



**COst-effective COherenT ultra-dense-WDM-PON  
for lambda-To-the-user access**

*SPECIFIC TARGETED RESEARCH PROJECT (STREP)  
INFORMATION & COMMUNICATION TECHNOLOGIES*



**EU CNC** 2016  
June 27-30

European Conference on Networks and Communications | Athens, Greece

## **EU-CNC STAKEHOLDER MEETING**

*Thursday, June 30, 2016 Part II n.20*

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# **Flexible WaveLength Distribution for PONs with Elastic Bandwidth Range**

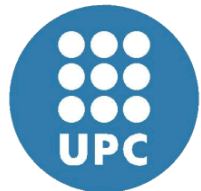
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**COCONUT**  
**FLIPER**

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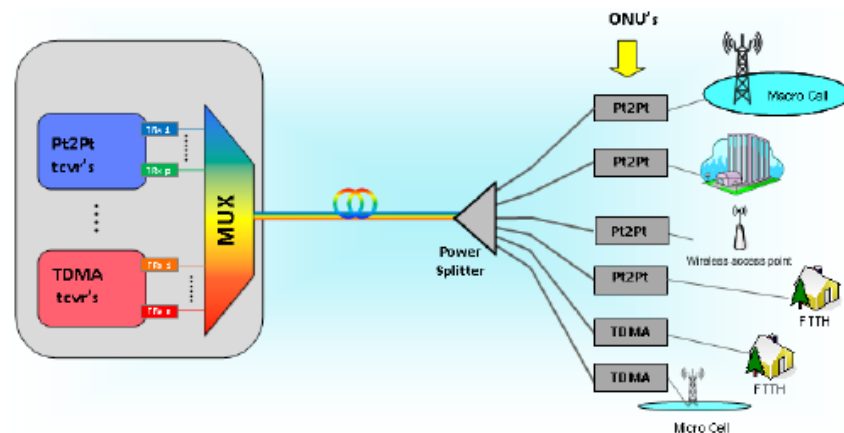
**Universitat Politècnica de Catalunya,  
UPC  
Barcelona**



- EU COCONUT: **CO**st-effective **CO**hereNt Ultra-dense-WDM-PON for **lambda-To-the-user** access
- STREP 318515, ICT Objectives 1.1, 1st-Nov 2012 + 36 months

- **GOAL: efficient  $\lambda$ TTU**

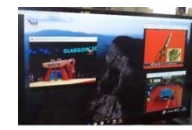
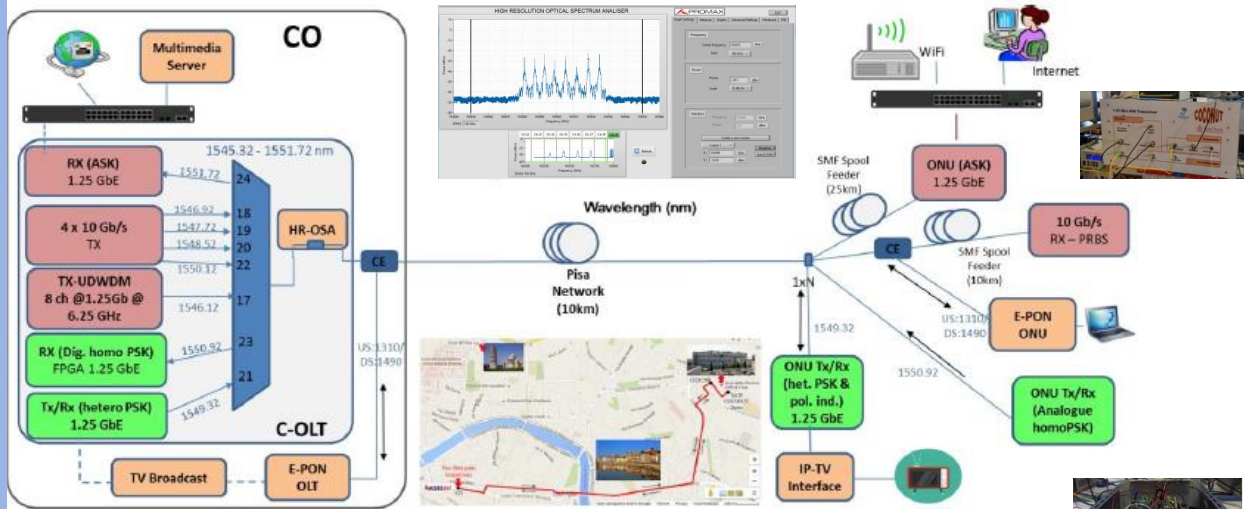
- 1G-to-the-User Home & 10G-to-the-Antenna
- By: ultra-dense WDM-PON, by:
  - Statistical WDM multiplexing
  - Simplified coherent transmission



- Current Project (Spanish Min.): **FLIPER: Flexible WaveLength DI**istribution for PONs with Elastic Bandwidth RANGE

## Effectively demonstrated

- Development of low cost coherent transceivers
  - direct DFB modulation
  - fully real time coherent processing
  - Several possible solutions with reduced complexity
  - -35 to -53 dBm sensitivity
- Implementation of the  $\lambda$ -to-the-user concept in a filterless optical network
- UDWDM operations @ 6.25GHz
- Datarates 1G-10 Gb/s
- Development of an HR-OSA as Monitoring System
- Network Capacity Upgrade by reuse of legacy infrastructures
  - Co-existence with legacy PON
- Real-Time, HD streaming services



- Elastic Wavelength-to-the-Antenna / Home
  - cheap wavelength
    - common DFB lasers, directly modulated, thermal tuned, non-preselected.
    - simple coherent RX.
    - TDM and burst mode: not required, if more than 14 nm available.
  - 256 wavelengths & 5-25 GHz spacing.
  - more total BW, less bit/rate per user, lower consumption.
  - transparent-flexible to:
    - Bit rate
    - Code
    - BW

