



# FABULOUS

## FDMA Access By Using Low-cost Optical network Units in Silicon photonics

***S. Abrate***

# Project overview

# Project genesis

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- FP7-ICT-2011-8 – Objective 3.5: Core and disruptive photonic technologies

*"Application-specific photonic components and subsystems"*

*"For access networks, the goal is affordable technology enabling 1-10 Gb/s data-rate per client"*

# FABULOUS at-a-glance

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- EU STREP contract 318704
- Total cost: 4,3M€
- EU contribution: 2,9M€
- Project start: 1<sup>st</sup> October 2012
- Duration: 36 months

# The consortium

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A balanced mix of  
universities, research  
centers, industries and  
telecom operators



FP7-ICT-2011-8 Challenge 3.5 – STREP project n. 318704 – FABULOUS  
FDMA Access By Using Low-cost Optical Network Units in Silicon photonics



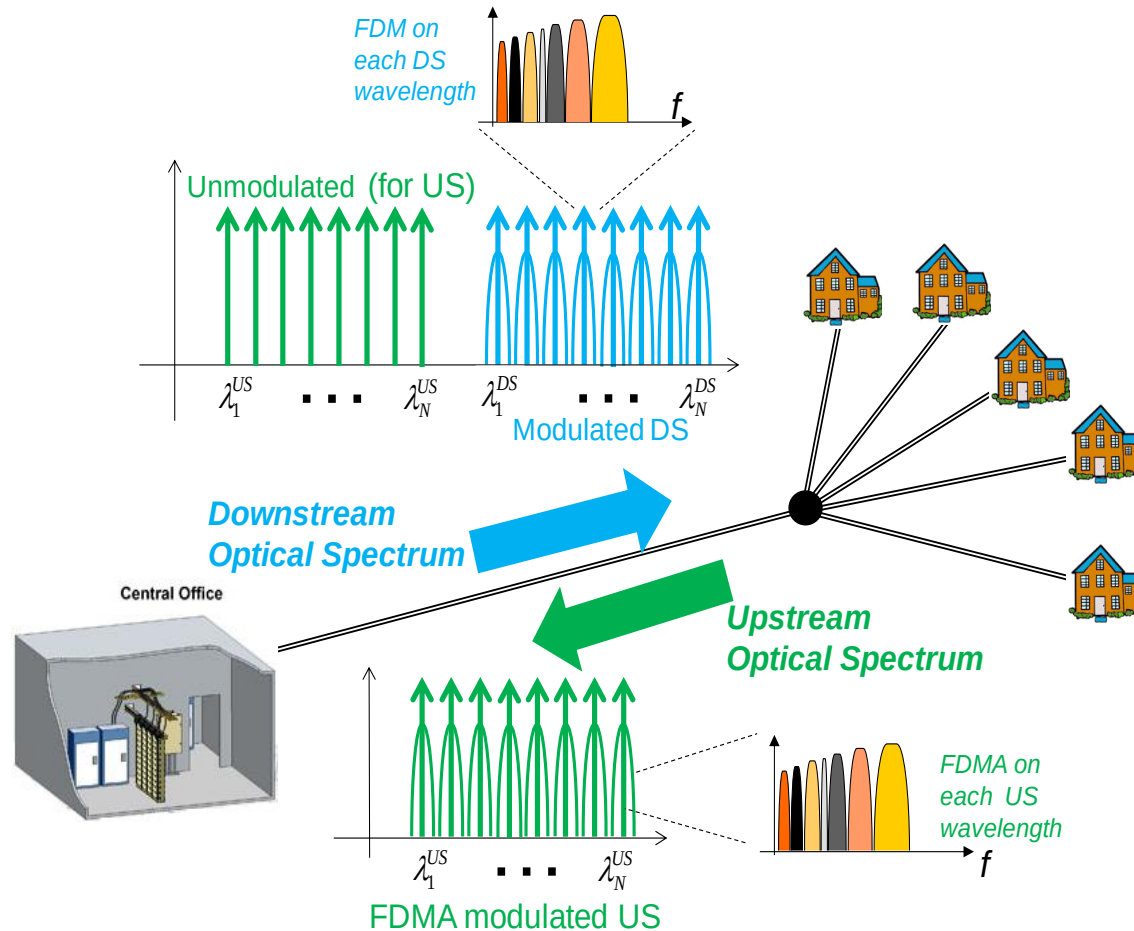
***A flexible architecture  
compatible with current  
infrastructures and low cost  
components based on silicon  
photonics:***

***the keys for mass Fiber-To-  
The-Home ultra-broadband  
deployment.***

# The challenge

# The architecture

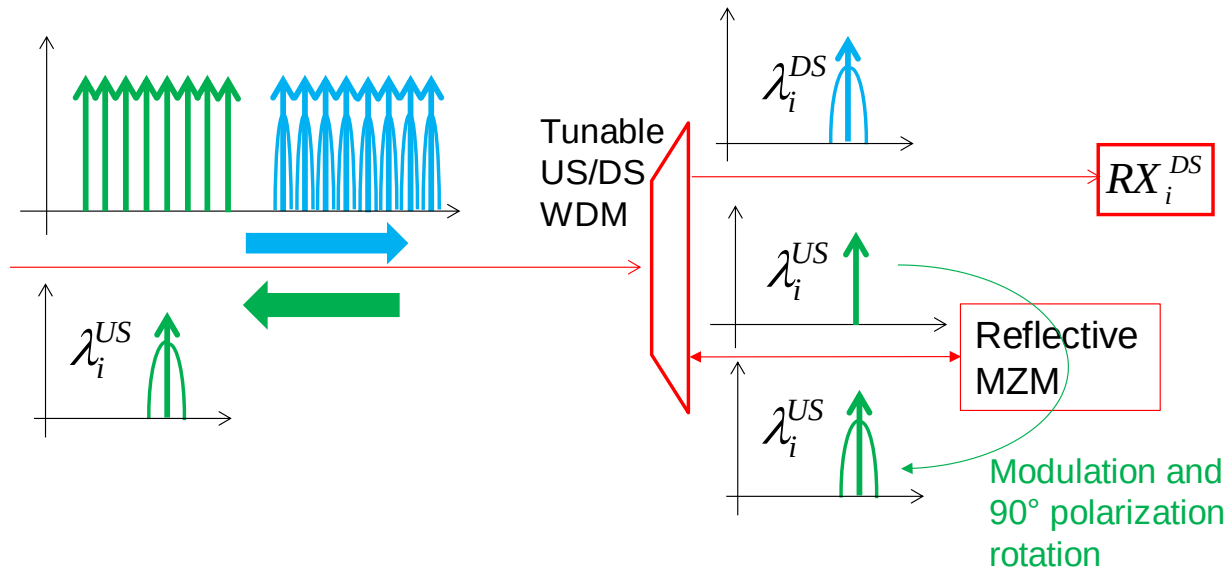
To demonstrate a FDMA PON architecture ...





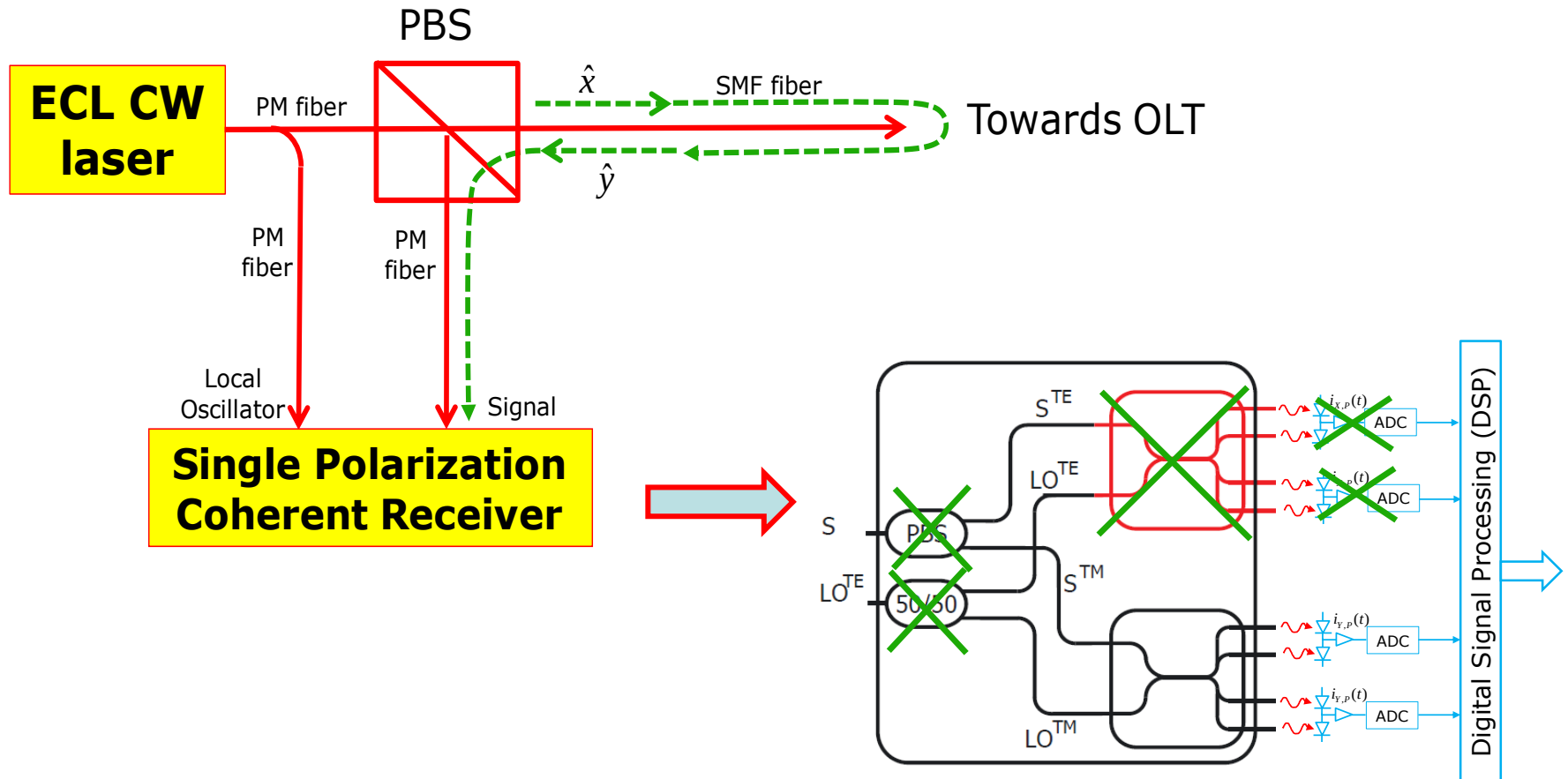
# The ONU

... exploiting the R-PON paradigm and Faraday rotation ...



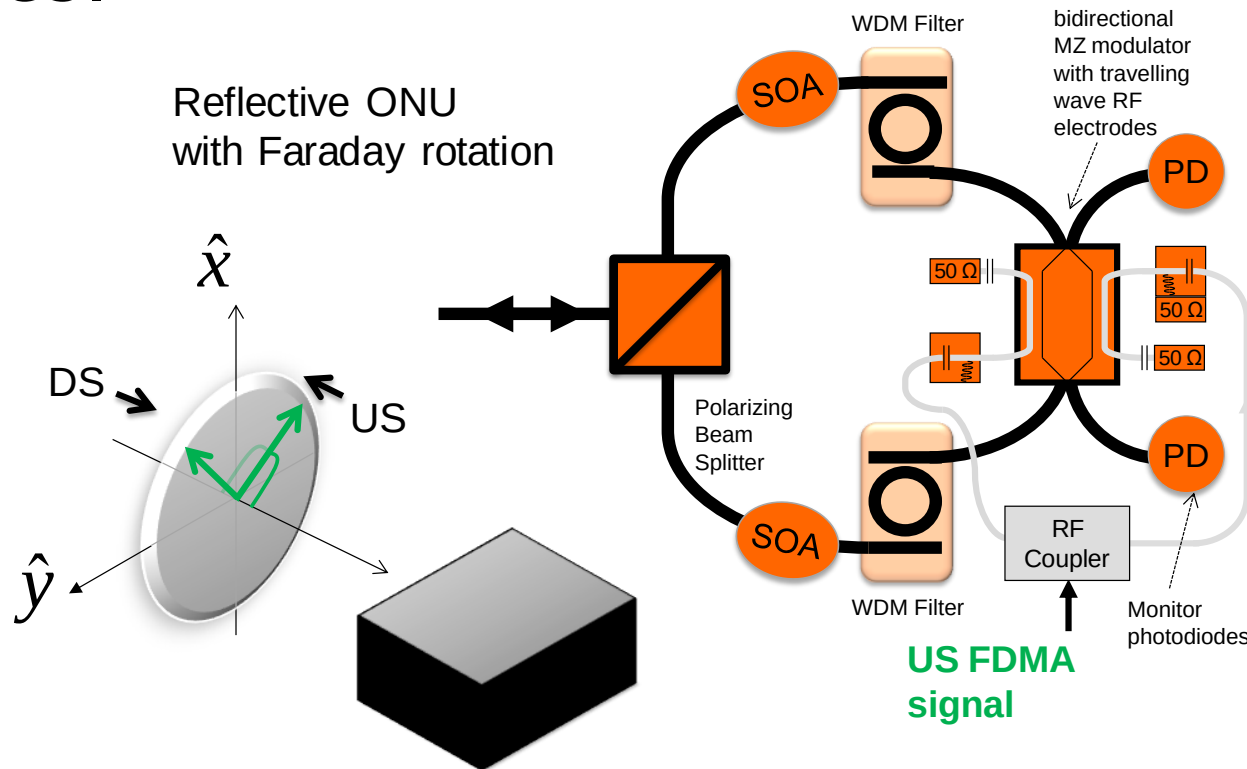
# The OLT

... allowing for simplified coherent receivers at the OLT side...



# The silicon-photonics integrated ONU

... and producing an integrated revolutionary ONU based on silicon photonics, for low-cost devices.



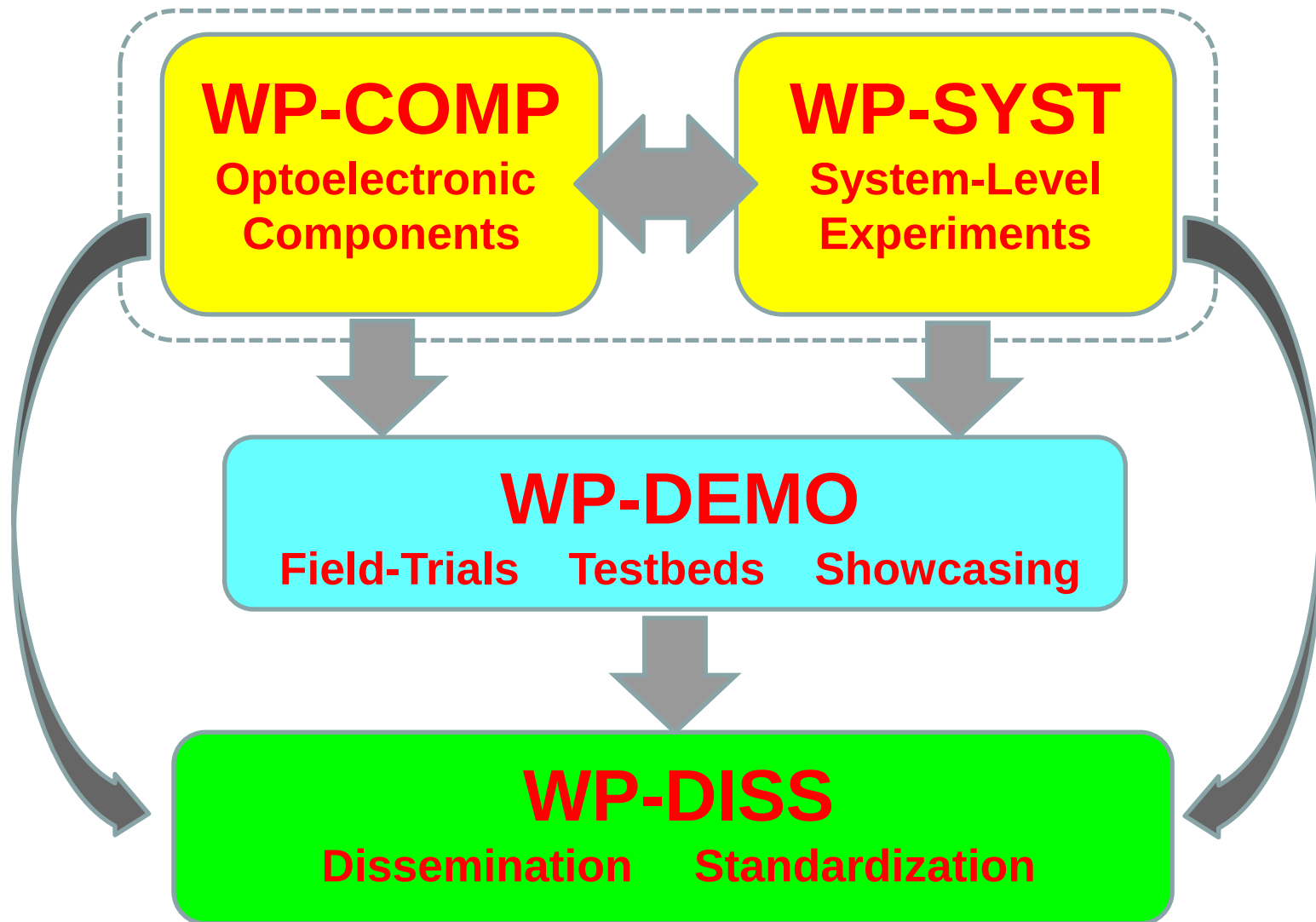
# Exploitation potential

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- Low-cost access devices are important for PON deployment: silicon photonics can be a breakthrough towards low-cost!
- The proposed architecture is flexible and scalable, for OPEX reduction. It is also compatible with current infrastructures.
- Large industries and telecom operators are part of the FABULOUS consortium.

# The project organization

# The project work-packages



- Definition of the detailed specifications for the components to be developed in WP-COMP
- Comparison of the FABULOUS architecture with other PON architectures in term of performances and cost
- FDMA-PON architecture demonstratio
  - Firstly using discrete optoelectronic components
  - Then inserting the integrated components coming from WP-COMP in the architecture
- Proof of the full architecture in relevant environment (dark-fiber test-beds)

- Development of standalone opto-electronic components to be used at the ONU side of NG-PON
- Development of custom integrated ONU for the FDMA-PON architecture proposed by the project



- Sub-system demonstration: demonstration of the standalone components
- System demonstration: demonstration of the full architecture with the integrated ONU and real-time traffic

- General dissemination: papers, website, newsletter
- Actions toward standardization, thanks to the partners in the FSAN organization

# Acknowledgments

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## **FABULOUS: “FDMA Access By Using Low-cost Optical Network Units in Silicon Photonics”**



- WEB site:  
[www.fabulous-project.eu](http://www.fabulous-project.eu)
- To contact the coordinator:  
[info@fabulous-project.eu](mailto:info@fabulous-project.eu)
- To contact the author:  
[Silvio Abrate](#)  
[E-mail: abrate@ismb.it](mailto:abrate@ismb.it)