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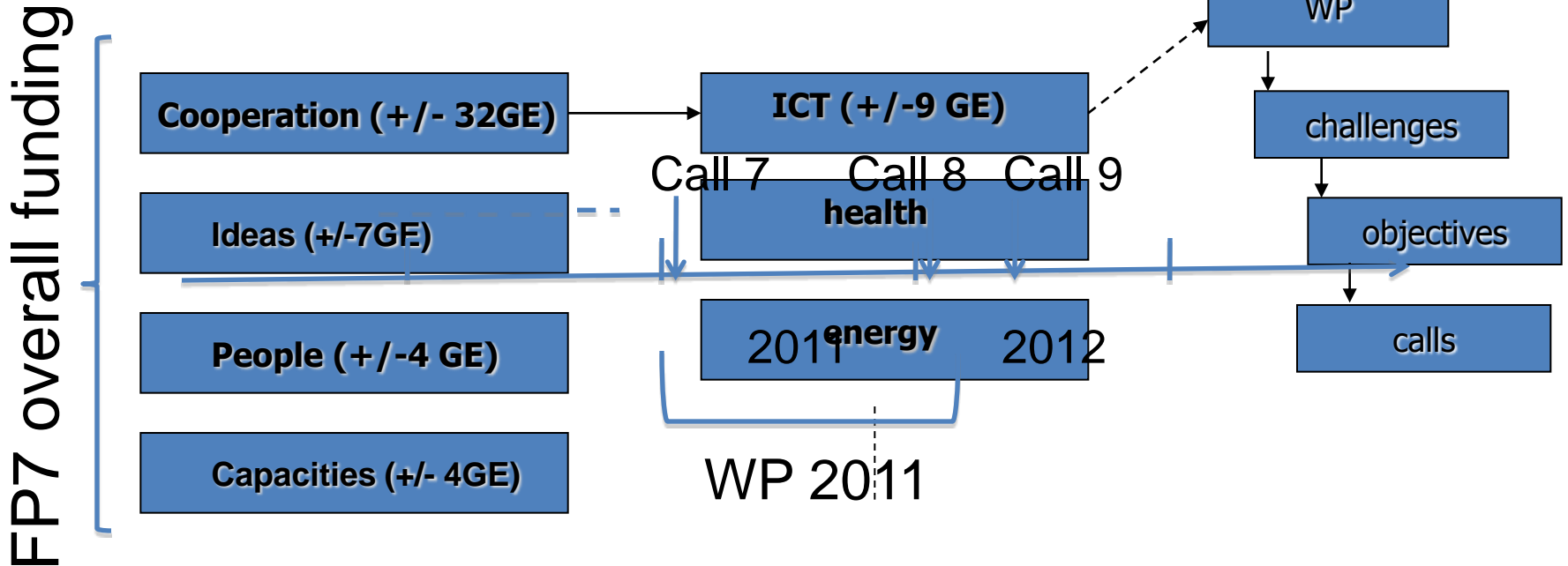
# introduction to The European FP7 funding framework and Optical access projects

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- Brief introduction to European funding framework
- Details of future opportunities related to optical access projects
- Projects introduction

- Eureka initiatives/ JTIs :
  - Industry driven, large projects usually
  - Labelled at European level and financed at national level (Hybrid status for JTI)
  - Initiative of interest: CELTIC(+) for infrastructure; 2 calls / year (next one: May 2011)
- FP7 (2007-2013) / 8 (2013-..):
  - More « research driven »
  - Selection and follow-up by EC

- FP7: 2007-2013, +/- 50 GE
- Cooperation ICT: 9GE
- In practice: call for 50-200 ME per objective each 1.5-2 years



# Where do we stand in FP7?

- **Behind us**
  - ICT Calls for proposals under WP 2007-08 and WP 2009-10
    - >4200 M€ of EU funding committed
    - >1100 projects launched or to be launched
    - >10000 participations
    - >3600 distinct organisations participating
  - Calls under two Joint Technology Initiatives (Artemis and Eniac) and the Ambient Assisted Living Joint Programme (AAL) in 2008, 2009 and 2010
- **Ahead of us**
  - ICT WP 2011-12
    - 2422 M€ funding
  - ICT WP 2013
    - >1500 M€ funding
  - JTIs + AAL WPs 2011, 2012, 2013

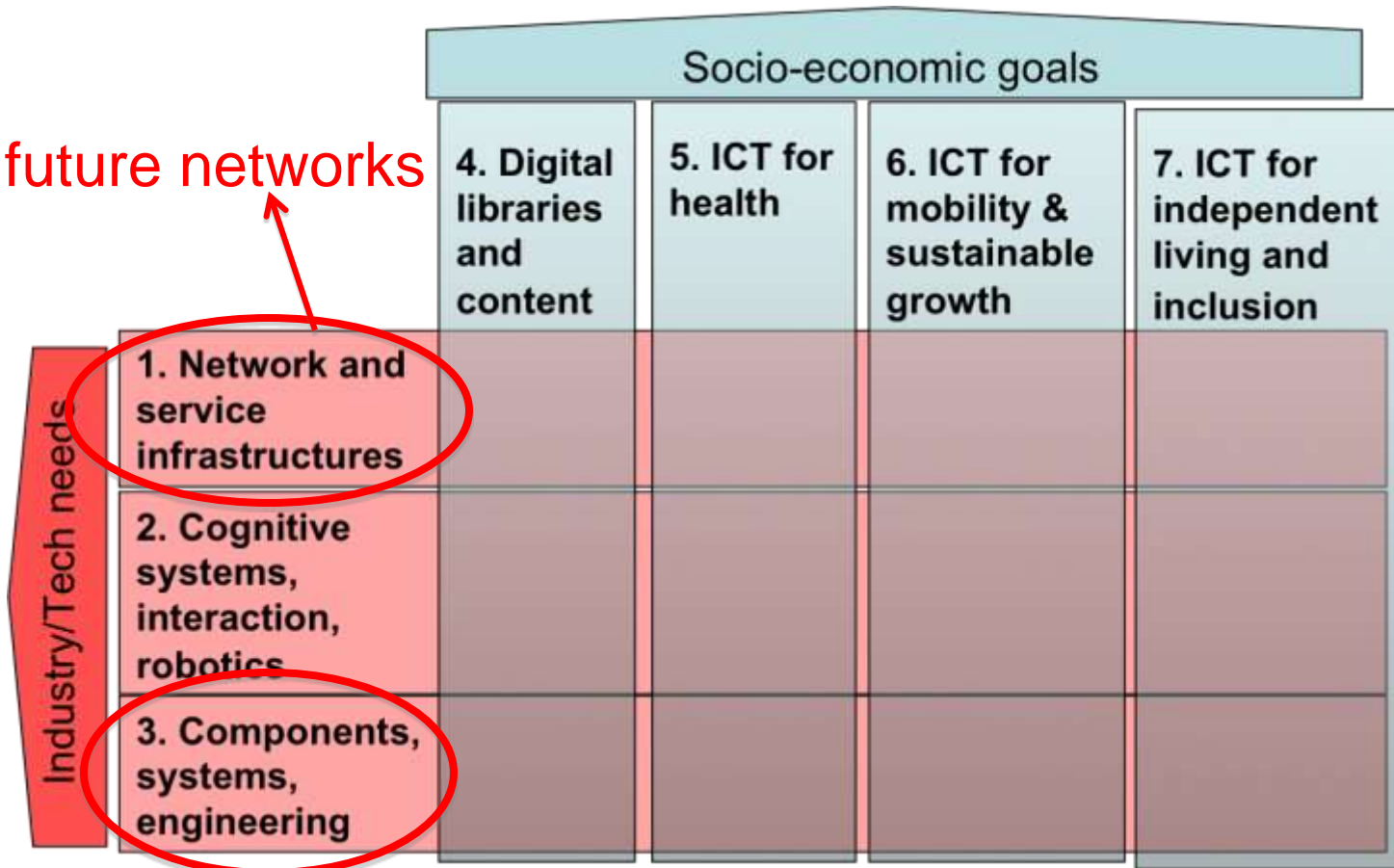
# Types of instruments

- STREP: medium size research projects; 5-15 partners, 3-5 ME budget
- Integrating projects: 7-20 partners, more industry driven, 6-30 ME budget, global problematic
- NOE: Network of excellence
- CSA: Coordination or support action

# Funding rates

Funding Scheme	Non-profit public bodies, secondary and higher education establishments, research organisations and SMEs	All other organisations
Collaborative project	75%	50% (1)
Network of Excellence	75%	50% (1)
Coordination and support action	100%	100%

1.1 future networks



3.5 photonic technologies

- Objective 1.1 Future Networks (Draft) Budget 160 ME
- Objective 1.6 Future Internet Research and Experimentation (FIRE) 25 ME
- Objective 3.5 Core and Disruptive Photonic technologies 92 ME
- Objective 1.2 Cloud Computing, Internet of Services and Advanced Software Engineering
- Objective 1.4 Trustworthy ICT
- Planned Date of publication: 26 July 2011
- Expected Deadline: 17 January 2012, at 17:00

# WorkProgramme 2011-12: Objective 1.1. Future Networks

The target is the development of **Future network infrastructures that support the convergence and interoperability** of heterogeneous mobile, wired and wireless broadband network technologies as enablers of the future Internet.

This includes **ubiquitous fast broadband access and ultra high speed end-to-end connectivity**, with optimised protocols, addressing and routing capabilities supporting multiple operation schemes and provision of open generic services and applications.

# Objective 2011.1.1: Future Networks (Call 8, 160M€)

## Target Outcome

- Development of **energy-efficient future network infrastructures** that support the convergence and interoperability of **heterogeneous mobile, wired and wireless** broadband network technologies

## a) Wireless and mobile broadband Systems

- **LTE-Advanced and post-LTE Systems**

*(targeting new radio transmission paradigms and system designs)*

- **Flexible spectrum usage** *(reference implementation for cognitive radio)*

- **Novel radio network topologies** *(autonomy, energy efficiency, low EMF...)*

- **Integration radio and fiber** *(integrated communication systems using e.g. femto-cells)*

## b) High capacity end-to-end infrastructure technologies

- **Ubiquitous fast broadband access:** convergence of heterogeneous broadband and mobile network technologies; (*heterogeneous networks with optimised traffic exchange*)
- **Ultra high capacity all-optical networks** (*WDM technologies enabling transportation of 160 wavelengths at 40Gb/s, in combination with TDM technologies with e.g. 100Gb/s per wavelength*)
- Functional split between circuit, flow and packet switching
- system perspective for photonic components and subsystems undertaken in Objective 3.5

## c) Novel Internet architectures and management and operation frameworks

- **Future Internet architectures**

*(designed for open access and heterogeneity of end-points with the need of a seamless and generalised handover)*

- **Visionary multi-disciplinary research on new architectures**

*(Cycles of research, design and large-scale experimentation of innovative architectures)*

- **Network management and operation frameworks**

*(Internet mobility, virtualization, and backward compatibility strategies)*

- **Self or distributed management approaches** *(tighter integration between network functionalities and overlay service functionalities)*

## d) Flexible, resilient, broadband satellite communication

- **Innovative system architectures and technologies**

*(ultra high capacity satellite communication systems with seamless integration capabilities, reconfiguration of satellite-terrestrial protocols)*

- **Novel technologies and architectures for resilient and flexible networks**

*(Enabling institutional missions. Integration with navigation systems and sensor networks)*

- Strengthened positioning of **European** industry in Future Internet technologies, mobile and wireless broadband systems, **optical networks**.
- Increased economic efficiency of access/transport infrastructures (cost/bit).
- Contributions to standards and regulation
- Industry adoption of all optical networks and spectral efficient wireless systems.
- Industrial acceptance of novel Internet architectures and technologies

## objectives

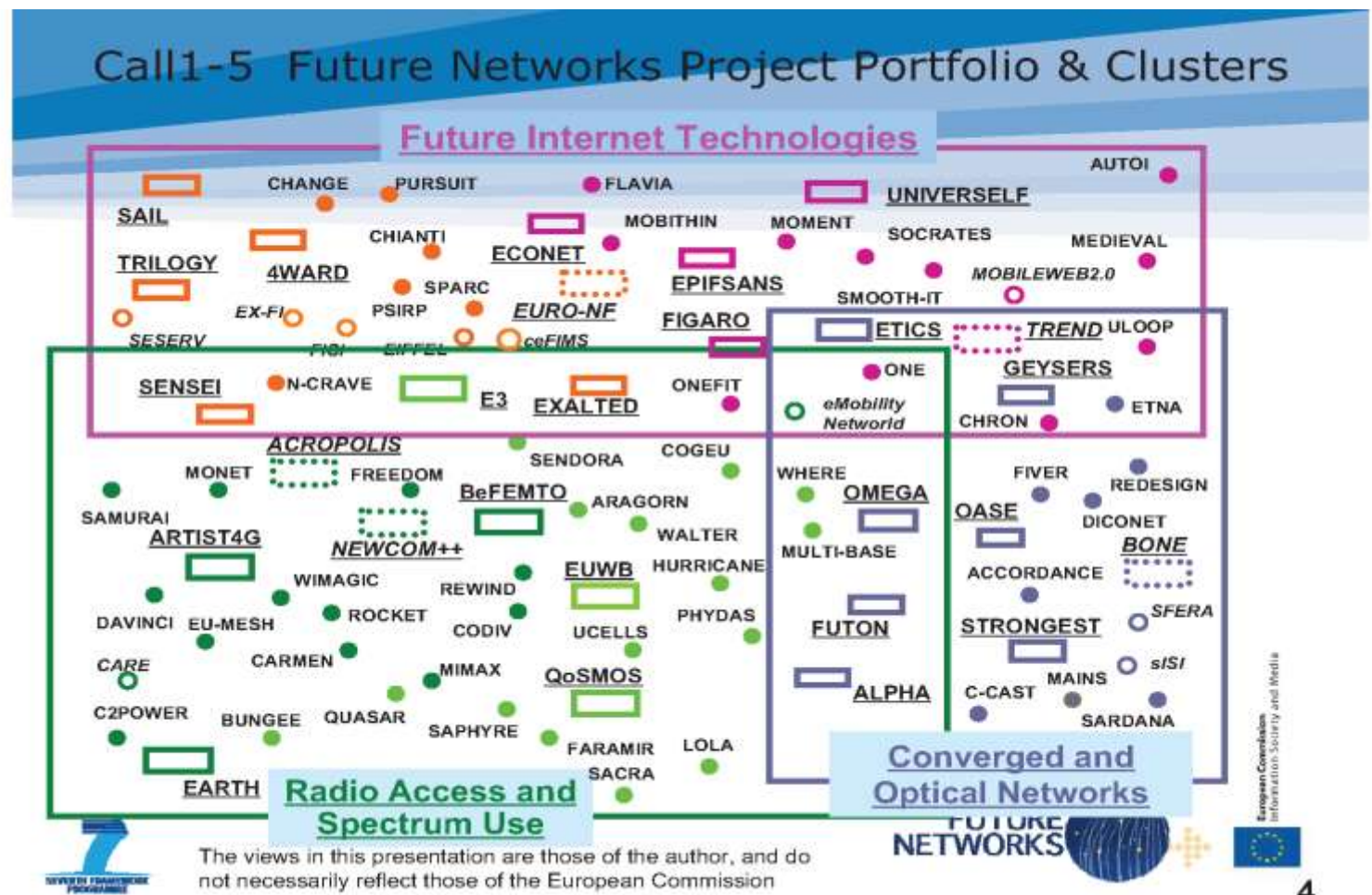
a)1. components for optical backbone (100 Gb/s+ and access networks (1-10 Gb/s), including RoF.

5. Photonics integration platform: high performance PICs.

Impact: reinforcement of European industry / market share

- 2010-2011: FP7 interim evaluation, 2020 digital agenda, etc.
- 2011-2012: FP8 framework definition (financial rules and framework, new instruments, priorities,..)
- 2012: call 8 (jan), call 9 (apr.)
- 2013: decision for FP8
- Right time to contribute and influence FP8 (via photonics21, FTTH-C, etc.)

# Call1-5 Future Networks Project Portfolio & Clusters



The views in this presentation are those of the author, and do not necessarily reflect those of the European Commission

# Projects on Fiber access

- Alpha (2008-03/2011): integrating project on next gen services, and home/access architecture (PHY+MAC+IP)
- OASE (2010-end 2012): integrating projet on access addressing technology, techno-econmics, business regulation, standards
- Sardana, Accordance: STREP focusing on specific PON solutions (WDM-TDM, OOFDMA)
- Gigawam: focusing on R&D on components for high speed WDM PON

## Objectives:

- Define next gen services (2015 horizon)
- Define impact on home and access architecture (wireless and cable)
- Address PHY (optical) , MAC and IP layer

## Targets:

- 1Gbps range per sub
- Coordination between home and access



## Objectives:

Development and assessment of NGOA network architectures for the “2020” time horizon focused on European requirements.

- Technology and architecture evolution focusing on minimized total cost of ownership
- Supporting new business models and

## Target:

- 1 Gbit/s per customer
- > 1000 customers per fiber feed
- > 100 km transmission distance.

**now**

**WP2**

*Requirements for European NGOA networks*

**WP3**

*architectures assessment*

**WP5**

*Techno-economic assessment*

**WP4**

*system aspects*

**WP6**

*Business modeling and regulatory aspects*

**WP7**

*Experimental validation*

**2020**

**1 Gbps peak  
500 Mbps sustainable  
1000 customers/feed  
100 km transmission**

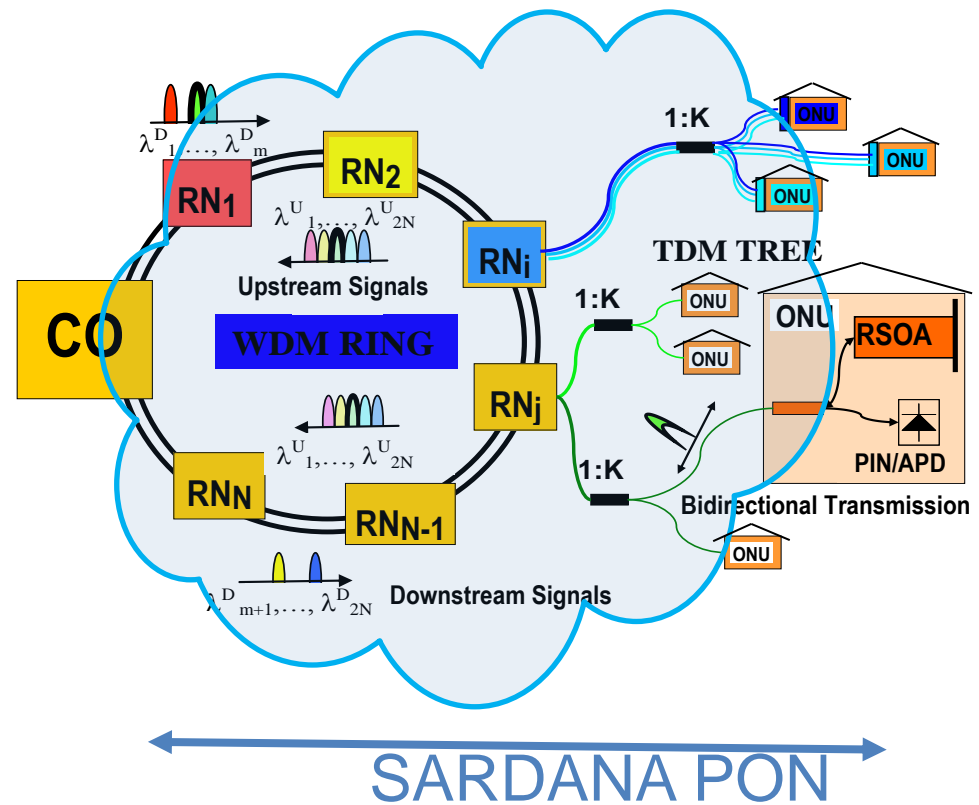
# SARDANA

## Objectives

- Resilient trunk
- Fully passive
- Hybrid:
  - WDM Metro ring
  - TDM Access trees
- Cascadable remote nodes
- New adoption of remotely-pumped amplification
- Colourless ONU
  - RSOA
  - Tunable laser

## Targets

- 10G-2.5G (1G-100Mb /user)
- 100 Km
- 1000 users
- Multi-operator
- Based on GPON, but transparent.
  - IP traffic



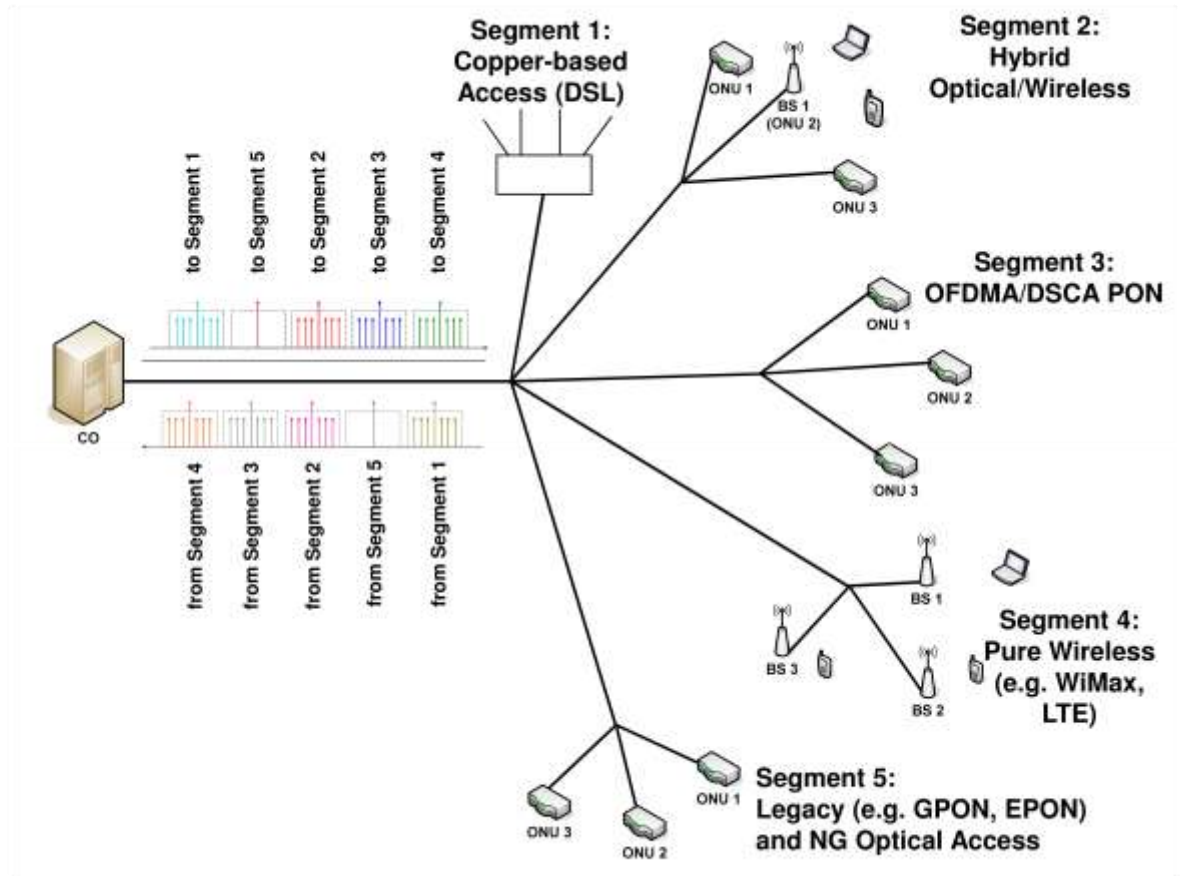
# ACCORDANCE

## Objectives:

- Investigate feasibility of OOFDM(A) technique for PON
- Design and demonstrate PHY and MAC
- Investigate common OFDM PHY issues between wireless, fiber, cable
- Investigate "META MAC layer" between different access media

## Targets:

- Affordable cost in the 5-10 years time frame
- Ultra high bit rate per segment (10-100 G)

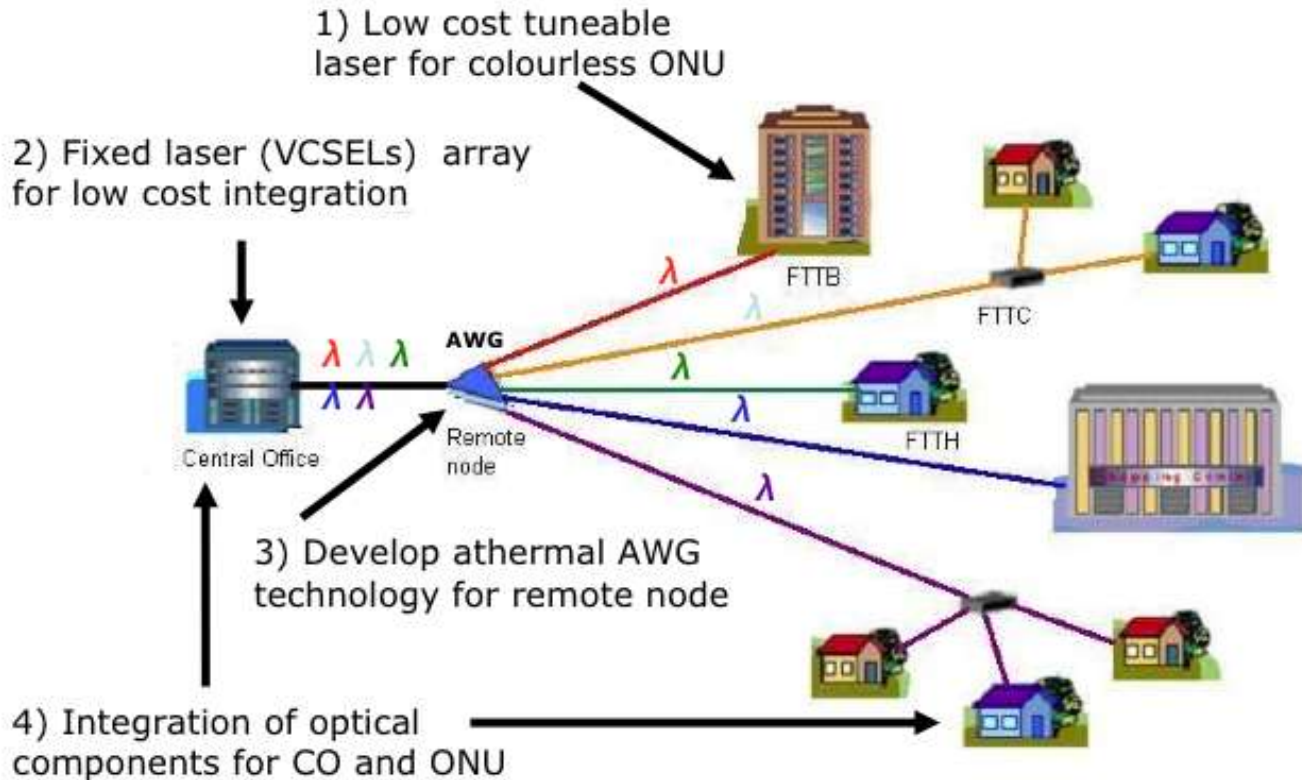


## Objectives:

- Investigate feasibility of components for PTP WDM PON
- Develop application specific components:
  - Tunable laser
  - Fixed laser arrays
  - Athermal AWG
  - Hybridisation of photonic components (OLT and ONT)

## Targets:

- 1Gbps sustained bit rate per ONU
- Similar cost as GPON
- 100 times gain in integration scale compared to current technology



THANK YOU  
QUESTIONS?  
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