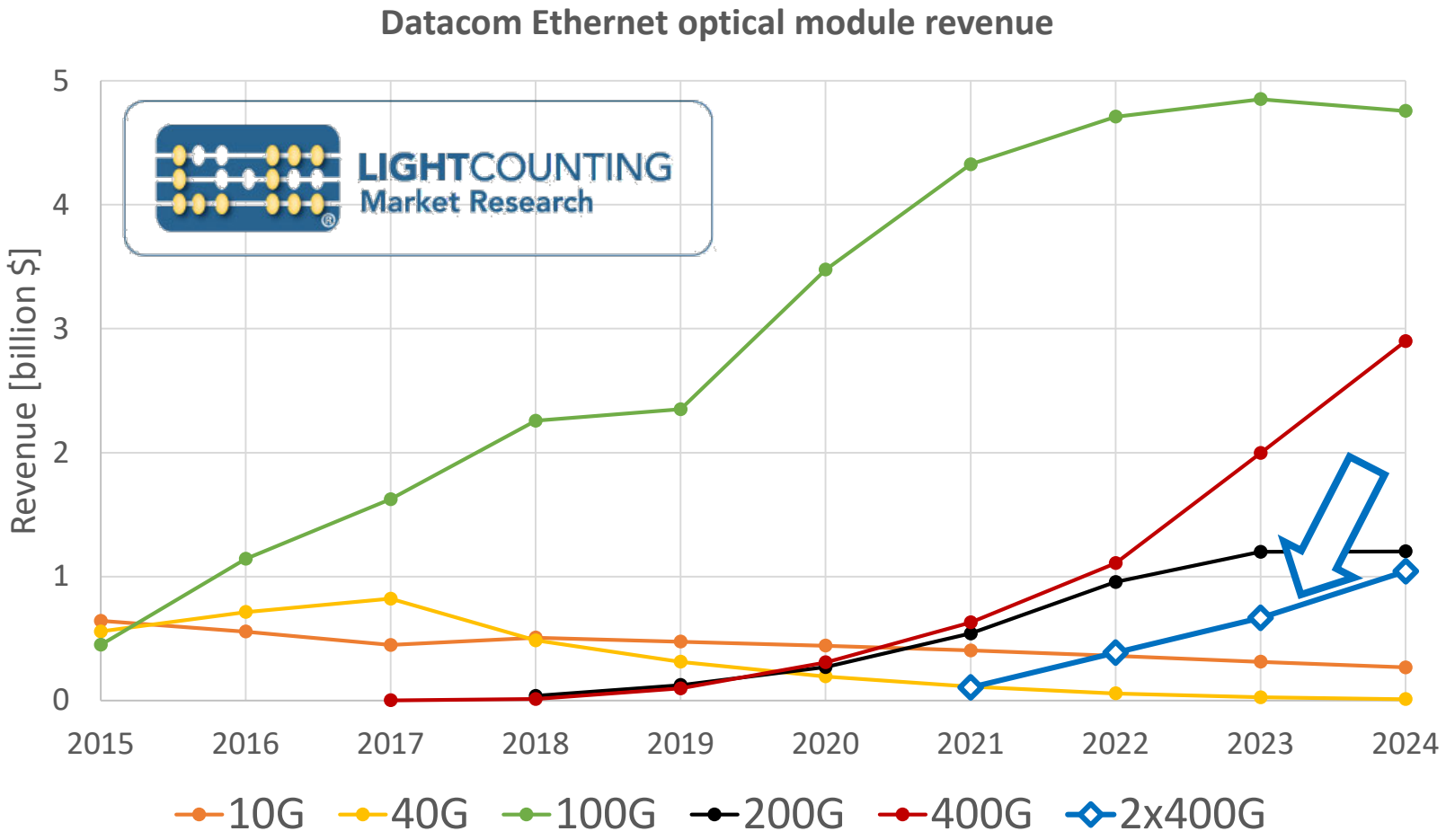
800G Pluggable MSA

800G Pluggable MULTI-SOURCE AGREEMENT

Ethernet optical module market

- 100G dominates the market
- 200G/400G modules slowly ramping
- Potential 2x400G demand is seen to begin in 2021
- Co-packaging of 2x400G in a single module is not cost effective

➔ **A true 800G solution is preferred**

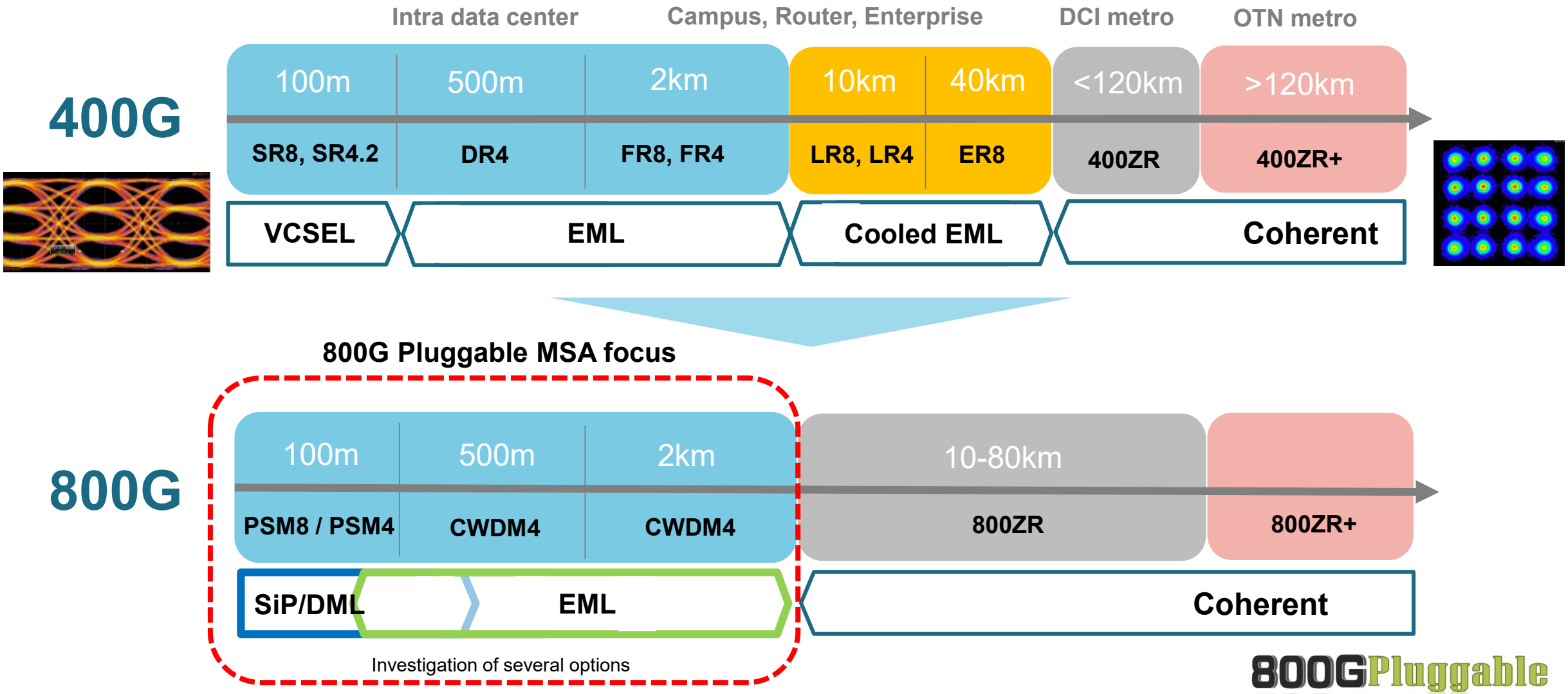


800GPluggable
MULTI-SOURCE AGREEMENT

Key objectives of the 800G Pluggable MSA

1. Define the specifications for optical interfaces of 800Gb/s optical datacom transceivers
2. Develop essential parts of an eco-system to create a global direction for next generation 800G technology
3. Establish the eco-system of 800Gb/s optical transceivers
4. Value sharing of the technology within the supply-chain

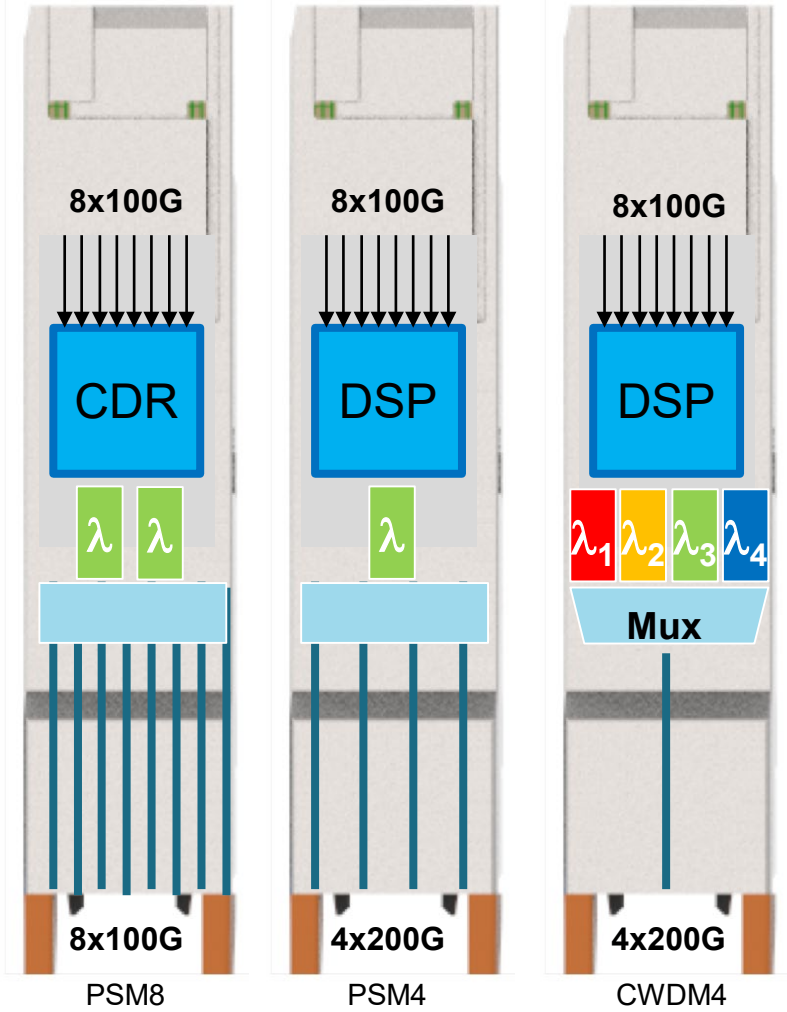
Evolution towards 800G



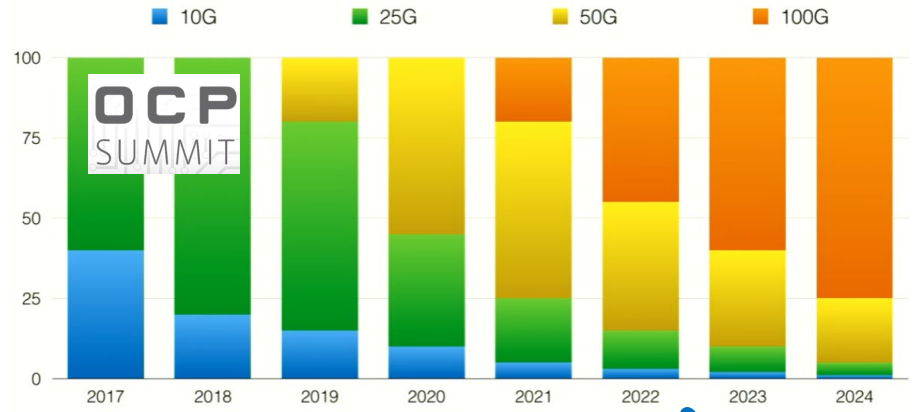
800G pluggable module interfaces

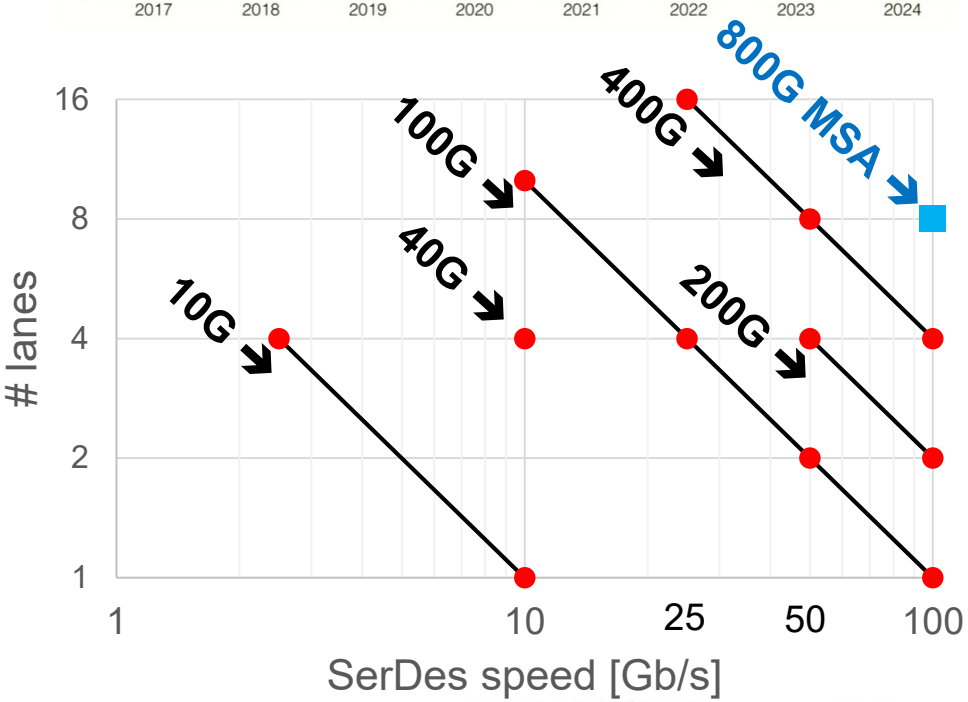
- 800G Pluggable MSA targets 8x100G / 4x200G signaling for optics
- Host side will rely on 8x112G
- Support of 8x100GbE, 2x400GbE on the host
- 800GbE will not be standardized in time, but should be supported in the future

8x100GbE, 2x400GbE



SERDES Speed Transition Over the Years [% Mix]

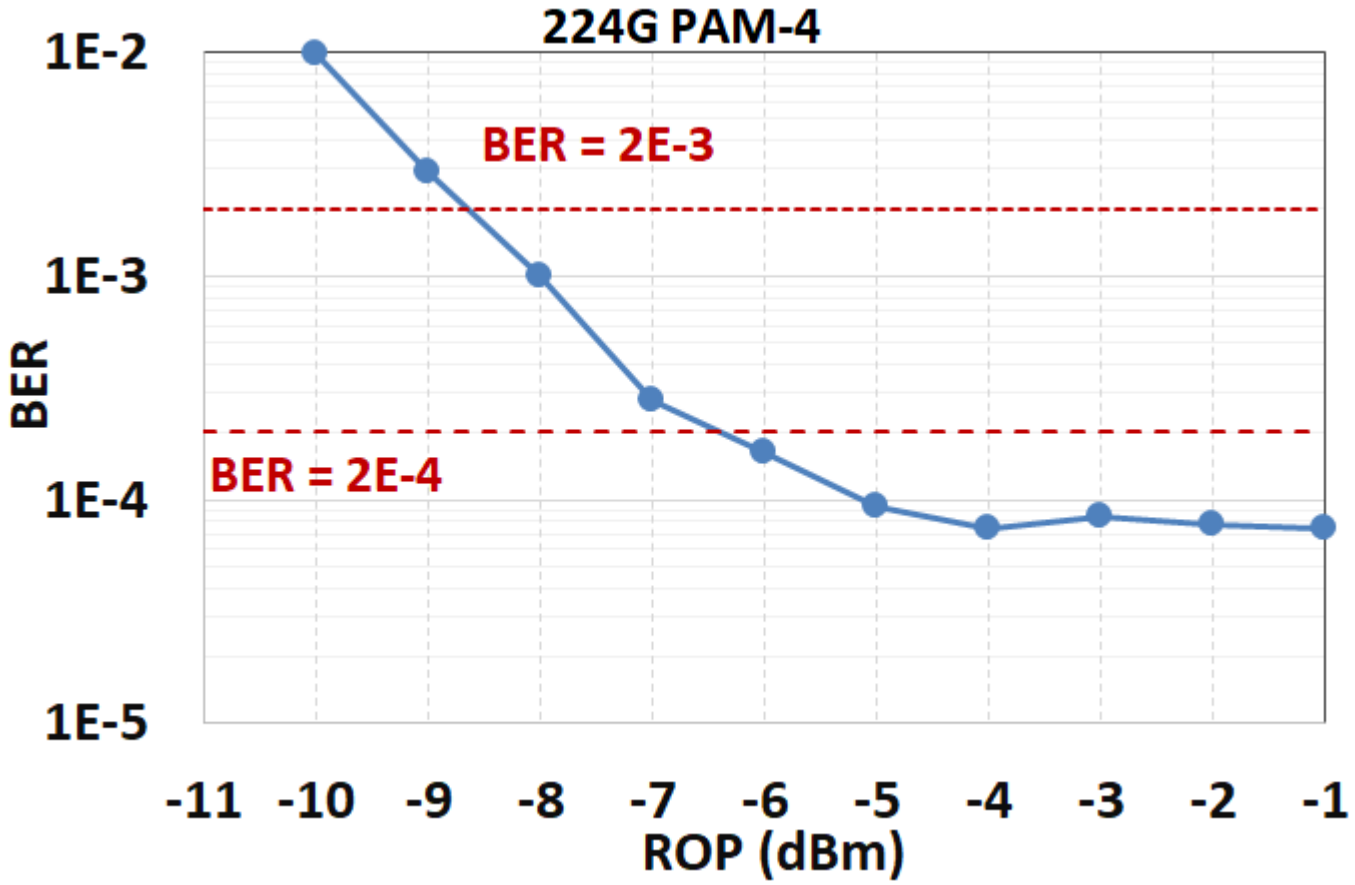




800GPluggable
MULTI-SOURCE AGREEMENT

200G/λ Technical feasibility

- 4x 200G/λ will be the core technology developed by the MSA
- History shows: 4 lambda solutions generally lead to lower cost than 8 lambda at lower baud rates
- A 224G PAM-4 technical proof-of-concept was demonstrated by the MSA members (see figure)
- The MSA will define the optimum modulation scheme & FEC to support 4x200G and continue improving the performance



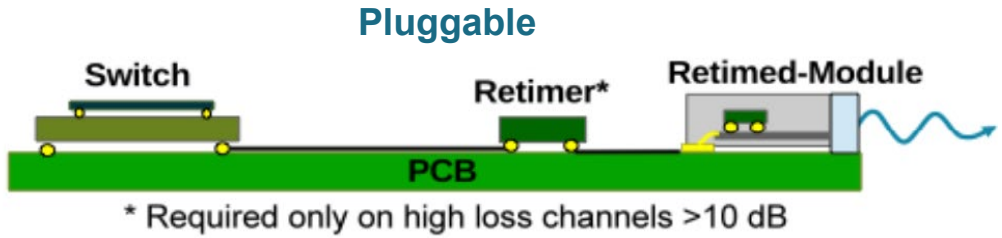
Measured at the Huawei Munich Research Center, Germany

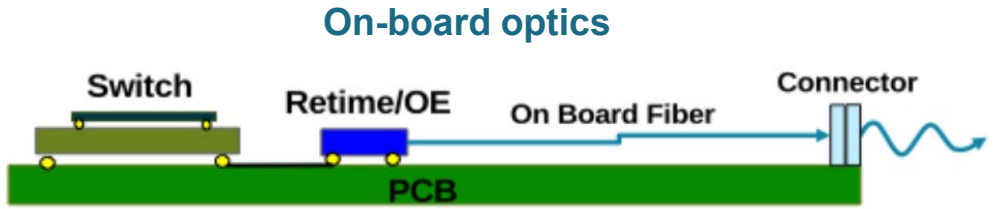
Pluggables vs. On-board optics vs. Co-packaging

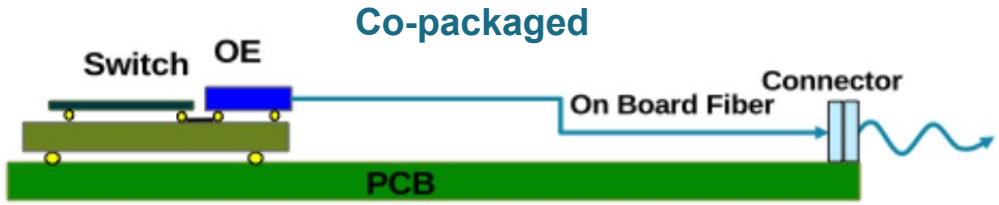
Pluggables offer benefits vs. OBO/co-packaging

- Pluggability leverages established component eco-system
- No disruption to established supply chains and data center architectures
- Diverse supply chain will lead to cheaper optics
- Direct sourcing of optics without margin stacking
- Pay-as-you-grow
- Multi-service, multi-reach in any slot
- Easy servicing and replacement of defective optics
- Deploying future better/cheaper modules on the same line card

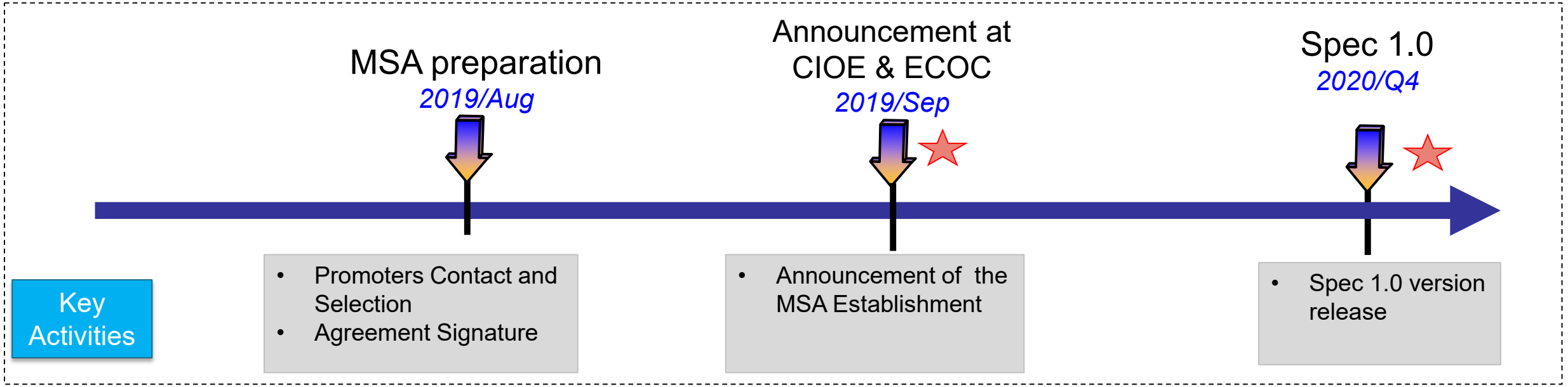
It is likely that on-board or co-packaged optics will be needed for the generation of post 800G interconnects







Initial Key Milestones of the MSA



First prototypes of 800G pluggable subcomponents targeted for ca. **Q4/2021**

MSA Members

Promoters

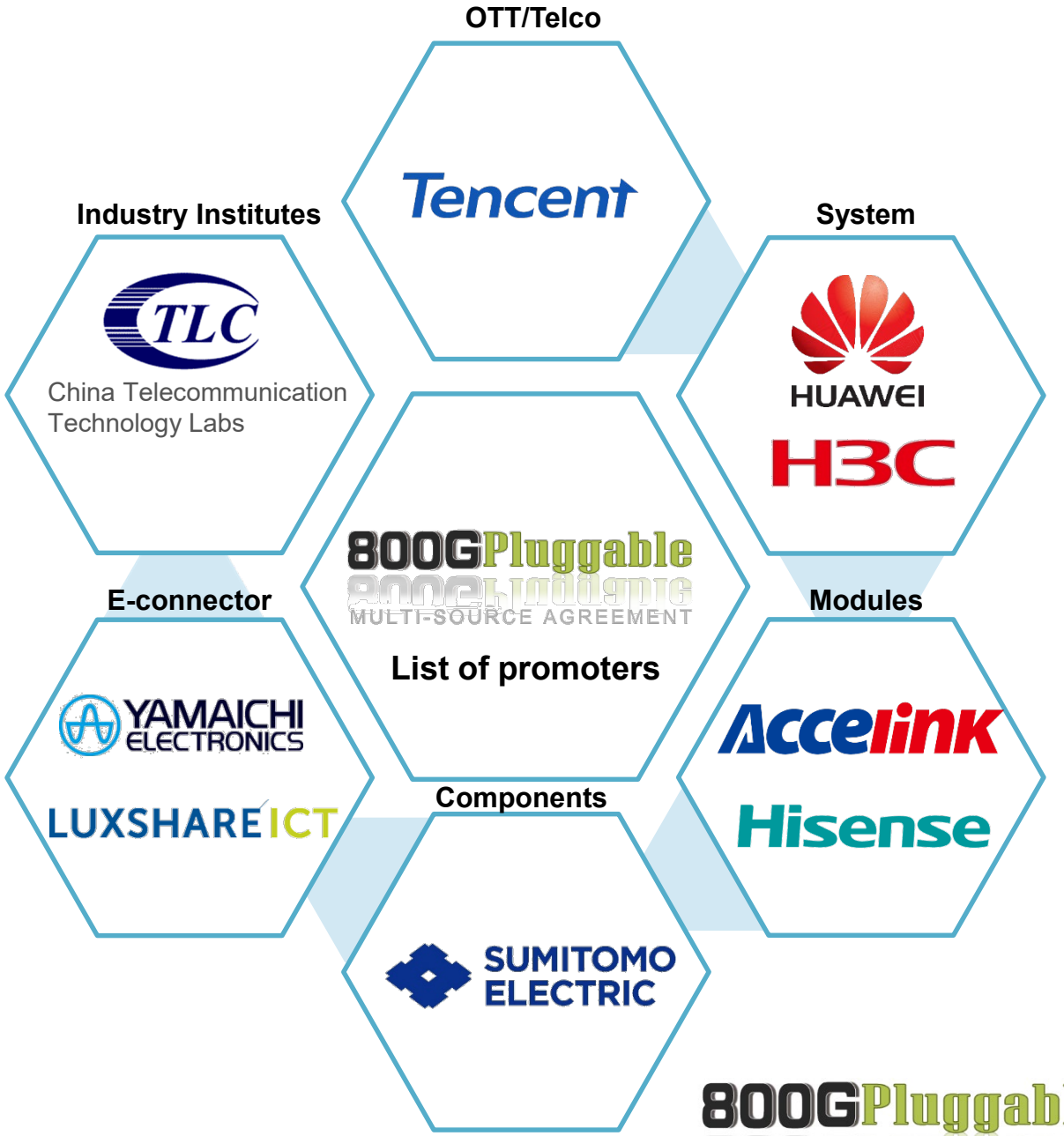
- Establish and operate the MSA consortium
- Raise technical proposals
- Right to vote

Contributors

- Raise technical proposals

Who can join

- All relevant industrial partners incl. OTTs, service providers, system suppliers, optical/electrical component and module suppliers, integrated circuit manufacturers, etc.



800GPluggable
MULTI-SOURCE AGREEMENT

Welcome to join the 800G Pluggable MSA

Contact: Dr. Hua Zhang
zhanghua8@hisense.com