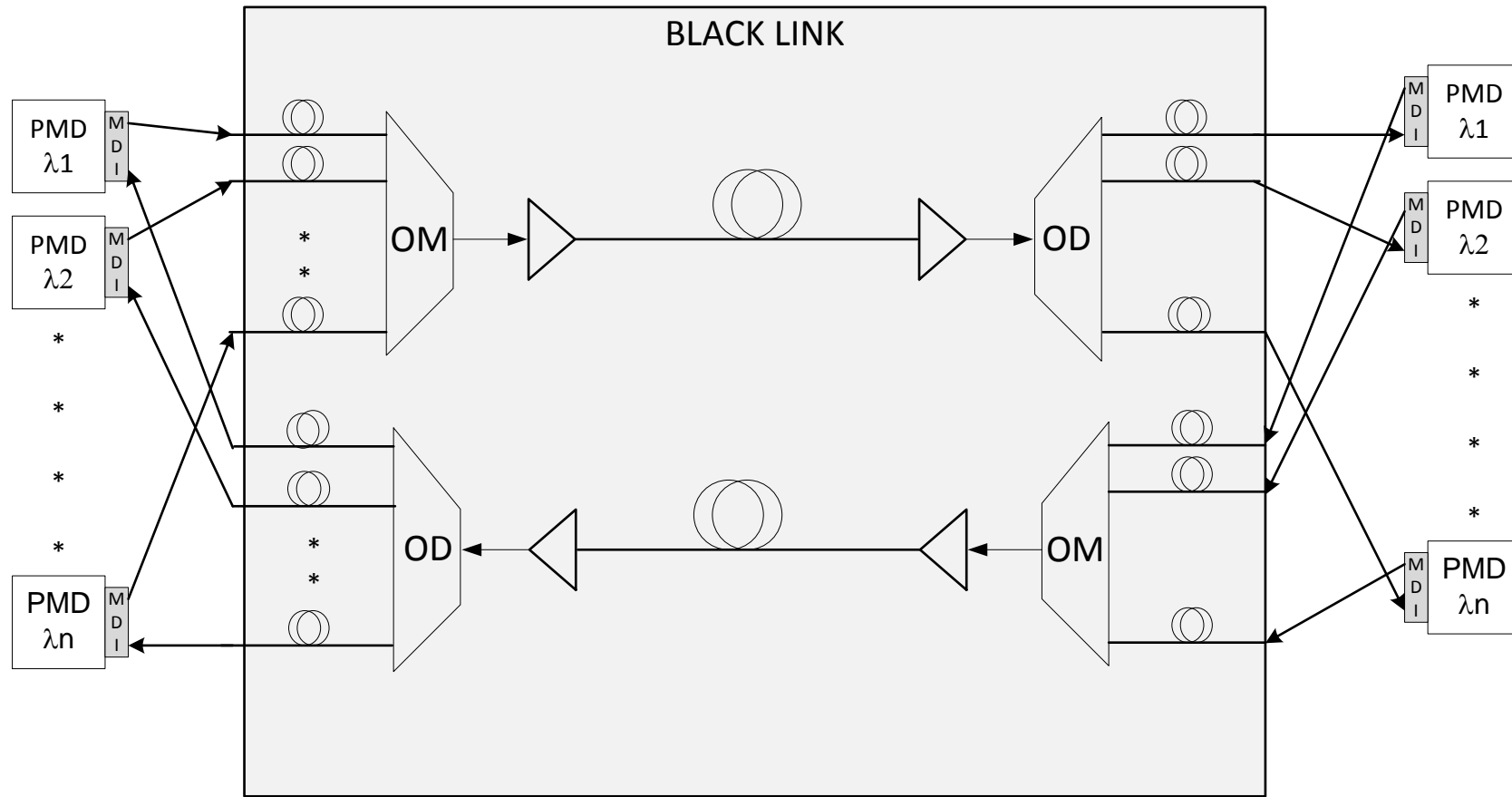# 802.3ct wavelength grid considerations
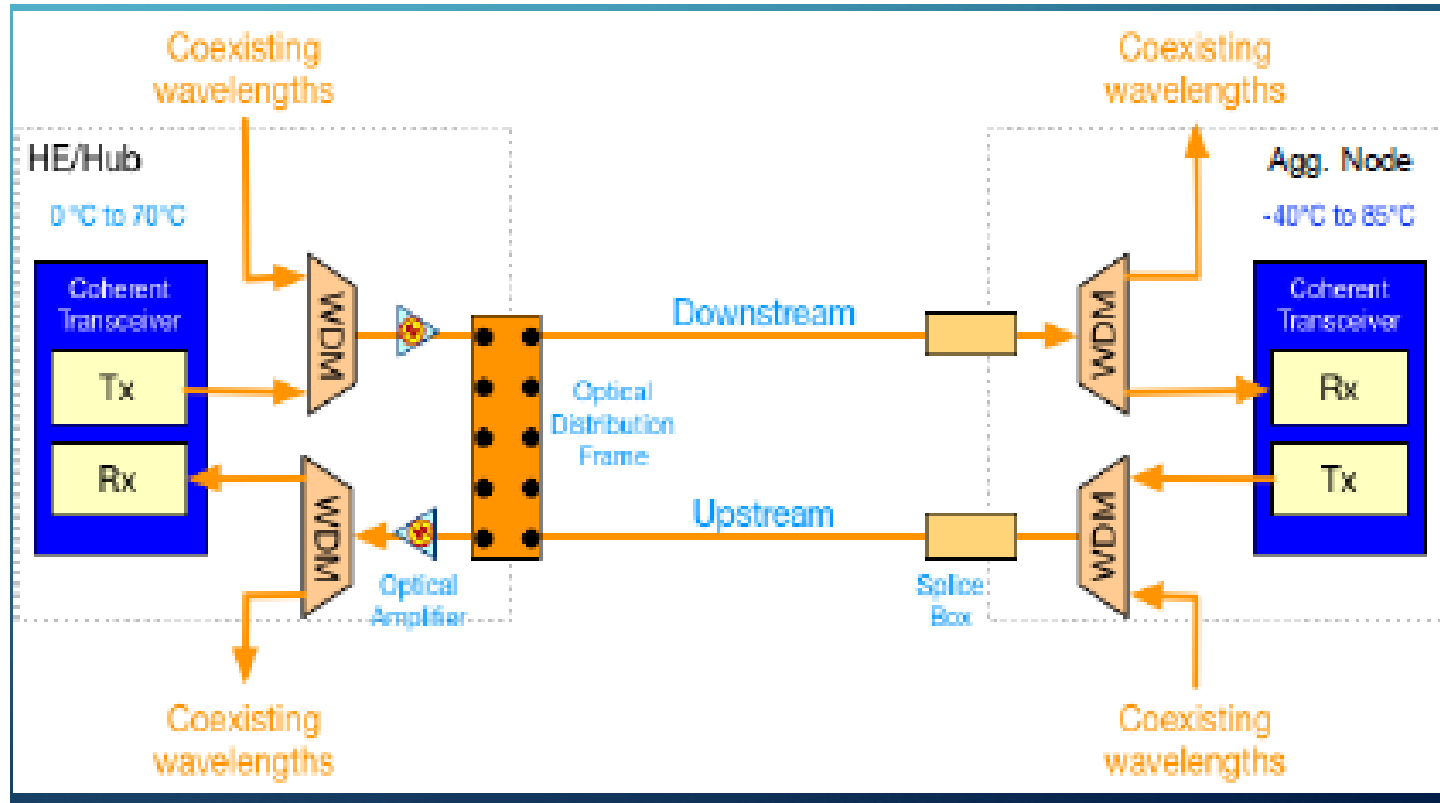
David Lewis, Lumentum

Rich Baca, Microsoft

Example DWDM System for 802.3ct

- Each PMD is set to a particular wavelength / frequency
- May be tunable or fixed
- The black link must support transmission of the frequencies needed by the application

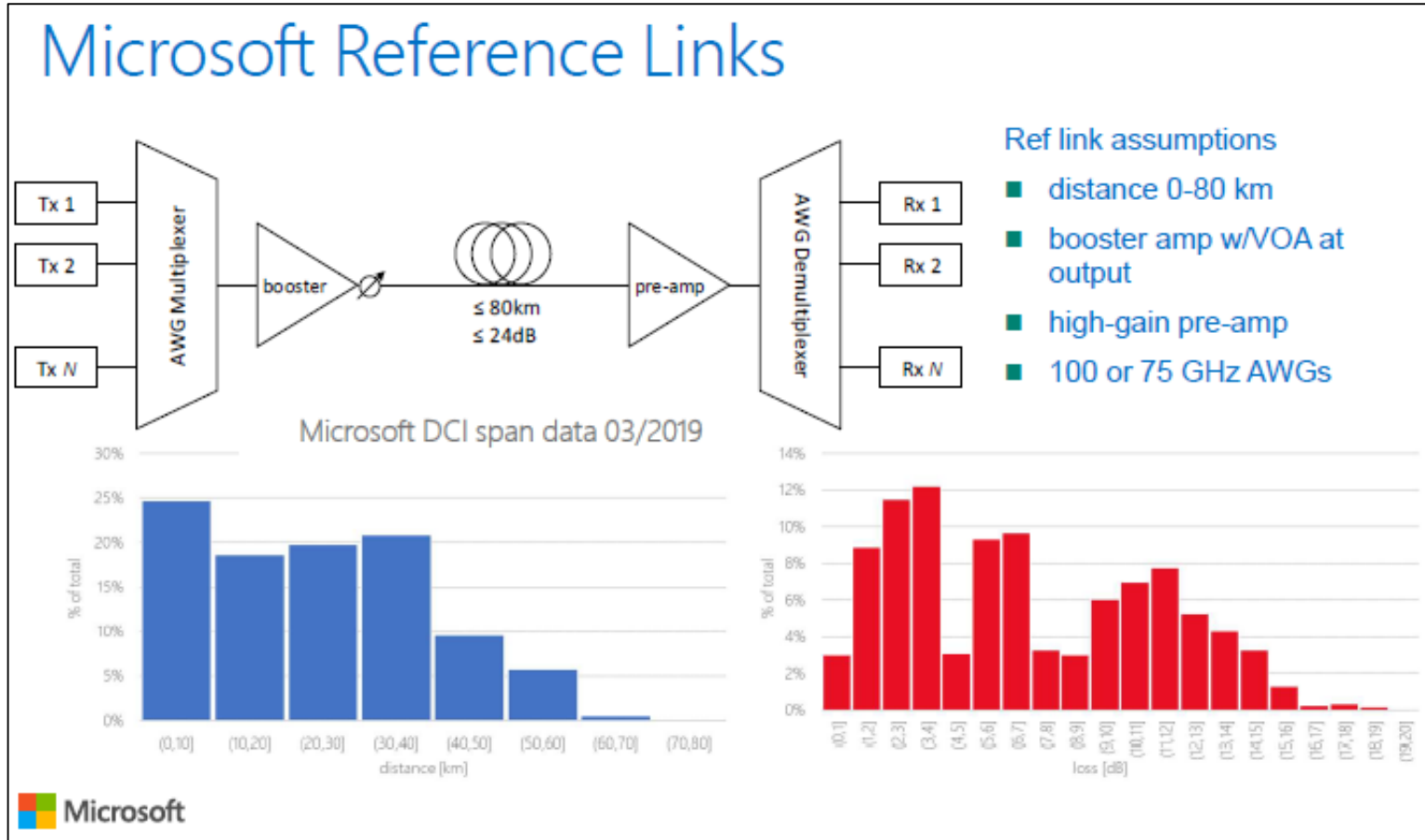# 802.3ct Applications - Cable / MSO networks

Ref: schmitt_3ct_01a_0319.pdf

- A few channels* of 100 Gb/s on 100 GHz grid
- Add-on wavelengths to existing fibers carrying other traffic
- 1 b/s/Hz on a portion of C-band

* The CableLabs specification requires that a compliant module supports one or more channels from a choice of 50. It is unlikely that all 50 will be used.

802.3ct Applications - Data Center Interconnect

Microsoft Reference Links

Tx 1, Tx 2, Tx N → AWG Multiplexer → booster → ⌀ → ≤ 80km ≤ 24dB → pre-amp → AWG Demultiplexer → Rx 1, Rx 2, Rx N

Ref link assumptions
- distance 0-80 km
- booster amp w/VOA at output
- high-gain pre-amp
- 100 or 75 GHz AWGs

Microsoft DCI span data 03/2019

- Up to 64 x 400 Gb/s on 75 GHz grid
- Maximize use of each fiber
- 5.33 b/s/Hz over the full C-band

Ref: baca_3ct_01_190328.pdf

Proposal

Tables for Transmit characteristics, Receive characteristics, and DWDM system characteristics.

Parameter	Value	Unit
Channel frequency, min	191.3	THz
Channel frequency, max	196.1	THz
Grid spacing	75 or 100	GHz

Grid with 100 GHz spacing.

index	freq [THz]	Center wavelength (nm)
1	196.100	1528.7734
2	196.000	1529.5534
3	195.900	1530.3341
...	...	
46	191.600	1564.6788
47	191.500	1565.4959
48	191.400	1566.3138

Grid with 75 GHz spacing.

index	freq [THz]	Center wavelength (nm)
1	196.100	1528.7734
2	196.025	1529.3583
3	195.950	1529.9436
...	...	
62	191.525	1565.2915
63	191.450	1565.9047
64	191.375	1566.1840

Thank You