

## ODEON

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### Partners:

National Institute of Telecommunications, Poland  
Seidor, Spain  
Vioteck, France

### Co-ordinator:

Jaume Fuentes, Seidor  
E-Mail: [jfuentes@seidor.es](mailto:jfuentes@seidor.es)

### Project Website

[www.celticplus.eu/project-odeon](http://www.celticplus.eu/project-odeon)

## On-Demand Dynamic Media Cloud Creation and Exploitation

### Project Abstract

ODEON exploits recent advances in Networked Media and Cloud Computing technologies and progresses beyond the state-of-the-art by converging into Ad-Hoc Media Delivery Cloud (AMDC). In AMDC, users exchange Media Events, exploiting servers' infrastructures available in Conventional Clouds (public or private infrastructure configurations, usually offered by

Over-the-Top providers), Content Delivery Networks (CDNs) and Media Distribution Community Clouds (Home Gateways/Community Gateways configurations, exploited in Peer-to-Peer mode).

### Main focus

ODEON introduces a novel business actor, the Media Cloud Provider (MCP), which creates, on demand, the AMDC (Ad

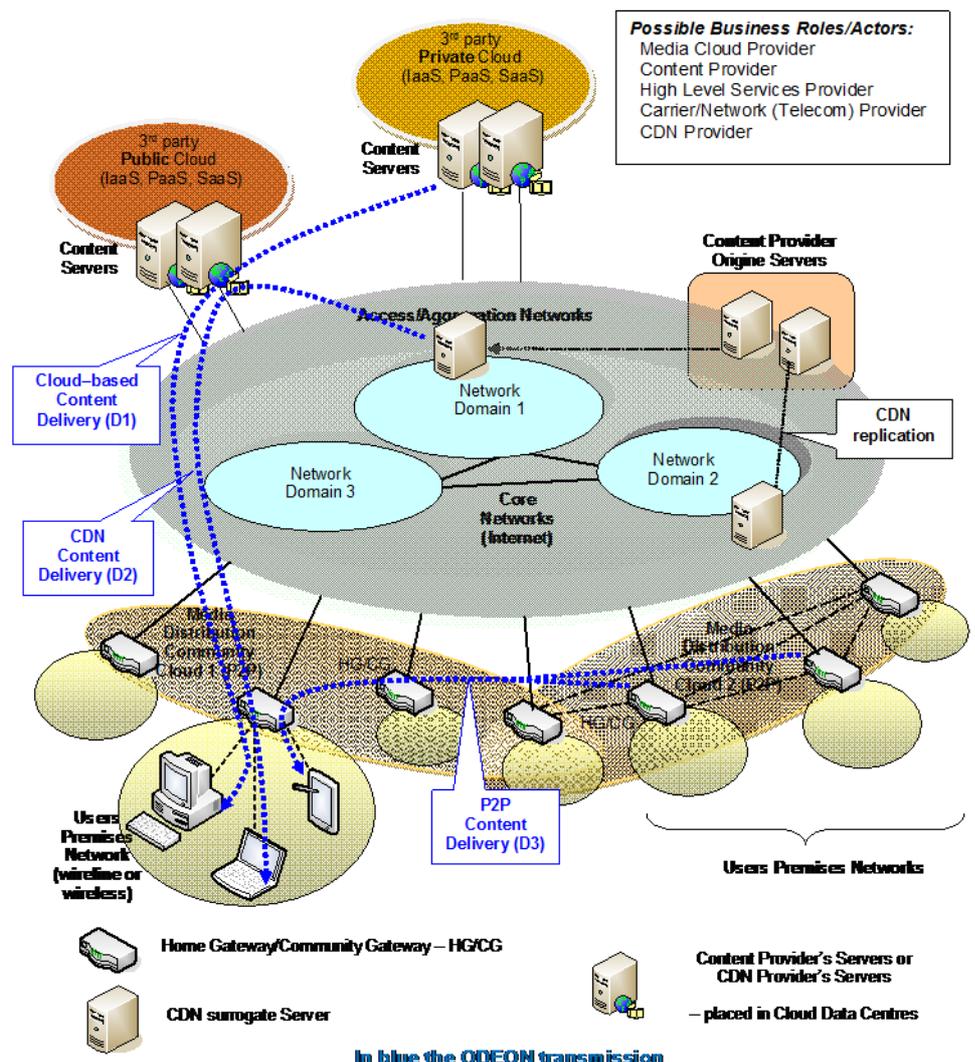


Figure 1. Odeon solution in current Internet multimedia streaming scenario

-Hoc Media Delivery Cloud) and offers it to other entities. The MCP owns an infrastructure of servers (e.g., a conventional Cloud Provider could become MCP) or has concluded Service Level Agreements (SLA) with different servers 'owners (e.g., other Cloud/CDN Providers) to use their servers for AMDC purposes.

**Most important facts and elements that are characteristic for your project; which currently existing problems will be solved; what impact of the outcome is expected?:**

ODEON will develop a traffic forecasting algorithm to react in advance to network resource changes.

Network Infrastructure supporting ODEON Media Distribution Middleware. The three basic delivery configurations using specific AMDC are represented in Figure 1:

- ◆ D1: Cloud Data Centre Media Server-> AMDC-> (HG/CG->) Users. Here the HG/CG is playing the role of AMDC egress node;
- ◆ D2: CDN Media Server->AMDC-> (HG/CG->) Users. Here the HG/CG is playing the role of AMDC egress node;
- ◆ D3: HG/CG-> AMDC-> HG/CG, in P2P mode-> Users. Here the HG/CG is playing the role of

AMDC egress node and participates, as peer, in a P2P cloud configuration, the Media Distribution Community Cloud (MDCC).

## Concept and approach

Media distribution generates a significant part of the global Internet traffic and the amount of this traffic is expected to increase in the near future. Different technologies have been already deployed for Media Distribution Systems and are currently of great interest: Content Delivery Networks (CDNs), Peer-to-Peer systems, Over-the-Top (OTT) solutions, HTTP adaptive streaming techniques and other operators – proprietary solutions.

## Main results

**Result 1:** Ad-hoc Media Delivery Cloud (AMDC) Creation and Termination. The AMDC creation will mainly comprise the selection of ODEON nodes to be involved in the AMDC delivery path(s), and their configuration. Responsible for AMDC creation/termination processes is the new ODEON Media Distribution Middleware (MDM).

**Result 2:** Ad-hoc Media Delivery Cloud (AMDC) exploitation. The AMDC exploitation process concerns the QoE-based Media Delivery and its management, through ODEON nodes participating in

AMDC configuration.

**Result 3:** Design, implementation, and validation of a User-driven Personalized Quality of Experience (QoE) model for combined real-time entertainment and communication services within hybrid, heterogeneous environments.

**Result 4:** Validation of the ODEON architecture and performance evaluation in a real-scale pilot, in preparation for bringing it to the market.

## Impact

Given the tremendous evolution of multimedia-related technologies over the Internet, the demand for an efficient, unified, secure and seamless media distribution solution has never been greater.

Media/content (TV, video, music) distribution generates today a significant part of the global Internet traffic and the amount of this traffic is expected to double in 2015, compared to 2012, reaching more than 30 PB/month out of an overall traffic of 50 PB/month.

This way, a Service Provider can leverage geo-diversity to achieve Media Delivery to the final users. The challenging issue still remains the quality of the delivery according to the user's expectations, in conjunction with a reasonable cost.

In the Odeon business model, it is supposed that a Service Provider (e.g., local TV provider), who wants to provide service streaming to specific clients, will ask to the Odeon provider (e.g., Seidor) to set a quality-monitored streaming path between server and clients.

## About Celtic-Plus

Celtic-Plus is an industry-driven European research initiative to define, perform and finance through public and private funding common research projects in the area of telecommunications, new media, future Internet, and applications & services focusing on a new „Smart Connected World“ paradigm. Celtic-Plus is a EUREKA ICT cluster and belongs to the inter-governmental EUREKA network. Celtic-Plus is open to any type of company covering the Celtic-Plus research areas, large industry as well as small companies

or universities and research organizations. Even companies outside the EUREKA countries may get some possibilities to join a Celtic-Plus project under certain conditions.

## Celtic Office

c/o Eurescom, Wieblinger Weg 19/4  
69123 Heidelberg, Germany  
Phone: +49 6221 989 381  
E-mail: office@celticplus.eu  
www.celticplus.eu

