

Chapter XLI

Mobile Agents and Personalized Multimedia Services

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ABSTRACT

Discovering and redirecting multimedia services in a personalized manner is achieving increasing importance for mobile users. It is a powerful characteristic, one of the endless capabilities of mobile e-commerce technology. Regardless of their location, users are able to find and utilize services according to their needs and without complex configuration and preknowledge of service interfaces. In addition, they gain control over how, where, and when multimedia services are delivered. Mobile agent platforms may contribute significantly as a supporting component of the overall personalized multimedia service infrastructure. In order to appreciate the impact of MA-based solutions in personalized multimedia service platforms, we present a set of basic criteria related to mobile agents, which may evaluate their necessity and usage. Although it is not an exhaustive list of evaluation criteria, it is sufficient to cover a broad variety of areas under consideration regarding the involvement of mobile agents in service platforms.

INTRODUCTION

The uniqueness of mobile Internet applications can be appreciated from different viewpoints. Undoubtedly, from the system's viewpoint, mobile

multimedia (M3) applications present disadvantages: mobile devices have smaller screens/keyboards, minor multimedia processing capabilities, and inferior (as well as unstable) network connection speeds than desktop computers. On the other

hand, from the environmental viewpoint, there is an important advantage: mobile devices provide users mobile access to Internet-based content and services, anywhere and anytime. Moreover, an additional benefit comes from analyzing mobility in user interactions: mobile users' actions are positioned in a particular context, such as location and resources nearby. Thus, enabling context-sensitivity on mobile devices, these devices may actually provide task-relevant services and communications.

Many researchers over the last few years have identified and underlined personalization as an important feature related to acceptance and use of M3 information. Personalization has the ability to adapt information and services to better fit the needs of each user. In this context, significant issues are unraveled focusing on M3 service-related considerations. This is an area in which mobile agent (MA) technology may play a considerable role in the necessary underlying infrastructure, as it exploits a specific aspect of mobility; namely, "service mobility."

The characteristics of MAs allow them to provide solutions on key areas of personalized M3 communication, such as discovering and locating multimedia services, as well as redirecting services in mobile environments. Automating service discovery is achieving increasing importance for mobile users, considered as service infrastructures capable of letting services be discovered and utilized efficiently. Mobile users are allowed to request services according to their own needs. Even though all the available resources are retrieved, the results that do not fit the user's need are reduced or eliminated, increasing the precision of the answer (Valavanis, Ververidis, Vazirgiannis, Polyzos & Norvag, 2003). Moreover, in order to get better results, the service search procedure is capable of being customized according to current context conditions.

By adopting MAs, mobile users may submit a service request without having to wait for results or trying to keep constantly "active" the connection in the process of service discovery. That type of asynchronous service discovery deals successfully with the frequent disconnections and possible long delays of wireless links. Thus, MA platforms may contribute significantly as a supporting component of the overall personalized multimedia service discovery infrastructure. Another aspect related to service discovery issues and MAs is interoperability. MAs may provide an intermediary layer between various underlying service discovery protocols and mobile users. Mainly, this MA-based layer is capable of handling service requests (of various types of service discovery protocols) from users (Wang & Koubaa, 2006). Furthermore, it may present a generally reliable view of service configuration and a common way to prepare search requests.

MAs are actually capable of exploiting the context information detected by the mobile devices with sufficient flexibility. Their sophisticated individuality promises considerable support in another state-of-the-art area regarding the delivery of personalized multimedia communication and services. Mobile users want more control over how, where, and when multimedia services are delivered. Personalized service redirection is concerned with directing multimedia communication and services to the suitable devices for the appropriate person at the proper time and location, performing any type of alterations that are essential to accomplish this (Yang & Williams, 2006).

In order to appreciate completely the impact of MA platforms in personalized multimedia services, we will analyze architectural issues related to personalized redirection and personalized service discovery. Afterwards, we will make an effort to detect a number of basic criteria related to MAs, which may evaluate their necessity and usage for personalized M3 services.

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