Personalizing Navigation Structures in a Mobile Portal*

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1 Introduction

The mobile Internet (epitomized by WAP) has so far failed to meet user expectations. Many factors have been responsible – unreliable early handsets, limited content, slow connections, and poor portal usability. Today, the first 3 of these issues have been largely solved through device and infrastructure improvements but usability remains a problem, limiting the ability of users to locate, and benefit from, wireless content.

The usability problem is that users spend too much time navigating to content through portal menus, a problem that is exacerbated by the fact that users are usually charged for this navigation time. A recent usability study indicates that while the average user expects to be able to access content within 30 seconds, the reality is closer to 150 seconds [1]. The result: today WAP offers users poor value-for-money.

2 Click-Distance & Personalized Navigation

Portal navigation effort, with a mobile handset, can be usefully modeled as *click-distance* – the number of menu *selections* and *scrolls* needed to locate a content item – and our studies indicate that many portals suffer from average click-distances (home page to content items) in excess of 15 to 20. One way to improve the usability of a portal is to optimize the click-distance to content sites. However, this is not possible using conventional portal design techniques because, inevitably, as more content is added to a portal, more menus and navigation structures must be added in order to help the user access this content. This is especially true in the mobile domain because there are severe limitations on the number of options that can be presented on a single menu page – for practical reasons a typical menu must contain less than 10 options.

However, using personalization techniques it is possible to reduce the click-distance of a portal by selectively reordering and promoting menu options in line with a given user's short and long-term preferences. The ClixSmart Navigator system by ChangingWorlds achieves this by using a multi-strategy personalization approach that combines probabilistic and collaborative techniques. A standard deployment architecture is outline in Fig. 1. When a user U selects a menu option O (1), the request is intercepted by the navigator server (2). The server updates (3) and accesses

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(4) U's profile and request the menu page M that corresponds to O (5) from the portal content database. The navigator server then adapts M for U by promoting and reordering its links as appropriate. This newly adapted menu M' is returned through the gateway to user U.

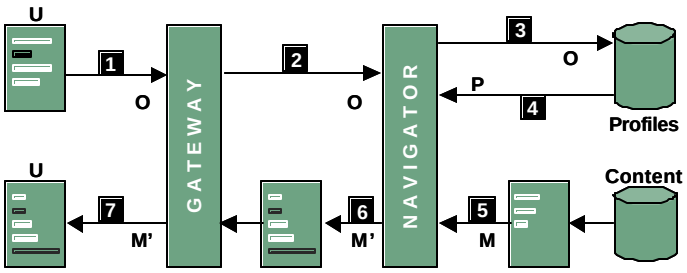

Fig. 1. The ClixSmart Navigator standard deployment architecture and information flow.

3 Discussion

Traditionally, the lion's share of attention, when it comes to personalization, has been directed at content personalization, with methods such as content-based and collaborative filtering proving to be effective at filtering information items according to a user's implicit and explicit preferences. In this position paper, we are emphasizing the important of personalized navigation, which is not concerned with identifying individual items of information (TV programmes, job adverts, news articles) that are relevant to the user, but rather seeks to identify navigation paths through a portal that lead to relevant content services. In this sense, we argue that personalized navigation represents the initial phase of portal personalization – helping users to discover and locate relevant content services – with content personalization playing a critical role once the user has located a particular service of interest.

The ClixSmart Navigator solution has shown click-distance reductions of over 50% with mobile usage increases in excess of 40% for a number of European mobile operators. In particular, the success of its personalized navigation strategy as a means of improving the mobile user experience is highlighted by the fact that these deployments have shown that for every second of navigation time that is saved, users are willing to engage in an additional 3 seconds of content time. In short personalized navigation is now recognized as a key technology for mobile portals going forward.

4 References

1. Ramsey, M. and Nielsen, J. (2000) WAP Usability Report. Neilsen-Norman Group
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