

Mobile Guide

Introduction - The Idea

There are a number of everyday scenarios where providing on the move information to mobile and PDA users can be of tremendous help. Consider such an example in a typical museum. Here the users entering the museum move from one exhibit to the other. On approaching a particular exhibit the user may want to know more about that particular painting or sculpture or may want to share information regarding the same with their peers who also are currently roaming in different parts of the museum. They may wish to bid, buy or create hotlists of particular exhibits they find interesting or search for other similar exhibits in the museum. They may also wish to get directions to reach a particular exhibit from their current location especially in case of large museums. Similar scenario may be found in a real marketplace where customers which to have information regarding particular products or automatically have their purchases registered when they find something interesting at certain product counters. In both these situations users carrying a mobile device or PDA can greatly benefit from installing a simple mobile guide software which would solve all the problems mentioned above. The mobile guide software presented below isn't restricted to a museum alone. Its use can be found across several scenarios as explained further. Also the concept of a mobile guide isn't new but given below is the documentation of a ready-to-deploy marketable idea that I conceptualized initiated as part of an independent project and am currently working on its actual design and implementation.

The Intelligent Mobile Guide - Example Application for a fictitious real-world museum

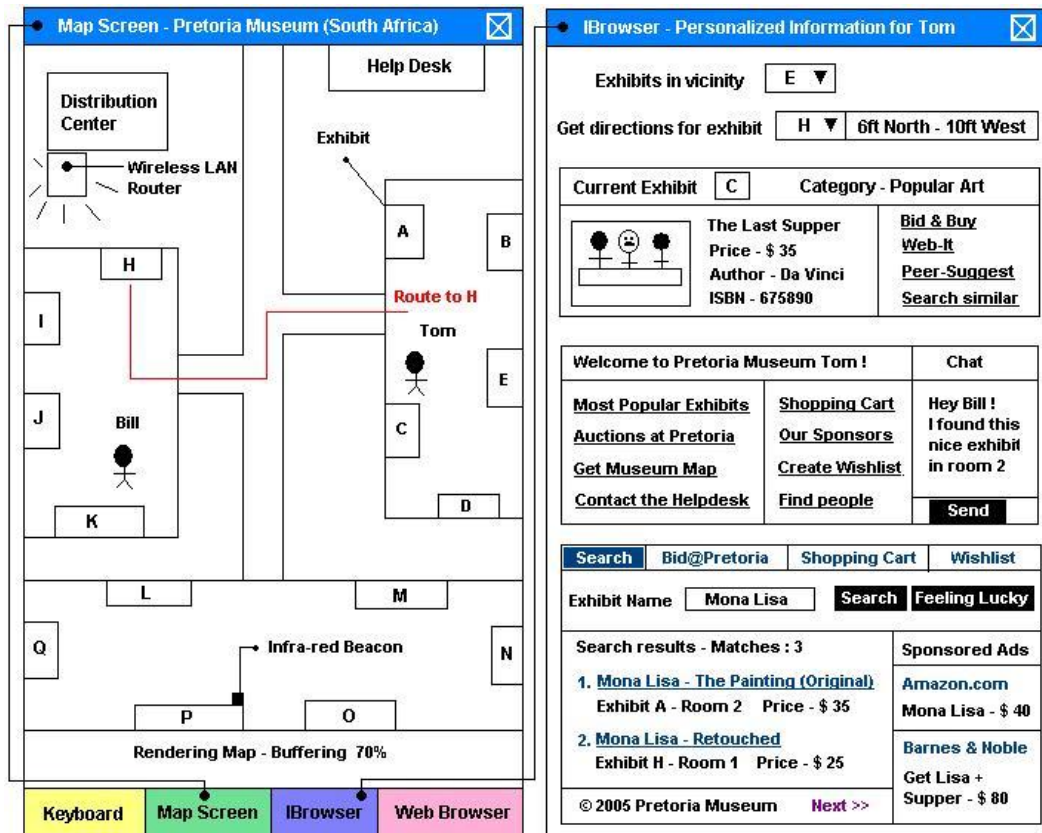


Fig 1 - Split Screen mode - This is how the mobile guide software would look like on a user's PDA or mobile device

The figure shown above simulates how a typical mobile guide software applicable to a real world museum would look like once installed on the end user's mobile device or PDA. The Mobile guide software basically consists of two versions - a Designer version which is used to design maps such as the museum map shown above (Left Screen). This version is mostly purchased by any museum who wants to provide a mobile guide experience to their users. The administrator of the museum uses this version to create a standard format interactive image file of the museum with all the exhibit relevant information such as total number of exhibits, exhibit ISBN number, author, price, location as well as museum services such as Auctions, Helpdesk, Wishlist, Sponsors etc packaged into this single file which is then uploaded on the internet so that the end-users may download this file before coming to the museum or it may be dynamically downloaded by the user when present in the museum itself. The second version of the software is for the end-users and should be purchased by them to load the interactive image file created by the mobile guide designer and be able to receive interactive content as shown in the above figure (Right Screen).

Now let's assume there is a museum called the 'Pretoria Museum' in South Africa which is famous for its rather queer collection of exhibits. Visitors frequent this museum throughout the year and on occasions when there are special exhibitions held. We assume over here that the visitors have either a mobile device or a PDA. Once entered inside the museum, this user comes in the wireless range of a **Distribution Center (DC)** installed in the museum which is connected to an existing wired Internet backbone and provides a wireless LAN IEEE 802.11 coverage throughout the museum. As soon as the DC detects a new visitor to the museum (either manually or automatically) the user's PDA is sent a message welcoming him to the museum. Then instructions to download the museum map are provided to the user. The mobile user may now request for the museum map to be downloaded from the DC (if he does not have one) and to be loaded on his mobile device's Map Screen as shown above (Left Screen). The mobile user is now equipped to receive interactive content broadcasted by the DC and make use of all the museum related services which are embedded in the downloaded file.

As the mobile user moves throughout the museum he comes in the vicinity of different exhibits which have an associated infra-red beacon attached to them. The mobile guide software periodically sends a 'Location discovery message' to this beacon which is forwarded on to the DC. The DC now does a simple mapping of the beacon which sent it the discovery message to form a user location message which is sent back to the mobile user. So the user's current location is now computed as being same as the beacon which sent message to the DC. Remember that the beacon location information was embedded into the file by the museum administrator. This location may be good enough though lacking precision. Having received this message the mobile guide software on the user's mobile device refreshes the user location on the interactive map. Along with service related to tracing a mobile user, the mobile guide screen (Right Screen) now displays different museum services such as getting directions to visit a particular exhibit, bidding and buying the exhibits, finding similar exhibits, getting a list of the most popular exhibits, chatting with peers currently inside the museum as well as searching for particular types of exhibits. **All these services are made available by the DC and these services may vary across different scenarios such as a marketplace where the shoppers want to have their shopping carts updated. Though these services may differ in different contexts, the principle idea remains the same and the underlying map designing or mobile guide software remains homogenous across all of them. However in every context some broadcasting center analogous to the DC of the museum would be required to provide customized services to the mobile users.**

Now whenever the user's mobile device sends request to access a particular service, the DC processes the same against its own backend database and responds by broadcasting information packets containing directions to visit particular exhibits or search results. These are dynamically rendered on the mobile device (Right Screen). Let's take examples of such services. Say a visitor named Tom is currently looking at the Exhibit C. His mobile device does location tracking as mentioned before and also sends a 'Discover exhibits in vicinity' request to the DC through the associated infra-red beacon. The DC responds containing the required information. Next Tom wants to get directions to visit a particular exhibit. In this case he need

not be in the vicinity of any infra-red beacon and so he may request this service directly from the DC which responds with information containing how the route be rendered on the mobile device.

Displaying information of the exhibit C undergoes the similar process as that incurred when discovering exhibits in vicinity, only here the DC has to render more information about a specific exhibit by querying its backend. Now what if Tom finds the exhibit C so interesting that he wants to communicate the same to his peer currently in the museum and having the same mobile guide infrastructure as he. This is made possible through the Chat service which basically streams chat message packets through the DC from Tom to his peer Bill. Having expressed his admiration for a particular exhibit, Tom now wants to bid or buy exhibit C. He does so through the Bid@Pretoria service provided by the museum which is again handled by the DC. Finally Tom can search for a particular exhibit he wants to find in the museum by utilizing the Search service provided by the museum. The DC can decide whether relevant ads should be displayed on the user's screen or not. Tom can also use the embedded Web Browser available with the mobile guide software to look up the internet to find more information regarding a particular type of exhibit that he is interested in. Thus the mobile user does a lot of things with this simple to implement and use mobile guide applicable across different scenarios such as museums, marketplaces, zoos, exhibitions etc.