Mobile Portal Technologies and Business Models

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INTRODUCTION

Mobile portals have become a common entry point to the mobile Internet, and take a number of forms. They may be service provider portals, such as Vodafone's Live! portal (Vodafone, 2006), offering access to both in-house and brokered external services. Alternatively, they may be public pure play sites that provide some kind of managed access to resources using a yellow-pages approach. Good examples of this kind of mobile portal are WordDial (WordDial, 2006) and graBBit (Grabbit, 2006), though they have very different approaches to the way that they provide targeted access to resources, with WordDial using a keyword approach and graBBit modeled on more traditional search engines. As well as mobile and pure play operators, mobile portals are also provided by device manufacturers (e.g., Palm (Palm, 2006)), software companies (e.g., MSN (Microsoft, 2006)) existing Web portal providers (e.g., Yahoo (Yahoo, 2006)), mass media companies (e.g., AOL (AOL, 2006)) and transaction providers (m-commerce sites).

MOBILE PORTAL ADVANTAGES

The advantages that mobile portals have over standard Web portals are in ubiquity, convenience, localization, and personalization. Ubiquity means that the portal can be accessed anywhere, regardless of location. With ever widening coverage by mobile network providers, mobile portals have an increasingly ubiquitous presence. Availability at all times, via mobile devices, provides for convenience, with the ability for users to access portals at the point of need, for example to get up to date information on flight times or traffic conditions. Wireless connectivity is integrated into the mobile phone, whereas alternative ways of connecting to the Internet while traveling, such as accessing wireless or fixed networks, or using publicly available computers, can be difficult and/or expensive to access in many locations. Localization is a specific strength of mobile portals, since they can use location awareness to provide services that are targeted to the user's current locality (e.g., local weather). Location awareness can be supported by a number of technologies, including triangulation from a mobile phone network or the satellite based global positioning system (GPS). Finally, personalization is a key component of mobile portals for two reasons. First, the difficulty of navigation and the small screen size of mobile devices means that it is important to target Web-based material as much as possible. Second, such targeting is easier for subscription type services that are common with mobile phone contracts, where the carrier is likely to be able to gather considerable information about users and construct accurate profiles of their activities and requirements. All of these characteristics are important features in the potential for mobile commerce, which relies on giving the best value-for-time service. Portals that are easily customizable, technically flexible, and contain relevant content are those that are most likely to be successful tools for mobile commerce (Clarke, Flaherty, & Madison, 2003).

MOBILE PORTAL TECHNOLOGIES

The technology of mobile portals is evolving as mobile devices become more sophisticated. Early portals were based on the wireless access protocol (WAP) version 1.0, using the Wireless Markup Language (WML) with very limited user interface features and severe limits on the type of content that could be accessed. In many cases, content was based on a transformation from HyperText Markup Language (HTML) pages, designed for standard Web browsers, into WML pages. These conversions, performed by WAP gateways that linked the mobile device network to the wider Internet, were slow and the content was not optimized for mobile users. Current WAP-based portals take advantage of the improvements in WAP technology that were introduced with version 2.0 (e.g., WAP push and end-to-end security) and more powerful handsets to provide richer interaction and media types. In addition, content is more likely to be tailored especially for mobile devices rather than being converted from HTML, developed either directly in WML or in XHTML-MP (eXtensible HyperText Markup Language – Mobile Profile) which is the evolutionary pathway from WML and is now the recommended markup language for mobile Internet domains (Cremin & Rabin, 2006).

Portals that were developed in the context of second generation (2G) mobile phone networks suffered from slow connection speeds, limiting the range of contents that could

be provided. Portals running over third generation (3G) networks benefit from much faster data transfer speeds, so they can deliver rich multimedia content, such as TV and movie feeds and MP3 downloads. However, despite the market dominance of entertainment content, with the huge popularity of ring tones and screen savers, mobile portal services are not limited to entertainment alone. Some portals also host location based services, for example the provision of MapPoint access via the Vodafone portal in certain territories, and portal-hosted M-Payment services are increasingly popular.

DESIGN ASPECTS OF MOBILE PORTALS

Mobile portals have had to be designed to provide the easiest access to services within the usual constraints of mobile devices, such as limited screen space, varying navigation button layouts on phones from different manufacturers, and lack of a consistent programming platform. Unlike portals designed for the desktop that are usually based around table-like structures containing separate portlets, mobile portals are structured around nested menu lists, often with images, that provide quick scrolling access to services. The initial WAP portal pioneered by Vodafone Live! exemplified the typical style for mobile portals, with a brand header followed by a list of headlines that lead to other pages. Figure 1 shows a top level menu page from Vodafone Live! Although this type of mobile portal design has become a little more sophisticated over time with the move towards larger screens and XHTML-MP markup, the basic principles of using brief headline links and/or small images still apply.

Typical top-level mobile portal menus contain links to services such as news, weather, TV, downloads (games, ring tones, screen savers) and search engines. Mobile portals are not, however, only designed for one way services. One of the more unique features of a mobile portal is the ability to register for alerts, sent via SMS or using push technologies.

Because of the difficulties of configuring connections to the mobile Internet and managing page navigation with limited control keys, mobile carriers have worked with handset manufacturers to provide branded phones that include single key access to the carrier's mobile portal. This makes it easier to access the carrier's own portal but harder to access other portals.

BUSINESS MODELS FOR MOBILE PORTALS

There are three basic business models for mobile portals, which may be used in combination. Either they are based on subscription, payment for individual services or advertising. The role of the mobile network operator in the m-commerce value chain will vary between contexts, but at the most active level the operator will provide the network, the WAP gateway, the mobile portal and also act as an intermediary and trusted third party between the customer and other content and service providers (Tsalgatidou & Veijalainen, 2000).

The first generation of mobile portals, introduced in the late 1990s, had limited success due to factors including cost, limited browser capability and slow transmission speed. However in Japan, NTT DoCoMo's subscription-based I-mode portal showed that it was possible to achieve success in the mobile portal market by developing a large customer base built using youth targeted branding, low costs and suitable technology (CNET News, 2001). A key aspect of success in Japan, as opposed to early failure in Europe, was that DoCoMo successfully integrated the three value chains that comprise mobile telecommunications, the devices, the infrastructure, and the services (Sigurdson, 2001). More

Figure 1. The Vodafone Live! mobile portal (image courtesy of Vodafone New Zealand Ltd.)