Chapter 45
Creating Applications for Real-Time Collaboration with XMPP and Android on Mobile Devices

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ABSTRACT

The goal of this chapter is to discuss the challenges of generic protocols and platforms for mobile collaboration in general and for the adoption of XMPP for mobile collaboration in particular. The chapter will introduce the XMPP protocol family, discuss its potentials and issues for mobile collaboration, and describe experiences with the implementation of mobile collaborative middleware and applications based on XMPP. In particular the protocol family has been used to create a generic middleware for mobile collaboration providing a set of generic services such as publish/subscribe, group management, and chat functionality, as well as advanced functionality for geo-location and geo-tagging, map visualization, and multimedia content sharing. For the implementation of our platform and applications XMPP is used in combination with the Android platform running on the mobile devices. The authors describe their experiences in adjusting and adopting XMPP protocol implementations based on Java on the Android platform.

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INTRODUCTION

There is already a multitude of collaborative applications available in mobile environments. Although they share a good amount of common functionality, most of them are built from scratch, or are tailored to a specific device platform using proprietary libraries. An open and customizable environment for mobile collaborative applications is still missing. To set up a generic environment for mobile collaboration support, the selection of the right set of underlying protocols is of high importance. Based on the protocols for collaboration the foundations for interoperability, scalability, portability and performance are created.

In earlier work (Springer et al., 2008) we introduced the Mobilis reference architecture as a service-oriented approach to support developers of mobile collaborative applications with a framework covering all the different aspects and layers of such applications. This comprises the device operating system, basic communication and context services, a service environment with commonly used functionality as well as the applications at the application layer. As can be seen in Figure 1, each of these four layers comprises a distinguished set of individual services. The functionality of the services at the Mobilis service layer will be described later in this chapter.

The Mobilis reference architecture already provides a good guideline for developers of mobile collaborative applications. It served already as a basis for the development of a set of applications adopting diverse collaboration functionality:

- **MobilisFunFlags:** So-called fun flags can be tagged to locations at a map to notify other users of the application about cool places. Images and text notes can be attached to these places.
- **MobilisGuide:** Tourists travelling together can create and join closed groups and are able to be aware of the other group members visualized as icons on a map-based view. They can interact by selecting icons of group members on the map, for instance to chat with each other or contact one another directly.

Figure 1. Mobilis reference architecture