Integrated **r**econfigurable s**i**licon photonic based optical **s**witch

Project presentation

Deliverable 1.5 (second part)

European Commission funded STREP
Call identifier: FP7-ICT-2013-11
Contract No. 619194
Project start date: January 1st, 2014

IRIS at a glance

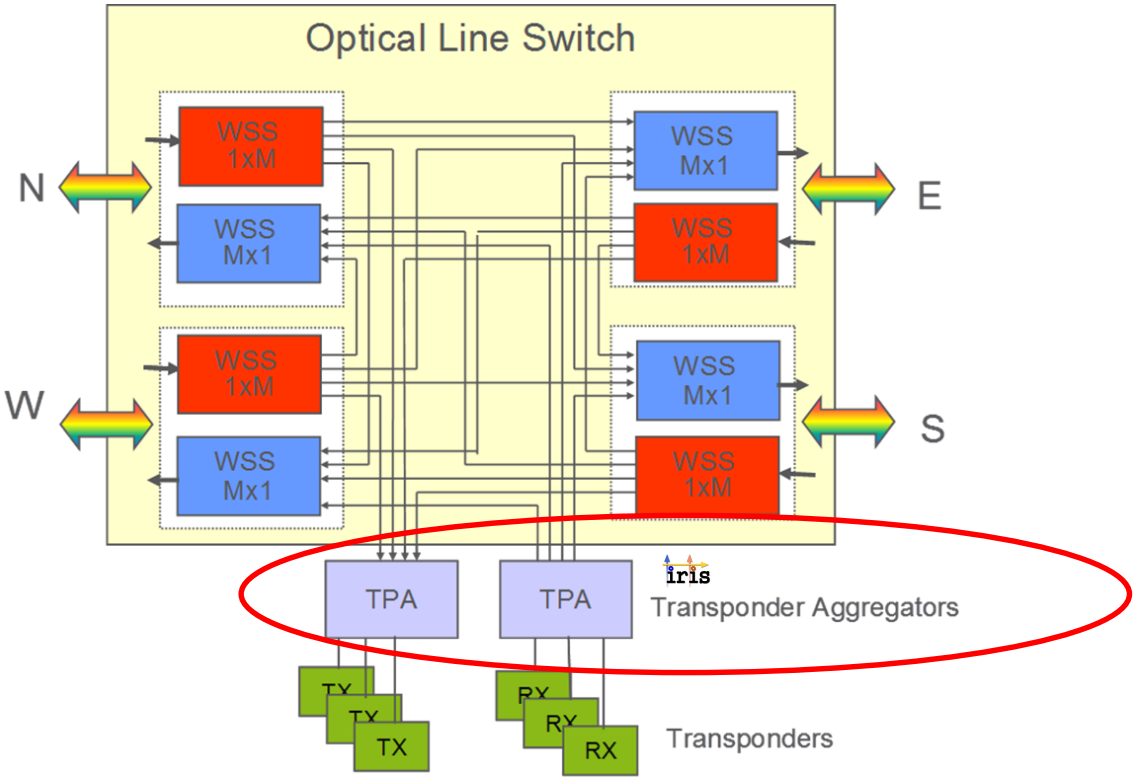
IRIS is an European Commission funded project aiming at developing a highly integrated, scalable, transparent and high capacity Wavelenght Division Multiplexing (WDM) **Photonic Switch** used as an **Transponder Aggregator** (TPA), a novel function which will be added to existing Reconfigurable Optical Add and Drop Multiplexer (ROADM) nodes without disrupting their architecture while adding attributes such as colorless, directionless and contentionless.

A similar device can also be used in **Data Centers** to interconnect at high speed a great number of nodes

The device consists of an assembly of a **silicon photonic chip**, where the photonic switching function is built, and an **electronic chip** that control the photonic part.

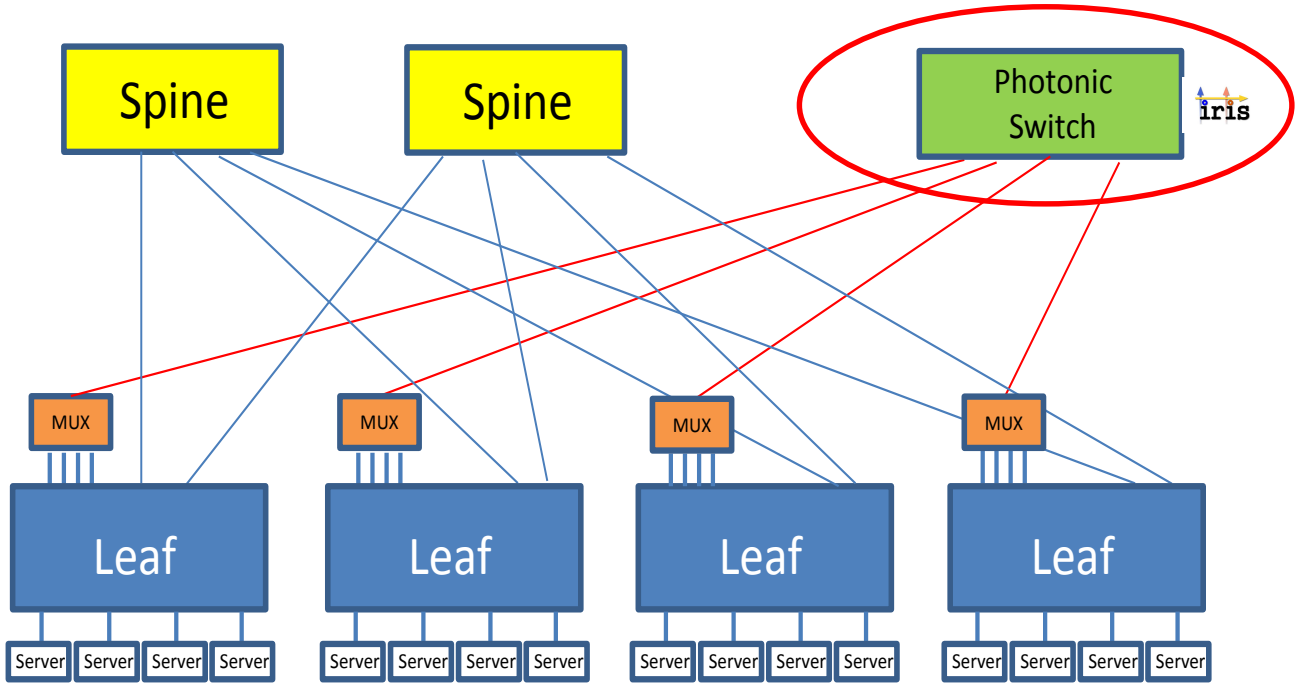
The basic element of the photonic switch is a **ring resonator** that is tuned by adjusting its temperature. In the chip there will be **more than 1200 photonic devices** (rings, grating couplers, AWGs, interleavers, crossings, photodiodes)

IRIS application for Colorless/Directionless/Contentionless ROADM nodes

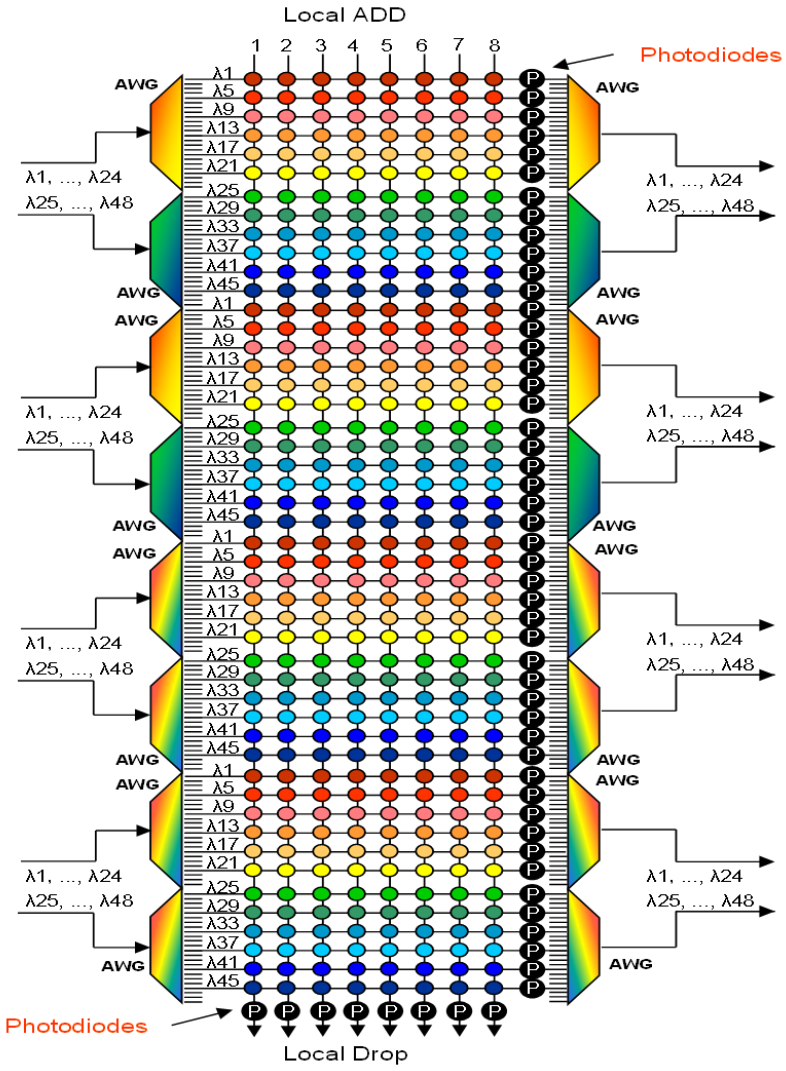


The number of interconnected transponders can be easily scaled by using many individual TPA devices, each of them connected to one of the spare ports of the WSS

IRIS application for Data Centers



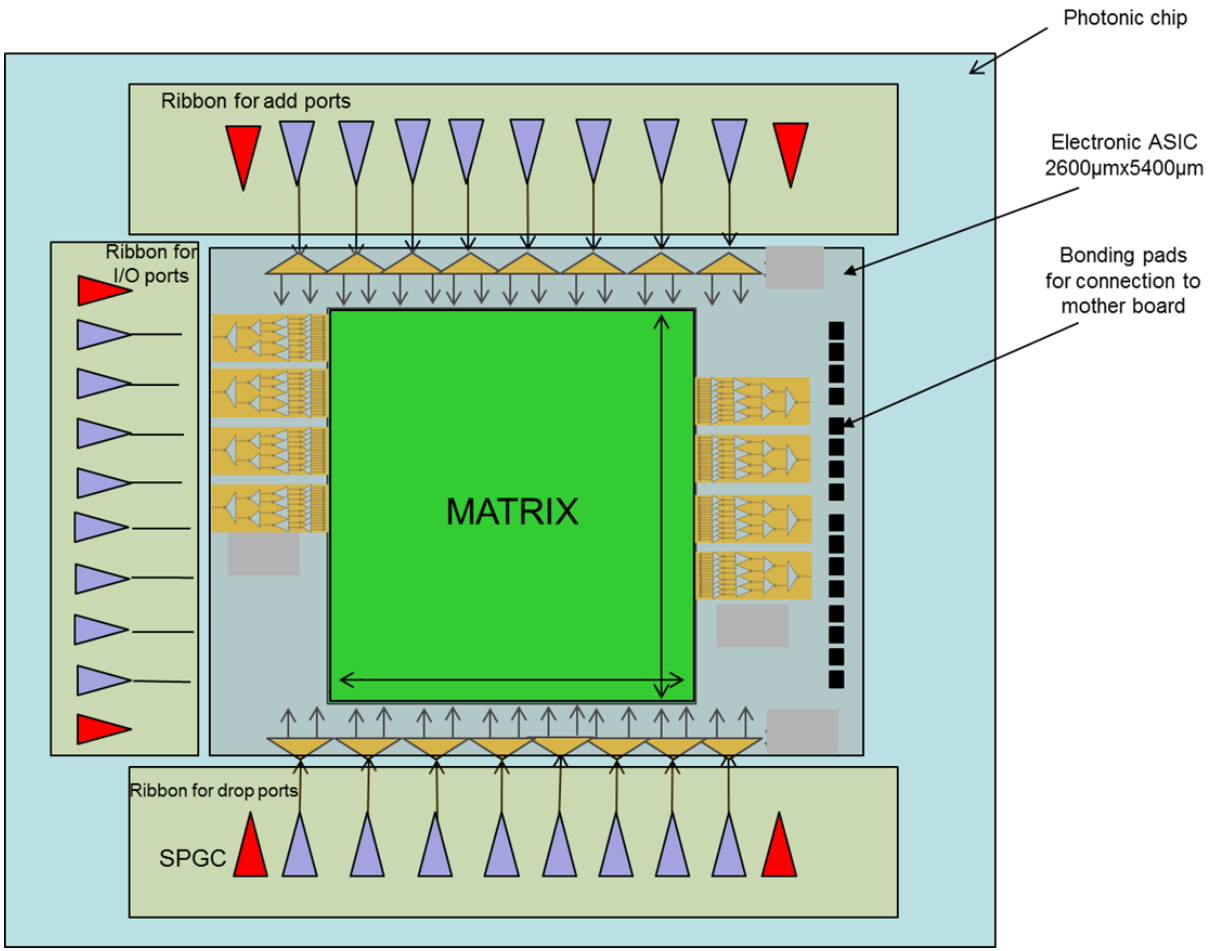
Photonic switch matrix concept



Very High level of integration including >1000 optical circuits with the following functions:

Wavelength mux/demux
Wavelength interleavers
Optical monitoring
Optical switching
Grating coupler

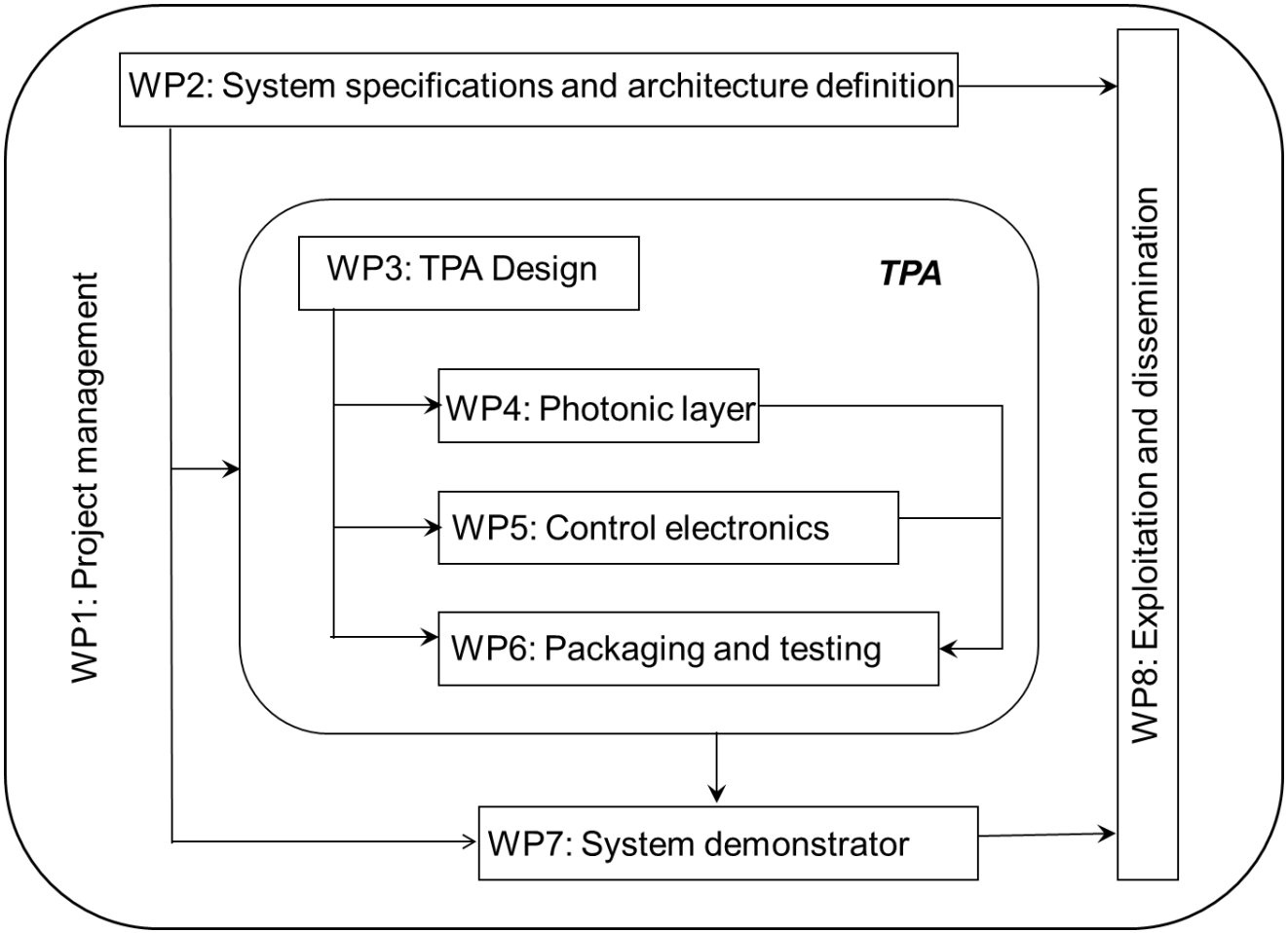
TPA device outline



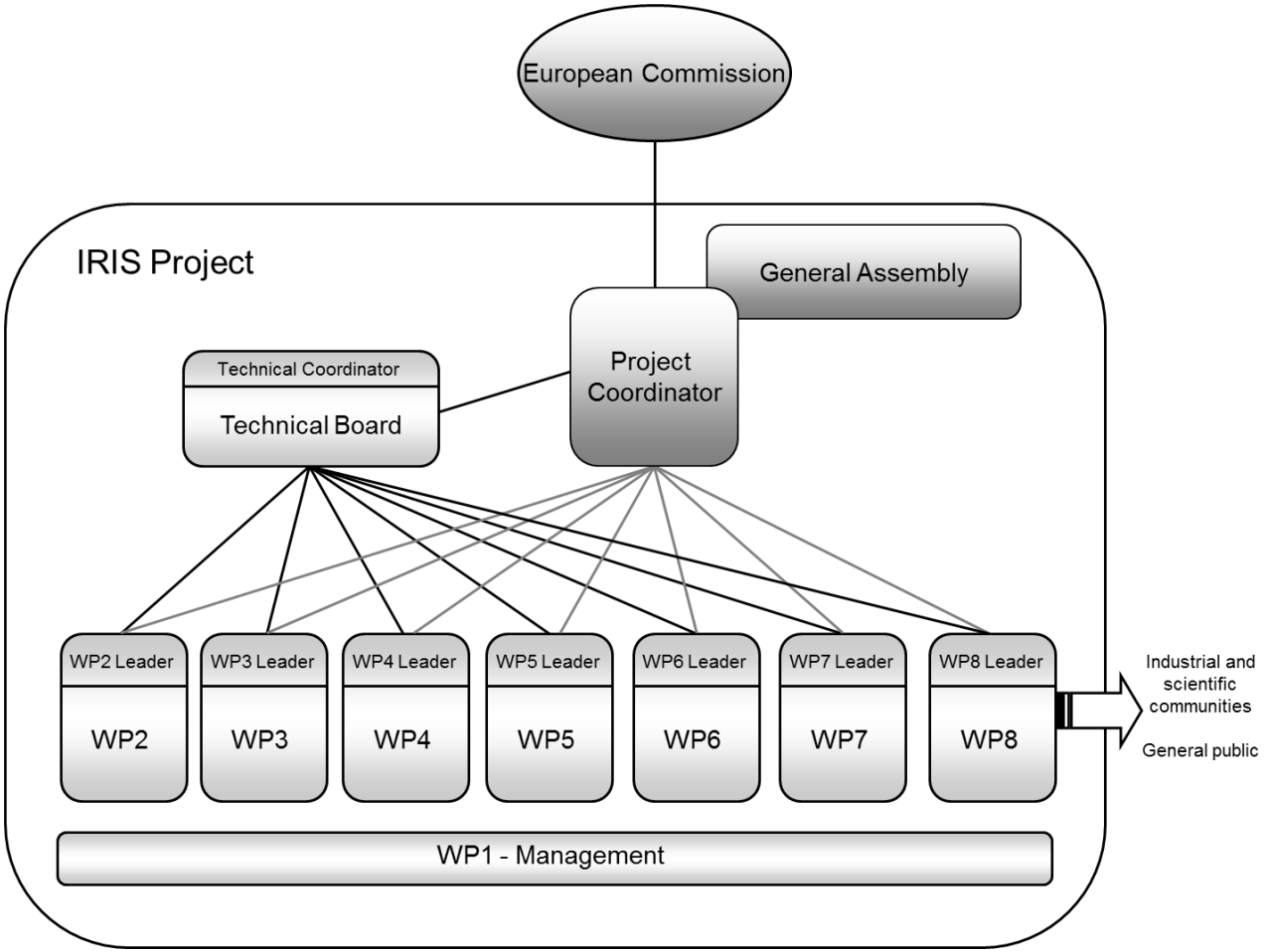
Work Packages

- WP1 - Project Management
- WP2 - Specifications and Architecture
- WP3 - TPA design
- WP4 - PIC Fabrication and testing
- WP5 - Control electronics design and implementation
- WP6 - Packaging and Photonic and Electronic testing
- WP7- System Demonstration
- WP8- Dissemination and Exploitation plan

Work breakdown structure



IRIS organization



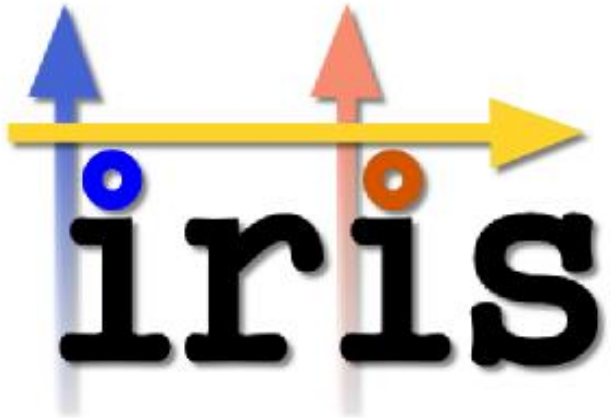
Consortium

- Ericsson Telecomunicazioni SpA (Italy)
- ST Microelectronics srl (Italy)
- CEA/LETI (France)
- Consorzio Nazionale Interuniversitario per le Telecomunicazioni (Italy)
- Technische Universität Wien (Austria)
- Universitat Politècnica de València (Spain)
- Università degli Studi di Trento (Italy)
- Electronics and Telecommunications Research Institute (Republic of Korea)

Contacts

Project Coordinator
Stefano Stracca
Ericsson Telecomunicazioni SpA
Via Giuseppe Moruzzi 1
56124 Pisa (PI) - Italy
Tel. +39 0505492320

Technical Coordinator
Francesco Testa
Ericsson Telecomunicazioni SpA
Via Giuseppe Moruzzi 1
56124 Pisa (PI) - Italy
Tel. +39 0505492397


iris