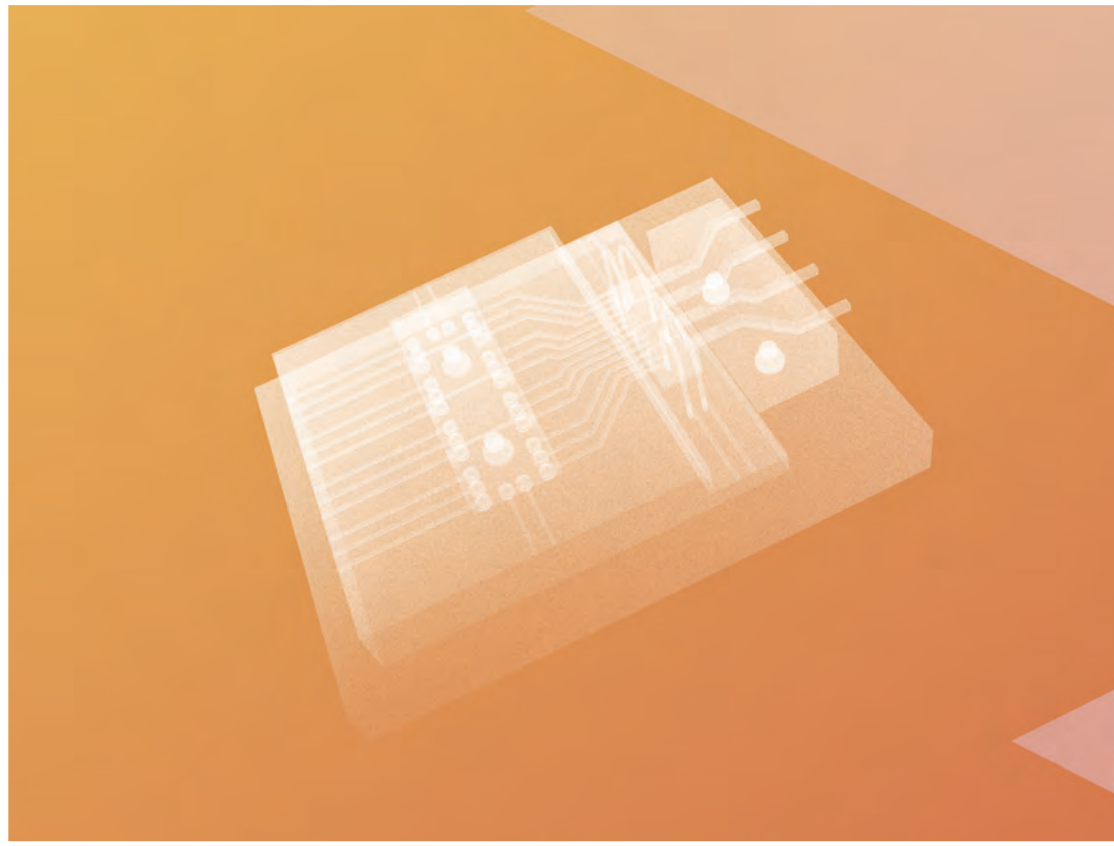


Optical Transmitter for HPC



Areas of Application



Industry & Automation



Quantum Technologies



**Data Centers,
AI Infrastructure**



Communications

High Performance Computing

Multi-Material Sensor

Photonic Integration

Radio Frequency Solutions

coordinated by

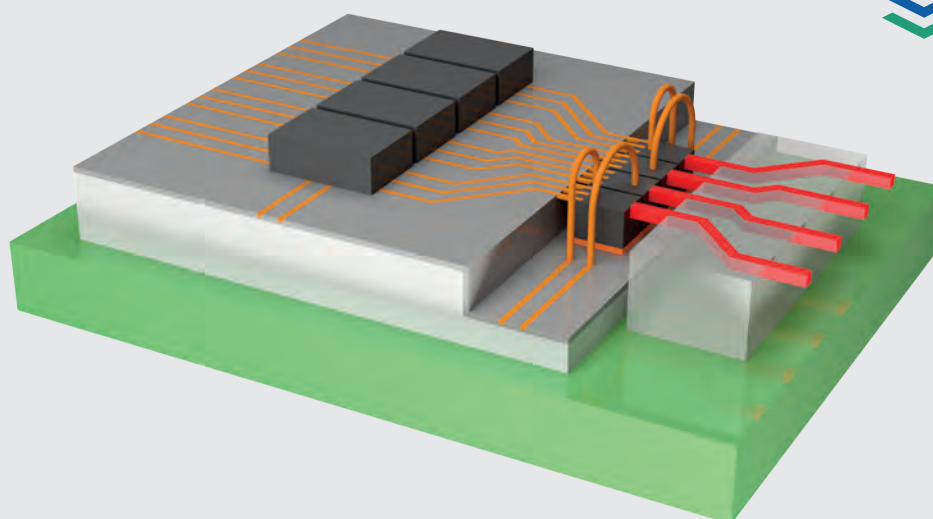


implemented by



**Co-funded by
the European Union**

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The **Photonic Integration (PI) demonstrator** focuses on high speed optical communication modules. It represents an example for the hybrid integration of different III-V optoelectronic components on a common interposer inclusive fiber coupling.

The developed technology will pave the way for the future realization of customized hybrid photonic–electronic integration and enables scalable high-speed transmitter solutions for HPC and data communication applications.

In detail, edge InP technologies, interposer capabilities and photonic wire bonding are applied, to increase transmitter modulation bandwidth and optical output power, and to reduce the total energy consumption in response to the growing demand for high-speed data transfer in compact systems.

The demonstrator targets a hybrid-integrated photonic–electronic high-speed optical transmitter module. An o-band $4 \times 200\text{Gbps}$ InP EML array and the corresponding InP driver chiplets will be assembled on a common multi-layer interposer platform, including DC connection lines, low-loss electrical RF connection lines and low-loss optical coupling to a fiber array.

All components will be co integrated on a suitable heat dissipative submount. RF flexlines with bandwidths exceeding 200 GHz will be used for the electrical connection between EMLs and the corresponding drivers, enabling low loss high-speed signal transmission and thus optimum transmitter performance.

