NOTTS

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Alkit Communications, Sweden
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Project Website

www.celticplus.eu/project-notts

http://projects.celticplus.eu/notts/

Next generation Over-The-Top multimedia Services

The objective of NOTTS was to investigate the technical problems experienced by service providers of Over-The-Top (OTT) multimedia services, proposing realistic solutions, and evaluating these solutions in testbeds and real networks. The final goal of establishing an Ecosystem for assuring OTT content delivery was reached. It includes all the required techniques to achieve a context-aware and media-aware delivery platform.

Main focus

The project NOTTS, in which 20 Companies and Institutions from Spain, France, Sweden, Poland, Finland and Portugal have collaborated, has developed a scalable and sustainable integrated solution to guarantee the OTT content delivery from the customer's perspective for the whole content distribution chain, which includes:

♦ **New media distribution architectures**, including peer-assisted solutions and local caching, have been analyzed using real traffic data from our partners. *And a context-aware and media-aware delivery platform.*

♦ Novel cross-disciplinary approaches to **optimize the distribution of OTT contents**.

♦ User demand patterns have been analyzed & impact of new consumption patterns have been investigated in terms of **OTT traffic analysis**

♦ Methods for **QoE estimation and Quality Assurance monitoring tools for CDN/OTT** have been developed

♦ Models where traditional network operators get their share of the raising OTT business have been investigated.

Approach

First of all, the project has defined the OTT architectures and designed an OTT content distribution platform, setting the technical bases of the overall project. Afterwards, in order to ensure the Quality of Experience (QoE) of the system, control and monitoring tools for OTT services have been developed, taking into account the results provided from other projects like Eureka Celtic IPNQSIS or Eureka Celtic QuEEN. In addition, user demand consumption patterns have been analyzed
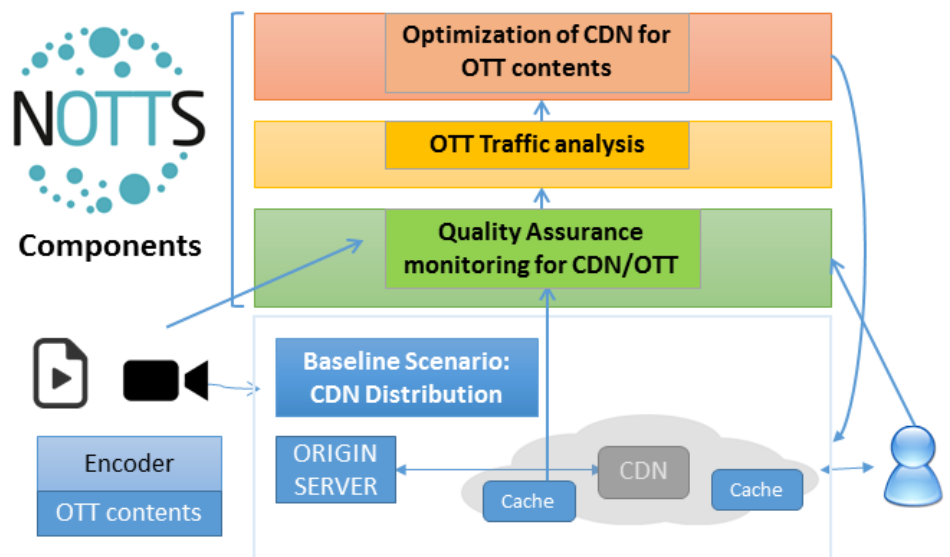
in terms of OTT traffic analysis. Besides, another remarkable achievement was the reduction of latency for live OTT services. All in all, NOTTS has developed a prototype that allows a service provider to deploy its own OTT service while granting the user good levels of QoE at low cost.

Achieved results

The main objectives have been achieved: A scalable and robust video streaming solution able to deliver adapted contents to heterogeneous devices and networks that include quality assurance technology to improve customer satisfaction of OTT contents.

The main result of the project is a new service architecture including advanced content distribution methods together with QoE monitoring and OTT application control. This architecture is formed by: improved products for OTT video communication and distribution; improved products for QoE monitoring and management of video and OTT distribution; solutions for content distribution, storage and distributed caching; solutions for scalable and adaptive content delivery; control mechanisms and service supervision, based on QoE monitoring; and integrated demonstrations, as well as prototypes of the systems. The consortium has tested the prototypes in a real case of study.

The project has developed methods to monitor and analyze detailed content demand patterns of over the top media services. Results have been produced in academic submissions and project deliverables. 27 products from four product lines have been improved by the project.

Latency has been optimized and it was demonstrated that it can be significantly reduced, making OTT competitive with broadcast networks, such as terrestrial networks, to deliver live services.

This European project generated 7 Press releases, 7 contributions to standardization bodies (ISO MPEG/DASH Ad-hoc group, DASH Industry forum, VQEG and TM Forum), 77 scientific publications in leading international journals and magazines (15), conference publications (46) and book chapters (16). In addition 17 PhD & MSc theses have been realized and the project participated in 10 dissemination events (Celtic Event, Conference Organizations, NEM, FN&MS and IWQM.

Some activities in this area have been extended under the EIT-Digital NFMD (Networks for Future Media Distribution) project, where NOTTS partners have consolidated their activities in this research line. In addition, the collaboration between the partners will continue in a new research line under the Eureka Celtic-Plus MONALIS,

where most of NOTTS partners will develop new activities.

Impact

The project NOTTS has provided technological solutions that involve a new business line for all stakeholders, so that as a result of this project a NOTTS prototype has be provided. This way, NOTTS supplies the European OTT services providers with opportunities to take revenue from the improved business. The project has also investigated business models in which traditional network operators can be part of the OTT business. NOTTS contributes to this objective with a combination of technical network solutions and business development.

In addition, the advanced methods for content distribution and technology for monitoring and controlling QoE of OTT services that we have developed, has a direct impact on the end users. Furthermore, if the contents and services were offered in a better quality, it would have positive effect on the customers' satisfaction.

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 intergovernmental 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 organisations. Even companies outside the EUREKA countries may get some possibilities to join a Celtic-Plus project under certain conditions.

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