Intelligent Decision-Support Systems for E-Tourism: Using SPETA II as a Knowledge Management Platform for DMOs and E-Tourism Service Providers

Ángel García-Crespo, Universidad Carlos III de Madrid, Spain
Ricardo Colomo-Palacios, Universidad Carlos III de Madrid, Spain
Juan Miguel Gómez-Berbís, Universidad Carlos III de Madrid, Spain
Javier Chamizo, Universidad Carlos III de Madrid, Spain
Ismael Rivera, National University of Ireland, Ireland

ABSTRACT

The Internet has disrupted traditional tourism in which a promising landscape of intelligent service provision has erupted by applying a new lattice of cutting-edge technologies. Thus, the different actors of the tourist services are in a new environment and they should operate in a coordinated manner to increase the value of tourism, to keep current tourists and attract new ones. One of the major players of this technological disruption are Semantic Technologies, which have profited from the combined use of pervasive elements and recommender systems to bring added value to tourist actors. Based on previous works, this article presents a new module that enables SPETA II to act as a recommender not only for tourists, but to destination management organizations and tourist service providers. Searches, decisions and preferences of tourists are used to “pull” tourist service providers and destination management organizations to create and adapt services based on new recommendations.

Keywords: Decision Support System, E-Tourism, Recommendation Systems, Semantic Web

1. INTRODUCTION

With roughly 11% of the world total employment or GDP, tourism is often presented as the first worldwide industry and Europe is by far the first tourist continent (Longhi, 2007). Bigger than in any other Top-5 European economies, the tourism industry is responsible for almost 12% of Gross National Product in Spain, and in several areas of this country more than a...
third of regional jobs and incomes stem from this activity. Additionally, in a rapidly evolving and changing society, in which the internet is becoming crucial, tourism could not avoid taking part in this revolution. E-Tourism can be seen as the digitalization of all the processes and value chains in the tourism, travel, hospitality and catering industries that enable organization to maximize their efficiency and effectiveness (Buhalis, 2003). Increasingly, ICTs play a critical role for the competitiveness of tourism organizations and destinations as well as for the entire industry as a whole (UNWTO, 2001).

Developments in search engines, carrying capacity and speed of networks have influenced the number of travelers around the world that use technologies for planning and experiencing their travels (Buhalis & Law, 2008).

The globalization of Internet in the mid 1990s, and its subsequent reinvention as the Social Web or Web 2.0 (O’Reilly, 2005), have lead to a scenario where the improvement of various e-tourism aspects has been amplified. For example, those dedicated to providing a better user experience through touristic routes scheduling and planning. Thus, in the context of Web 2.0, globalization and participation have opened up infinite opportunities for exploiting the user’s network contribution, by recommending particular preferences regarding tourism, and the opinion comparison possibilities in a typical Web 2.0 context. The emergence of Web 2.0 or Travel 2.0 brings together the concept of social networking/virtual communities and applies it to the tourism industry (Buhalis & Law, 2008).

SPETA (García-Crespo et al., 2009a) is a tool created for exploiting the information exposed by user preferences, based on similarities with a current user’s social network profile, as well as the contextual information extracted from the user’s location, determined by the user’s mobile. In this article we analyze in deep the new capabilities of SPETA II to use Context Awareness in a semantic environment as a tool for decision support and decision aid in the context of tourists, service providers and destination management organizations (DMOs).

The remainder of the article is organized as follows. In Section 2 estate of the art of technologies included in SPETA II is outlined. Section 3 discusses the features, the underlying architecture of SPETA II. Section 4 pictures a use case for the use of SPETA II data as a tool for decision support in the context of DMOs. Lastly, Section 5 presents the principal conclusions of the study, and some suggestions for resolving the problems encountered are outlined, as well as proposals for future research.

2. STATE OF THE ART

Tourism destinations are probably one of the most difficult products to market (Palmer, 2005). Buhalis (1998) pointed out that the use of Internet in the tourism industry gives access to a great number of people, as well as offers the opportunity to develop closer relationships with customers. Internet enables consumers to communicate with organizations on a 24 hours, 365 days a year basis and also it enables organizations to implement Customer Relationship Management (CRM) programs enhancing the opportunities for interaction and a better understanding of both sides.

This vision of CRM is an enabler for any interaction with tourism. The first attempts to bring the two worlds are produced from the standpoint of integration between Web platforms and legacy systems such as CRM and back-office Enterprise resource planning (ERP) (Joo, 2002). Thus, according to Beldona et al. (2005), for the managers of airlines and car rentals is a necessary integration of customer relationship management tools on their websites. This is a new integration opportunity. That’s why, according to Buhalis (2004), airlines have been investing in CRM programs in order to improve their direct communication and to manage their loyalty clubs. There have been several studies that employ cutting-edge technologies in areas relating to the use of CRM in the airline market, to prevent customer churn in the airline markets (Liou, 2009).
Discrepancies and Analogies in Artificial Intelligence and Engineering Design Approaches in Addressing Collaborative Decision-Making
www.igi-global.com/article/discrepancies-analogies-artificial-intelligence-engineering/53812?camid=4v1a

An Agent-Based Knowledge Management Framework for Marketing-Mix Decision Making
www.igi-global.com/article/an-agent-based-knowledge-management-framework-for-marketing-mix-decision-making/94664?camid=4v1a