CELTIC
Telecommunication Solutions

Quality of Experience Estimators in Networks – Service Delivery adaptation and optimization through Quality of Experiences estimators

QuEEN
Quality of Experience Estimators in Networks

The project QuEEN aims at producing an overlay network of software agents based on perceptual models being able to estimate the Quality of Experience (QoE) for generic services or applications. New technical and business opportunities generated by these individual estimators or by the estimators overlay will be defined and demonstrated.

Main focus

Currently, most of the models allowing providing objective assessments for the Quality of Experience are designed in view of specific media services (voice, video …). Furthermore, few of them are incorporating contextual information or give multi-dimensional estimations of quality. The project QuEEN focuses on the design of a software agent able to assess quality for a "generic" service or at least for a service involving several simultaneous perceptual modalities (hearing, vision, duration) as well as their possible interactions. In addition, contextual and user-related information will be included in the models.

The ability given to the agents to communicate with other agents will open a large range of possible applications, like, for instance, the monitoring of QoE over the network.

Approach

A first task in the project is devoted to a clear characterization of the concepts and of the terminology related to the notions of quality and in particular of QoE. The software agent for objective QoE estimation is
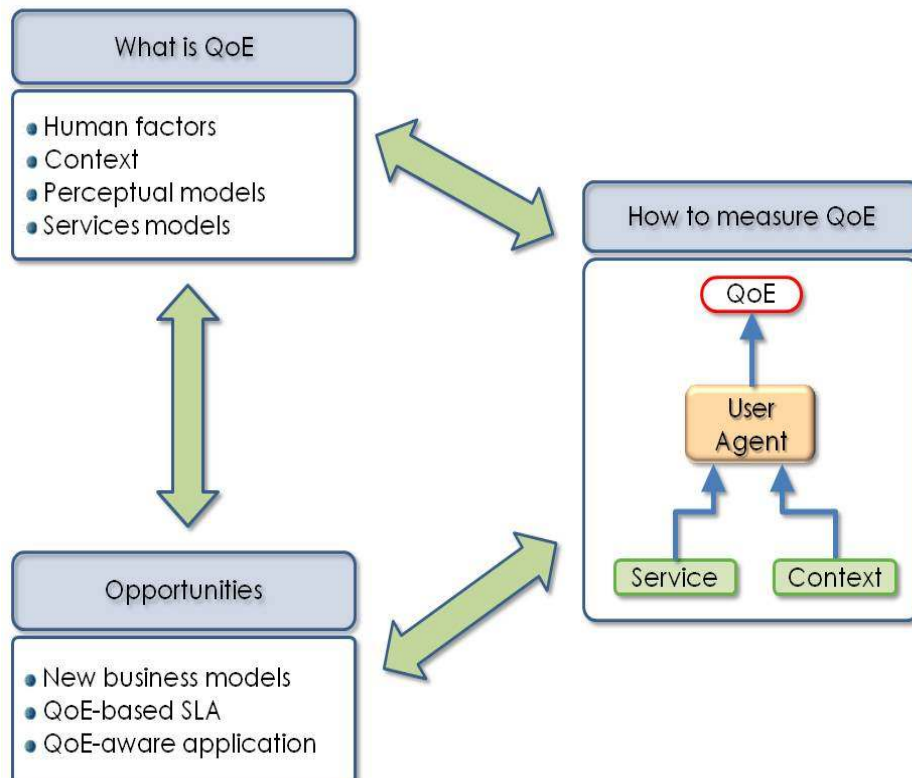
QuEEN

Project ID: CP8-004

Start Date: 1 September 2011

Closure date: 31 August 2014

Partners:

Acreo AB, Sweden
BTH - Blekinge Institute of Technology, Sweden
Embou, Spain
Ericsson AB, Sweden
EXFO Nethawk, Finland
France Telecom, France
FTW - Telecommunications Research Center Vienna, Austria
Hiberus TECNOLOGÍA, Spain
IBBT, Belgium
INDRA sistemas, Spain
Info24, Sweden
INRIA, Institut National de Recherche en Informatique et en Automatique, France
Instituto Tecnológico de Aragón, Spain
IP-Label Newtest, France
Mobisoft Oy, Finland
PPO Yhtiöt Oy, Finland
Rugged Tooling Oy, Finland
Technical University Berlin, Germany
Telnet Redes Inteligentes, Spain
University of Zagreb - Faculty of EE and Computing , Croatia
VTT, Technical Research Center of Finland, Finland

Co–ordinator:

Frédéric Guyard

France Telecom

E-mail: Frederic.guyard@orange.com

Project Website

at the core of the project. It will be designed using a modular layered approach, easily upgradable. Some layers of the agent will represent the psycho-physical capacity of humans. These layers will include perceptual models for the audition and for the vision, models for reference-based perception (e.g. perception of delays, contextual information …) as well as models for the interactions between these various perceptual modalities. Higher layers of the agent will include models representing long term user's judgment and assessment based on the information provided by the lower layers. The modular approach of the agent's design will allow a constant improvement of the various models during the whole duration of the project.

A protocol allowing inter-agents communication over the network will be defined providing the various agents with the possibility of updating efficiently their models, and allowing for their exploitation in QoE-optimization, SLA-renegotiations etc.

New types of SLA incorporating QoE information will be defined. Similarly, new applications able to measure the QoE they provide to user and to act in consequence will be defined.

The various results of the project will be demonstrated on experimental platforms but also on real operational infrastructures owned by partners in the project.

Main results

The main results of the project will be:

♦ A terminology of concepts and notions associated with QoE (WP2).

♦ Specification and implementation of user agents incorporating perceptual models and contextual information and able to provide a pertinent objective QoE estimation for generic multimodal services (WP2).

♦ A protocol of communication between the agents (WP3).

♦ A platform of QoE-related traffic capture and analysis (WP4).

♦ Specifications of new services and new applications using the objective QoE estimation provided by the agents (new type of SLA, methods for charging QoE, network management tools using QoE information, new type of service subscription) (WP5).

♦ Demonstrators of the principal results of the project on experimental or operational situations, based on use-cases related to the main activities of some partners in the project (taxi fleet management, information broker, e-learning platform …).

Impact

In the currently very competitive telecommunication market, the QoE becomes an important differentiating factor among the various providers. Despite this fact, the QoE remains concept not yet well understood. In clarifying the notions and influential factors pertaining to QoE and in providing means to objectively assess the QoE for generic services, the project will produce results beneficial for both the providers and the users. Network providers will gain understanding on the way to manage their networks in order to supply more satisfactory services to their users. This better experience must encourage users to use services more and more frequently and decreasing churn. The project will also provides network providers with new business opportunities, new models of SLA and new methods for charging services on the base of QoE information. Finally, QuEEN's results, will give services or applications providers methods to design new type of applications able to measure the QoE they provide to the users and able to act in consequence.

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 currently the only European R&D programme fully dedicated to end-to-end telecommunication solutions.

Timeframe: 8 years, from 2004 to 2011

Clusterbudget: in the range of 1 billion euro, shared between governments and private participants

Participants: small, medium and large companies from telecommunications industry, universities, research institutes, and local authorities from all 35 Eureka countries.

Celtic Office

c/o Eurescom, Wieblinger Weg 19/4, 69123 Heidelberg, Germany

Phone: +49 6221 989 405, e-mail: office@celtic-initiative.org

www.celtic-initiative.org

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