

Chapter 4.9

Applying Semantic Web to E-Tourism

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ABSTRACT

Traditional E-Tourism applications store data internally in a form that is not interoperable with similar systems. Hence, tourist agents spend plenty of time updating data about vacation packages in order to provide good service to their clients. On the other hand, their clients spend plenty of time searching for the ‘perfect’ vacation package as the data about tourist offers are not integrated and are available from different spots on the Web. We developed Travel Guides - a prototype system for tourism management to illustrate how semantic web technologies combined with traditional E-Tourism applications: a.) help integration of tourism sources dispersed on the Web b) enable creating sophisticated user profiles. Maintaining quality user profiles enables system personalization and adaptivity of the content shown to the user. The core of this system is in ontologies

– they enable machine readable and machine understandable representation of the data and more importantly reasoning.

INTRODUCTION

A mandatory step on the way to the desired vacation destination is usually contacting tourist agencies. Presentations of tourist destinations on the Web make a huge amount of data. These data are accessible to individuals through the official presentations of the tourist agencies, cities, municipalities, sport alliances, etc. These sites are available to everyone, but still, the problem is to find useful information without wasting time. On the other hand, plenty of systems on the Web are maintained regularly to provide tourists with up-to-date information. These systems require a lot of efforts from humans - especially in travel

agencies where they want to offer tourists a good service.

We present Travel Guides—a prototype system that is combining Semantic Web technologies with those used in mainstream applications (cp. Djuric, Devedzic & Gasevic, 2007) in order to enable data exchange between different E-Tourism systems and thus:

- Ease the process of maintaining the systems for tourist agencies
- Ease the process of searching for perfect vacation packages for tourists

The core of Travel Guides system is in ontologies. We have developed domain ontology for tourism and described the most important design principles in this chapter.

As ontologies enable presenting data in a machine-readable form thus offering easy exchange of data between different applications, this would lead to increased interoperability and decreased efforts tourist agents make to update the data in their systems. To illustrate increased interoperability we initialized our knowledge base using data imported from some other system. We built an environment to enable transferring segments of any knowledge base to the other by selecting some criteria - this transfer is possible even if the knowledge bases rely on different ontologies.

Ontology-aware systems provide the possibility to perform semantic search – the user can search the destinations covered by Travel Guides using several criteria related to travelling (e.g., accommodation rating, budget, activities and interests: concerts, clubbing, art, sports, shopping, etc.). For even more sophisticated search results we introduce user profiles created based on data that system possesses about the user. These data are analysed by a reasoner, and the heuristics is residing inside the ontology.

The chapter is organized as follows: in next section we describe different systems that are developed in the area of tourism which use semantic

web technologies. In the central section we first discuss problems that are present in existing E-Tourism systems, and then describe how we solve some of these problems with Travel Guides: we give details of the design of the domain ontology, the creation of the knowledge base and finally system architecture. To illustrate Travel Guides environment we give an example of using this system by providing some screenshots. Finally, we conclude and give the ideas of future work and also future research directions in the field.

BACKGROUND

E-Tourism comprises electronic services which include (Aichholzer, Spitzenberger & Winkler, 2003):

- Information Services (IS), e.g. destination, hotel information.
- Communication Services (CS), e.g. discussion forums, blogs.
- Transaction Services (TS), e.g. booking, payment.

Among these three services *Information Services* are the most present on the Web. Hotels usually have their Web sites with details about the type of accommodation, location, and contact information. Some of these Web sites even offer *Transaction Services* so that it is possible to access the prices and availability of the accommodation for the requested period and perform booking and payment.

Transaction Services are usually concentrated on sites of Web tourist agencies such as Expedia, Travelocity, Lastminute, etc. These Websites sometimes include *Communication Services* in the form of forums where people who visited hotels give their opinion and reviews. With emerging popularity of social web applications many sites specialize in CS only (e.g., www.43places.com).

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