New Distribution Capability

Together, Let's Build Airline Retailing

NDC@Scale: Roadmap to Critical Mass

Edition 1.0

October 2018

DISCLAIMER NOTICE

The information contained in this document is subject to regular review in the light of changing business needs of the industry, government requirements and regulations. The views expressed in this guide are based on the views and opinions of the IATA NDC team.

IATA takes no responsibility for the completeness of this document or the various checklists. The airline is responsible for all decisions made based on this document.

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Preface

NDC – New Distribution Capability – is a travel industry supported program to introduce a new distribution standard and modernize the industry. In 2015, IATA published the first official NDC standard and in 2016, it introduced a certification program to validate the exchange of NDC messages.

As the NDC standard moves towards industrialization, with all major stakeholders engaged, IATA is keen to continue to provide transparency, visibility and guidance to the industry. For this purpose, IATA is introducing a new concept called "NDC@Scale".

NDC@Scale is a set of criteria that will demonstrate that airlines (and their IT providers), aggregators and travel sellers have a minimum set of recognized capabilities to drive volumes of NDC transactions towards 2020.

IATA has commissioned the consulting firm Sia Partners to conduct a survey of some of the key participants across the value chain. The aim of the survey was to better understand the expectations that NDC stakeholders have of each other to ensure better alignment in the drive toward critical mass. The study gathered 32 participants from across the industry landscape: airlines, sellers, corporates and system providers, and was conducted through interviews and questionnaires over a period of three months in 2018.

The information collected through the survey was used to build this document that is divided in two main chapters. The first part, in cooperation with Sia Partners, provides information about the methodology used for the survey and describes the key findings and main challenges identified by the participants. The second part is an attempt from IATA at providing guidance to the industry on how to overcome those challenges. It will describe a possible roadmap for implementation of NDC capabilities and highlight key benefits for players including customers. Setting up the foundations to scale is seen as the first step on the road towards value creation and unlocking the full potential of NDC.

This paper is aimed at supporting NDC stakeholders from across the value chain through this new phase of volume growth and particularly to provide guidance and best practices to NDC Leaderboard Airlines on the way to achieve their goal of 20% of NDC transactions powered by an NDC API by the end of 2020.

IATA welcomes industry feedback, and looks forward to continuing the cooperation with all stakeholders in its different governance forums.

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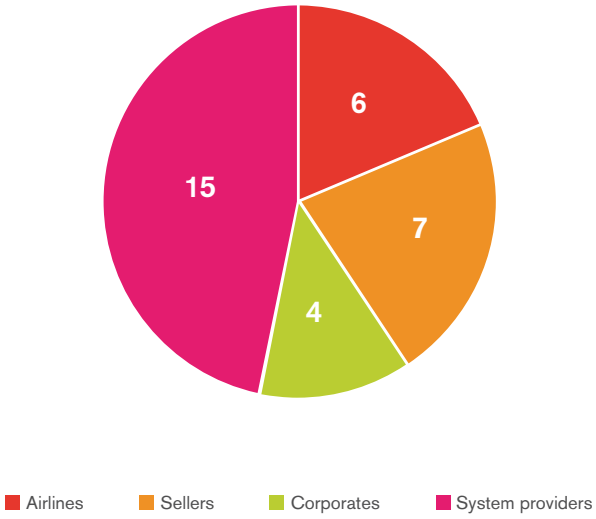
IATA

1. Methodology and results of the NDC@Scale survey

1.1. Methodology of the survey

The NDC@Scale survey was conducted during the summer 2018 by the consulting company Sia Partners with a sample of 32 participants from across the industry. This included airlines, travel sellers, corporates and system providers. The system provider category is made up of a selection of IT providers, startups, GDSs, NDC aggregators and other industry partners.



The participants were asked to provide their views through interviews and questionnaires around the following key topics:

- Technology challenges: What are the main technology & scalability challenges? At your level/at an industry level?
- Business process challenges: What are the main business process challenges? At your level/at an industry level?
- **Identifying the key NDC Capabilities:** What is the criticality of capabilities to be replicated from the traditional channel in NDC and of new capabilities enabled by NDC? What is the maturity of capabilities to be replicated from the traditional channel in NDC and of new capabilities enabled by NDC?
- **General challenges:** What is missing to achieve 20% sales powered by an NDC API by 2020? What is the roadmap of your NDC IT deployments and functional evolutions?
- **NDC@Scale criteria:** set of criteria for the NDC@Scale certification

The following table summarizes the main findings of the survey around three key dimensions:

- **Technology challenges**
- **Business process challenges**
- **Identifying key NDC capabilities**

The colors refer to the number of times the criterion was mentioned by the participants e.g. Performance and NDC API were mentioned as technology challenges by more than 50% of the participants in the survey.

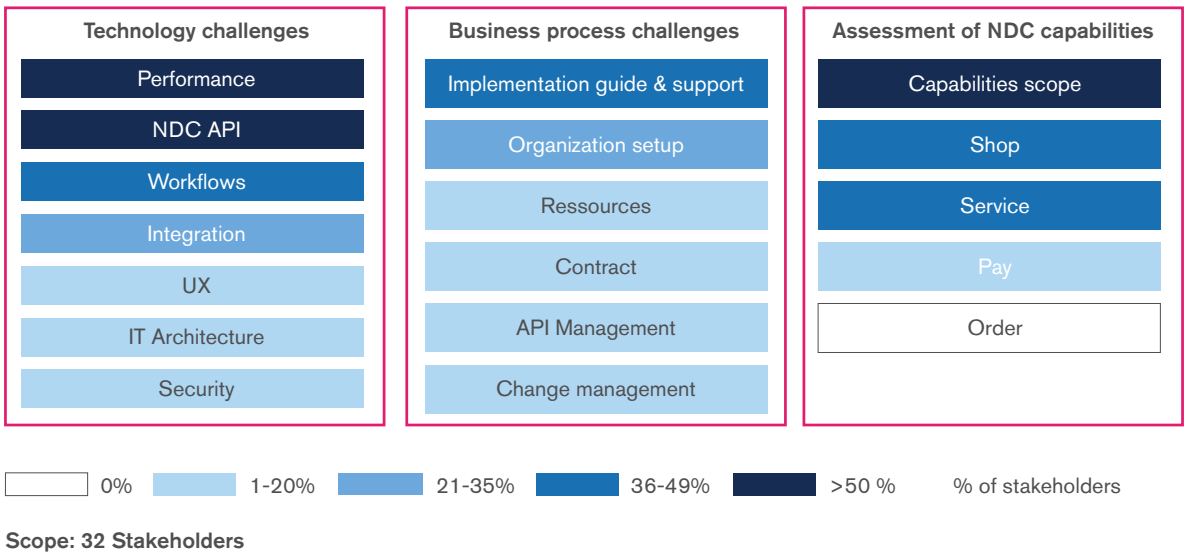


Figure 1: Assessment of scalability criteria

1.2. Technology challenges

1.2.1. Performance

In this context, performance refers to the robustness and reliability of the NDC API (i.e. ability to run on SLAs) as well as the ability to handle a given amount of simultaneous transactions. This was highlighted as a main scalability challenge by more than half of the participants. In order to scale, players agree that both airlines and aggregators should have KPIs in place measuring response time, transactions per second, availability, etc. Performance will be a critical success factor in terms of scalability, especially to match the current level of service experienced by sellers.

NDC aggregators making connections between airlines and sellers could be the key to drive volume; however, some players think that a mixture of new entrants could also help better drive critical mass.

1.2.2. NDC API

In this context, NDC API refers to the compatibility between the different versions of the NDC schemas implemented. This has been identified as a main scalability challenge by half of the players who believe that currently too many versions are co-existing making integration between players more complex. The challenge highlighted is for the industry to converge to similar versions and to ensure that NDC APIs are continuously updated to match the latest version of the schema released (see actions already in place in the next chapter).

1.2.3. Workflows

Workflows refer to the implementation of common workflows of NDC messages. The players mentioned different levels of maturity between airlines regarding the implementation of the same features and corresponding message workflows. There are currently too many different ways to implement the same feature or use case across the industry. Related to this, sellers would like to see convergence regarding error handling.

1.2.4. Integration

In the short/medium term, stakeholders and especially airlines will have to work with

legacy technologies and new NDC-based technologies in parallel. The players mentioned that this transition period could be complex and costly. It particularly impacts sellers that have many proprietary tools. Industry players would like to see more plug and play solutions that will facilitate the adoption of NDC.
Many players highlighted that content differentiation and new consumer experience will ultimately motivate sellers and consumers to move to these new channels.

1.2.5. User Experience (UX)

UX is the interface a seller (or a traveler with an online booking tool) will use to find and process the offers for its clients. It will be critical to be able to display multiple content via the same interface. This was not mentioned as a key scalability challenge, however, the players agreed that user interface in general in the airline industry should be rethought to show on the same page multiple content (multiple airlines, NDC/non NDC content, air/non air content, etc.) and allow better comparison of products and services.

1.2.6. IT Architecture

This section addresses how the different airline IT deployments are aligned with / follow the NDC reference architecture. Some players, mainly IT providers recommend having some use cases in order to better understand what they need to implement.

1.2.7. Security

In this area, one blocker for NDC@Scale has been identified. Several actors are requesting an industry approach for the identification of agents – accredited and non-accredited. Other aspects of security; e.g. security management (e.g. Payment Card Industry (PCI), Personally Identifiable Information (PII), etc…) – are not seen as key challenges by most of the players.

1.3. Business process challenges

1.3.1. Implementation guide and support

This refers to maintaining API technical documentation, functional sandboxes and documentation of the workflows and use cases continuously updated. It also includes having a good operational support process. One of the main challenges identified will be to find a scalable way to manage the onboarding process of sellers and to provide an overall good level of operational support.

1.3.2. Organization setup

Organization setup refers to the changes in organizational structure needed when implementing NDC. With NDC, airlines become responsible for some features that were traditionally managed by the GDSs and they must make sure that they setup the right organization to handle them.

1.3.3. Resources

Airlines willing to scale their NDC implementation not only will need to have the proper organization setup but also the right resources in place. This includes a scalable workforce and the appropriate level of expertise and knowledge in the NDC team and across the various departments involved. Some players highlighted the difficulty to find the right expertise to implement NDC. Best practices to understand what it takes to be successful (resources, investment) could help further adoption, in particular among mid-size carriers.

1.3.4. Contract

Contract refers to the contract management process between airlines, aggregators and sellers. Potentially a large number of contracts

will have to be concluded to give access to an NDC API. Standard contracts currently exist but they often need to be amended to cater for the specificities of the customers.

1.3.5. API Management

In this context, API management refers to the ability to have a support desk and issue management process in place. API Management has not been mentioned as a main scalability challenge by the participants.

1.3.6. Change Management

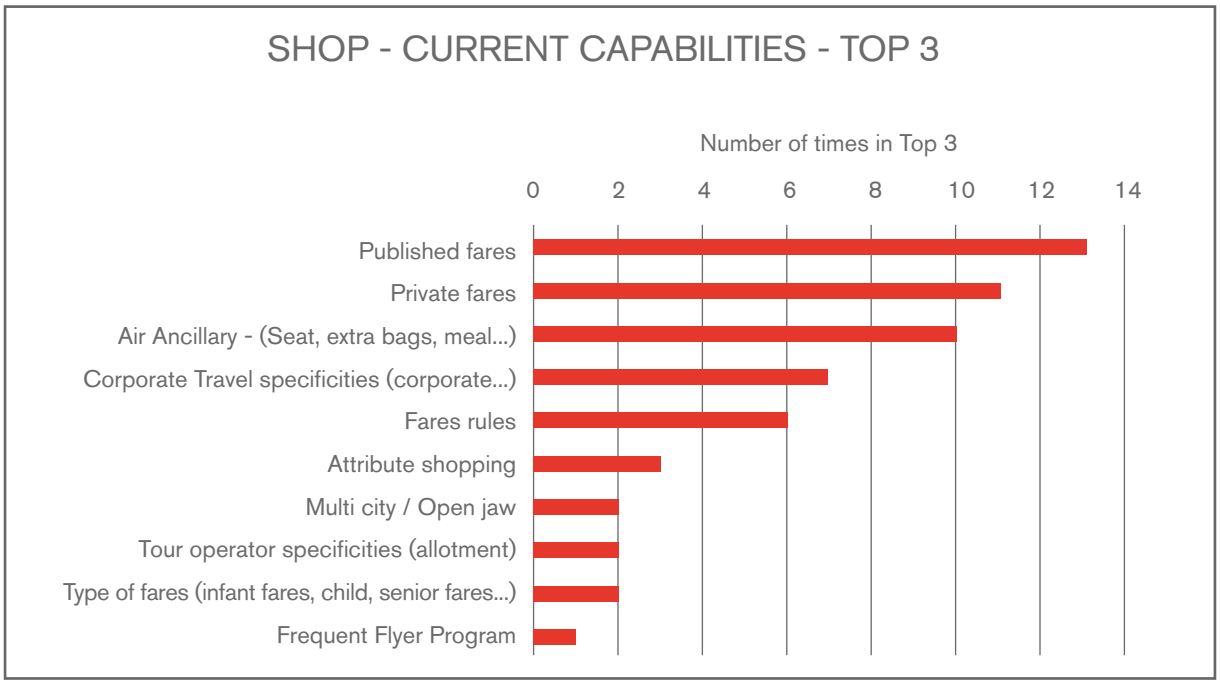
NDC is new for airlines and it has major implications on their existing processes. Change management, internal training and communication will be key to succeed. All players, but especially airlines and aggregators, will need to articulate a clear strategic roadmap of NDC implementation and an onboarding strategy of sellers.

1.4. Assessment of NDC Capabilities

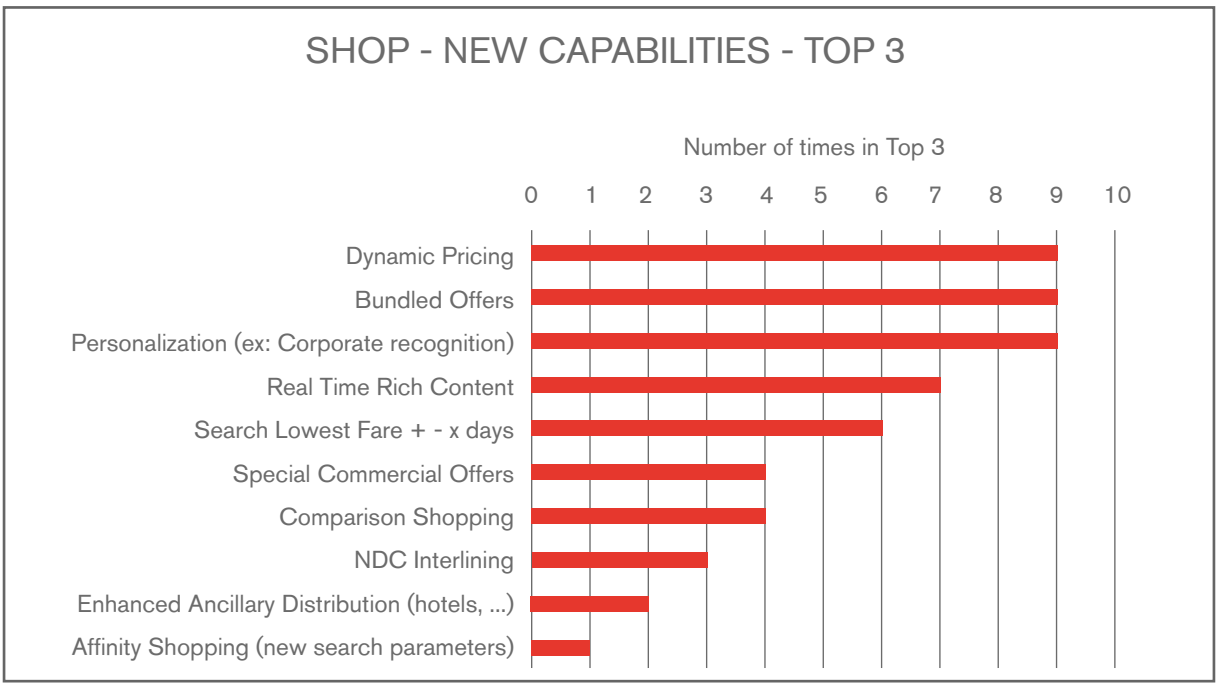
The players highlighted that NDC capabilities already implemented might not be sufficient to cover advanced use cases or match the current features provided through the traditional channels. A wider range of features and attractive content provided by NDC APIs would be an incentive for Sellers to move to NDC.
Servicing is a key capability that is not yet widely implemented but is considered absolutely necessary especially for business travel.

- The below graphs show the top NDC capabilities ranked by criticality by the players. NDC capabilities cover the Shop, Order & Service and Pay processes and are split in two categories:
- Current capabilities that need to be replicated from the traditional channels (GDSs)
- New capabilities enabled by NDC

SHOP

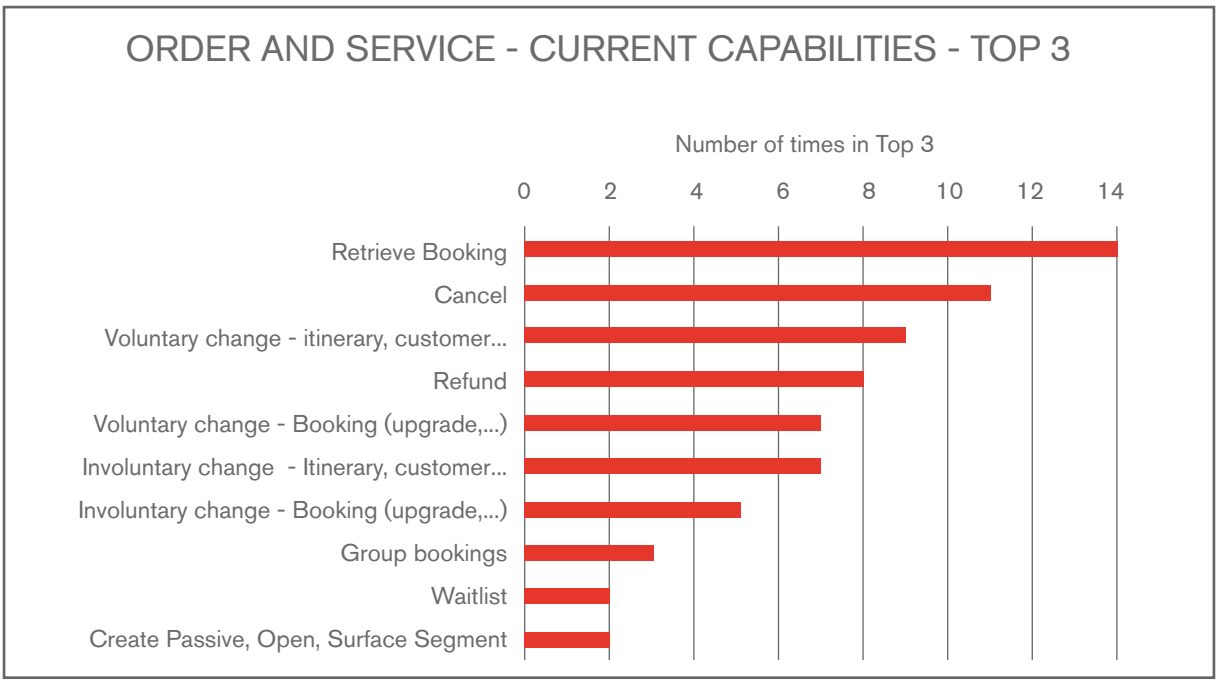


Scope: 18 participants
Figure 2: Shop - Current Capabilities – Top 3 by criticality

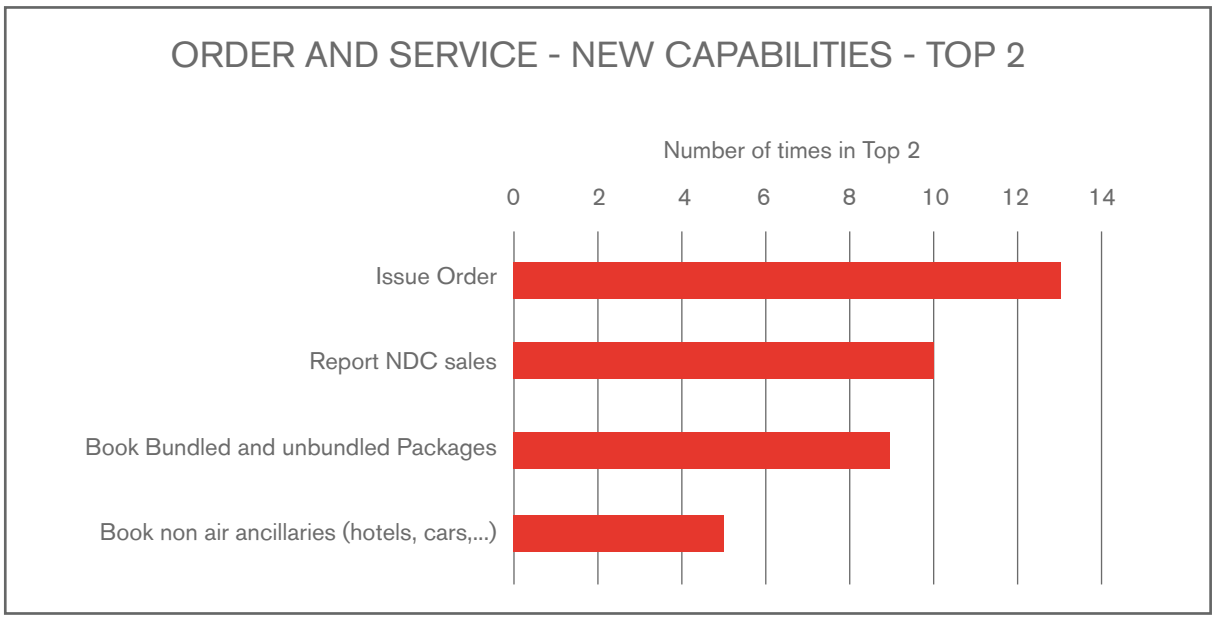


Scope: 18 participants
Figure 3 : Shop - New Capabilities - Top 3 by criticality

ORDER AND SERVICE

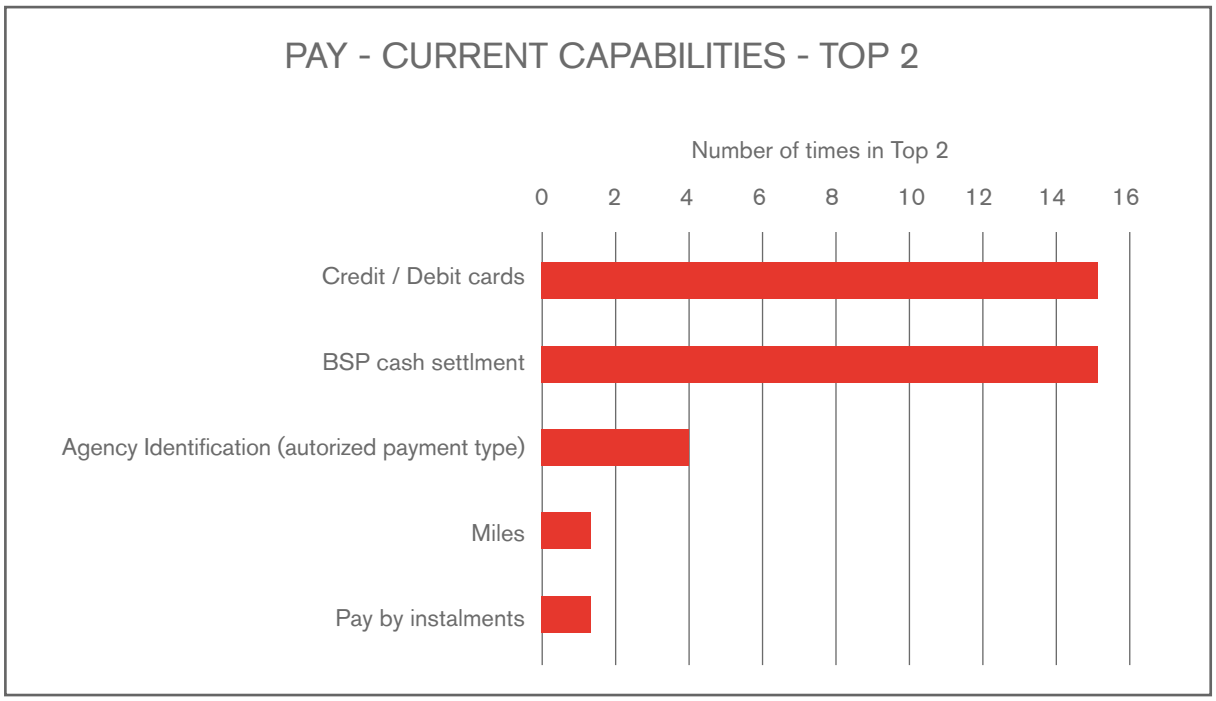


Scope: 18 participants
Figure 4: Order and Service - Current Capabilities - Top 3 by criticality

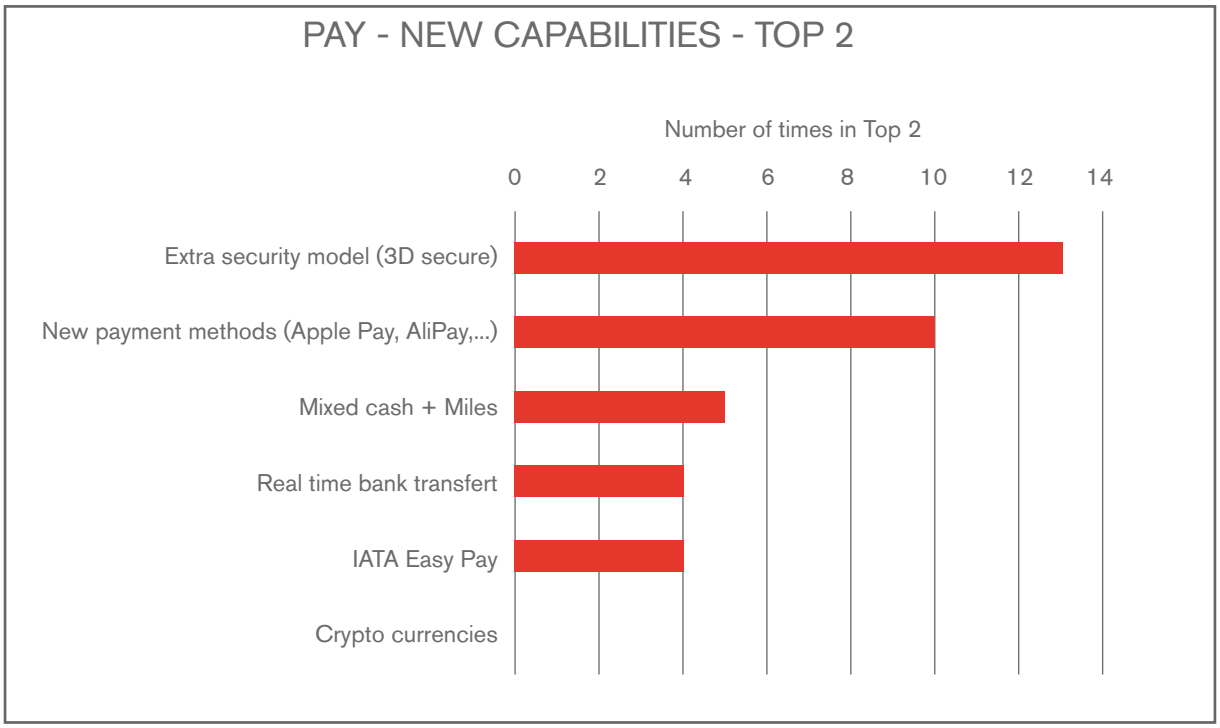


Scope: 18 participants
Figure 5: Order and Service - New Capabilities – Top 2 by criticality

PAY



Scope: 18 participants
Figure 6: Pay - Current Capabilities – Top 2 by criticality



Scope: 18 participants

Figure 7: Pay - New Capabilities – Top 2 by criticality

2. NDC@Scale: roadmap to critical mass

The survey highlighted the main challenges from an industry perspective to reach high volumes of NDC transactions. IATA has listened to this feedback and has worked further with the industry to address these challenges, provide guidance and share best practices on how to implement NDC at scale.

As a result of this work, IATA is proposing to airlines a possible implementation roadmap built around two main phases.

Phase 1 is a phase of "plumbing" where airlines are setting up the foundations of their NDC implementation mainly their API connectivity and their Offer and Order Management system with basic functionalities and product and services. The capabilities implemented there are mainly replicated from the traditional channels (GDSs) – See Annex 1. During this phase IATA recommends that airlines follow the criteria defined for "NDC@Scale" that highlight the minimum necessary capabilities to start processing high volumes of NDC transactions – See section 2.1.

Phase 2 is a phase when real benefits are realized where airlines start implementing additional capabilities that are enabled by NDC. This includes capabilities such as dynamic pricing, rich content, personalization, etc. – See section 2.2. Additionally, during this phase, airlines will be in a position to propose enhanced content in the form of new products and services and new shopping experience for sellers and customers.

Ultimately, this roadmap will be driven by customers' needs i.e. the travel trade, the buyer and the needs of the traveler (business and leisure) – See Annex 1.

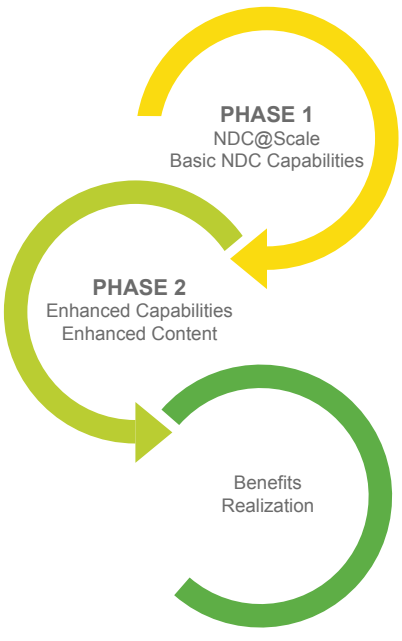


Figure 8: NDC@Scale: roadmap to critical mass

2.1. Phase 1: Implementing NDC@Scale

NDC@Scale is a set of criteria that, if achieved, will demonstrate that airlines (and their IT providers), aggregators and travel sellers have a recognized capability to work together to drive volumes of NDC transactions.
It is based on four key dimensions that are necessary to measure the ability to scale to volumes of NDC transactions:

- Technical setup
- Organization setup
- Use cases
- Capabilities

The criteria are not exhaustive and IATA recognizes that there are many components to take into consideration but this is where the most convergence across the industry was identified.

This report will provide critical input into defining the final criteria for a new level of certification beyond the existing levels (NDC@Scale).

2.1.1. Technical setup

Technical set up is the ability to run an NDC API on Service Level Agreements (SLA) with performance requirements for areas such as response time, availability, available transactions per second, error management, etc.

2.1.2. Organization setup

Organization setup considers two areas that an airline needs to implement to support volumes:

- Business function to connect new partners
- Business function to support on-going operations

Full support to connect new partners (travel agents, aggregators...) can be measured by the following elements:

- Having a developer portal/test environment (Sandboxes) in place
- Having documentation such as an Implementation guide available and continuously updated
- Having dedicated resources and strategy for the onboarding of new partners
- Having an established and documented registration process for NDC API access
- Having a new partner onboarding policy and process in place

Full support to run the operation can be measured by the following elements:

- Having a 24/7 help desk in place
- Having a bug tracking tool in place
- Having SLA in place on issue management (i.e. debugging, error solving, acknowledgement time)
- Having dedicated resources

2.1.3. Use cases

Use cases consider the implementation of standardized messages workflows across the industry. IATA has been working with the industry to create reference use cases and recommended workflows (NDC implementation guide) to facilitate the adoption of the NDC standard. This is particularly important for aggregators and/or travel agents connecting to several airlines.

As a best practice provided by the industry in the NDC Implementation Guide, the recommended reference use cases that will set the foundation for the ability to communicate via NDC in an industrywide scalable way are:

- Shop - Shopping for flights and ancillaries
- Order Creation - Basic order creation
- Order Servicing - voluntary, customer initiated - Change of itinerary
- Order Servicing - voluntary, customer initiated - Full Order Cancellation
- Order Servicing - Involuntary, airline initiated with notification - Change of flight time outside the operational window

2.1.4. Capabilities

Capabilities consider the coverage of key features powered by an NDC API and the ability for airlines to replicate some features currently possible through the traditional channels (GDSs) as well as the ability to provide additional content (see the list of capabilities in Annex 1).

As a pre-requisite to NDC@Scale, IATA also recommends that all players adopt the minimum version of NDC standard 17.2 (18.x and future versions included), which is the first release endorsed by the industry for industrialization. IATA will encourage this convergence in its certification program starting 2019.

Servicing was assessed in the survey as a key capability that is not widely implemented. IATA will start recognizing the ability to have servicing messages in place through its NDC certification program with a new level of certification (Level 4) starting 2019.

2.2. Phase 2: Value creation

In this section IATA will describe the new capabilities enabled by NDC and their business value across the value chain.

2.2.1. Rich content

Definition	Ability to curate, store, manage and distribute rich media and rich content (pictures, videos, sound etc.).
Example	Display of in-flight products (seats, meals, etc.). It can be done in a static way or dynamically (adjust rich media depending on the customer).
Business Benefit	Airlines expect to be able to up-sell towards higher fares or even higher cabin of transport. Rich content has been shown to increase the look to book ratio (i.e. conversion).

2.2.2. Ancillaries

Definition	Capability of offering additional products and services.
Example	Extra bags, specific seat, lounge access, wi-fi on board, bundled pricing offers (via fare families) etc. Other products: insurance, hotels, cars, etc.
Business Benefit	Most airlines notice that the ancillaries' share of sales is much higher for direct sales than indirect and want to reduce the gap. Airlines should build a list of ancillaries and evaluate extra revenues and cost of implementation. NDC standard simplifies overall implementation process.

2.2.3. Personalization

Definition	Tailoring a service or a product to accommodate specific individuals.
Example	NDC enables identification of who is shopping and therefore airlines can personalize products and services. A light implementation is by using frequent flyer number, a full implementation is by linking with CRM database (access customer's flight history).
Business Benefit	Revenues from having better offer to the end consumer and building long term relationship with the customer.

2.2.4. Continuous Price Point

Definition	Personalized and flexible prices are set based on current market demand
Example	Moving away from traditional pricing with fixed amounts towards indefinite pricing curve. This can be done by adjusting output from ATPCO, by removing booking classes, or other new innovative dynamic pricing approach.
Business Benefit	Revenues through better watch of supply and demand. Possible cost savings via reduction of fare filing.

2.2.5. New Channels of Distribution

Definition	Expose content towards new channel of distribution.
Example	Content is distributed using different distribution channels: it can be distributed directly, or via an aggregator. Direct connect: travel agents need to build their own IT capability. Content access via an aggregator: travel agents need to connect to new players.
Business Benefit	Potential reduction in the cost of the intermediary as new aggregators may have different business models.

2.2.6. Interlining

Definition	Ability to procure content from another airline, flight segments or ancillary products and services.
Example	Interlining is the sale of seats on an airline partner, to offer a wider network to consumers. Interline also covers the ability to cross-sell ancillaries.
Business Benefit	Potential for enhanced business opportunities from selling partner's ancillaries and seats. Fewer disputes during settlement, greater revenue integrity.

2.2.7. Order Create in an airline environment

Definition	All PNRs (orders) are created in the airline environment.
Example	The airline fully controls PNRs (orders) in its own Order Management System.
Business Benefit	Cost savings on revenue integrity: fewer, or no need for, ADMs as offers cannot be altered. Overall process simplification (managing orders instead of PNRs).

2.2.8. Payment

Definition	An ability to manage different forms of payment.
Example	Credit card is currently the only B2C payment form in a GDS environment. With NDC there is an opportunity to implement other forms of payment or to continue using BSP.
Business Benefit	Cost savings using alternative forms of payment. Fraud detection done in-house. Propose customer's preferred forms of payment.

Our sincere thanks to the following companies who participated to the NDC@Scale survey:

- Airlines Technology Private Limited
- Allianz Technology SE
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- Amber Road
- American Airlines
- ATPCO
- British Airways
- China Southern Airlines
- Click Travel
- Corporate Travel Management
- Datalex
- Expedia
- Farelogix, Inc.
- Flyiin
- GTMC
- Hogg Robinson Group
- Iberia
- IBS Software Private Limited
- InteRES GmbH
- JR Technologies
- Lufthansa Group
- Maureva Ltd
- Microsoft
- Qantas
- Sabre GLBL Inc
- SITA
- Travelport
- UBS
- Verteil Technologies PVT. LTD.
- WTMC

THE NDC@SCALE SURVEY WAS DONE IN COOPERATION WITH CONSULTING FIRM SIA PARTNERS

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3. Annexes

3.1. Annex 1- List of NDC Capabilities supported by Airlines and Benefits

This table describes a possible roadmap (Phase 1 and Phase 2) for implementation of NDC capabilities and highlights key benefits for players including customers.

SHOP	**Phase 1: Basic NDC Capabilities** ▪ Shopping for flights and ancillaries ▪ Shopping by common ancillary - (e.g. Seat, extra bags) ▪ Shopping including seat selection ▪ Shopping based on calendar (fare + or - days) ▪ Shopping based on passenger type (e.g. infant, senior, military, resident…) ▪ Shopping by Multi city / Open jaw itineraries ▪ Airline offers based on private fares (corporate fares, tours, etc.) ▪ Airline offers with localisation (offers in local language) ▪ Describing offer rules
	Phase 2: Enhanced Capabilities ▪ Shopping by other ancillaries - Third party content (e.g. travel insurance, lounge pass, meal, wifi…) ▪ Shopping for airline-specific products ▪ Shopping with airline loyalty program ▪ Shopping for groups (e.g. Tour operator specificities scenarios) ▪ Shopping including non-air ancillaries (e.g. hotels, cars, rail) ▪ Affinity shopping (new search parameters) ▪ Airline dynamically built and/or personalized offers ▪ Airline providing bundled offers (e.g. supporting pick 1 of 3) ▪ Airline offers with rich content ▪ Airline offers including discounted benefits and/or promotions ▪ NDC Interline shopping

ORDER/ SERVICE/ PAY	**Phase 1: Basic NDC Capabilities**
	▪ Basic order creation ▪ Order creation of airline bundle ▪ Order changes initiated by the customer – e.g. itinerary, contact details, upgrade, adding an ancillary ▪ Order changes initiated by the customer - remove passenger from order in multi-passenger scenarios (split order) ▪ Order changes initiated by the customer - name correction ▪ Order changes initiated by the customer - seat selection ▪ Order changes initiated by the airlines with notifications – e.g. flight schedule, flight cancellation, passenger upgrade or downgrade ▪ Order changes resulting in an Order Cancellation without refund ▪ Order changes resulting in an Order Cancellation with refund ▪ Retrieve an Order ▪ Cancel an Order ▪ Pay using cash (BSP, ARC etc.) ▪ Pay using Credit cards ▪ Deferred payment (Order on hold) ▪ Implementation of 3D-Secure
	Phase 2: Enhanced Capabilities
	▪ Order creation for groups ▪ Order changes for groups ▪ Implementation of Order History ▪ Pay using Debit cards ▪ Pay using airline loyalty ▪ Pay using mixed payment instruments (e.g. cash + loyalty points or voucher redemption) ▪ Pay using alternate payment instruments (e.g. PayPal, WeChat) ▪ Pay using real time bank transfer ▪ Pay using IATA EasyPay ▪ Implementation of crypto currencies

BENEFITS	**For Sellers and Customers:** ▪ Offering a better shopping experience for customers through the display of rich content ▪ Offering a consistent shopping experience depending on where the customer search for travel ▪ Allowing true comparison shopping and transparency in pricing and content ▪ Offering limitless products and services according to the airline marketing strategy ▪ Offering immediate access to new flights and ancillary products & services ▪ Enabling customers to purchase relevant ancillaries (a la carte or bundled) ▪ Providing special price and product offers to key customer segments including frequent flyers ▪ Providing unique packaged offers to corporate and leisure customers ▪ Ensuring that customers understand the fare products they select through upfront disclosure of fare rules ▪ Simplifying the booking process for the Sellers, as all offer creation, pricing and fulfillment processes (incl. Servicing) is done on airline side ▪ Offering increased and flexible price points to customers via dynamic pricing ▪ Reducing error risk and ADM's for agents because of increased control of the offer by the airline **For Corporations:** ▪ Enabling the availability of more accurate data and greater visibility of costs (fare types vs ancillary costs) ▪ Enabling at corporation level a segmentation by traveler types and personalization of the trips ▪ Enabling more responsive and dynamic corporate travel policies ▪ Providing corporation duty of care and traveler servicing in real time

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