Business Requirements Document
NDC Order Management

11 June 2014

Document Status: Version 1.3 – FINAL

Workgroup members or interested parties should send their comments and requests to DDX Booking (Order Management) Taskforce at DDX-TF-Booking@iata.org and to DDX Steering Group at DDX-SG@iata.org
## Revision History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Name</th>
<th>Description of Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>5/12/13</td>
<td>Andrew May</td>
<td>Initial Draft</td>
</tr>
<tr>
<td>0.3</td>
<td>13/12/13</td>
<td>Andrew May</td>
<td>Revised draft</td>
</tr>
<tr>
<td>0.4</td>
<td>18/12/13</td>
<td>Booking and XML TF</td>
<td>Revised draft</td>
</tr>
<tr>
<td>0.5</td>
<td>3/1/14</td>
<td>Andrew May</td>
<td>Updated post Booking / XML TF Meeting Madrid Dec13</td>
</tr>
<tr>
<td>0.51</td>
<td>13/1/14</td>
<td>Andrew May</td>
<td>Updated post Booking and Interline TF conference calls 8/9Jan14</td>
</tr>
<tr>
<td>0.52</td>
<td>16/1/14</td>
<td>Andrei Grintchenko</td>
<td>Updated with comments received</td>
</tr>
<tr>
<td>0.53</td>
<td>23/1/14</td>
<td>Andrei Grintchenko</td>
<td>Updates from Booking TF Review Calls on 17 and 23 January and feedback received from Payment and Ticketing TF</td>
</tr>
<tr>
<td>0.54</td>
<td>3/2/14</td>
<td>Andrew May</td>
<td>Updated prior to TF meeting</td>
</tr>
<tr>
<td>0.55</td>
<td>5/2/14</td>
<td>Andrei Grintchenko</td>
<td>Updates from TF face to face meeting, TF leaders review; added Message Models chapter and addition of Use Case 5</td>
</tr>
<tr>
<td>0.56</td>
<td>10/2/14</td>
<td>Andrew May</td>
<td>Added MSE message flows and Use Cases</td>
</tr>
<tr>
<td>0.57</td>
<td>20/2/14</td>
<td>Andrew May</td>
<td>DDX6 Revisions. Issued to PADIS</td>
</tr>
<tr>
<td>1.0</td>
<td>26/2/14</td>
<td>Andrei Grintchenko</td>
<td>Formatting and PDF for PADIS submission</td>
</tr>
<tr>
<td>1.1</td>
<td>3/4/14</td>
<td>Andrew May</td>
<td>PADIS recommendations update</td>
</tr>
<tr>
<td>1.2</td>
<td>4/30/14</td>
<td>Andrei Grintchenko</td>
<td>Additional post-PADIS recommendations update and formatting.</td>
</tr>
<tr>
<td>1.3</td>
<td>6/11/14</td>
<td>Andrei Grintchenko</td>
<td>Updated terms and definitions to align across BRDs, cleanups and minor edits following on site changes during PADIS review calls (12/14 May). Final version and PDF.</td>
</tr>
</tbody>
</table>
1 Introduction

IATA Resolution 787, passed in Oct 2012, recognised that the industry will benefit from the introduction of a standard process for airlines to distribute product offers created within their own systems and to manage the resulting orders. This standard Application Programming Interface (API) is called the New Distribution Capability (NDC) API.

In September 2013 the BRD and schema for the shopping part of the NDC process, ie up to the point when the customer is ready to accept a product offer, was reviewed by the IATA PADIS Messaging Committees and subsequently approved by the PADIS Board.

This BRD documents the NDC business requirements for the Order Management part of the process that follows on from shopping.

2 Scope

2.1 Field of Application

The full NDC context is shown in the following diagram with the scope of this BRD indicated.

The scope covered by this BRD for NDC Order Management is:

In Scope:

Airline Order lifecycle management from acceptance of the product offer:
• Request the reservation of inventory for flights and/or inventory based ancillaries and its confirmation prior to providing passenger details
• Request the creation of an Airline Order for flights and ancillaries and its confirmation, including payment and documentation for products that have to be paid at Order creation. Includes products that are not journey related such as season tickets and subscriptions to services.
• Request the amendment of an Order for either voluntary or involuntary changes.
• Provide shopping responses, contextualised to the existing Order and re-priced for requested changes including change fees and the residual value of the original order. Includes the impact of changes to flight product on associated Airline sold ancillaries and changes to passenger credentials impacting eligibility to offers.
• Request the cancellation of an Order and Order cancellation confirmation.
• Meta Search Engine booking process including facilitated booking
• Group and Non-Group bookings
• Retrieval of the content of a specified Airline Order, an Airline Order’s transaction history and the retrieval of a list with headline data of 1 or more Airline Orders meeting a range of search criteria
• Unsolicited notification to the Seller of Order changes (eg confirmation of waitlisted orders and direct sales) and notification that the order cannot be delivered as booked.

• **Note Order Management requires compatibility changes to the Airline Shopping BRD for Time Limit qualifiers: Booking TL (deprecated), Offer TL (revised) and Bilateral, Deposit and Price Guarantee TLs (new)**

**Out of Scope:**
The remaining proposed standards resulting from the NDC project are out of scope of this document, ie:

• Airline Profile distribution and usage.
• Interactions between the Offer Responsible Airline (ORA) and Participating Offer Airlines (POA) requiring new NDC standard messaging, including direct amendments to the POA’s Order that need to be communicated to the ORA’s Order for onward notification to the Seller (In Scope of the Interline Taskforce).
• Payment and document issuance interactions for products that are not instantly purchased and instantly fulfilled. All payment refunds and voiding of accountable documents before sales close out are out of scope (in scope of Payment & Ticketing).
• Shopping interactions without an existing Order (covered by BRD NDC Airline Shopping, Sep2013)
• Negotiated Space is out of scope for this revision of the document
• Settlement, reconciliation, and reporting between parties is not being documented within the scope of this BRD
• Application redirects (between websites / smartphone apps / tablet apps / etc.) between the parties for the purposes of deep and shallow linking from metasearch tools are not being documented within the scope of this BRD

**NOTE:** Schedule change notification from the POA to the ORA may use existing AIRIMP standards and will then be notified to the Seller using NDC.
2.2 Principles

- Airlines will authenticate the entity sending the NDC message and trust that the identities of upstream entities included in the request message have been authenticated by each entity in turn up the chain to the originator.
- Parties using the API shall ensure their own compliance with all applicable laws and regulations.
- Parties using the API shall be responsible for maintaining data confidentiality and be compliant with all applicable privacy laws and regulations.
- Display orders and results ranking across multiple Offer Responsible Airlines are not in scope of NDC.
- Parties using the API shall be responsible for PCI compliance to the extent applicable to them. It is not in the scope of this document to suggest any particular PCI compliance strategy, methodology or tools, and it is assumed that any party using the API will establish its own compliance strategy using methodology and tools it finds most appropriate.

3 References

- IATA Resolution 787
- NDC Airline Shopping (Oct 2013)
- NDC Payment and Ticketing BRD (Feb 2014)
- NDC Assumptions Document
- ARIMP
- PSC Ticketing and EMD Resolutions
- Airline Shopping Change Requests – refer to PADIS Messaging Week 3 Agenda (March 2014)

4 Terms and Definitions

Term and Definitions identified in this document and in other NDC Business Requirements Documents (ie. Airline Shopping, etc.) are maintained in a separate document NDC Terms and Definitions, owned by DDXWG Steering Group. Terms and definitions are included in this document as an excerpt from NDC Terms and Definitions v.1.2 for easier reading and referencing.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>BRD Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accountable Document</td>
<td>Validated official document (such as any type of an airline ticket, or a Standard Traffic Document (STD) or payment voucher) that has a value and must be accounted for.</td>
<td>Order Management</td>
</tr>
<tr>
<td>Acknowledgement</td>
<td>Acknowledges the receipt of a message but does not imply acceptance of the message content</td>
<td>Order Management</td>
</tr>
<tr>
<td>Affinity Shopping</td>
<td>A wide search defining a range of criteria including specific interest, destination attributes and defined budget plus date and destination ranges.</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>Aggregator</strong></td>
<td>The business function of distributing a Seller’s shopping request to multiple Airlines and aggregating the subsequent responses.</td>
<td>Airline Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td><strong>Airline</strong></td>
<td>Supplies product offers in response to receiving a request from a Seller. <strong>Airline</strong> refers to itself and any subcontracted entity providing a service to the airline.</td>
<td>Airline Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Airline currency</strong></td>
<td>Miles, vouchers, residual value EMD, airline issued gift/cash card.</td>
<td>Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Ancillary Services or Optional Services</strong></td>
<td>Ancillary Services are defined in PSC Resolution 787 as anything outside of product attributes (optional or discounted). Ancillary Services may be bundled in the product offer, or offered as additional, a la cart services. For the purposes of this document the term Ancillary Services is sometimes used interchangeably with the term Optional Services.</td>
<td>Airline Shopping; Interline Ancillary Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Anonymous Shopping</strong></td>
<td>No traveller personal data in the shopping request.</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>API</strong></td>
<td>Application Programming Interface.</td>
<td>Airline Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Attribute Shopping</strong></td>
<td>A search specifying one or more attributes to get more focused results (eg equipment types, seat types and characteristics, baggage allowance, meals, etc.</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>Authentication</strong></td>
<td>The process by which a system identifies an individual or a business entity to make sure that the user or the business entity is who they claim to be, based on attributes that are sent in a message.</td>
<td>Airline Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Bilateral Interface Agreement</strong></td>
<td>A documented agreement made between the sender and receiver as the basis of the data exchange between systems. This agreement defines a number of features which are mandatory or optional within the specification (time outs, message order processing, reject processing).</td>
<td>Interline Ancillary Shopping</td>
</tr>
<tr>
<td><strong>Bilateral Time Limit</strong></td>
<td>A generic structure for time limits, that is subject to bilateral agreements between parties.</td>
<td>Airline Shopping (requires a change) and Order Management</td>
</tr>
<tr>
<td><strong>Booking Time Limit</strong></td>
<td>Booking time limit is the amount of time within which the booking transaction must be completed (does not include ticketing).</td>
<td>Airline Shopping (requires change)</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td><strong>NOTE:</strong></td>
<td>This definition in Airline Shopping is superseded with the revised definition of Offer Time Limit (revised) as provided in Order Management BRD</td>
<td></td>
</tr>
</tbody>
</table>

| **Cabin** | A compartment where passenger seats are installed | Interline Ancillary Shopping |
| **Campaign Identifier** | Campaign ID is a tracking code used by the airline’s advertising analytics system to monitor and optimize the paid advertising by the airline across interactive marketing channels. By including the Campaign ID with shopping requests the online media publisher (MSE, OTA, affiliate partner, booking widget, etc.) can help guide the airline so that the airlines personalization of offers can align with any paid advertising that may be present on the publisher’s display. | Order Management |

| **Card payment** | Various forms of payment that include: credit card (includes UATP), debit card (PIN based or signature based), pre-paid debit/bank/gift card, cash card where the Airline is the merchant. Refer to IATA Resolution 728 Attachment A for full details on card types and codes. | Payment and Ticketing |

| **Cash payment** | Any payment that is collected by the agent and settled between the Airline and the agent. Refer to IATA Resolution 728 Attachment A for full details on card types and codes. | Payment and Ticketing |

| **CBT** | Corporate Booking Tool | Airline Shopping |
| **Check/Cheque** | Personal or bank issued order for transfer of money. Refer to IATA Resolution 728 Attachment A. | Payment and Ticketing |

| **Commercial Agreement ID** | Code or ID referenced by ORA or POA in message exchange which refers to a previously created bilateral agreement. A SPA is an example. | Interline Ancillary Shopping |

| **Corporate ID** | An ID provided by an airline to uniquely identify a corporate location for which a commercial arrangement exists. | Order Management, plus change to Airline Shopping |

<p>| <strong>Deposit Time Limit</strong> | Time by which a deposit must be paid for an Order. | Airline Shopping (requires change) and |</p>
<table>
<thead>
<tr>
<th><strong>Distribution Channel Provider</strong></th>
<th>An entity that has the capability to interface with an airline’s dynamic shopping API enabling distribution of airline product offers across one or multiple channels. For the purposes of this document it is assumed that such provider shall use industry standard NDC XML messages to communicate with airlines dynamic shopping API, and may act as a content aggregator.</th>
<th>Airline Shopping</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FQTV</strong></td>
<td>Frequent Traveler</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>Group Booking</strong></td>
<td>An Order made under a group name without individual passenger names at the point of creation</td>
<td>Order Management</td>
</tr>
<tr>
<td><strong>Inventory Guarantee Time Limit</strong></td>
<td>The time that inventory for a specified product offer is guaranteed as available. The inventory held must be converted into a completed order before the time limit expires otherwise the guarantee is lost. Held Inventory is referenced by an Inventory Guarantee identifier (equivalent in business terms to the legacy ITAREQ ‘Conversation ID’). In the context of Interline Ancillary Shopping, this term is defined as the time window (or final date) identified by the ORA or POA where inventory will be held prior to booking.</td>
<td>Order Management; Interline Ancillary Shopping</td>
</tr>
<tr>
<td><strong>Inventory Guarantee Identifier</strong></td>
<td>An unique identifier issued by an Airline to reference that inventory for a specified offer will be guaranteed as available for a period</td>
<td>Order Management</td>
</tr>
<tr>
<td><strong>Leg</strong></td>
<td>The operation between a departure station and the next arrival station</td>
<td>Interline Ancillary Shopping</td>
</tr>
<tr>
<td><strong>Marketing Carrier</strong></td>
<td>The carrier that sells with its own code as part of a code share agreement on a flight that is actually operated by another carrier.</td>
<td>Interline Ancillary Shopping</td>
</tr>
<tr>
<td><strong>Meta Search deep link</strong></td>
<td>A link to an airline's or OTA's itinerary purchase page enabling the user to purchase a specific itinerary offer.</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>Meta Search shallow link</strong></td>
<td>A link to an airline's or OTA's shopping results page listing multiple flight options for a pre-specified city pair and dates, as well as upsell / cross-sell products</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>MSE (Meta search Engines)</strong></td>
<td>MSE redirect their users to an airline or Online Travel Agent for the creation of an Airline Order. A MSE is not involved in servicing the resulting order - this is done by the OTA or Airline.</td>
<td>Order Management</td>
</tr>
<tr>
<td><strong>Multi Leg Flight</strong></td>
<td>A flight comprised of more than one leg</td>
<td>Interline Ancillary Shopping</td>
</tr>
<tr>
<td>----------------------</td>
<td>----------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td><strong>Naming Time Limit</strong></td>
<td>Time by which an Order, must be completed with individual passenger names.</td>
<td>Order Management</td>
</tr>
<tr>
<td><strong>OAL</strong></td>
<td>Other AirLine</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>Offer ID</strong></td>
<td>Offer ID facilitates the tracking and verification of individually priced offer(s) selected from the shopping response. Only the Offer IDs of the ORA (Offer Responsible Airline) are returned in shopping responses. Offer ID is unique to each individually priced offer in the shopping response even if the offer price is zero. OfferID may be specific to individual passengers in the offer, and may be associated with a segment or a journey. The set of Offer IDs returned in a response are referenced by a Shopping Response ID.</td>
<td>Airline Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Offer item</strong></td>
<td>One or more products that has one price, eg a product bundle</td>
<td>Order Management</td>
</tr>
<tr>
<td><strong>Offer Responsible Airline (ORA)</strong></td>
<td>Offer Responsible Airline: The airline responsible for returning a combined offer, including participating airline offers, to the requesting entity</td>
<td>Airline Shopping; Interline Ancillary Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Offer Time Limit</strong></td>
<td>Offer Time Limit is the amount of time within which offers in a shopping response may be reserved. Upon expiring, a new shopping request must be sent. <strong>NOTE:</strong> This definition in Airline Shopping is superseded with the revised definition of Offer Time Limit (revised) as provided in Order Management BRD</td>
<td>Airline Shopping (requires change)</td>
</tr>
<tr>
<td><strong>Offer Time Limit (revised)</strong></td>
<td>The time within which offers must be converted into completed Orders. On expiry a new shopping transaction is required. This definition supersedes both Offer and Booking Time Limit definitions in the Shopping BRD. Offer Time Limit is mandatory.</td>
<td>Order Management; Interline Ancillary Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Operating Carrier</strong></td>
<td>The carrier that holds the Air Operator’s Certificate for the aircraft used for that flight</td>
<td>Interline Ancillary Shopping</td>
</tr>
<tr>
<td><strong>Order</strong></td>
<td>An Order is a uniquely identified record of the agreement of one party with another to receive products and services under specified terms and conditions. ‘Order’ supports the sale of a flexible range of airline products and services that are not necessarily journey based (eg subscription services). A ‘PNR’, ‘super PNR’ and ‘ticket’ are all today’s versions of airline implementations of aspects of an Order. An Order will contain 1 or more Order Items each with an identifier that is unique within an Airline’s Order Management system. An Order may support non-homogeneity, ie each passenger in an Order may hold different sets of order items at different prices.</td>
<td>Order Management; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Order item</strong></td>
<td>A selected Offer item.</td>
<td>Order Management</td>
</tr>
<tr>
<td><strong>Order Management</strong></td>
<td>Order Management is the process of taking, amending, tracking and fulfilling requests for an airline’s products and services.</td>
<td>Order Management</td>
</tr>
<tr>
<td><strong>OSI</strong></td>
<td>Other Service Information</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>OTA</strong></td>
<td>Online Travel Agency</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>Participating Offer Airline (POA)</strong></td>
<td><em>Participating Offer Airline</em>: An airline other than the Offer Responsible Airline involved in a product offer</td>
<td>Airline Shopping; Interline Ancillary Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Payment Time Limit</strong></td>
<td>The deadline by which a commitment to pay must be made for the items in the order. This includes ticketless transactions and other accountable documents (ie EMD. Payment Time Limit and Ticket Time Limit may be the same in most cases; however, Payment Time Limit expands to include ticketless transactions and other accountable documents. Payment Time Limit is mandatory.</td>
<td>Order Management; Interline Ancillary Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Personalised Shopping</strong></td>
<td>Traveller consents to include personal data in the shopping request</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>PNR</strong></td>
<td>Passenger Name Record</td>
<td>Airline Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td><strong>Price Guarantee Time Limit</strong></td>
<td>Period for which an Offer price is guaranteed. On expiry an Offer may be re-priced up to the point an accountable document is issued. A Price Guarantee</td>
<td>Airline Shopping (requires change) and Order Management</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
<td>Category</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Product Bundle</td>
<td>Where several products are offered for sale as one product. <strong>NOTE:</strong> This definition has evolved in Order Management BRD, and has the same meaning as Offer Item</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td>Referrer Identity</td>
<td>Identifies to the aggregator or the airline, the specific commercial contract under which a particular message should be tracked; for example, is the message related to (A) the x cents per click for traffic from Indonesia or (B) the y % per ticket for each booking that originates from Japan.</td>
<td>Order Management</td>
</tr>
<tr>
<td>Seller</td>
<td>Creates shopping requests to Airlines on behalf of a customer and displays the subsequent product responses for review</td>
<td>Airline Shopping; Payment and Ticketing</td>
</tr>
<tr>
<td>Service Item</td>
<td>An airline service item is a product or a service that can be separately delivered and uniquely described by an airline. It is referenced by an ID that is unique within an airline. A service may be sold separately in a single offer/order item or sold bundled with other service items in a single offer/order item (eg a return price consisting of inbound and outbound services).</td>
<td>Order Management</td>
</tr>
<tr>
<td>Service Time Limit</td>
<td>Time limit for EMD creation. May be different from Payment Time Limit</td>
<td>Interline Ancillary Shopping</td>
</tr>
<tr>
<td>Settlement providers</td>
<td>Third parties that provide settlement services between agent and airlines. Could include ARC, BSP, TCH, MoneyDirect, eeNet, etc.</td>
<td>Payment and Ticketing</td>
</tr>
<tr>
<td>Shopping</td>
<td>A process whereby a Seller is able to request offers from the airlines (ie flight and ancillaries) based on its desired search criteria and receive offers corresponding to its request. There are various types of shopping, including, for example, Personalized/ Anonymous and Attribute/ Affinity shopping types as defined in this document.</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td>Shopping Basket</td>
<td>A Shopping Basket is e-commerce software that allows visitors to an internet site to select items for eventual purchase</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td>Shopping Response</td>
<td><strong>Shopping Response ID</strong> facilitates the tracking of what</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td>ID</td>
<td>was offered and is an identifier unique to the source airline for a set of product offers returned in response to a shopping request. Shopping Response ID may be comprised of an Offer ID corresponding to an individual flight and/or ancillary service product offer that make up the offer. See Appendix D for scenarios illustrating use of this identifier.</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>SSR</td>
<td>Special Service Request</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>Ticket Time Limit</strong></td>
<td><em>Ticket Time Limit</em> is the amount of time which the booking maybe held until it must be ticketed or other accountable documents issued (eg EMD).</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>Ticketing</strong></td>
<td>The process of issuing any type of an accountable document to fulfil an airline order.</td>
<td>Payment and Ticketing</td>
</tr>
<tr>
<td><strong>TMC</strong></td>
<td>Travel Management Company</td>
<td>Airline Shopping</td>
</tr>
<tr>
<td><strong>XML</strong></td>
<td>Extensible Markup Language</td>
<td>Airline Shopping</td>
</tr>
</tbody>
</table>
5 Functional Requirements

5.1 Functional Requirement Description

Note mandatory fields are indicated by a ‘*’ below.

5.1.1 Order Creation

<table>
<thead>
<tr>
<th>Ref #</th>
<th>Category</th>
<th>Requirements</th>
<th></th>
</tr>
</thead>
</table>
| 1.1   | Guarantee Inventory Request   | Request airline to optionally guarantee inventory for specified product offers (which may be referenced by airline Shopping Response & Offer IDs or by entering the full details of a product) without providing sufficient passenger data to complete an Order. Airlines may only provide an inventory guarantee under particular conditions, e.g. a qualifying POS or passenger (e.g. a validated high tier frequent flyer). These qualifiers will need to be present in the request or derivable from request data (e.g. Offer ID)
   The mechanism by which an airline guarantees inventory is not in the scope of the standard. | • InvGuaranteeRQ (new message) |
| 1.2   | Guarantee Inventory Response  | Confirmation that inventory has been guaranteed for specified products for a period specified by the Inventory Guarantee Time Limit and referenced by an Inventory Guarantee identifier (equivalent in business terms to the legacy ITAREQ ‘Conversation ID’). The Guaranteed Inventory Time Limit cannot extend beyond the Offer Time Limit after which new Offers will be generated.
   Note an Inventory Guarantee may also be issued as part of the initial Offer.
   Valid responses are:
   - ‘Inventory Guarantee Identifier’ for each offer and/or product’s Service ID
   - No Inventory Guarantee - with reasons indicated
   - or an indicator that there is ‘no | • Enhancement to AirShoppingRQ
   • InvGuaranteeRS (new message) |
<table>
<thead>
<tr>
<th>Ref #</th>
<th>Category</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>inventory available' for the product offer - or that the product is ‘not under inventory control’ - response may indicate “waitlisted” The ‘Inventory Guarantee ID’ is referenced in the Create Order request to take up the guaranteed inventory.</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Release “Inventory Guarantee”</td>
<td>An ability to release guaranteed inventory based on a list of Inventory Guarantee Identifiers. This is equivalent to the legacy ‘Ignore’ transaction. Response is an Acknowledgment.</td>
</tr>
<tr>
<td>1.4</td>
<td>Create Order Request</td>
<td>Order creation for all products and services supported under NDC Airline Shopping (see NDC Airline Shopping BRD) - * specify the offer items or product to be ordered. - include Inventory Guarantee references for previously guaranteed inventory. - * identity of the entity that requested the Order and Agent and Corporate IDs - * contact details (phone, mobile, fax, etc.) for agent, corporate, booker, each passenger - Passenger Identity No + Form of ID (eg passport no) - Agent’s Customer Profile ID - *Passenger or Group names - *Number of items (eg seats) For Group Bookings: - *Party Name - * The Complete Party (TCP) indicating total party size For MSE: - Airline advertising campaign identifier</td>
</tr>
<tr>
<td>Ref #</td>
<td>Category</td>
<td>Requirements</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>--------------</td>
</tr>
</tbody>
</table>
|       |          | - Form of payment and associated data (for all supported Forms of Payment (see Payment & Ticketing BRD), including support for more than 1 form of payment and split (eg EMD as one or more form of payment and cash, or promo and cash, Credit Cards, redemption currency) and including different forms of payment for each passenger.  
Create Order Request additionally includes all the necessary data to allow the airline to take payment by supported Forms of Payment (see Payment and Ticketing BRD) for products with Instant Purchase terms, eg:  
- for card holder not present payment: payment card type, card number, CVV number, card expiry date, account name and billing address.  
- Plus the return of payment authorisation codes as a result of additional security such as 3-D Secure.  
- Acceptable Price Variance: the acceptable amount and/or percentage of the total amount by which the Order item price can vary from the Offer price for Order creation to proceed, for example to cover minor currency exchange rate fluctuations for taxes quoted in a different currency.  
- Indicator that the Seller wants to proceed or not with Order creation if one of multiple forms of payment provided fails, eg where each passenger provides a form of payment.  
Scope includes both flight and/or ancillaries. |
<table>
<thead>
<tr>
<th>Ref #</th>
<th>Category</th>
<th>Requirements</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| 1.5   | Order View | Return details of the created Order and optional accountable documents issued including support for multiple Order references in different Order management systems, eg multiple PNR references for ORA and POAs, non PNR based Order management identifiers and 1 or more subsidiary Order Item identifiers within an Order. **OrderView to return:**  
- up to date contents of an Order, excluding Airline internal elements (eg remarks, airline special keywords and Airline held customer data). Any form of payment data will meet PCI compliance, ie Card numbers will be partly or wholly masked and no CVV data will be returned.  
- Pricing information at an Order Item level and total for the Order  
- Optional Price guarantee time limit at order item level  
- identity of the entity that requested the Order item. This may be the agent, corporate (eg Agent/corporate ID) or by the passenger through an airline direct channel (eg passenger name)  
- order and order item status, eg complete, pending, including delivery status, eg ‘delivered’, ‘not delivered’ and an indication that the airline cannot deliver as ordered, eg due to aircraft config change, schedule change, operational disruption and so that the airline may waive order change and cancellation fees.  
- contact details (phone, mobile, fax, etc) for agent, corporate, booker, each passenger  
- Passenger Identity No + Form of ID (eg passport no). Authentication of passenger eligibility to an offer may be available through CustomerInputRQ/RS for PIN ‘phasing’ | OrderViewRS |
<table>
<thead>
<tr>
<th>Ref #</th>
<th>Category</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>required requiring a request for random individual characters from a passenger’s membership scheme password.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Agent’s Customer Profile ID</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- where an Order is sub-divided into associated Orders (eg because a change creates non-homogeneity in a PNR) then provide the original Order or new Order with the cross-referencing Order ID to original or new Order</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Shopping Response &amp; Order IDs and service IDs for ordered items</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For Group Bookings:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- the time limits for deposit payment, full payment commitment (including group size firming), and passenger naming and any Bilateral Time Limit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- The Complete Party (TCP) indicating total party size if split across &gt;1 Order</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When payment is part of the order creation process, return:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- optionally, for ticketing carriers, issued accountable document references including support for partial ticketing in the event of 1 passenger’s payment failing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- or a declined payment message per form of payment per passenger, per offer item</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- or a request for additional payment security checks requiring further interaction by the card holder and the return of additional payment authorisation codes from the card issuing bank from the Seller system to the Airline. Including 3-D Secure (eg Verify by Visa, Amex SafeKey, etc.) which may need the Airline to return a link to the 3-D Secure page (see Payment &amp; Ticketing BRD).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Payment Status (pending, declined, etc.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CustomerInputRQ/RS for PIN ‘phrasing’</td>
</tr>
<tr>
<td>Ref #</td>
<td>Category</td>
<td>Requirements</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>--------------</td>
</tr>
</tbody>
</table>
|       | - Payment Bank Code (from reconciliation file)  
For changes to an Order where accountable documents have already been issued then the updated view of Order will include references to cancelled (eg for cancelled passengers and associated ancillaries) and re-issued (eg for itinerary changes) accountable documents.  
Order item creation, deletion or amendment failures:  
- include reasons for failure by Order item including that some Order items could have been successfully ordered or changed but other items in the Order failed, eg Offer or Held Inventory time limit expired, Order price greater than acceptable price variation from the offer price, inventory not available, passenger not eligible, product compatibility broken, etc.  
- optionally return best available alternative offers |
| 1.6  | Airline request for customer data |
|      | Request by an airline for additional data from the customer, including:  
- One or a combination of customer credentials allowing the airline to authenticate the customer, eg Loyalty scheme membership id and partial password for payment by airline currency, url link to 3D Secure provider, security questions (eg mother’s maiden name). Note it is assumed that the customer will not be passing their complete password via the Seller but that the airline request will be for a randomly generated subset (eg 2\textsuperscript{nd}, 4\textsuperscript{th} & penultimate characters) | CustomerInputRQ |
<table>
<thead>
<tr>
<th>Ref #</th>
<th>Category</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Additional customer product delivery data eg limo pickup point</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If the customer provided data in a preceding Request/Response transaction was invalid then the airline may repeat the request for data, requiring that an error condition can be included in the request (eg ‘password invalid, please try again’, ‘you have exceeded the number of allowed tries, please contact our call centre’)</td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td>Customer data response</td>
<td>Customer data, eg - Password characters - Verification cryptogram generated by 3D Secure process - response texts with their associated requests</td>
</tr>
</tbody>
</table>

### 5.1.2 Order Retrieval

| 2.1   | Order Retrieval Request | 1) When the retrieval request comes from the order creation requestor, then Order Reference is sufficient with the identity of the requesting entity (note it is the Agency and/or Corporate that has access to created orders not intermediaries that may have forwarded the request) Order reference may be a PNR reference, ticket or EMD number, or other Airline supported Order reference. Extended Security: allow order view and/or change access to be extended to entities other than the order creation requestor, so that for example TMC emergency call centres can support customers away from base. This may require the interpolation of an additional security challenge (eg customer security question and answers) Accept filter criteria to restrict the data |
|       | Responds with OrderViewRS | CustomerInputRQ/RS for customer security question & response |
|       | See 1.4 | OrderRetrieveRQ |
| 2.2  | Transaction History Request | Request the transaction history audit trail for a specified Order. Only available to the order creation requestor (note it is the Agency and/or Corporate that has access to created orders not intermediaries that may have forwarded the request). |
| 2.3  | Transaction History Response | Provide a list of order transaction and/or other order related messaging details for a specified Order. At a minimum the list is to contain the following details: |
| 2.4  | Search for multiple Orders | Request a list of Airline Orders that meet all of the specified search criteria. Only available to the order creation requestor and all authorised entities (note it is the Agency and/or Corporate that has access to created orders not intermediaries that may have forwarded the request) |

- elements of the Order returned to:
  - itinerary
  - air segment
  - by passenger name for passenger associated data and passenger data applicable to all passengers
  - form of payment
  - accountable document data by reference

- identity of requesting entity

- Action Entity (who)
- Action Date (timestamp)
- Action Create, Read, Update or Delete
- Order properties
- Transaction type

- Search Criteria may include any combination of the following:
  - by Airline
  - by Sales Office
  - by IATA number
  - by FQTV and airline

OrderHistoryRQ

OrderHistoryRS

OrderListRQ
<table>
<thead>
<tr>
<th>2.5 Order Search Response</th>
<th>Airline responds with</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- a list of Order references matching the search criteria with:</td>
</tr>
<tr>
<td></td>
<td>Passengers Full names</td>
</tr>
<tr>
<td></td>
<td>Number in Party</td>
</tr>
<tr>
<td></td>
<td>O&amp;D and O&amp;D of first segment</td>
</tr>
<tr>
<td></td>
<td>First departure date</td>
</tr>
<tr>
<td></td>
<td>Sales Office, IATA &amp; Agent and Corporate IDs</td>
</tr>
<tr>
<td></td>
<td>Order Creation date</td>
</tr>
<tr>
<td></td>
<td>Order Status (eg ticketed, not ticketed, cancelled, flown, etc.)</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>- a list capped at a maximum record volume (in the event that the search criteria is not</td>
</tr>
</tbody>
</table>
### 5.1.3 Order Amendment

| 3.1 | Order Amendment Shopping Request | Specify a new shopping requirement for each of 1 or more order items in a specified Order and shop for alternative offers or re-price the specified order without change. Add and/or delete items in an existing order - Order reference may be PNR or non PNR order reference. - Identity of entity requesting the change may require inclusion of a passenger name to meet minimum Order access security requirements (see 2.1 Retrieve Order) Supported changes are (including combinations and both ORA and POA products): - flight date/time - change of itinerary - change to flight product and associated or standalone ancillary products and service requests (eg from one branded product to another or one product bundle to another) - change to cabin - amend passenger type, add Infant, FQTV and other passenger qualifiers - amend (ie add/ remove) number of passengers As a result of receiving an unsolicited notification from an Airline offering alternatives to a now unavailable ordered item (eg as schedule change or cancellation), respond with: | ItinReshopRQ (new message) |
| 3.2 Order Amendment Shopping Response | - a selected alternative offer
- rejection of all alternative offers | - Return airline product offers applicable to a request to amend existing order items and in context with the unchanged order items
- New offers may be returned for ancillaries associated with a changed flight product
- The return of new offers may also result from the removal of a qualifying passenger or qualifying product (eg by product marriage).
- Where a change will result in the cancellation and/or exchange of existing accountable documents, then return the exchange value of these, the change fees and the new offers
-A change of one item may result in a change to other order items
- When there is disruption, the Airline response may waive cancellation fees and offer product change at no extra cost
- Identity of entity that requested the change | ItinReshopRS (new message) |
| 3.3 Order Amendment Enactment Request | Request a change to 1 or more Order items by specifying the order item to be changed and the new product to change it to, either as a specification of the new requirement without prior shopping or as a selected offer ID from a preceding shopping response. Security requirements are as per 2.1 Order Retrieval Supported changes are as per 3.1 Order Amendment Shopping Request, plus the following:
Supports the cancellation of:
- 1 or more but not all specified passengers by name and all passenger associated itinerary and ancillaries, including un- | OrderChangeRQ |
| 3.4 | Order Amendment Enactment Response | Return an updated view of the Order  
- Where a change creates non-homogeneity in a PNR requiring the separation of some passengers into a separate newly created PNR, then the reference to the new PNR will be returned.  
- Identity of entity that requested the change  
Where an enacted change results in the cancellation and/or exchange of existing accountable documents then return the exchange value of these, the change fees and the amount to pay (see Payment and Ticketing BRD). |
<p>| 3.5 | Cancel Order evaluation request | Request the fees for cancellation of a specified Airline Order and all of its order items. Order reference may be PNR or non PNR order reference. |
| 3.6 | Cancel Order evaluation response | Returns the cancellation rules, fees etc. for the specified order. |
| 3.7 | Cancel Order Request | Request the cancellation of a specified Airline Order and all of its order items. Order reference may be PNR or non PNR |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>order reference.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- identity of entity that requested the change</td>
<td></td>
</tr>
<tr>
<td>3.8</td>
<td>Cancel Order Response</td>
<td>Returns confirmation of cancelled Order and order items with cancellation fees, supporting both PNR and non PNR order reference types and including any associated orders and any issued accountable documents.</td>
</tr>
<tr>
<td></td>
<td>- identity of entity that requested the change</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Returns the value of any cancelled accountable documents associated with the cancelled Order and cancellation fees – in scope of Payment &amp; Ticketing BRD.</td>
<td>OrderCancelRS</td>
</tr>
</tbody>
</table>
### 5.1.4 Order Change Notification

| 5.1 | Unsolicited Change Notification | Message sent to the entity requesting the original order indicating:  
- Reason for issuance of notification, eg: schedule change or cancellation,  
conversion of Waitlisted requests to confirmed Orders  
re-accommodation notice, changes made through the airline’s direct channel - both sales and information updates,  
reduction in Group booking party size or cancelation of booking  
aircraft equipment change (eg impacting selected seat)  
other reasons for not being able to deliver items as ordered  
- identity of impacted service(s)  
- identity of entity that requested the notified change, eg passenger, ORA or POA airline  
- Airline contact field, eg phone or link to airline’s re-accommodation service  
- compensation information (eg refundable, non-refundable, waived change or cancellation fee, compensation voucher reference (ie EMD)  
- optional information text in preferred language (eg call to action)  
- notification time stamp | OrderNotifRQ |
|---|---|---|
| 5.2 | Acknowledgement | Return acknowledgement of receipt of unsolicited messages with receipt time stamp and receiving entity’s identity. Acknowledgment will be used to maintain Order transaction history.  
Usage of Acknowledgement is optional and described in Message Exchange Pattern (MEP). | ACK |
5.2 **Recommended Messages**

**Note:** Recommended messages are to be updated from the original OpenAxis schema used as the basis in order to meet NDC business requirements. In consideration of the current industry pilots and OpenAxis users, existing schema functionality may be retained where possible and applicable. As such recommended messages functionality may, at times, extend beyond the scope defined in this document. 5 new message pairs will be created in order to support:

- Inventory Guarantee request and response
- Inventory Guarantee Release
- Re-shopping to change an existing Order
- Order Rules
- Transaction History request and response
- Requests for customer data input

<table>
<thead>
<tr>
<th>Message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CustomerInputRQ/RS</td>
<td>Allows an intermediate message pair to be inserted allowing additional information to be collected from the customer, eg authentication of scheme membership, 3D-Secure, customer product fulfillment data such as limo pickup point</td>
</tr>
<tr>
<td>InvGuaranteeRQ/RS</td>
<td>New NDC message to request that inventory is guaranteed for specified Offers, pending their conversion into a completed Order</td>
</tr>
<tr>
<td>InvReleaseNotif/ACK</td>
<td>New NDC message to request the release of guaranteed Inventory</td>
</tr>
<tr>
<td>ItinReshopRQ/RS</td>
<td>New NDC message to pass new shopping requests to an airline to replace existing specified order items in an Order or for new shopping requests to add to an existing Order. Airline responds with product offers within the context of the existing Order. Also used to re-price an order (eg prior to payment)</td>
</tr>
<tr>
<td>NDC Shopping message set</td>
<td>See Airline Shopping BRD</td>
</tr>
<tr>
<td>OrderCancelRQ/RS</td>
<td>Cancel specified order, returns confirmation of cancellation</td>
</tr>
<tr>
<td>OrderChangeRQ/OrderViewRS</td>
<td>Request modifications to an Order by specifying which order items to delete or change and what to change them to. The updated view of the Order is returned.</td>
</tr>
<tr>
<td>OrderCreateRQ/OrderViewRS</td>
<td>Request specified inventory to be held (returns a reference to the held inventory) or request an order to be created (returns complete view of the Order) or request additions to order data elements (e.g. add frequent flyer data)</td>
</tr>
<tr>
<td>OrderHistoryRQ/RS</td>
<td>New NDC message to request the transaction history for an Order</td>
</tr>
<tr>
<td>OrderListRQ/RS</td>
<td>Retrieve a list of Orders by one or more search criteria</td>
</tr>
<tr>
<td>OrderNotif</td>
<td>Unsolicited order change notification message.</td>
</tr>
<tr>
<td>Message</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>OrderRetrieveRQ</strong>/OrderViewRS</td>
<td>Retrieve a specified order by order reference and passenger name</td>
</tr>
<tr>
<td><strong>OrderRulesRQ/Rs</strong></td>
<td>New NDC message to request the rules, change and penalty fees applicable to a specified order</td>
</tr>
<tr>
<td><strong>ShopProductRQ/Rs</strong></td>
<td>A part of Airline Shopping Changes Requests (PADIS Messaging Week #3, March 2014)</td>
</tr>
</tbody>
</table>

**SimpleTypes**

The SimpleTypes schema promotes NDC type reuse as it contains common SimpleTypes, attributes and attributes Groups used in two or more NDC Phase 1 Shopping/ Pricing schema. It is included in the CommonTypes schema file via an xsd: include mechanism.

**CommonTypes**

Common definitions, used by the majority of NDC transactions, that provides a common representation of key data sets and promote reuse within the specification.

5.3 **Out of Scope Order Related OpenAxis Messages**

<table>
<thead>
<tr>
<th>Message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>InstantPurchaseRQ</strong></td>
<td>Combines a PNR create with instant payment data. Taken out of scope, as it is redundant with the functionality offered by OrderCreate.</td>
</tr>
<tr>
<td><strong>Loyalty messages</strong></td>
<td>Relative to SME data</td>
</tr>
<tr>
<td><strong>PNRSplitRQ</strong></td>
<td>Maintains the homogeneity restriction of PNRs by splitting out passengers with a different itinerary into a new PNR. Seller does not need to specify its use as the Airline will use it internally when necessary</td>
</tr>
<tr>
<td><strong>PNRClaimRQ</strong></td>
<td>Redundant as Airline hold the master Order</td>
</tr>
<tr>
<td><strong>PNRDeleteRQ</strong></td>
<td>Deletion of data elements from an Order has been incorporated into OrderChangeRQ</td>
</tr>
<tr>
<td><strong>PNRdisplayRQ</strong></td>
<td>Retrieves an order from Aggregator cache, redundant as Airline holds the master order</td>
</tr>
<tr>
<td><strong>PNREXternalUpdateRQ</strong></td>
<td>3rd party notification of non-airline product</td>
</tr>
<tr>
<td><strong>QueueRQ/RS</strong></td>
<td>Legacy queue management, internal to Aggregator</td>
</tr>
<tr>
<td><strong>Revenue structure messages</strong></td>
<td>Aggregator internal capability to set commissions</td>
</tr>
</tbody>
</table>
5.4 Message Sequence Flows

**NOTE:** Message Sequence Flow diagrams are provided for illustration purposes only. These diagrams are not intended to recommend any particular business process workflow and do not cover all possible scenarios and workflows as there can be an infinite number of possible constructions. Workflows will depend on the business process users will implement, and may be different from one implementation to another. Message pairs are atomic.
5.4.1 **Create Order**

**Common Booking User Case Message Flow**

<table>
<thead>
<tr>
<th>Seller/Aggregator</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram of message flow between Seller/Aggregator and Airline" /></td>
<td></td>
</tr>
</tbody>
</table>

1. AirShoppingRS – Result of the previous Shopping User Case / Flow

2. InvGuaranteeRQ
   - Flight & other inventory controlled services OfferIDs

3. InvGuaranteeRS
   - InvGuaranteeID and time limit

4. OrderCreateRQ
   - Send details required to create order: Selected Offers, Guarantee Inventory ID, Names, contact details, form of payment, service requests etc

5. OrderViewRS
   - OrderID with items ordered & accountable document references or Payment Time Limit

1.1. Offers displayed and decision is made which to buy (if any) before Offer TimeLimit expires.

2.1. Should the Offer indicate the facility then the inventory/services may be guaranteed for an Inventory Guarantee Time with applied qualifiers with a “Inventory Guarantee ID”. Additional Offers may be added if the above is looped.

3.1. The user has until expiry of Offer Time Limit to complete the Order

4.1. The Airline creates the Complete Order, Re-Pricing the Order ensuring all qualifiers are still there and no time limits have expired. Instant payment offers will trigger payment and issue of accountable documents

5.1. Order confirmation sent to customer. Copy of the Order may be stored locally.
### 5.4.2 Name Spelling Change

#### Name Spelling Change User Case Message Flow

<table>
<thead>
<tr>
<th>Seller/Aggregator</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. OrderChangeRQ</td>
<td>The user requests a change to the spelling of one or more passenger names</td>
</tr>
<tr>
<td>1.1. The airline checks whether the name modification complies with their policy. If it does the Airline updates the Order. This may generate a ticket reissue (if previously issued).</td>
<td></td>
</tr>
<tr>
<td>2. OrderViewRS</td>
<td>Updated view of the Order</td>
</tr>
<tr>
<td>2.1. Users copy of the Order is updated.</td>
<td></td>
</tr>
</tbody>
</table>
### 5.4.3 Group Booking

#### 2-Group Booking User Case Message Flow

<table>
<thead>
<tr>
<th>Seller/Aggregator</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
</tr>
</tbody>
</table>

1. **AirShoppingRS** – Result of the previous Shopping User Case / Flow

1.1. Offers displayed and decision is made which to buy (if any) and to accept the conditions of the group contract before Offer Time Limit expires.

2. **OrderCreateRQ**

   Send details required to create order:
   - Group Name, contact details, service requests, acceptance of contract conditions.

   2.1. The airline creates the Group Order with applicable review date (receipt of deposit, review numbers, final names and ticketing).

3. **OrderViewRS**

   OrderID is returned with Time Limits for review and finalisation of group together with any contractual conditions to be notified.

   3.1. The user Creates a copy of the order in their system with the necessary reminders to fulfil the conditions.

4. **OrderChangeRQ**

   The user may send the Airline deposit payment details, reduction/increase in group size, passenger names, service requests, etc.

   4.1. The Airline Updates the Order in their system. Additional orders may be created for increases in the group size. This may generate a Re-Pricing of the Order(s).

5. **OrderViewRS**

   Any changes will be acknowledged and/or confirmed

   5.1. The Users copy of the updated.

6. **OrderNotifRQ**

   Automatic reduction/cancellation of group and size may be sent.
5.4.4 Change Itinerary (Re-Shop) on an existing Order

<table>
<thead>
<tr>
<th>Seller/Aggregator</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 Display current Order</td>
<td>1. authenticate access rights to order and return view of Order</td>
</tr>
<tr>
<td>1. OrderRetrieveRQ</td>
<td>Order ID</td>
</tr>
<tr>
<td>2.1 Request new product options for specified order items</td>
<td>3. ItinReshopRQ</td>
</tr>
<tr>
<td>3.1. Return new Offers, including for ancillaries impacted by the change &amp; new price to pay (new total price plus change fees less original value)</td>
<td>4. ItinReshopRS</td>
</tr>
<tr>
<td>4.1. Customer reviews offers and requests order to be amended for selected offers</td>
<td>5. OrderChangeRQ</td>
</tr>
<tr>
<td>5.1. Airline clears payment, makes changes to order and returns updated view with any re-issued accountable document refs</td>
<td>6. OrderViewRS</td>
</tr>
<tr>
<td>6.1. Updated Order confirmation sent to customer. Copy of the Order may be stored locally.</td>
<td></td>
</tr>
</tbody>
</table>
### 5.4.5 Standalone Ancillary Order Creation (Paid Seat)

**Note:** Paid seating is used as an example, and it should be noted that a returned price for a seat could be zero (i.e., the seat is offered at no cost to the customer). Irrespective of the prices offered (zero or not), the same workflow will be applicable.

Standalone Ancillary purchase on an existing Order (paid seat)

<table>
<thead>
<tr>
<th>Seller/Aggregator</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 Request paid seating for specified sector within an existing Order for a flight</td>
<td></td>
</tr>
<tr>
<td>1. SeatAvailRQ Order ID</td>
<td>1.1 return (priced) available seat map</td>
</tr>
<tr>
<td>2. SeatAvailRS Offer IDs</td>
<td></td>
</tr>
<tr>
<td>2.1 Display seat map. Request pricing for selected seat (optional if pricing hasn’t been provided in SeatAvailability)</td>
<td></td>
</tr>
<tr>
<td>3. FlightPriceRQ Order &amp; selected offer ID</td>
<td>3.1 Check seat availability &amp; return final prices for selected seat by passenger</td>
</tr>
<tr>
<td>4. FlightPriceRS priced Offer,</td>
<td></td>
</tr>
<tr>
<td>4.1 Customer requests purchase of selected seats</td>
<td></td>
</tr>
<tr>
<td>5. OrderChangeRQ Order and selected Offer IDs, form of payment</td>
<td>5.1 Airline clears payment, makes changes to order and returns an updated view with ref to the accountable documents issued</td>
</tr>
<tr>
<td>6. OrderViewRS Updated Order &amp; accountable documents</td>
<td>6.1 Updated Order confirmation sent to customer. Copy of the Order may be stored locally.</td>
</tr>
</tbody>
</table>
### 5.4.6 Purchase a Meal on an existing Order

#### Purchase a Meal on an existing flight Order

<table>
<thead>
<tr>
<th>Seller/Aggregator</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 Request availability of special meals on a selected itinerary</td>
<td></td>
</tr>
<tr>
<td>1. ServiceListRQ Order ID</td>
<td></td>
</tr>
<tr>
<td>1.1 return priced available meal offers appropriate to the booked itinerary</td>
<td></td>
</tr>
<tr>
<td>2. ServiceListRS Offer IDs</td>
<td></td>
</tr>
<tr>
<td>2.1 Request purchase of selected meal, including form of payment</td>
<td></td>
</tr>
<tr>
<td>3. OrderChangeRQ Order and selected Offer IDs, form of payment</td>
<td></td>
</tr>
<tr>
<td>3.1. Airline clears payment, checks availability, makes changes to order and returns an updated view with ref to the accountable documents issued</td>
<td></td>
</tr>
<tr>
<td>4. OrderViewRS Updated Order &amp; accountable documents</td>
<td></td>
</tr>
<tr>
<td>4.1. Updated Order confirmation sent to customer. Copy of the Order may be stored locally.</td>
<td></td>
</tr>
</tbody>
</table>
5.4.7 Meta Search Engine Facilitated Booking

MSE Order Management Use Cases
Facilitated Booking Scenario - NDC SHOP & BOOK ONLY

<table>
<thead>
<tr>
<th>MSE</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 Submits pax(s) details (if available) &amp; travel requirements along with qualifiers including CampaignID (optional), geo-location of user (POS), user's device, and language preference</td>
<td>1. AirShoppingRQ</td>
</tr>
<tr>
<td>1.1 Carrier responds with multiple OfferID's, which may also include bolt-on optional ancillary OfferID's, as well as OfferID's which enable the user to choose x number of selections from a listing of options</td>
<td></td>
</tr>
<tr>
<td>1.2 Carrier response may include an optional MarketingMessage which it generated for this traveler / O&amp;D / POS / device / language</td>
<td></td>
</tr>
<tr>
<td>1.3 If the carrier is willing to guarantee inventory while the user reviews the Offers on the MSE display, the carrier response may also include an Inventory Guarantee Time Limit &amp; ID</td>
<td></td>
</tr>
<tr>
<td>2. AirShoppingRS</td>
<td></td>
</tr>
<tr>
<td>2.1 Traveler revews offers on the MSE display and selects which OfferID to book, which may also include optional (associated) OfferID's, as well as optional (associated) OfferID's which enable the user to choose x number of selections from a listing of options</td>
<td></td>
</tr>
</tbody>
</table>

Continued
## MSE Order Management Use Cases
### Facilitated Booking Scenario - NDC SHOP & BOOK ONLY

<table>
<thead>
<tr>
<th>MSE</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2 MSE retrieves traveler profile (if a known traveler) or traveler fills out form</td>
<td>2.3 MSE sends OrderRQ with the OfferID’s that the user wishes to book, along with the passenger(s) details and credit card number + CampaignID</td>
</tr>
</tbody>
</table>

3. Traveler selects offer, MSE retrieves / requests traveler detail, then OrderRQ

<table>
<thead>
<tr>
<th>MSE</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Carrier takes payment, creates Order, issues accountable documents, and sends confirmation details directly to the traveler</td>
<td>3.2 Carrier responds with an OrderID, which is the carrier’s internal reference number for this referral transaction, specific to the selected OfferID’s and the passenger(s) details</td>
</tr>
</tbody>
</table>

4. OrderRS or HoldInventoryRS

<table>
<thead>
<tr>
<th>MSE</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 MSE displays the order confirmation number on the user interface, providing the airline’s contact information should that traveler end up needing support after-booking</td>
<td></td>
</tr>
</tbody>
</table>

5. MSE confirms purchase to the traveler
5.4.8  Meta Search Engine Booking via NDC-Enabled Deep Link to Airline Website

MSE Order Management Use Cases

### Deep Linking Scenario - NDC SHOP & BOOK ONLY

<table>
<thead>
<tr>
<th>MSE</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. AirShoppingRQ</td>
</tr>
<tr>
<td>0.1 Submits pax(s) details (if available) &amp; travel requirements along with qualifiers including CampaignID (optional), geo-location of user (POS), user's device, and language preference</td>
<td>1.1 Carrier responds with multiple OfferID's, which may also include bolt-on optional ancillary OfferID's, as well as OfferID's which enable the user to choose x number of selections from a listing of options</td>
</tr>
<tr>
<td></td>
<td>1.2 Carrier response includes a WebAddressID which informs the MSE of the carrier's preferred URL for receiving this transaction</td>
</tr>
<tr>
<td></td>
<td>1.3 Carrier response may include an optional MarketingMessage which it generated for this traveler / O&amp;D / POS / device / language</td>
</tr>
<tr>
<td></td>
<td>1.4 If the carrier is willing to guarantee inventory while the user reviews the Offers on the MSE display, the carrier response may also include an Inventory Guarantee Time Limit ID</td>
</tr>
</tbody>
</table>

Continued
### MSE Order Management Use Cases

**Deep Linking Scenario - NDC SHOP & BOOK ONLY**

<table>
<thead>
<tr>
<th>MSE</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. AirShoppingRS</td>
<td>2.1 Submits the OfferID's that the user wishes to book, along with the passenger(s) details and credit card number (if available) + CampaignID (optional)</td>
</tr>
<tr>
<td></td>
<td>3. If MSE knows traveler detail OrderRQ or if not HoldInventoryRQ</td>
</tr>
<tr>
<td></td>
<td>3.1 Carrier responds with a OrderID, which is the carrier’s internal reference number for this referral transaction, specific to the selected OfferID’s and (if had been provided) the passenger(s) details</td>
</tr>
<tr>
<td></td>
<td>3.2 **** OR *** Carrier responds with a HoldInventoryID, which is the carrier’s internal reference number for this referral transaction, specific to the selected OfferID’s</td>
</tr>
<tr>
<td></td>
<td>4. OrderRS or HoldInventoryRS</td>
</tr>
<tr>
<td>4.1 A Deep Link is issued to the URL informed in the WebAddressID containing Order ID or Inventory Guarantee ID + Campaign ID (optional)</td>
<td></td>
</tr>
</tbody>
</table>
### 5.4.9 Order an Instant Purchase Flight Product

#### Order an Instant Purchase Flight Product

<table>
<thead>
<tr>
<th>Seller/Aggregator</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="chart.png" alt="Flowchart Diagram" /></td>
<td><img src="chart.png" alt="Flowchart Diagram" /></td>
</tr>
</tbody>
</table>

1. **AirShoppingRS**
   - Offer IDs from preceding shopping process

2. **OrderChangeRQ**
   - Selected Offer IDs, passenger and payment details

3. **OrderViewRS**
   - Updated Order & accountable document refs

3.1. Updated Order confirmation sent to customer. Copy of the Order may be stored locally.

2.1. Airline clears payment, checks offer still valid & availability, creates a flight order and issues accountable documents. Returns view of Order and refs to accountable documents.
Order an Instant Purchase Flight Product with 3D Secure

<table>
<thead>
<tr>
<th>Seller/Aggregator</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. AirShoppingRS</td>
<td>Offer IDs from preceding shopping process</td>
</tr>
<tr>
<td>1.1 Request Order creation of selected instant purchase offers, include minimum order completion details and form of payment</td>
<td></td>
</tr>
<tr>
<td>2. OrderChangeRQ</td>
<td>Selected Offer IDs, passenger and payment details</td>
</tr>
<tr>
<td>2.1. Airline authenticates card payment but requires additional 3D Secure authentication</td>
<td></td>
</tr>
<tr>
<td>3. CustomerInputRQ (optional)</td>
<td>3D-Secure request</td>
</tr>
<tr>
<td>3.1 online agency displays 3D Secure request to customer to complete. Returns 3D Secure authorisation code (or error)</td>
<td></td>
</tr>
<tr>
<td>4. CustomerInputRQ</td>
<td>3D Secure authorisation code</td>
</tr>
<tr>
<td>4.1. If 3D Secure authorised then Airline checks offer still valid &amp; availability, creates a flight order and issues accountable documents. Returns view of Order and refs to accountable documents</td>
<td></td>
</tr>
<tr>
<td>5. OrderViewRS</td>
<td>Updated Order &amp; accountable document refs</td>
</tr>
<tr>
<td>5.1. Order confirmation sent to customer. Copy of the Order may be stored locally.</td>
<td></td>
</tr>
</tbody>
</table>

---

1. 3D Secure is used as an illustration for one potential methodology of securing Credit Card transactions. It must be noted, that an Airline, or any other 3rd party implementer, may have its own strategy on credit card data processing. While 3D Secure is identified as one potential methodology, an airline may choose to use any other methodology, as would be aligned with its strategy and it would see fit.
### 5.4.10 Involuntary Change

#### Involuntary Change: Re-accommodated flight cancelation Message Flow

<table>
<thead>
<tr>
<th>Seller/Aggregator</th>
<th>Airline</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>0.1 Airline cancels flight and notifies Seller of re-accommodation onto new service</td>
</tr>
<tr>
<td>1 OrderNotifRQ</td>
<td>Send original and replacement Order items</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>1.1. Seller informs customer of change and obtains their preference (accept change, request refund or request a different service)</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>2. ItinReshopRQ</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>Send request for new shopping options</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>2.1. Airline processes shopping request in the context of the cancelled flight and offers replacements to meet customer’s preferences within the airline’s allowable change policy</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>3. ItinReshopRS</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>Order &amp; new Offer IDs,</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>3.1. Customer reviews offers and selects one</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>4. OrderChangeRQ</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>Order and selected Offer IDs</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>4.1. Airline validates change against policy, changes the Order and returns an updated view with re-issued accountable document refs</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>5. OrderViewRS</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>Updated Order &amp; accountable documents</td>
</tr>
<tr>
<td><img src="message_flow_diagram.png" alt="Message Flow Diagram" /></td>
<td>5.1. Updated Order confirmation sent to customer. Copy of the Order may be stored locally.</td>
</tr>
</tbody>
</table>
6 Data Description

Refer to Appendix C - NDC Order Management Data Dictionary (maintained as a separate document due to size).

7 Non-Functional Requirements

7.1 Order Access Security Assumptions

NDC introduces additional access security requirements since all Orders will be made under the airline’s Sales Office and the concept of a booking being ‘owned’ by an agency Sales Office will be replaced by airline controlled access to the subset of its Orders made on behalf of a specific agency Sales Office.

- It is not the responsibility of the Airline to enforce the internal security model of an agency organization; this is the responsibility of the Agency themselves (including their contracted 3rd parties).
- An airline will therefore allow view and change access to any orders from a Sales Office that is authenticated as having requested those orders to be created.
- An agency can include filter criteria in their access request in order to restrict access according to its internal security model but the Airline will not determine whether the search criteria has been correctly applied. For example:
  - an airline will grant access to all orders requested by a Sales Office authenticated as ‘ABC Travel’ even if internally ABC Travel is organized to restrict access by staff based on corporate accounts. It would be ABC Travel’s responsibility to manage which of their staff can request access to a particular order but once that request has been submitted to the Airline, the Airline is only required to authenticate that the message has originated from ABC Travel. So if a staff member only allowed to see Corporate 123 submits a request to see orders for Corporate 456, and ABC Travel doesn’t prevent this then the Airline will allow access since the order was originally made by the Airline on ABC Travel’s request. In order to apply its internal security model, ABC Travel would include a filter to restrict the orders retrieved to Corporate 123.

- An airline is only able to authenticate the identity of the submitter of an NDC request message, not the ultimate initiator of that request. If the Airline is interacting with an aggregator, it is the aggregator’s responsibility to authenticate the identity of the Sales Offices interacting with it & the Airline must ‘trust’ that the aggregator has performed that function in passing through the identity of the Sales Office. For example:
  - if aggregator ‘ABC’ passes through a request for Agent 123 to see it’s Orders, then the Airline will only authenticate the identity of ‘ABC’, it must trust that ‘ABC’ has authenticated that it is actually Agent 123 that has submitted the request to them and further trust that Agent 123 has applied its own internal staff security model. The airline
will then allow access to any Orders made on behalf of a Sales Office with an identity of ‘Agent 123’

- Access security also needs to support extending secure access to Agencies other than those that requested the creation of the order, for example to service a customer away from home. To support this, the security model must be able to use credentials that the traveller themselves can provide.

### 7.2 Non-Functional Requirements Applicability

<table>
<thead>
<tr>
<th>Feature</th>
<th>Definition</th>
<th>Requirement Order Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard based and interoperable messaging protocol</td>
<td>Messaging protocol must be based on industry standards to enable interoperability</td>
<td>Applicable</td>
</tr>
<tr>
<td>Send Only</td>
<td>Also called a Push MEP, this is a simple one-way messaging where an unsolicited message is sent to a receiving system. NDC supports: Send Only with no response, e.g. no Acknowledgement response (ACK, NACK) is sent from the receiving system back to the message sender. Send Only with Acknowledgement response, e.g. an Acknowledgement response (ACK, NACK) may be sent from the receiving system back to the message sender.</td>
<td>Conditional</td>
</tr>
<tr>
<td>Receive only</td>
<td>Also called Pull MEP is a message pattern where a non-addressable sender supports the ability to explicitly obtain messages from another application. This can be used for exchanges that are of “pull” type only</td>
<td>n/a</td>
</tr>
<tr>
<td>Request/Response exchange</td>
<td>Message pattern consists of one or more request/response pairs. The correlation between a request and a response is well defined. In this MEP the response maybe deferred and the requesting application may or may not block application processing until a response is received</td>
<td>Applicable</td>
</tr>
<tr>
<td>Diagnostics/Routing</td>
<td>Authentication, diagnostic, logging &amp; routing information should be included in the message header and not the payload</td>
<td>Applicable</td>
</tr>
<tr>
<td>Feature</td>
<td>Definition</td>
<td>Requirement Order Management</td>
</tr>
<tr>
<td>--------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td>Protocol capability to support assured and single delivery to the receiving application with no message loss</td>
<td>Applicable</td>
</tr>
<tr>
<td><strong>Message acknowledgement/delivery report</strong></td>
<td>Message exchange protocol acknowledgement provides guaranteed delivery in a sense that if there is any communication failure or any remote system unavailability, the message is transparently repeated until the application has received it. This is referred to as reliability feature necessary for business critical messages. Message loss may happen using application acknowledgement only in cases like application or system problems. It may however be complementary to reliability mechanism. Additionally there is also a notion of end to end delivery report that can be used to request a delivery notification from the end user generated by its messaging agent. This may be used for cases that a proof of delivery is required by the sender.</td>
<td>Conditional</td>
</tr>
<tr>
<td><strong>Fault management</strong></td>
<td>Capability to report permanent or transient problems or errors in message exchange and return this information to the sending application</td>
<td>Applicable</td>
</tr>
<tr>
<td><strong>Priority handling</strong></td>
<td>Capability to assign priority to messages and process accordingly – separate between processing and delivery related priority handling.</td>
<td>Applicable</td>
</tr>
<tr>
<td><strong>Data confidentiality</strong></td>
<td>Assurance that data remain secret except for those entities that have been authorized to access this data. (i.e. encryption/decryption). Identify any data elements that are subject to specific confidentiality requirements. For example payment card data will be subject to PCI compliance requirements, and personal data will be subject to PII (Personally Identifiable Information) compliance requirements.</td>
<td>Applicable to passenger personal data</td>
</tr>
<tr>
<td>Feature</td>
<td>Definition</td>
<td>Requirement Order Management</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Requester Authentication</td>
<td>Capability to confirm the identity claimed by a sender or entity</td>
<td>Supported in all Request messages. To include the identity of the source of the request (the identity of the selling entity, the staff member making the request and the Point of Sale channel) and any intermediaries that the request has passed through.</td>
</tr>
<tr>
<td>Message integrity</td>
<td>Capability to ensure that data are preserved in its original form and not altered</td>
<td>Applicable to the message body</td>
</tr>
<tr>
<td>Capability to target multiple recipients</td>
<td>Ability to send a message to more than one recipient or applications</td>
<td>Applicable, eg to multiple directly connected airlines plus one or more aggregators</td>
</tr>
<tr>
<td>Multi part Messages</td>
<td>Communications do not support the transmission of messages in multiple parts.</td>
<td>Applicable</td>
</tr>
<tr>
<td>Support for attachment (for rich documents (image, large files etc.)</td>
<td>Ability to have digital attachments (to allow simpler management of attachments and optimized transport)</td>
<td>Attachments must not appear in the message – only links to them</td>
</tr>
<tr>
<td>Message Compression</td>
<td>Capability to compress (to save bandwidth)</td>
<td>Applicable</td>
</tr>
<tr>
<td>Feature</td>
<td>Definition</td>
<td>Requirement Order Management</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Support for specific protocols</td>
<td>Please indicate what messaging protocols you expect the industry will use to exchange the messages. May need to support either or both SOAP and REST</td>
<td></td>
</tr>
<tr>
<td>Response Time</td>
<td>Communications must support a timeout function</td>
<td>Applicable</td>
</tr>
<tr>
<td>Versioning</td>
<td>Messages must comply with PADIS versioning specifications</td>
<td>Applicable</td>
</tr>
<tr>
<td>Localisation</td>
<td>Any localisation data elements must support the ability to provide a language identifier</td>
<td>Applicable</td>
</tr>
<tr>
<td>Unique Message Identification</td>
<td>Messages should provide the ability to support a unique message identifier</td>
<td>Applicable</td>
</tr>
<tr>
<td>State</td>
<td>Messages should have the ability to support both stateful and stateless modes of communication Shopping messages will be stateless</td>
<td></td>
</tr>
<tr>
<td>Message Expiration</td>
<td>Communications should provide the ability to stipulate an expiration timestamp</td>
<td>Applicable</td>
</tr>
<tr>
<td>Schema Language Locale</td>
<td>Message schema must be written in en_us</td>
<td>Applicable</td>
</tr>
</tbody>
</table>

8 Code Lists

PADIS Codesets must be used where existing and where possible. DDXWG is responsible for requesting PADIS to update and/or add codesets as NDC business needs may evolve. Codesets are managed according to PADIS methodology and governance process.

IATA
- IATA Airline Coding Directory (ACD): Airline Designator Codes
- IATA City Code Directory (CCD): Airport and City Codes (3 alpha characters: XXX)
- IATA: 3 character Passenger Type (PTC)

PADIS
- 1050 – Sequence Number
- 1245 – Status Indicator
- 3227 - Place/Location Qualifier
- 9750 - Reservation Booking Designator or bilaterally agreed codes are used
- 9800 - Reservation Booking Designator
- 9825 - Seat Characteristic, Coded
- 9864 - Row Characteristic
- 9865 - Seat Occupation
- 9972 - Originator Type Code
- 9978 - Cabin Facilities Characteristic
- FST – Flight Segment Type
- COT - Camera Orientation Type (refer to PADIS Codeset CR - PADIS Messaging Week 3)
- MLT - Media Link Type (refer to PADIS Codeset CR - PADIS Messaging Week 3)
- TDT - Touchpoint Device Type (refer to PADIS Codeset CR - PADIS Messaging Week 3)

**Other**
- ISO 8601 (Date Format: YYYY-MM-DD and Military/ 24 Hour Format (HH:MM)
- ISO 4217 (Currency designators (three character) format)
- ISO 3166-1 (Country codes (two character)
- Microsoft National Language Support (NLS) encoding (content language designators)

Code lists usage is further identified in Appendix C – *NDC Order Management Data Dictionary*. 
**Appendix A: List of Use Cases**

The range of use cases included is not exhaustive. Use cases described are illustrations. Personalized Booking scenarios are included to demonstrate the capabilities described in the business requirements. Personalization is optional, and the level of personalization depends on the traveller choice.

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>Seller</th>
<th>Aggregator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Common Create Order Use Case</td>
<td>Generic</td>
<td>Direct &amp; /Or Distribution Channel Provider</td>
</tr>
<tr>
<td>2</td>
<td>Group Booking</td>
<td>Generic</td>
<td>Direct &amp; /Or Distribution Channel Provider</td>
</tr>
<tr>
<td>3</td>
<td>Booking via TMC</td>
<td>TMC</td>
<td>Distribution channel provider</td>
</tr>
<tr>
<td>4</td>
<td>Leisure Travel Agency with Anonymous Affinity Shopping</td>
<td>Travel Shop/Call Centre</td>
<td>Distribution channel provider</td>
</tr>
<tr>
<td>5</td>
<td>Non flight order (lounge pass, Booklet 10 flights)</td>
<td>Leisure Agent/ TMC/ CBT</td>
<td>Direct</td>
</tr>
<tr>
<td>6</td>
<td>Dynamic Bundle</td>
<td>TMC</td>
<td>Distribution channel provider</td>
</tr>
<tr>
<td>7</td>
<td>Change Itinerary (Re-shop) on an existing Order</td>
<td>Generic</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>UC with change upgrade</td>
<td>TMC</td>
<td>Direct &amp; /Or Distribution Channel Provider</td>
</tr>
<tr>
<td>9</td>
<td>Common Booking Use Case – Name Change</td>
<td>Generic</td>
<td>Direct &amp; /Or Distribution Channel Provider</td>
</tr>
<tr>
<td>10</td>
<td>UC with change from Anonymous offer to a personalized offer</td>
<td>Leisure Agent/ TMC/ CBT</td>
<td>Distribution Channel Provider</td>
</tr>
<tr>
<td>11</td>
<td>Conditional change due to a qualifying passenger</td>
<td>Generic</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Waitlist</td>
<td>Generic (Leisure Agent/ TMC/ CBT, etc.)</td>
<td>Distribution Channel Provider</td>
</tr>
<tr>
<td>13</td>
<td>Involuntary Changes</td>
<td>Generic</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Common booking</td>
<td>Generic</td>
<td>Direct &amp; /Or Distribution Channel</td>
</tr>
<tr>
<td>Cancellation</td>
<td>Provider</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Metasearch Booking</td>
<td>Airline and OTA Direct channel provider &amp; OTA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 Create Flight Order with instant purchase</td>
<td>Travel Shop/Call Centre</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Use Case 1: Common Create Order Use Case

1: Use Case Flow Overview

Principal actors (with roles):

Customer (Traveler) – The person purchasing the product who may or may not be travelling

Seller - Selects offer(s) to book (examples: Leisure Agency, Travel Management Company, Corporate Booking Tool, etc...)

Aggregator – Aggregates various “offers” from different providers

Airlines – Providers who respond to shopping & booking request

Preconditions/Assumptions:

Assumption: The Shopping Response may include offers with: Bundled Fares, Unbundled Fares, as well as A-La-Carte Ancillary services.

Precondition: Travelers have indicated to the Seller (and provided or withheld consent for) what personalized information and preferences can be used and exchanged with industry providers in the process of Booking for and Booking/Servicing travel products and services.

All parties (Sellers, Aggregators, and Airlines) involved in the process have been identified and authenticated.

The Selling System may or may not offer the concept of a Shopping Basket.

Description:

This Use Case may be used as a “Base” on top of which all others may be constructed.

The Seller reviews the offers received from the Airline. Offer responses may include: Bundled Product Offers, Unbundled Product Offers, as well as A-La-Carte Optional Services.

Steps to follow in the process:

1. The “ShoppingResponse” is returned and presented to the “Seller” for review.
   - The “ShoppingResponse” may contain Offer items with a “Offer Time Limit” for the purpose of indicating the time for which the Airline will keep a record of the response to facilitate the booking process. Once the time limit has expired the airline may clear the response from their cache and require that the seller/aggregator no longer make reference to that “ShoppingResponse” in any subsequent booking messages.

2. The “Seller” reviews the “ShoppingResponse” and decides whether to purchase an offer

3. The “Seller” selects one or more “Offers” to purchase.
   - The “Offers” are returned with a “Offer Time Limit” by which time the “Seller” must request any of the included offers. Should the “Offer Time Limit” expire then the airline may no longer have any record of the Offers and a new “Shopping Request” may be required.

4. The “Seller” selects the “Offers” they wish to purchase
   4.1. Some airlines may wish to offer the facility to guarantee inventory space at this step in the process, the facility needs to be indicated in each Offer item, if so then:
       - A message may be sent to the airline to hold the inventory
   4.2. The airline may then respond with a message which may contain the following indicators:
• Whether space is actually held or not
• If held, for how long ("Inventory Guarantee Time Limit")
• Whether the “Offer” price is guaranteed for that time period.
• A “Inventory Guarantee Reference” to be referred to when the booking is completed.
• Qualifiers to be sent

5. The seller may be able to accumulate additional “Offers”.
6. Once they have finished Shopping they may complete the purchase “proceed to check-out”.
7. If the “Offer Time Limit” is still valid then the booking may be completed.
   • The “Order Creation request” is sent with all the information required to complete the sale (i.e. names, contacts, forms of payment, etc.)
     o If the inventory space was held then a “Inventory Guarantee Reference” may be sent to the airline to use the space previously held in 4.1.
8. The airline validates the order creation request, re-pricing with qualifiers.
9. If the validation fails then the user is directed to re-shop. If it succeeds then the Airline executes the order request and returns a Order ID.
10. Should the seller not wish to commit fully to the purchase, a Purchase Time Limit will be in force by which time there must be an authenticated commitment to pay and an accountable document issued (i.e. a ticket for ticketing airlines). Other a-la-carte “Offers” may also be offered, i.e. insurance, etc…

**Post Conditions:**
An Order is made in the airlines system, a copy of which may be recorded by the Seller’s and/or Aggregator’s systems.

The booking may require instant payment and ticketing, whereby the seller enters the ticketing flow, the first step of which may be to check that any and all time limits have not expired.
1. Shopping RS
2. Review Offer(s)
3. Select Offer(s)
4. Do I want to Hold Space? Yes → 4.1 Hold Inventory
   No → 4.2 Space/Offer Guarantee Indicator
5. Finished Shopping? Yes → 6. Order creation request
   No → 5. Finished Shopping?
6. Order creation request
7. Space/Offer Guarantee Indicator
   No → 8. Offer Validated? (repriced)
10. Clear Payment
11: issue accountable document
Use Case 2: Group Booking

Principal actors (with roles):

**Customer (Traveller)** – The person purchasing the product who may or may not be travelling

**Seller** - Selects offer(s) to book (examples: Leisure Agency, Travel Management Company, Corporate Booking Tool, etc…)

**Aggregator** – Aggregates various “offers” from different providers

**Airlines** – Providers who respond to shopping & booking request

Preconditions/Assumptions:

Assumption: The Shopping Response may include offers with: Bundled Fares, Unbundled Fares, as well as A-La-Carte Ancillary services.

Precondition: Travelers have indicated to the Seller (and provided or withheld consent for) what personalized information and preferences can be used and exchanged with industry providers in the process of Booking and Servicing travel products and services.

All parties (Sellers, Aggregators, and Airlines) involved in the process have been identified and authenticated.

The Selling System may or may not offer the concept of a Shopping Basket.

Description:

This Use Case is for a booking for ten or more passengers, travelling together for the entire journey.

Group bookings are typically ordered and held with a deposit and names may be given at a certain period of time prior to departure.

The Seller reviews the offers received from the Airline. Offer responses may include: Bundled Product Offers, Unbundled Product Offers, as well as A-La-Carte Optional Services.

Due to the nature of Group Bookings, the time between “Shopping” for offers and Order creation may be much longer.

Steps to follow in the process:

1. The “ShoppingResponse” is returned and presented to the “Seller” for review.
   - The “ShoppingResponse” may contain Offers with an “OfferTimeLimit” for the purpose of indicating the time for which the Airline will keep a record of the “Offer” to facilitate the group sales process. Once the time limit has expired the airline may clear the response from their cache and require that the seller/aggregator make a new shopping request

2. The “Seller” reviews the “ShoppingResponse” and presents it to the Customer for review

3. The “Seller” selects the Offer items the customer has chosen

4. The “Seller” sends a “Order creation Request” to the airline containing the Offers .

5. The airline will then respond with a message which may contain the following indicators:
   - An order identifier
   - Whether space is actually confirmed or is on request
   - Whether a deposit or full payment and ticketing will be required
   - If and when the space is confirmed the following information may be sent by the airline:
• The deposit amount due
• The date by which the deposit is due
• The date by which time:
  • The group size must be reviewed
  • The passenger names must be provided

6. **Post Conditions:**
   • An order is created in the airlines system, a copy of which may be recorded by the Seller’s and/or Aggregator’s systems.
   • The order may require instant payment and ticketing, whereby the seller enters the ticketing flow, the first step of which may be to check that any and all time limits have not expired.
   • Some of the most common changes to Group Bookings are:
     • Addition of names / Change of names (prior to ticketing)
     • Split some passengers from the group to depart and/or return on different dates to the bulk of the group
     • Addition of Ancillary Services once the individual passengers and their needs are known. Increase in group size
Use Case 3: Booking via TMC

Description:
Post the shopping request, response, offer, selection of offer by the customer and acknowledgement of the offer (Air Fare and Ancillaries) by the airline, this use case continues with the order creation process. The booking scenario remains as follows:

Two travellers (1 Top Tier FF and a VGML request) booking via a TMC who is using a distribution channel provider as an Aggregator, looking for a Round-Trip International itinerary with a non-stop outbound and a stop-over on the return flight. The customer would like to review and book available seats before completing the booking process.

Principal actors (with roles):
Customer - (Traveller/s)
TMC – (Seller)
Distribution channel provider – (Aggregator)
Airlines – (Provider)

Preconditions/Assumptions:
An acknowledged offer (including ancillary / add-on ancillary services) is stored by the airline. The offer could be stored under one or more Offer IDs and Service IDs.

It is assumed that a booking system is available for transfer of information and booking creation process between the TMC, the Distribution channel provider and the Airlines. Hence, information transfer including request, communication, acceptance and acknowledgement of the offer, as well as the entire booking creation process including holding of the inventory and management of offer, Inventory Guarantee and Payment time limits is conducted through this booking system.

Steps to follow in the process:
1. The customer asks the TMC to hold inventory and make a booking for the selected offers.
2. The TMC requests the Distribution channel provider to book the offer (including ancillary / add-on ancillary services) with the airline.
3. The Distribution channel provider requests the airline to hold inventory and make a booking.
4. The airline validates whether the offer time limit, the Inventory Guarantee Time Limit and the Payment Time Limits are valid for the selected and acknowledged offer.
5. If the time limits are no more valid, the airline informs the Distribution channel provider which informs the TMC, which in turn informs the customer that the offer is no more valid and hence, requests the customer to select any other offer. The flow ends.
6. If the time limits are still valid, the airline holds the inventory for both the travellers for each of the bookable component of the selected offer i.e. the To and Fro round trip international journey and any other ancillary services that are part of the selected offer.
7. The TMC then passes on the traveller personal information (names, contact information, emergency contact details, frequent flyer numbers, as well as other preferences gathered from the traveller’s profile to the airline via the Distribution Channel provider.
8. In the request, the TMC also includes a request for vegetarian meals for both the travellers for the To and Fro flights.
9. The airline validates whether the Offer, Inventory Guarantee and Payment time limits for the inventory held flights and ancillaries are still valid.
10. In case the time limits have expired before generation of the Order ID, the Airline informs the Distribution Channel Provider which informs the TMC, which in turn informs the customer. The TMC has to request for a fresh offer again. The flow ends.

11. However, if the time limits are still valid, the airline makes a reservation for the held flights and ancillaries and generates an Order ID.

12. Since the payment time limit is still valid, the customer has the option to hold the inventory until the payment time limit.

13. The airline also actions (confirms or rejects) the request for the vegetarian meals for the travellers.

14. The airline returns the Order ID along with the order details to the TMC via the Distribution channel provider.

15. The TMC presents the Order ID and its details along with the payment time limit to the customer/traveller.

16. The flow ends

Post conditions:

- An order (including ancillary / add-on ancillary services) is created and stored with the airline. There could be one or more confirmation numbers based on the number of services included in the order.
- No services booked by the airline.

Flow Diagram:
Use Case 4: Leisure Travel Agency Booking

This use case is in continuation to the shopping use case for ‘Leisure Travel Agency with Anonymous Affinity Shopping’.

Description:

Post the shopping request, response, offer and selection of offer by the customer, this use case continues with the order creation process. The shopping and booking scenario remains as follows:

A family member visits a high street Travel shop to book flights for their annual beach holiday. Their holiday dates are fixed but not their destination. They specify a direct flight. The travel agent does not provide any personal details to the airline suppliers during the shopping process except that they are a party of 2 adults and 2 children under 12. They also want to buy holiday Fast Track.

Principal actors (with roles):

Customer - (Traveller/s)
Leisure Travel Agent – (Seller)
Distribution Channel Provider - (Aggregator)
Airlines – (Provider)

Preconditions/Assumptions:

A user accepted offer (including ancillary services - Fast Track Ancillary) is acknowledged and stored by the airline. The offer contains an Inventory Guarantee Time Limit.

The offer could be stored under one or more bundled/unbundled Offer IDs and Service IDs for the following:

- Airfare based on passenger types (These could be agent negotiated net fares with the airline provider via the Distribution Channel Provider (e.g. IT or Seat only)
- Holiday Fast Track Service

Steps to follow in the process:

1. For the customer selected offers within the Offer time limit, the Travel Agent requests for inventory to be guaranteed
2. If the Offer time limit is still valid, the airline guarantees the inventory for the entire party (2 adults and 2 children under 12 years) for each of the bookable components of the selected offer/s for a specified time and passes on the information of the booked orders on the booking tool to the Leisure Travel Agency via the Distribution Channel Provider. The order includes:
   - To and Fro flights to the beach destination for the selected negotiated fare (IT or Seat Only).
   - Holiday Fast Track Service
3. The Travel Agent informs the customer of the inventory guarantee and requests them to provide the individual passenger details in order to complete the booking.
4. The customer then provides the personal information (names, date of birth, contact information, emergency contact details, frequent flyer numbers, etc. for each of the travelers.
5. The Travel Agent inputs the passenger information in the booking tool to complete the booking.
6. At this stage, the airline again validates whether the Inventory Guarantee, Offer and the Payment time limits for the inventory held flights and ancillaries are still valid or not.
7. In case the time limits have expired, the airlines informs this to the Travel Agent (on the booking tool) who in turn informs to the customer. The customer has to request for fresh offers again. The flow ends.

8. However, if the time limits are still valid, the airline crates an order with the traveler details.

9. The Leisure Travel Agent again asks the customer to provide the preferred payment method and its details.

10. The customer provides the Credit Card details for making the payment for the booking.

11. The Travel Agent inputs the passenger information and payment details in the booking and charges the credit card with the total booking amount.

12. The airline authenticates the payment then issues accountable documents i.e. Electronic Tickets and EMDs for the booked order.

13. The Travel Agent passes the order and accountable document references to the customer.

14. The flow ends

Post conditions:

- An order (including ancillary) is created, ticketed and stored with the airline.
- No services booked by the airline.
Flow Diagram:

1. The TA requests for booking creation on the booking tool
2. The Airline validates the Inventory Guarantee, Offer and Payment Time Limits
3. Time Limits Valid?
   - Yes
   - No
4. The airline holds space/inventory for each of the services in the offer and creates Order ID
5. The customer provides traveller information to the TA
6. The TA enters the traveller information details in the booking
7. The airline again validates the Inventory Guarantee, Offer and the Payment time limit
8. Time Limits Valid?
   - Yes
   - No
9. The airline Updates the order with the traveler information
10. The customer advises the Payment details for making the payment
11. The TA Collects the payment and appends the payment details in the booking
12. The Airline Issues the the E-Tickets and EMDs
13. The Flow Ends

The Customer accepts the offer Or Reoffer
Use Case 5: Non Flights Order

Description:
The airline receives a request to offer for a non-flight product on its portal. The product requested is a one year subscription for fixed number of lounge access i.e. 10 accesses for the year. The airline is the distribution partner for the lounge brand and sells the subscription of the lounge on its portal. The airline returns the offer which is accepted and purchased (ordered) by the customer though a seller. The product is not instant purchase and so payment is not taken as part of this Use Case.

Principal actors (with roles):
Customer - The person purchasing the product who may or may not be traveling.
Seller – Selects offer(s) to book (examples: Leisure Agency, Travel Management Company, Corporate Booking Tool, etc...)
Airline – Provider who respond to shopping & booking request

Preconditions/Assumptions:
Assumption – The airline is an authorised reseller of lounge access subscription service through its portal.
Precondition - A customer accepted offer for a lounge subscription service is acknowledged and stored by the airline.
The offer made by the airline has valid offer, price guarantee and payment time limits.

Steps to follow in the process:
1. A shopping response (AirShoppingRS) for lounge subscription access is returned by the airline and presented to the seller.
2. The shopping response may contain an offer time limit, a price guarantee time limit and a payment time limit.
3. The seller reviews the shopping response and presents it to the customer for review.
4. The customer reviews the airline offer and asks the seller to book and purchased it.
5. The seller requests the airline to book the offer and create an order (OrderCreateRQ).
6. The booking request is sent with all the information required to complete the order, i.e.
   - Name of the passenger for whom the lounge access subscription is purchased;
   - Date of Birth;
   - Frequent Flyer Number (If any);
   - Start and end period of the subscription (Validity);
   - Any other information required
7. The airline validates whether the offer, price guarantee and payment time limits are valid.
8. If the time limits are no more valid, the airline returns with the response that the time limit has expired and the seller needs to request for new offers. The flow ends.
9. If the time limits are valid, the airline books the order and returns an order ID to the seller along with the order details (OrderViewRS).
10. The flow ends
Post conditions:
- An order for the lounge access subscription is created and stored with the airline.
- No orders are booked by the airline.

Flow Diagram:
Use Case 6: Adding Dynamic Service Bundle to Booking (anonymous or personalized)

This use case is based on a common booking workflow and shows as extension the selection of dynamic service bundles.

Description:

Starting point: Agent has

a) Received and selected an offer as agreed upon w/corporate traveller. Selection may be (a) a fare family with already pre-packaged and included services or (b) a fare without any additional services.

b) User is then displayed any additional “a-la-carte” (bolt-on) service items available in addition to the basic selection.

Shopping/Booking scenario:

The business traveler calls his agent at the TMC to book a regular business trip. He is known to always look for some helpful services to speed up his ways though the airport and to also be able to work on the plane.

Principal actors (with roles):

Customer - (Traveller/s)

TMC – (Seller)

Distribution Channel Provider - (Aggregator)

Airlines – (Provider)

Preconditions/Assumptions:

Agent has the results from the Shopping response displayed and discussed with the traveller. It appears that none of the pre-packaged fare families provide exactly what the traveller wants in terms of ancillary services. Instead there is a special discounted fare offered based on the provided Corporate ID but that fare does not have any pre-packed services (as not all levels of travellers of this corporation are entitled to ancillary services).

Simultaneously with the base offers the POS application also displays what additional a-la-carte services are available for each returned offer. These services were also discussed with the traveller and he decides to go for one of the ‘Service Bundles’.

- Each Service bundle displayed has its own OfferID and Service ID
  - Each individual service inside the bundle also has its own Service ID
- All content described above and displayed has been provided in the Shopping Response

Steps to follow in the process:

1. TMC agent selects the corporate offer and sends a request to guarantee inventory without any details in order to secure the flight inventory. POS app logic may check the offer validity and reject processing the request if it is expired.
2. **Aggregator checks if offer is within offer validity** – if yes, proceeds by passing request to airline, otherwise returns an ‘expiration’ or ‘not any longer available/valid’ message to aggregator who informs the TMC’s POS application (most likely triggering a new shopping request - end of flow)

3. **Airline holds the flight inventory for a specified time and sends this to the aggregator with confirmation of hold** (no order is generated at this point)

4. **Aggregator returns airline’s confirmation to TMC.**

5. **TMC agent verifies that the traveler is within corporate policy and is allowed to select the services in question.** Agent continues with one of the following options. The different options below reflect the different packaging methods the airline can apply to their service bundle offering. The Shopping response does support all methods outlined below so that the POS app can display and execute accordingly

   **Option 1:**
   The bundle offered is a customizable service bundle where the traveler can choose 3 out of the 5 services offered. Traveler asks agent to choose: Priority boarding, Fast Track through Security and WiFi. This bundle is dynamically priced based on the corporate ID (corporate negotiated deal) and the traveler’s top tier level status has also influenced the price point.

   **Option 2:**
   The bundle offered is a customizable service bundle where the traveler can choose 3 out of the 5 services offered. Traveler asks agent to choose: Priority boarding, Fast Track through Security and WiFi. This bundle is NOT initially priced – but the individual selectable services have individual prices and based on selection the bundle price is dynamically established. This can be done by the POS app or the POS app sends a ServicePriceRQ message with the selection to obtain the dynamic price from the airline via aggregator.

   **Option 3:**
   If TMC agent initiated the initial shopping request w(attributes for (a) PriorityBoarding, (b) FlyByLane, (c) WiFi and (d) PowerPort then these services can be dynamically bundled and returned in the original ShoppingRS and be made available for selection as a STATIC bundle (no individual service selection within the bundle – just the selection of the entire offered service bundle).

   Note: The airline may choose to INCLUDE the above and create a “fare family” or may choose to offer the services as a Service Bundle to be added to the selected corporate fare.

6. **Traveler may or may not request the selection of any additional bundle or single a-la-carte item to be added to the POS application display.**

7. **TMC agent is not sending a request to hold inventory for the above ancillary service selection** (as the selected services are not inventory controlled). Agent instead continues to collect all mandatory data from traveler (or pulls it from an existing profile).

8. **The order creation request is now being send containing**
   - The held flights (with offer ID – allowing the airline to match with the held inventory)
   - The additionally selected Service Bundle(s) with
     - Associated “Bundle Offer ID”
     - Individual “Service Offer ID” for each of the 3 selected service
   - Any additional Service with individual “Service Offer ID”

9. **At this stage, the airline validates whether the booking time limit for the [flight] inventory is still valid or not.** – if yes, airline proceeds with the processing of the booking request (see next step),
otherwise airline returns an ‘expiration’ or ‘not any longer valid’ message to POS app (triggering a new shopping request - end of flow)

10. Airline executes the order request and returns confirmation (Record Locator) to the TMC via aggregator.
11. Payment / Ticketing will follow but is not within the scope of the booking workflow

**Post conditions:**

A confirmed order (including ancillary) is created by the airline and communicated to the seller via aggregator.
Use Case 7: Change Itinerary (Re-shop) on an existing Order

**Description:**
Customer contacts their Travel Agent to change an existing order: changing a flight date and adding a new segment. Ancillaries had been ordered on the flight that is changing. Fare rules for the ordered itinerary allow change for a fee.

**Principal actors (with roles):**

**Seller:** On behalf of their customer - generate new shopping requests, display airline product offers, order selected products from airline

**Airlines:** provide access to existing order details, respond to requests to change orders with new product offers and create, update and cancel orders [and provide the necessary accountable documentation]

**Preconditions/Assumptions:** Customer has an airline order originally made through the Seller.

**Post Conditions:** Seller has a changed order

**Steps to follow in the process:**

1: Customer requests Seller to change their airline order to depart a day earlier and add a side trip
2: Seller requests the airline for the current version of the airline Order, quoting the order reference (and the passenger’s surname?)
3: Airline authenticates the Seller’s credentials, retrieves the order, verifies that the Seller has view rights to this Order and returns the order data to the Seller (Else returns a 'no access allowed' message)
4: Seller reviews the existing order and sends a request to change it to the Airline, detailing the new flight and routing requirements and quoting the Order reference
5: Airline retrieves the referenced Order and
   - looks up the fare rules to calculate the residual value of the existing Order and the applicable change fees
   - checks for the presence of ordered ancillaries on the impacted passenger segments,
   - creates product offers for the new flight and route requirements
   - produces new ancillary offers relevant to the new request, including any previously ordered ancillaries transferred to new flights and the residual value of any ancillaries that have had to be cancelled.
and returns these to the Seller together with any unchanged order items and a Booking Time Limit
7: The Seller displays these to the customer. The customer selects a new set of new product offers
8: optional. Seller requests airline to re-price the new offers referenced by their offer identifiers with the unchanged order items
9: optional. Airline re-prices the customer selection and returns to Seller, including the change fee and residual value of the old order.
10: Seller requests the airline to reserve the customer selection and re-issue the accountable documents if accountable documents have already been issued for the original order, including those for ancillaries, otherwise the TTL of the original order still applies if the limit has not been reached.
11: Airline either cancels the old Order and creates a new one or amends the existing order by cancelling changed order items and adding newly selected order items. The order reference (and accountable document references if re-issued) is returned to the Seller, together with the reference of any cancelled Orders and cancelled accountable documents.

12: Seller passes new Order reference (and accountable document references if re-issued) to Custom
Use Case 8: With Change Upgrade Cabin

Description:
The customer had made a booking with his travel agent for LHR to JFK and back in Economy Cabin. He had made the booking for the flights 10 days before the flight date and made the payment for the order as well. 5 days before the flight date, he approaches the airline directly requesting for an upgrade from Economy cabin to Business cabin by presenting the free of charge upgrade voucher he had received from the airline as a result of his tier level upgrade in his Frequent Flyer membership with the airline.

Principal actors (with roles):

Customer (Traveler) – The person purchasing the product who may or may not be travelling.

Seller – Selects the offer and books the order – Leisure Travel Agency, Travel Management Company, etc.

Airline(s) – Providers who respond to shopping, booking and booking update requests.

Preconditions/Assumptions:
Precondition: A booking is made in the airlines system, a copy of which may be recorded by the Seller’s systems.

All parties (Sellers, Airlines) involved in the process have been identified and authenticated.

Steps to follow in the process:

1. The customer approaches the airline and provides the order ID or the Order reference number to the airline for retrieval.
2. The Airline retrieves the order and validates the order credentials as well as the credentials of the customer for authenticity and security purposes.
3. The airline also validates the accountable documents (Tickets/EMDs, etc.) issued
4. The customer asks the airline to upgrade his outbound flight LHR to JFK from Economy to Business Cabin.
5. The customer also presents to the airline the free of charge upgrade voucher sent to him by the airline a few weeks earlier as recognition for his frequent flyer tier level upgrade.
6. The airline validates the upgrade voucher.
7. If upgrade voucher is not accepted, the airline refuses the customer’s request for upgrade explaining why the upgrade has been refused.
8. The airline agrees to upgrade the outbound flight as requested on the condition that seats are available in Business Cabin.
9. The airline searches its system for Business cabin offers for the same route, flights and dates as booked in the existing order.
10. If no offers are available for the Business Cabin, the airline informs to the customer and the flow ends.
11. Offers are available, so the airline cancels the existing Economy cabin order item and updates the order for the business seat using the upgrade voucher information as form of payment and reissues the Electronic Ticket as per the upgraded flight.

12. The Flow Ends

**Post Conditions:**

The order is modified in the airlines system for the upgraded cabin, a copy of which may be recorded by the Seller’s systems.

The cabin upgrade is not allowed as the upgrade voucher is not valid or there are no seats available in the Business Cabin.
Flow Diagram:

1. Customer asks airline to retrieve the pre-existing order
2. Airline retrieves the order and validates the order and customer credentials and the accountable documents
3. The Customer presents the upgrade voucher and asks airline to re-book the flight from economy to Business cabin
4. Airline validates the voucher, voucher valid
5. The Airline checks for offers in Business Cabin
6. Offers available?
7. Airline rebooks the flight in Business Cabin
8. Airline issues new accountable document
9. The Flow Ends
0. Airline informs the Customer that upgrade is not possible
Use Case 9: Generic Booking Use Cases – Name Change

Principal actors (with roles):

Customer (Traveller) – The person purchasing the product who may or may not be travelling

Seller - Selects offer(s) to book (examples: Leisure Agency, Travel Management Company, Corporate Booking Tool, etc...)

Aggregator – Aggregates various “offers” from different providers

Airline(s) – Providers who respond to shopping & booking request

Preconditions/Assumptions:

Precondition: A booking is made in the airlines system, a copy of which may be recorded by the Seller’s and/or Aggregator’s systems.

All parties (Sellers, Aggregators, Airlines) involved in the process have been identified and authenticated.

Description:

This Use Case describes the process flow of modifying or changing a name on a previously created reservation.

Steps to follow in the process:

1. The Seller retrieves the reservation.
   1.1. This may cause the Selling system to request an updated copy of the reservation details from the airlines system.
   1.2. The Seller selects one or more of the passengers to change or modify the name
   1.3. The Seller modifies the name(s) and submits the request to the airline

2. The Airline validates the request which may include:
   2.1. Have accountable documents been issued?
   2.2. How many characters in the name are being modified?
   2.3. Are the flights still available?
   2.4. Are any Ancillary Services affected

3. If the name change/modification is refused, the Airline will respond with the original reservations details and explaining why the change has been refused.

4. If the name change/modification is accepted then:
   4.1. The Airline will inform the Seller whether there are any conditions and charges applicable to the change.

5. If the Seller accepts the conditions, and any applicable charges, then:
   5.1. If any tickets have been issued the airline may reissue new tickets and any other document necessary (i.e. EMD), go to Ticketing/EMD Flow.
   5.2. If the ticket has not been issued the airline will process the request and return a confirmation. If there are payments to be processed go to Ticketing/EMD Flow.

6. Post Conditions:
   - The booking is modified the airlines system, a copy of which may be recorded by the Seller’s and/or Aggregator’s systems.
- The change/modification may require instant payment and re-issue of the ticket and any other applicable documents (i.e. EMD) to cover any charges. If so then the Ticketing flow would be entered.

1. Seller Retrieves Reservation & Requests Name Change/Modification

2. Airline Authorises the Request
   - Yes
   - No
     - 3. Original Reservation Returned with Reason for Denial

4. Conditions and Charges are notified

5. Seller Accepts Conditions and Charges
   - Yes
   - No
     - Original Reservation Returned with Reason for Denial

6. Update Reservation is returned. Payment & Ticketing Flow is entered if necessary.
Use Case 10: Change from Anonymous offer to a personalized offer

Principal actors (with roles):
Customer – (Traveller/s)
Seller – (Leisure Agency, Travel Management Company, Corporate Booking Tool, etc.)
Aggregator – (Distribution channel provider)
Airlines – Provider who responds to the Order requests

Preconditions/Assumptions:
An order already exists and was created for a Customer where all personalized information was withheld for the shopping requests, resulting in an anonymous order (AO).
The existing order may include bundles fares, unbundled fares as well as a-la-carte ancillary services.
The Customer wishes to provide personalized information to update the order and possibly get a better deal with the airline (discount, more attributes and/or services, modified terms and conditions, etc.)
It is assumed that an anonymous order updated with personalized information will always be on par with the original order or to advantage of the customer.

Post Conditions:
An updated order which now includes some personal information that will allow the airline to better serve the customer with the current order (request) as well as with futures orders (Customer Lifetime Value).
It is accepted that the initial order (AO) will remain unchanged in the event that no better offer can be made or customer doesn’t accept it.

Description:
The customer with an already created anonymous order has decided to convert it into a personalized order (PO). [This maybe because the customer had forgotten their login credentials or frequent flyer information at the time of the original order, or it may have been by design as the customer may not have fully understood the value of providing this personal information upfront during the shopping process, or any other reason]
The seller retrieves the AO, gets the relevant personal details of the customer and sends a request to the airline to get a new personalized offer. This can be Order Amendment Shopping Request.
The airline will validate the request and determine if anything in the AO can be changed (the assumption is that it should be “improved” for the customer in terms price, terms and conditions, new services, etc.) If there is a “better” offer, then it will be returned together with any changes that will affect the AO (customer), as price and fees, cancellation/exchange of documents, new items, etc.
The seller will pass the new offer to the customer and if it is accepted will send an Order Amendment request to the airline (using the old AO and the new offer).

Steps to follow in the process:
0. The Seller retrieves the order by providing the order number and/or some other information (e.g. last name) to identify it. Authentication and validation on the permissions to retrieve the order are handled outside this use case
1. Customer reviews AO and decides to request a Personalized Offer
2. Customer enters personal details (that may affect the price or order attributes). These could include: Frequent Flyer information, Email address of previous orders, Corporate ID, Personalized coupon code, etc.
3. Seller Uses AO (details) and Customer’s personal details to request a new personalized offer.
4. The airline validates the request and evaluates the AO and new personal information. This evaluation could include
   - Has payment been received and processed
   - Has the order been fulfilled
   - Has the order been consumed – e.g. flown segments
5. Airlines determines if a new offer can be created
6. If there isn’t anything in the AO that can change, the airline return same AO with a potential (warning) message.
7. If the airline determines the order can be changed (improved) with the new items and/or attributes then using AO details and customer details creates a new “best” offer. This can include
   - Price(s) change
   - Additional free items added to the order – e.g. Lounge access, More baggage allowance
   - New terms or conditions
8. Airline returns to the seller the new offer, the old Anonymous Order, and any potential changes related to accepting it (new price change, new terms and conditions, etc.)
9. Customer review new Offer and all associated changes
10. Customer determine is accepts new Offer (and any new conditions)
11. If Customer doesn’t accept new Offer the use case ends with no changes to original order (AO)
12. If Customer accepts new Offer, Seller creates Order Change request with old AO and new offer
13. Airline change/updates the AO with the new offer, and returns to seller the Personalized Order
14. Use Case ends with new Personalized Order (PO)
User Case 11:
Change from Anonymous to Personalized Order

<table>
<thead>
<tr>
<th>Airline</th>
<th>Seller (TA, TMC, CBT)</th>
<th>Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>0. Seller Retrieves</td>
<td>1. Customer reviews AO and decides to request a Personalized Offer (PO)</td>
<td></td>
</tr>
<tr>
<td>Anonymous Order (AO)</td>
<td>2. Customer enters personal details</td>
<td></td>
</tr>
<tr>
<td>4. Evaluate AO Order and new</td>
<td>3. Seller Uses AO (details) and Customer’s personal details to request a new personalized Offer</td>
<td></td>
</tr>
<tr>
<td>Request</td>
<td>6. Seller receives same Order and message</td>
<td></td>
</tr>
<tr>
<td>5. Create new Offer?</td>
<td>7. Airline uses AO (details) and personal details to create a new “best” Offer</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td>8. Seller receives new Offer and any changes that will affect old AO</td>
<td></td>
</tr>
<tr>
<td>YES</td>
<td>9. Customer review new Offer and all associated changes</td>
<td></td>
</tr>
<tr>
<td>7. Airline uses AO (details)</td>
<td>10. Customer accepts new Offer?</td>
<td></td>
</tr>
<tr>
<td>personal details to create a</td>
<td>12. Seller creates Order Change request with old AO and new offer</td>
<td></td>
</tr>
<tr>
<td>new “best” Offer</td>
<td>13. Airline change the AO with the new offer, creates PO and returns to seller</td>
<td></td>
</tr>
<tr>
<td>14. Use Case ends with new</td>
<td>11. Use Case ends with no changes to AO</td>
<td></td>
</tr>
<tr>
<td>Personalized Order (PO)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Use Case 11: Conditional change due to a qualifying passenger

Description:
Travel Agent has made a booking for 2 customers, one of who has identified themselves in the booking as a high tier frequent flyer in the airline’s scheme. A high tier customer has access to the advance seat selection ancillary at zero price with this airline and due to this airline’s product rules all customers in the booking get this ancillary at this price and have also pre-selected their seats. The Travel agent has now been instructed to cancel the high tier customer’s itinerary so that the other passenger no longer has access to free seat selection.

Principal actors (with roles):

**Seller:** On behalf of their customer - generate new shopping requests, display airline product offer responses, order selected products from airline

**Airlines:** provide access to existing order details, respond to requests to change orders with new product offers and create, update and cancel orders [and provide the necessary accountable documentation]

**Preconditions/Assumptions:** Customer has an airline order originally made through the Seller.

**Post Conditions:** Seller has a changed order

**Steps to follow in the process:**

1: High tier customer requests Seller to cancel their itinerary in their 2 passenger order.

2: Seller requests the airline for the current version of the airline Order, quoting the order reference (and the passenger’s surname?)

3: Airline authenticates the Seller's credentials, retrieves the order, verifies that the Seller has view rights to this Order and returns the order data to the Seller (Else returns a 'no access allowed' message)

4: Seller reviews the existing order and sends a request to cancel the high tier passenger’s itinerary to the Airline, quoting the Order reference

5: Airline retrieves the referenced Order and
   - looks up the fare rules to calculate the residual value of the existing Order and the applicable change fees
   - checks for the presence of ordered ancillaries on the impacted passenger segments
   - checks the impact of the removal of a qualifying passenger from the booking and consequently sends a new product offer for the pre-seat selection ancillary for the remaining passenger and returns these to the Seller with the value of any refund, if any and an Offer Time Limit

6: The Seller informs the remaining customer of the new seat selection offer. The customer decides not to take up the offer.

7: Seller sends a confirmation of the cancellation of the passenger itinerary to the Airline, but not the seat selection ancillary.

8: Airline amends the existing order by cancelling changed order items including the remaining customer’s current seat selection. The order reference is returned to the Seller, together with cancelled accountable documents.
Use Case 12: Waitlist

Description:
The customer has created an order with one or more order items waitlisted and before being fully consumed (executed) the airline determine that the waitlist status of at least one item has changed.

It will send a specific, non-solicited message to the seller (entity that has requested the original order creation) informing that the order status has changed (an item or more have been confirmed).

The seller will confirm with the customer the change of status and any other associated changes (price changes, fees, service changes, terms and conditions changes, etc.) If the customer does not accept the new, modified order, then the seller will have to cancel the order. If the customer accept the changes the new order is retained.

Principal actors (with roles):
Customer – (Traveler/s)
Seller – (Leisure Agency, Travel Management Company, Corporate Booking Tool, etc.)
Aggregator – (Distribution channel provider)
Airlines – Provider who responds to the Order requests

Preconditions/Assumptions:
An order which has at least one order item waitlisted was created for a Customer with an Airline.
The seller is able to receive unsolicited messages, acknowledge them and then present to the customer for confirmation.

Upon changes the status of an order item from waitlisted to confirmed, any other related item will be modified accordingly (even cancelled) so the resulting order is valid.

Post Conditions:
An updated order which now has all order items in confirmed or not waitlisted status or a cancelled order (no order).
Steps to follow in the process:

1. Use case starts with an order with 1+ items in waitlist status
2. Airline determines that 1+ items from the order are confirmed (status changed from waitlist to confirmed)
3. Airline updates the order and informs the seller (entity that has created the order) that the order status has changed.
   • The message should identify which order item has been confirmed
   • The message should detail any other changes in order as a consequence of the status change (price changes, fees, service changes, terms and conditions changes, etc.)
4. The seller acknowledge receiving the message
5. The Seller informs the Customer which review new Offer and all associated changes
6. Customer will accept or not the new, modified Order and any associated changes
7. If Customer accepts the changes, Seller will send a notification to the airline that the changes are accepted
8. Use case end with changed Order with new status for one or more items and potential other changes
9. If Customer does not accept the changes, the Seller will send an Order cancelation request to the airline
10. Use Case ends with order canceled (no active order)
## User Case 13: Waitlist

### Airline

0. Order with 1+ items in waitlist status is created/accepted by airline

1. Airline determines that 1+ items from the order are confirmed

2. Airline updates order and sends an unsolicited message to notify of status change

7. Use Case ends with new Order with item(s) confirmed from waitlist status

9. Use Case ends with Order canceled

### Seller (TA, TMC, CBT)

3. Seller acknowledge receiving unsolicited message

6. Seller notifies airline that the Changed Order is accepted

8. Seller creates Order Cancel request and send it to airline

### Customer

4. Customer review new Offer and all associated changes

5. Customer accepts new Offer?

   - **YES**
   - **NO**
Use Case 13: Involuntary Change

Description:

Includes besides Schedule Changes, unavailability or change of any ordered services,

Assumptions:

Process for involuntary change starts when a PNR has been created. Offers will not be changed, nor eliminated, but are no longer available in case they are selected.

Guaranteed inventory during the offer process or during the creation of the PNR does also not qualify for the change process.

Terms in the following Diagram:

Ticketing: stands for the ticket and for EMDs.

In a ticketless environment ticketing stands for paid service/segment/ancillary.

Order stands for segment or PNR (depends what is affected by the change)

“Queue to customer/Seller” stands for Messages between Airline to Customer/Seller including:

- Codes for the affected services, failure reason and codes for differentiated actions (information, compensation, new offer, etc.)
- Compensation Codes (refundable, Money, Points, Voucher)
- Language Indicator of the Customer
- Specified link to Airline or seller website to present personalized actions or compensations
- Pushed notification with feedback features for Email, SMS, Smart phone
- message includes indicator for involuntary change, so that airline does not apply change fees
- It is assumed that Seller/Agent is capable to receive and respond to such messages.
Use Case 14: Generic Booking Use Cases - Cancel Booking

Principal actors (with roles):

Customer (Traveller) – The person purchasing the product who may or may not be travelling

Seller - Selects offer(s) to book (examples: Leisure Agency, Travel Management Company, Corporate Booking Tool, etc...)

Aggregator – Aggregates various “offers” from different providers

Airline(s) – Providers who respond to shopping & booking request

Preconditions/Assumptions:

Precondition: A booking is made in the airlines system, a copy of which may be recorded by the Seller’s and/or Aggregator’s systems.

All parties (Sellers, Aggregators, Airlines) involved in the process have been identified and authenticated.

Description:

This Use Case describes the process flow of cancelling a previously created reservation.

Steps to follow in the process:

1. The Seller retrieves the reservation.
   1.1. This may cause the Selling system to request an updated copy of the reservation details from the airlines system.
   1.2. The Seller selects one or more of the passengers to cancel and requests the cancellation.

2. The Airline validates the request which may include:
   2.1. Has the ticket been issued?
       • If the ticket has not been issued:
         • The airline will check if there are any other charges payable/refundable and if so the Seller will be advised and asked if they accept in step 3.
       • If the ticket has been issued the any charges or refunds will be advised to the seller for their acceptance.

The Airline responds advising of conditions and any charges / refunds that may apply.

3. If the Seller accepts the conditions, and any applicable charges, then the cancellation is confirmed:
   3.1. If any TKTs or any EMDs have been issued the Payment/Refund Ticketing/EMD Flow is called.

Post Conditions:

• The booking is modified/cancelled in the airlines system, a copy of which may be recorded by the Seller’s and/or Aggregator’s systems.
• The change/modification may require instant payment and re-issue of the ticket and any other applicable documents (i.e. EMD) to cover any charges. If so then the Payment/Refund & Ticketing flow would be entered.
• The refund is processed.
Flow Diagram

1. Seller Retrieves Reservation & Requests Cancellation of some or all passengers.

2. Conditions and Charges are notified

3. Seller Accepts Conditions and Charges

   Yes

   4. Reservation is modified/cancelled Payment/Refund & Ticketing process may be invoked.

   No

   Original Reservation Returned.
Use Case 15A: MSE Deep Link

1: Use Case Flow Overview

Principal actors (with roles):

Meta Search Engine (MSE) – website or app used by requestor to determine which Order she/he wants to book

Airlines – (Provider and Seller)

OTA – (Aggregator and Seller)

Aggregator – may be used by MSE to complement offers that were received directly from Airlines and OTA’s

Requestor (Traveler) – The person purchasing the product who may or may not be travelling

Preconditions/Assumptions:

General Assumptions:

- The Shopping Response may include offers with: Bundled Fares, Unbundled Fares, as well as A-La-Carte Ancillary services.

MSE Specific Assumptions for Deep Linking:

- Shopping completed normally, with Airline Profile guiding the MSE to shop via NDC
- ShoppingRS contains a WebAddressID (or, outside of NDC the airline has provided the MSE with a table of which URL’s to use across permutations of geo-location / POS, device i.e. laptop/desktop vs. smartphone vs. tablet, and language preferences)
- As the MSE may present the user with 1000 or more offers, we assume that the airline offer will be available for at least a few seconds while the requestor is filtering and reviewing to find the desired offer (“ShoppingResponseTimeLimit”)

General Preconditions:

- Travelers have indicated to the Seller (and provided or withheld consent for) what personalized information and preferences can be used and exchanged with industry providers in the process of Booking for and Booking/Servicing travel products and services.
- All parties (Sellers, Aggregators, and Airlines) involved in the process have been identified and authenticated.
- The Selling System must offer the concept of a Shopping Basket.

MSE Specific Preconditions for Deep Linking:

- The flow for Deep Linking may vary, based on whether the requestor is a known traveler to the MSE
- If the requestor is a known traveler, then the MSE booking process will proceed with an Order creation request, to which the airline may respond with an OrderID
- If the requestor has not yet identified to the MSE who is the traveler at the moment of selecting an Offer to book, then the MSE booking process will proceed with an Inventory guarantee
request message to create a ‘provisional’ Order until such time as the Deep Link has occurred

Description:
The Requestor reviews the offers received from the Airline. Offer responses may include: Bundled Product Offers, Unbundled Product Offers, as well as A-La-Carte Optional Services.

Steps to follow in the process:

1. Some airlines may wish to offer the facility to guarantee inventory space at Shopping step in the process, the facility needs to be indicated in each “OfferID”.
2. The Requestor indicates to the MSE that there are offers that she or he wishes to book via OrderRQ.
3. An interstitial page is presented to the Requestor, to inform her or him that messaging is underway between the MSE and the airline.
4. Then, there are two possible paths, based on whether the traveler is known to the MSE, or whether this is an anonymous traveler.
   a. If the traveler is known to the MSE, then the MSE proceeds with Order request, and the MSE sends a message to the airline indicating:
      i. All the information required to complete the sale (i.e. names, contacts, forms of payment, etc.) excluding the CVV code
      ii. Which core Offers and which supplemental (optional) offers are to booked
      iii. If the inventory space was held then a “Guarantee InventoryReference” may be sent to the airline to use the space previously held
   b. Otherwise, if the traveler is not yet declared to the MSE, then the MSE proceeds with a InventoryGuaranteeRQ, and the MSE sends a message to the airline indicating:
      i. Which core Offers and which supplemental (optional) offers are to booked
      ii. If the inventory space was held then a “Inventory Guarantee Reference” may be sent to the airline to use the space previously held
5. The airline then responds with a message which may contain the following indicators:

   · Order ID
   · Whether space is actually held or not
   · If held, for how long (“Inventory Guarantee Time”)
   · Whether the “Offer” price is guaranteed for that time period.
   · A “Inventory Guarantee Reference” to be referred to when the booking is completed.
6. The MSE retrieves the airline’s WebAddressID which had been received at the moment of AirShoppingRS (or, if WebAddressID was left blank in the AirShoppingRS, then the MSE as a fall-back knows to do a lookup in its own, local, off-NDC table of that airline’s URL’s and query string parameters).

7. The compute the correct URL for this deep linking, using the OrderID and either the WebAddressID or the locally-referenced URL syntax

8. The MSE interstitial is then redirected to the correct URL with the OrderID that it received via NDC messaging

9. The requestor lands on the airline website

10. The airline validates the booking request, re-pricing with qualifiers.
    a. If successful, the requestor is prompted to proceed with the purchase and/or make further customizations or enhancements to the trip
    b. If unsuccessful, then the user is directed to re-shop.

11. Once the traveler confirms that she or he wishes to finalize the purchase of the Order and provides the CVV code, the Airline executes the booking request and returns a record locator.

12. Should the Requestor not wish to commit fully to the purchase, the airline may offer the Requestor the ability to make a temporary HOLD on the Order.

Post Conditions:

A booking is made in the airlines system.

The MSE receives confirmation that the booking and ticketing were successful, along with the Orders (all fulfilled Offers) that were present in the purchase, during the Reporting, Settlement, and Accounting process.
Use Case 15B: MSE Facilitated Booking

1: Use Case Flow Overview

Principal actors (with roles):

Meta Search Engine (MSE) – website or app used by requestor to determine which Order she/he wants to book, and also used by requestor to provide full passenger detail as well as full payment detail

Airlines – (Provider and Seller)

OTA – (Aggregator and Seller)

Aggregator – may be used by MSE to complement offers that were received directly from Airlines and OTA’s

Requestor (Traveler) – The person purchasing the product who may or may not be travelling

Preconditions/Assumptions:

General Assumptions:

- The Shopping Response may include offers with: Bundled Fares, Unbundled Fares, as well as A-La-Carte Ancillary services.

MSE Specific Assumptions for Facilitated Booking:

- Shopping completed normally, with Airline Profile guiding the MSE to shop via NDC
- As the MSE may present the user with 1000 or more offers, we assume that the airline offer will be available for at least a few seconds while the requestor is filtering and reviewing to find the desired offer (“ShoppingResponseTimeLimit”)

General Preconditions:

- Travelers have indicated to the Seller (and provided or withheld consent for) what personalized information and preferences can be used and exchanged with industry providers in the process of Booking for and Booking/Servicing travel products and services.
- All parties (Sellers, Aggregators, and Airlines) involved in the process have been identified and authenticated.
- The Selling System may or may not offer the concept of a Shopping Basket.

MSE Specific Preconditions for Facilitated Booking:

- The traveler has logged into the MSE, or has otherwise filled out a form to provide the MSE with all detail required about the traveler and about the payment.

Description:

The Requestor reviews the offers received from the Airline. Offer responses may include: Bundled Product Offers, Unbundled Product Offers, as well as A-La-Carte Optional Services.
Steps to follow in the process:

1. Some airlines may wish to offer the facility to guarantee inventory space at Shopping step in the process, the facility needs to be indicated in each “OfferID”.

2. The Requestor indicates to the MSE that there are offers that she or he wishes to book via OrderRQ.

3. The MSE proceeds with Order RQ, and the MSE sends a message to the airline indicating:
   a. All the information required to complete the sale (i.e. names, contacts, forms of payment, etc...) including the CVV code
   b. Which core Offers and which supplemental (optional) offers are to booked
   c. If the inventory space was held then a “Inventory Guarantee Reference” may be sent to the airline to use the space previously held

4. The airline validates the booking request, re-pricing with qualifiers.

5. The airline then responds with a message which may contain the following indicators:

   · Order ID
   · Whether the booking process was successful or not

6. If Step 5 was unsuccessful, then the user is directed to re-shop.

7. If Step 5 was successful, the Airline returns an OrderID to the MSE.

8. The MSE presents its Requestor with the record locator on the MSE’s screen or app.

Post Conditions:

A booking is made in the airlines system.

The MSE receives confirmation that the booking and ticketing were successful, along with the Orders (all fulfilled Offers) that were present in the purchase, during the Reporting, Settlement, and Accounting process.
Use Case 16: Create Flight Order with instant purchase

Description:
Travel Agent requests an airline to create an order for a flight offer that has instant purchase and instant ticketing terms. The customer’s credit card is used to pay on the airline’s merchant.

Note: the use case is similar for a ticketless carrier with the exception that a ticket record is not created or returned by the Airline.

Principal actors (with roles):
Seller: requests order, confirms fulfillment with customer
Airline: creates order, takes payment, creates ticket record
Payment Service Provider: authorizes or declines payment card for transaction
Preconditions/Assumptions: Customer has selected an airline offer to purchase
Post Conditions: Customer has confirmed airline order and ticket

Steps to follow in the process:
1: Seller sends a request to the airline to create an order for the selected flight offer with instant purchase terms. The seller includes the offer ID, passenger details, customer’s credit card details for payment.

2: The Airline checks that the offer is still valid and the flight product still available.
   2a: If is not the airline returns an appropriate error message
   2b: Else the airline sends the credit card details to its payment service provider to validate the card

3: The Payment Service provider returns an authorisation code or declines authorisation

4:
   4a: If the card is declined, Airline returns an appropriate error message to Seller
   4b: Else the Airline creates an Order with the passenger, Seller, product offer details, payment details, card authorisation code. The Airline creates a ticket record in its ticketing system. The airline returns the order and ticket references to the Seller.

5: Seller passes product order and ticket details to the customer
Appendix B: Relationship of NDC Time Limits

Time Limits Definitions are contained in Terms and Definitions section of this document
Appendix C contains NDC Order Management Data Dictionary, which is maintained as a separate document due to its size.
Appendix D: Relationship between NDC Offers and Orders

**Relationship between NDC Offers and Orders**

**Airline Shopping Response:**
- Service #1
  - Supersaver
  - Flight A-B
- Service #2
- Service #3
- Service #4
- Service #5
  - Exit row seat

**Airline Order:**
- # 999999.. (1Q ABC123)
  - Total paid: $450
  - TKT #123..
  - $150
  - Order item #1
  - EMD #123..
  - $300
  - Order item #2

An offer has a single price and contains 1 or more products/services.
An order item is an offer selected for payment and delivery.