



OpenTravel Implementation Guide

Executive Summary

VERSION 1.1
JUNE 2009

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, provides guidance on how to describe and expose web services and on how flattened schemas might be used, 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 1— The OpenTravel Alliance.....	Error! Bookmark not defined.
1.1.1 Mission and Objectives.....	Error! Bookmark not defined.
1.1.2 Organizational Structure	Error! Bookmark not defined.
1.1.3 Key Activities.....	Error! Bookmark not defined.
1.1.4 Specification Release Process.....	Error! Bookmark not defined.
1.2 EXTENSIBLE MARKUP LANGUAGE.....	ERROR! BOOKMARK NOT DEFINED.
1.3 XML SCHEMAS.....	ERROR! BOOKMARK NOT DEFINED.
Section 2— General Functional Implementation	Error! Bookmark not defined.
2.1 OPENTRAVEL SCHEMA DESIGN BEST PRACTICES	ERROR! BOOKMARK NOT DEFINED.
2.2 XML SCHEMA ARCHITECTURE.....	ERROR! BOOKMARK NOT DEFINED.
2.2.1 Message-Level XML Schemas.....	Error! Bookmark not defined.
2.2.2 Function-Specific XML Schemas	Error! Bookmark not defined.
2.2.3 Industry Common Types XML Schemas	Error! Bookmark not defined.
2.2.4 Common Types XML Schemas	Error! Bookmark not defined.
2.2.5 Simple Types XML Schema.....	Error! Bookmark not defined.
2.3 SUPPORTING ARCHITECTURE	ERROR! BOOKMARK NOT DEFINED.
2.3.1 Namespaces	Error! Bookmark not defined.
2.3.2 File Naming.....	Error! Bookmark not defined.
2.3.3 Enumerations and Code Lists	Error! Bookmark not defined.
2.3.4 Success/Warnings/Errors	Error! Bookmark not defined.
2.4 MESSAGE EXCHANGE PATTERNS.....	ERROR! BOOKMARK NOT DEFINED.
2.5 GENERIC MESSAGE FUNCTIONALITY	ERROR! BOOKMARK NOT DEFINED.
Section 3— General Technical Implementation	Error! Bookmark not defined.
3.1 GETTING STARTED	ERROR! BOOKMARK NOT DEFINED.
3.2 NON-FUNCTIONAL REQUIREMENTS.....	ERROR! BOOKMARK NOT DEFINED.
3.2.1 Payload Transaction Management	Error! Bookmark not defined.
3.2.2 State Maintenance	Error! Bookmark not defined.
3.2.3 Message Transport.....	Error! Bookmark not defined.
3.2.4 SOAP Messaging	Error! Bookmark not defined.
3.2.5 HTTP Messaging.....	Error! Bookmark not defined.
3.2.6 Web Service Description.....	Error! Bookmark not defined.
3.2.7 Authentication	Error! Bookmark not defined.
3.2.8 Web Service Reliable Messaging ..	Error! Bookmark not defined.
3.3 ADDITIONAL NON-FUNCTIONAL REQUIREMENTS..	ERROR! BOOKMARK NOT DEFINED.

3.3.1 Session Management.....	Error! Bookmark not defined.
3.3.2 Connection Management.....	Error! Bookmark not defined.
3.3.3 Synchronous and Asynchronous Messaging.....	Error! Bookmark not defined.
3.3.4 Synchronous Messaging	Error! Bookmark not defined.
3.3.5 Asynchronous Messaging	Error! Bookmark not defined.
3.3.6 Transport Security	Error! Bookmark not defined.
3.3.7 Payload Security	Error! Bookmark not defined.
3.3.8 Message Integrity.....	Error! Bookmark not defined.
3.3.9 Message Encryption.....	Error! Bookmark not defined.
3.3.10 Authentication	Error! Bookmark not defined.
3.3.11 Authorization	Error! Bookmark not defined.
3.3.12 Security Policies (per process) ..	Error! Bookmark not defined.
3.3.13 Quality of Service	Error! Bookmark not defined.
3.3.14 Guaranteed Delivery.....	Error! Bookmark not defined.
3.3.15 Message Priority	Error! Bookmark not defined.
3.3.16 Message Lifetime	Error! Bookmark not defined.
3.3.17 Flow Control.....	Error! Bookmark not defined.
3.3.18 Message Bundling	Error! Bookmark not defined.
3.3.19 Service-Level Agreements	Error! Bookmark not defined.
3.4 XML DATA BINDING	ERROR! BOOKMARK NOT DEFINED.
3.4.1 Overview.....	Error! Bookmark not defined.
3.4.2 Design Considerations.....	Error! Bookmark not defined.
3.4.3 Tools Available.....	Error! Bookmark not defined.
3.5 OTHER RESOURCES	ERROR! BOOKMARK NOT DEFINED.
3.5.1 Flattened XML Schemas.....	Error! Bookmark not defined.
3.5.2 OpenTravel Implementers Forum.....	Error! Bookmark not defined.
3.5.3 Online XML Schemas.....	Error! Bookmark not defined.
3.5.4 OpenTravel Model Viewer	Error! Bookmark not defined.

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 3035. 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 Member Site at <http://forum.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

1255 23rd Street NW, Suite 200

Washington, DC 20037 USA

+1 202 521 6777

Email: info@opentravel.org

Web: www.opentravel.org

© 2009, 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.