Project Information

The interweaved roles of multimedia and networks

Today's broadband networks experience a huge growth in video traffic, together with an increasing demand for more personalized services and better Quality of Experience (QoE). In this changing network environment, a multitude of actors are trying to develop profitable business models. All involved actors have to cope with an increased complexity level, that is caused by the end-to-end support required to provide quality assurances for the end user. In addition to that, the variety of objectives that come along with the high number of actors harbors much potential of conflict. Therefore service interfaces with hard service level agreements can be used to provide definite responsibilities and minimize the potential of conflict.

Extended Value Network

The Value Network of traditional Broadband Access networks has to be extended to take into account the new actors on the scene. The Network Access Provider (NAP), Regional Network Provider (RNP), Connectivity Provider (CP), the Packager (P), and the Application Service Provider (ASP) continue to play a key role in the Value Network. Also the Multimedia Content Provider (MCP) was already recognized as an important stakeholder. Taking into account the rapid growth of video traffic, and the increased personalization and QoE demands, the Value Network is now further extended with the Content Aggregator (CA) and Content Distribution Provider (CDP) roles (Figure 1).

The CA is an intermediate that aggregates content from various Multimedia Content Providers. A CA may also process the original data in regard to codecs, format and quality, bundle content from different providers and provide access to it for multiple Application Service Providers.

The CDPs organize the content delivery, e.g. by operating content delivery networks (CDNs). CDNs consist of surrogate servers that are spread around the world.

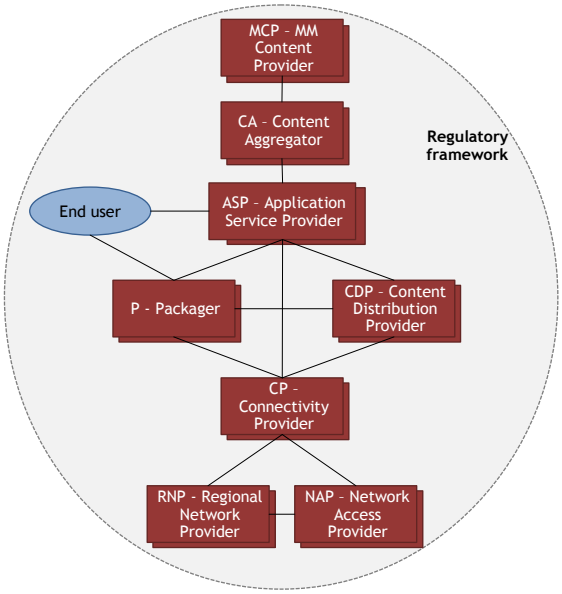

Figure 1—The extended RUBENS Value Network

RUBENS

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End user requests are rerouted to these surrogate servers near the user's location to accelerate applications, downloads and set-up times for media streaming. CDPs capture an important role within the QoE eco-system because they seek to utilize the current network infrastructure to its maximum to increase the perceived quality by the end users without additional mechanisms.

In addition to the roles within the value network, the regulatory framework plays an increasingly important role. Regulatory decisions may influence the pace of the network capacity increase, whereas excessive network capacity reduces the necessity to integrate QoE mechanisms into the network. More specifically, NGANs (Next Generation Access Networks) allow to offer services with high bandwidth requirements without additional quality assurances, thus making QoE mechanisms less urgent.

The Packager and the Connectivity Provider roles have to be adapted slightly. The Packager remains the single point of contact for the end user, but its responsibilities are extended with the management of services that require QoE assurances within a QoE environment.

The Connectivity Provider needs to work closely with the Packager. The CP is responsible to provide end-to-end connectivity between end user and service provider. Therefore, the management of end-to-end QoE assurances on a technical level falls into his area of responsibility. Since the Packager handles the end users' service requests, close co-operations between these two roles are necessary.

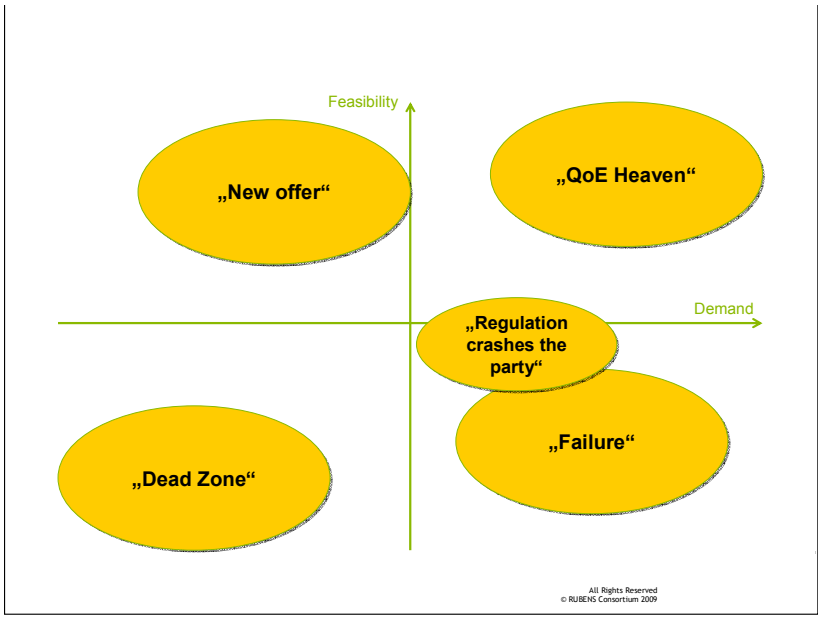

Figure 2 - Scenario's for QoE evolution

Techno-economic Approach

The RUBENS techno-economical work has first focused on the detailed analysis of the various business roles and their multiple relations. This was done by the systematic assessment of a large number of established commercial market players, and a mapping of their activities, roles and characteristics to the RUBENS business roles. Subsequently, a scenario analysis was conducted. Within this, a set of 12 key factors, having a major influence on the QoE market development, were identified in various domains (political/economical/sociological/technical).

For these key factors expressive future projections were made, resulting in a number of scenarios, each covering a characteristic segment of a two-dimensional scenario space with the dimensions feasibility and demand (Figure 2).

The relations between the various business roles, the convergences/divergences between players, and the possible alliances are currently being assessed by means of the MACTOR method. Further activities will focus on a translation of the scenarios, their drivers and their constraints, into a set of recommendations towards the various stakeholders on how to approach the further QoE market development, in such a way that sound business relations can be established for all involved parties. Related to this, Target Costing techniques are being used to get a realistic assessment of the pricing levels applicable to projected QoE evolutions.

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.

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