PARADIGM

Photonic Advanced Research And Development for Integrated Generic Manufacturing

Project reference: 257210
Instrument: CP-IP

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Web site
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Timeline
Start date: 01/10/2010
End date: 30/09/2014

Budget
Total Cost: 12 693 460 EUR
Contribution: 8 320 000 EUR

Project Partners

- Technische Universiteit Eindhoven, NL
- Willow Photonics LTD, UK
- The Centre for Integrated Photonics Limited, UK
- Oclaro Technology plc, UK
- Fraunhofer-Gesellschaft zur Förderung Der Angewandten Forschung E.V, DE
- Chalmers Tekniska Hoegskola AB, SE
- FILARETE s.r.l., IT
- PHOENIX BV, NL
- Gooch & Housego (Torquay) Limited, UK
- PHOTON DESIGN LIMITED, UK
- ALCATEL THALES III V LAB, FR
- The Chancellor, Masters and Scholars of the University of Cambridge, UK
- Philips Electronics Nederland B.V., NL
- Linkra S.R.L., IT
- Politecnico di Milano, IT

Vision & Aim

The objective of PARADIGM is to effect a fundamental change in the way photonic integrated circuits (PICs) based on indium phosphide (InP) are designed and manufactured in Europe, with the aim of reducing the costs of design, development and manufacture by more than an order of magnitude and making more complex and capable designs possible than ever before. The key step is to develop a generic platform technology for application-specific PICs. This will be achieved by adopting a similar methodology in the field of photonics to the one that has been so successful in microelectronics. The new approach developed in PARADIGM will be indispensable in creating a sustainable business sector with potential for significant future growth. PARADIGM addresses the whole product development chain from concept, through design and manufacturing to application. It will establish library-based design, coupled with standardized technology process flows and supported by sophisticated design tools. Our goal is to develop technical capability at the platform level, rather than at the level of individual designs, greatly reducing the cost and time required to bring a new component into production, whilst allowing the designer great freedom for creativity at the circuit level. To establish a generic, design-rule and library-based methodology for photonic ICs is an ambitious and demanding task, which could only be contemplated with a consortium possessing a wide range of complementary skills. PARADIGM has brought together just such a collaboration of Europe's key players in the fields of III-V semiconductor manufacturing, PIC design and applications, photonic CAD, packaging and assembly. The project will verify the potential of the generic approach by fabricating a number of InP PICs, addressing a range of applications in communications, sensors, data processing and biomedical systems, at a level of complexity and performance that will define the state of the art.