

The use of portable interactive guides to enhance tourist experience

Carlo Tognoni

Facoltà di Lettere
Università del Piemonte Orientale, Italy
carlo.tognoni@ct2.it

Abstract

This paper compares the different methods to support tourists on site and focalizes on the use of GPS-triggered, multimedia rich PDA and/or iPhone. The experience acquired with the creation of GPS based tour guide for a bird trail in the Italian Alps is described and the features required to an integrated hardware/software system to be productive and efficient are listed.

Keywords: mobile device, interpretive media, GPS based guide

1 Introduction

The following paper is mostly focused on “open space” visits, and namely to natural or archaeological sites, thematic parks, zoos, botanical gardens and historic or art cities. Generally speaking they do not apply to museums, confined within a building and with different requirements and constraints.

There is a wide range of tools that could be used to support visitors on site, such as pamphlets, maps, printed guides, audio guides. Hands on exhibits, educational videos, multimedia kiosks are also available in visitor centres and in addition during the visit the tourist could find panels or other interpretive signs that provide information specific to that location.

In many sites, guides, rangers or volunteers could lead groups of people during the tours, supplying a set of standard information but also answering to occasional questions asked by the visitors, offering much more than simple information, but often supplying the “flavour” of the site, the culture and the mood of the people living there.

These methods make up the bulk of educational or interpretive offerings on which the site managers rely to connect with and educate the visitor; this paper focuses on the use of technology-based interpretive tools to be used on site for these purposes.

2 One medium is not enough: the example of Sentiero Corti

The use of technology based devices allows for delivery of contents such as audio, video and context specific descriptions that otherwise cannot be delivered on site (Sakamura, 2003). The integration of various media has proved to be the most

efficient solution to drive visitors toward the venue and supply them with contents on site that are site-specific and multimedia enabled, and therefore makes sense only on the spot and require a multimedia enabled device to be delivered. The development of Sentiero Corti, a bird trail guide in the Regional Park of Orobie Valtellinesi (Sondrio Province, Lombardy, Northern Italy, www.sentierocorti.it [Dec 2009]) was the test bed for a multimodal content system. The Sentiero Corti is dedicated to Walter Corti, a local ornithologist, and is aimed to communicate the richness of biodiversity that exists on the Alps and the relationships existing between habitats variety and flora and fauna biodiversity. The trail unwinds around a length of nearly 6 km and from an altitude of 1550 m to 2142 m. To help visitors understand the natural value of the area different media were adopted to convey information:

- a printed map, that shows the trail on one side and supplies information about flora, fauna and environments on the other;
- a CD, distributed for free to schools and people that request it. The CD ROM contains a description of the trail, and allows users to view pictures of animals and plants. For each bird species listed the bird song and the audiogram can be accessed;
- a website, that contains nearly the same information available on CD and some additional information that can be easily updated;
- a guide on PDA, that visitors can rent at the start of the trail and use along the path to receive information about the habitats they are crossing. The PDA lets the visitor listen to bird songs and compare them with those actually heard in nature, so that they can identify the singing species. The PDA content is triggered by GPS at specific locations.

3 Key features for a mobile interpretive system

From the Sentiero Corti experience and other implementations done by the author (Tognoni, 2004), some key features emerged as a “must-have” in order to let the use of mobile devices for tourism application evolve from an academic exercise to a viable application that is also economically sound.

- Referencing system (Koopers, 2009). It must be the less intrusive possible both for the location and for the user. This means to avoid panels, signs and antennas to be installed on place – all of these limit the capability to change on the fly the tour and require expensive installations. GPS seems a nearly perfect solution because it is available everywhere at open spaces – except for very local conditions – is totally free, does not require any local installation, is precise enough for practical purposes;
- Freedom of visit. Users should be able to wander around the site without being constrained in specific paths. When they approach a point of interest the system should trigger automatically supplying the relevant information for the location.
- Use of standard media and content. Nowadays most of the information is generated in digital format, or can be easily converted into digital format. The device should be able to use, without changes, standard format such as JPG or GIF pictures, TXT texts, AVI or MPG videos, Flash animations,

MP3 audios and so on. The adoption of standard formats is also a guarantee that migration to different hardware will preserve the contents, that is where the value resides.

- Multimedia capabilities. The use of different media could suit to different learning styles and therefore adopting a multimedia rich content lets you use videos, audios and text to convey the same information to people that have different attitudes.
- Robust and reliable devices. The availability of hardware that is sturdy, to resist the rental stresses, and stable, to guarantee a consistent software environment, is mandatory. The use of consumer grade devices proved to be completely unsatisfactory for many reasons, such as tiny differences in the screen management of different models that required software adjustments, battery duration that is too short, non-replaceable batteries that limit the device lifetime, connectors unsuitable for heavy use.
- Specially designed devices. The consumer grade devices are general purpose devices with a set of controls and buttons that are absolutely not needed for tourism application and that must be disabled and reconfigured every time. They are also shipped with a set of preconfigured software that must be paid for and that is not needed.
- A software system engineered for rapid development of the tour content and easy modification of the same. This reduces cost development and allows easily addition of events, new features or new points of interest.

4 Rent or download?

Two business models can be applied to mobile interpretive system: user owned devices, a model in which the user owns the delivery device and the site manager supplies contents, and rental model, in which the site manager supplies both delivery device and content and rents the devices on site.

The “user owned devices” business model is appealing for many reasons. The wide diffusion of cell phones (<http://epp.eurostat.ec.europa.eu/>, [Dec. 2009]) seems to make them the election device for delivering tourist information to a wide audience. More recent models have extensive multimedia capabilities (Kunz, 2007) and are equipped with GPS receivers, making them location-aware devices. There is no initial investment in hardware by the site manager and all efforts can be focused on tour development.

The use of cell phones however has some drawbacks. The variety of models, functionalities and operating systems limits the actual functions available. Namely multimedia features and smart phones are available only to a subset of potential users. Due to different operating system, tours must be developed on the purpose for each version of OS / model. Moreover, the visitors should be aware of the tour availability before the trip, download the tours beforehand and install them on the phone. This requires a lot of planning and further limits the number of potential user. Alternatively, information can be accessed on the spot through some Web/WAP site, SMS sending or calling a phone number. This puts on the user communication costs

that are directly linked to the use of the service and that therefore act as limiting factor to the use of the service itself. Also, panels and signs are needed to make the visitor aware of the tour opportunity and to supply him with the information needed to access it - with the drawbacks outlined previously.

On the other side the rental model, that is widely applied with audio guides both in museums and open air sites, can use devices made on the purpose for tourism applications. Such a device could be designed with fewer buttons, if any, a user interface mostly defined by software, without software that is not required by the application, a high quality GPS receiver, long lasting batteries easy to recharge and replace. The visitors could pay a fee for the device rental and this makes this model sustainable, even in presence of a substantial initial investment on hardware. These devices can also easily be customized with the venue graphics and logos, and they can host location based advertising, that could become an additional source of revenue.

5 Conclusions: the evolution of portable devices as interpretive media

Portable devices as interpretive media could be instrumental in enhancing the visitors' experience and increase the satisfaction of the visit. Both business models, rent and download, could be applied to achieve this goal. These devices should always be used as companion tools to more traditional communication supports, such as leaflets, maps and web site. This approach could appeal different target audiences and also allows for cross-marketing of the different media.

An important aspect of these systems, beyond the evolution of delivery devices themselves, is the integrated software and hardware system that allows for easy creation and modification of tours – to adapt them to the season, events and the contingencies – and the backward data collection of the user's experience to continuously improve the service.



Fig. 1. Custom made device are a good way to promote the venue and its initiatives, and could act also as advertising spaces.

Waypoint Name	Number of Visits	Average Time	Total Time
Front Street	10	0:02:18	0:23:03
Court Street	11	0:01:46	0:19:27
Church Street	12	0:00:58	0:11:42
Harbor Viewpoint	11	0:02:10	0:23:58
Episcopal Church	11	0:01:12	0:13:15
Bermuda Bistro	6	0:01:21	0:08:09
Mitchell House	8	0:00:24	0:03:12
Old Maid's Lane	5	0:00:37	0:03:06
Somers' Lane	5	0:04:44	0:23:42
World Heritage Center	4	0:00:39	0:02:36

Fig. 2. An example of report on users' behaviour that can be used for market research purposes or to fine tune the tour.

Smart phones and namely the iPhones are the best candidate as user owned devices, because these devices are equipped with GPS, and can also rely on an integrated software platform. The tours can be downloaded and installed from AppleStore for free or for a fee. This solution will appeal iPhone owners that are willing to plan in advance their visit, but it could also foster rental on site for those who forgot to do it beforehand.

The rental solution allows the use of devices made on the purpose for tourism applications that are rented at the site. In art and historic cities the rental point could be hotels or Tourist Offices; at fenced sites, such as botanical gardens or archaeological sites, the ticket office or the entrance. Devices such as GPS Ranger (Rademaker, 2008), developed by BarZ Adventures (Austin, TX, USA) have some of the hardware characteristics that make it suitable for rental, such as high durability, embedded GPS receiver and long lasting replaceable batteries. GPS Ranger works by automatically triggering interpretive content as visitors approach points of interest. The format of interpretive content can vary greatly with the needs of the site, however it often features audio and video and it can include close captioning for the hearing impaired or in languages other than the video voiceover. Visitors rent the device and then are free to walk or drive around the property visiting places that interest them. The device stores information in anonymous format about place visited and the time spent at each of them. When content exists for a specific place the GPS Ranger alerts them with a chime and a video begins to play on the LCD screen. Visitors can also access content on demand using the touch screen.

The back-end software allows for easy changes in the content, and the alignment of even large number of devices is managed automatically by the software system itself. Reports are available that describe time spent at each point of interest and even at silent Points of Interest, where tourist flows can be analyzed in detail for market research purposes.

Well-engineered hardware and an integrated software solution represent the elements that could propel multimedia mobile devices from the pilot stage to a widespread use within the tourism market, to the benefit of both tourist operators and visitors.

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