Advanced Broadband Communications Center (CCABA)

Broadband Communications Systems Research Group (CBA)
About the CCABA

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

IP networks
• QoS
• Routing
• New Architectures

Optical Networking
• Trials
• Tests

Interworking

Optical Communications

Radio Communications

Traffic Monitoring and Analysis
• Trials
• Tests
About the CBA Group

Leaders: Jordi Domingo, Josep Solé
Academic Staff (PhD): 10    Students: ~ 10

- IP networks
  - QoS
  - Routing
  - New Architectures

- Optical Networking
  - Trials
  - Tests

- Interworking
  - Traffic Monitoring and Analysis

- Radio Communications
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 Architectures
  – Software-Defined Networking (VNF)
  – Network Architecture for 5G Networks
  – Network Architecture for IoT
  – Machine learning for network management
  – Network Economics
  – Data privacy. Security of communications
  – Digital Identity and Electronic Signature
Topics

- Optical Networking
  - IP over ASON/GMPLS networks
  - Optical Packet Switching
  - Optical Burst Switching
  - Multilayer/technology Interoperability
  - Protection/restoration
  - Resource management
  - Physical Impairments aware Optical Networks
  - Energy Consumption aware Optical Networks
  - OF/SDN based optical Networks
  - Data Centers inter/intra connection
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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

  – Spin-off: Talaia Networks

http://www.cba.upc.edu/smartxac
http://loadshedding.ccaba.upc.edu/
http://www.talaianetworks.com/
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
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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/
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Topics

- Network-on-Chip:
  - Wireless Network-on-Chip
  - Graphene Wireless Communications
  - Coding and Modulation
  - MAC protocols for NoC