Chapter 2.28
A Framework for Ontology-Based Tourism Application Generator

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ABSTRACT

This chapter provides an overview of tourism ontology and how it can be used for developing e-tourism applications. The Semantic Web is the next generation Web; it uses background knowledge captured as an ontology and stored in machine-processable and interpretable form. Ontologies form the core of the Semantic Web and can be used to develop intelligent applications. However, generating applications based on ontology still remains a challenging task. This chapter presents a framework that provides a systematic process for developing intelligent e-tourism applications by using a tourism ontology.

INTRODUCTION

Tourism is one of the most successful and dynamic industries in the world, and it is constantly evolving because of technological advancements. Information technology is being used to enhance tourism services such as travel bookings, itinerary planning, destination marketing, and information sharing. These services use dynamic Web applications.

The current tourism applications rely on static information sources such as Web sites to create tourism products and services. These applications lack intelligence; for example, an itinerary planner in the current scenario will allow the tourist to make bookings, but it cannot suggest an itinerary based on the travellers preferences. A Semantic Web application using an ontology, generic profiling, and semi-structured query tools can overcome the technical limitations of the current systems, and help build intelligent e-tourism tools, or applications.

This chapter discusses the purpose of developing a tourism ontology and proposes a model to develop intelligent tourism applications based on the same. The second section presents the background knowledge, followed by a proposed model for developing e-tourism applications, the following section demonstrates the working of an itinerary planner, and we finish with the conclusions.

The main objective of this chapter is to present a framework for developing ontology based

e-tourism applications. The specific foci of the chapter are:

- To provide an understanding of the Semantic Web and ontologies
- To introduce various existing travel ontologies and applications based on the same
- To describe a process model for developing e-tourism applications
- To present a case study using an intelligent itinerary planner

BACKGROUND

Semantic Web

The Semantic Web was thought up by Tim Berners-Lee as a mesh of information linked up in such a way so as to be easily processable by machines. It is not intended to be read by people, as it describes relationships between data that software will interpret (Palmer, 2001). Figure 1 represents the Semantic Web stack which has a layered architecture, it is based on a hierarchy of languages, each language both exploiting the features, and extending the capabilities of the layers below (Butler, 2003). A brief introduction to the Semantic Web layers is presented in the following:

- **Uniform resource identifier (URI):** The Web naming and addressing convention, like the strings starting with "http" or "ftp"; they are short strings used to identify resources on the Web. Anyone can create new URIs. Example: http://melba.vu.edu.au/roopa.txt.
- **Unicode:** A replacement for the older ASCII code and can cope with multiple languages. It is a 16-bit code that can be used to represent the characters in most of the world's scripts.
- **Extensible Markup Language (XML):** A standard format for serializing data using tags; XML file can contain data like a database, it is derived from Standard Generalized Markup Language (SGML) and is somewhat similar to Hypertext Markup Language (HTML). XML schema is a schema language used for describing XML data as well-defined schemas or data models. XML namespaces (NS) is an extension to XML for managing a collection of names identified by URIs.

Figure 1. The Semantic Web stack, and its layers covered in this chapter