Project information

CELTIC
Telecommunication Solutions
www.celtic-initiative.org

Integrated Multimodal Platform for Ubiquitous muLtimedia Service Execution

Mobile users start to demand innovative multimedia applications traditionally associated with the Internet. It requires a network architecture that allows these new services to be developed and deployed quickly, efficiently and by different independent actors. The IMPULSE platform aims to solve these particular requirements.

Main focus

This project aims at the definition and implementation of an open and distributed platform that allows an effective framework for easy development, deployment and integration of innovative multimedia services on the Internet with traditional services coming from the world of mobile telecommunications. This platform will be integrated into the media chain, covering the necessary stages for content acquisition and description, presentation and multi-modal publication to the final user.

At the heart of this new architecture will be a **SIP/IMS Application Server (AS)**, conceived as a container of IP Multimedia services addressed both to the IMS (IP Multimedia Subsystem) and the fixed IETF SIP (Session Initiation Protocol) networks. This node will decouple the multimedia interactions coming from the Internet and the signaling logic derived from the mobile network by using complimentary technologies, such as JAIN SLEE and J2EE, in order to provide integrated services which combine the best from both domains.

impulse

Impulse

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Approach

The Application Server will be located in the service layer within the IMS infrastructure, on top of the call control and signaling infrastructure, allowing the service developer to manipulate elements in both this layer and the media transport infrastructure.

In order to fulfil the objectives mentioned above, the following steps will be taken:

- Design of Model of Components, whose combination will constitute the service logic
- Specification of a Programming Model, defining the procedures of interaction between the components
- Implementation of a set of Capacities, abstracting the service logic from the underlying standard IMS services and external resources
- Definition of a set of Service Patterns, offering the developer a set of templates to build services; they will act as a practical implementation of the Programming Model
- Creation of a Management Framework, as a way for the Administrator to manage both the platform and the lifecycle of the different services and capacities
- Provision of a Service Development Toolkit, including an Integrated Development Environment that allows the developer to define, implement and modify the necessary Service Patterns

The communication between the AS and IMS will be carried out using standard interfaces, and it will require the use of CSCF (Call State Control Function) nodes. Additionally, the AS will use all the conventional servers exposing their capacities through standard 3GPP (3rd Generation Partnership Project) interfaces: presence and messaging servers, list and group servers, conferencing servers, etc. It will also include all non-standard resources, such as: content repositories, speech servers, streaming servers, or specific gateways, such as voice gateways for legacy networks.

Main results

Major results expected for this project are:

- Study, proof of concept and demonstration on the use of SIP/IMS Application Servers to manage and deliver services consisting of service components from multiple domains (Internet service platforms, mobile service enablers, content provision platforms) to users in different domains (Mobile, Internet, Digital Television, etc.)
- Analysis on how the AS can be used as an effective integration platform of legacy services running on different access technologies (UMTS, WLAN, ADSL, etc.)
- Demonstration on how this node supports the rapid development of new services, following a programming model that provides the necessary Java APIs (JSLEE/J2EE) and specific service patterns to abstract all the signaling concepts and to interact with external resources (media servers, speech resources, IMS nodes, media gateways, etc.)
- Research on the concept of using preference variables and small size efficient profiling techniques as a means for modeling and representing user preferences towards the service domain.

Impact

This project is strategically relevant for the multimedia, broadcasting and telecoms industries.

IMPULSE will contribute to the multimedia industry by producing a platform that will impact the media chain, by offering tools for content description, acquisition, transport and distribution over diverse networks, and its publication to the final user.

In the evolution of the “media chain”, IMPULSE will deal with the main expected changes, namely: broadcasting of media content over broadband networks, home connectivity (i.e. through set-top boxes, materializing the idea of TV and rich multimedia applications making use of telecommunication infrastructures) and ubiquitous access to the content for nomadic users.

Regarding the telecommunications domain, the use of SIP can guarantee some kind of interoperability, not only with Internet applications but also with the IMS architecture defined for 3G mobile networks, which is based on SIP as an enabler protocol for the whole life cycle of multimedia sessions.

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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