# Daidalos – The operator's vision of the next-generation Internet

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## Abstract

Telecom operators are challenged by the increasing user demand for mobility, Quality of Service, and security on one hand, and the constraints imposed by economy and regulatory bodies on the other. Daidalos, an EC funded Integrated Project, addresses the vision of a seamlessly integrated heterogeneous network architecture based on an IPv6 infrastructure. The Daidalos architecture addresses conceptual issues of operators, customers/users, and identities, as well as integrated aspects, such as service interfaces, a semi-layered approach and broadcast integration.

## Introduction & Motivation

User demands are high
- Mobility
- QoS
  - VoIP
  - IPTV
- Security
- Services

Operators are challenged
- Regulation and de-regulation restriction
- Heterogeneity
- Decreasing revenues
- Access network investments

☞ **Telecoms become a horizontally segmented market**

☞ **Fundamentally changes the telecom business model**

## Daidalos

Designing Advanced Interfaces for the Delivery and Administration of Location independent Optimised personal Services.

- Objectives
  - Seamless integration of heterogeneous networks
  - Build an open architecture for next-generation networks.
- Guidance on concepts and project orientation for
  - An open architecture based on IPv6
  - Intelligent access
  - Dynamic service provisioning
  - Wide range of existing and new applications
  - Business models and business process interactions
  - Benefits for users

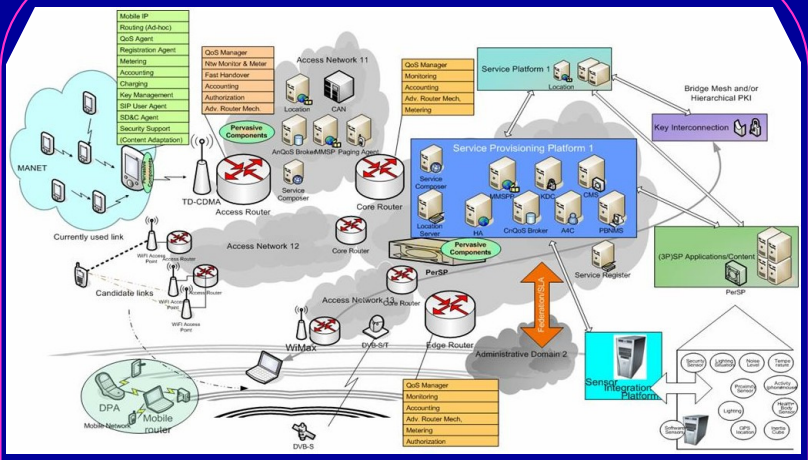
## The 4 fundamental assumptions of the Daidalos architecture

1. **The future telecom operator runs and operates enabling services for a huge number of users and service providers.**
2. **All design will ultimately be made around the user, simplifying his needs.**
3. **Services could be produced in any point of the network.**
4. **Users have the final control of the services to use.**

- Non-trivial tradeoff: optimization of networks vs. freedom of the user
- Who will pay for the future Internet?
- Operators must be involved in the design of the next-generation Internet

☞ DAIDALOS: investigates the feasibility to provide the communication technologies

## Architecture Overview




The DAIDALOS architecture has two goals
1. *Defines* architectural concepts *independently* of a concrete underlying network infrastructure.
2. *Applies* and *deploys* the concepts on a next-generation, mobile IPv6-based infrastructure .

Daidalos separates the operator/service provider challenge into three areas
1. access network
2. inter-operator aspects
3. pervasive support components.

☞ Different technologies
☞ Different optimisation (Mobility, QoS, etc.)
☞ Unicast, multicast and broadcast.

## Overarching Concepts

**1. MARQS**
- Mobility management, AAA, QoS
- Functional integration for end-to-end services across heterogeneous technologies.

**2. Virtual Identity**
- Separates user and device
- Provides flexibility privacy and personalisation.

**3. Ubiquitous & Seamless Pervasiveness**
- Enables pervasiveness across personal and embedded devices
- Allows adaptation to movement, changing contexts and user requests.

**4. Seamless Integration of Broadcast**
- Technology-wise (e.g. DVB-S/T and -H)
- Service-wise (TV, carousels and datacast).

**5. Federation**
- Multiple network operators and service providers in a dynamic business environment
- Offer and receive services
- Players enter and leave the field dynamically

☞ Overall integration is a key activity!

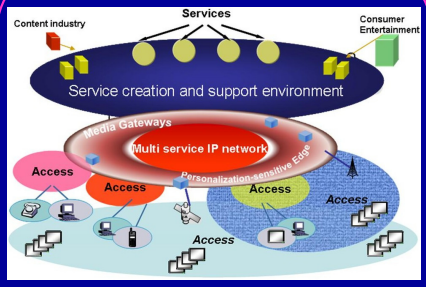
## Inter-operator

- Business scenarios and use-cases drive the architecture
- Network consists of multiple administrative domains
- Daidalos defines an inter-operator architecture (Federation) and functionalities and interactions for seamless mobility for end-users, terminals, multimedia sessions, and services between administrative domains
- Architecture is open, modular, and extensible
- Inter-operator modules deployed on mobile terminals, access routers, access network nodes, and Service Provisioning Platform (SPP)

## Pervasive support

- Service-oriented approach
- Service management infrastructure (discovery, composition, runtime support)
- Devices independent from users (context-awareness, personalisation)

## Access Network Architecture




Different Modules:

1. Terminal Mobility
2. Moving Networks Integration
3. Ad-hoc Integration
4. Quality of Service
5. Security
6. Broadcast

Deployed on various physical entities/nodes.

## Conclusions

Daidalos provides next-generation integrated network architecture from an operator point of view. The architectural concepts support mobility (e.g. fast hand-over), QoS, security, broadcast, and pervasiveness in a next-generation heterogeneous wired and wireless network. Its concepts are currently applied on a mobile-IPv6 based network, serving as a proof-of-concept architecture and providing valuable first-hand experience. Lessons learnt from its deployment will provide fruitful incentives for a clean-slate Internet design.

www.ist-daidalos.org