Chapter LXII
Personalized Redirection of Communication and Data

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ABSTRACT

One current vision of future communication systems lies in a universal system that can deliver information and communications at any time and place and in any form. However, in addition to this, the user needs to be able to control what communication is delivered and where, depending on his or her context and the nature of the communication. Personalized redirection is concerned with providing the user with appropriate control over this. Depending on the user's preferences, current context and attributes of the communication the user can control its delivery. This chapter provides an understanding of what is meant by personalized redirection through a set of scenarios. From these, it identifies the common features and requirements for any system for personalized communications, and hence the essential functionality required to support this. It goes on to describe in detail two systems that aim to provide a personalized redirection service for communication and information.

INTRODUCTION

The computing landscape of the future will be an environment in which computers and applications are autonomous and provide largely invisible support for users in their everyday lives. One aspect of this vision is universal access to information and communication. The rapid development of the Internet and the proliferation of networks and devices, such as mobile phones and pager networks, is improving prospects for universal access by providing increasing coverage for access to information and data. Such communication-intense environments will enable users to

access content ubiquitously through a variety of networks and stationary or mobile devices despite a growing range of different data formats.

Thus the vision of future communication lies in a user-oriented universal communication system which can accommodate versatile communication needs (Abowd & Mynatt, 2000, Abu-Hakima, Liscano, & Impey, 1998; Satyanarayanan, 2001). It should be able to deliver information at any time, in any place and in any form. But ubiquitous access is not enough. With such access comes an increasing need for users to have more control over when, where and how communications are delivered. This will depend on the context of the user at the time. Thus any future system will need to cater for user requirements relating to user control and maintain information on the current user context.

The design and implementation of such a system is challenging due to the variety of networks, devices and data, the preservation of user privacy, administration and management overheads, system scalability, and so on, and is the subject of this chapter.

The rest of the chapter is structured as follows. The next section provides an understanding of what is meant by personalized redirection. This is followed by a brief discussion of related work, based on commercial systems and research projects, and a section on the essential functionality for personalized redirection. The following two sections describe two prototype systems — the PRCD system and the Daidalos system, and explain how these map onto this essential functionality. It discusses the integration technologies and an example is used to demonstrate how personalized redirection works in Daidalos. The final section sums up the chapter.

WHAT IS PERSONALIZED REDIRECTION?

In order to understand what is meant by personalized redirection, this section describes several scenarios where redirection might be useful. From these it extracts the common features and arrives at a set of requirements for systems to support personalized redirection.

Doctor Scenario

A maternity patient who is deemed to be at risk of having a premature delivery, is at home wearing a foetal heart rate (FHR) monitor. This is a sensor that monitors the heart rate of the unborn baby. Suppose that it can be connected to the telecommunications network via the patient's home PC.

Now suppose that the patient is concerned for some reason. She calls the doctor. He needs to see the data currently being produced by the FHR monitor. Because the doctor prefers the FHR data to be displayed graphically, the data needs to be converted to a graph and then to an image using an appropriate software package. The doctor currently has access to a desktop, laptop, TV set, telephone, and mobile phone, but prefers his desktop. In this case the data need to be redirected via the conversion software to the desktop. (See Figure 1) On the other hand, the doctor may have been visiting another patient or may be in the hospital, and may not have access to a computer but only his mobile phone. In this case the data from the FHR monitor needs to be routed to the software package to convert to a graph and then an image and then sent to the mobile phone.

The doctor may want to compare the FHR graph against another stored in a database accessible via the Web. This previous FHR must be traced from the relevant database and the FHR data fetched. Again following the doctor's preferences, an appropriate conversion is determined which may be different from the previous one, and an appropriate graphics package is selected whose output, if necessary, should be converted to a suitable form for the doctor's current device. The graph is then displayed, overlapped with the current trace.