

QoE for 3G Wireless Data Services

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Abstract

This work is a comprehensive analysis of several aspects about quality assessment of telecommunication services. The work focuses on the importance of offering services with quality, the theory behind quality assessment and ways to measure how network users perceive such quality.

For service providers understanding QoS, QoE, how are they related and how are they perceived by the customers is vital to conduct business successfully. In an industry considered young and in some places far from market saturation, opportunities are not scarce and competitors aggressively fight them. Hence, customer satisfaction and retention are keys for business success being the most important way to achieve this QoE. Subscriber churn is costly not only from the financial point of view but also because it hurts the company's image and jeopardizes market share.

We start this document discussing the importance and impact of QoE for network operators, followed by an extensive discussion of different aspects and concepts of quality assessment as well as tools and metrics commonly used in this area. Concepts ranging from networks metrics to users' quality perception measurement techniques are exposed in Section 3.

The "QoE ASSESSMENT METHODOLOGY" section is highly influenced by researches and recommendations conducted by the ITU in the video quality assessment field. These methods and practices were modified, enhanced and adapted to fulfill the needs when assessing user experience of any provided service. The goal of the proposed methodology is to provide a universal framework for assessing users' QoE and estimate service perception based on network QoS metrics.

Section 5 presents a QoE assessment as an example of methodology usability. There, using the proposed methodology, we measured how QoE of WAP browsing services are influenced by variations in the network throughput. Finally, a model to estimate how user perception varies with throughput variations is provided based on the survey results and posterior data analysis. From these results we conclude that there is a linear relationship between link throughput and perceived quality; and the methodology proposed is suitable and flexible enough for assessing a wide variety of services if not all of them.

To finalize, we expose potential areas to research in the quality assessment field. Being that this topic is gaining momentum these days thanks to increasing demand of high-quality networking services and the imminent convergence of telecommunication services over a common network architecture there is no doubt that opportunities in this field are immense and this research work will contribute to develop further investigation work in the area.