T2 RL®

Delivery in an Order Management World

August 2024

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Contents

Introduction

T2RL and Ink Innovation have collaborated on this paper which describes a new approach to delivery for airlines that are modernising their commercial technology along Offer-Order-Settle-Deliver lines.

Most of the industry work on OOSD assumes that Deliver will look much like today's DCS with the addition of an XML interface. This is missing an opportunity to fully exploit the capabilities inherent in the new technologies by creating a comprehensive Retailing Delivery System (RDS). This proposed system will take responsibility for the customer's order from the moment it is created until the last service within it has been delivered, creating greater efficiency and more revenue opportunities.

A draft version of this paper has been discussed with a small number of airlines based in different regions of the world. Their feedback has been incorporated into this publication.

Background

The airline industry adopted large scale computer systems before almost any other. An unintended consequence of that pioneering status is that airlines are now burdened with 50-year-old technology. Since 2012, and even before, the industry has been making a concerted effort to modernise. Initially, this effort focused on merchandising and distribution, leading to the IATA initiative of New Distribution Capability or NDC. Airlines have moved on to consider other aspects of the technology stack, and in particular, the focus now is on an environment based around the concepts of Offer, Order, Settle and Deliver. While there are reasonably good ideas of what offer and order systems will look like, and settlement systems may not differ greatly from existing accounting systems, remarkably little attention is yet being paid to the fourth element, deliver.

Standards agreed by airlines working together under the banner of IATA have played a huge part in the development of airline technology over more than fifty years. They are robust and reliable, but they are not fast to develop. Most of the significant advances in the way that airlines harness technology have run ahead of standards development. NDC is a case in point. Development of the standard came about after Farelogix and others had launched their API-mediated merchandising and distribution capabilities. This is where delivery stands today.

> The opportunity exists for leading-edge airlines and technology providers to launch new capabilities into the market.

Those that prove their value will form the basis for the new standards of the future.

Deliver Has Not Yet Been Considered

Within the work that IATA and its members have done on modern airline retailing, little attention has been paid to delivery systems, although that is beginning to change. Some believe that in an order management world, Deliver will simply be a very small app interfacing to the Order Management System (OrMS). T2RL does not consider that this position will stand up to much analysis. Delivery systems need to be far more capable than a simple app would imply.

> Apart from all the complex processes around airport operations and the interfaces to national governments, which are now mandatory, there is a whole set of open questions about how to deliver products sourced from third-party partners.

One of the main benefits of moving to an OOSD environment is intended to be that it will be much easier to sell third-party ancillary products. It may indeed be possible to sell third-party products using the tools of NDC and ONE Order.

> Still, there remains the problem of ensuring that those products are delivered to the end customer and that the payments connected to those products end up in the right place.

It is conceivable that the airline delivery functions will be performed by today's departure control systems simply upgraded to handle order management messaging. Indeed, this may provide a bridge into the new world for airlines that are implementing offers and orders.

> However, in the longer term, there is a great opportunity to implement new delivery systems that will have far more capability and potentially take on some of the functions that currently are not well defined.

DCS has been static for many years

Departure Control Systems, or DCS, have not changed fundamentally since their introduction in the 1970s. There is an assumption that at some point in the lifetime of a passenger booking, control of that booking will be taken over by a system based on airport processes. After that time, bookings will no longer be readily available to the airline's commercial systems. The DCS is responsible for passenger and baggage acceptance, the production of documents such as boarding passes and bag tags, and it interfaces with government agencies that demand passenger data in an increasing number of cases. In today's world, the DCS is able to access the electronic ticket coupon associated with the journey to determine whether the passenger is entitled to board the flight. Once boarding has been done, the DCS sets the coupon status to flown, and that ticket is no longer available and can pass into the revenue accounting process.

This is expected to change in the world of offers and orders.

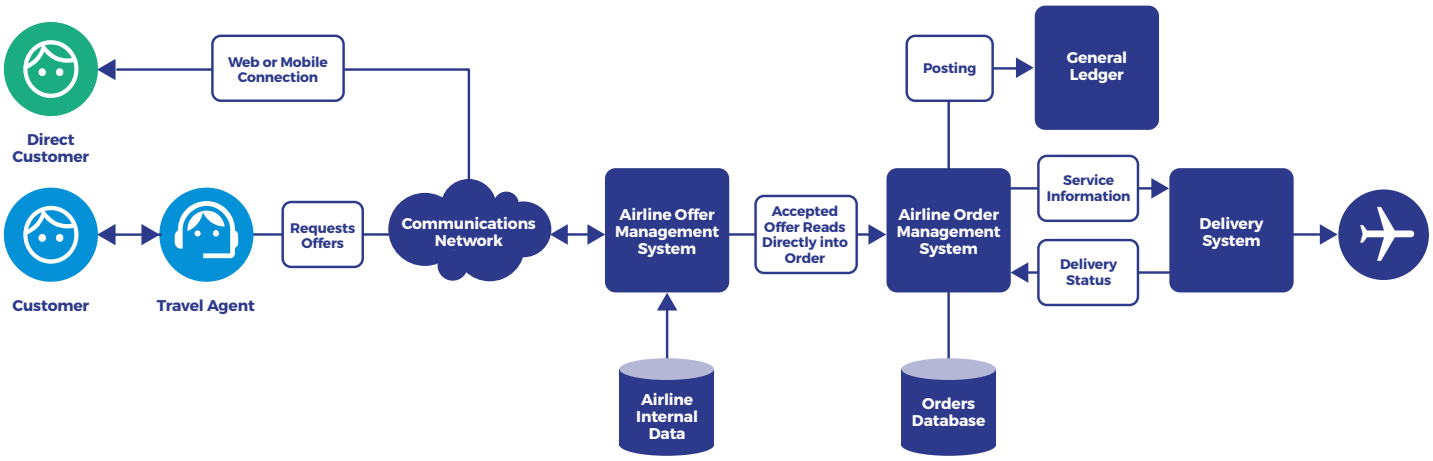
The delivery system needs to consult the order from the OrMS to determine passenger eligibility to travel. Once it has completed its processing it updates the status of the service item from the order to allow accounting to take place. Current expectations in the industry are that this will broadly remain the pattern into the future.

Airport hardware has changed dramatically since the 1970s. Self-service check-in is now the norm, either using kiosks at the airport or passengers' personal mobile devices. Self-tagging of bags is becoming increasingly common, and biometrically controlled access to boarding gates is also being introduced widely. Despite this, the underlying business processes of departure control remain largely unchanged.

> T2RL and Ink believe there is an opportunity to transform the delivery system radically to have a much broader remit than DCS does today.

A Proposal

Current expectations are that the process flow in an OOSD world will be as depicted in this picture:



Simplified Process and Data Flows in Offer/Order Bookings

This view depicts a happy path in which a customer makes a booking for a flight, either directly or via a travel agent, and subsequently takes that flight. Delivery is the responsibility of a system at the end of the line that manages airport processes and updates the status when the flight has departed. The delivery system receives information about the services to be provided shortly before they are scheduled. This is typically in the region of 24-48 hours before departure.

In reality, the picture is much more complex than this. Customers may make changes to their bookings. Airlines may wish to offer additional services after the booking is made. Disruptions to service may occur that require changes to the order.

> The simple picture of the DCS as the last link in the chain is outdated.

In a modern environment, there is no good reason why the system responsible for delivery should not be aware of the booking as soon as it is made.

An Alternative Approach - The Retailing Delivery System

The primary purpose of an airline delivery management system is to ensure that passengers and their baggage are boarded on the flight with all legal formalities complete and that the flight departs safely and on time. This does not change in the new world of offers and orders. It is table stakes for any provider that seeks to provide the service.

> What does change is that the processes around offers and orders create the possibility for delivery systems to become a central part of the airline's commercial offering.

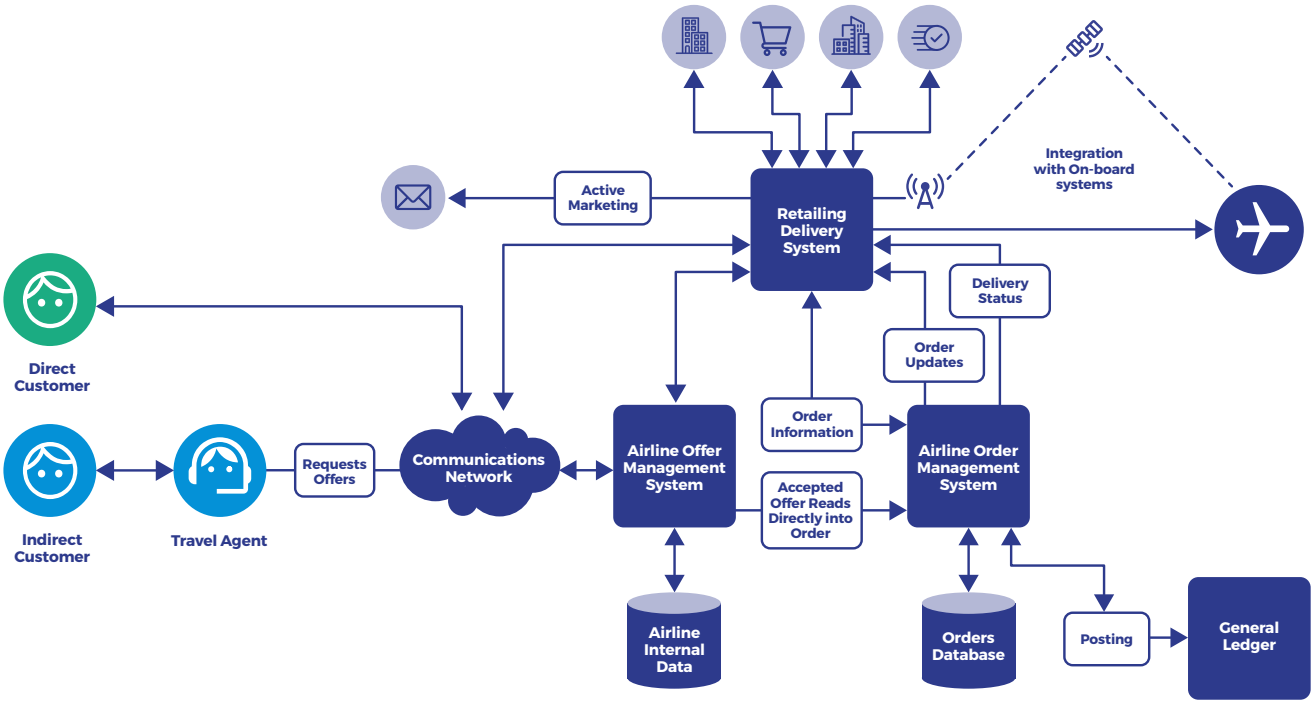
There is no fundamental reason why a delivery system needs to be confined to the last day or two before flight departure. It is already widely accepted that as the main point of contact with the customer in the airport, deliver must be capable of managing a wide range of commercial transactions. These include upgrades, paid baggage acceptance and other ancillary product sales, both flight-related and third-party.

> Given this requirement and real-time communications between order management and delivery, there is no reason to restrict its applicability to the period after the customer arrives at the airport.

The delivery system could take responsibility for the customer's interaction with the airline at any point after the initial order creation.

If the delivery system is built on modern technology standards, then a single interface between order management and delivery can provide a bridge between the closed world of airline systems and the wider world of modern retailing. It can also provide a bridge to the on-board systems where airlines are actively selling additional services during the flight. It is important to note that the OrMS would remain the repository of all information relating to the customer and their order. Deliver would keep the OrMS updated in real-time as the customer added services or provided additional information.

> In this case, the role of Deliver is expanded to become a full Retailing Delivery System (RDS).



Proposed Configuration with Retailing Delivery System

In this arrangement, the RDS takes responsibility for the order as soon as it is created and confirmed. The user interface in the airline's direct channels will route "Manage My Booking" activity to the RDS, while the NDC interface will route Order Change messages to the same system.

Requests to add non-air ancillary products will be orchestrated by the RDS, which will manage the interfaces with third-party systems. It is very unlikely that non-airline third parties will use the NDC standard, so the RDS will need to accommodate a wide range of APIs. Fortunately, most of them will be far simpler than NDC, so the task should be manageable. Requests to make changes to the booked airline services will be routed to the airline's Offer Management System (OfMS), which will process them according to its own business logic.

The RDS also has the ability to drive marketing efforts to upsell and cross-sell products to customers who have already committed to flying with the airline. This may be as simple as emails triggered at fixed times between booking and flying or as sophisticated as AI-driven campaigns based on customer data and changing inventory levels.

Updated Orders will be stored in the OrMS, which at all times remains the system of record.

Check-in has historically been a multifaceted process that takes place once a flight is under the DCS's control. With a modern delivery management system able to access orders as soon as they are made, the various components of check-in can take place at the optimum time. Some may be done well in advance, while others may require that passengers be physically present at the airport.

At the time decided by the airline, the RDS manages passenger acceptance, baggage acceptance, document production and boarding control in the same way that a DCS does today. It updates the Order in the OrMS with Service Status Change messages as specified in IATA's ONE Order standard. In addition, it manages the delivery status of any non-air ancillaries according to the capabilities of the third-party systems. The ability of the RDS to interactively update the order when third-party services are consumed adds a layer of accountability and activity tracking that does not exist today. Where there is no status feedback from the third party, the RDS will be required to have business logic that deems a service delivered if its scheduled delivery time has passed and no negative communication has been received.

Benefits of the RDS Approach

> The benefits of the proposition outlined here are to be found in agility.

An RDS based on modern technological components would be able to add and manage third-party connections very rapidly. It would not be limited to communication that was either very rudimentary or depended on the partner company's ability to handle NDC. There would be no disconnection between the initial sale, the pre-travel period and the airport experience. In fact, the customer relationship could be extended even after the operation of all the flights in the order. The need to transfer service information to the delivery system at a point in time ahead of departure would no longer exist as delivery would have all the information in the order available to it at all times.

> A capable RDS would open up significant opportunities for upsell and cross-sell during the pre-travel period.

An RDS based on modern architectures would generate much more granular data to populate a Customer Data Platform, in turn leading to better analytics and commercial decision support.

No significant changes would be needed to existing OfMS and OrMS. The onus would be on the RDS to accommodate the interfaces with these systems. End customers would not need to have any knowledge of the internal architecture. Their orders would continue to be accessible using the same identifiers.

An RDS may account for the use of loyalty privileges and improve situational awareness across airline partnerships in a way that does not exist in today's world of PNRs, EMDs and EDIFACT IATCI transactions.

Open Questions

Any proposal to make significant changes in the way airline commercial operations are managed will inevitably raise questions, especially at a time when the exact configuration of Offer-Order-Settle-Deliver (OOSD) is far from settled. Among the questions that require further analysis are:

- **Is there a convincing business case for the introduction of a new system into the architecture?**
- **Does it make sense to combine the commercial functions of the RDS with the operational requirement of delivery, or would two separate systems do the job better?**
- **How will servicing of interline relationships between airlines be managed?**
  - When both airlines are using OOSD
  - When one airline remains on legacy technology
- **How will the RDS interface with disruption management systems?**
  - Could the RDS incorporate disruption management?
  - Will the RDS always need to work through the OfMS to get to the inventory needed to solve disruption issues?
  - Are there use cases where the RDS may make changes to the order without going through the OfMS, if those changes are permitted without charge by the terms of service?
- **How will third-party ancillaries be included in initial offers?**
  - Will the OfMS call upon the RDS?
- **How will payment and settlement with third parties be done?**

This is far from an exhaustive list and more such questions will arise as this proposition is considered more widely.

Next Steps

At the time of writing, this is an entirely "blue sky" proposal. During 2024 T2RL and Ink Innovation will discuss it with more airline representatives to determine whether there is a case for taking it forward into a proof of concept. Comments and suggestions regarding the concept and the implementation are welcome.

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Ink Innovation, a travel IT provider, specialises in designing the Retailing Delivery System (RDS) to evolve standard Departure Control Systems (DCS). We work with airlines to offer web-based, cloud-integrated solutions, including biometrics, mobile, and self-service devices, enhancing operations and integrating legacy systems into modern frameworks. For more information, visit **www.innovation.ink** or contact the team at: **info@innovation.ink**

For further analysis and discussion on Delivery in an Order Management World please listen to our podcast on the subject available here:

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