

## PARADIGM

### Generic photonic foundry development

Professor Richard Penty is the Cambridge Director of the CDT, MRes in Photonic Systems, and is a senior academic within the Centre for Photonics Systems at Electrical Engineering. Richard has an extensive research portfolio and is PI/Co-I on numerous projects sponsored by EPSRC, the EU and industry.

PARADIGM is a 13M euro project intended to standardize the development and production of optical chips, making them much cheaper and enabling new markets, potentially worth tens of billions of euros. Optical chips are in great demand to process the ever-growing Internet bandwidth requirements, but also have many other application areas such as larger data flows in computers and in processors with dozens of arithmetic cores. In these processing nodes the signal processing still takes place electronically. Those nodes are reaching their limits presenting an opportunity for integrated photonic switches, to provide a solution.

Researchers at Cambridge design application specific photonic integrated circuits for applications such as high speed, low energy optical switches and optical short pulse sources for novel biological applications. In addition researchers also act as mentors for other external users, helping them to produce optimised designs for optical integrated circuits which are manufacturable within the PARADIGM platform.

#### Prof Penty's areas of expertise include:

- Optical data communications
- MMF systems (digital and analogue)
- High-speed optical communications systems
- Wavelength conversion and WDM networks
- Optical amplifiers
- Optical non-linearities for switching and routing applications
- RF over fibre
- High power semiconductor lasers



Professor Richard Penty  
Director of CDT, Cambridge

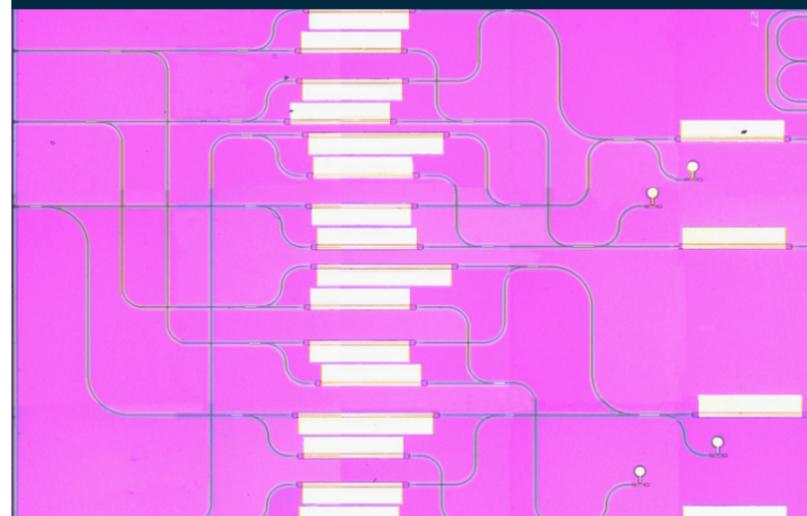
Supported by EU FP7

#### Applicable to:

- Optics
- Telecommunications
- Lasers

#### Partners:

Oclaro (UK), Alcatel-Thales III-V Lab (France), HHI and IZM Fraunhofer Institutes (Germany), CIP (UK), Gooch & Housego (UK), Linkra (Italy), Willow Photonics (UK), Cambridge U (UK), Chalmers U (Sweden), Milan U (Italy), (Netherlands), Phoenix (Netherlands), Photon Design (UK), Filarete (Italy), COBRA Institute of Eindhoven University of Technology (Netherlands)



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