ITEA 2

INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

Project Results

ACDC

Cloud computing to manage resource-hungry video content distribution

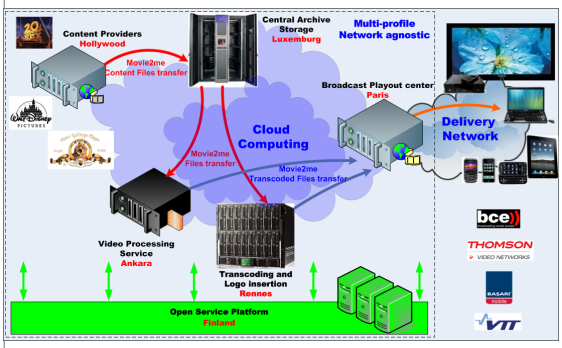
The proliferation of video content on the Internet, from both service providers and consumers, is placing great strain on existing public infrastructures and slowing many services to the point of unusability. With Internet broadcasting (Web TV) and streaming video on demand (VoD) becoming more popular, increasing bandwidth on communications infrastructures is being taken up by the delivery of such content. The ongoing fast penetration of cloud computing technology in all sectors of ICT based systems reveals the technical and strategic relevance of the ITEA 2 ACDC project whose results are increasingly relevant to lowering the cost and raising the competitiveness of multimedia and entertainment services delivery.

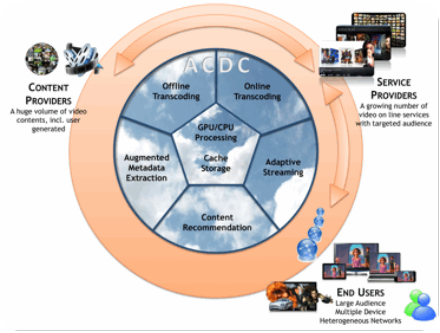
CLOUD WITH A SILVER LINING

While the usage of video delivery over Internet is growing exponentially, the complexity also is growing, with more and more contents types, more devices and uses. Such growth of traffic and such a multiplicity of streams and codecs show a critical need for efficient video delivery over IP solutions. The ACDC project set out to tackle this problem using the resources of 'cloud computing', which offers practically limitless resources from an online virtual infrastructure, and pave the way for a range of new services and applications based on semantic-knowledge technologies. This involves computers and other devices sharing resources, software and information over the Internet on demand, much like the electricity grid. Using the resources offered by such virtual infrastructures could make possible much larger-scale, digital-content processing, storage and delivery, and underpin more efficient end-to-end transmission of multimedia content. The goal of ACDC was to develop and demonstrate an adaptive content-delivery cluster with intelligent multimedia applications such as web and mobile TV, video on demand, personal video recording and targeted advertising services, all using different networks and delivered to a variety of user terminals.

PATHWAY TO SUCCESS

Following a thorough study, 25 elementary use cases were completely reworked into four consistent and fully comprehensive master scenarios: a cloud infrastructure that allows broadcasters and mobile operators to offer and request transcoding services; a service provider proposing a huge volume of video content through a public site that relies on the ACDC Transcoding & Delivery services to stream videos in a format adapted to the end-user's device and network capabilities with high level performances and low investment; new kinds of value added convergence





Some ACDC Use cases

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Partners

AGMLab
Basari Mobile
Bull
Centre de Recherche Public Henri Tudor
Institut Mines Telecom
Kit Digital France
NDS Technologies France
Neusoft Mobile Solutions
RESONATE-MP4
RTL BCE
Sanoma News
Silkan
Sofia Digital
Thomson Video Networks
University of Oulu
VTT Technical Research Center of Finland

Countries involved

Finland
France
Luxembourg
Turkey

Project start

June 2010

Project end

November 2012

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Project Results

services and advertising models that allow broadcast television to create interactive and augmented viewing experience via linear broadcast; and an on-line gaming service that can increase the number of consecutive game plays and end-user loyalty, allowing more advertisement views for the gaming service provider. Work then focused on the design and implementation of the user awareness services of the ACDC software and services platform while comprehensive scientific contributions advancing the state of the art were made in the form of scientific publications. The final demonstration in Luxembourg centred on demonstrators that comprise a B2B approach for one business case scenario addressing content delivery and transcoding in the cloud, and three B2C approaches, demonstrating optimised content delivery and adaptive processing, showing smart HbbTV services with cross-device mobile notifications and advertisements, and semantic recommendations efficiency in web gaming.

OPENING A DOOR TO NEW MARKETS

ACDC results are expected to be significant drivers for new and competitive multimedia services in Europe, a market based on cloud-computing infrastructures for user-aware entertainment applications. The cloud will provide the resources for content and semantic-knowledge processing, storage and delivery, thereby opening the door to a whole new marketplace for the European computing industry. Such advances will enable semantic content and knowledge technologies to be progressively exploited in Europe and so boost the competitiveness and, consequently, the value of European multimedia and entertainment applications.

A few cases studies from the project are illustrative of the impact that the innovative ACDC platform is already having at customer level and of the threshold of a television revolution. For example, a service company within the RTL Group (the Luxembourg-based radio and television business), BCE, used the results of the ACDC project to implement RTL India broadcasting via the cloud from Luxembourg. The success of this is being seen as a springboard to implementing a cloud service in Luxembourg for the whole global RTL group. Another example is provided by NHK which used the ACDC platform, developed by Thomson Video Networks and commercially deployed now under the name of VS7000, to show more than 35,000 video clips of the London Olympics to more than four million viewers.

The benefits of using the cloud to relay such services mean that all the heterogeneity inherent in current practice can become homogeneous, ultimately leading to more speed and efficiency as well a higher level of accessibility and making non-linear and interactive television a much more realistic and practicable option. TV in and from the cloud signals not just an innovation but a revolution.

Major project outcomes

DISSEMINATION

- 40 peer-reviewed Scientific Publications and conferences
- More than 10 appearances in trade shows and symposia
- 1 International Workshop (ACDC-NextMedia)
- 3 Newsletters

EXPLOITATION

- Partners are currently working on developing products and solutions based on ACDC results
- Several new services in beta-test deployment
- Some existing offers using different cloud infrastructures will be merged to ACDC Cloud
- The new generation of Video Transcoder/Streamer (BVS-NG) enabling multiple user device support (set-top-box/ipad/tablet/android) has been integrated in the Bull offer and has been proposed to several telecom operators with a first commercial deployment. Work done in ACDC is contributing to enhance of the Bull Cloud offer

STANDARDISATION

- Contribution to 3D Video Coding Extension (ITU-T SG16 WP3 and ISO/IEC JTC 1/SC29/WG 1
- Participation in ISO/IEC 23009-1 MPEG-DASH

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■ ITEA 2 – Information Technology for European Advancement – is Europe's premier co-operative R&D programme driving pre-competitive research on embedded and distributed software-intensive systems and services. As a EUREKA strategic Cluster, we support co-ordinated national funding submissions and provide the link between those who provide finance, technology and software engineering. Our aim is to mobilise a total of 20,000 person-years over the full eight-year period of our programme from 2006 to 2013.

■ ITEA 2-labelled projects are industry-driven initiatives building vital middleware and preparing standards to lay the foundations for the next generation of products, systems, appliances and services. Our programme results in real product innovation that boosts European competitiveness in a wide range of industries. Specifically, we play a key role in crucial application domains where software dominates, such as aerospace, automotive, consumer electronics, healthcare/medical systems and telecommunications.

■ ITEA 2 projects involve complementary R&D from at least two companies in two countries. We issue annual Calls for Projects, evaluate projects and help bring research partners together. Our projects are open to partners from large industrial companies and small and medium-sized enterprises (SMEs) as well as public research institutes and universities.

EUREKA

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