



PHOTONICS PUBLIC PRIVATE PARTNERSHIP

PHOTONICS²¹



European
Commission



Innovation hubs with photonics competencies Integrated Research Center for Photonic Networks and Technologies (IRCPHONET)

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Acknowledgement: Roberto Pini, Institute of Applied Physics,
National Research Council, Florence, Italy

Outline

- *What is it and main aim?*
- *How does it work?*
- *What is the impact / success story?*
- *Why is it successful?*
- *What else would be interesting to add?*

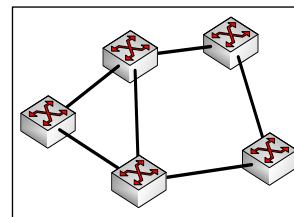


IRCPHONET- What is it and main aim?

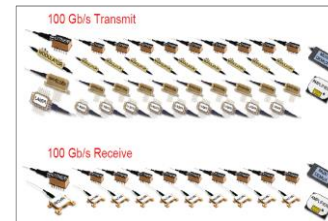
*located in Pisa,
Tuscany, Italy*



- It is a private-public complex ecosystem consisting of three main actors: Scuola Superiore Sant'Anna (SSSA), Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), partnering with Industry (Ericsson R&D, STM, GE G&O, RFI, ..)
- IRCPHONET, in addition, can partner with regional organization (FORTIS Technological District), other SMEs, Italian universities through CNIT, other foreign universities via SSSA, other industry branches.
- IRCPHONET mission is design innovation of photonic systems and networks and devices fabrication as photonic integrated circuits (telecom, sensors, etc)



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IRCPHONET - How does it work?

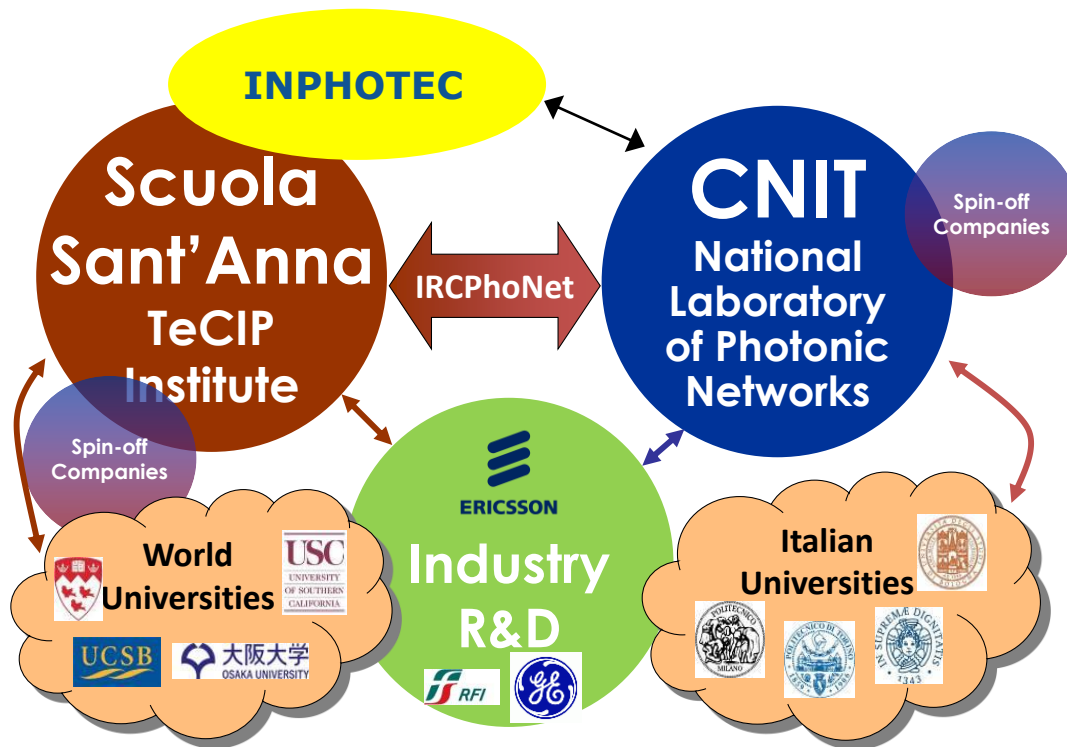
The Pisa ecosystem is part of



DT
F.O.R.T.I.S.

Technological district
F.O.R.T.I.S., that indicates
the sectors therein
represented, namely:
Photonics,
Optoelectronics,
Robotics, Telecom, ICT
and **SPACE.**

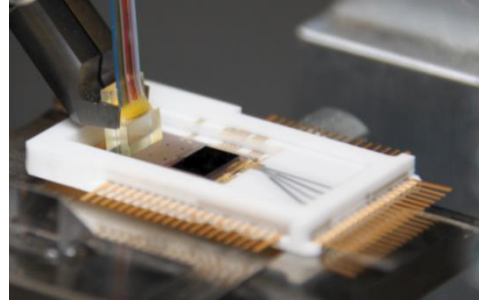
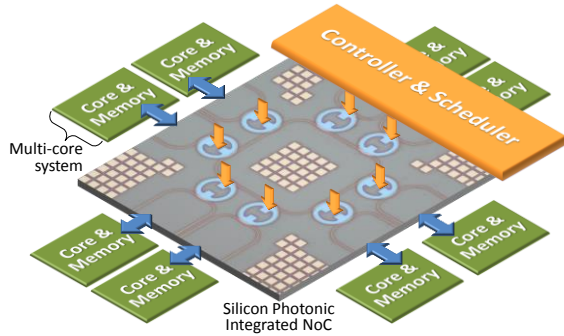
F.O.R.T.I.S. has been
created by **Regione**
Toscana in 2014,
OPTOSCANA acts as the
scientific secretariat





IRCPHONET- Impact

PIC and PIC packaging



Fiber Sensors



Visible Light Communication



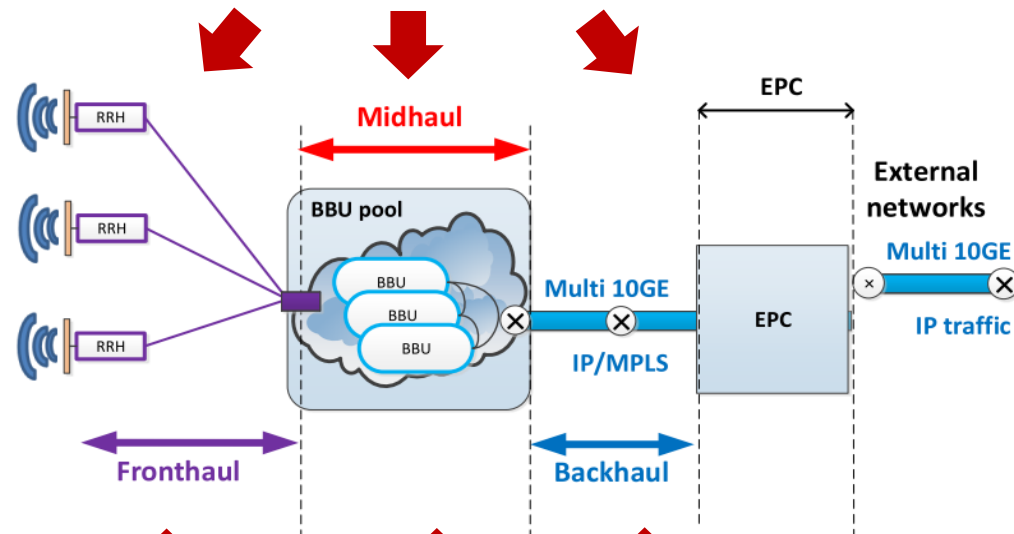
1Tb/s demo @ OFC



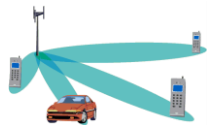
**Photonics
for 5G**

IRCPHONET- Success story

Network functions orchestration



Optical Beamforming



Solution based on optical phase shift implemented through PICs

High speed Short reach

Solution based on novel transceivers implemented as PIC

Data Center Architecture

NFV virtualization and optical DC networks

Access Architecture

High speed coherent optical transceivers as PIC



IRCPHONET- Why is it successful?



- Proximity of core partners and facilities
- Joint critical mass on specific objectives
- Joint exploitation of european, national and regional funding for research, infrastructure and settlement
- Long term agreements with industries



IRCPHONET - What to add? At local, regional, national, European level?

In progress (bottom-up)

- *partnering with other similar facilities in Europe at the training level (e.g. Erasmus Mundus initiatives)*

Desirable (top-down)

- *Inventory of best practice and requirements definition to recognize an "innovation hub" as such with quantitative parameters (at different scales)*
- *Competitive calls for aggregation of innovations hubs as a systemic composition and/or stable collaboration programs on industry-driven objectives at the European level (in addition to existing H2020 instruments)*
- *Vision of the hub aggregation (growth) process by building-up on substantial and challenging collaboration objectives.*

Thanks ! Q&A

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