

QoE management in emerging multimedia services

The realization of the paradigm of Internet anywhere, anytime and any-device and the diffusion of end-user multimedia devices with powerful and user-friendly capabilities such as smartphones, tablets pc, mobile gaming terminals and ebooks, are leading to the proliferation of a significant amount of emerging multimedia services: immersive environments, mobile online gaming, 3D virtual world, book/newspaper consumption, social networking, IPTV applications, just to cite a few. Some of these services have already reached a major market success, such as the case of newspaper/magazine mobile readers and smartphone multimedia apps. Their success could be achieved especially because a user-centered approach has been followed to design the whole process of content production, service activation, content consumption, service management and updating. Indeed, the quality of the user experience, the perceived simplicity of accessing and interacting with systems and services, and the effective and acceptable hiding of the complexity of underlying technologies are determining factors for success or failure of these novel services, as well as graceful degradation.

The management of the Quality of Experience (QoE) is then undoubtedly a crucial concept in the deployment of future successful services, and it is straightforward to be understood as well complex and stimulating to be implemented in real systems. The complexity is mainly due to the difficulty of its modeling, evaluation, and translation in what for more than a decade we have been mainly dealing with (partially in its substitution), that is the Quality of Services (QoS). Whereas QoS can be now easily measured, monitored and controlled at both the networking and application layers and at the end-system and network sides, the quality of experience is something that is still quite intricate to be managed. The practice in evaluating the QoS can be exploited in evaluating the QoE, but it is just a starting point for a complete QoE management procedure, which should encompass at least the following activities: monitoring of the experience of the user when consuming the service, adapting the provisioning of the content on the basis of the varying context conditions (e.g. network status, user behavior, user profile, environment), predicting potential experience level degradation, and masking quality degradation due to abrupt system changes. To have a complete control of the final user experience, all these tasks need to be performed in a coordinated way and their real effectiveness depends on the validity of the adopted user perception model.

Objectives

The purpose of this special issue is to present to the magazine's audience a concise, tutorial oriented reference of the state-of-the-art, current and future research challenges and trends on the management of QoE in emerging multimedia services. To achieve this goal the special issue seeks original research and review papers that survey and present new ideas, leading-edge research prototype development, trials and early deployment, and performance evaluations in the following areas:

- Definition of QoE (Quality of Experience) for emerging services
- Relationship between QoE and QoS
- Architectures for the management of the QoE in emerging multimedia services
- Offline and online prediction and evaluation of QoE
- QoE-oriented multimedia traffic management
- QoE-oriented multimedia source and channel coding
- Testbeds for performance evaluation of QoE-oriented systems
- Middleware solutions for QoE management
- Adaptive and self-configuring solutions for QoE management
- Advanced, scalable service-aware QoE-oriented traffic control and management
- QoE management in heterogeneous networks

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