

# Datacenter solutions

## CWDM – 40 & 100G – Terabit Mux

High density 19" NETWORK-Cube solution (e.g. 8pcs of MUX for 8x 40GBase-LR4 QSFPs into 32x 10Gig E)

Good things come in small cubes

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# CUBO's Product Portfolio

## Engineered Components for OEMs

## Access Network Solutions for Operators



### Passive components

### Active components

### Passive Transport Solutions

### Active Transport Solutions

- CWDM / DWDM / WWDM / LAN-WDM
- Customized lambda grids
- Ultra-compact, OSP
- Couplers, switches, attenuators, etc.
- Private labeled line cards, modules and assemblies

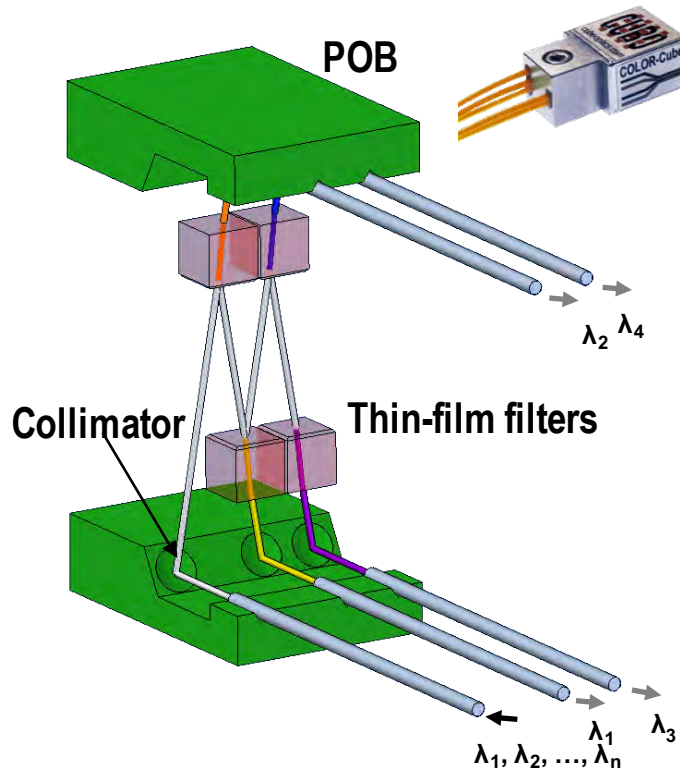
- Multi-lambda detectors for T&M
- 4x10 Gbps CWDM ROSA
- 4x25 Gbps LAN-WDM ROSA

- Passive W/C/DWDM systems for rack mounting, splice enclosures or line cards, highly customizable
- Full suit of Transceivers, as well 3rd party compatible
- PON Solutions

- Active transport solutions for metro core to long haul with optional amplification
- Conversion, Repeaters, Aggregation
- Metro Access Demarcation

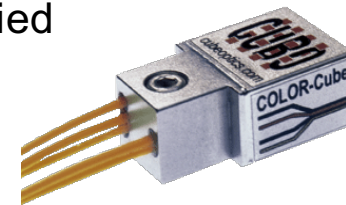
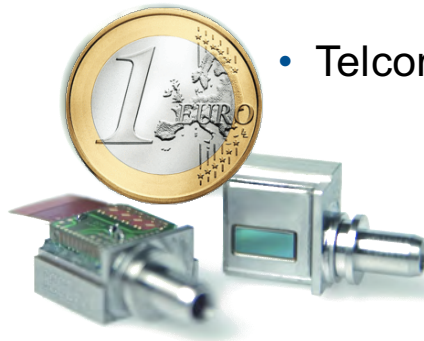
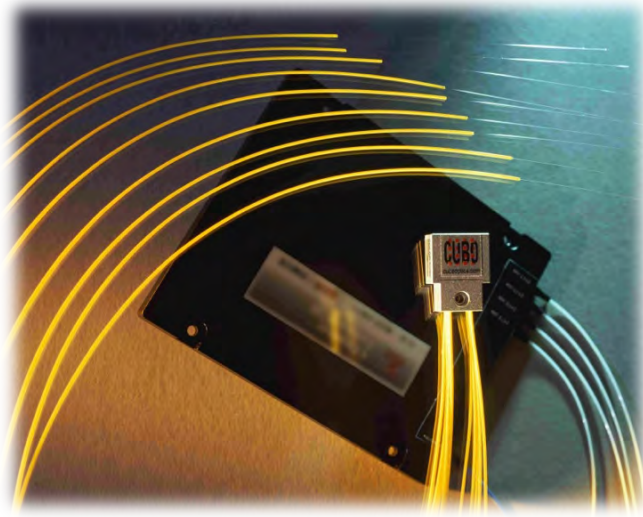
- Consulting, Network Planning
- Installation, Provisioning
- Service and Support

# Polymer Optical Bench Technology (POB)



- Basis of CUBO's fiber-optic, passive components. In production since 2002
- Telcordia qualified (CO / OSP) since 2004 / 2006
- Approx. 200.000 parts in the field
- Very low cost due to micro injection molding and passive assembly, very high yield in production
- Proprietary to Cube Optics, protected by patents
- Products: MUX and ROSA

# Miniaturized Multiplexers



- Any wavelength: CWDM, LAN-WDM, DWDM, BWDM, WWDM and customer defined grids
- Components being up to 100 times smaller than standard products
- Low loss with an even loss distribution over all channels
- Active and passive integration
- Customized line cards and modules with private labeling, packaging according to the needs
- Telcordia qualified

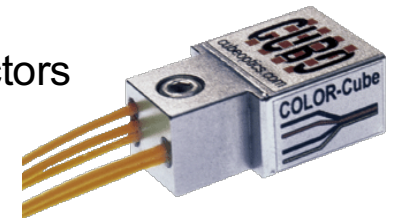
## 40G / 100G Transceiver Sub-Components

**Unique product line in accordance with IEEE 802.3 standard baseline proposal which has been strongly influenced by CUBO**

**>95% market share in 100GBase-LR4 CFP transceivers**

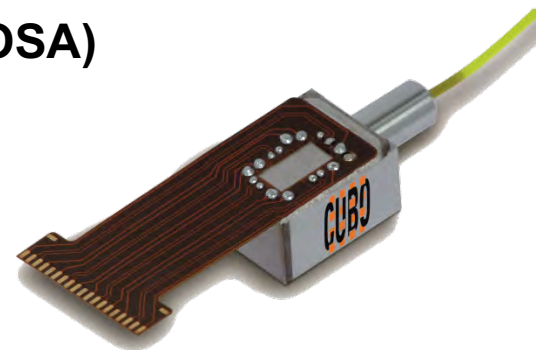
### **Purely passive WDM components**

- Miniaturized mux/demux to be spliced to single lasers and/or detectors
- CWDM for 40G LR4 and LAN-WDM for 100G LR4



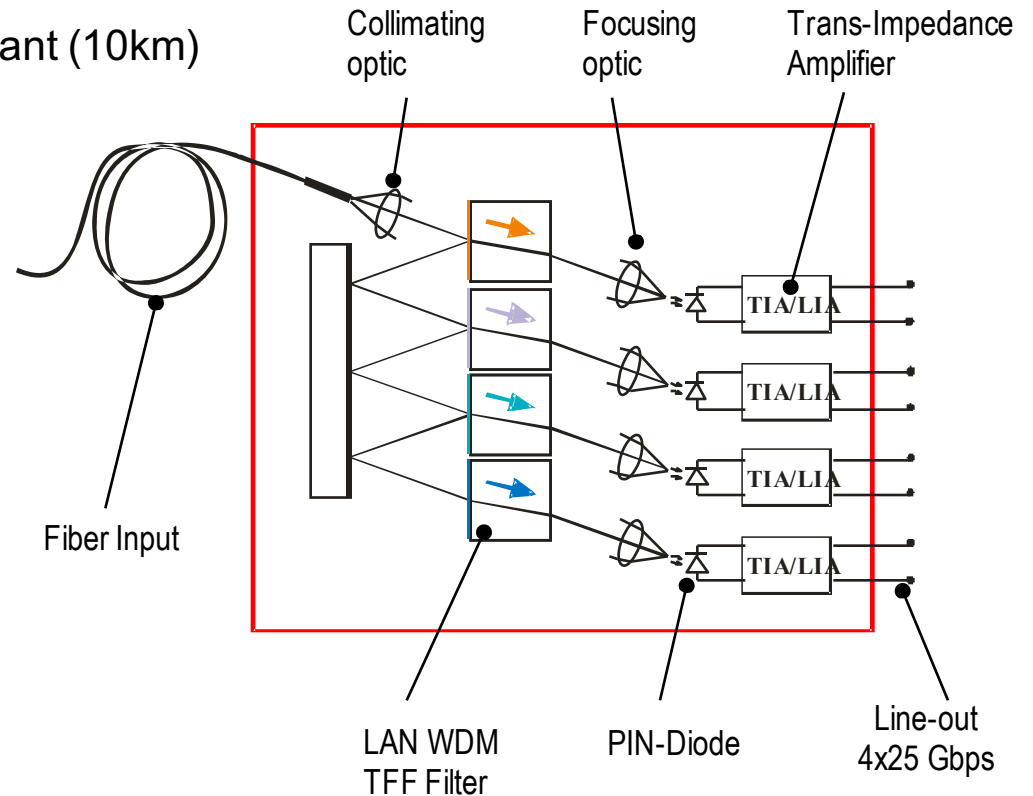
### **WDM Receiver Optical Sub-Assemblies (ROSA)**

- First to market with 100Gbps LR4 ROSA
- Integrated multi- $\lambda$  WDM + Detectors + TIAs
- 4x10 Gbps or 4x25 Gbps
- CWDM or LAN WDM grid



# 100G LR4 ROSA for 100GBase-LR4 CFPs / CFP2s

- 4 PDs, 4 TIAs, Optical LAN-WDM Demux
- **CFP / CFP2** 100GBase-LR4 compliant (10km)
- -13dBm typ. Sensitivity
- 650mW typ. Power Consumption
- 0.2dB typ. Cross Talk
- In volume production



## Terabit-Mux: Product Description

- The TERABIT MUX platform is to multiplex and de-multiplex up to 88 DWDM channels out of C and H band.
- Integrated DCU for different choice of length.
- The TERABIT MUX can be combined with TRANSPORT CUBE platform and DWDM Optical Amplifier (EDFA)
- Multiple 100G and 10G transport solution over fiber pair



# TRANSPORT CUBE - Amplifier & Encryption

## Encryption

- IEEE 802.3ae compliant MAC security layer 2 encryption algorithm for 1G and 10Gb Ethernet
- Low latency (5 $\mu$ s)
- Linecard for TRANSPORT CUBE chassis



## Amplifier

- SOA (Semiconductor Optical Amplifier)
  - Reach extension for 40G/100GBase-LR4 (1310 nm) transceivers from 10km to 40-60km
  - Stand-alone unit, 1RU







**HUBER+SUHNER**

**Cube Optics**