

Project information



Quality of Real Time Applications End-to-End over Heterogeneous Domains

QUAR2 aims to develop and establish a new standard for a system that can provide high quality Voice and Video services over IP networks (V2oIP). The QUAR2 solution presents a common platform for heterogeneous network environments based on existing IP networks infrastructure, offering guaranteed quality.

Main focus

The main objective of the QUAR2 project is to perform the necessary research, development and validation of a system that can provide toll-quality voice and video service over heterogeneous IP networks and over heterogeneous network environment. This will allow to offer audio-video services at low prices while spanning over the whole European continent and beyond, despite the heterogeneity of its communications infrastructure.

Such a set of services will help to dramatically reduce geographical and cultural distances, allowing a global community based on new open technologies from network to applications.

The QUAR2 project is in line with the ongoing effort of smooth migration from circuit-switch based networks to packet-based networks and services. Therefore, QUAR2 will rely on emerging Next Generation Networks (NGN) infrastructures, providing carrier-class quality of service at low operational costs using standard interfaces resulting in multiple value-added services to the benefit of the European end users.



QUAR2

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Partners

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Project web site

www.celtic-initiative.org/projects/quar2

Approach

QUAR2 aims to develop a system for providing high-quality voice and video service over heterogeneous environments. The QUAR2 platform will enable a convergence of all applications, basing the infrastructure on NGN architectures. This will allow the deployment and introduction of high value services, such as real-time applications and specifically video, audio and voice.

These next generation services will be managed by a Service Controller entity based on open source solutions, also known as soft-switch. It will be responsible for the sessions generation and will also verify that the user is entitled to use the service (e.g. if he paid his bills, or if he has enough credit in his pre-paid account) and will resolve the service request, identifying who is the other party of the service. The Service Controller will use the information regarding the Perceived QoS (Quality of Service) Estimator to perform admission control and codec-type QoS selection.

The Perceived QoS estimator will monitor in real-time the stream of data, and it will obtain statistical information for future estimation inside the Service Controller of the resources available for new calls. If a possible degradation below the assured level

of service would be predicted, it would dynamically alert the Service Controller to update the call-codec use with less QoS requirements or to modify service admission policies. In addition, the Perceived QoS estimator will provide real-time information regarding network resources and quality of the previous calls.

Finally, the Resource Manager handles the Quality of Service in the Metro Area Network (MAN) and in a part of the Wide Area Network (WAN). Its work will complement the work of the local access controllers across the various access networks, such as xDSL (Digital Subscriber Line), cable and future wireless networks. Those local access controllers will verify the allocation of the potentially limited resources within the access segment, with the management of the service controller.

Main results

The main goals and results expected from the QUAR2 project are:

- Identify and specify users and system requirements and value added services. These tasks will contribute to the design of the reference system architecture.
- Development of the building blocks of the QUAR2 architecture and their integration in a single open platform with

guaranteed QoS. This step includes the design and implementation of methods for providing video session services.

- Traffic analysis and network planning in order to implement the solution by means of a software module. This simulation will be used to develop a traffic prediction algorithm.

- Investigate new objective quality-measurement methods for voice and video in order to verify end-to-end QoS and to provide information for dynamic network management.

- Integration, verification and validation of the overall system by means of a demonstrator.

- Dissemination and exploitation of the project results and collaboration with different standardization initiatives.

Impact

QUAR2 represents a migration effort to overcome the existing QoS delivery obstacles. QUAR2's innovative architecture will allow the delivery of audiovisual and other real-time services, united and uniform, over the existing and evolving heterogeneous infrastructure with the appropriate end-to-end quality. This platform will solve the lack of interoperability and management due to the proliferation in the market of different protocols, networks and vendors, proposing new innovative solutions to diversity. Furthermore, the QUAR2 solution includes advances and innovations referring to service-control mechanisms that will allow cheaper, flexible and simpler operation, while improving the offered services.

Considering QoS and its evaluation, QUAR2 will offer different solutions. First of all, a network performance is offered through the network qualities and parameters. However, the biggest efforts focus on a dynamic evaluation of speech and video quality, which will allow the user a continuous analysis of the quality.

QUAR2's innovative architecture, concepts and methods will enable the service providers to suggest to their customers the next generation high-quality V^oIP services, utilizing existing networks and achieving a reduction of the operational cost.

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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