

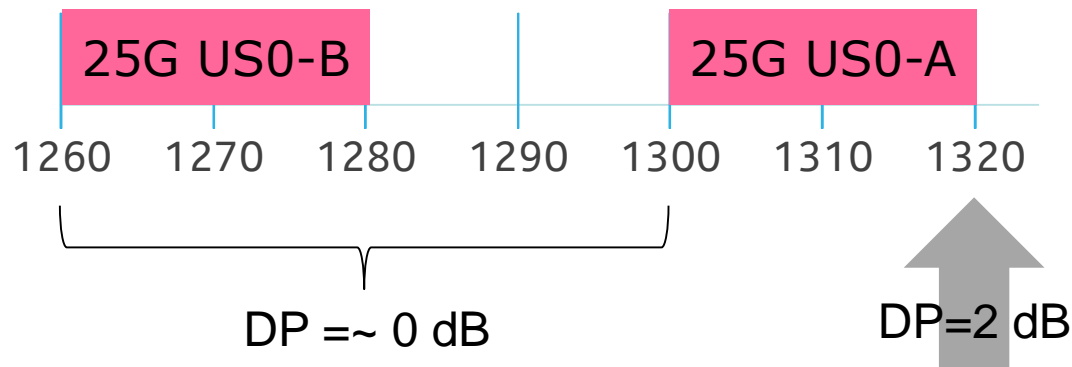
# Upstream wavelength plan

- Ed Harstead, Nokia
- ...

# Upstream dispersion penalties

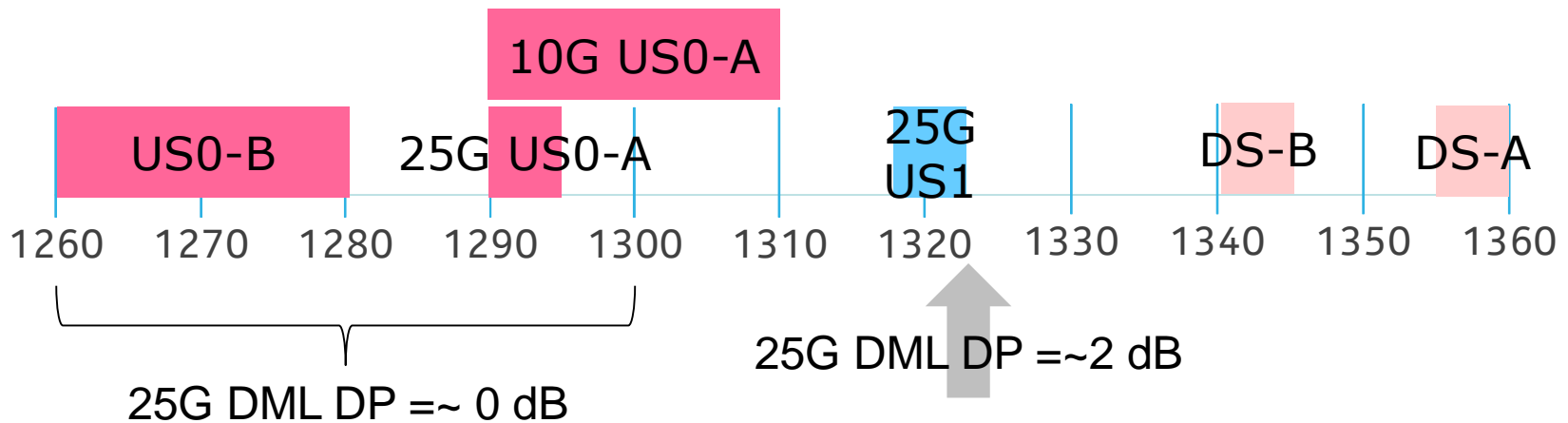
- From harstead\_3ca\_2a\_1117: For a DML, there is a strong dependence of dispersion penalty (DP) on wavelength.

## Worst dispersion penalty at 25G for DML



- To obtain the same DP=0 for 25G US0-A, we can restrict its wavelength range to be  $\leq 1300$  nm

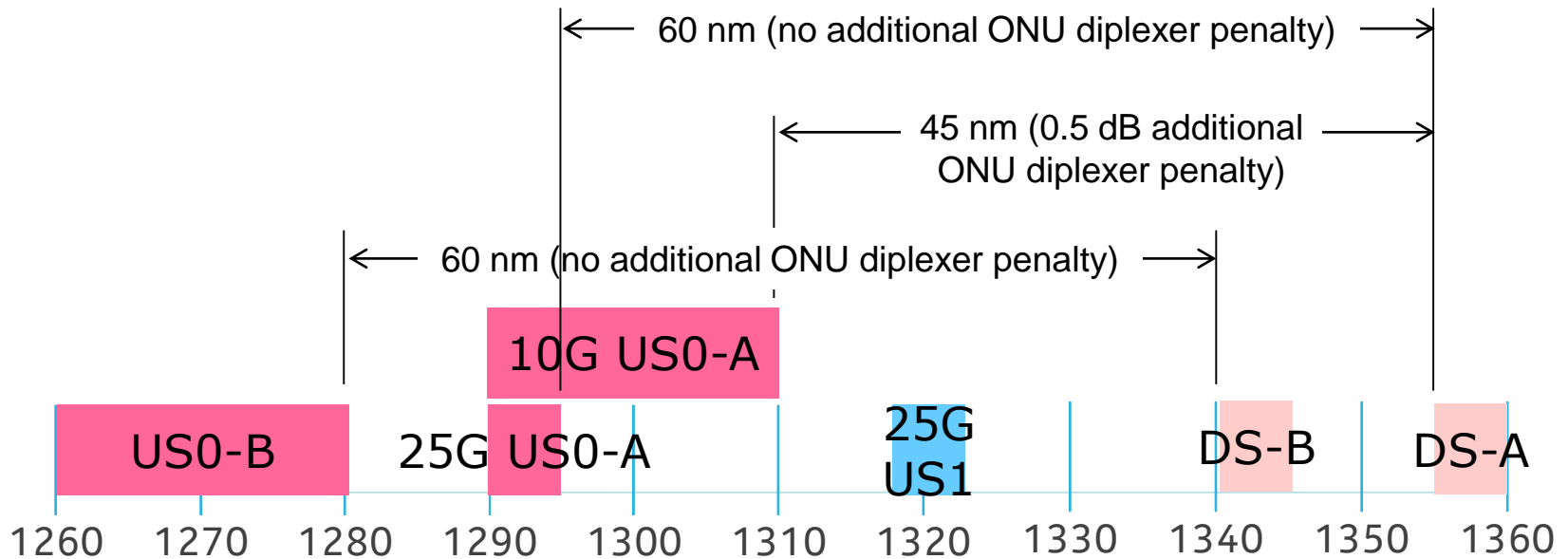
# Dispersion-optimized US wavelength plan



- ❑ DML DP  $\sim 0$  dB for 25G US0-A, to be equivalent to 25G US0-B.
- ❑ Keep 20 nm for 10G US0-A: allows uncooled DMLs in 25/10 ONUs using US0-A.
- ❑ The burden of DP=2 dB is deferred until 2x25G EPON

# Diplexer penalty

100G EPON



## ❑ US0-B ONUs:

- Both 25/10 and 25/25 ONUs have a 60 nm DS/US gap and therefore no diplexer penalty

## ❑ US0-A ONUs:

- 25/25 ONUs have a 60 nm DS/US gap and therefore no diplexer penalty
- 25/10 ONUs have a 45 nm DS/US gap and a 0.5 dB diplexer penalty. The 10G ONU transmitter may absorb this penalty in the US. The 25G ONU receiver may be required to absorb this penalty in the DS.

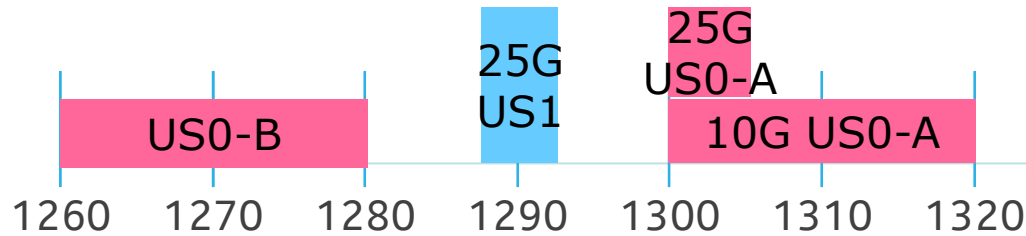
# References

100G-EPON

- ❑ DML dispersion penalties per umeda\_3ca\_1\_1117 (interpolate for intermediate values), liu\_3ca\_1\_0917 and liu\_3ca\_2\_0118.
- ❑ 25G ONU optical module diplexer penalties per funada\_3ca\_1\_0117

# Alternatives

- ❑ Per example 1 in harstead\_3ca\_2a\_1117, p. 9



- ❑ If can specify transmitter to trade-off power and wavelength tolerance to absorb DP

