Objective

The WIPE project aims at developing hybrid electronic-photonic chips as a key enabling technology for data transmission purposes. It aims at bringing photonics to a new level by developing a concept that can be well industrialised. This sustains EU leadership in photonics, as is the ambition of the work program.

A new wafer-scale technology will thus be developed for direct and intimate attachment of III-V Indium-Phosphide (InP) photonic integrated circuits (PICs) and BiCMOS electronic chips (ICs). The ICs contain the driver, receiver and control electronics for the PIC and enable direct connection to polymer optical waveguides. This technology of ‘wafer scale heterogeneous integration’ enables high-performance and high-density photonic-electronic (photronic) modules are created having a lower energy consumption, lower packaging complexity and lower cost compared to modules using more traditional interconnection techniques like wire bonding and laser welding of fibre connections.
Next to the new bonding technology, an integrated module design technology is developed for efficient co-design of hybrid photonic and electronic modules. A library consisting of photonic/electronic standard modules, is created leveraging the process design kits (PDKs) of the most important European foundries of photonic chips in combination with a powerful BiCMOS. These tools are of significant importance to industry, since they offer photronic module designers a standardised approach that highly facilitates the module design for SMEs and affordable manufacturing by photonic and electronic foundries. The WIPE approach will be proven by showing the feasibility of a 400Gb/s transceiver for data centre application.

Field of science

/physical sciences/optics/physics

Programme(s)

Topic(s)

Call for proposal

H2020-ICT-2015

Funding Scheme

RIA - Research and Innovation action

Coordinator

TECHNISCHE UNIVERSITEIT EINDHOVEN

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Activity type

Higher or Secondary Education Establishments

EU contribution

€ 1 030 188,75

Website

Contact the organisation

Participants (7)
INTERUNIVERSITAIR MICRO-ELECTRONICA CENTRUM
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Activity type
Research Organisations
Website
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EFFECT PHOTONICS LTD
United Kingdom
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Activity type
Private for-profit entities
(excluding Higher or Secondary Education Establishments)
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IBM RESEARCH GMBH
Switzerland
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€ 0
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Activity type
Private for-profit entities
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Website
Contact the organisation

FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V.
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EU contribution
€ 601 147,50
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Hansastraße 27C
80686 Munich
Activity type
Research Organisations
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