ONDM 2009
100GET.es – Spanish Subproject

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Technical approach

- **100GET.es:** An end to end approach to 100Gbps networking

- **Operator-driven validation:**
  - Requirements definition and techno-economic validation.
  - Experimental validation of the most promising transmission solutions.
  - End-to-endCarrier Ethernet over Optical data and control planes.

The goal is to justify the adoption of the most efficient approach to a 100G CET network

- **Experimental testbed in 2010:**
  - TID IP/MPLS and Carrier Ethernet facilities
  - An optical fiber metropolitan ring in Madrid
  - The Adrenaline dual-layer GMPLS test-bed
  - The developed 10-100 aggregation node.
100GET.es Network Architecture

- Reference end to end 100G Carrier Ethernet Network
  - Metro and Core Reference Networks
    - Topology & Distances
    - Meshed design
    - Traffic Matrices
  - Techo-economic Validation
  - Transmission simulation

- Generic Link Design
  - Link distance limit
  - Fibre conditions
  - 10/40/100 WDM coexistence
  - DQPSK, DP-QPSK, DMC

Service Platform
Network Edge
Internet Exchange
Metro Network
Core Network

ROADM
ROADM
ROADM
ROADM
ROADM
ROADM

100 km
80 km
70 km
50 km
40 km
30 km
20 km
10 km

100GET

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Technological Developments

- **Metro-edge node development:**
  - Ability to join several 10G fluxes into 100G and the inverse process.
  - Integration with access/aggregation technologies.
  - CAC and IP routing features.
  - Carrier Ethernet data and control functions.
  - Fabrication of eventual optical or electrical hardware prototypes.
  - Eventual inclusion of GMPLS capabilities in the border node.

- **100G Transceivers Characterization:**
  - Stimulated Brillouin Scattering Spectrum Analyzer
  - DQPSK, DP-QPSK, DMC characterization.

- **Integrated Coherent Optical Receiver:**
  - QPSK demodulation with polarization diversity.
  - Receiver design & optimization tools development.
  - Collaboration with Fraunhoffer Institute.
Carrier Ethernet & Control Plane

- Overlaying Carrier Grade electronic Packet Transport technology:
  - PBB-TE vs. MPLS-TP packet transport layer.
  - End to end multi-layer architecture.
  - Efficient location of L2 switching.
  
Where and How?

- Control Plane:
  - Automated operation and a high availability.
  - Dual-layer scalable GMPLS control plane.
  - Efficient grooming and TE algorithms.
  - Multi-layer & Multi-domain interfacing.

- Validation in CTTC’s ADRENALINE+ testbed