ATIS-0410002-0032

Unified Ordering Model (UOM)

Volume II - Analysis

For Access Service Ordering Guidelines (ASOG)

Version 57

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Unified Ordering Model (UOM) – Volume II - Analysis

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SUMMARY OF CHANGES
ASOG V57

This issue of the Unified Ordering Model (UOM) – **Volume II** Analysis provides the analysis and details to support the Access Service Ordering Guidelines (ASOG) and the Unified Ordering Model – Volume I Business Requirements for Version 57. Changes to this document have been made in support of the following issues:

3602, 3606, 3609

The following issues went into Final Closure; however they resulted in no impact to the contents of this document:

3604, 3605, 3610

The following issues were Withdrawn:

3575

Global Changes

- Change all ASOG 56 to ASOG 57; Version 56 to Version 57; Issue 31 to Issue 32
- Change ATIS document number from ATIS-0410002-0031 to ATIS-0410002-0032
- Update Issue Date
- Other grammatical and spelling corrections that do not impact the technical content of this document are not reflected in the Summary of Changes

Table of Contents

- Updated to reflect new sections, re-numbered sections, and document re-pagination

SUMMARY OF CHANGES
ASOG V57

UOM-ASR VOLUME II – SUMMARY OF CHANGES FOR ASOG V57			
Section #	**Issue #**	**Model Object or Section Name**	**Description of Change**
1	3609	UOM Documentation	Remove multiple references to Rationale Rose
2.3	3609	Scope	Remove references to Rationale Rose
3.1	3609	Footnote	Remove Rational Rose from footnote
3.4	3602	UOM-ASR High Level Process Overview	Added reference to Provider Test Acceptance (PTA).
5.3	3602	Post Confirmation Use Cases	Updated text to insert the PTA Notification.
5.3	3602	Post Confirmation Use Cases	Redraw Use Case diagram and insert PTA Notification
5.3.5	3602	Provider Test Acceptance Notification	Inserted Provider Test Acceptance section and text
5.3.5	3602	Provider Test Acceptance Notification	Inserted Provider Test Acceptance Sequence Diagram
5.3.5	3602	Provider Test Acceptance Notification	Inserted Provider Test Acceptance Collaboration Diagram
5.3.6	3609	Completion Notification	The Design Notification paragraph should be moved into the Design Notification section 5.3.7 between the two diagrams below.
6.4.1.3.8	3606	SALI	Create a new optional LAT_LONG attribute of LAT_LONG_ComplexType.
6.4.1.3.8	3606	LAT_LONG_ ComplexType	Addition of 2 new attributes LAT: LATITUDE_Type and LONG: LONGITUDE_Type
6.6.1	3609	ASR Notification Class	Remove text “The detailed data elements…’
6.6.1	3602	ASR Notification Classes	Modified text PTA Notification
6.6.1	3602	ASR Notification Class	Insert new PROVIDER_TEST_ACCEPTANCE_Type within ASR_NOTIFICATION_Type
6.6.1.4	3602	Provider Test Acceptance (PTA) Notification	New section. (Subsequent section numbers have been sequenced.)
6.6.1.4	3602	Provider Test Acceptance Notification	Insert Provider Test Acceptance Class Diagram and text.
7.1	3602	State and Activity Diagrams	Modified text for the Confirmed and Designed State(s) to support the provider possibly issuing a PTA Notification from the respective state.

Change History

Issue #	Document Release	Description of Changes
32	**R1**	Initial version for ASR 57
31	R1	Initial version for ASR 56
30	R1	Initial version for ASR 55
29	R1	Initial version for ASR 54
28	R1	Initial version for ASR 53
27	R1	Initial version for ASR 52
26.1	R1	Revision to align Error_ComplexType model with schema
26	R1	Initial version for ASR 51
25	R1	Initial version for ASR 50
24	R1	Initial version for ASR 49
23	R1	Initial version for ASR 48
22	R1	Initial version for ASR 47
21	R1	Initial version for ASR 46
20	R1	Initial version for ASR 45
19	R1	Initial version for ASR 44
18	R1	Initial version for ASR 43
17	R1	Initial version for ASR 42
16	R1	Initial version for ASR 41
15	R1	Initial version for ASR 40
14	R1	Initial version for ASR 39
13	R1	Initial version for ASR 38
12	R1	Initial version for ASR 37
11	R1	Initial version for ASR 36
10	R1	Initial version for ASR 35
9	R1	Initial version for ASR 34
8	R1	Initial version for ASR 33
7	R1	Initial version for ASR 32
6	R1	Initial version for ASR 31
5	R1	Initial version for ASR 30

4	R1	Initial version for ASR 29
3	R1	Initial version for ASR 28
2	R2	Minor changes to synch up with schema affecting the TQ form
2	R1	Initial version for ASR 27
1	R3	Final version of UOM-ASR Volume II for ASR 26
1	R2	Revisions to support synchronization with Volume III XML schema
1	R1	Base line version of UOM-ASR Volume II for ASR 26

Table of Contents

1 UOM Documentation

The document, Unified Ordering Model Volume II – Analysis, (UOM-ASR Volume II) is part of a set of documents that provides an end-to-end structured systems engineering approach to perform the analysis related to unified ordering via electronic interfaces. This document provides the analysis of the detailed business and systems' requirements for an ordering model. It describes the information model and the behavioral model with the intent that service providers, customers, and their vendors understand how the data, business rules and systems rules work together with the behavior of the data and rules. Because of the level of complexities inherent in such an electronic ordering model, Unified Modeling Language (UML) tools by MyEclipse™ have been used to develop this volume. UOM-ASR Volume II utilizes UML for descriptive purposes and in some instances may not strictly adhere to existing UML specifications.

The intent of Unified Ordering Model (UOM) is to develop a complete set of system documentation using an end-to-end structured methodology. The scope of UOM encompasses business requirements, analysis, design, and implementation. Logically, these components are defined within the UOM in four volumes.

UOM-ASR Volume I - Business Requirements

This document describes the business requirements. This volume includes a high-level overview of the three primary processes in ordering: pre-ordering, service request, and post-confirmation activities. It also includes more detailed information in the use cases and activity diagrams. Two appendices include the data dictionary and the functional data matrix. The UOM-ASR Volume I is focused on ordering for access services only. As other services are added in the future, additional Volume I documents may be developed. The OBF Ordering Solutions Committee/Access Service Ordering Subcommittee maintains the UOM-ASR Volume I document.

UOM-ASR Volume II - Analysis

This analysis document provides the logical view of the business requirements stated in Volume I. The primary sections include the information model, sequence diagrams, and behavior model. Both the informational and behavioral models are described using the Unified Modeling Language (UML). UOM-ASR Volume II utilizes UML for descriptive purposes and in some instances may not strictly adhere to existing UML specifications. The UML provides the notation used within Volume II. Because of the level of complexities inherent in such an electronic ordering model, unified modeling language tools (MyEclipse™) have been used to develop this Volume II. Some additional requirements are included in Volume II in order to accommodate fundamental aspects of ordering services via electronic interexchange. Volume II is not specific to any particular technology or protocol. If additional Volume I documents are developed, this Volume II may need to be expanded to address additional requirements. The OBF Ordering Solutions Committee/Access Service Ordering Subcommittee maintains UOM-ASR Volume II.

UOM-ASR Volume III - Design

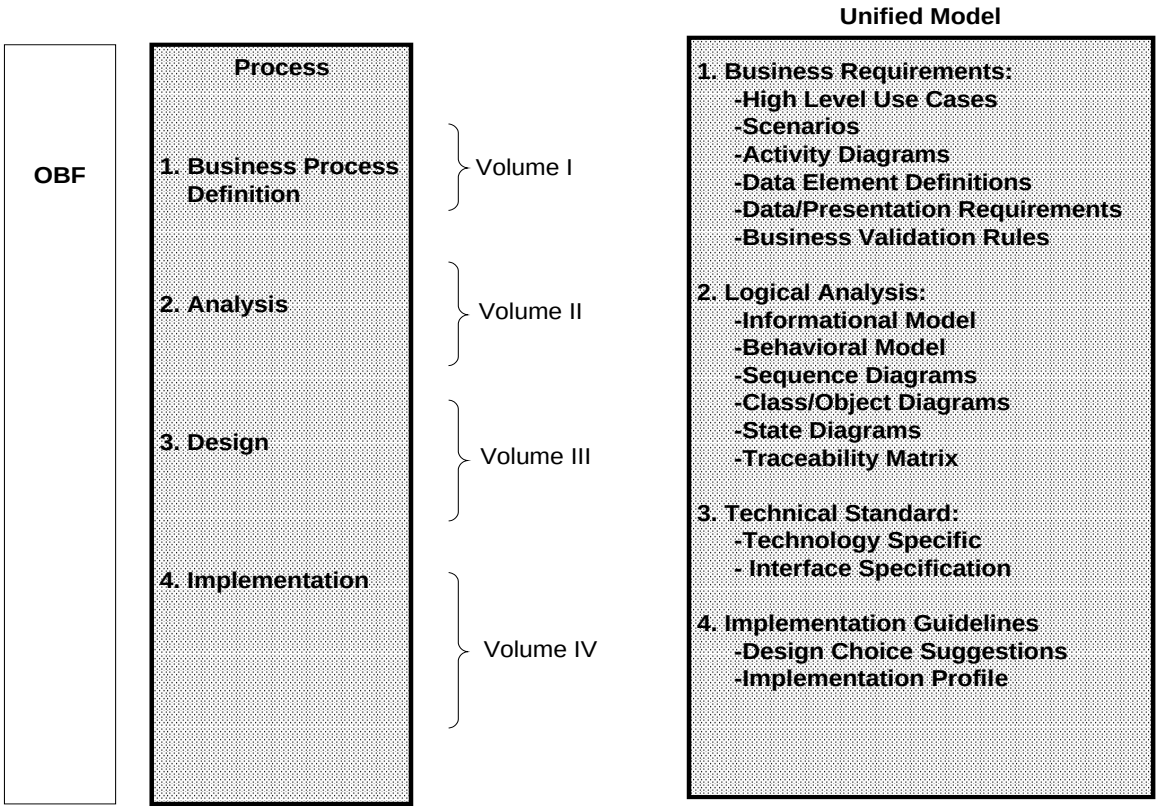
The logical view of the proposed resolution (model), created in the Analysis Phase, is translated into the language appropriate for the selected implementation technology. The first technology selected is XML; therefore UOM-ASR Volume III includes appropriate XML schemas related to unified ordering. This document does not specify a particular protocol as it is assumed that the trading partners will determine the appropriate transport protocol. It may be necessary to repeat the Design Phase when more than one implementation technology is selected. The OBF Ordering Solutions Committee/Access Service Ordering Subcommittee maintains UOM-ASR Volume III.

UOM-ASR Volume IV - Implementation

This document includes implementation specifications that must be addressed before the system specifications can be realized using the selected implementation technology. In addition, a sample Joint Implementation Agreement (JIA) may be included as an appendix for trading partners to use as a starting template. As with the *Design Phase*, the *Implementation Phase* may also have to be repeated in order to

provide support for multiple technologies. The OBF Ordering Solutions Committee maintains UOM-ASR Volume IV – Generic Implementation Guideline.

UOM Process and Document Development



2 Introduction to UOM-ASR Volume II

2.1 Intended Audience

The audience for this volume is the technical and software development staff of service providers and customers. The audience includes anyone who wishes to gain a better understanding of the interface between the customer and the provider, or between providers, in the provisioning of Access Services.

2.2 Purpose

The document is intended to assist providers and customers in the process of conducting the analysis phase of their development steps to realize an electronic, unified ordering system.

2.3 Scope

UOM-ASR Volume II describes the detailed analysis of the informational and behavioral model within a Unified Ordering Model. In addition, it defines at a more detailed level of the business requirements and

systems requirements needed to conduct ordering activities efficiently over an electronic interface. This includes a blending of the pre-ordering, service request and post-confirmation activities.

Specifically, UOM-ASR Volume II-Analysis describes access service ordering as defined in:

- UOM-ASR Volume I
- Access Service Ordering Guidelines (ASOG)
- Multiple Exchange Carriers Ordering and Design (MECOD)
- Design Layout Report (DLR) Guidelines for Access Service

These business requirements are developed and maintained within the Ordering and Billing Forum (OBF) under the auspices of the Ordering Solutions Committee/Access Service Ordering Subcommittee.

UOM-ASR Volume II Analysis contains both the Informational and Behavioral Models that provide the reader a broad understanding of Service Ordering. Specifically, each model provides a dimension to the overall process:

- Informational Model describes the data relationships.
- Behavioral Model describes the data as it acts with stimuli/events over time.

Both the Informational and Behavioral Models are described using the Unified Modeling Language (UML). The UML provides the notation used within UOM-ASR Volume II. Because of the level of complexities inherent in such an electronic ordering model, unified modeling language tools (MyEclipse™) have been used to develop this volume[1].

NOTE: A new UML tool has been chosen for updating class diagrams, starting with ASOG35. With the previous UML tool, 'one and only one' associations displayed a '1' on the association line connecting classes. With this new tool, the '1' is omitted. Any changed class diagrams (moving forward) will no longer display the '1'. The absence of a multiplicity indicator on these association lines should be interpreted as 'one and only one' multiplicity.

2.4 Development Note

The UOM process is iterative in nature. Subsequent iterations of UOM-ASR Volume II - Analysis may expand the functionality or services supported by the model.

3 Overview of UOM-ASR Volume II

3.1 Assumptions of this Document

- UOM-ASR Volume II should be generic and not be technically or protocol specific.
- UOM-ASR Volume II Informational and Behavioral models reflect the current parameters defined within the OBF business rules.
- UOM-ASR Volume II should be backward compatible, flexible, have reusability and add value.
- UOM-ASR Volume II is modeled using synchronous messaging; this is done simply for notation purposes, unless explicitly noted. The synchronous/asynchronous discussion may be revisited in UOM-ASR Volume III and UOM-ASR Volume IV.
- Validation rules and processes are generally left to the customer/provider back end systems.
- System acknowledgements are not explicitly defined within the sequence diagrams.

[1] The use of MyEclipse™ does not reflect a tool recommendation by either the authors or the associated Industry Forums.

3.2 Structure of Document

This document is divided into these primary sections:

i. Overview of the Standards Process and UOM Volumes
ii. Summary of Business and System Requirements
iii. Analysis of Requirement through Use Case Realizations
iv. UOM Information Model using UML
v. Behavior Analysis with States and Activities

3.3 Overall Process Description

This version of UOM-ASR Volume II is based upon the business requirements defined with UOM-ASR Volume I and Access Service Request Ordering Guidelines for ASR Version 50. Together with additional support documentation, the analysis team developed the Informational and Behavioral Models.

Key components of UOM-ASR Volume I are:

- Description of the business process through Use Cases.
- Definition of data elements and their associated data characteristics through a data dictionary.
- A functional data matrix that relates the data elements to particular inquiry/response functions.

3.4 UOM-ASR High Level Process Overview

The UOM-ASR may be broken down into three logical stages:

- Pre-Order
- Service Request Process
  - Customer ←→ Provider communication
  - Multiple Exchange Carrier (MEC) communication
- Post-Confirmation

These stages define the high level processes necessary for ordering services and transmitting design information. Though it is not necessary to perform every function within each stage, it is beneficial to consider the creation, provisioning, and resolution of an order flowing through these stages.

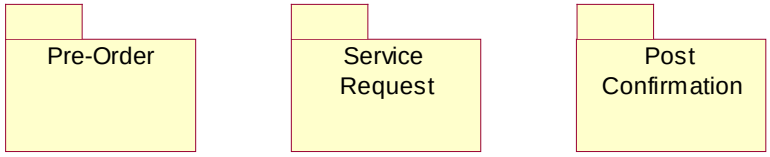


Figure 1 – UOM–ASR Logical Stages (Use Case Packages)

Within each of these stages, there are numerous business functions that may be initiated by the customer, the provider or both. Likewise, each business function may be further refined into a series of steps which require interaction between the customer and the provider, or between providers. Therefore, it is beneficial to logically segment the control of these processes.

At a high level, the functions may be grouped as follows:

- Pre-Order process – Inquiries/responses for Location Inquiry (LI), Service Availability Inquiry (SAI), Connecting Facility Assignment Inquiry (CFAI), and Ethernet Service Inquiry (ESI).
- Service Request process - is defined for particular services which validate street address, CFA, NC/NCI/SECNCI combination or applicable ASOG edits, fatal error and other fatal edits as

determined by customer/provider negotiations. Process also includes Supplement, Confirmation, Clarification/Notification Request (C/NR) and the exchange of data between providers of a jointly provided (Meet Point) service.

- Post-Confirmation process - includes the functions that may take place after the customer has received a Firm Order Confirmation. These functions may include Retrieve Service Request Information, Jeopardy Notification, Design Layout Report (DLR), Provider Test Acceptance (PTA) Notification, and Completion Notification.

The interaction between customer and provider, or between providers, may involve both required and optional processes, but the intent is to provide a well-defined and workable ordering and provisioning model.

4 UOM Requirements Summary

4.1 Business Requirements

The Business Requirements for UOM-ASR Volume II – Analysis, are defined in several documents that are maintained by the Ordering Solutions Committee/Access Service Ordering Subcommittee within the Ordering and Billing Forum (OBF).

The documents are defined as:

- Unified Ordering Model Access Service Request (UOM-ASR Volume I). This document describes the business requirements. This volume includes a high-level overview of the three primary processes in ordering: preordering, service request, and post confirmation activities. Through use cases and activity diagrams, UOM-ASR Volume I describes detailed interactions between customer and provider, and between providers. The appendices include a data dictionary, a functional data matrix, and a fatal error functional data matrix. This volume is focused on pre-ordering, ordering, and post confirmation for access services only.
- Access Service Ordering Guideline (ASOG). This document is broken up into a series of practices. Each practice defines a logical grouping of data elements that may be utilized within the service ordering process.
- Multiple Exchange Carriers Ordering and Design (MECOD). This document establishes methods for processing orders for access service involving jointly provided (Meet Point) services.
- Design Layout Record (DLR) Guidelines for Access Service. The DLR provides pertinent provider design information for a customer to review the design and ensure the provider's ability to deliver the requested service.

4.2 System Requirements

Additional system requirements are needed to support an implemented UOM interface. These requirements are in addition to the business requirements specified by the various OBF documents and address issues involving security, messaging, and account profiles that will be provided in UOM-ASR Volume IV. Additional requirements may also be added based upon customer provider negotiations as documented in pair wise Joint Implementation Agreements.

4.3 Security Requirements:

Security requirements include encryption, authentication, and non-repudiation. Refer to ITU-T Recommendation Q.815 for details of message level security specifications.