

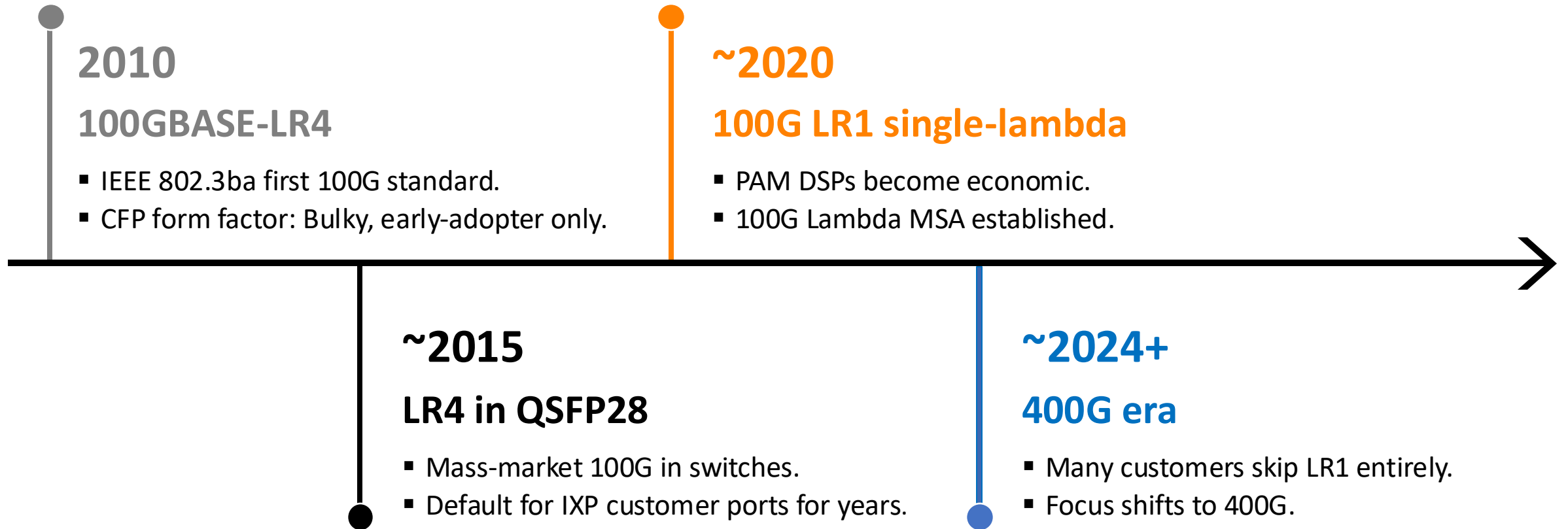
# My IXP supports LR1.

Are small numbers better (for me)?

Thomas Weible | CTO of FLEXOPTIX

# From LR4 to LR1 – How we got here

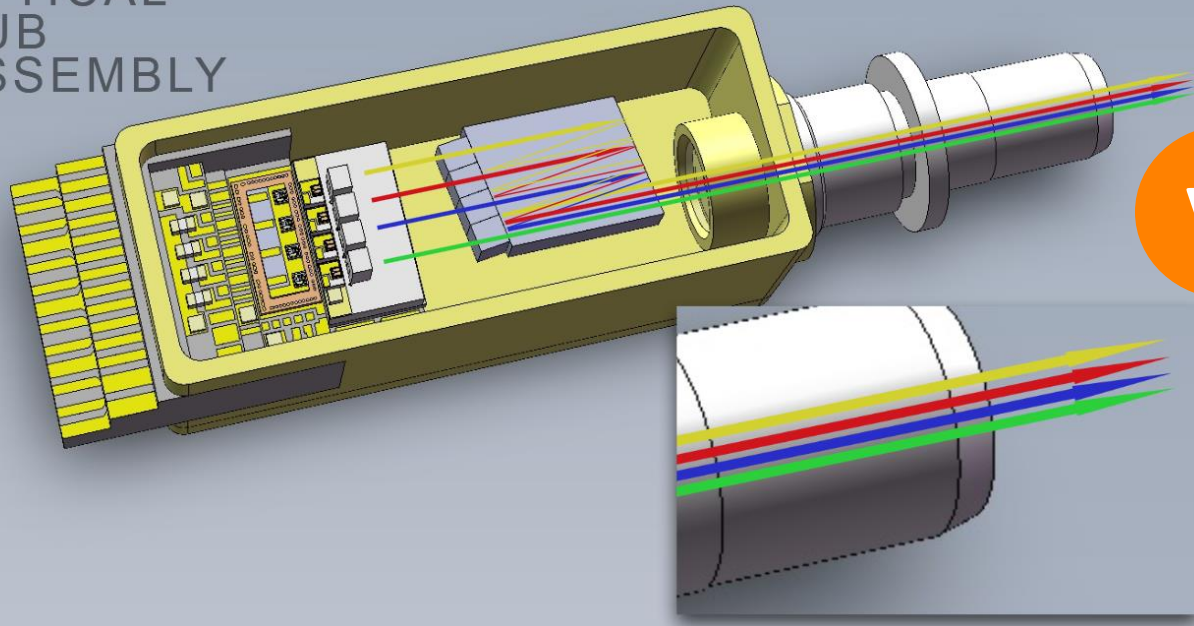
More than 15 years of 100G long reach and a market that already moved on.



# What's inside – LR4 vs LR1

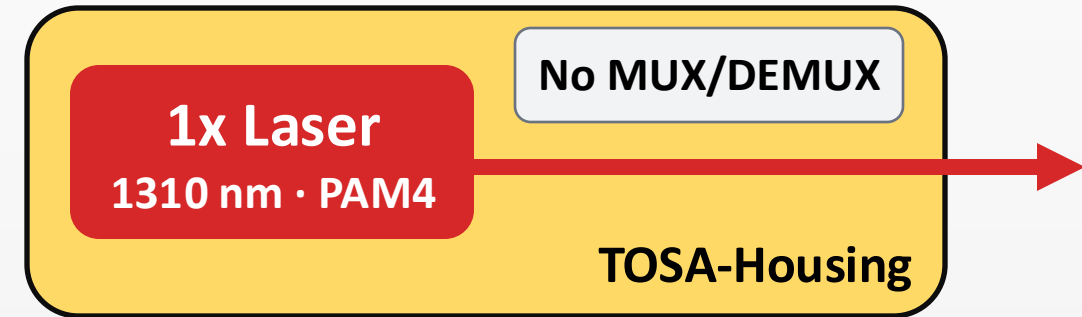
100G LR4 → 4 optical lanes

TRANSMITTER  
OPTICAL  
SUB  
ASSEMBLY



- 100G across 4 lanes via 4 × 25G NRZ (no DSP)
- 4 lasers + 4 photodiodes + MUX / DEMUX

100G LR1 → 1 optical lane



- 100G on a single lane via PAM4 (with DSP)
- 1 laser + 1 photodiode (No MUX / DEMUX)

# So are small numbers better, for you?

## Why LR1

- **~10% lower price today**  
and dropping further as PAM4 scales
- **4x density in 400G ports**  
clean 1:4 breakout
- **1 vs 4 optical components**  
fewer failure points / higher MTBF
- **Future-proof**  
shares ecosystem with 400G optics

## Why LR4

- **Mature ecosystem**  
IEEE 802.3ba since 2010
- **Lower power per module**  
no PAM4 DSP
- **No DSP / no FEC dependency**  
robust on legacy platforms / marginal links

- **New build or scaling up to 400G? → Go LR1**
- **Topping up existing 100G or legacy ports? → LR4 is fine**