



## Provisioning and monitoring of optical services

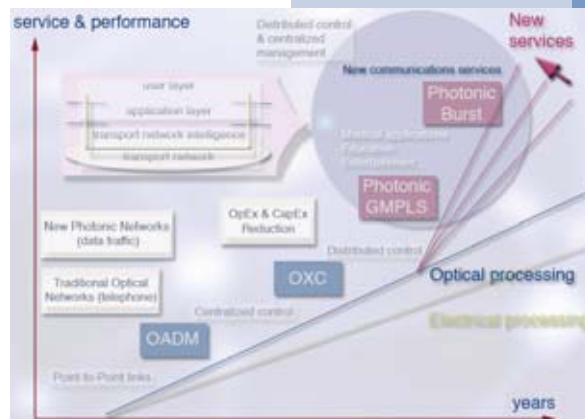
**The PROMISE consortium will bring together the required network solutions to build and experimentally demonstrate a dynamic, self-organised, and fully service-oriented optical transport network. The goal is to meet the needs of future optical broadband services for data traffic.**

### Main focus

PROMISE is mainly about how to bring optical networks closer to end users. Firstly, this requires to investigate what happens in the core of a network. The project will explore how to best leverage the capabilities present there to provide to customers in residential or business environments appealing propositions, which should encompass a range of advanced high-capacity services, from Bandwidth on Demand to Optical Virtual Private Networks.

Secondly, there is a need to identify which applications will be the first to use the aforementioned services. GRID-based platforms and digital content intensive applications, due to the high-capacity traffic demands they place in the networks, are the two most suitable candidates.

Another focal point of PROMISE is optical service management. For optical services to finally flourish, drastic changes are required in the legacy operational models and processes of operators. Therefore, the project will propose and assess innovative architectures for dealing with the automatic setup of services, and for smoothly supervising and operating them.



PROMISE

## PROMISE

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### Partners

Budapest University of Technology and Economics (BUTE), Hungary

Civcom, Israel

i2CAT Foundation – Technical University of Catalonia, Spain

UPC - Universidad Politécnicade Catalunya, Spain

Telecommunications Technological Center of Catalonia (CTTC), Spain

Telefónica I+D, Spain

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### Project web site

[www.celtic-initiative.org/projects/PROMISE](http://www.celtic-initiative.org/projects/PROMISE)

## Approach

PROMISE adopts a holistic approach that will encompass the investigation and implementation of network elements, control software, management software and especially tailored services and applications which take advantage of the overall capabilities of future intelligent optical networks.

Transport networks, and the optical technologies that support them, have been traditionally perceived as a fundamentally static layer whose primary role is to provide fixed capacity to higher layers, exhibiting a low degree of interaction with customers. As a result, there is a jarring disconnect between the possibilities offered by the network control and management software and the way optical transport services are being assembled. The latter is surprisingly slow and inefficient, particularly when multiple technology layers are involved, and dynamic, automated services are expected.

In this context, PROMISE is a collaborative effort to demonstrate the feasibility of providing dynamic and automated optical services in a realistic operational environment. The project will study under which conditions these services can be commercialised.

It will identify the technological requirements for the infrastructure of network operators and service providers, and will develop a set of tools for service provisioning and supervision.

To do so, PROMISE will construct a service-oriented test-bed where the most relevant aspects of an optical service offering will be covered. The test-bed will be built through the integration into an existing network of different building blocks at the transport, control and management planes. In addition, GMPLS-aware applications implemented by the project will be an essential part of the test-bed as the means to highlight the potential value of the technologies involved.

## Main results

PROMISE will build a test-bed for optical services, integrating the following elements in an optical metropolitan network:

- Photonic cross-connects, enabled with GMPLS routing and signalling protocols
- Optical network and service management systems, with support for provisioning and monitoring and SLA visibility
- Optical measurement devices

• GMPLS-aware multimedia applications and GRID middleware

Experimentation at the test-bed will help producing recommendations and best practices for migrating to and operating service-capable dynamic optical networks, along with a process and system architecture for optical service fulfilment and assurance.

Finally, the project will carry out validation tests looking at the carrier-grade readiness of control plane protocols, focusing in particular on their resilience aspects.

## Impact

PROMISE intends to act as a driver for the commercialisation of optical, GMPLS-based services. For operators and service providers who are reluctant to take the step that separates technological availability from full service deployment, validation and demonstration in the project test-bed should help to obtain a better understanding of the potentiality and the challenges that these services present.

The project will also contribute to adding GMPLS awareness to end user services and applications, such as Video on Demand or GRID middleware, and will showcase how those applications take advantage from GMPLS. Support of these capabilities at client devices will serve as an additional incentive to deploy optical services.

Another problem of optical services are the severe architectural limitations of many legacy OSSs. PROMISE will build service fulfilment and assurance tools to facilitate a smooth transition and cover identified functional gaps in current architectures. Service visibility will be a common attribute of these fulfilment and assurance systems; both will use agreed SLA parameters to govern their provisioning and supervision strategies.

To sum up, PROMISE will address, from a service centred perspective, the evolution of optical networking, in order to help in shaping a path from today's architectures and technologies towards all-optical, service driven, intelligent optical networks.

## About CELTIC

CELTIC is a European research and development programme designed to strengthen Europe's competitiveness in telecommunications through short and medium term collaborative R&D projects. CELTIC is the only European R&D programme fully dedicated to end-to-end telecommunication solutions.

**Timeframe:** 5 years, from 2004 to 2008

**Cluster budget:** in the range of 1 billion euro, shared between governments and private participants

**Participants:** small, medium and large companies from the telecommunications industry, universities, research institutes, and local authorities from 33 countries

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