

# New Distribution Capability (NDC)

*Together Let's Build Air Retailing*

## Revenue Accounting Guide 1.1

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## Background

This guide was constructed from conversations that occurred between airlines and Revenue Accounting System Providers during a dedicated forum that was convened by the IATA Financial Services Development Group (FINDEV) and the IATA Interline Billing and Settlement Operations Working Group (IBSOPS WG). The guide is intended to present airlines looking to implement NDC Offer and Order Management with ways in which Revenue Accounting processes may change to support the opportunities presented by NDC.

This guide will refer to specific NDC messages and the content of these messages and identify this by showing them in italics.

As NDC adoption continues, the NDC schemas (and other industry standards that will change to support NDC processes) will continue to evolve. Some discussions on this evolution have also been captured in this guide, and IATA member airlines are encouraged to become fully involved in these development activities.

It has been assumed that the reader has high level knowledge of the basic end to end NDC workflows as documented in the IATA NDC Implementation Guide. It is recommended that the reader is somewhat familiar with section 1 and 2 of the guide. The guide is available to download for free at [www.iata.org/ndc](http://www.iata.org/ndc)

This guide assumes that the Offer Responsible Airline (ORA) will also be the validating carrier. However, when processes are described specific to Order management, the term ORA is used; and where processes are described specific to ticketing, settlement and billing, the term validating carrier is used.



## Stages in NDC Offer and Order Management

From an airline perspective, 11 distinct stages in implementing and using NDC Offer and Order Management have been identified as having an impact on Revenue Accounts. These involve a setup phase, followed by the day to day transactions including shopping, order creation/servicing, managing payments, service delivery, settlement and accounting.

The same stages from an NDC perspective apply to both simple online itineraries as well as complex interline or codeshare itineraries although the Revenue Accounting processes to support them may differ.

Revenue Accountants and their system providers, need to understand at a high level how each of the stages are conducted to appreciate the nature of the data they will consume in sales and uplift data transmissions.

This guide is based upon best practice use of NDC end to end shopping and order management, as explained in the IATA NDC Implementation Guide. These best practices are non-binding (the NDC Standard defines the messages and their data elements, but any suggested workflows are not mandatory).

This guide first discusses online itineraries, then interline, followed by further discussion on codeshare.

A final section describes the impact of the emerging ONE Order standard (in which it is assumed that the ET/EMD is replaced by including financial and status control elements to the Order record).

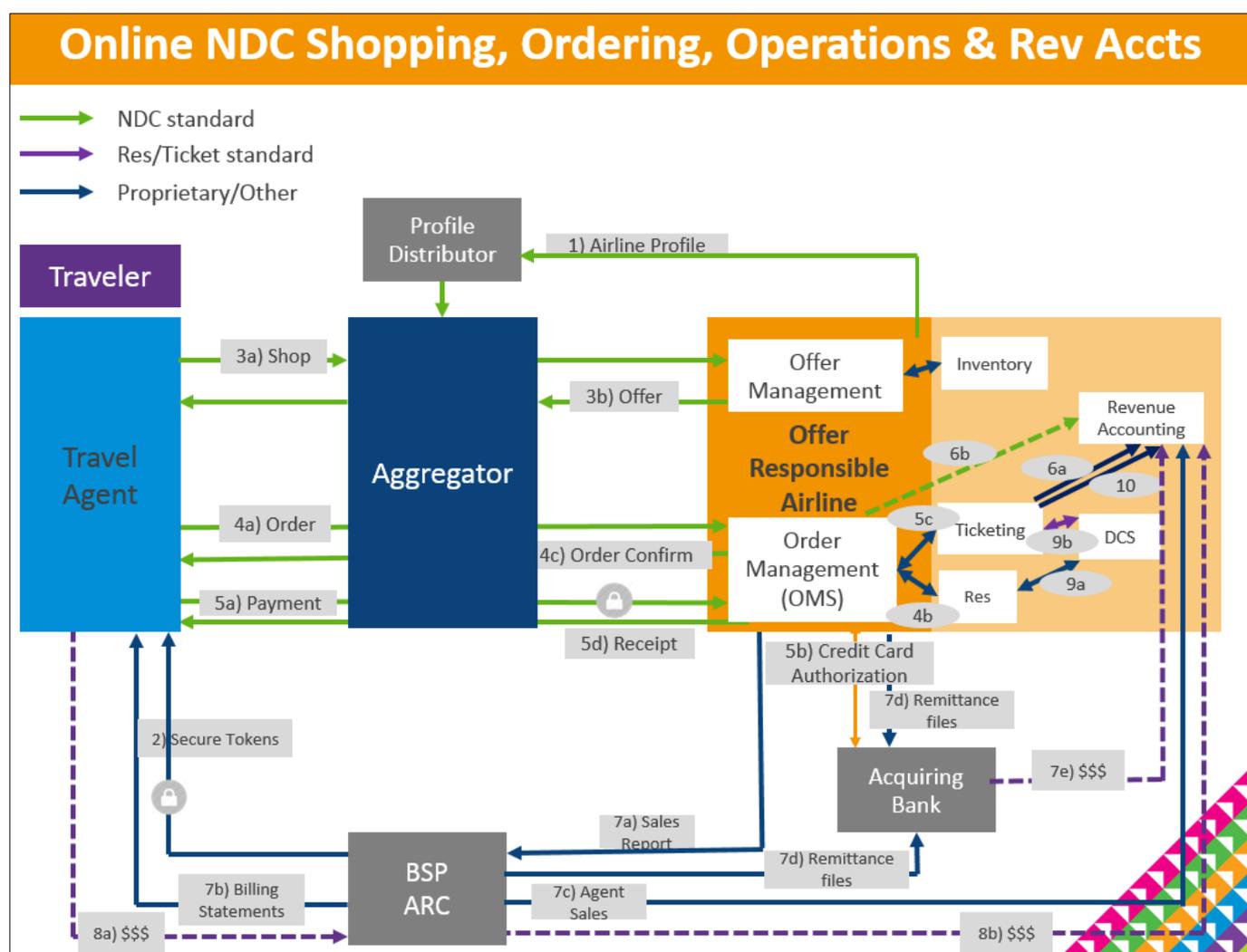
### 1. Online itineraries

**Figure 1** shows the process map outlining the 11 stages of 'end-to-end' NDC Offer and Order Management.

- 1) Airline setup - NDC airline may choose to publish its 'Airline Profile'.
- 2) Agent setup - agent accreditation (with possible use of the optional 'Secure Token' process) to confirm identity of IATA accredited agents and their status in the BSP.
- 3) Shopping - agent initiates Shopping Request and receives Offer(s) in response from Offer Responsible Airlines (ORA).
- 4) Order creation - agent places an Order and receives confirmation.
- 5) Payment - agent provides details of proposed form of payment, ORA issues the accountable documents and returns the itinerary receipt.
- 6) Sales reporting - ORA feeds sales data from its Ticketing and Order Management System (OMS) into its Revenue Accounting Systems (RAS)

- 7) BSP reporting - If the ORA chooses to report a sale to the BSP, it will produce its own input file to initiate settlement through the BSP.
- 8) BSP remittance and settlement – The BSP conducts remittance from agent and settles with validating carrier/ORA
- 9) Delivery - Follows existing DCS and airport coupon control processes.
- 10) Uplift reporting - Ticketing Systems report final status coupons to RAS
- 11) Finalization - RAS conducts accounting driven by document and coupon based events, prepares reports (including tax, fees and charges) and supports business intelligence.

Figure 1



Following the analysis of the NDC for Revenue Accounting Task Force, the key findings about the impacts of each stage on Revenue Accounting are described below.

## 1.1 NDC airline publishes its 'Airline Profile'

The Airline Profile is a data source for the markets an airline wishes to receive NDC Shopping requests. It may be based on routes on which an airline operates, regions they operate to, or sales markets they are willing to receive requests from (this list is not exhaustive). The Profile is intended to allow airlines to reduce the volume of shopping requests they receive which are of no interest to them. The use of the profile is voluntary, and there is no impact on revenue accounting.

## 1.2 Agent accreditation and security for cash settlement when an agent confirms payment

Under NDC and ONE Order IATA will continue to accredit travel agents. Processes under other industry settlement schemes (such as ARC and TCH) will vary.

IATA is currently issuing NDC airlines with a 'ticketing authority' file on a regular basis each day to show the accreditation status of each agency by its IATA number. Under NDC, the ORA needs to be confident that an NDC sale, particularly where BSP credit will be used, originates from the agency with whom settlement will occur.

As one solution to this, IATA's BSP is proposing the provision of a "Secure Token" service. This aims to issue accredited agents with 'secure tokens' that can be attached to NDC Order Management messages to verify the identity of agent along with their status in the BSP. These tokens may also be used to verify the credit-worthiness of an agent when IATA moves to a credit limit approach to agent management. If the ORA chooses to subscribe to this service, the token verification would take place prior to its acceptance of a BSP cash settlement proposal.

## 1.3 Agent initiates Shopping Request and receives Offer(s) in response from Offer Responsible Airlines (ORAs)

The process under which an ORA determines which products and at what price to offer a customer is subject to internal airline processes and the independent commercial decision of each ORA.

In practice ORAs can either internally apply a construction of filed fares or use any other method of calculating a price (subject to local laws), which may be described as dynamic pricing. A combination of the two approaches may also be used. The distinction between these two methods is important in terms of the options available for ticketing and subsequent revenue accounting (see stage 5).

In addition, the ORA is responsible under consumer legislation in many jurisdictions to include all taxes as well as any imposed fees and charges (TFCs) in its NDC Offer.

Airlines may make several offers in response to an *AirShoppingRequest* with different combinations of products. The various offers will be separated into different *OfferItems* that will show a distinct price and which in some circumstances may be ordered independently of other *OfferItems*, depending on how the Offer is constructed. With this in mind, each Offer may have a total price (a sum of the prices of each *OfferItem*), or each *OfferItem* may have a distinct price with the total Offer price only determined when the Customer has made their selection.

An *OfferItem* will contain one or more *Services* that cannot be selected individually – an *OfferItem* is a distinct priced unit (an exception to this may occur where a priced *OfferItem* allows the passenger to “choose 3 of 5” *Services* as part of a bundle).

*Services* may be individual flight segments, or they may be ancillary items such as baggage entitlements or lounge access. An agent may refine their shopping request to obtain more specific ancillary products based on a Customer’s specific requests.

An *OfferItem* would not show to an agent any other values (such as an internal value per *Service*) other than its total price (plus TFCs), but airlines’ Offer Management Systems should also store service level internal values to support management reporting. For example, a round trip may be presented as a single *OfferItem* with a single price in an Offer to an agent, but for internal management reporting and to support Revenue Accounting, an internal value would be required for each of the two flights (these flights being represented as two separate *Services* within an *OfferItem*, as part of the Offer). This is an improvement on the current practice of conducting an internal proration after sale for the purpose of establishing coupon values.

Offers may be requested and returned in any currency, although settlement through the BSP would require use of the BSP currency (and a similar principle may apply to other settlement plans e.g. ARC/TCH). When an ORA is constructing an Offer using a dynamic price (internally determined by the ORA and proposed directly to the agent), or using filed content for its own services, there is no longer any need to apply industry currency conversion standards (for example to use IROE for fare construction in NUCs, or BSR for equivalent fares). This is because ORAs and not intermediaries are constructing the NDC Offers in their own environment. All currency conversions are internal to the ORA and they will apply any conversion rate they wish.

Offers may have various time limits applied – such as the duration of validity of the Offer and the time by which an Order will require payment (similar to today’s ticketing time limit).

Offers can also specify acceptable forms of payment and if applicable should describe how surcharges might be applied to different forms of payment.



Offers can also contain information about any commission which might be offered to the agent for accepting the offer, establishing clarity on this prior to booking (of course this will remain as information for the agent only, this is not information the agent would disclose to the customer).

Every Offer will be referenced with a unique *OfferID*, serving as a reference to allow the ORA to create an Order based on the Offer(s) selected by the Customer. If when requesting Order creation the agent only references the *OfferID* to the airline, then it is a prerequisite that the airline's Offer Management System will have had to store these Offers (the contents of the Offers, referenced by their *OfferIDs*) at least until the expiry of the Offer Time Limit.

#### **1.4 Agent places an Order and receives confirmation of Order and Reservation**

Orders are placed by sending an *OrderCreate* message to the ORA. The Order is created with reference to Offers created internally by the ORA and these Offers are not subject to manipulation by a third party. Therefore significantly fewer Agency Debit Memos would need to be issued by against NDC Orders in comparison to today, with a much smaller remit for sales audit processes.

The Order record is expected to contain all the details of the Offer(s) which have been accepted – replacing the *Services* within *OfferItems* by the same *Services* under an *OrderItem*. The characteristics of each *OfferItem* (especially rules and pricing elements) would also need to be brought across into the *OrderItem*.

The ORA has control over which agents may display Orders, and how these agents are identified. The ORA should only respond with the information in the Order that the airline wishes to return to them. The Order record held by the ORA will contain various internal data elements, including the internal values of *Services* however the information about the Order sent from ORA to agent in an *OrderViewRS* message will need to only carry a subset of data, and this subset will be based on 'who is asking' – whether interline partner, ground handler or agent. The ORA will also have its own internal Order display, and in a similar fashion, the data displayed may vary by user (an internal Airline display may or may not include confidential data such as internal *Service* values according to the identity of the user).

All NDC Orders will have their own unique *OrderID*.

Where an agent wishes to change an Order they may use the *ItinReshopRQ* message to obtain new content in the form of new Offers (which may include a change in price and/or penalties) and if the Customer wishes to select one of these new Offers, an *OrderChangeRQ* message will be sent from the agent to the ORA to initiate a change to the Order.



Where an Order has already been ticketed, the ORA may be in a position to apply modifications to accountable documents immediately following the change to the Order, or they may require further information, such as payment details, prior to applying and changes to documents.

### **1.5 Agent provides proposed form of payment, ORA issues accountable documents and returns itinerary receipt**

An Offer may require immediate payment at the time of Order Creation, or payment within a specified time limit after creation.

The ORA is expected to deploy payment card processes similar to those used within a direct sales payment gateway. For web-based transactions this may include managing an authorization request which requires a 3D secure check (which is supported within NDC by the *CustomerInputRQ/RS* message pair agent). Different processes would need be applied for transactions where the customer is not 'online', with the card being entered by the agent (whether or not the customer and card are present at the agency).

Just as the ORA makes card payment authorization checks, they would also be responsible for reading the token to confirm the agent identity and their credit status within the BSP.

Prior to the start of the token service, the BSP will provide airlines with regular updates to the listing of all their accredited agents in each BSP – this is the 'ticketing authority' file that is used by GDSs today. However, under NDC, the actual concept of granting 'ticketing authority' to an agent becomes irrelevant as airlines (rather than intermediaries) will decide in real time whether or not to accept orders from agents and it is the airline that is responsible for subsequent ticketing.

Having received an Order creation request from the agent along with payment information (using the *OrderCreateRQ* message initially and a subsequent *AirDocIssueRQ* message to inform the ORA of payment information if necessary) and having confirmed the proposed form of payment, the ORA issues accountable documents using its own stock. This follows IATA Resolution 722f/725f for airline issued documents. From 1 June 2016, these Resolutions requires the use of the value of "3" in the Fare Calculation Mode Indicator (FCMI) data element. This identifies that the documents were issued following the creation of an NDC Order. Accordingly this allows the ORA to identify that the pricing was based upon an accepted NDC Offer, and that the agent has not applied a fare or made any amendments to the documents themselves.



The IATA Numeric exchanged within ticketing messages will be that of the ORA. The identity of the agent would be held in the Order record and could also be held internally on the ticket record.

The ORA is responsible for deciding how to document the sale on separate ET and EMD documents. Each *Service* that will be separately consumed (and where it is necessary to separately identify entitlement or consumption) should be separately identified on an individual accountable document value coupon. Ancillary services may appear as separate value coupons on EMD documents, or may simply be included on a ticket as part of the service entitlements associated with a flight segment. In this case, operational delivery in this case would occur based on SSR elements contained within a PNR.

The ORA is then responsible to respond to the agent with an *OrderViewRS* message. This will contain all information about the created Order, detailing every *OrderItem* and the *Services* contained within it, providing full pricing with taxes, fees and charges, acknowledgment of payment and details of the issued documents. As Validating Carrier it is also responsible for issuing the Itinerary Receipt.

An NDC Order may be changed at the request of the Customer, facilitated by the agent. This may occur prior to the commencement of travel or following the consumption of one or more of the *Services* within the Order. The agent sends an NDC message referencing the original Order and outlining the changes the customer requires. The ORA may respond with possible changes, which may include differences in price. The agent may select the desired change, in which case payment of an additional collection may be made, and an *OrderChangeRQ* will be sent. On receipt of the *OrderChangeRQ* message, the ORA makes any changes required to documents, which may include processing exchange/reissue or refunds of their own documents. The relationship between the current *Services* within the Order and the current document/coupons must be stored within the OMS. All existing ticketing processes and data elements following exchange/reissue and refund transactions remain unchanged.

It should be noted that how the ORA calculates a price difference (if any) following a change is an entirely commercial decision and must be determined internally. There may also be regulatory requirements as to how this occurs, or information which must be provided to passengers. The original order may contain certain commitments (such as change or refund conditions or penalties) which will need to be respected.



## 1.6 ORA feeds sales data from their Ticketing and Order Management System (OMS) into their Revenue Accounting Systems (RAS)

Based on today's distribution, the ORA already has existing processes for reporting sales of airline issued documents into their revenue accounting system. The information about these documents provides the sales record of airline issued documents, just as the BSP HOT provides the sales record for neutral documents. These sales records drive revenue accounting processes and are supplemented by other data feeds.

For NDC transactions, the OMS will contain data required for Revenue Accounting that is not present on documents. For this reason, data from the OMS for NDC sales should pass directly into the RAS to supplement data from the ET or EMD server.

Early implementers should note that discussions continue around developing a new NDC message that will allow the OMS to push the full order data in real-time to the RAS system as each document is issued. These messages are not likely to be included in the NDC standard messages until 2017.

The ORA would need to determine if this data feed could replace or supplement the existing feed of ticket data from their direct sales today. The ORA needs to ensure that the risk of duplicate records is managed as the information on NDC sales has the potential to enter the RAS through three data sources:

- The existing internal sales record for airline issued documents.
- Data feed from OMS.
- HOT file from BSP, if NDC sales are reported to the BSP for settlement and/or reporting.

## 1.7 Validating Carrier chooses to report sale to BSP, triggering agent billing and HOT file production

For sales made by an IATA accredited agent active in a BSP market, the airline may submit the sales information to the BSP. The main reasons for doing this are to allow the BSP to:

- Collect and settle cash payments with the agent
- Manage any payment of commissions
- Calculate and manage taxes on commissions
- Prepare an integrated sales report for the agent

ORAs wishing to use the BSP today for NDC sales must prepare a single global sales daily reporting file in the BSP input format (DISH-RET) and send it to the BSP portal NDCLink. NDCLink conducts basic data integrity checks, splits the file into separate BSP files and submits them as required to each BSP.

The BSP processing will generate standard output files – adding the sales and deducting the commissions from the agent billing statements, and generating the airline DISH-HOT files. The NDC sales will be combined with traditional GDS reported sales.

The circumstances in which an ADM may be issued are limited in NDC, however the agent continues to have some responsibilities when requesting the creation of an Order. These may include ensuring the use of the correct client payment card or correctly identifying the proposed passengers (e.g. to confirm eligibility to an age related or residence related fare where this could not be done during the Shopping/Offer proposal phase). For the latter case, ADMs may still be required if errors are not corrected at the airport when inspecting travel documents.

### **1.8 BSP conducts remittance from agent and settles with ORA**

There is no difference in the BSP remittance and settlement process between agents and airlines whether a sale was reported by a GDS or airline as NDC sale. The Passenger Agency Conference rules do not distinguish any priority for receiving payment in a shortfall between GDS or airline reported sales.

### **1.9 Operating Carriers - DCS and airport coupon control processes**

Under NDC, the current processes for service delivery continue. Existing processes around coupon control and changes to coupon statuses remain. Where required, existing DCS messaging formats will also continue to be used for operational delivery. After a flight has successfully departed (according to rules set by individual carriers), the ET and EMD coupons for the lifted passengers will be set to Flown status as today. There may be a requirement for this status update to reach the airline's OMS, but whether this is directly from the DCS or from the ET/EMD server, and whether this information is required at all, is up to individual implementers.

### **1.10 Ticketing Servers report final status coupons to RA Systems**

Ticketing Servers send reports to Revenue Accounting about final status coupons – whether flown/used, refunded or reissued/exchanged. This report is usually referred to as the Uplift File. There will be no difference under NDC.



## 1.11 Revenue Accounting Systems conduct accounting, prepare reports

Revenue Accounting is driven by the correct processing of two types of input records – sales records and usage records.

When a sales document is received (as validating carrier) a number of activities are triggered. These include:

- Break out of sale amounts into different taxes, fees and charges where these are not included on the ticket.
- Coupon valuation (this may be a simulated proration, or use of an interim estimation. With NDC, it is possible to now rely upon the internal values of individual *Services*, as defined within the OMS, if an airline has implemented this feature).
- Allocating the total into different payment methods and ensuring submission for receipt of all dues (including the preparation of card remittance files, unless handled by the payment gateway, and of BSP RET reporting file), and conducting payments accounting for each receivable.
- Conducting revenue accounting functions of crediting unearned revenues and debiting Order receivables.
- Conducting tax accounting by crediting tax payables for sales taxes and storing tax liabilities for usage based items.

When a sales document is refunded or exchanged, the reverse accounting processes will occur.

The uplift file will trigger revenue recognition by *Service*\* for each type of final status coupon with a corresponding decrement of unearned revenues.

## 2. Use of NDC for managing Interline itineraries

*Note – It is assumed for this section that no codeshare partners are involved, that any Participating Offer Airlines (POAs) both market and operate their flights.*

**Figure 2** below shows the process map for NDC sold interline itineraries, illustrating the 11 stages described above. For clarity, it omits any stages that are identical to those for Online Itineraries. It is important to understand that the industry practice of a validating carrier only paying an interline partner for its coupons or EMDs after they have reached the final status of ‘flown’ remains a fundamental principle of settlement against NDC Orders – it is this process that is documented here. However, airlines can bilaterally agree otherwise if they so wish.

Within an interline Order the roles of Offer Responsible Airline (ORA) together with Participating Offer Airline(s) (POAs), are to be considered alongside the ticketing

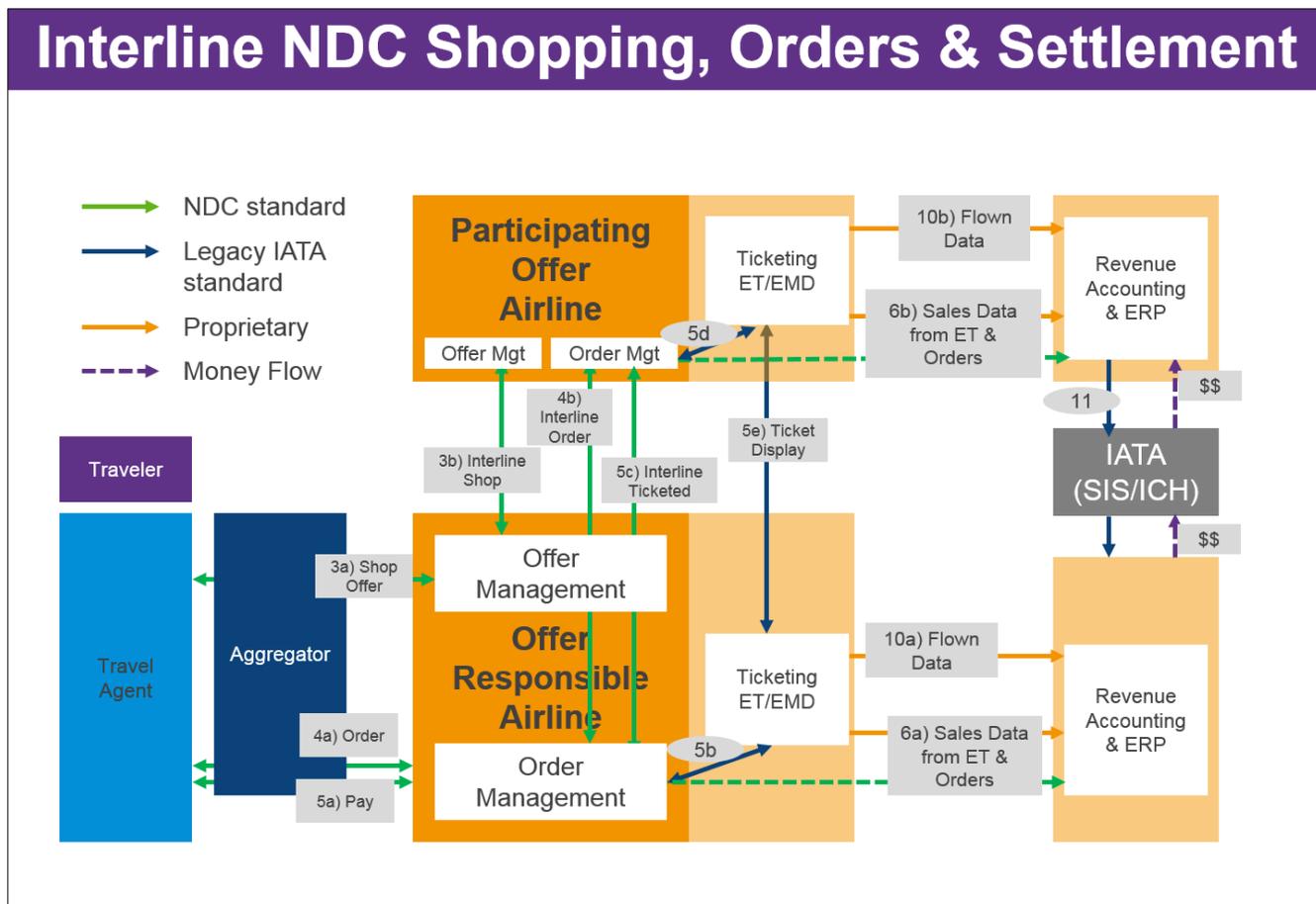
role of a Validating Carrier (VC) and the Codeshare concepts of Marketing Carrier (MC) and Operating Carrier (OC).

The relevant stages illustrated on the diagram on the next page are:

- 3) Shopping - agent initiates Shopping Request with one or more Offer Responsible Airlines (ORAs). In this case the ORA needs to acquire content from one or more partner airlines to satisfy the request. The ORA uses the same shopping messages with its interline partner (Participating Offer Airline, POA) as between agent and ORA, although some of the data within the messages differs. The ORA then builds their own Offers which include the interline content, sending these Offers to the agent via an Aggregator (if present).
- 4) Order Creation - agent places an Order. ORA will advise any POA that it accepts their interline Offer(s). The POA creates their Order, provides confirmation to the ORA and at that point the ORA finalizes and confirms the Master Order to the agent.
- 5) Payment – The agent provides details of proposed form of payment, the ORA processes the payment and as Validating Carrier (VC) issues any documents, responding with confirmation along with the itinerary receipt. The VC advises the POA that the order has been ticketed so that it can refer to the correct ticket.
- 6) Sales reporting – The ORA or VC and POA feed sales data into their Revenue Accounting Systems (RAS) from their Ticketing server and OMSs.
- 7) BSP reporting – There is no change between online and interline processes as this remains the responsibility of the ORA or Validating Carrier.
- 8) BSP remittance and settlement - no change between online and interline processes
- 9) Delivery – The DCS and airport coupon control processes (with the passing of coupon control to other Operating Carriers) continue as today, and as for online NDC Orders.
- 10) Uplift reporting – The ticketing systems of each airline in the itinerary will report final status coupons to their RAS
- 11) Finalization – The RAS conducts accounting driven by document and coupon based events, and now manages interline billing through SIS



Figure 2. Process Map for NDC Interline from shopping, ordering and revenue accounting



The key differences for each stage in comparison with online NDC transactions that impact Revenue Accounting are described below.

## 2.1 Agent initiates Shopping Request with an Offer Responsible Airlines (ORA). ORA needs to acquire content from partner airlines to satisfy the request.

Upon receiving the request, the ORA recognizes that it will need to use the services of one or more partner airlines (Participating Offer Airlines, POAs) to satisfy the shopping request. It will assess which POA(s) it wants to approach for this content and will send them their requirements using an *AirShoppingRequest* message (the same message format as for an agent-ORA request, with slightly different data). This request must disclose the complete proposed itinerary, as far as is known at the time of the request. The POA will respond with Offer(s) to the ORA if it wishes, and these Offers will contain *OfferItem(s)* as per an online response from ORA to agent, and these *OfferItems* will contain one or more *Services*.

A key feature of each *Service* is that they will have a separate **Settlement Value**. If the Offers go on to feature in an ORA's Offer and are subsequently included in an Order, then these Settlement Values will form the basis of interline settlement, and settlement will occur after each *Service* has been consumed. In this way, the Settlement Values function in a similar way to a fixed value SPA, with the primary difference being that they are proposed and agreed upon per transaction rather than in advance. They will be billed regardless of the itinerary or the total price paid by the Customer. Unlike SPAs, the Settlement Values may be dynamically determined by the POA for each shopping request.

ORAs can request Settlement Values from POAs in any currency. For example they may be requested in the currency that will be used for interline settlement. If no currency is requested, the POA may respond in any currency, and this may be one of the factors the ORA uses to determine whether or not it includes the POAs Offers within its own.

The Settlement Values between POA and ORA are exchanged only between the two airlines and are not disclosed in the pricing of Offers from the ORA to the agent. As such, an ORA could choose to structure its Offer to include a POA's *Services* within its own *OfferItems*, each of which are priced independently of the Settlement Values proposed by the POA.

The Offers between interline partners can and should contain any POA surcharges along with its understanding of all appropriate taxes, fees and charges that it will need to pay to relevant authorities.

However, under existing industry standards (Resolution 785) the Validating Carrier is responsible for calculating and collecting all taxes. Operating Carriers may then bill the Validating Carrier for what they consider to be the correct applicable taxes, regardless of what has been collected.

Early implementers should note that there is an opportunity to reduce the number of interline billing rejections, as POAs have the opportunity to provide details of the required TFCs (assuming they are also the Operating Carrier) at the time they propose their Offers to the ORA. However, this may not be possible in all scenarios under NDC as it requires that they have details of the exact itinerary along with the price charged to the Customer. The latter is not supported today under NDC. Discussion are ongoing with regards to this and depending on the outcome, changes to the NDC Standard, RAM and/or other industry standards may be required.



## **2.2 Agent request Order creation and receives confirmation. ORA will advise any POA of the acceptance of their interline Offers.**

When the ORA receives the *OrderCreate* message against an interline Offer from an agent, it will subsequently send an *OrderCreate* to the POA referring to the relevant Offers (as per the online process, the best practice will be to reference the *OfferID*). The POA will respond with their *OrderID*. The ORA will then respond to the agent with their own *OrderID* for the Master Order. The ORA's *OrderID* will be used by all parties in the transaction, and the POA's *OrderID* will specifically point at the Order in the POA's OMS, and this will be different to that of the ORA.

## **2.3 Agent provides proposed form of payment, ORA issues documents, and advises any interline partners**

For NDC sales, there is no difference in how an ORA will manage a proposed form of payment or use settlement services such as the BSP for interline itineraries in comparison with online only itineraries.

As explained for online itineraries, all NDC tickets will be issued by the ORA as Validating Carrier and should use the FCMI "3". In doing so, if they query the ticket data in future, they can be comfortable that the agent has had no opportunity to manipulate pricing.

The ORA will inform all POAs of the issued documents using an *AirDocNotifRQ* message. This message outlines the relationship between every document/coupon number, and the corresponding *Services* of the POA. This information must be stored within the OMS of both the ORA and POA as it is critical to interline billing and settlement.

Where an agent has requested a change to an Order which features an interline itinerary, the ORA will first evaluate whether or not they can respond without needing to contact their partners. If they determine that to satisfy the new request alone, they will contact one or more POAs (whether they already feature in the Order or not). To satisfy the ORA's request, if the POA needs to propose changes to POA's *OrderItems* and included *Services*, this may result in the POA proposing a new settlement value for these, differing from the Settlement Value agreed within the existing Order. As during the initial shopping process, the ORA may or may not include the revised POA Offers in their response to the agent. Based on the contents of the Offer it is building, the ORA is at liberty to propose a new price to the agent this price is independent of the Settlement Values proposed by the POA. The ORA may choose to absorb any increase, or ignore any reduction in the Settlement Values when determining the price of the new Offer, this is an ORA commercial decision.

Where the ORA performs an exchange/reissue action on their own documents, as described as part of the online process, they will need to send another *AirDocNotifRQ* message to any POAs involved in the revised Order. This message contains the new document/coupon numbers, and the relationship between the coupons and the *Services* in the POA's revised Order. The POA's OMS simply disregards any previous document/coupon numbers they have been advised. This is similar to the existing process where a new SSR TKNE message is sent to participating carriers whenever a document is issued (or reissued) against a reservation.

When the POA lifts the coupon, they will bill on the basis of the Settlement Value that was stored in their OMS. Any coupons that have been lifted are billed based on the Settlement Values that had been established at the time of lift, even if the settlement values related to other (unflown) coupons on the document are changed before these coupons are lifted. The settlement of flown coupons is not impacted by any changes to other *Services* that are yet to be consumed and billed.

Resolution 735d governs processes during irregular operations regardless of whether NDC has been used or not. The carrier responsible for causing the disruption needs to take responsibility for providing a refund or carrying the passenger to their next point of stopover or their final destination, which may involve carriage on a new operating carrier. Resolution 735d requires that impacted coupons are reissued allowing the passenger to check-in on the new operating carrier's service. Revenue accounting rules allow the new operating carrier(s) to bill the carrier who has reissued the impacted coupons for the value that would have accrued to the original operating carrier. This is calculated using information on the ticket, and in the absence of this information the new operating carrier may bill on the basis of a local fare. For an NDC transaction, the fare calculation on the ticket will not include any values as billing information is stored within each carrier's OMS. Accordingly, to prevent new operating carriers (who are not party to the Settlement Value of the NDC Orders) from billing at high local fares, it is recommended that airlines pursuing interline arrangements under NDC also pursue bilateral fixed value agreements for billing in these situations. Alternatively, carriers may concur to SIRS (Simple Involuntary Reroute Settlement), or use other mechanisms to ensure certainty in billing such as a Cents per Mile agreement.

It was noted that NDC could simplify this process for revenue accounting by having the disrupting carrier sending NDC interline shopping messages to potential new operating carriers, marking the shopping request with an 'INVOL' flag, and then sending Order and ticketing messages that would not need any reference to a special 'INVOL' process. Such a change would need much wider discussion across commercial and operational groups prior to reviewing the use of NDC schema.



## 2.4 All airlines feed sales data into their Revenue Accounting systems from their Ticketing and OMSs

For interline itineraries the data that the ORA/Validating Carrier passes into their RAS for each Order will include the interline Settlement Values for each *Service* together with the corresponding document/coupon numbers (for the RAS to match with coupons reported in the uplift file).

All interline partners will have been advised of the documents which the Validating Carrier has issued. In addition to NDC messages exchanged at the time of shopping and order creation, participating carriers will also receive document information in existing ticketing messaging, typically at time of receiving coupon control.

NDC POAs will store in their OMS the document/coupon numbers corresponding to each *Service*. In the same way as the ORA, the POA needs its OMS to pass to its RAS for each *Service* the agreed Settlement Value together with the corresponding document/coupon number.

## 2.5 Revenue Accounting Systems conduct accounting, prepare reports and manage interline billing through SIS

Where an Operating Carrier's RAS is processing a flown coupon for which it was not the validating carrier then it will need to conduct interline billing.

When an NDC Offer has been accepted the interline billing should be based upon Settlement Values established between the POA and ORA. The RAM will need to change to recognize settlement based upon these pre-agreed amounts rather than proration of the total amount paid. The policy for settling taxes, fees and charges will also need to be established by the industry. The Settlement Values should already have been sent to the RAS and would not be adjusted to reflect interline service charges or sharing of UATP costs, unless bilaterally agreed.

The billing carrier will submit its claim into SIS as today. The current IS-IDEDEC or IS-XML formats are suitable for NDC settlement, so all references will remain to ticket and coupon numbers rather than Order references.

When a Validating Carrier receives inward billing of a coupon that it recognizes as having been agreed with the POA according to NDC Offer and Order messages, it should already have the Settlement Values in its RAS to confirm legitimacy of the inward billing request. The RAS may recognize this in a number of ways. It may identify the FCMI value of "3" and query the Order Management System, or coupon based settlement values already stored in the RAS from the time of shopping and order creation. This varies by implementation.

### 3. Use of NDC for managing Interline itineraries with codeshare

Airlines need to evaluate and agree how they will manage their codeshare relationships under NDC, just as they must today.

There are various ways that codeshares are used in airline commercial agreements, but in this section, we have not directly considered the use of codeshare under a franchise agreement\*.

*\*By this we mean an agreement under which the operating carrier takes no role in reservations, departure control, managing electronic tickets or revenue accounting for the services they operate – in this special circumstance the “parent” carrier is not just the marketing carrier but also from a commercial perspective also the operating carrier.*

For the all other situations, we will assume that the Marketing Carrier and Operating Carrier are distinct. Both will be marketing carriers in their own right, independently, (unless approved in a joint venture, in which case they may do this in collaboration) but **only the Operating Carrier will manage operational processes and departure control**. This includes uplifting coupons and taking responsibility for collecting payments from the validating carrier (under interline billing) or marketing carrier (under a separate codeshare agreement). Under NDC, the ORA is always assumed to be the Validating Carrier. The ORA may or may not participate in the itinerary and if it does it could be as Marketing or Operating Carrier. If present, the POA will always be part of the itinerary in the role of either Marketing or Operating Carrier. On this basis, four distinct ways of using NDC under codeshare have been identified and these are shown in the following table:



<u>Activity</u>	<u>Validating Carrier</u>	<u>Marketing Carrier</u>	<u>Operating Carrier</u>	<u>Interline Billing Direction</u>	<u>Billing Value</u>
<b>NDC Use Cases:</b>					
<b>1</b>	ORA is both		POA	OC bills VC	Settlement Value
<b>2</b>	ORA is both		Participating Carrier by Inventory & Fare	OC bills VC	Prorated Fare
<b>3</b>	ORA	POA	Sub POA	OC bills VC	Sub POA's Settlement Value
<b>4</b>	ORA	POA	Sub POA	a) MC bills VC b) OC bills MC	a) POA's Settlement Value b) by Codeshare Agreement

where

ORA	NDC Offer Responsible Airline
POA	NDC Participating Offer Airline
Sub POA	NDC POA to a POA
OC	Codeshare Operating Carrier
VC	Ticketing Validating Carrier
MC	Codeshare Marketing Carrier
SV	NDC Settlement Value agreed POA to ORA

These four cases are described in more detail below:

- 1) The ORA is the Marketing Carrier for a service, and is choosing to use NDC messages with its Operating Carrier to establish content and Settlement Values with its partner. The Operating Carrier will lift the flight coupon and instigate interline billing from the coupon that will show an NDC sale (FCMI = 3). It will find the coupon has been reported in its feed from OMS to its Revenue Accounting System and that it has a Settlement Value to use in Interline Billing
- 2) This differs from the previous case in that the ORA chooses not to use NDC messages with its Operating Carrier, but instead poll for inventory and apply a filed fare for the chosen RBD, then confirming the order through an AIRIMP message. The Operating Carrier will lift the coupon, see that it was sold as NDC to the agent, check for it being included in its feed from OMS to RAS and find it there – so instead will read the fare information on the ticket and apply interline proration prior to interline billing as it does today.
- 3) The third and fourth examples separate the roles of being ORA from being Marketing Carrier. If the ORA were to simply send an interline shopping request

to the Operating Carrier then this would not be using any aspect of the codeshare agreement (just interline NDC between an ORA and a POA).

Instead the ORA is choosing to send a shopping request to another Marketing Carrier. In example 3, the Marketing Carrier chooses to relay the shopping request onto the Operating Carrier, and under a commitment in their codeshare agreement, the Marketing carrier simply forwards the Settlement Values it received from the Operating Carrier directly to the ORA – hence synchronizing settlement values between marketing carrier and OC.

The operating carrier can deploy interline billing with the VC on the basis of the Settlement Values its OMS will have passed into its RAS. These codeshare partners are agreeing to work in such a way that they can utilize normal interline billing with NDC agreed Settlement Values – despite the POA not being an Operating Carrier.

- 4) Finally, if the operating carrier and marketing carrier do not agree to relay shopping requests and keep constant the Settlement Values proposed by the operating carrier in the Offer from marketing carrier to ORA, the parties may proceed as follows.

The marketing carrier will again relay the shopping request to the operating carrier but before responding to the ORA, the marketing carrier may now apply its own Settlement Values, different to those proposed by the operating carrier operating carrier marketing carrier.

When the operating carrier uplifts its coupon and confirms the flown status to the VC, it will need to declare that the marketing carrier is to be the 'billing carrier', under the ticketing standards. The marketing carrier will then bill according to its settlement value agreed with the ORA/VC. The operating carrier will need a separate arrangement under the codeshare agreement to be paid the Settlement Value agreed with the marketing carrier

These four situations, together with the franchise agreement mentioned earlier, are believed to cover the range of codeshare agreements in today's environment. In some circumstances these concepts may need be combined to introduce different levels of POAs and deploy either filed fare or NDC Settlement Values as appropriate. It will be important for carriers with codeshare agreements to discuss and agree how they will use NDC and ensure successful revenue accounting.



## Appendix: Treatment of Currency in NDC

Currency Conversion (and use of industry exchange rates) in existing standards and under NDC:

<b>Conversion</b>	<b>Existing standard with filed fares</b>	<b>NDC process with Offers and Orders</b>
Two fares in different currencies are combined into a single fare which is offered to the customer.	All different fares are converted into Neutral Units of Construction (NUC)s.  The NUC total is converted into the currency of country of commencement.  IROE is used, which is issued by IATA quarterly.  (Resolution 024c)	No longer relevant.  Agent may request an offer from ORA in any currency.  ORA may request interline offers in any currency. POAs may return interline offers in any currency, the ORA may accept or declines on this basis.  Eg. ORA could request an interline offer directly in a billing currency.
A fare calculated in country of commencement of travel is converted to an equivalent amount, as the ticket is issued in a different currency.	The total amount is converted to the equivalent currency using the Bankers Selling rate (BSR), which is published daily as the "IATA Consolidated Exchange Rates" (ICER).  (Resolution 024e)	No longer relevant.  Agent may request the offer in any currency (ie. logically they will request offer in currency of payment), and ORA can offer in any currency.  ORA determines which rate to use internally (perhaps an industry rate such as IROE or BSR) if conversion is required.
Refunds or revised fare where the equivalent currency does not change.	Convert the amount of the fare to the currency of the revised fare at the BSR in effect on the date of original issuance.  (Resolution 017f)	
A revised itinerary results in a different country of commencement.	Convert the amount of the fare to the currency of the revised fare at the BSR in effect on the date of original issuance.  (Resolution 017f)	
Calculating refunds in a currency other than what was paid.	The amount is calculated based on the BSR at the	

	<p>date of the refund transaction.</p> <p>(Resolution 017f)</p>	
<p>Settlement between interline partners</p>	<p>Billing is in USD (GBP, EUR may be bilaterally agreed).</p> <p>Conversion based on the fare (or equivalent fare if present), using the Five Day rate applicable in the month of clearance, published monthly.</p>	<p>Billing is in USD (GBP, EUR may be bilaterally agreed). <b>No change.</b></p> <p>Conversion based on the settlement value in the currency offered/accepted, using the Five Day rate applicable in the month of clearance, published monthly.</p>

