
MASSTART - Mass Manufacturing of Transceivers for Terabit/s Era

Co-funded by the Horizon 2020 Framework Programme of the European Union



How to enable mass-manufacturing of datacom photonics products?

- Automated manufacturing
 - Optical transceivers transfer rates > 1Tb/s
 - Competitive costs according to the interconnection distance
 - Proven designs
 - Chip manufacturing (photonic/electronic)
 - Integration & Packaging
 - Testing
 - Demonstration in a real environment
 - Standardisation
-
- PIC-based optical transceivers with transfer rates above 1Tb/s enabling massive deployment in datacenter environments (<1€/Gb/s between racks and <0.1€/Gb/s inside racks)

**→ Ecosystem and improved cross fertilisation
between photonics and other technology areas**



MASS manufacturing of TrAnsceiverS for Terabit/s era



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MASSTART surpasses the cost metric threshold by using enhanced and scalable techniques

- Glass interface based laser/PIC and fiber/PIC coupling approaches, leveraging glass waveguide technology to obtain spot size and pitch converters in order to dramatically increase optical I/O density, while facilitating automated assembly processes,
- 3D packaging (TSV) enabling backside connection of the high speed PIC to a Si carrier,
- A new generation of flip chip bonders with enhanced placement in a complete assembly line compatible with Industry 4.0 which will guarantee an x6 improvement in throughput and
- Wafer-level evaluation of assembled circuits with novel tools that will reduce the characterization time by a factor of 10, down to 1 minute per device.

- 4-channel PSM4 module in QSFP-DD format with 400G aggregate bit rate,
- 8-channel WDM module in a QSFP-DD format with 800G aggregate bit rate,
- 16-channel WDM on-board module delivering 1.6Tb/s aggregate line rate,
- A tunable single-wavelength coherent transceiver with 600Gb/s capacity following the DP-64QAM modulation format on 64Gbaud/s line rate.

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MASSTART project is an initiative of the **Photonics Public Private Partnership** www.photonics21.org

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