

## Chapter 2

# Ontology-Based Open Tourism Data Integration Framework: Trip Planning Platform

**Imadeddine Mountasser**

*Moulay Ismaïl University, Morocco*

**Brahim Ouhbi**

*Moulay Ismaïl University, Morocco*

**Ferdaous Hdioud**

 <https://orcid.org/0000-0002-8870-2386>

*Sidi Mohamed Ben Abdellah University, Morocco*

**Bouchra Frikh**

*Sidi Mohamed Ben Abdellah University, Morocco*

### ABSTRACT

*Tourism is an information-intensive industry that requires the interconnection of the stakeholders to make strategic decisions for both tourism organizations and tourists. For instance, trip planning as a high-engagement, time and effort-consuming decision-making process, allows choosing the most suitable travel destination, mode, and activities. Tourists often need a considerable amount of information to develop a travel plan and to build expectations for their trip. Therefore, they need a technological platform on which information relating to tourism activities could be interoperated to respond to the pre-trip tourists' information sourcing behavior. In contrast, given the substantial number of actors providing open data in the field of tourism, tourism service providers aim to explore its significant potentials for sustainable tourism development. Thus, this chapter investigates the capacity to build a centralized information platform using diverse open data sources to support travelers during their trip planning by providing more prominent and better-tailored information.*

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## INTRODUCTION

The tourism industry thrives on information (Benckendorff, Sheldon, & Fesenmaier, 2014). Tourism stakeholders including tourism service providers, governments, local communities and tourists, increasingly seek for new ways to enhance decision-making and opportunities for destinations competitiveness and innovations (Hjalager & Nordin, 2011; Irudeen & Samaraweera, 2013; Jafari, 2001). In fact, smart tourism destinations claim stakeholders to inter-operate through centralized technological platforms to ensure the tourism-related information collection and exchange which enriches tourism experiences (Buhalis & Amaranggana, 2015; Gretzel, Werthner, Koo, & Lamsfus, 2015). Thus, the process is heavily contingent upon the availability of information integration platforms that enable multiple visualizations in a common direction (Gretzel, Sigala, Xiang, & Koo, 2015).

Certainly, and from travelers' point of view, destination-specific information assists them in the decision-making process and enables them to acquire additional and detailed knowledge to reduce their cognitive dissonance and their perception of risk and uncertainty (Quintal, Lee, & Soutar, 2010; Ross & Bettman, 1979), and to build their expectations for the upcoming trip (Gretzel, Fesenmaier, & O'Leary, 2005). In fact, trip planning is considered as a high-engagement decision-making process, inasmuch as it includes various levels of implications, large time spent planning and several decisions that must be made before traveling (Li, Law, Vu, Rong, & Zhao, 2015a). It may depend on trip associates (For example alone, couple, family with children) and varies given trip modes (annual family trip, short trip, long trip). Also, the planning can be made according to traveler preferences and expectations (Michopoulou & Buhalis, 2013), travel fees or other's past experience (Pantano, Priporas, & Stylos, 2017). Indeed, choosing the most suitable travel destination, mode and activities remain a time and effort consuming process (Bieger & Laesser, 2004; Choi, Lehto, & O'Leary, 2007), especially with the overwhelming amount of information which the travelers are overexposed to (Li, Law, Vu, Rong, & Zhao, 2015b).

As a consequence, tourism service providers are starting adapting their targeting and advertising strategies to meet with the needs, expectations and desires of travelers, in such a way to improve the competitiveness of their destinations. They benefit from the recent advances in information technologies, the Internet and the technological development of services, to build intelligent systems aiming to support travelers during their trip planning, by providing more prominent and better-tailored information.

All things considered, this chapter explores the concept of Open Data in the tourism context and investigates the capacity of different stakeholders to work together through their Open Data for better, smarter and strategic operational decisions. For that, the authors demonstrate the capabilities, to which an Open Data integration strategy may provide to develop applications able to support tourists for their travel planning scenarios (destinations and services) and to assist tourism service providers with their targeting and advertising strategies. Hence, the significance of this study affects not only the tourism industry, as a way to join government agencies in their strategic plan to promote the re-use of touristic Open Data (See Figure 1) in the development of smart tourist destinations, but also incites the academics, by providing a good foundation to explore the great opportunities and potentials of using Open Data in various fields.

Obviously, in tourism industry, different large-scale data in both structured and unstructured formats are generated, gathered and stored, opening thus a new age for innovation, productivity growth and competition (Kambatla, Kollias, Kumar, & Grama, 2014). Specifically, several valuable data sources can be considered: Social networks platforms that incorporate users' interactions, notably user-generated content, deployed smart objects (sensors) in an Internet of Things (IoT) infrastructure and Open Data

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