Advanced Broadband Communications Center (CCABA)

Broadband Communications Systems Research Group (CBA)

**ADVANCED BROADBAND
COMMUNICATIONS CENTER (CCABA)**
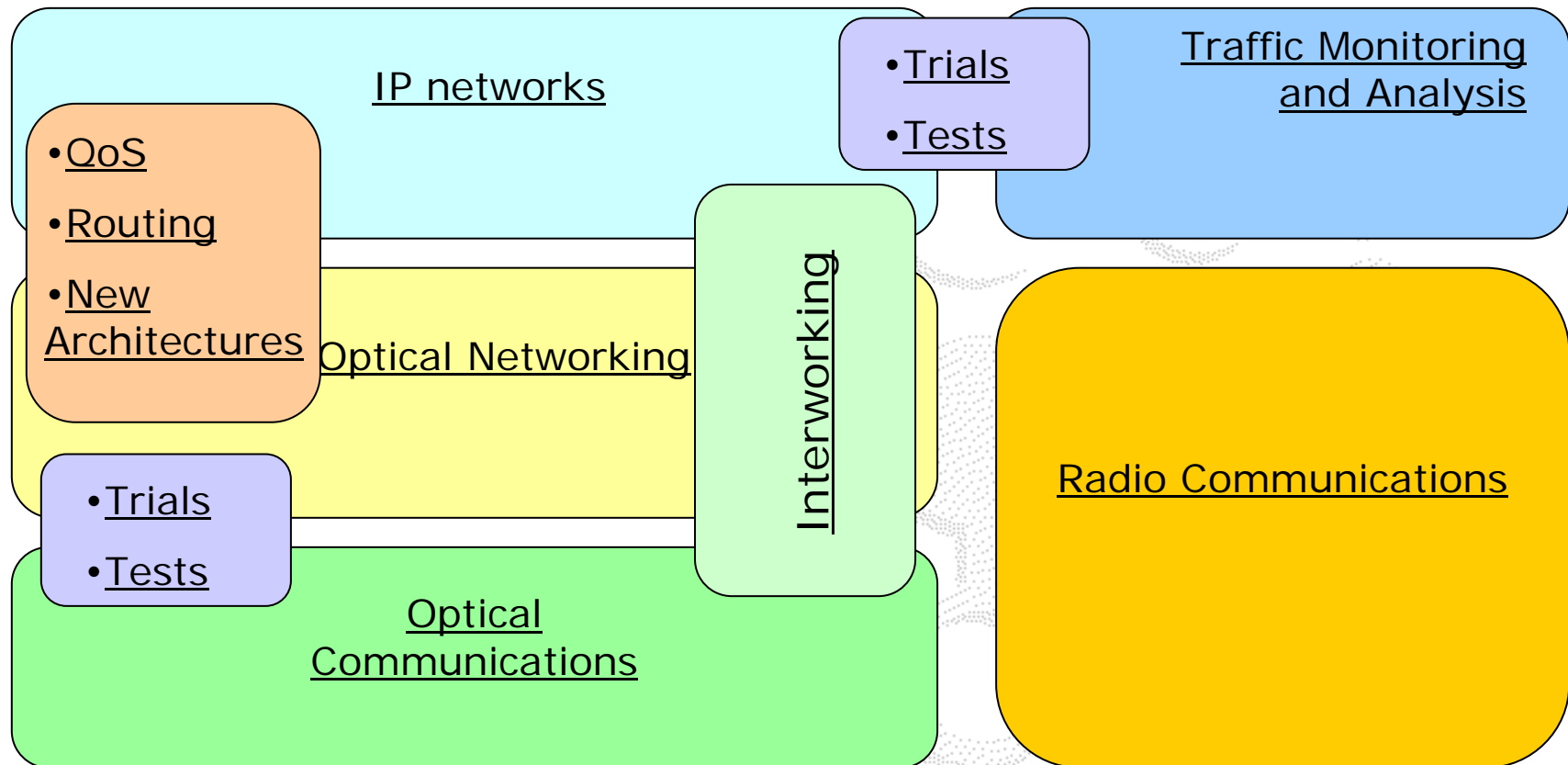
**UNIVERSITAT POLITÈCNICA
DE CATALUNYA (UPC)**

Departament d'Arquitectura de Computadors
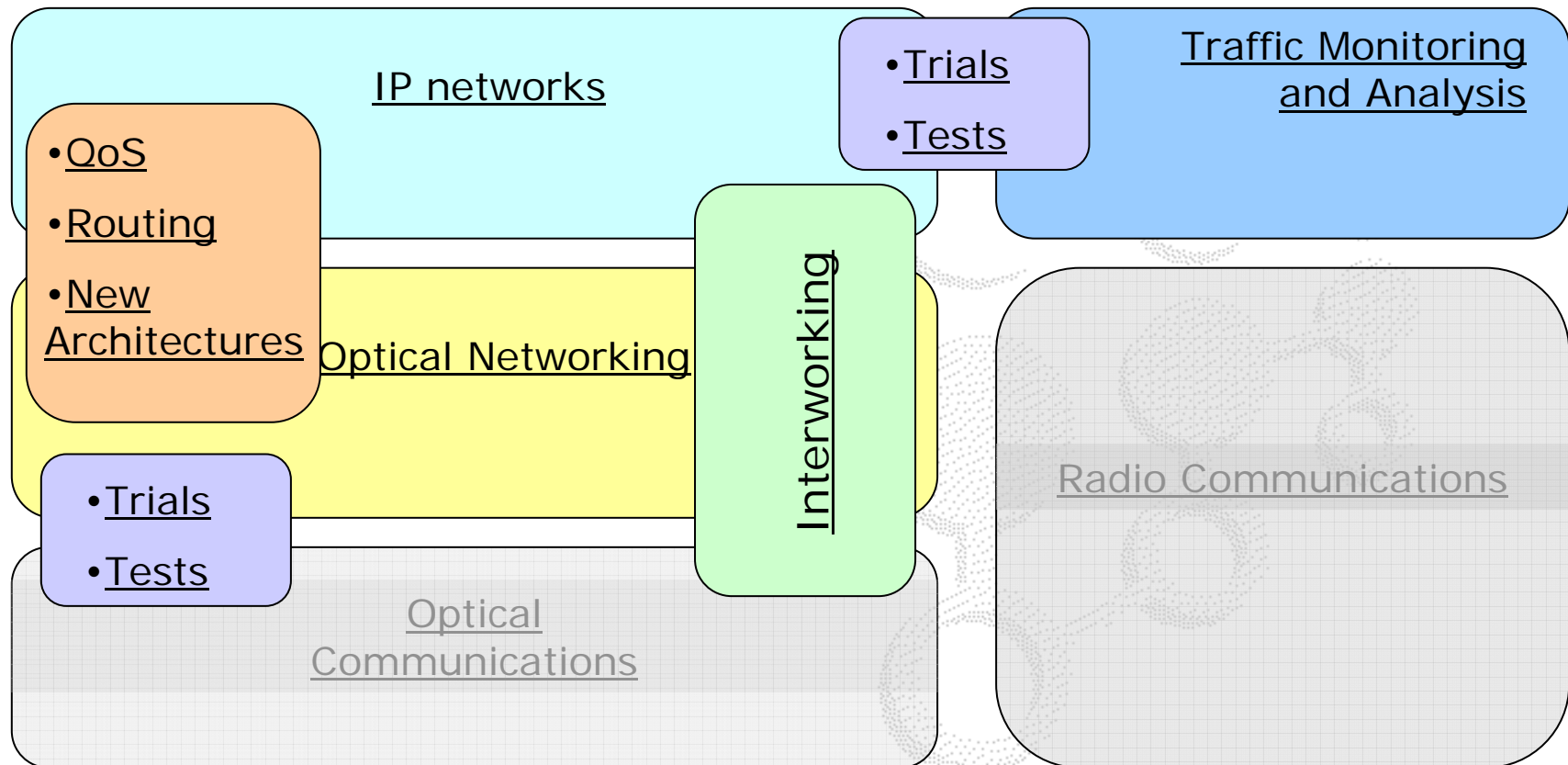
About the CCABA

Director: Gabriel Junyent
Academic staff: ~ 25   Students: ~ 40

IP networks

- QoS
- Routing
- New Architectures

Optical Networking

- Trials
- Tests

Optical Communications

Interworking

- Trials
- Tests

Traffic Monitoring and Analysis

Radio Communications

About the CBA Group

Leaders: Jordi Domingo, Josep Solé

Academic Staff (PhD): 8   Students: ~ 10

IP networks

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Optical Networking

- Trials
- Tests

Interworking

- Trials
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Traffic Monitoring and Analysis

Optical Communications

Radio Communications

Participation in EC Projects

- ## Networking

  - **COST Action IC0804: Energy efficiency in large scale distributed systems** *(In progress)*
    - *http://www.cost804.org/*

  - *Strep Project* **EULER: Experimental UpdateLess Evolutive Routing** *(FP7-258307)* *(In progress)*
    - *EULER aims to design, develop, and validate experimentally a distributed and dynamic routing scheme for Internet scale-free topology that addresses fundamental limits of current stretch-1 shortest-path routing in terms of scalability but also topology and routing exchange dynamics*
    - *http://euler-fire-project.eu/*

- ## Traffic Monitoring and Analysis

  - **COST Action IC0703: Data Traffic Monitoring and Analysis (TMA)**
    - *http://www.tma-portal.eu/*

Participation in EC Projects

- ## Optical Networking

  - *IP project **STRONGEST: Scalable Tunable and Resilient Optical Networks Guaranteeing Extremely-high Speed Transport** (FP7-247674)*

    - *STRONGEST relied on the definition of innovative architectures for developing a scalable, resilient and cost-effective transport network, offering ultra-high capacity to the end users in the broadband society of the future. The new defined architectures toke into account the evolution of the access network technologies, in order to ensure transparent core-access integration, but the studies carried out by the project focused mainly on the metro and core areas, because these are the part of the network where the main scalability issues are currently foreseen*

    - *http://www.ict-strongest.eu/*

  - *Strep Project **LIGHTNESS: Low latency and high throughput dynamic network infrastructures for high performance datacentre interconnects** (FP7-318606). Started in Nov 2012*

    - *The main objective of the LIGHTNESS project is the design, implementation and experimental evaluation of a high-performance network infrastructure for data centres, where innovative photonic switching and transmission solutions are required*

Participation in Research Projects

- DOMINO: Design and Optimization of Multi-layer Green Optical networks

  - TEC2010-18522 (01/01/2011 - 31/12/2013)

- NOMADS: Un nuevo paradigma de monitorización y compartición de datos de red

  - TEC2011-27474 (01/01/2012 - 31/12/2014)

- NAME: Gestión de la movilidad basada en la separación de identificadores - Naming and Addressing for Mobility management in ubiquitous Environments

  - TEC2011-29700-C02-02 (01/01/2012 - 31/12/2014)

Participation in Research Projects

- METRA: Efficient measurement of advanced networks
  - IPT-2011-1079-370000
  - Tecsidel, TCP, CCABA-UPC and CESCA

- DISTORSION: Distorsión de redes inalámbricas para transportar información
  - TEC2010-10440-E (01/07/2010 - 30/06/2012) CTTC, UPC

CBA research group

Topics

- Network Architectures:
  - Quality of Service in IP networks
  - IPv6 (coexistence and transition)
  - Mobility (Mobile IPv4 and IPv6)
  - MPLS and TE (QoS and Resilience)
  - Inter-domain routing
  - Future Internet
  - Network Economics
  - Security of communications
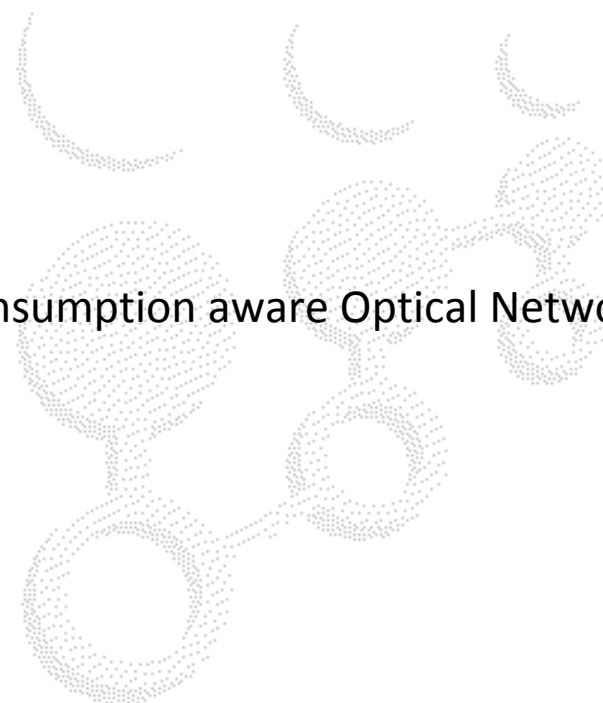 - Digital Identity and Electronic Signature

CBA research group

Topics

- Optical Networking
  - IP over ASON/GMPLS networks
  - Optical Packet Switching
  - Optical Burst Switching
  - Interoperation of GMPLS and OBS
  - Protection/restoration in GMPLS
  - Resource management in GMPLS
 - Physical Impairments and Energy Consumption aware Optical Networks

CBA research group

Topics

- Traffic Monitoring and Analysis:
  - Monitoring and measurement
  - Distributed platforms for monitoring and measurement
  - Traffic characterization
  - Classification of applications Anomaly detection and classification (attacks)
  - Accounting and pricing

http://www.cba.upc.edu/smartxac
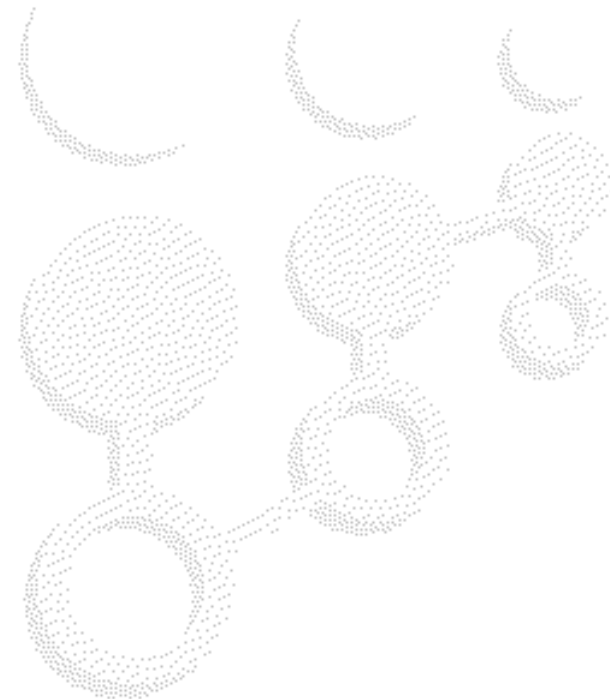http://loadshedding.ccaba.upc.edu/
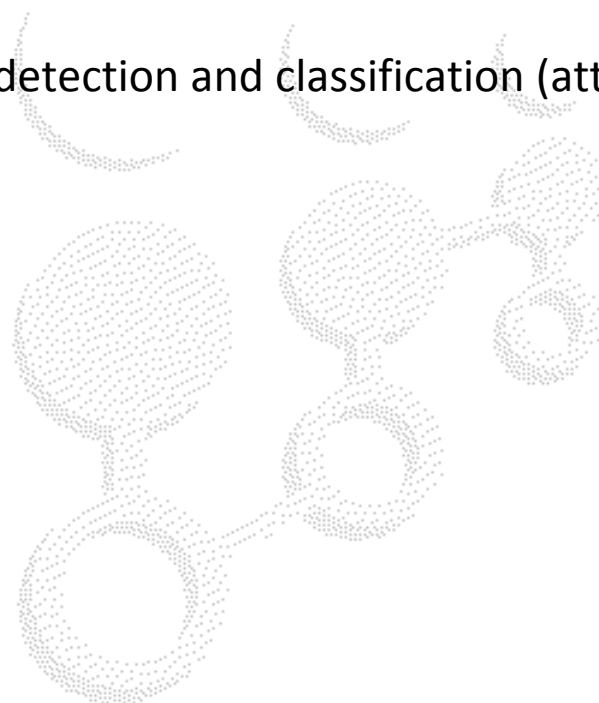
CBA research group

Topics

- Nanonetworking Communications:
    - Molecular communications
    - EM Nano-sensor networks (in the THz band)
    - Channel modeling
    - Nanonetwork architectures
    - General purpose simulator

http://www.n3cat.upc.edu/

About the CBA

Topics

- Green Networking:
  - Energy-aware algorithms and protocols for telecommunication networks
  - Energy-aware Routing and Wavelength Assignment algorithms
    - Heuristics and ILP formulations
  - Energy-aware OSPF-TE extensions for reducing GHG emissions
  - Energy-oriented Network Re-optimization
  - Energy models
  - Renewable energy sources
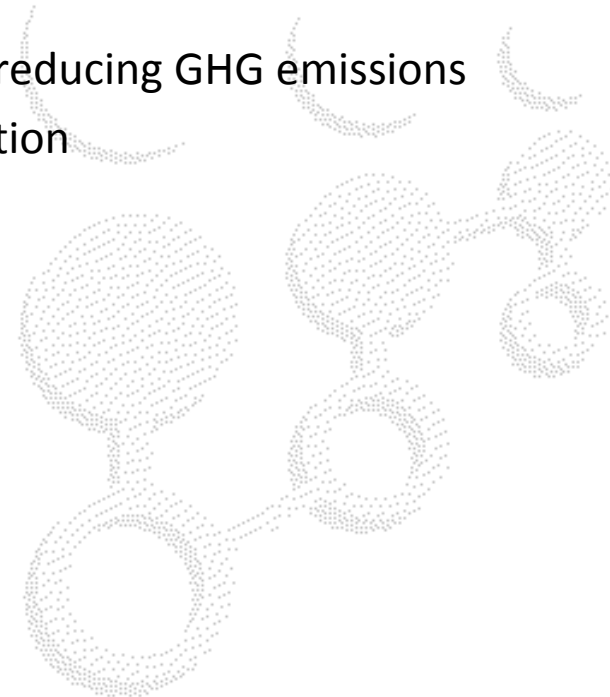
MONACO Testbed
(MOnitoring & Advanced COmmunications)
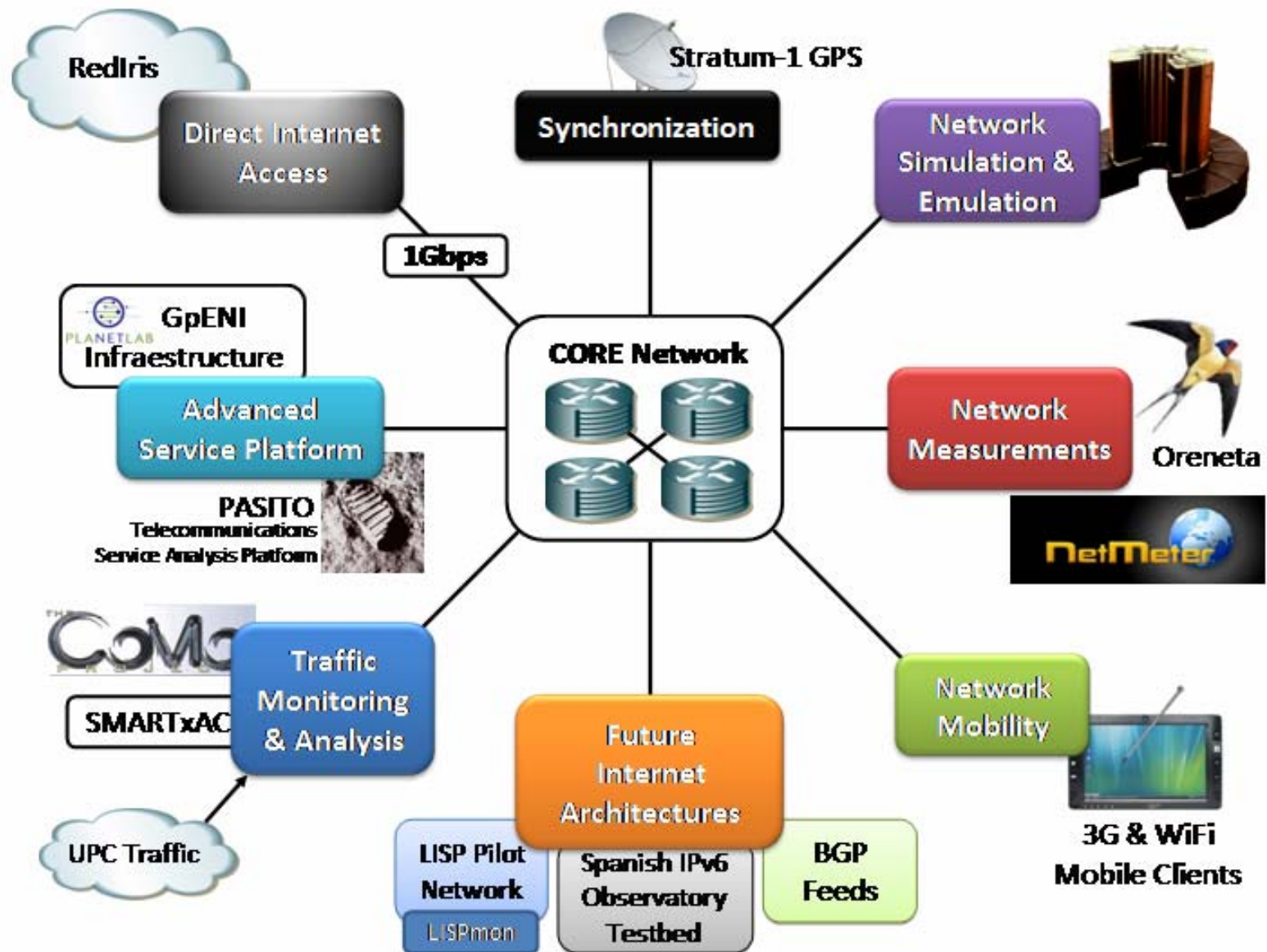
CBA   Broadband Communication Systems

If you want to become a first league researcher in the field of the

(Inter)Net(work) of the Future,

get enrolled as Ph. D. student with the CBA research group
and select one of these hot topics:

- Next Generation Network Architectures
- Traffic Monitoring and Analysis
- Optical Networking
- Nanonetworking Communications

Contact Information: www.cba.upc.edu

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