Chapter XI

Software Agents for Mobile Commerce Services Support

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ABSTRACT
This chapter considers an application of software agents to mobile commerce services provision. With the increasing number of e-commerce services for mobile devices, there are challenges in making these services more personalized and in taking into account the severely constrained bandwidth and restricted user interface these devices currently provide. In this chapter we present an agent-based platform for support of mobile commerce using wireless devices. Agents represent mobile device customers in the network by implementing highly personalized customer profiles. The platform allows customization and adaptation of mobile commerce services as well as pro-active processing and notification of important events. Information to the customers is delivered via both access to the Internet and SMS messages. Usage of the platform is illustrated by examples of valued customer membership services and subscription services support. We hope that the presented work demonstrates benefits of software agents as assistants in mobile commerce services.
INTRODUCTION

The increasing number of mobile portable devices in use creates a great opportunity for development of a wide spectrum of mobile e-commerce services. The main advantage of these services is their high availability. Customers with a mobile device can enjoy these e-commerce services regardless of time or location. However, mobile devices, such as cellular phones and PDAs, are constrained by severe restrictions that might complicate practical use of e-commerce services. These restrictions are related to the limitations of wireless data networks when compared to wired networks (less bandwidth, more latency, lower connection stability, less predictability, and less standardized protocols) and to the limitations of mobile handsets when compared to personal computers (small screen size, complicated text input, little memory, slow CPU, and more constrained energy supply).

Additional problems with wide application of mobile e-commerce services are related to higher cost of wireless communications (compared with wired communications) and users of mobile devices not having sufficient experience of Internet or PC usage. To overcome the above restrictions and problems, we require simplicity and expressiveness in the mobile commerce services.

It is possible that some of the limitations will be relaxed in the future through improved hardware or telecommunication networks technology (Tarasewich & Warkentin, 2000), but, at the moment, all of them should be taken into consideration when implementing mobile services.

As a basic way of relaxing the above-mentioned problems and limitations we see the following solutions:

• the connection time to the network service should be minimized,
• the precision of delivered information should be high in order to avoid exposing a large amount of useless information to be read on a small screen.

These solutions assume that as much work as possible should be done off-line without the mobile device being directly connected to the network.

Our approach towards reaching this goal is to provide a mobile device user with a personal software assistant that represents the customer’s profile and interests in his e-commerce activities. In order to implement such an assistant, we deploy the agent technology. The personal software assistant is implemented as a software agent. This agent operates in the Internet environment, and the users employ mobile devices with the Internet access to communicate with their personal software assistant agents to take advantage of e-commerce services.

XML-based standards related to Web Services are of increasing importance on the traditional Internet, and they are also likely to influence how mobile services
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