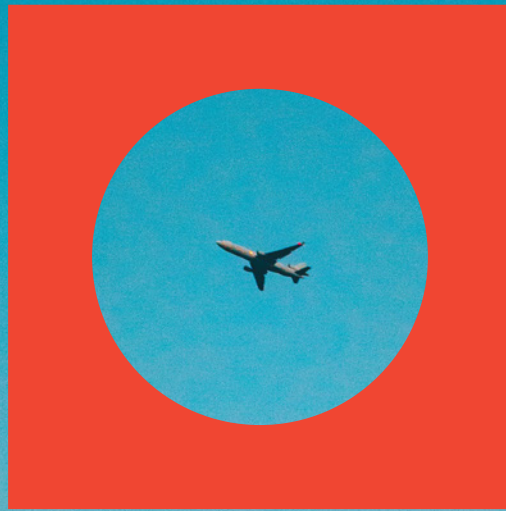




# IATA ONE Order Transition Study





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# Legal Notices

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The information contained in this draft discussion paper is subject to regular review in the light of changing business needs of the industry, government requirements and regulations. The views expressed in this draft discussion paper are preliminary and based on input and collaboration from stakeholders across the value chain. The focus of the initiative is to enhance innovation across the industry to produce cost savings, efficiencies and consumer benefits. The information contained herein is based on publicly available data, and data based on aggregated and anonymized industry surveys. Any potential resulting industry standards will be subject to customary government filings prior to implementation.

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# 1. Mind your steps – Offers and Orders only ahead!

Many airlines are on a journey to become travel retailers and want to emulate the success of traditional offline and online retailers. Those airlines want to differentiate their offerings and better answer the needs and wants of their customers.

Industry players have collaborated with IATA to articulate this airline retailing future and IATA has launched three industry initiatives to support and shape this new travel retailing world – New Distribution Capability, ONE Order, Settlement with Orders and Dynamic Offer Creation industry programs.

This document examines the transition aspects of the ONE Order industry program. More generally, this study considers the transition to an end-state where participating airlines have morphed into travel retailers and where they would only use offers and orders; e.g. going from ET, EMDs and PNRs to orders only.

This document focuses on two broad questions for this transition:

1. the reasons for airlines and their partners to embark on this journey and
2. the pathways they could follow to reach this end-state.

The case for airline retailing is clear. Even if a transition to offers and orders will be complex and require significant efforts, it is expected that it will bring significant benefits to airlines, their partners and their customers. NDC and Dynamic Offers will bring the major part of that benefit; however, participating airlines may find that NDC and Dynamic Offers alone will quickly see limitations to the airlines' ability to deliver sophisticated (air and non-air) offers. The implementation of the ONE Order standard will therefore be necessary to provide the simplification and modernization of the airline's IT architecture which will unlock the remaining value.

When looking into the "how" aspects, this study has identified several possible pathways towards the full use of orders. The main considerations presented here are concentrating around how to move from a current channel-driven, siloed architecture to a customer centric, omni-channel

architecture, built around core capabilities – i.e. offer and order management capabilities.

Typically, the first step for participating airlines will be to create an order repository. Then, they will need to migrate the following channels:

1. NDC and Web/Mobile are considered the easiest to start the transition and switch to order records. Some system providers already combine bookings from these two channels into a single order database.
2. The GDS channel that can be managed by a change to NDC sales (including deploying the new GDS aggregator products) but is considered as taking a long time.
3. The ATO/CTO/CC channel can be brought into order records in different ways. An airline may just rely upon the PSS provider to deliver an updated reservation service based upon orders, or it could place a web frontend for staff in front of offer and order management capabilities.

After examining the options for bringing sales from these channels into order records, the transition study then discusses how to use the ONE Order messages for service delivery and revenue accounting. Both DCS and Revenue Accounting System providers are paying attention to ONE Order and working on developing compliant versions of their products. In many cases these systems will support a mixture of legacy and ONE Order messages even for passengers on the same flight.

## 2. Background

IATA first prepared a white paper on how airlines could transition to ONE Order in November 2016. For this first study, IATA commissioned Travel in Motion to interview industry players and capture their perspective on this transition exercise. This first paper was not widely circulated.

IATA has since published the industry standard for ONE Order in September 2018. In late 2018, the Shop Order Standards Board (SOSB) asked IATA to examine again these transition aspects via a wider study of the industry helping to prepare the transition towards ONE Order.

### 2.1. What is ONE Order

ONE Order is an industry-led initiative aiming to simplify the airline fulfilment, servicing, delivery and accounting processes related to airline products and services. ONE Order aims to replace the current booking (PNRs) and ticketing



records (e-tickets and electronic miscellaneous documents, or EMDs) and combine those multiple records into a single retail and customer-focused Order.

As stated in the IATA resolution 797, the ONE Order objectives are:

1. Support the delivery and servicing (of orders) by the relevant airline, or by contracted third parties of online or interline products or services
2. Support appropriate customer servicing in case of voluntary or involuntary changes and their related financial sales and accounting processes
3. Reduce complexity, improve inter-operability between airlines and their service provider(s) and create a better passenger and customer experience.

## 2.2. Guiding principles for ONE Order

Several key principles have guided the development of ONE Order. These principles are as follows:

- All current relevant business data stored within the legacy records (PNR/ETKT/EMD) will be carried over to the order record. Data elements in the order will need to support the current and future needs.
- The customer will have a single order reference. There will be a single order controlled and managed by the Offer Responsible Airline (ORA). Sub-components of the order may be contributed and controlled by other entities providing additional products or services, such as the interline partner which is the Participating Offer Airline (POA).
- The reference held in the ORA OMS shall be used to enable access at all points in the value chain to support any required actions on an order.
- Before and after delivery, the single source of all data related to products and services, e.g. a record of customer data, entitlement and delivery status of services, is held in the ORA OMS.
- The provider of the service(s) shall update the ORA of any status change to services in the order.
- The owner of an order shall provide real-time access to the relevant part of the order for all involved entities including 3rd parties such as partner airlines, ground handlers and other service providers.

- ONE Order will facilitate improved customer servicing with simpler interactions between the Offer Responsible Airline (ORA), Participating Offer Airlines (POAs), customers, passengers and service providers, with a single order reference.
- Accounting shall rely on data validated at time of order creation or modification. All relevant data and information required for accounting are adequately captured within the order.
- Delivery, tracking and accounting will be achieved using order status control indicators.

## 2.3 Study Objectives and Methodology

This report aims to examine two key aspects of the transition:

- Why? Why should an airline decide to transition towards offers and orders?
- How? How could an airline start the transition and more specifically to orders and Order Management? What pathways are available?

Accordingly, there have been two separate surveys; one survey focusing on the value creation unlocked by this transition and the other survey focusing on the transition itself.

The research conducted has been through extensive discussion and surveys across the industry including Leaderboard airlines and various system providers. The willingness to participate indicates a strong level of interest in ONE Order, which was confirmed by some airlines declaring a strong interest from their top management in the initiative.



# 3. Why go through this transformation? Where is the value?

Implementing airline retailing will bring a range of opportunities and challenges to airlines, IT providers (traditional airline IT providers and new entrants; e.g. Order Management vendors coming from different industries) and to airline service providers such as ground handlers. Transitioning to Order Management will enable airlines to develop new types of partnerships both with airlines and non-airline 3rd parties, to implement delivery, servicing and accounting processes which are more streamlined and better aligned with other travel verticals and industries.

In addition, when the end state architecture has been implemented by a critical mass of the industry, airlines will be able to eliminate legacy from their IT infrastructure.

The transition to ONE Order will be a complex multi-year journey for which the support of airline senior management is needed together with a solid business case.

Therefore, as part of this transition study, we have undertaken a detailed analysis of the value airlines can expect to create when transitioning to airline retailing.

## Approach

Leveraging extensive discussions with key industry players, we have identified a wide range of value propositions that are enabled by these three industry initiatives (NDC, ONE Order, and Dynamic Offer Creation). We have then grouped these value propositions into several value domains to which airlines could associate a strategic priority.

As a result of this analysis, we created a survey asking airlines:

- To share the level of awareness and support for transition to full order management from their senior management, To assess the strategic priority of each value domain for their airline,
- To grade each value proposition as delivering High, Medium or Low overall value,

- To assess for each value proposition which percentage of the value could be specifically assigned to the implementation of full order management.

We worked with a small panel of participants (6 airlines) due to the early level of maturity regarding full order management within the industry. The respondents span across all three major alliances and are part of the top 15 airlines/airline groups in the world.

## Airline Retailing Value Domains

We have identified the following value domains, and each of these domains include one or several value propositions that are created by moving to airline retailing.

### Value domain 1 – Optimize sales opportunities

The ability for the airlines to propose dynamically created and personalized offers consistently across all distribution channels is key to creating value. These offers may include a richer mix of airline and 3<sup>rd</sup> party services and may be optimized as a whole.

Additional value propositions for this domain are the ability for airlines to:

- Ensure that what is offered to the customers can also be delivered;
- Sell additional interline itineraries, across Full Service and Low-Cost carrier partners.

### Value domain 2 – Drive airline distribution, through a wider range of channels

Having core offer and order management capabilities (common to all channels) allows airlines to drive their channel strategy more effectively. Additionally, they may develop new digital channels through mainstream digital retailers or by developing their own marketplace.

### Value domain 3 – Take orders; deliver and account for them as a digital retailer

Offer and order management enables a shop/buy/pay/deliver or refund/exchange process which is much simpler from a customer standpoint, empowering the customer to self-serve his/her needs in various cases including disruption recovery.

Additionally, the settlement amount of the different elements of the offer being pre-agreed at offer creation time will greatly facilitate the revenue forecasting, accelerate the cash flow and avoid proration disputes.



**Value domain 4 – Optimize sales and execution across airline groups, joint ventures (JVs) and alliance partners**

The airline groups, JVs and alliances may benefit from the possibility to better and more effectively:

- Manage offers at Group/Alliance level from strategy to execution (implementation and delivery);
- Align processes and optimize/share resources;
- Deliver a consistent customer experience across the Group/Alliance;
- Offer itineraries across the Group/Alliance Full-Service carriers and Low-Cost carriers.

**Value domain 5 – Enhanced customer experience**

Customer experience enhancement is a large part of all value creation. The customer experience will benefit from the possibility for an airline to:

- Manage the end to end customer journey; Personalize it at all steps of the journey, including disruption management.

**Value domain 6 – Leverage data and optimize IT costs**

The implementation of global, consolidated offer and order management capabilities will be the opportunity for airlines to develop better data analytics due to the centralized storage of all shopping to booking data and the real time and reliable exchanges of information during delivery between airlines and different services providers.

Also, the transition to offer and order management provides the opportunity for an airline to adopt a best of breed approach from a wider range of providers for its IT solution needs. Once a critical mass of the industry will have completed this transition, airlines will be able to greatly simplify their IT infrastructure.

**Value domain 7 – Organize as a retailer**

The transition to NDC and ONE Order is a major business transformation for an airline. This transformation is likely to require organizational changes within the airline that may entail cost reduction due to streamlined processes.

**Findings from the survey**

**C-Level support for the transition to full order management**

The survey found there is a strong backing and motivation from the C-level management for their airline to become a true digital retailer. Airline senior management is well aware that such business transformation will require substantial changes in their airline’s IT solutions and business processes.

Airlines C-Level management tend to have a good understanding of the offer and order concepts and potential value creation. They are aware that streamlining and aligning with other industries in terms of retailing processes around the delivery, servicing and accounting:

- Is a complex, yet necessary step in their airline’s transformation towards becoming a travel retailer;
- Will imply a material modernization of their IT solutions.

Most of the interviewed airlines have an active project team working on ONE Order, generally as part of a wider airline transformation project. In all cases this requires a secured budget to support the transition to airline retailing together with a solid business case for it.

**Key value domains/value propositions supporting a business case for the transition to airline retailing**

Three value domains that can be for most airlines key contributors to their transition business case are:

- Optimize sales opportunities (value domain 1)
- Take Orders, deliver and account for them as a digital retailer (value domain 3)
- Leverage data and optimize IT costs (value domain 6)

Each of these domains are believed to have either:

- a very high (VH) potential positive impact for an airline and a meaningful share of that value attributable to ONE Order; or
- a high (H) potential positive impact for an airline and a share of value attributable to ONE Order of more than one third.

Value Domain	Overall value impact for your Airline H/M/L	Share of value (%) due to ONE Order
Optimize Sales Opportunities	VH	20%
Drive airline distribution, through a wider range of channels	M	15%
Take orders and deliver and account for them as a digital retailer	H	70%
Optimize sales and execution across airline groups, joint ventures (JVs) and alliance partners	M	25%
Enhanced customer experience	M	25%
Leverage data and optimize IT cost	H	40%
Organize as retailer	M/L	10%



When preparing a ONE Order transition business case for a specific airline, the other value domains should not be neglected because different airlines will have different sources of value.

However, when building a value in a business case, the three value domains identified above are important to consider.

The consolidated view of the full benefits and the share of value attributable to full Order Management for these three priority domains is detailed below as follows:

### Value domain 1

1. Optimize Sales Opportunities	Overall value impact	ONE Order Share
1 Dynamic, Personalized offer creation	H	15%
2 Total offer optimization (product, price, segment)	H	15%
3 Expose time omnichannel offers	H	15%
4 Sell more 3rd party partners ancillaries (Air and non air)	H	15%
5 Enforce Revenue integrity, avoid revenue leakage	M	40%
6 Maximize sales in conjunction with interline partners due to simplified cooperation models across Full Service Carriers (FSCs) and between FSCs and Low Cost Carriers (LCCs)	M/L	10%
<b>Overall</b>	<b>VH</b>	<b>20%</b>

As an aggregate, this domain has the highest potential positive impact for an airline.

The first four value levers, relating to dynamic offer creation, with more services from 3<sup>rd</sup> parties and with an optimization for the whole of the offer are driven by offer management. It is worth presenting a complex offer to a customer only once the right processes are in place to deliver it in a smooth and reliable way. This is where the value attributed to order management comes in.

The full benefits of this domain will be delivered as an airline progresses through the transition to full order management, bringing more channels and more content (own and 3<sup>rd</sup> party) supported by the ONE Order standard. The value propositions of this domain may therefore support the first steps an airline will make in the transition to full order management.

### Value domain 3

3. Take orders and deliver and account for them as a digital era retailer	Overall value impact	ONE Order Share
10 Shop/Buy/Pay/Deliver or Refund-Make it simple from a Customer's point of view. Increase self-serviceability and simplify order delivery support	M/H	80%
11 Automate End-to-end order disruption recovery	M/H	40%
12 Improve customer experience beyond your Airline's services	M	80%
13 Improve your revenue forecasting, accelerate your revenue recognition through enhanced accounting processes, reduce revenue integrity abuse/cost, remove costly and inefficient revenue proration and reduce disputes	M/H	80%
<b>Overall</b>	<b>H</b>	<b>70%</b>

This domain relates to the airline adoption of retailing processes that are simpler, aligned with other industries and empower the customer to enjoy self-servicing through the shop/buy/pay/change/deliver or refund/exchange steps.

The share of value attributable to full order management for domain 3 is very high and will create cost saving opportunities along the transition phases.

As an aggregate, the potential impact of these cost savings has the second highest impact.

### Value domain 6

6. Leverage your data and optimize your IT costs	Overall value impact	ONE Order Share
20 Support Airline Data-driven transformation	H	15%
21 Adopt a best of breed approach to build/source your NDC/ONE Order capable Passenger solution	M/L	50%
22 Fully leverage ONE Order in term of IT infrastructure simplification and transformation (end state)	M	80%
<b>Overall</b>	<b>H</b>	<b>33%</b>

The value airlines will gain from offer and order management in support to their data-driven transformation will vary depending on how much they already leverage information collected by their passenger solutions.

The centralized storage of all the shopping and booking data (including the settlement value and internal value) and the management of orders containing more diverse 3<sup>rd</sup> party services should help airlines to make a step further in their data driven transformation, which justifies the share of value attributed to full order management.

The impact of full order management on value propositions 21 and 22 is however much higher. As airline retailing processes become more standardized and widely adopted, IT providers that do not play in the PSS market today could become attractive alternatives for an Offer and Order Management system. Best of breed IT solution sourcing should be made easier and the market for airline IT solutions more competitive.

During the transition to full order management the airline's IT solution will initially be made more complex because of the need to support in parallel both new and old systems. However, when a critical mass of the industry has migrated to airline retailing it should bring some substantial savings in terms of IT infrastructure.

#### **Planning for the transition to ONE Order and making the first steps towards it**

There will be many different opportunities for airlines to achieve benefits and value creation in the initial steps of their transition to ONE Order. These imply various dimensions around channels (e.g. Online, NDC, ..) and content (e.g. partnerships with low cost carriers partner, lounge access,...).

The benefits will start to flow as each offer can become more complex in the assurance that bookings are captured as orders and delivered through providers that accept the ONE Order messages and accounted into a revenue system that accepts ONE Order messages. To this extent, each airline can roll out its own new offers through direct and indirect channels, as long as their delivery provider is enabled. One airline is only dependent on another airline when interlining.

The full realization of benefits from airline retailing will only come once a critical mass of other airlines as well as ground handlers and 3<sup>rd</sup> party non-airline service providers have transitioned to ONE Order. The final industry benefit from the transition to airline retailing comes with the confidence that legacy technology can be turned off – even under IROPS circumstances.

The ONE Order implementation should therefore be approached as a strategic project with a broad vision of the entire journey towards airline retailing. This project will need to be supported by a solid business case, hence the need to develop and fine tune a value model for it with leading airlines.

## 4. Current Architecture

Airlines have a variety of different architectures and dependencies for their current implementations of their Passenger Services System (PSS) and Offer and Order Management System (OMS). In particular, some airlines are managing their own PSS, some their own OMS and some their own Revenue Accounting System whereas others are taking services from various industry suppliers. IATA is conscious that the status of architecture for the Leaderboard airlines is unlikely to be representative of the industry as a whole where there is a greater use of industry solutions. There is also a substantial difference in the scope of the components of the offerings from the suppliers especially the OMS.

The transition survey was sent to NDC Leaderboard airlines and system providers focusing on the three roles of providers: Passenger Services System (PSS), Offer and Order Management Systems (OMS) and Revenue Accounting Systems (RAS). The components of the survey were around:

1. What is your current architecture (airline) or service (system provider) and particularly your status in holding/offering an order record?
2. What is your understanding and agreement with the vision for what the end state will be after completing a ONE Order transition?
3. How would you propose to build order records for each current sales channel:
  - a. NDC
  - b. Web/Mobile
  - c. GDS online sales
  - d. GDS or other airline interline sales
  - e. Direct sales through ATO/CTO/CC
4. How do you expect to manage service delivery after you have an order record?
5. How do you expect to manage revenue accounting after you have an order record?

The surveys were conducted between April and June 2019. The responses were as below:

Role	Responses
Airline	12
Passenger Services Systems – PSS	4
Offer and Order Management Systems - OMS	4
Revenue Accounting Systems – RAS	6

Table 1 – Survey responses

The surveys revealed that only three airlines have implemented an order record. The more common 'ordering' process for both web/mobile direct or NDC indirect sales is based upon producing a PNR and possibly keeping just a link between OrderID and PNR. And none of the Leaderboard airlines had started interline NDC, which invariably necessitates an order record to store interline settlement values. However, three airlines indicated they intend to implement an order record and start interlining NDC in 2019.

The participating PSS providers all provide some NDC offer management capability to subscribing PSS clients although the uptake among our responding airlines is quite low. The PSS providers are also working on upgrading their core products to use order records instead of the classic PNR but explain that this is a massive transformation program. In the short term they are proposing to integrate Offer and Order management for NDC and Web/Mobile platforms and starting to construct the additional fields needed to manage ONE Order messages using the service status fields.

Since airlines have wanted to concentrate on Offer Management, they have either developed their own Offer Management systems or procured the services of a specialized vendor with a merchandizing platform. Most, but not all, of those specialized systems also provide an Order Management System, so starting the journey to ONE Order by keeping a full order record today. Those OMS providers intend to fully integrate the orders received through both indirect NDC and direct web/mobile channels they support.

In the survey IATA described the current architectural state as being represented by the diagram in Figure 1 below. This shows the airline systems as consisting of three layers with the PSS between the Financial Systems and the NDC and Direct Sales Web/Mobile channels which may be independent or sharing functionality with each other.

For the distribution part, several channels were identified as:

1. GDS with legacy (ATPCO) pricing and neutral ticketing
2. Interline sales on direct airline channels between PSS systems and through GDS for indirect sales

3. Interline sales via NDC API (not used today) for both direct and indirect sales
4. NDC sales supporting Agencies via NDC API
5. Agency or Consumer access to airline web or mobile apps and portals
6. Airline staff in ATO/CTO/CC use of PSS with or without a frontend but directly accessing reservation and ticket records

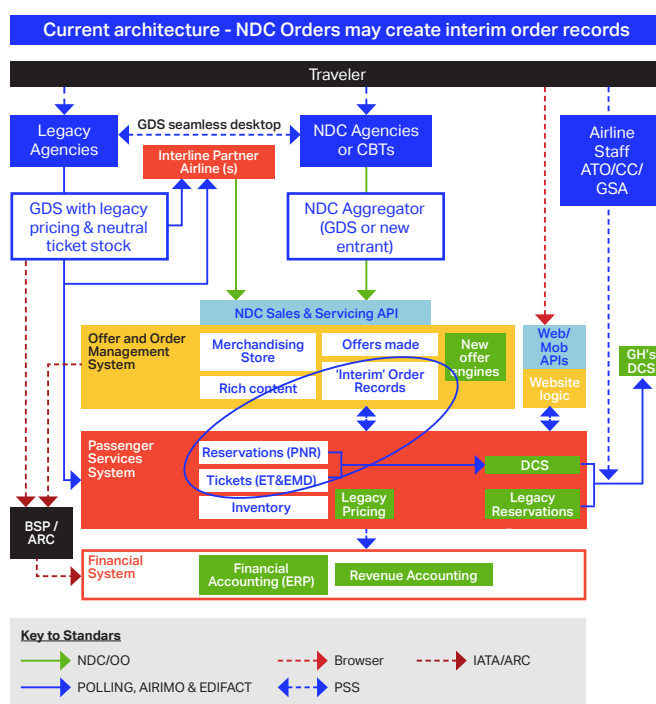


Figure 1 – Suggested current architecture showing sales channels and state of 'orders'

This diagram has been generally accepted although individual airlines may have implemented more solutions within their PSS or already achieved greater commonality between NDC and Web/Mobile channels.

As already mentioned, few airlines have implemented anything other than the most basic interim order records.



In order to progress with ONE Order, airlines then need to develop their OMS to use the ONE Order messages and make these available for service delivery and revenue accounting as shown below in Figure 2.

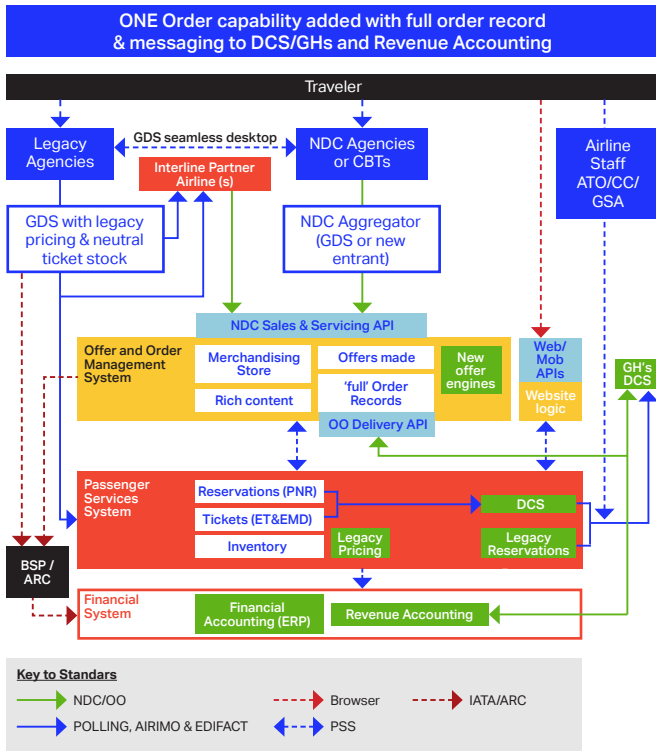


Figure 2 – Implementing the ONE Order messages for Service Delivery and Revenue Accounting

This state shows a capability of having order records for just NDC sales, and then to deploy the ONE Order messages. It is quite feasible that other channels may have created the order record, so the survey asked respondents about their plans for producing ONE Order records for the principal sales channels, and then as there is a build-up of order records as to how they could be used for service delivery and revenue accounting.

## 5. The retail vision for the industry: Offers and Orders

### End state conditions

The following propositions in the survey asked participants what the end state of having completed a full order management transition would look like:

	Airlines	PSS providers	OMS providers	Revenue Accounting providers
No more PNRs	9 of 12	2 of 4	4 of 4	2 of 6
No more ET/EMDs	11 of 12	3 of 4	3 of 4	5 of 6
LCCs would still need implement ONE Order to interline	6 of 12	3 of 4	1 of 4	2 of 6
Airlines in control of their own master Order Records	10 of 12	0 of 4	2 of 4	Not asked

Table 3 – What has changed at the end state

It appears the industry is expecting full order management to generate significant efficiencies, such that legacy PNR and ET/EMD records together with the legacy data transmission protocols (EDIFACT, Teletype etc.) are likely no longer required. The value creation survey confirmed there are benefits from the eventual simplification and modernization. But as with many projects to replace ancient IT systems, the bigger benefits will come from the new use of order records and the automating and streamlining the business processes as part of the airline retail strategy.

While airlines are expected to control their own master records, PSS providers still appear to have some concerns on this matter.

On interlining it was apparent that many survey participants had not thought through how this should work and were not in a position to confirm how interlining with an LCC would work. An important consideration from this report is that the industry completes the current investigative work on in-

terlining and establish best practice for using NDC interline shopping and order processes.

## Who will need control of order records?

The survey asked further questions about the confidence of airlines in achieving the vision of the **ORA (Offer and Order Responsible Airline) holding the master order record**.

This principle is contrary to current practice for interlining (where the operating carrier gains control), agency sales (where GDS holds master record) and ground handling (where the ground handler may be granted 'airport control').

The level of confidence is as below:

Control issues	Airlines	PSS providers	OMS providers
Are you <b>fully confident</b> that we can make this work with modern communications even in the most remote parts of our network?	2 of 12 agree	3 of 4 agree	3 of 4 agree
Not fully confident, but we should work on this during the <b>transition period</b>	6 of 12 agree	1 of 4 agree	1 of 4 agree
We are rather doubtful that the principle of not providing a <b>ground handler</b> with control can be maintained	2 of 12 agree	0 of 4 agree	1 of 4 agree
We are rather doubtful that the principle of not providing the <b>operating carrier</b> with control can be maintained	3 of 12 agree with 1 insisting the Operating Carrier must get control	0 of 4 agree	1 of 4 agree

**Table 4** – Opinions about control over order records

There is no doubt that opinions are quite strongly held but also divergent on the control issue. It was interesting that in general the supplier community seems more confident of leaving the ORA in control of the master order record at all times, which could perhaps be confirmed through pilots. One particular concern an airline raised was whether a POA would be able to fulfil the vision of retailing to 'its' passenger unless it had some autonomous control over the order record it had agreed with the ORA. Another airline raised the question of how the various master and copy order records would get locked down in an emergency situation.

## Long term impact on Revenue Accounting discipline

There has been some discussion in the industry about the eventual need for specialized systems for Revenue Accounting. The survey asked the various groups about their opinions about this:

	Airlines	PSS providers	OMS providers	RAS providers
<b>Revenue Accounting (RA) will cease as a separate function</b>	1 of 12 agree	0 of 4 agree	4 of 4 agree	1 of 6 agree
<b>RA still needed for proration</b>	1 of 12 agree	0 of 4 agree	0 of 4 agree	1 of 6 agree
<b>RA still needed for taxes, fees &amp; charges</b>	4 of 12 agree	3 of 4 agree	0 of 4 agree	3 of 6 agree
<b>RA still needed for revenue integrity purposes</b>	3 of 12 agree	3 of 4 agree	0 of 4 agree	2 of 6 agree
<b>RA will be needed for following:</b>	Prorating online sales, managing invol partners outside of interline	Payment acquirers, FFP, invol changes		FFP, non-air suppliers, offer auditing, accurate status for accounting

**Table 5** – Impact of ONE Order on Revenue Accounting

It is not surprising that Order Management System providers are the most optimistic about being able to expand their system capabilities to displace specialized revenue accounting systems, but the rest of the industry seems skeptical of that claim, with many exceptions being reported for specialized treatment.

## Alignment with ONE ID initiative

Only half of the airline respondents had heard of this initiative being championed by the Passenger and Airports community. Those who were aware of this proposal, to develop a single identifier for passengers supporting biometric recognition, usually commented that the ONE ID is clearly a separate implementation which would complement ONE Order by simplifying the search for each passenger's order record.

# 6. Building order records for each sales channel

## Meta versus Full order records

When an airline wishes to start ONE Order it first establishes an order record.

As illustrated in Figure 1 the first Order record is described as an 'interim record'. The content of this order record has been discussed in two alternative forms: a meta order record and a full order record. When a new booking is received through an NDC API or Web API connected to the Order Management System, the order reference (OrderID) may be stored together with references to traditional legacy records (PNR and ET/EMD). The Order messages such as OrderViewRS can only be fulfilled by taking data elements from the legacy records. This is a meta order record as described in the 2016 Transition Study - encapsulating the legacy PNR and ET/EMD records with additional data in a 'wrapper' to build the order record.

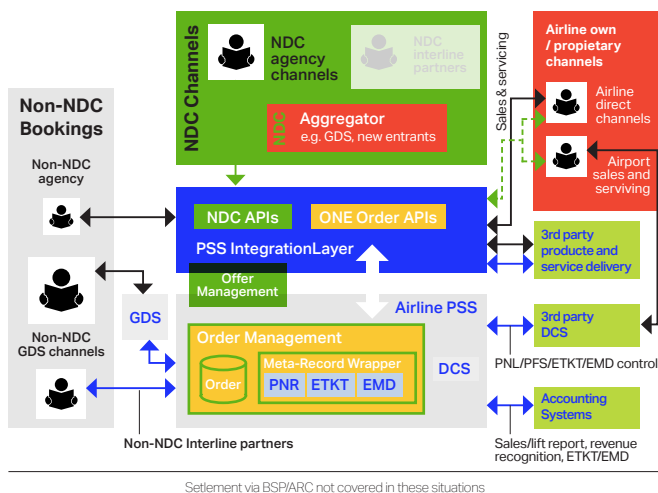


Figure 3 – ONE Order Transition Study v2016 – encapsulated orders

This approach will minimize, even eliminate, duplication of data elements between the two record types while allowing use of either record type with guaranteed synchronization. The advantages seem to be that this is the simplest way to produce an order record for starting ONE Order while ensuring automatic synchronization. But the inherent problem will be performance as it must take longer to respond to every order access request as the full data elements are

built in real time. Although the wrapper may be able to hold offer items, such as bundles or settlement values, which could not be stored in the legacy data structures, it seems impractical to extend this very far rather than relying upon a full order record.

In the survey we asked airlines and PSS providers whether they were thinking of using the meta record, and it is fair to say that this question was not universally understood, so answers are possibly unreliable. Only 2 airlines from the 12 responders proposed to use a meta record and no PSS provider thought this was a helpful stage in their adoption of ONE Order.

A more generally accepted approach was to hold all the data in an order record as required for an OrderDisplayRS while copying data into legacy records which might still be relied upon for data elements such as ticket coupon status until service delivery and accounting were ready for ONE Order. This approach should improve performance and is a clearer pathway to full use of order records. But airlines need to ensure synchronization between the duplicated data elements; especially if servicing is carried out by airline staff on the legacy records.

Whichever approach is taken in constructing the order record, it is essential to add the various data fields required for service delivery and accounting using the ONE Order messages. These fields are not derived from the OrderCreateRQ but rather should be added when compiling the order record – service status fields, baggage and personal data such as passport numbers, as well as items such as internal and interline settlement values from the Offers database.

## The full retail vision requires more than 100% Orders

This report looks at architectural and value creation aspects of transitioning to ONE Order and makes two observations relevant to achieving the full retail vision.

First, the majority of the retail benefits (70-80% from the two largest domains) come from making more sophisticated Offers; those Offers can be even more valuable when captured into a sophisticated Order database to achieve the full opportunity. Having an order record is necessary but not sufficient as the sales Offer needs to be made using the airline's chosen methodology of Offer management in every channel. This requires each sale to be made through a channel connected to Offer Management for Offer construction involving dynamic offers with personalization and merchandizing and then for the 'booking' to be captured into an order record with a matching level of sophistication to support servicing and service delivery as well as accounting needs. Simply copying or encapsulating data from the legacy booking and ticketing records into the format of



an order record may help in the rollout of ONE Order but will achieve few if any benefits from the retail vision.

Second, the value creation study revealed an expectation that additional benefits would arise in simplifying technology and opening the supply of best of breed modules when interfaces adhered to industry standards. This is where use of the ONE Order messages becomes important to limit ALL access to the Order database. Orders could be fulfilled through 'native' access by DCS and Revenue Accounting to the Orders database (as happens with DCS use of PNR and ET/EMD records today). Revenue Accounting System providers seem to be keen to have industry standards define access to their systems, and DCS providers are also supporting ONE Order standards for accessing their systems by Ground Handlers. While providing direct access to the Order Database to DCS providers may enhance the retail experience at the airport in the short term, it might cause a loss of system modularity. Instead, the industry may wish to consider how it can enhance the NDC and ONE Order messages to better support the retail opportunity during service delivery.

## NDC sales resulting in an Order record

The survey first asked airlines whether they were storing PNR and/or order records today following sales through NDC channels. The responses were:

- Four airlines said they already had a full order record while copying data elements into PNR and ET/EMD. Four other airlines did not yet have an order record but were now working on developing this in the same way.
- Two airlines said they were holding a meta order record which encapsulated their PNRs and ET/EMDs.
- Two airlines had not started work on capturing orders from NDC sales.

## Adding Non-Air products

Having created an order structure it is quite feasible to use this for service delivery of Non-Air products which can be added to both Offer and Order Management Systems. This has already been used in a couple of ONE Order pilots. Typical business use would be for ground products.

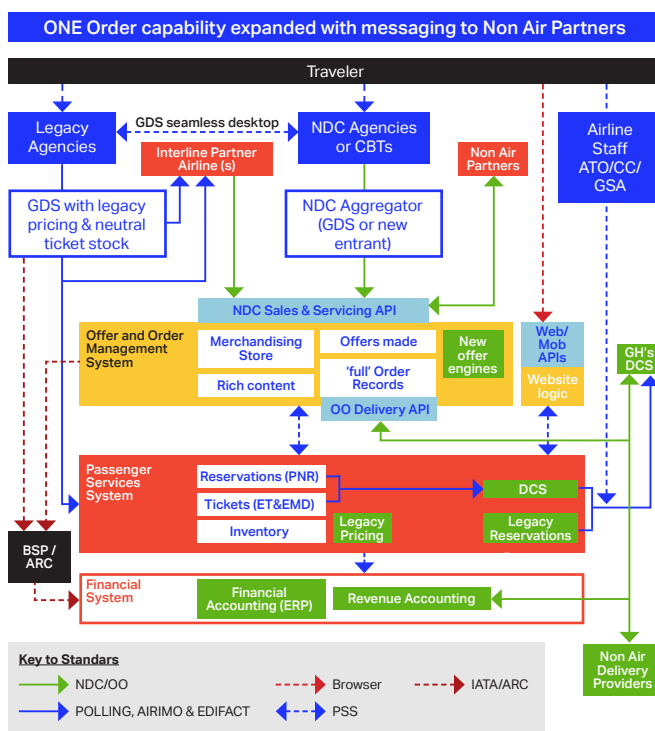


Figure 4 – Adding Non-Air partners for sales and delivery

## Web and Mobile sales resulting in an order record

The survey asked about current practice following a sale through a web or mobile channel. One airline said it was storing an order record in the same database as for NDC sales, and only one further airline was storing an order record while not doing so for NDC sales. The latter demonstrates that it is indeed possible to first implement ONE Order for web or mobile sales without (or before) NDC sales. For most full-service carriers the web sales have been practiced for many years prior to any discussion about order records. When airlines were asked which channel they expected to first cutover to order records, the usual response was for the Web/Mobile as presumably it is the easiest to switch within an airline-controlled system.

This is essentially the furthest state that airlines have reached in implementing or near-term planning for keeping an order record which could be then used for service

delivery and revenue accounting deploying the ONE Order messages. The business case for this stage is to have web and mobile channels benefit from the new sophistication of the Offer Management System while relying upon the order structure to manage that level of complexity. At the same time some functional and data duplication held in the web-site (e.g. rich media) would no longer be needed.

If service delivery is affected from the legacy copy records in PNR and ET/EMD rather than ONE Order messaging, then the Offer and Order Management will still need to be throttled back to what can be reliably controlled through the legacy records.

Airlines did report different timings for making this transition to order records. It is the channel over which airlines have the most control technically, so there was a universal recognition that this was the first channel that could be brought fully onto Order records.

At that stage the architecture would be described as below:

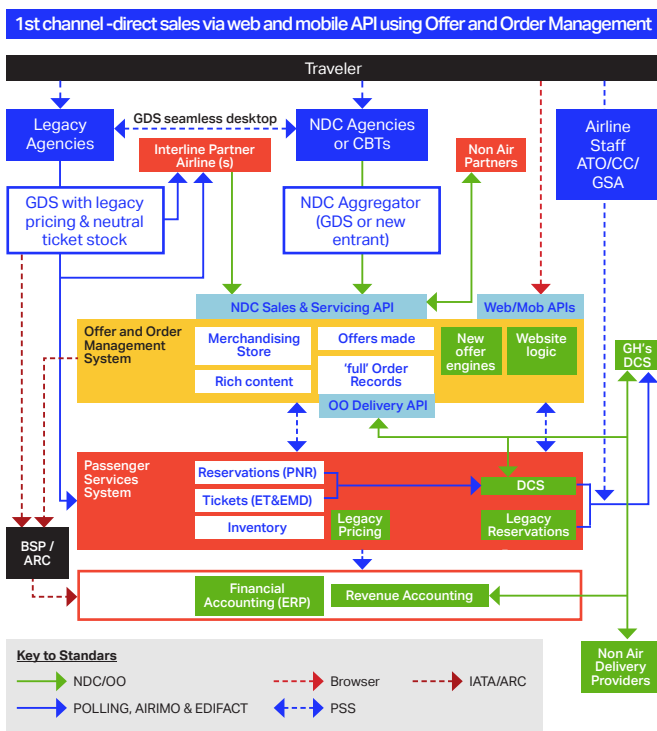


Figure 5 – NDC and Web/Mobile sales can result in an order record used for service delivery and revenue accounting

## ATO/CTO and Call Center bookings and servicing of order records

The next channel airlines reported generally to start to switch to creating order records was for ATO/CTO/Call Center and with a confidence of completing the change some time after Web/Mobile. However, airlines have very different thinking about how to achieve this:

- Three airlines expect their PSS to be upgraded to build order records rather than PNRs so being committed to using the offer as well as order management capability offered by their PSS. These airlines will need to be conscious that they are risking not achieving the architectural benefits of modular systems as PSS vendors may well continue to use order records in a 'native' way as with PNRs today, rather than relying solely upon the industry messages.
- Three other airlines anticipate building meta order records for this direct channel which allows universal access to order records but fails to provide airline staff with any offer management capability developed outside of the PSS.
- Just one airline proposes to offer a web front-end to their staff bookings tools to gain access immediately to both Offer and Order Management.
- There were five airlines that had no plans for this transition.

Of the system providers, one PSS did not want to disclose their plan. Two others will be upgrading their PSS reservation service to include their new Offer Management services while building and working from order records. The fourth anticipated providing a web front-end to access Offer and Order Management.

Three of the OMS providers expected their clients to provide the web access for staff to use both their Offer and Order Management facilities, with the fourth expecting staff to access the OMS directly.

In considering the various pathways, the most efficient approach appears to be to provide staff with access to full Offer and Order Management capability through a browser access. However, it will be necessary to continue to provide traditional access to PNRs and ET/EMD records for servicing legacy bookings.

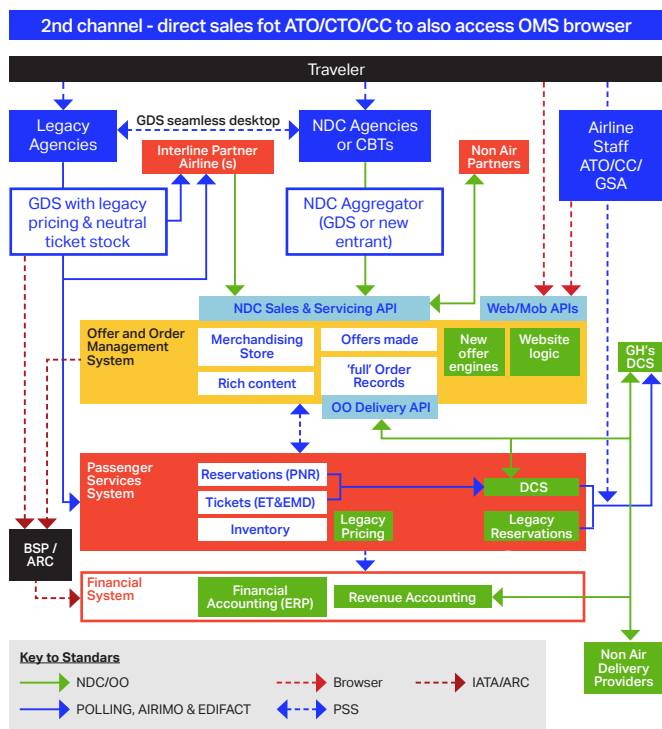


Figure 6 – Airline staff can access full offer and order management by accessing a 'staff portal'

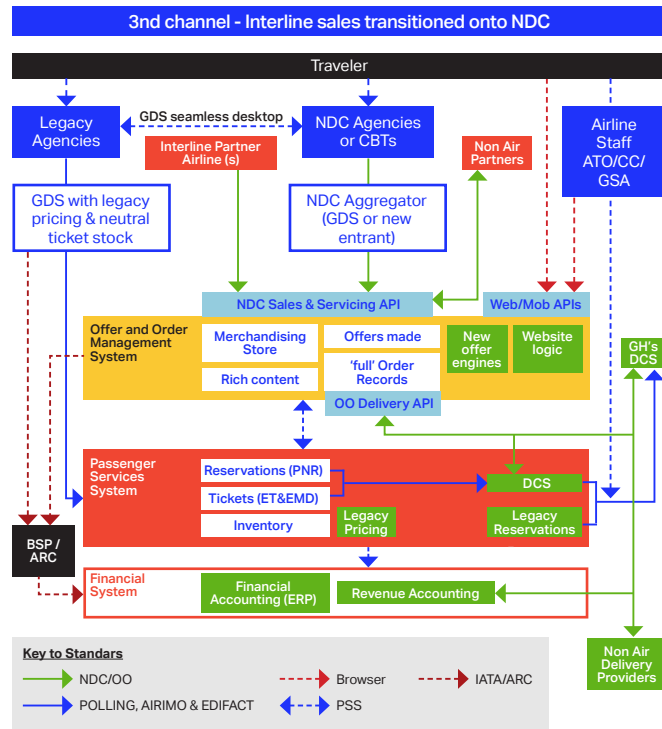


Figure 7 – Bringing all interline sales into order records, using NDC shopping & orders

## Interline sales

Interline sales are made through either a direct (PSS to PSS) sale or indirect GDS sale. Although some airlines are starting to transition their sales onto the NDC channel, interline NDC sales have not yet started. In the surveys three airlines reported that they plan to start interline NDC & ONE Order this year. At the other extreme, three others had not even started thinking about interline NDC.

The surveys asked about perceived problems with using the NDC interline messages. There are no known reported problems by the 12 airlines except for the comment that the current Interline Group need to complete its work program. Of the PSS providers, concern was expressed about the suitability of the message standards for passing taxation details between ORA and POA and how the full itinerary would be disclosed to the POA.

It will also be essential to resolve the concerns about control of order records between ORA and POA as Operating Carrier and the expectations for interlining with LCCs that do not implement ONE Order standards.

## GDS bookings\*

This is likely to be the first distribution channel that changes to create order records through an indirect sale being made using NDC messages, but it is quite probably the last to be finally switched from legacy PNRs into Orders. For airlines trying to manage their transition into orders alongside other airlines that may not have started, a key enabler will be the proposed GDS seamless desktop in which an agency can see and book both NDC and legacy GDS content from a single desktop. There is an expectation that the transition to NDC sales across all the world's agencies will take a long time.

Airlines are aware of the challenge to bring the legacy GDS booking into an order record. Six airlines reported that they would expect the GDS bookings to naturally transfer into NDC bookings as the GDSs implement their NDC aggregator services or through an expansion of direct connects to their NDC API. One of these airlines was very clear that it considered bringing a GDS booking into a copied order record would be a mistake, while five airlines considered they would do just that and start to copy their PSS PNR copy record into an order record. The PSS providers were similarly split two and two on whether they would attempt to bring a client's bookings made in a GDS, which was not themselves, into their proposed order record or to wait for that GDS to become an NDC aggregator. Of the four OMS providers, three responded that the legacy GDS channel



would need to transition to become an NDC aggregator to create an Order.

From a value creation perspective, it is worth repeating that there will be little, if any, benefit from copying legacy PNRs into Orders – if the sale has missed the value of retail Offer management there is no benefit from storing it for service delivery in a superior record. As such, the goal must be to migrate agencies into using an NDC service which will provide their clients with richer content. When this is achieved the architecture becomes:

*\*Note: In this report we have used the terminology "GDS booking" to mean what results from a GDS proposing an offer based upon their use of their pricing engine and being accepted as a PNR. The GDS will hold the master record and provide a copy to the marketing carrier. The same intermediary can also act as an "NDC Aggregator" in proposing an airline created offer with the resulting booking being held as an airline order.*

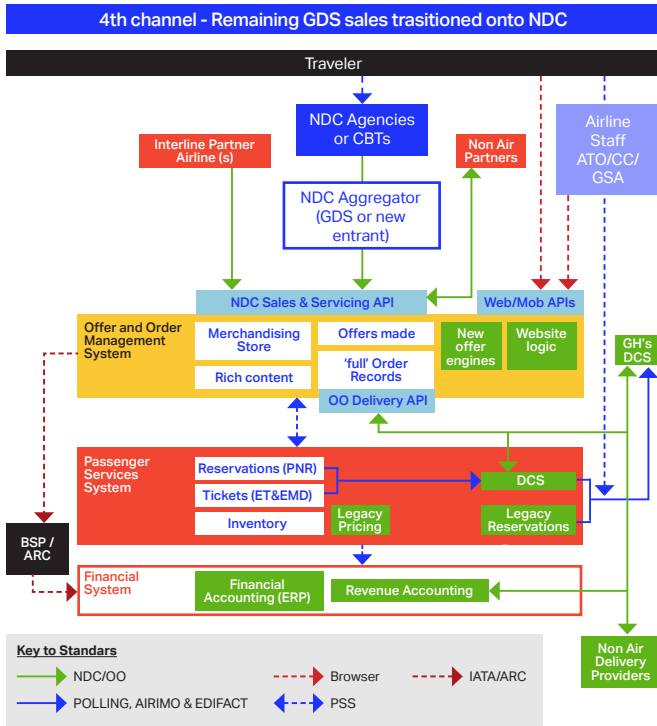


Figure 8 – All channels accessing offer and order management

Under these schematics, all bookings will naturally create order records which can be directly serviced, delivered and accounted for using the Order messages (hence there would no longer be a need to copy Order records into PNRs and ET/EMD records). This would bring substantial efficiencies in simplification and modernization – and achieving the accepted vision of the end state with ONE Order transformation. The final architecture plan now becomes:

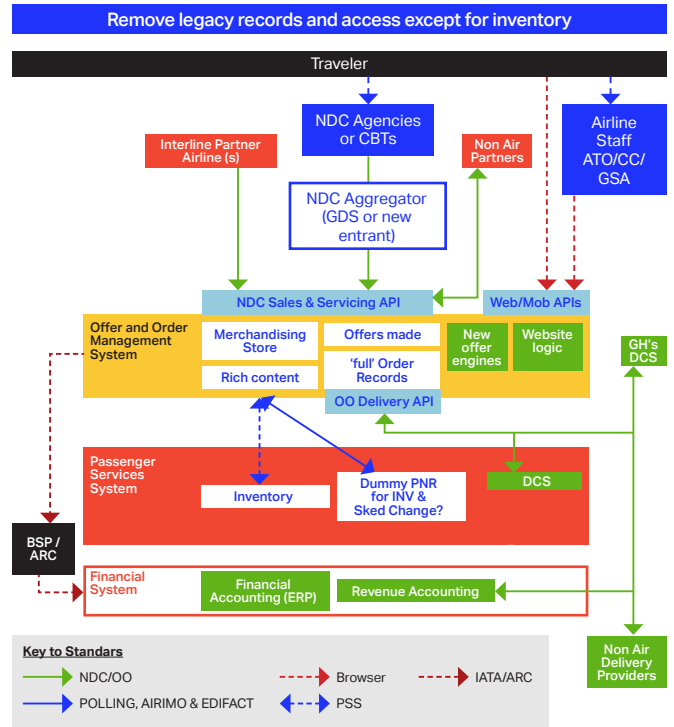


Figure 9 – Final architecture

This completes the vision of airlines becoming modern retailers with a combination of NDC, Dynamic Offer and ONE Order management. There is still scope for resolving the future for inventory management. The expectation is that Dynamic Offers will not be based upon booking classes tied to filed fares, so that inventory management will become simpler. With a new inventory database, the legacy practice of linking inventory changes to adding or deleting PNRs would eventually become unnecessary. A couple of surveys suggest that a small PNR may be needed for a very long time for this purpose – and possibly to keep the PSS functionality around managing schedule changes.

But as airlines move forward on this transition journey by channel of sale, they also need to consider how service delivery and revenue accounting will be managed for a substantial transition period.

The transition study now considers those points.

## 7. Managing service delivery through the transition

We would like to distinguish the two types of current air service delivery – which we will call as ‘native’ and ‘ground handler’.

In ‘native’ mode an airline has its own (or own contracted) DCS as part of its PSS services. The reservation PNRs are either shared with DCS or passed into DCS some time in advance of operation. The DCS system has direct access to the ticket server to directly inspect and change the status codes on ticket coupons and EMD records.

In ‘ground handler’ mode an airline’s DCS will first send a PNL to the ground handler’s chosen DCS and then follow up with equivalent messages to change the booking information. The airline will have an agreement on how the actual check-in process will proceed according to their GBR (General Business Requirement agreement) – to deploy the ticketing standard messages in Resolution 722G according to either the airport control method (in which the ground handler has a defined period of time in which to manage airport activities and flight departure before providing a bulk update message back to the airline to update reservation and ticketing records for each booked passenger), or interactive method in which every stage of the check-in, boarding and departure requires a message to the airline’s ticket server.

It should be noted that IATA standards relate only to the use of ground handling. The technical definitions above are not to be confused with the contractual arrangement an airline may have with a ground handler in which it either operates as described or alternatively provides access for the ground handler’s staff to its DCS – in which case the technical process follows the ‘native’ DCS usage.

This distinction of ‘native’ versus ‘ground handler’ is important in relation to the standards for ONE Order which again only apply to the technical deployment of the ‘ground handler’ methodology. There will be no ‘standard’ way for an airline to have its Order record directly accessed and managed by a DCS – this is the bilateral responsibility of DCS system provider and airline client.

### DCS access to order records

The surveys aimed to find out what types of understanding had been reached between airlines and DCS suppliers on how they could be deploying Order records. It was very clear that few discussions had progressed to this point. From the airline surveys, there was a consistent understanding (7 of 12 airlines) that they did expect their Ground Handlers to use a DCS system which deployed ONE Order service delivery message, with 3 airlines expressing confidence that their chosen DCS would be able to operate in native mode with their order records; with 2 of those 3 airlines progressing with Offer and Order Management services from their PSS. The implication seems to be that an airline which builds its order records outside of its PSS does not expect those order records to be accessed by its DCS in a native mode – certainly, the only IATA standards which would apply are for the DCS to operate in the ground handler mode. But that does not preclude the DCS provider offering a specific solution.

There was more clarity on this from the PSS providers. One provider stated that their DCS was ‘a standalone module but better when integrated with our other services’. The other three providers were quite clear that they would upgrade their DCS to work directly with their new Order records but would require an airline client that had built their own Orders database to continue to use DCS in the ground handler mode of using ONE Order messages.

The question is whether an airline is disadvantaged by using its DCS in a ground handler mode. Or put differently, can a ‘ground handler’ achieve the full vision of an airline becoming a retailer – including at all points of contact with a customer which certainly must include the airport opportunity for both ORA and POA if they become essentially ground handlers? How could they sell an additional ancillary whether bag or lounge pass or propose and accept a paid offer for an upgrade? It has not been in the scope of this transition study to investigate those opportunities, so further work is required, and that work should include the significance of airlines using their own DCS as a ‘ground handler’ versus ‘native’ mode.

While an airline may be able to reach closer to the full retail vision if their DCS is used in a native mode, there is a clear architectural disadvantage from this as the usage does not rely upon industry standards, so there is a severe risk of vendor locking to their proprietary solution. If an airline wishes to avoid that risk and use the industry standard interface, with the ONE Order service delivery messaging, it may lose some retailing advantages at the airport. But this is not yet really understood and could quite possibly be overcome with the development of further industry messages to support a ground handler (or very similarly an inter-line partner) becoming a secondary seller adding items to the Order. This whole area will need to be carefully explored for later enhancements to the messages.



## DCSs are likely to offer dual record type capability

One consistent message from the PSS providers, was their intention to develop their DCS to operate in ground handling mode through a simultaneous use of legacy and ONE Order messages. They explained that if an airline started by sending a legacy PNL (and continued with legacy updates) they could also send and update the passengers by sending a ServiceDeliveryNotifRQ message. Although not asked in the survey, this presumably also requires the full of the interactive method for the legacy ticketed passengers. But it will be extremely helpful for managing transition to order records if the DCS systems can indeed provide that dual capability and so eliminate one reason for copying order records into PNR/ET/EMD records or vice versa.

## Disruption handling

Airlines were also asked about their thinking around handling disruption during the transition period. Since interline NDC has not yet started, it was not surprising that the answers to these questions were quite sparse. There was at least a strong (9 of 12 airlines) agreement that the goal is automation of rebooking disrupted passengers to minimize customer inconvenience. There was a recognition by just 3 of the airlines that front desk staff at airports and call centers would need to be able to access both legacy records and order records to support disrupted passengers – although perhaps that wouldn't be necessary if orders had copies made into legacy records or vice versa. There was little additional insight from the survey on how disruption would be managed during transition when some airlines were order capable and others only PNR/ET/EMD capable. This must remain a focus area as airlines start using the NDC interline messages.

## 8. Managing Revenue Accounting transition

Passenger Revenue Accounting is composed of various modules. In today's world their role is to achieve various processes, mainly around sales data processing and preparation, sales reporting, sales control, commission management and accounting (e.g. liabilities, revenue, accounts receivables, and payables). It is also where appropriate regulatory processes for tax calculation and remittance are managed.

Just 2 of the 12 airlines registered that they had a clear understanding with their supplier (or own IT Group) for Revenue Accounting processing under ONE Order – with one of those having already tested some of the principles in a pilot. Four other airlines said they did not have clarity on this.

However, of the 6 providers of Revenue Accounting solutions that replied to the survey, there does seem to be a quite strong level of understanding of what is required to deploy the ONE Order messages. Five of the 6 providers confirmed their understanding of the steps to move from supporting NDC to full use of ONE Order, with the 6<sup>th</sup> provider saying this was already done in their pilot. The airlines were less clear on the steps, again perhaps because they have not implemented interline NDC which requires settlement values to be stored in an order record and reported to revenue accounting through an OrderSalesInformation-NotifRQ message – with one system provider pointing out that the key component of that message to link an OrderID to a particular ticket number would not be included in the standard until 19.2.

Some of the most interesting comments came in the survey responses by the 4 responses from OMS providers, with 2 implying that they would be able to work directly with an airline's financial accounting ledgers when an airline reached full use of order records. It was also apparent that they also saw opportunities to modernize the settlement activities with real time processing.



The various survey responses revealed two implementation issues:

1. The Order item status fields and their updates by the ONE Order messages reflect the sales and operational activities. They do not cover the additional requirements for managing and tracking actual payments. This is an additional function included in revenue accounting and ERP systems, but which would need to be developed by any OMS that wanted to work directly with standard accounting packages.
2. For the transition period when airlines may have copied originating order records into ticket records or vice versa, it is vital to avoid double counting. As such, airlines must ensure they only report each actual sale one time unless their revenue accounting system is detecting duplicate records. From the survey, 2 of the 6 RAS providers required airlines to not send duplicated records and 3 were proposing that this could be managed given the reference between OrderID and ticket number was provided.

While displacing the need for a specialized RAS is not really an option during transition, there is no doubt that some functionality will be displaced. The three areas relate to:

1. Proration which is not required if every interline itinerary has been Offer priced with NDC shopping messages between carriers. This is many years away, and it is likely that some airlines will want to make NDC Offers which include segments on their non NDC interline partners which will still require ticketing with available filed fares. In addition, one airline felt there would still be a need for internal proration of online multi sector or roundtrip journeys for revenue reporting information systems. In this latter case, surely a better solution would be for Offer Management Systems to allocate the 'internal value' for each service item according to the value determined in the pricing algorithm and then store this in any resulting order – so that every service item held a best calculated value rather than apportioned value by proration.
2. Taxes, fees and charges which are now needed at time of Offer Management. There is still debate whether a POA is able to assess the charges which it needs to pay at time of making its Offer. However, it is clear that there will always be a need to manage the consequences of these amounts being altered by the relevant authority between the time the Offer was made and the time the passenger travelled, and the charge becomes liable. This may still require the final calculation be made in the Revenue Accounting System, but it would help eliminate interline billing disputes if airlines agreed that an accepted offer from a POA was the final amount they could claim from an ORA.

3. Revenue integrity checking should be eliminated when the ORA has made every Offer through all channels from its own Offer Management, and especially when Orders are constructed by reference to the stored Offer items, since there is no scope for intermediaries to make any adjustments in their own systems. But that does not remove the need for airlines to be continually monitoring and reviewing their Offers to ensure pricing engines are performing as wanted and to be vigilant against fraud. It remains to be seen whether the Revenue Accounting system can help with those matters.

The overall conclusion is that airlines will probably find that their Revenue Accounting system is already being prepared for ONE Order and that they should start the dialogue on how to manage the transition period as well as conducting tests through pilots. As airlines progress in the transition to full ONE Order they will have the experience to determine how best to continue to deploy their revenue accounting systems. In the future, with the creation of rich Order Management solutions, interfacing with finance systems, some of the activities of the Revenue Accounting might:

- Not be needed at all: per example sales auditing might be un-necessary due to the NDC shopping process with the agreement on the offer at time of shopping
- Not be needed anymore in finance: interline proration would not be necessary due to the interline settlement information exchanged at time of shopping
- Might happen differently: for example, leveraging further on the orders agreed data between retailers and suppliers (Carriers, Sellers, etc.), the Settlement with Orders standard will enable an alignment between the accounting of receivables and payables, and their collection process, due to the agreement on payment and settlement at time of sales (OMS payment commitment). This means that a direct and standard accounting process could be followed for accounts receivables and payables.

## 9. Conclusion

The transition to a world of offers and order only and the associated adoption of distribution standards (NDC and ONE Order) will be a complex exercise, but one which will prove well worth the effort. Airlines transitioning towards offers and orders only will be able to develop new types of partnerships both with airlines and non-airline 3<sup>rd</sup> parties, to implement delivery, servicing and accounting processes which are more streamlined and better aligned with other travel verticals and industries.

There will be many different opportunities for airlines to achieve benefits and value creation in the initial steps of their transition to ONE Order. These benefits will start to flow once every offer, and in particular every “sophisticated” offer (e.g. including 3<sup>rd</sup> party non-air services, interline content from ticketless carriers) will be captured via an order and the order management capability of the airline supports the delivery and accounting of these complex offers.

When looking into the “how” aspects in terms of transition and usage of orders there are different approaches to this transition across the industry. The main considerations presented in this report are around how to move from a current channel driven architecture to an omnichannel customer centric one relying on centralised capabilities (and data). Building an order repository is a first step. Then there is a general acceptance that, to get to the goal of sunsetting the legacy records and messages, airlines will need to manage and consider their sales channels (own channels and the distribution ones).

For the initial transition steps, some potential business use cases that could be considered are around the maximisation of the ancillary services or new products (e.g. 3<sup>rd</sup> party content) that airlines would like to include part of their offers, and that can be now fulfilled, delivered and accounted via orders.

In the early stage of transition, there might be use cases where it might be necessary to replicate data from these first orders into legacy records to support downstream service delivery, servicing and accounting, but as those systems become fully capable of taking either types of records this will become less necessary over time.

Interline and disruption have been identified as two main domains where ONE Order will bring simplification and they require more industry focus and work in documenting end to end use case, best practices and developing necessary standards.

In all these various use cases, during the transition phase the airlines will need to think carefully about how their staff will service passengers with both ONE Order and legacy bookings at all customer touchpoints.

Airlines transitioning to offers and orders only should approach this strategic initiative with a broad vision of the entire journey towards airline retailing. This initiative will require significant effort and focus from airlines around change management and user adoption. Ultimately, it will unlock new value and opportunities for the entire value chain.





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