



How can we, as a community, handle differences between airlines' NDC APIs?



Discoverability 🔍



**Why and how do airlines' NDC APIs
differ? 🤔**



Three ways to handle differences between airlines' NDC APIs



1. Standardisation



2. Hard-coding



3. Discoverability



**Why discoverability is the key to NDC
happiness 🙏**

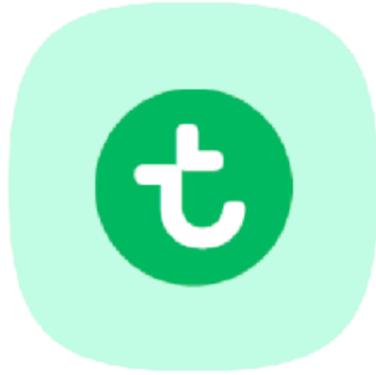
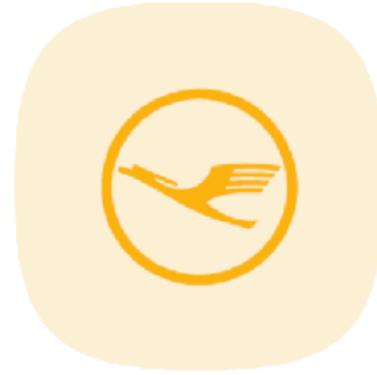
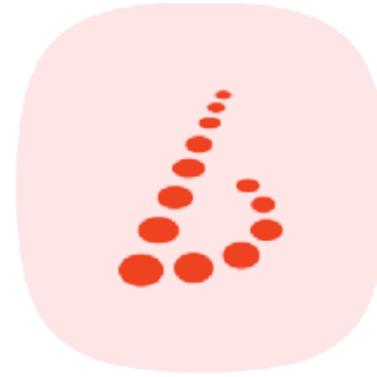
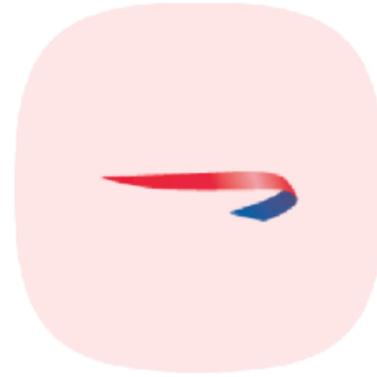
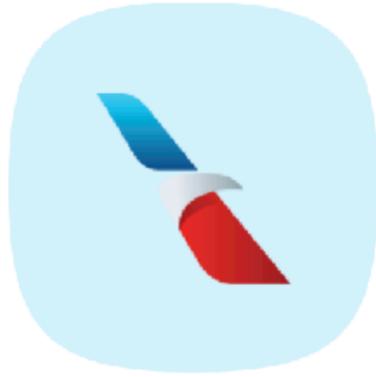


How we're approaching discoverability at Duffel 🙌



**We make it 10x easier for travel sellers
access NDC content, speeding up adoption**







Universal API



Universal UI



Travel sellers can turn on new airlines in one click, with no changes to their code



**I'm an engineer - but now I help get
airlines connected to the Duffel platform**



**Why and how do airlines' NDC APIs
differ? 🤔**



NDC: one language, many dialects



There are multiple NDC versions



There are significant differences between airlines using the same NDC version



**The standard doesn't define everything,
and it's open to interpretation**



**This is just not the standard's fault
- airlines' business decisions also
come into play**



As an airline, what payment methods do I want to support?



Our NDC implementations don't
just connect to one airline*

* I'm sure this is not true for someone in this room!



**We need to be able to handle
the differences between them**



**There are three ways to handle differences
between airlines' NDC APIs** 



1. Standardisation



The screenshot shows a web browser window with the URL guides.developer.iata.org. The page features the IATA logo and navigation links for 'IATA Home', 'Home', 'Documentation', and 'Community Support'. A blue header bar contains a search bar and a dropdown menu for 'ATSB 19.2'. On the left, a sidebar menu lists various sections under 'Enhanced and Simplified Distribution', with 'Introduction' highlighted. The main content area is titled 'Introduction' and includes a sub-header 'Welcome to the Enhanced and Simplified Distribution Guide'. The text explains the site's purpose and includes a disclaimer. At the bottom, it identifies the author as the Senior Vice President of Marketing and Commercial Services at the International Air Transport Association, with contact information for 800 Place Victoria, P.O. Box 113.

IATA Home Home Documentation Community Support

ATSB 19.2 Search

Filter

- Enhanced and Simplified Distribution
 - Introduction
 - Data Protection
 - Definitions
 - Getting Started
 - Messages
 - Business Functions
 - Capabilities
 - Integration
 - Reference Data
 - Change Log
 - Terms of Use
 - Planning/Scheduling

Introduction

Updated on 26 Jun 2019 | 1 minute to read | Contributors 01

Print Dark

Welcome to the Enhanced and Simplified Distribution Guide

This website holds information and best practices to aid with implementations of Enhanced and Simplified Distribution. This site is managed by the Offer and Order Standard Setting Groups.

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CLID

 Updated on 26 Jun 2019 |  1 minute to read | Contributors 

Business Function

Used to store the Client Identification Number.

Mapping in Enhanced Distribution

XPath: IATA_OrderCreateRQ/Party/Participant/Corporation/CorporateID



**But what about things that we
can't standardise?**



2. Hard-coding



```
if airline == "british_airways"  
    payment_methods = ["bsp", "credit_card"]  
elsif airline == "united"  
    payment_methods = ["bsp", "credit_card"]  
elsif airline == "cathay_pacific"  
    payment_method = ["credit_card"]  
# Add entries for more airlines here...  
end
```



**Hard-coding makes adding new airlines
expensive and time-consuming**



Hard-coding makes it difficult and expensive to keep my integrations up to date



3. Discoverability





discoverability



All

Images

News

Videos

Maps

More

Settings

Tools

About 1,790,000 results (0.32 seconds)

Dictionary

Search for a word



discoverability

/dɪskʌv(ə)rəˈbɪlɪti/

noun

the quality of being able to be discovered or found.

"the legal discoverability of information"

- **COMPUTING**

(in relation to online content) the quality of being easy to find via a search engine, within an application, or on a website.

"a good way to gauge your discoverability is to type your name into Google"



Translations, word origin and more definitions

From Oxford

[Feedback](#)





discoverability

/dɪskʌv(ə)rə'bilɪti/

noun

the quality of being able to be discovered or found.

"the legal discoverability of information"

**The API itself tells implementers
how it works and what it supports**



**Why discoverability is the key to NDC
happiness 🙏**



Payment methods



What payment methods are accepted?



What payment surcharges apply, if any?



```
if airline == "british_airways"  
    payment_methods = ["bsp", "credit_card"]  
elsif airline == "united"  
    payment_methods = ["bsp", "credit_card"]  
elsif airline == "cathay_pacific"  
    payment_method = ["credit_card"]  
# Add entries for more airlines here...  
end
```



```
<PaymentCardMetadatas>
  <PaymentCardMetadata MetadataKey="Payment1">
    <CardCode>VI</CardCode>
    <CardName>Visa Personal</CardName>
    <CardType>Credit</CardType>
    <CardFields>
      <FieldName Mandatory="true">CardType</FieldName>
      <FieldName Mandatory="true">CardCode</FieldName>
      <FieldName Mandatory="true">CardName</FieldName>
      <FieldName Mandatory="true">CardNumber</FieldName>
      <FieldName Mandatory="true">CardHolderName</FieldName>
      <FieldName Mandatory="true">Expiration</FieldName>
      <FieldName Mandatory="true">SeriesCode</FieldName>
    </CardFields>
  </PaymentCardMetadata>
  <!-- More PaymentCardMetadata elements here -->
  <PaymentCardMetadata MetadataKey="Payment14">
    <CardCode>TP</CardCode>
    <CardName>Airplus/UATP</CardName>
    <CardType>Credit</CardType>
    <CardFields>
      <FieldName Mandatory="true">CardType</FieldName>
      <FieldName Mandatory="true">CardCode</FieldName>
      <FieldName Mandatory="true">CardName</FieldName>
      <FieldName Mandatory="true">CardNumber</FieldName>
      <FieldName Mandatory="true">CardHolderName</FieldName>
      <FieldName Mandatory="true">Expiration</FieldName>
    </CardFields>
  </PaymentCardMetadata>
</PaymentCardMetadatas>
```



If all airlines worked this way...



Adding new airlines would be simple, as you could use the OfferPriceRS to decide what payment methods to offer



**Airlines could change their payment policies
without every integration having to change,
which could take months or even years**



Discoverability is particularly important when there are more complex business rules



“Combinability” of offers





LHR-YMQ

1st June 2020



YMQ-LHR

8th June 2020

Business Class





LHR-YMQ
DI001 on 1st June 2019



YMQ-LHR
DI003 on 8th June 2019

Offer 1



LHR-YMQ
DI001 on 1st June 2019



YMQ-LHR
DI004 on 8th June 2019

Offer 2



LHR-YMQ
DI002 on 1st June 2019



YMQ-LHR
DI003 on 8th June 2019

Offer 3



LHR-YMQ
DI002 on 1st June 2019



YMQ-LHR
DI004 on 8th June 2019

Offer 4





LHR-YMQ

D1001 on 1st June

Offer 1



LHR-YMQ

D1002 on 1st June

Offer 2



YMQ-LHR

D1003 on 8th June

Offer 3



YMQ-LHR

D1004 on 8th June

Offer 4





LHR-YMQ
DI001 on 1st June

Offer 1



LHR-YMQ
DI002 on 1st June

Offer 2



YMQ-LHR
DI003 on 8th June

Offer 3



YMQ-LHR
DI004 on 8th June

Offer 4

Offer 1 + 3

Offer 1 + 4

Offer 2 + 3

Offer 2 + 4



What offers can be combined together? The API should tell you.



Frequent flyer programmes



What loyalty programmes are supported?



Frequent flyer programme

Cathay Pacific Asia Miles



Programme number





My Avios

Collect Avios

Spend Avios

The Avios Travel Rewards Programme in the UK has closed



NEWS

China Southern to Leave the SkyTeam Alliance



Emily McNutt
Nov 15, 2018



The API should tell you.



**Adding opportunities for
discoverability can add value
across the NDC schemas**



How we're approaching discoverability at Duffel 🙌



**At Duffel, we're adding discoverability in
the aggregator layer**



**This means that our customers can turn on
new airlines without changing their code**



**...and they don't have to keep track of
changes that airlines make to their
products or policies**



**A good example of this is how we
handle identity documents in our
Cathay Pacific integration**



passenger_identity_documents_required `boolean` *required*

Whether identity documents must be provided for each of the passengers when creating an order based on this offer. If this is `true`, you must provide an identity document for every passenger.



```
if airline == "cathay_pacific"  
    identity_documents_required = true  
else  
    identity_documents_required = false  
end
```



```
if offer.passenger_identity_documents_required
    identity_documents_required = true
else
    identity_documents_required = false
end
```



This is great for travel sellers



They can turn on new airlines in one click



**They don't have to worry about keeping
their integrations up to date**



This is great for airlines



**Travel sellers can get connected to them
much more easily, meaning more sales**



**They don't have to wait years and years
for thousands of sellers to update their
integrations**



**Airlines' NDC APIs differ in technical
implementation *and* business
capabilities**



Three ways to handle differences between airlines' NDC APIs



1. Standardisation



2. Hard-coding



3. Discoverability



**Discoverability helps us to handle
different business capabilities and
business rules**



**At Duffel, we're adding discoverability
in the aggregation layer**



Tim Rogers

tim@duffel.com



Discoverability

Summary + Q&A

Summary

- Airlines' NDC APIs differ because of different technical implementations and different business decisions, capabilities and rules
- Standardisation can help us with differing technical implementations, but we can't standardise airlines' business decisions
- Discoverability is where the API itself tells implementors how it works and what it supports

Q&A

- What differences have you noticed between airlines' NDC APIs?
- Which differences are technical, and which are related to business decisions?
- Do you have any other examples of discoverability in NDC?
- What parts of NDC would benefit from discoverability?

