

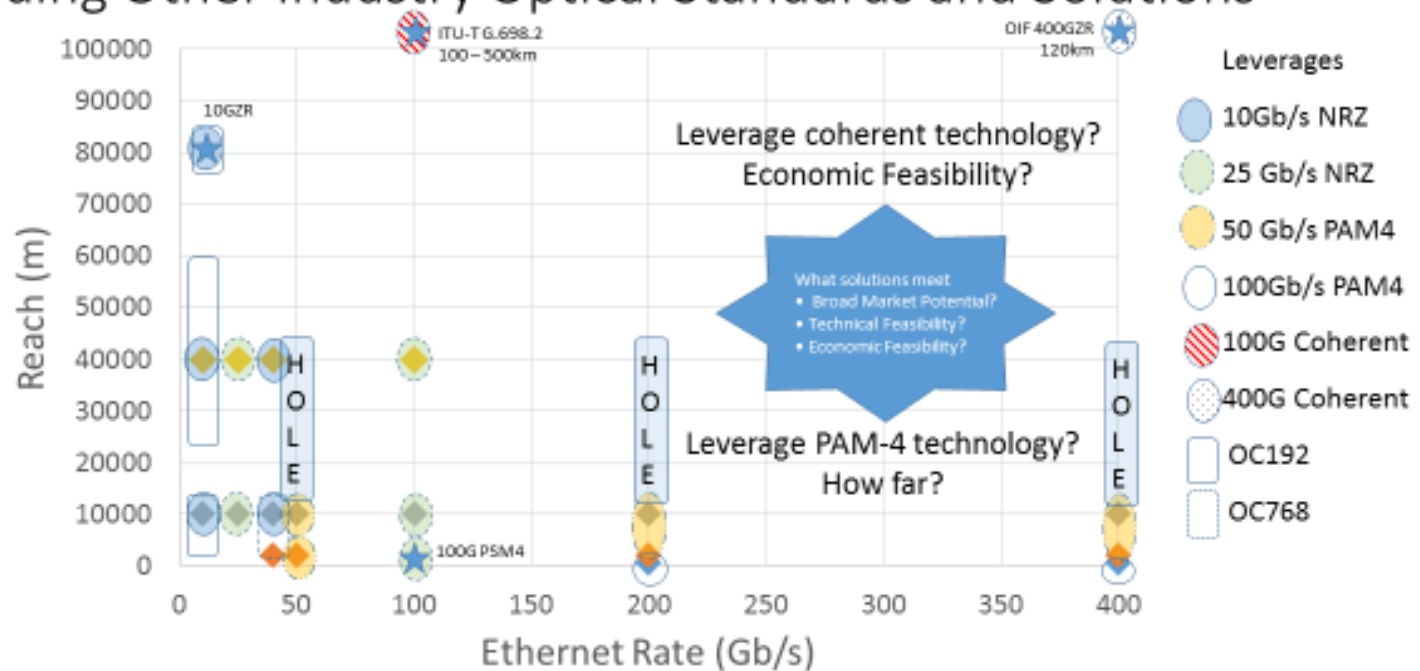
Pluggable Coherent 400G

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Beyond 10km Landscape

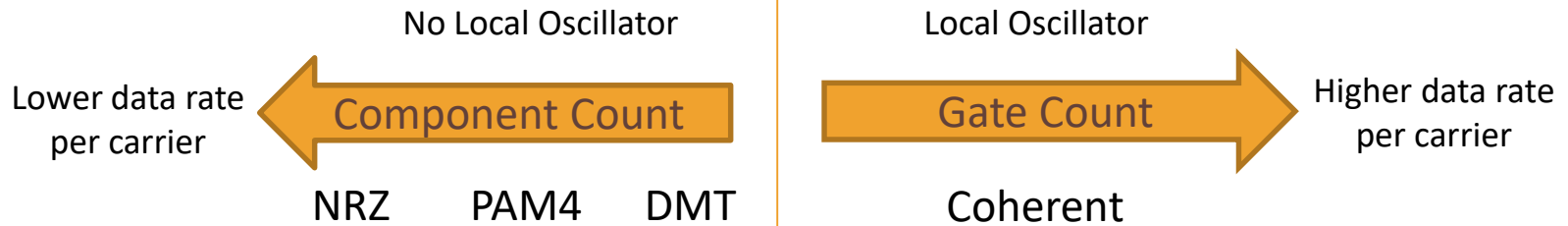
Adding Other Industry Optical Standards and Solutions



Note - All Ethernet SMF standards >=10GbE (completed or in progress) shown.

Coherent.....It's Just a Local Oscillator!

www.acacia-inc.com



- Even in direct detect, various modulation formats exist to trade-off component count for gate count
 - Coherent is just an extension of this continuum with extra receiver gain by adding a local oscillator
 - ◆ In most applications, the same laser is shared between transmitter and receiver
 - The penalty for added gate count is reduced over time at the pace of Moore's Law
- Coherent design and architectures were initially focused on optimization for long haul and metro DWDM applications
- Coherent offers the benefit of higher data rate per carrier

Pluggable Coherent 400G

- Coherent power/bit has reduced at ~40%/year
 - Smaller CMOS technology nodes
 - Increased bits/symbol
 - Optimization for shorter reach interfaces
 - ◆ LH → Metro → DCI
- OIF project defining 400G coherent interoperable modes
 - Modulation Format, Framing, FEC encoding, etc.
 - Two target applications
 - ◆ DWDM – 120 km
 - ◆ Single λ – TBD km
 - ~40km seems reasonable (no external amplification or DCM)
 - <15W power target based on 7nm process
 - ◆ OSFP, QSFP-DD, or COBO form factors
 - ◆ Single λ application may be lower
 - Fixed Laser
 - Reduce CD compensation

Evolution in Power, ASP/cost and Density per 100G

