

OpenTravel Implementation Guide

Executive Summary

OpenTravel Alliance
1740 Massachusetts Avenue
Boxborough, MA 01719 USA
+1 978 263 7606

Email: info@opentravel.org Web: www.opentravel.org

> VERSION 1.2 MARCH 2010

Introduction

The OpenTravel Alliance (OpenTravel) is a member-funded, nonprofit organization formed in May 1999 by major airlines, hoteliers, car rental companies, and companies that provide distribution and technology systems to the travel industry. OpenTravel's primary activity is to develop and maintain a library of Extensible Markup Language (XML) schemas for use by the travel industry. These schemas constitute the OpenTravel XML specification, which is based on the World Wide Web Consortium (W3C) XML Schema standard.

The purpose of this implementation guide is to provide, in a single document, information that an implementer of the OpenTravel specification can use to more easily build software systems that are interoperable with other travel systems. The guide should also be useful for analysts who need to understand how to use the OpenTravel specification. In addition, it will help promote the adoption of the specification by members who have never implemented XML schemas or who are just becoming involved with OpenTravel.

The guide has three sections. Section 1 presents some background information about OpenTravel and its activities and processes. It then provides some basic introductory material on XML and XML schemas.

Section 2 describes the architecture of the OpenTravel specification. Specifically, this section describes the XML schema architecture (schema modularity and the request and response model) upon which the OpenTravel specification is based, and it describes supporting mechanisms such as OpenTravel code lists.

Section 3 explains how to use the OpenTravel specification to build travel systems. Specifically, this section describes messaging options available to implementers of the OpenTravel specification and provides guidance on how to describe and expose web services, and discusses XML binding tools—the programs that automatically create pieces of software from XML schemas.

This document will be amended and expanded on an ongoing basis to address other topics relevant to the implementation and use of OpenTravel schemas.

Acknowledgements

OpenTravel's success as an organization is the result of the commitment of its member companies, and their willingness to provide resources, to realize the vision of a standard specification that enables richer interoperability between travel trading partners and ultimately a better traveler experience.

Several individuals from member companies contributed to this publication. OpenTravel would like to recognize them and acknowledge the time, effort and expertise they provided.

Stephen Adkins, The Rubicon Group

Sandy Angel, Marriott International

Kevin Camenzuli, Avis Budget Group

Gee Chia, IBM

Adrianna Colbath, SITA

Allison Danziger, US Airways

Jordan Digby, Viator

Lisa Fues, Marriott International

Paula Heilig, Worldspan

Ron Kleinman, Sun Microsystems

John Lambe, OpenJaw Technologies

Mansour Rezaei Mazinani, SITA

Becky McGee, Hertz

David Morley, Marriott International

Kajsa Palmberg, Amadeus

John Ramos-Yeo, EDS

Chuck Thackston, Worldspan

John Turato, Avis Budget Group

Tony Williams, Travel Technology Initiative

Acknowledgements

OpenTravel would like to thank those member companies who have provided funds for this project as participants in OpenTravel's Sponsorship Program:











Table of Contents

Section I— The Open Ira	/ei Alliance
1.1 Mission and Object	tives
1.2 Organizational Str	ucture
1.3 Key Activities	
1.4 Specification Relea	se Process
1.5 Extensible Markup	Language
1.6 XML Schemas	
Section 2— General Func	tional Implementation
2.1 OpenTravel Schem	a Design Best Practices
	tecture
2.2.1 Message-Lev	vel XML Schemas
2.2.2 Function-Spe	ecific XML Schemas
2.2.3 Industry Cor	nmon Types XML Schemas
2.2.4 Common Typ	oes XML Schemas
2.2.5 Simple Type:	s XML Schema
2.3 Supporting Archite	cture
2.3.1 Namespaces	
2.3.2 File Naming.	
2.3.3 Enumeration	s and Code Lists
2.3.4 Success/War	nings/Errors
2.4 Message Exchange	Patterns
2.5 Generic Message F	unctionality
Section 3— General Tech	nical Implementation
3.1 Getting Started	
_	quirements
3.2.1 Payload Trar	saction Management
	nance
3.2.3 Message Tra	nsport
3.2.4 SOAP Messa	ging
3.2.5 HTTP Messag	ging
3.2.6 Web Service	Description
3.2.7 Authentication	on
3.2.8 Web Service	Reliable Messaging
3.3 Additional Non-fun	ctional Requirements
	agement
	Management
	and Asynchronous Messaging
3.3.4 Synchronous	Messaging
3.3.5 Asynchronou	is Messaging
=	

3.3.6 Transport Security	103
3.3.7 Payload Security	104
3.3.8 Message Integrity	104
3.3.9 Message Encryption	104
3.3.10 Authentication	104
3.3.11 Authorization	104
3.3.12 Security Policies (per process)	105
3.3.13 Quality of Service	105
3.3.14 Guaranteed Delivery	105
3.3.15 Message Priority	106
3.3.16 Message Lifetime	106
3.3.17 Flow Control	106
3.3.18 Message Bundling	107
3.3.19 Service-Level Agreements	107
XML Data Binding	107
3.4.1 Overview	107
3.4.2 Design Considerations	109
3.4.3 Tools Available	109
Other Resources	111
3.5.1 The OpenTravel Forum	111
3.5.2 OpenTravel Message Users Guide	111
3.5.3 Online XML Schemas	112
3.5.4 OpenTravel Model Viewer	112
3.5.5 OpenTravel Webinars	112
	3.3.8 Message Integrity 3.3.9 Message Encryption 3.3.10 Authentication 3.3.11 Authorization 3.3.12 Security Policies (per process) 3.3.13 Quality of Service 3.3.14 Guaranteed Delivery 3.3.15 Message Priority 3.3.16 Message Lifetime 3.3.17 Flow Control 3.3.18 Message Bundling 3.3.19 Service-Level Agreements XML Data Binding 3.4.1 Overview 3.4.2 Design Considerations 3.4.3 Tools Available Other Resources 3.5.1 The OpenTravel Forum 3.5.2 OpenTravel Message Users Guide 3.5.3 Online XML Schemas 3.5.4 OpenTravel Model Viewer

Selected Figures

- Figure 1-3. OpenTravel Release Process
- Figure 2-1. OpenTravel XML Schema Hierarchy
- Figure 2-2. OpenTravel XML Schema Categories
- Figure 2-7. OpenTravel Response Message Structure
- Figure 2-9. Notif Message Exchange Pattern
- Figure 3-1. Implementation Procedures
- Figure 3-5. Skeleton SOAP Request
- Figure 3-10. SOAP RPC with Attachment
- Figure 3-13. WSDL Document/Literal Binding Example
- Figure 3-23. OpenTravel SOAP Message with WS-Security Token
- Figure 3-25. Encrypted OpenTravel Sample SOAP Message
- Figure 3-30. Consolidated WSDL (Interface and Binding)
- Figure 3-33. OpenTravel Message Using SOAP without Authentication
- Figure 3-35. WS-RM and WS-* integration for reliable messaging solution
- Figure 3-48. XML Data Binding

About the OpenTravel Implementation Guide

The full *OpenTravel Implementation Guide*, written by OpenTravel staff and members, is available free of charge to OpenTravel members only. For access to the document, please visit the OpenTravel Site at http://www.opentravel.org/, or the OpenTravel wiki at http://wiki.opentravel.org/index.php/Main_Page. Both sites require OpenTravel approval for access.

About OpenTravel

The OpenTravel Alliance is passionate about solving the problems inherent with connecting multiple systems within the complex travel distribution arena.

OpenTravel's mission is to engineer specifications that make data transmission flow smoothly throughout travel, tourism and hospitality. OpenTravel creates, expands and drives adoption of open universal data specifications, including but not limited to the use of XML, for the electronic exchange of business information among all sectors of the travel industry.

OpenTravel is comprised of companies representing airlines, car rental firms, hotels, cruise lines, railways, leisure suppliers, service providers, tour operators, travel agencies, solutions providers, technology companies and distributors. Tens of thousands of OpenTravel message structures are in use, carrying tens of millions of messages between trading partners every day.

OpenTravel Alliance 1740 Massachusetts Avenue Boxborough, MA 01719 USA +1 978 263 7606

Email: info@opentravel.org Web: www.opentravel.org

 $\ ^{\odot}$ 2010, OpenTravel Alliance. All rights reserved. OpenTravel is a trademark of the OpenTravel Alliance.

The OpenTravel Alliance is a corporation organized and operating under the laws of the United States. This document is provided free of charge to OpenTravel members. OpenTravel is the sole owner and licensor of the information provided herein, and expressly and explicitly prohibits reproduction, unauthorized distribution in any format and/or other misuse of its contents. OpenTravel reserves the right to prosecute those who violate this prohibition to the fullest extent of the law.