

Construction of a Web-Based Geographical Information System: The Case of “Ria De Aveiro” Region

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Introduction

The development and modernization of tourism activity has been boosted, in various aspects, due to social, economic and innovation trends in technology, communication activities and transport systems. These factors have contributed to an intensification of new and diversified touristic interests, which have led to the emergence of differentiated and redesign destinations as new players. However, it must be kept in mind that destination development should be guided according to sustainability principles, which take into account both the natural and cultural resources and the well-being of local communities. Granted this balance between product/service and communities, it is important to develop tools that allow and enhance integrated destinations and tourist products management, but at the same time, allow the promotion of those same destinations and products.

Therefore, providing and promoting touristic offer through web-based Geographical Information Systems (GIS), allow the pursuit of two objectives: the provision of tools capable of aiding tourism related activities decision making process; and enabling potential visitors to get an overview, in a geo-referenced context, of touristic resources diversity, products and services that can be discovered when visiting each destination.

Until now, despite internet being considered as “*one of the most influential technologies that have changed traveller behaviour*” (Buhalis & Law, 2008), and tourism as one of the economic activities that mostly use internet (Aldebert, Dang & Longhi, 2011), literature concerning the analysis and evaluation of web based GIS use and interest in tourism information is still scarce

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(Chang & Caneday, 2011). Although, it has been referred by several authors the importance of this tool for the two purposes described before. In this way, Ria de Aveiro web-based Geographical Information System, developed within the scope of PRORia² will be analysed.

The “Ria de Aveiro”, a well outlined and branded tourism region site, situated in Portugal central tourism region, comprises eleven municipalities, all members of CIRA – Comunidade Intermunicipal da Região de Aveiro (Aveiro Region Inter-municipal Community)³. These municipalities: Águeda, Albergaria-a-Velha, Anadia, Aveiro, Estarreja, Ílhavo, Murtosa, Oliveira do Bairro, Ovar, Sever do Vouga and Vagos, cover almost 1700 km² and have a total population of nearly half a million people.

Despite the importance of tourism for this area, it has been verified the inexistence of an integrated database for the whole touristic resources and the lack of strategic planning for tourism activity. Defining a web based GIS could allow a better management of tourism activity, by gathering the information in one common platform that could be available for all entities responsible for tourism management, facilitating the interaction between them and the development of common projects.

This web-based GIS aims to contribute to more sustainable and environmental friendly tourism activities in the “Ria de Aveiro” region, by disseminating, with the aid of technology, the diversity of existing resources, namely the ones linked to coastal communities (fisheries heritage, salt production, among others) as complement to common practices which use paper based communication tools.

GIS may be considered, from an e-tourism point of view, as a service based on geographic location and, in some cases, depending on the correlation that may be established between contents, user and activity, it may also be considered a context aware application. The geographical proximity between resources, and between user and resources, may enable tourists to discover and plan their trip to and around the destination before departure or during the experience.

In the case of the “Ria de Aveiro” GIS the main objectives of its development were:

- The identification, data collection and analysis of touristic resources, products and services available in the region;
- The creation of a common and share database, which include all information collected about the tourism resources, products and services available in the region;
- The creation of a Geographical Information System, capable of aiding promotional actions and sustainable management of tourism activity in the region, and also capable of serving as a tool to support decision making process;

² Tourism Brand Project (axis 4 of PROMAR Programme 2007-2013 - Fisheries Operational Programme 2007/2013), focused on the implementation and promotion of “Ria de Aveiro”

³ <http://www.regiaodeaveiro.pt/PageGen.aspx>

- The creation of a web-based Geographical Information System, making available to tourists a suitable tool to support their trips planning.

This research goes further the literature reviewed since it is focused on the combination of the two purposes referred: the interest and importance of having a tool, accessible to the diverse stakeholders of Ria de Aveiro region, which can contribute for a more effective decision making process and for a better management of tourism in this area; and the importance of this tool for promotion of the area and for potential visitors.

Methods and Materials

The design and implementation of the “Ria de Aveiro” GIS was developed according to a set of objectives established by TCP, a public Portuguese destination management organization, based on the promotion of the region and its resources. Turismo Centro de Portugal (2010) also defined the categories, which resources, products and services would be associated with. These categories were: Cultural and Landscape Touring; Nature; Nautical; Gastronomy & Wine, Sun & Sea, Business and Golf. This information was then discussed within the trans-disciplinary project team and, through a participative design process, was fine-tuned at an initial stage of the project and then reviewed in an iterative manner throughout the remain of the project’s life cycle. Reviews done during the design and implementation phases of the project were due to the fact that trans-disciplinary collaboration was constantly feeding what was underdeveloped with new ideas derived from current trends in e-tourism and the strive to improve the resulting GIS.

GIS development work was done in four different phases:

1. Definition of the transdisciplinary team and discussion and definition of the goal to be met
2. The identification, data collection and analysis of the tourism resources, products and services available in the region according to specific categories established by Tourism Centro de Portugal.
3. Development of the “Ria de Aveiro” Database
4. Development of the “Ria de Aveiro” web-based Geographical Information System

Research and Results

“Ria de Aveiro” web-based GIS, has completed an initial stage of its life cycle with the launching at Lisbon Tourism Fair. The goal established for this project was the development of a tool ready to assist local and regional destination management organizations, entities and authorities (i.e.: TCP, CIRA and the 11 municipalities included in the region) and that can be considered as a first step for the creation of dynamic networks among managers and entrepreneurs (Denicolai, Cioccarelli & Zucchella, 2010).

It is possible to identify a set of main contributions of this project. It is possible an extent analysis of existing resources, products and services in an integrated manner, by consulting the GIS and the database developed. This analysis may also take in to account the spatial distribution and a set of descriptive characteristics of each geo-referenced resource made available. Instead of developing autonomous work, the GIS proposes to serve as an aggregating tool capable of compiling and correlating information about resources scattered throughout the 11 municipalities. The fact that the technological component of the GIS was designed with a clear concern with interoperability issues is also worth pointing out. The municipalities were not asked to re-do their current practices in relation to use of GIS software or even update the version of the software they are currently using for their own municipal GIS.

It is considered that “Ria de Aveiro” web-based GIS may also serve as facilitating tool for a more active public participation in the tourism activity planning decision making process, since it is available to any citizen or stakeholder. Furthermore, the possibility of building our own personal touristic routes in the region, may work as an indirect public participation component, by providing information for local and regional entities and authorities about preferred touristic resources, services and products as a support for future decision-making (evaluation of consumers preferences, consumers quality perception of touristic resources, services and equipment, creation of new tourist routes based on the consumers preferences...)

It is also believed that this GIS, because of its freely used web-based nature, will also assist potential tourists planning to visit or already in “Ria de Aveiro” region, by giving them geo-referenced information about the diversity of existent cultural and natural resources, such as their characteristics, exact location and the means for contacting some of them (i.e.: museums, restaurants, etc). By taking in the variety and amount of resources available in “Ria de Aveiro” region, tourist may also be impelled to plan future visits to the region. The fact that the GIS allows tourists to plan their visit, by selecting resources and places that they intend to visit, and to organise it taking into account the geographical distribution of each point of interest, may spark the interest to return and discover other aspects of the region.

Conclusion and Implications

Biophysical characteristics and natural endogenous potential of “Ria de Aveiro” region, provide competitive and differentiating advantages that may allow sustainable tourism development in there. Furthermore, it is intended that tourism sector should work as a spur for economic and social dynamism in this region, particularly through social strengthening of local communities, who have gradually faced a reduction in their income, and as a result, have seen their quality of life decrease.

Tourism sector has been considered, by responsible entities and authorities, the principal economic activity sector in “Ria de Aveiro” region, existing already a strong commitment to fostering and promoting tourism sector. This can only be achieved by collaboration efforts capable

of providing a region wide strategy supported by tools shared by all local and regional authorities, destination management organizations, stakeholders and even minor sized entrepreneurs. Compiling all the tourism resources in a common shared database, built in a participative manner, is just one of the steps being taken in the right direction. Using web-based GIS tool will hopefully improve conditions for a better integration of environmental concerns related with the design of tourism strategies at a macro and micro level. Furthermore the information available on the web-based GIS, accessible to the diverse stakeholders of this area (entities, authorities, economic stakeholders and communities) is expected to strengthen the development of integrated sustainable tourism strategies and also promote public participation in territory and resource conservation planning and management decision-making processes.

Despite the work already done on the GIS, it is believed there is still room for additional research and development in areas linked to its use on mobile devices and further developments related with the adoption of participative activities through social media.

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