Chapter 1.17
Mobile Portals for Knowledge Management

Hans Lehmann
Victoria University of Wellington, New Zealand

Ulrich Remus
University of Erlangen-Nuremberg, Germany

Stefan Berger
Detecon International GmbH, Germany

INTRODUCTION

More and more people leave their fixed working environment in order to perform their knowledge-intensive tasks at changing locations or while they are on the move. Mobile knowledge workers are often separated from their colleagues, and they have no access to up-to-date knowledge they would have in their offices. Instead, they rely on faxes and messenger services to receive materials from their home bases (Schulte, 1999). In case of time-critical data, this way of communication with their home office is insufficient.

Mobile knowledge management (KM) has been introduced to overcome some of the problems knowledge workers are faced when handling knowledge in a mobile work environment (e.g., Berger, 2004; Grimm, Tazari, & Balfanz, 2002,). The main goal of mKM is to provide mobile access to knowledge management systems (KMS) and other information resources, to generate awareness between mobile and stationary workers by linking them to each other, and to realize mobile KM services that support knowledge workers in dealing with their tasks (see chapter, "A Mobile Portal for Academe: The Example of a German University" in the same book).

So far, most of the off-the-shelf KMS are intended for the use on stationary desktop PCs or laptops with stable network access, and provide just simple access from mobile devices. As KMS are generally handling a huge amount of information (e.g., documents in various formats, multimedia content, etc.) the limitations of (mobile) information and communication technologies (ICTs), like mobile devices such as PDAs and

mobile phones, becomes even more crucial (Hansmann, Merk, Niklous, & Stober, 2001). Mobile devices are usually not equipped with the amount of memory and computational power found in desktop computers; they often provide small displays and limited input capabilities, in comparison to wired networks, wireless networks generally have a lower bandwidth restricting the transfer of large data volumes and due to fading, lost radio coverage, or deficient capacity, wireless networks are often inaccessible for periods of time.

Today, many KMS are implemented as knowledge portals, providing a single point of access to many different information and knowledge sources on the desktop together with a bundle of KM services. In order to realize mobile access to knowledge portals, portal components have to be implemented as mobile portlets. That means that they have to be adapted according to technical restrictions of mobile devices and the user's context.

This contribution identifies requirements for mobile knowledge portals. In particular, it reviews the main characteristics of mobile knowledge portals, which are considered to be the main ICT to support mobile KM. In addition, it outlines an important future issue in mobile knowledge portals: The consideration of location-based information in mobile knowledge portals.

MOBILE KNOWLEDGE PORTALS

Most knowledge management systems (KMS) are implemented as centralized client/server solutions (Maier, 2004) using the portal metaphor. Such knowledge portals provide a single point of access to many different information and knowledge sources on the desktop, together with a bundle of KM services (cf. Collins, 2003; Detlor, 2004), for example, contextualization, semantic search, collaboration, visualization and so forth. The added value of these portals compared to other KM tools is the integration of technologies for storage of, and access to, information and knowledge, with the ones for support of the interaction and collaboration activities in a unique entity (Loutchko & Birnkraut, 2005). Typically, the architecture of knowledge portals can be described with the help of KMS-layers (Figure 1, Maier, 2004).

The first layer includes data and knowledge sources of organizational-internal and external sources. Examples are database systems, data warehouses, enterprise resource planning systems, content and document management systems. The next layer provides intranet and portal infrastructure services as well as groupware services, together with services to extract, transform, and load content from different sources. On the next layer, integration services are necessary to organize and structure knowledge elements according to a taxonomy or ontology.

The core of the architecture consists of a set of knowledge services in order to support discovery, publication, collaboration, and learning. Personalization services are important to provide a more effective access to the large amounts of content, that is, to filter knowledge according to the knowledge needs in a specific situation, and offer this content by a single point of entry (portal). In particular, personalization services, together with mobile access services, become crucial for the use of KMS in mobile environments.

Portals can be either developed individually or by using off-the-shelf portal packages, such as BEA WebLogic, IBM Portal Server, Plumtree Corporate Portal, Hyperwave Information Portal, or SAP Enterprise Portal. Most of these commercial packages can be flexibly customized in order to build up more domain-specific portals by integrating specific portal components (so called "portlets") into a portal platform. Portlets are more or less standardized software components that provide access to various applications and (KM) services, for example, portlets to access enterprise resource planning systems, document management sys-