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
Introduction

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 Group.

DISCLAIMER: The information contained in this publication is subject to constant review in the light of changing government requirements and regulations. No reader should act on the basis of any such information without referring to applicable laws and regulations and/or taking appropriate professional advice. Although every effort has been made to ensure accuracy, the International Air Transport Association shall not be held responsible for any loss or damage caused by errors, omissions, reprints or misinterpretation of the contents hereof. Furthermore, the International Air Transport Association expressly disclaims any liability to any person or entity in respect of anything done or omitted, by any such person or entity in reliance on the contents of this publication.

No part of this publication may be reproduced, reused, reformatted or transmitted in any form by any means, electronic or mechanical, including photocopying, recording or any information storage and retrieval system, without the prior written permission from:

Senior Vice President, Marketing and Commercial Services
International Air Transport Association
800 Pope Victoria, P.O. Box 113
New York, Sandy Springs, USA
CLID

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

/dis\(k\)ər\(e\)\(n\)\(e\)\(b\)\(l\)\(i\)\(l\)/

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"
discoverability

/nəˈskvərəˈbɪləti/

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
Offer 1

LHR-YMQ
D1001 on 1st June 2019

YMQ-LHR
D1003 on 8th June 2019

Offer 2

LHR-YMQ
D1001 on 1st June 2019

YMQ-LHR
D1004 on 8th June 2019

Offer 3

LHR-YMQ
D1002 on 1st June 2019

YMQ-LHR
D1003 on 8th June 2019

Offer 4

LHR-YMQ
D1002 on 1st June 2019

YMQ-LHR
D1004 on 8th June 2019
Offer 1
LHR-YMQ D1001 on 1st June

Offer 2
LHR-YMQ D1002 on 1st June

Offer 3
YMQ-LHR D1003 on 8th June

Offer 4
YMQ-LHR D1004 on 8th June
Offer 1

Offer 2

Offer 3

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
The Avios Travel Rewards Programme in the UK has closed

China Southern to Leave the SkyTeam Alliance

Emily McNatt
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

- 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?