

Chapter 5.18

Toward Mobile Web 2.0–Based Business Methods: Collaborative QoS–Information Sharing for Mobile Service Users

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ABSTRACT

Mobile service providers (MoSPs) emerge, driven by the ubiquitous availability of mobile devices and wireless communication infrastructures. MoSPs' customers satisfaction and consequently their revenues, largely depend on the quality of service (QoS) provided by wireless network providers (WNPs) available at a particular location-time to support a mobile service delivery. This chapter presents a novel method for the MoSP's QoS-assurance business process. The method incorporates a lo-

cation- and time-based QoS-predictions' service, facilitating the WNP's selection. The authors explore different business cases for the service deployment. Particularly, they introduce and analyze business viability of QoSIS.net, an enterprise that can provide the QoS-predictions service to MoSPs, Mobile Network Operators (as MoSPs), or directly to their customers (i.e. in B2B/B2C settings). QoSIS.net provides its service based on collaborative-sharing of QoS-information by its users. The authors argue that this service can improve the MoSP's QoS-assurance process and consequently may increase its revenues, while creating revenues for QoSIS.net.

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INTRODUCTION

The last 15 years have been marked by the expansion, global adoption and seamless availability of the (fixed) Internet with a multitude of its ubiquitous services. In parallel, a new mobile era has undergone its preparation phase, driven by miniaturization and personalization of communication devices, as well as the rapid expansion and adoption of mobile voice and data services and heterogeneous communication infrastructures (Hansmann *et al.*, 2003).

In this era, ubiquitous Mobile Service Providers (*MoSPs*) bring to the market users' favorite Internet-services and start offering a wide range of new services. As a *mobile service* we define a data service that is delivered to (or from) a mobile device from (or to) the Internet. The service delivery is supported by the deployment of wireless communication infrastructures, enabling a user the Internet-connectivity while on the move. A MoSP is then an enterprise, which core business processes aim at providing mobile services to its customers (TMF, 2001).

The MoSPs are fully aware that to achieve their goals of gaining customer acceptance, secure their revenues and remain competitive, their services must provide users *Quality of Experience* (QoE) comparable to the QoE provided by the existing Internet-services (Afuah & Tucci, 2000). The QoE is "the overall acceptability of service, as perceived *subjectively* by the user" (ITU-T, 2007), and as a part of it, a MoSP must at least assure meeting user's *Quality of Service* (QoS) requirements, expressed quantitatively in terms of service speed, accuracy, dependability, security level and price related (performance) measures. The QoS is defined as "a collective effect of service performances which determine the (*objective*) degree of satisfaction of a user" (ITU-T, 1993). MoSPs unanimously indicate, that their *QoS-assurance process*, i.e., a business process related to service-management, and responsible for assurance that services provided to users are

performing according to their QoS-requirement, is critical to their business viability (Andersson *et al.*, 2006; Nokia, 2004).

The challenge is that, the MoSPs' QoS-assurance process relies on the QoS provided by wireless communication infrastructures, supporting the mobile services delivery. Ideally, there would be infrastructures supporting anytime-anywhere services delivery to a user. However, in reality these infrastructures are beyond the control of MoSPs; they are owned and managed by enterprises called *Wireless Network Providers* (WNPs). A WNP core business processes aim at providing Internet-connectivity to its customers. A wireless communication infrastructure exhibits different QoS depending on the WNP it's owned by, a wireless technology used (e.g. WLAN/GPRS) as well as the mobile user's location-time.

Nowadays, in most countries, a number of WNPs coexist, operating different long-range wireless communication technologies. In particular, there exists at least one nationwide WNP called a *Mobile Network Operator* (MNO). A MNO is an enterprise that, as a WNP, owns and manages its wireless network infrastructures. MNO's core business processes aim at providing voice services (primarily) and Internet-connectivity, using long-range wireless technologies (e.g. GSM/UMTS) (ITU, 2005) to its customers. A MNO can take a role of a MoSP, i.e., can also provide mobile services to its customers.

In parallel, WNPs like public-WLAN providers emerge rapidly, especially in big cities. Moreover, today's mobile devices embed multiple interfaces, thus supporting Internet-connectivity over various wireless technologies. Hence, the communications means tend to be ubiquitously available to mobile service users, and, at least in principle, these users must be able to choose a WNP (and a wireless technology) providing the QoS best meeting their QoS requirements thus facilitating meeting their expected-QoE. However, this assumption is far from the reality. The business strategy of existing WNPs, and particularly

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