

PICaboo!

Photonic Integrated Circuits on InP technology platform
enabling low-cost metro networks and next generation PONs

Successful Project Completion and Achievements

After nearly four years of collaborative effort, the PICaboo consortium is proud to announce the successful conclusion of the project. This EU-funded initiative, part of the Horizon 2020 program, united a diverse team of experts, organizations, and institutions from across Europe. The primary goal was to develop innovative photonic building blocks and Photonic Integrated Circuits (PICs) that are compatible with the generic foundry model, aimed at revolutionizing optical metro and access networks. These advancements focus on enhancing critical performance metrics such as speed, footprint, power consumption, and cost-effectiveness. By leveraging cutting-edge technology and collaborative expertise, PICaboo has positioned itself at the forefront of the photonics field, paving the way for future innovations that will benefit both industry and society.

Achievements and Outcomes

Throughout the project, PICaboo has successfully achieved numerous milestones and deliverables that demonstrate its contribution to the telecommunications industry

Key achievements include:

- The development of the Selective-Area-Growth-enabled SIBH InP O-band platform of III-V Lab for the co-integration of passive and active components
- The development of a polarization handling toolbox in the InP generic platform of TUE.
- The development of an EAM-MZM Transmitter and EMLs targeting 50G and 100G PON applications
- The development of an all-optical pre-equalizer capable of compensating for chromatic dispersion and bandwidth limitations in PON systems.



- The development of the subcomponents of a single polarization coherent receiver with phase and polarization control
- The development of compact models for several of PICaboo's building blocks, compatible with the PDK libraries of III-V Lab and TUE.

Impact on the European Community

The outcomes of PICaboo have made substantial contributions to (a) photonic integration technology, (b) PIC design, and (c) photonics-enabled applications, targeting exploitation in metro/DCI and next-generation PON markets while tapping into emerging open market opportunities. Through compatibility with the generic foundry model, PICaboo enables fast prototyping and decouples design from fabrication, eliminating the need for vertical fabrication facilities. These advances support the objectives of the EU Chips Act, strengthening European industry leadership across the digital supply chain.

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PHOTONICS PUBLIC PRIVATE PARTNERSHIP

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101017114.