



## Baltic Ring Consortium Workshop

### Technical Implementations Issues

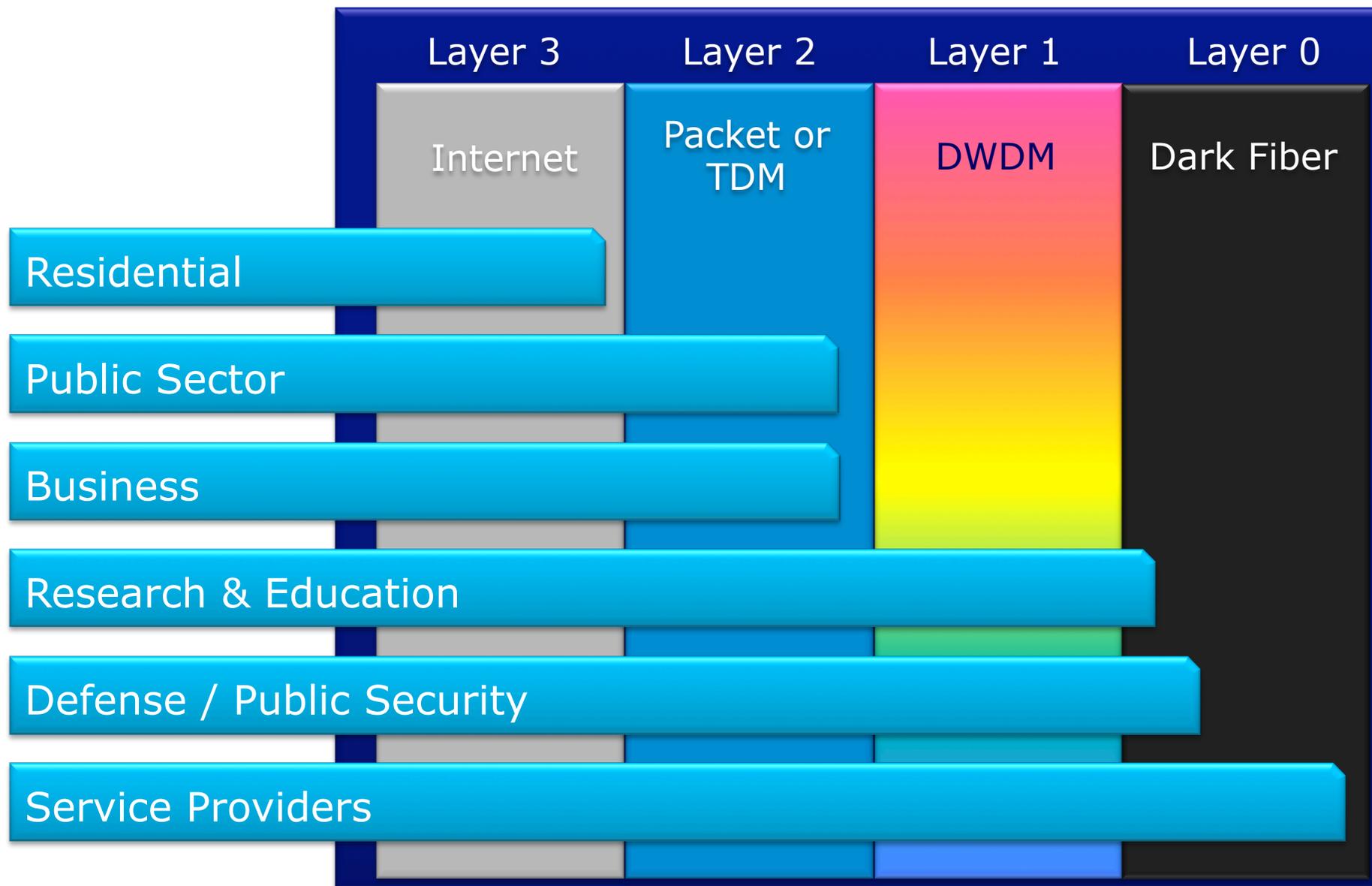
#### **Infrastructure for Free Movement of Knowledge in the Baltic Sea Area**

Tony Breach  
Research Officer

*Riga, Latvia*  
*24-25 November 2011*









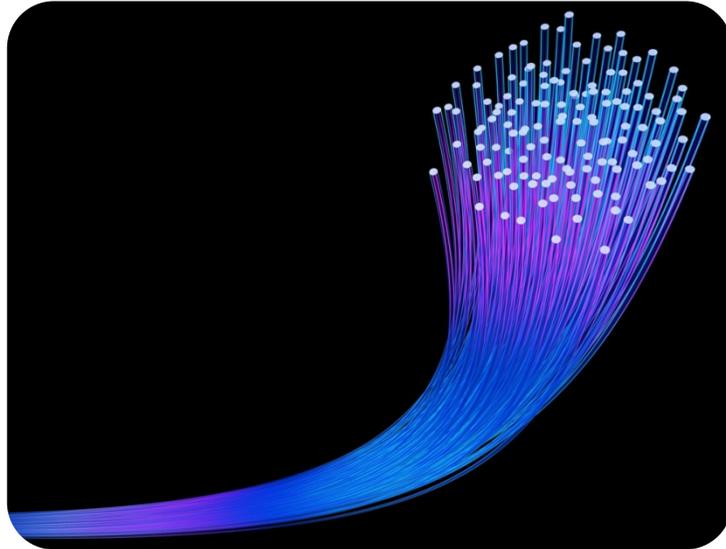
Sufficient Bandwidth

Access to the Internet

High Quality

Instant bandwidth when needed

Low Cost - free of charge



Passive glass fiber

Core diameter 8  $\mu\text{m}$  to 125  $\mu\text{m}$

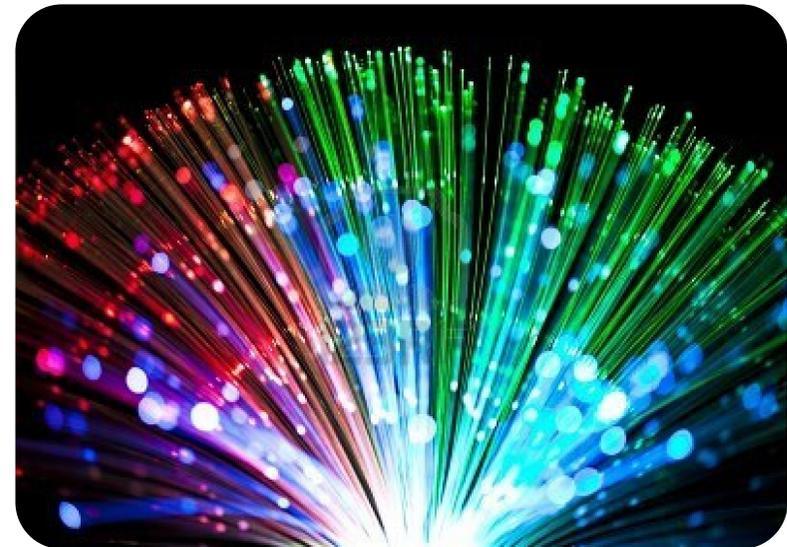
Length not applicable - can be spliced

Upto 192 fibers pr fiber cable

Lit by Erbium doped lasers

Lasers with different light spectrum

Colored wavelength

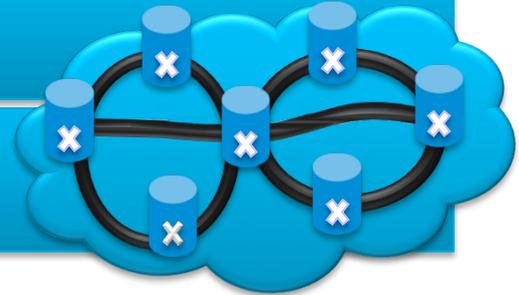


## Dark Fiber

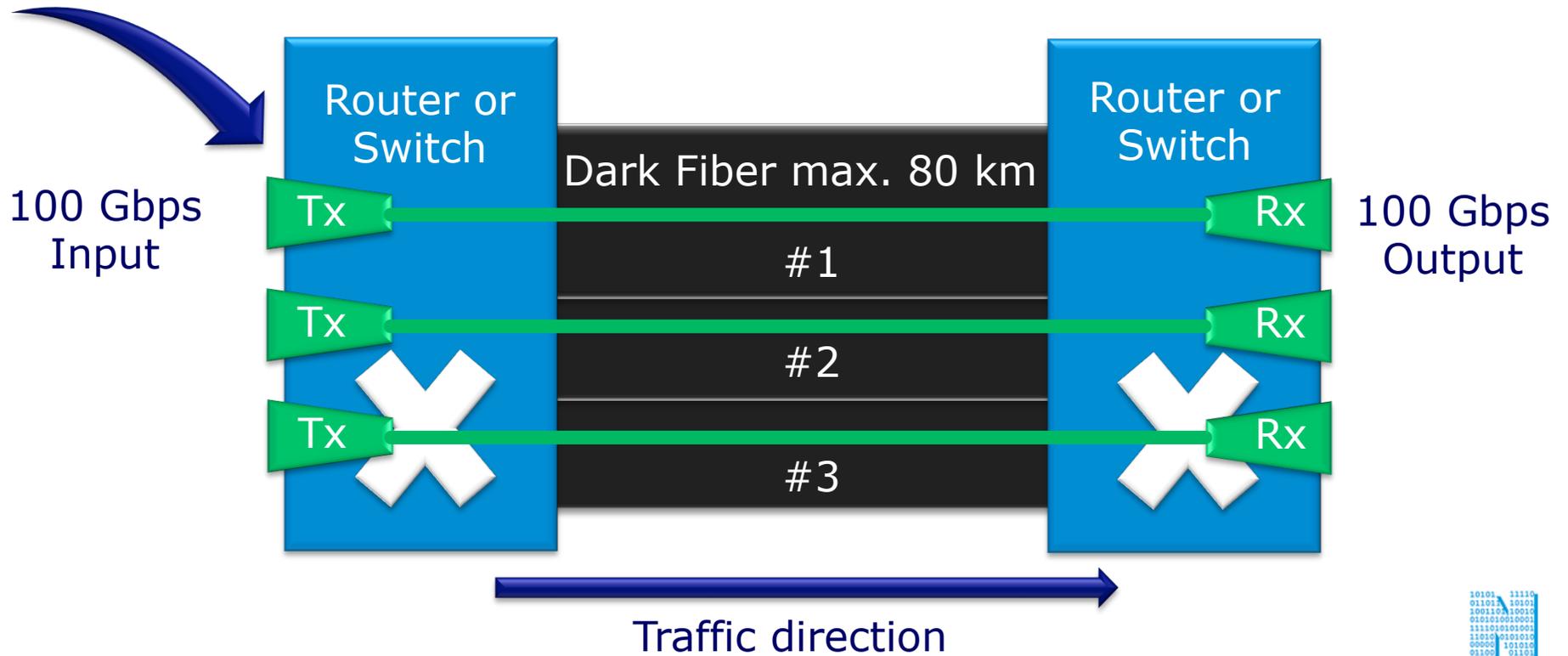
High quality transmission on a terrestrial fiber

## Optical System

IP/Packet/TDM System



One single interface/  
Dark Fiber

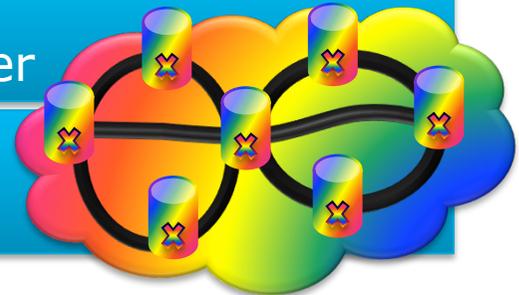


## Dark Fiber

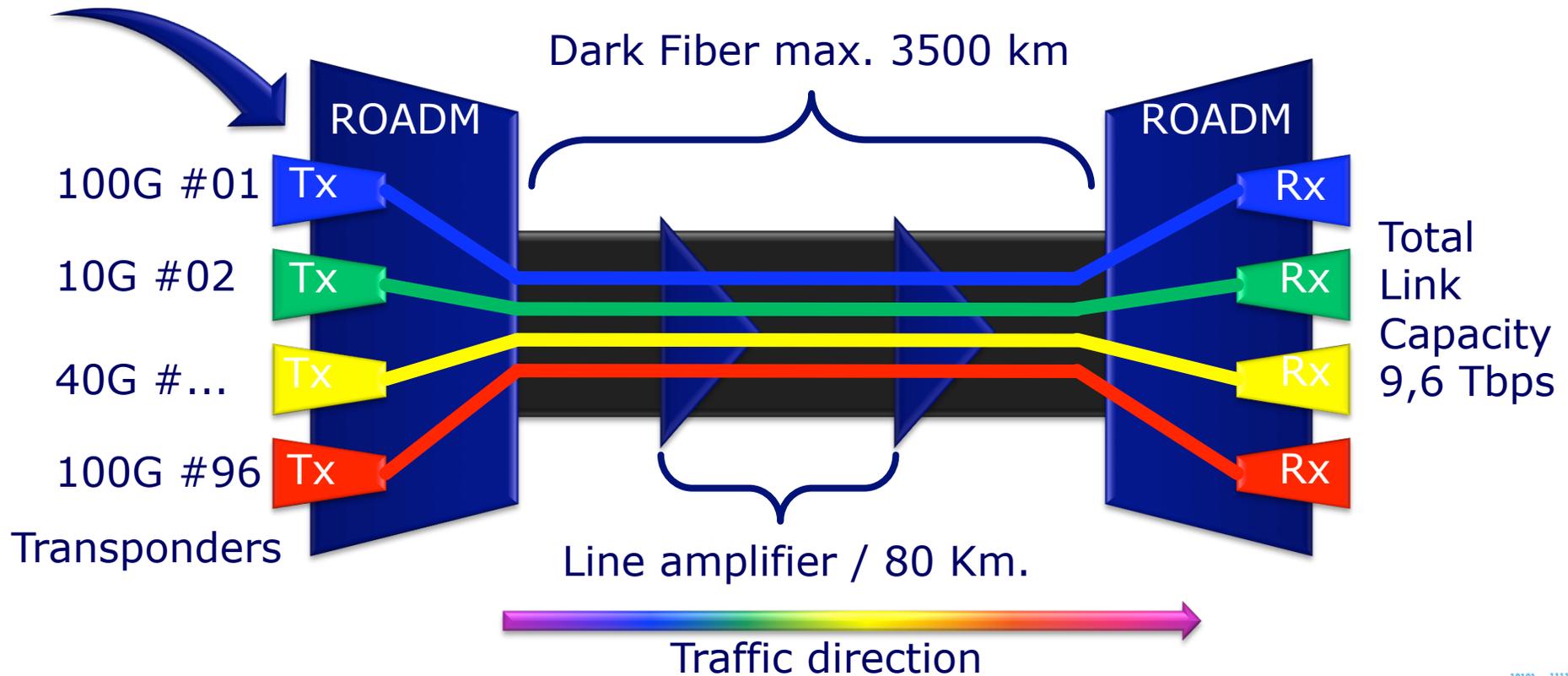
High quality optical terrestrial or passive submarine fiber

## Optical System

Dense Wavelength Division Multiplexing (DWDM)

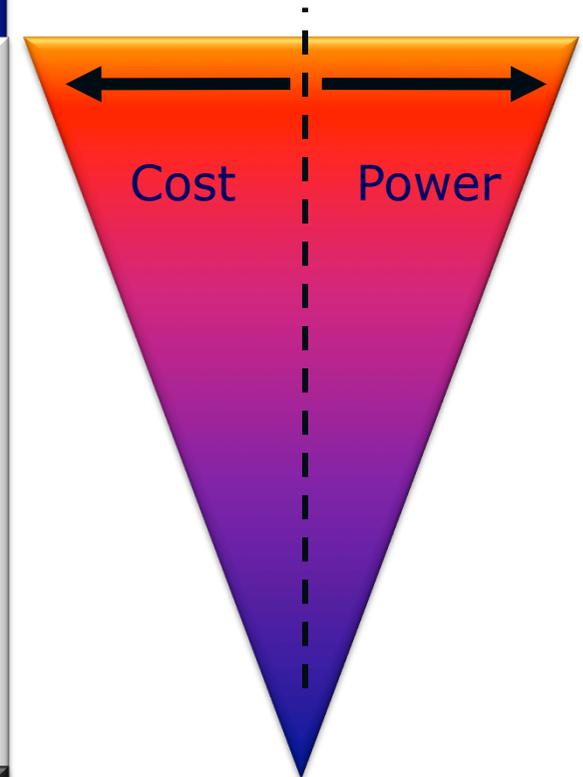
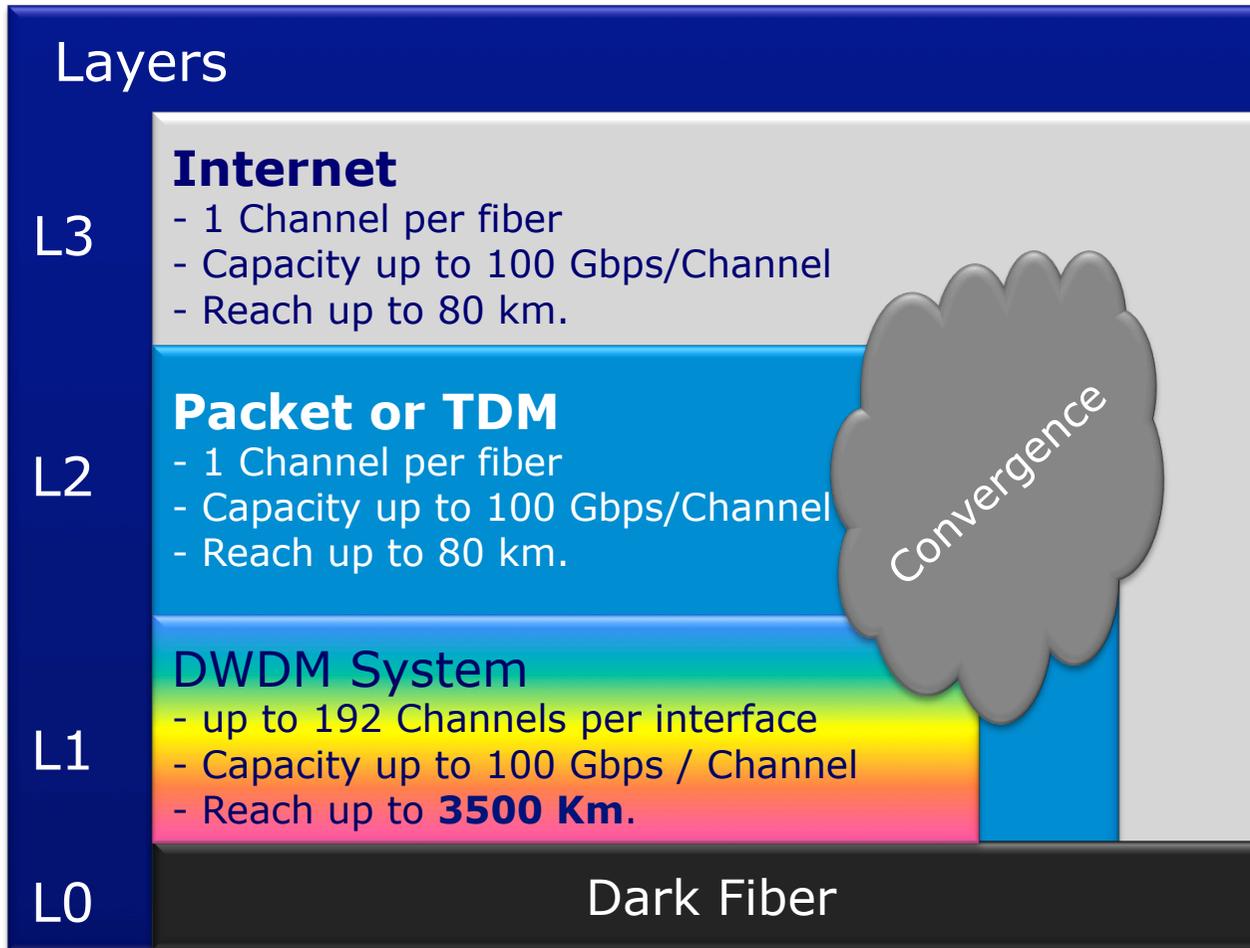


96 Interfaces/Dark Fiber



ROADM: Reconfigurable Optical Add Drop Multiplexer





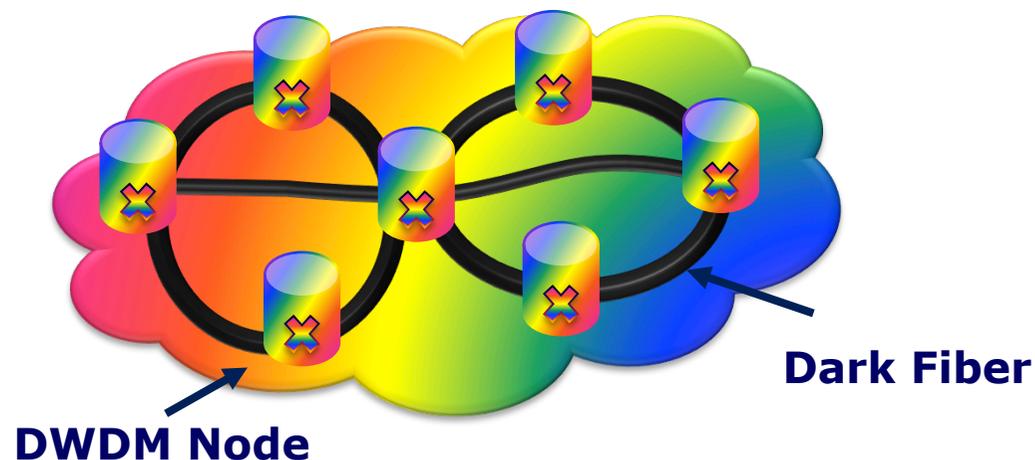
### Dark Fiber

High quality optical terrestrial or passive submarine fiber

### Optical System

Dense Wavelength Division Multiplexing (DWDM)

### DWDM Network

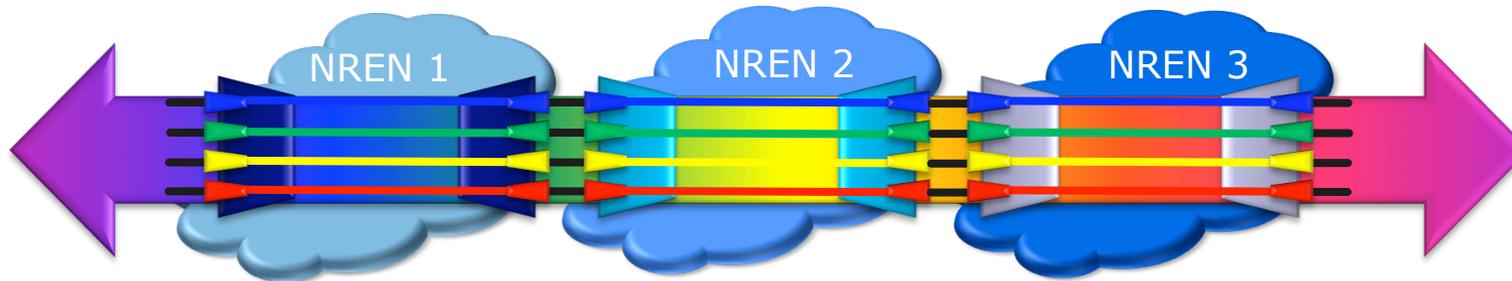


### Option - Carrier Grade Transport Equipment

Time Division Multiplexing e.g. OTN

Packet Switching E.g. Carrier Ethernet

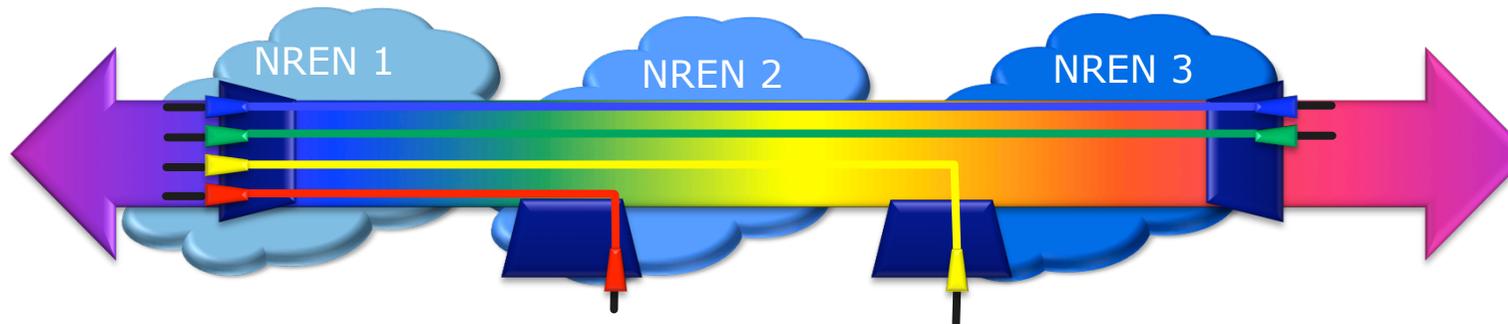
### Federated Architecture



#### Composed DWDM Network

- Lowest denominator defines the service quality
- One transponder set pr. partial network (this case 3 sets 1.8 Mill €)

### Carrier Carrier Architecture



#### Homogenous DWDM Network

- Uniform Service offering
- One transponder set 600.000 €

## Proposal for a Joint Baltic Ring



### Building a base DWDM service with features

- High capacity information transport
- Dependable and reliable across all NRENs
- Suitable for machine and "man" communication
- Enabling scientists and researchers to collaborate seamlessly



Thank you



Questions...