Air Retailers: how can airlines unlock the value of data?

IATA

siapartners

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Summary

Executive Summary

Airlines are becoming better travel retailers, seizing the opportunities offered by the NDC and ONE Order standards, that both enhance and simplify the shopping experience. But as the world becomes increasingly digital, providing the best shopping experience and meeting customer expectations heavily relies on airline capabilities to use and extract value from data.

IATA commissioned Sia Partners, a global consulting firm, to carry out a study on how airlines can unlock the value of data in order to become air retailers. Between July and September 2019, more than 50 stakeholders from the airline industry shared their insights on the latest trends, opportunities and challenges when leveraging data in air retail activities.

The key findings of the study show that:

- Airlines need to collect and integrate data from multiple sources to get a better customer context and use this context in real time. This vast amount of data, together with advanced analytics and Artificial Intelligence capabilities, offer great retail opportunities, increasing both short-term revenues and long-term customer satisfaction with a personalized, omnichannel and compelling delivery experience.

- However, if airlines are often well aware of the benefits of a data-driven approach, they are facing some challenges when it comes to leveraging data: overcoming their legacy mindset and processes, alignment to a common set of definitions, breaking both internal and industry silos and thriving in the data privacy era.

- Finally, the report concludes that airlines need to act now and move fast to become data-driven and suggests some guidelines based on best practices and feedback of leading actors, around the following topics: business value identification, data access, governance setup, technology and skills, data and retail mindset, test and learn culture and industry collaboration. For the last 10 years, IATA has been a major player enabling BI solutions that consolidate airline omnichannel sales data globally and will continue to facilitate data sourcing based on industry needs.

We hope you will enjoy the reading and welcome your feedback and comments.

IATA NDC and Data Management teams

Introduction

From selling flights to end-to-end travel experiences

The air industry has experienced a major shift from selling a flight ticket to selling a complete travel experience, with airlines wanting to become air retailers. Airlines have already started their journey as retailers by taking advantage of the opportunities offered by the NDC and ONE Order standards. These standards are transforming the way airline products are retailed. NDC is indeed addressing industry's current limitations in the distribution of products: better product differentiation and time to market, access to full and rich air content, and transparent shopping experience. In addition, ONE Order will facilitate product delivery and settlement between airlines and their partners with simplified and standardized order management processes. These standards will both enhance (NDC) and simplify (ONE Order) distribution, thus allowing airlines to become better air retailers.

What does it really mean to become a retailer?

Most participants agree that being a retailer is more than driving conversion and upsell or selling a variety of products and services, but it is also about providing a full customer-centric experience, from inspiration to post-delivery stages.

"There are several aspects in retailing: selling a wide variety of products and services, but more importantly, providing an omnichannel and personalized customer experience."
Massimo Morin, Head of Worldwide Business Development Travel, AWS

Then, it comes as no surprise that the best-in-class retailers mentioned during the interviews were often – if not always – the same: Amazon and Alibaba. While their respective business models differ, both ecommerce companies have a lot in common. They are indeed highly customer-centric, offer a wide variety of products and services, in a personalized way and through an omnichannel strategy. In addition, Amazon's added value also lies in reliable and efficient delivery and customer support.

To reach this level of service, both companies have adopted **a data-driven approach**. In other words, every business decision or customer interaction is based on data analysis.

Data as the foundation

Following the model of the best-in-class actors, airlines should therefore adopt a data-driven approach to really seize the opportunities offered by NDC and ONE order standards and thus becoming air retailers**.** The good news is that airlines are well positioned as they have a huge amount of data at their disposal and many business opportunities through multiple interactions with customers. However, if the value of data is most of the time well understood, unlocking this value in order to turn it into actionable insights is often a challenge. This leads to the question of this study:

How can airlines unlock the value of data in order to become air retailers?

Methodology

Between July and September 2019, insights were collected through interviews and an online survey with different actors of the airline ecosystem - airlines, airports, IT providers, aggregators, travel retailers, travel management companies and investment funds - to get a better understanding of the trends and challenges around this specific question. A total of 50+ respondents participated in the study, representing different job roles, involved in data as well as retail activities, and different geographic areas.

In particular, the following companies participated in the study:

IATA and Sia Partners would like to thank all participants who participated in the online survey and to the interviews.

Part One

Data enter the arena

The airline industry generates an increasing amount of data. With the right combination and use of data sources and technologies, many business opportunities are opening up to airlines.

In this section, we are focusing on:

- The importance of combining as much relevant data as possible to get a better customer context
- The myriad of business opportunities: increasing both short-term revenues and long-term customer satisfaction
- The impacts on the NDC architecture framework

01. A wealth of data

Airlines have a wealth of data

As the world becomes increasingly digital, organizations, including airlines, have a growing amount of data at their disposal. Airlines are indeed handling numerous of digital touchpoints across the customer journey and have, thus, a **wealth of data**, that provides them with a strong competitive advantage.

Airlines are mainly leveraging **"traditional" airlines data sources,** like online activity, transactions, PNR, loyalty programs, etc., to **understand their customers** and construct predictive models. However, **this data still represents an untapped potential for airlines**: according to the online survey, 40% of the respondents think that customer data are the least exploited data that could however benefit a lot to airlines for their retail activities.

Additionally, **operational data** (e.g. flight delays, baggage management) are also used by airlines, but mostly for operational purposes or disruption management rather than for a shopping experience.

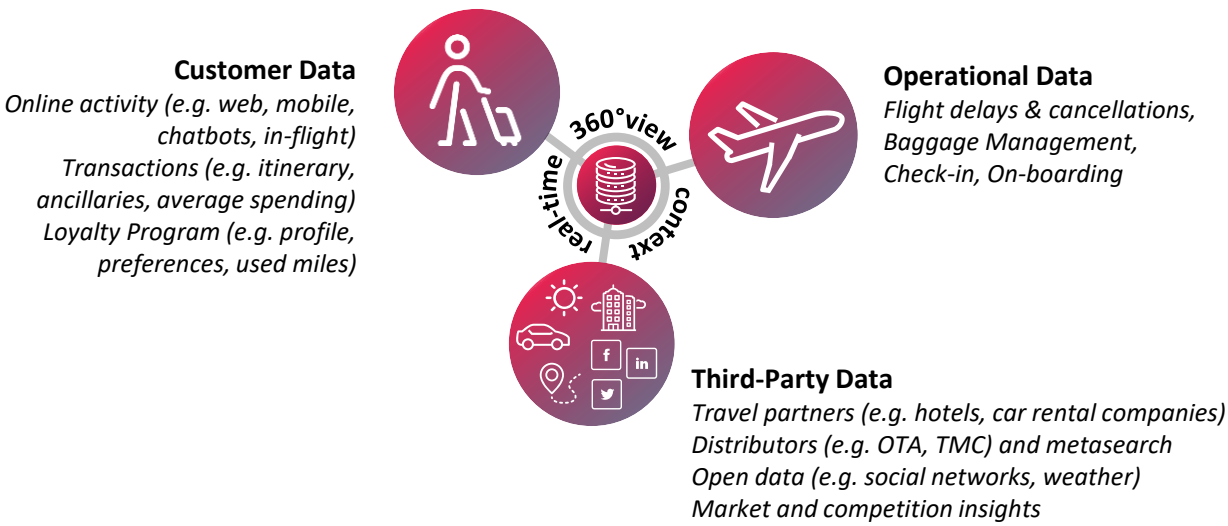


Figure 1. Data sources mapping: combining multiple sources of data is key to get relevant insights

Enrich data with other sources and create a 360° view of the customers

While airlines are mostly using traditional data, other **emerging data sources** are worth considering. Indeed, according to the online survey, 40% of the respondents also think **that third-party data** are the least exploited data that however could benefit a lot to airlines for their retail activities. In this case, third-party data comprise both **open-data** (e.g. weather, social media trends, market insights) available through open API, **partners data** (e.g. hotels, car rental companies, activities, metasearch), or any kind of data that is not directly owned by the airline. **The integration of these data sources, combined with the traditional ones**, customer and operational data, is essential to construct **the most complete picture of the customer.**

Context is key

"We believe there is huge potential in real time customer data and customer context data which would form the current digital context profile of a customer at any given moment. While today historical customer data is being used, the contextual aspect of the same is not explored"
IT player

Moreover, getting a full 360° customer view and offering true personalized offers can only be achieved if airlines leverage **contextual data**. In the context of retailing, customer contextual data can be for instance defined as "the current digital context profile of a customer" one respondent said. Generally, contextual data is any **data that gives a more comprehensive and accurate view of a customer** or an event (e.g. language, social media activity, clickstream), depending on the situation. In particular, interviewees underlined the opportunity of **geolocation data** to better address customer needs with for instance **nearby offers**.

While **airlines are primarily using customer historical data**, most of them are still underusing contextual data, which however, if **combined,** will enable high **personalization** for the customer. Indeed, **the more data the machine learning algorithm gets, the more accurate the personalization will be.**

Get and use data in real time

Finally, the increased adoption of services like for instance Uber or Amazon Now, have raised **customers' expectations**. **They expect instant responses** in each interaction they may have with a provider. This is why it is important to **leverage data in real time,** get insights and **take immediate action**, such as pushing the right product or service.

02. A myriad of opportunities

The vast amount of data in the industry creates a lot of business opportunities for airlines, especially for retail activities. These opportunities can be split into four categories, which are key attributes of retailers:

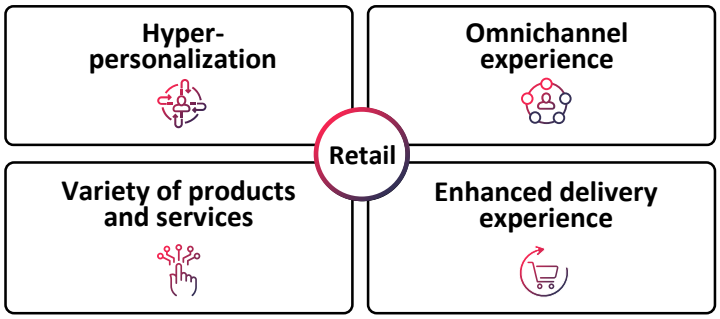


Figure 2. Key attributes of retailers

By embracing these opportunities, airlines will not only gain **short-term revenue** through higher conversion rates and upsell but also **long-term customer satisfaction** and loyalty.

Moving forward with hyper-personalization

While personalization is the **cornerstone of customer centricity** and, thus, of retailing, it is mostly addressed by airlines using segmentation of different groups of customers with the same behaviors or characteristics, like for instance corporate travelers, leisure travelers or families. However **actors like Google, Netflix or Spotify have raised customer expectation of personalization**: customers now expect to be treated as unique individuals with tailored offers. Thanks to the growing amount of data and the advances in machine learning and artificial intelligence, airlines have the opportunity to **shift from a segment-based personalization to a one-to-one personalization or hyper-personalization.**

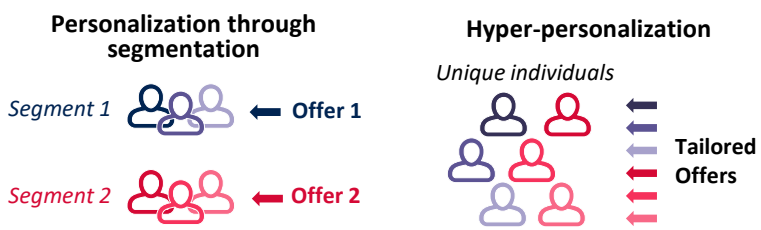


Figure 3. Segmentation vs Hyper-personalization

There are different use cases where airlines can leverage the data for retail purposes:

Ads and marketing campaigns: as the average load factor of airlines lies around 82% *(Statista, 2018 figures for commercial airlines)*, one interviewee suggested that airlines should first start improving ads and marketing campaigns. Airlines typically launch their marketing campaigns or ads, based on a large customer segmentation, while they could leverage multiple sources of data to understand the true appetence of a customer and target him with the right destination. For instance, if social media shows that a customer is a strong football supporter, airlines could push him the next big game destination or push a package with a flight ticket and a game ticket. By doing so, airlines will reduce their customer acquisition cost.

Offer construction: the combination of customer data and machine learning enables airlines to **create dynamic offers, in real time and in response to individual requests**. Customer data could, for instance, be used to determine what products or services need to be included in the offer or to make specific product recommendations.

"Airlines with dynamic pricing capabilities can leverage data to provide tailored offers and prices in real-time."
Gianni Cataldo, Director R&D, ATPCO

Revenue Management and pricing: airlines currently use static price points to handle revenue management and pricing. With the combination of the right technology and data, airlines can setup **dynamic pricing to create and sell products, in real-time, that are personalized for individual passengers and matching their willingness to pay.**

Content: displaying **rich and relevant content** could improve the inspiration and shopping phases of the customer journey. Customer data could be leveraged to display content – videos or images – tailored to the customer's profile and behaviors (e.g. search requests, customer preferences).

Upsell: leveraging data can help upsell throughout the whole customer journey, at the right time.

Generally, rich customer data combined with advanced machine learning algorithms, give airlines the capabilities to predict the **life time value of customers**, their **propensity to buy** a product or a service and their **willingness to pay** in a **more accurate way**. With this information, they can better adapt their offer, and thus, increase revenue and customer loyalty.

AS-IS	GOING FORWARD
• Airlines use segment-based personalization to target customers	• Airlines leverage data and machine learning capabilities to provide one-to-one personalization
• Airlines use generic or segment-based marketing campaigns and ads	• Airlines target their customers with high personalized marketing campaigns and ads
• Airlines display branded fares and bundles but not in a dynamic or personalized way	• Airlines construct dynamic bundles and fares tailored to customers
• Pricing and revenue management are done in a static way with limited price points	• Airlines apply dynamic pricing with unlimited price points and total revenue management optimization
• Content is sometimes enriched with videos and pictures but is not tailored based on customer profile	• Airlines display personalized content (videos, pictures, etc.) based on customer profile and behaviors
• Upsell is generic or based on large customer segment	• Airlines push high personalized upgrade or upsell

A consistent and seamless customer experience through an omnichannel strategy

With the evolution of customer behaviors and the growth of digitalization, the number of channels and touchpoints, between airlines and customers, are rising.

Most of the airlines have already adopted a **multichannel strategy** by using **several channels, whether they are digital, physical or a mix of both:** websites and mobile applications, self-service kiosks, ticket offices, travel agencies, call centers, on-board tablets, social media, etc. Airlines also **benefit from numerous touchpoints across the total customer journey to leverage these channels** from "inspiration" stage to "at destination" stage. With this strategy, airlines can gather a lot of data from the different channels to improve their understanding of the customers on where they are spending time for each of the journey stages and different shopping patterns.

Some touchpoints and channels seem however to be underused, a few interviewees told us. For instance, airlines could gather new data and leverage retail opportunities – e.g. pushing duty-free products to be picked up at arrival, activities at destination or ground transportation at airport – on tactile tablets during the in-flight experience, when airlines have the privileged attention of the customers.

Additionally, airlines could unlock the value of new channels like **chatbots or conversational agents**, that are increasingly user-friendly due to breakthroughs in **Natural Language Processing and Artificial Intelligence.** These channels demonstrate a great potential to push ancillaries during the post-booking phase, when customers are already at the airport or at destination on a smartphone. Combining geolocation and other contextual information about their customers' trips, airlines could promote restaurants or events.

A multichannel strategy can increase revenues by expanding the number of channels offered to customers, but it does not offer a seamless experience: **data remains in silos** across the different channels and **customers may not be recognized** when switching from one channel to another. Therefore, airlines need to adopt an **omnichannel strategy, in which data is shared across all channels and integrated in order to provide a consistent and seamless customer experience.**

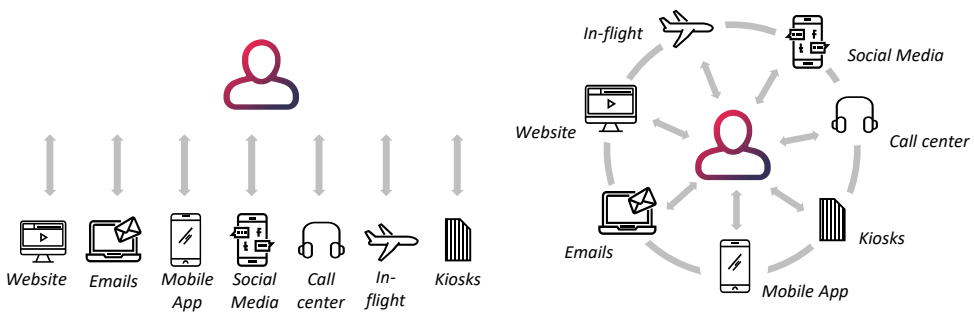


Figure 4. Multichannel vs Omnichannel strategy (non-exhaustive list)

Online data (e.g. search or transactions history, preferences or clickstream), if shared with **offline channels** (e.g. cabin crews or ticket offices) could be used to advertise tailored offers to customers at the airport or onboard. Making the customer **feel valued**, will increase satisfaction and thus, loyalty.

The goal is not to be everywhere but to be where customers are: **data**

enables airlines to identify the customer and reach him on the **right channel at the right time** to push products, services or information. By erasing the boundaries among all channels, **airlines will both increase their revenues and improve customer satisfaction.**

AS-IS	GOING FORWARD
• Airlines offer several channels to interact with customers, but they do not provide a seamless and consistent experience	• Customers experience a seamless and consistent experience across all channels and are recognized while switching from one channel to another
• Customers have to pull information and are not proactively targeted through the right channel	• Airlines proactively use the right channel to interact with each of their customers leveraging contextual data
• Airlines do not leverage the full retail potential of innovative channels like chatbots or conversational agents	• Airlines use innovative channels like chatbots or conversational agents, especially to push ancillaries during the post-booking experience

A variety of products and services for an end-to-end travel experience

"There are three different types of airline retailers: air/flight retailers, travel retailers and universal retailers. An airline should choose what it wants to be in each market."
Rogier van Enk, VP Digital Revenue & Distribution, Finnair

If airlines want to become **travel retailers**, they need to sell more than a flight ticket, but to provide a complete travel experience with the related products and services. Three categories of ancillaries are identified:

- **Air-related products** such as baggage, meal, seat selection or wi-fi;
- **Travel-related products** such as hotels, car rentals, activities or restaurants;
- **Other consumer goods** such as duty-free products.

As they are generally the first touchpoint with a customer, **airlines are uniquely positioned to sell partners' products.**

But being a retailer is not about randomly selling a maximum amount of products and services and lose the customer in too many choices. **It is about offering the right experience, tailored to the specific needs of each customer**. Most of the airlines have already started to **display the right ancillaries** to customers, but **mainly based on historical purchasing data** or large customers' segmentation (e.g. corporate vs

"Sharing data between travel actors fosters the creation of innovative services. Thanks to a trilateral agreement, customers were able to have food delivered at the boarding gate."
Gilles Brentini, IT - Head of strategic Innovation and Projects, Genève Aéroport

leisure) and not based on real-time and contextual data, yet. For instance, as airlines know the destinations of their customers, they could cross this information with customer hobbies, based on social media photos or likes, or restaurant taste preferences, based on social media reviews, and they could push the right activities or the right restaurant.

Finally, by collecting a vast amount of data, airlines would be able to better understand customers' untapped needs and to **create new innovative services to enrich the passenger experience.**

AS-IS	GOING FORWARD
• Airlines sell flight-related products (e.g. seat, meal, baggage), sometimes based on historical purchase • Airlines sell some travel-related products (e.g. parking, car, hotel) but not always through a seamless experience • Airlines sometimes sell some consumer goods (e.g. duty-free products)	• Airlines sell a large range of travel-related products (e.g. activities at destination, restaurant at destination) and consumer goods products based on individual real-time customers needs • Airlines offer innovative services to customers (e.g. products pick-up at the airport or in-flight, recovery of detained object during airport control, specific services)

Enhance delivery experience and disruption management

"Being a retailer is also about better serving the customer, in a proactive way, across the whole customer journey"
Hélène Millet, Head of Consulting and Airlines Products, Conztanz

Being a retailer also means **ensuring that the delivery of the services and products goes well.** As travel retailers, airlines should therefore pay specific attention not only to their "own" air services, but also to the different products they have sold, as they could be considered as responsible for their delivery into customers' eyes and should take responsibility for their passengers' journey from end-to-end.

Airlines can deliver outstanding services as they have an abundance of passenger data. However, **making this data available to operational teams such as ground staff or cabin crew,** who are the key actors when it comes to delivering these services, can sometimes **turn out to be a challenge**. For instance, an example that was given by one of the

interviewees, is priority boarding. Our interviewee had bought it for his business trip, so that he could get to work quickly once on the plane. But he had to face an unpleasant reality: getting first on the bus leading to his plane would soon mean that he would be the last one to get out of it (in the rain). It can also be complex for marketing and distribution teams to identify **what was delivered** and how, while this information could improve future interactions between the airlines and the customer.

Delivering a great experience also means to proactively push information or deal with disruption. Traveling is often associated with several sources of stress at different stages: the stress of arriving late at the airport, the stress of having to wait for a long time to go through security controls, the stress of losing luggage, etc. **Airlines can tackle this issue by delivering the right information to their passengers at each stage of their journey**:

- Notifying transportation disruption that can affect the arrival at the airport;
- Informing about waiting time at each checkpoint of the airport;
- Notifying boarding gate and boarding time through notifications;
- Allowing luggage tracking and notifying key events associated to luggage.

These use cases rely heavily on airlines' partners data, especially airports or ground handlers. For example, luggage tracking can be made available and effective for passengers if all stakeholders involved in luggage transportation agree to share their data. This will allow passengers track their luggage end-to-end. These data sources will, however, be beneficial to improve airlines' perceived experience: in its 2019 Passenger IT Insights, SITA pointed out that passengers having access to technology services such as real-time notifications at the bag collection stage have an 8.6% higher satisfaction rate.

Moreover, airlines that are proactively dealing with disruption at any stage of the journey could both increase customer satisfaction and revenues. For example, if a passenger is traveling to attend a specific event (e.g. concert, a sport event) that gets cancelled, the airline could proactively offer suggestions of other events he could attend based on his interests. While anticipating such disruption might seem complicated, there is plenty of data available and potential partnerships to make this possible.

Failing to deliver a great experience can turn out to be a great opportunity, if the necessary actions are taken. Airlines have plenty of data they can use to identify their flaws. Feedback surveys' data contain precious and rich information, and dissatisfied passengers often share

their unfortunate experience on social media. Airlines could use this to make customers feel heard:

- As soon as a dissatisfaction is identified, airlines could reach out to the passenger in order to find out what went wrong, and find a solution to compensate the inconvenience;
- Passengers' feedbacks data could be included in a continual improvement process of the airline, in order to offer a better customer experience;

By leveraging big data and AI technologies, especially NLP, airlines will have the capabilities to leverage in an automated way the potential of these types of data and implement the associated use cases.

AS-IS	GOING FORWARD
• Airlines do not always know if the delivery of the passenger's products or services ran smoothly	• Airlines are proactively dealing with any disruptions related to their passengers' travel (for example disruption related to transportation, hotel, events, etc.)
• Passengers get information when an event occurs (flight cancelled, boarding gate available, etc.)	• Passengers get information at every stage of their journey, from leaving their house to leaving the airport of arrival, sometimes before they reach the stage
• Airlines are proactively dealing with disruptions related to flights (cancellation, overbooking, etc.)	• Airlines proactively use social media data to get feedbacks and continually improve the customer experience
• Airlines use satisfaction survey data to get feedback but post travel	

03. Impacts on the NDC architecture framework

The different use cases listed in the previous section have impacts on the following key modules of the NDC Architecture:

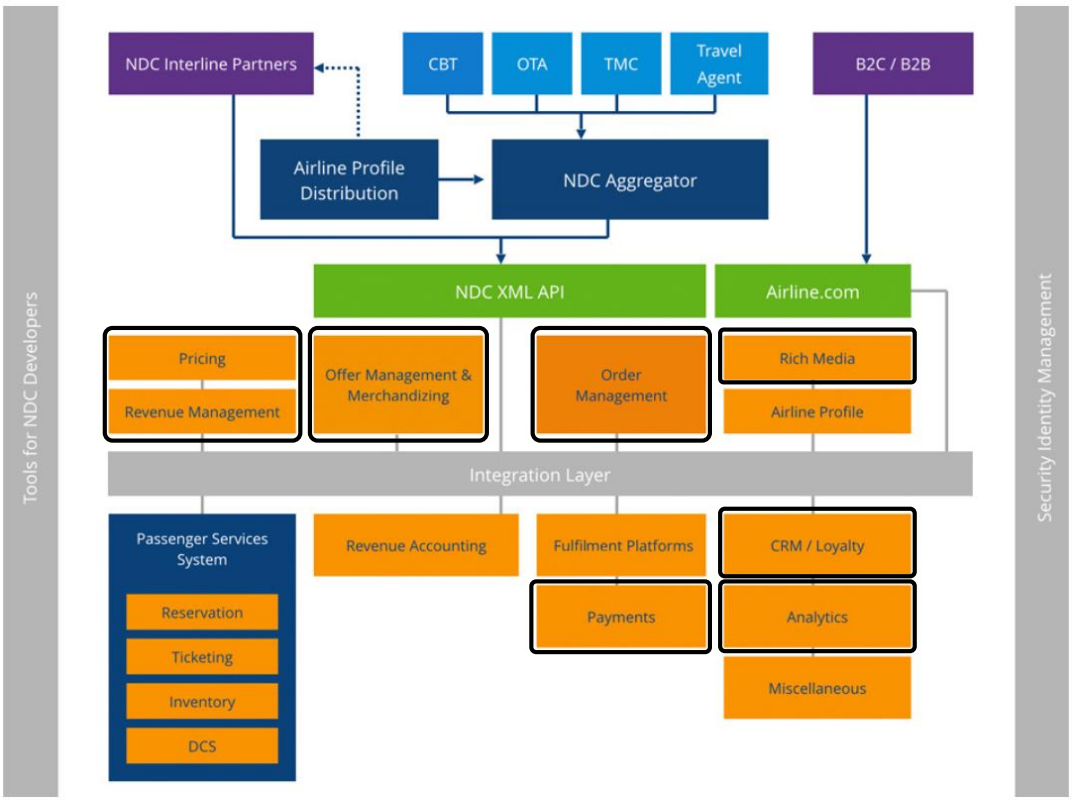


Figure 5. Impacts on the NDC architecture framework

- **Pricing and Revenue Management** with dynamic pricing and total revenue management use cases;
- **Offer Management and Merchandising** with dynamic offer construction, dynamic bundling and unbundling, personalization of ancillaries, cross sell, and upsell use cases;
- **Order Management** with the different use cases enhancing delivery and disruption management;
- **Rich media** with the display of personalized content use cases;
- **CRM / Loyalty** with the use of specific data to enrich personalization;
- **Payments** with the capabilities to predict and prevent fraud;
- **Analytics** as the core module with the tools to turn data into valuable insights.

Depending on the categories of the use cases, modules are not impacted or solicited with the same intensity:

	Pricing and Revenue Management	Offer Management & Merchandising	Order Management	Rich media	CRM / Loyalty	Payments	Analytics
Hyper-personalization	++	++	+	+	++	+	++
Omnichannel experience	+	++		+	+	++	++
Variety of products and services	++	++	++	+	+		++
Enhanced delivery experience			++		+		++

Figure 6. Impact matrix

Part Two

Leveraging data: some turbulences on the way

The benefits of a data-driven approach may be easy to understand, but the execution can be a challenge. The previous section showed the plethora of data opportunities that exist for airlines to develop their retail activities. Airlines are often well aware of them, yet they appear cautious when it comes to leveraging data.

From the interviews and online survey, three major challenges were identified. When it comes to leveraging data for retail purposes, airlines, to some extent, are facing the following challenges:

- Overcoming the legacy
- Breaking silos
- Thriving in the data privacy era

01. Overcoming the legacy

All respondents agree that **"legacy"** is one of the biggest challenge regarding leveraging data. Airlines face two issues in particular when it comes to be customer-centric and data-driven:

- Legacy mindset
- Legacy systems

The legacy mindset: from flying planes to flying customers

"Airlines are still fundamentally wholesalers and not retailers. Retailers have a deep understanding of the customer: airlines need to make this cultural shift of becoming more customer-centric."
Paul Byrne, VP Business Development, OpenJaw Technologies

Best-in-class retailers all have one thing in common: they are customer-centric. On the other hand, airlines have historically been focused on **operational efficiency** and **thinking like wholesalers rather than retailers.** To unlock the value of data, airlines need therefore to adopt this customer-centric and data-driven mindset across the whole organization.

With the mindset come skills and knowledge. For a long time, airlines have let the control of their retail capabilities to online distributors while they were focusing on operational activities. As they are taking back control of their distribution, thanks to the NDC standard, they need to **bring retail knowledge onboard to fully understand the core drivers of retailing**.

"Skills are an ongoing challenge: we need not only people to do the statistical work, but also people who understand the business and are able to interpret & apply the results."
Soumit Nandi, Managing Director - Customer Technology Platforms, United Airlines

Data skills are another issue worth considering. The challenge is not only to find data talents, a **rare and expensive resource** – because there are actually more airlines that have at their disposal a well-structured data team fuelling innovation – but more to **find the people able to interpret results too: retail-specialized data talents**. These resources are all the more important as they are key players in **spreading a data-driven mindset** across the whole organization.

Finally, this "legacy mindset" has a direct translation into data: **airlines usually do not have a clear data strategy for retail**. Sentiment among most of the interviewees is that although there are more and more excitement surrounding data projects, most of them still focus on operational efficiency, such as predictive maintenance, turnover optimization or fuel consumption, but few really tackle retail issues. This issue comes as **the first one in the online survey.**

What do you think is the main difficulty for airlines that want to leverage data for retail purposes?

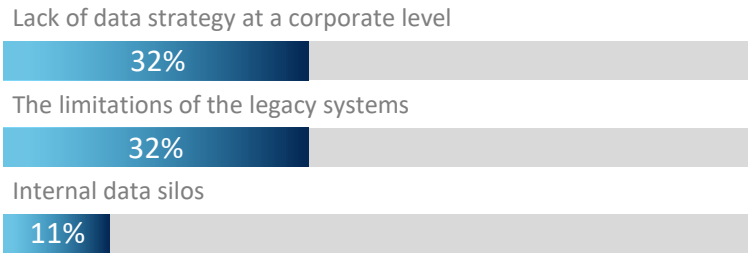


Figure 7. Insights from the online survey

The legacy systems: how to make something new out of something old?

While Amazon, Alibaba or other recent ecommerce players, benefit from native data-driven structures, airlines have to deal with the legacy and complexity of their distribution and operation structures.

"The real challenge lies more in the limitations of legacy systems and its inherent business models, that do not help us to differentiate our products and incorporate relevant data points for offer creation as airlines were not in control of the offer."

Arber Deva, Senior Director, Head of Distribution Solutions, Lufthansa

Technology to leverage data was not mentioned as a challenge in itself: interviewees were more concerned about the legacy structure (systems and processes) of the industry. The limitations of the **legacy systems** to leverage data is the first issue in the online survey, on an equal footing with the lack of a data strategy for retail.

Indeed, the core architecture of airlines often goes back to the 1980s. While it was performing well at this time, this legacy platform **does not facilitate the access and the use of the data** and does not enable airline to provide a fully personalized experience, with a reasonable time-to-market.

As an example, PSS are often described as not designed for custom business processes, and do not have a high level of agility. "Even if new tech layers are built on top of the current legacy systems, their true potential cannot be leveraged due to the antiquated design philosophies or limitations of legacy technology." – an IT provider told us.

Therefore, airlines have to carefully take into consideration this particular context when designing their data strategy and selecting their IT partners, especially if they plan to **leverage new technologies side-by-side with the legacy ones.**

02. Breaking silos

Breaking internal silos first

"Airlines need to break their data silos: they handle terabytes of data, but isolated in different databases that are not connected. Thus, they have no other choice than to leverage data in a tactical way rather than a strategic way."
George Khairallah, CEO, JR Technologies

The third difficulty mentioned in the online survey – internal data silos – is directly linked to the complexity of IT systems. The specificity and complexity of airline business led to **numerous data silos across organizations,** as the whole customer experience is handled through different departments, channels or IT systems.

Numerous data silos exist across the airline organization

Figure 8. Internal data silos

For many airlines, it is quite a challenge to **make all these silos communicate,** both on a mindset and on technological levels. This is an issue for retailing as customer **data is scattered across the organization**, and building a precise customer profile based on multiple data sources proves complex to achieve.

Ensuring data quality

"The integration of data in a consistent way can be a real challenge as airlines handle several data sources from different IT systems and channels."
Airline

Data quality is also a challenge for airlines. First of all, as they need to handle different data sources, they also need **to handle the different level of quality of these sources and to integrate them in a consistent way.** For example, data coming from GDS won't be as precise and comprehensive as the one coming from direct channels.

Additionally, airlines have to **deal with a growing amount of unstructured data**, coming from legacy sources or new sources like free

text coming from chatbot conversations, text reviews or images and videos from social media, making it more complex. A clear risk is that low data quality can **lead to wrong analysis.**

The quality issue is linked to a **scale issue** as ensuring data quality and consistency is a bigger challenge with the growing amount of data. The industry is already facing an exponential availability of data, and NDC is compounding this issue.

Moreover, the quality of data is even more challenging with the integration of multiple and external data sources, whether it is open data or partners' data.

Breaking industry silos: accessing external data sources and sharing data across the industry

"Airlines, as they are the first point of contact of travelers and gather a lot of data, are well positioned for online retail. But for the physical retail part, the airport still has the advantage. "

Laurent Verbiguie, IT Manager, Toulouse-Blagnac Airport

"Airlines could benefit from data sharing with airports, as they do have a lot of data but they do not know exactly how the passengers behave in the airport. There are opportunities for win-win use cases."

Laurent Vernet, Responsable Parcours & Expérience Client, Toulouse-Blagnac Airport

Data from partners is needed to enhance every aspect of the passenger journey, from dealing effectively with disruption to offering highly personalized products and services. By **enriching their data with third-party's data,** airlines will be able to consolidate a 360° customer view and have an extensive knowledge of their customers and their interests.

Data sharing is a key challenge for the air travel industry, and all the more for airlines that want to leverage data for their retail activities. While data sharing offers great opportunity to enhance the whole customer journey, initiatives remain few and isolated. Several impediments can explain this situation:

- **Technical debt can still be a burden:** not all IT systems are data sharing friendly. IT systems that are not designed to enforce data sharing internally will often not enable smooth external data sharing.
- **Sharing data can increase risk:** sharing data involves multiple risks, such as data privacy risks discussed in the next section, and more generally cybersecurity risks, as new flows of data expose organization to new threats. Some stakeholders may choose the simplest way to avoid these risks, and not share any data at all.
- **Business cases are not fully understood:** data is perceived as a source of power, and organizations might refuse to share it because they consider they have more to lose than to win. Yet, many times, data sharing could present a win-win relationship and risks can be mitigated with contractual measures.

Airlines are no exception and they are themselves affected by these impediments. They will not only have to deal with timorous partners when it comes to data sharing, but also with their own culture, **as sharing their own data could be the first step to a more open ecosystem**.

03. Thriving in the data privacy era

Data privacy is a major concern for organizations processing personal data. Authorities in charge of compliance have adopted a punitive position in the past year, inflicting record-breaking fines for data privacy breaches. This concern is especially true for retailers, that deal on daily basis with vast amount of customer data.

Airlines face two issues related to data privacy when it comes to implement data use-cases such as the ones that were described previously:

- Leveraging the full potential of personalization requires customer consent and trust
- Being compliant requires to adapt to the myriad of legislations across different markets

Finding the right balance between data privacy and personalization

"GDPR is a must: privacy management and consents are key. Yet the major challenge is not mere legal compliance but more finding the right way to engage our customers both in an understandable and fully transparent way at the same time about how we process personal data."
Charles Girard, Customer Data Officer, Air France KLM

With the growing amount of data collected by organizations and the recent data security breaches scandals, **customers are increasingly aware of data privacy issues** and thus **more cautious when and with whom they share their data**.

However some positive trends, like the **new European GDPR (General Data Protection Regulation),** establish rules that should give customers more transparency regarding the use of their personal data, ensure higher level of security and give customers back control over the data they agree to share or not.

On the other side, passengers' data is at the core of **airlines' business and airlines try to collect as much relevant data as possible on their customer**, so as to get to know them deeply and provide them with a high personalized experience. Indeed, the more data the machine learning algorithm gets, the more accurate the personalization will be.

The challenge for airlines is therefore not only to be GDPR compliant – even if it can be quite complex with the amount of data, the number of channels and the contracts with vendors and other third-party players – but rather to **manage customers' consent,** as it is required in order to

collect and process their personal data in a way that allows leveraging full potential of personalization.

Beyond practical difficulties that airlines may face dealing with customers' consent – for example, being able to match each consent with a customer at any given time often proves not so easy – the main hurdle is actually to get the customer to consent. Benefits of personalization are often misunderstood. The inspiration stage of the customer journey is a typical case study: while personalization could help customers find the most appropriate offer they are looking for, the belief that tickets' prices will increase if the airline leverages data such as clickstream is still widespread.

The challenge for airlines is to maintain or reinforce customers' trust, showing how secured their personal data is, and to convince them of the benefits of personalization, making customers more likely to share their information.

Navigating the regulatory landscape

"We believe that some of the major data governance challenges are uniformity in standard of practices and policies within and across nations which cannot be easily adopted due to constraints such as addressing local government regulations […]"
IT player

Another challenge is to handle the **variety of regulations in different markets**. Indeed, even if the GDPR provides a general framework for the European Union territory, airlines still need to adapt their rules to the many markets in which they distribute and operate in, and to the numerous legal frameworks that exist.

This exercise will be particularly complex as we are merely at the beginning of the data privacy era. Many countries have started to build their data privacy frameworks, as they came to realize the threats upon their citizens have reached a new threshold. That is for example the case with California, and the California Consumer Privacy Act (CCPA), which will become effective on January 1, 2020.

Due to the international dimension of their activity, airlines will have to address compliance issues for many of these new data privacy regulations, and most of the time address it market by market, as long as no global framework is defined.

Part Three

Seven guidelines for a winning data strategy

Amazon is identified as one of the best-in-class retailers and therefore commonly taken as a reference. Although it is essential to learn from its best practices, it is necessary to take into account the specific context of airlines – identified in the previous sections – to implement a concrete roadmap to unlock the value of data.

In this section we identify seven guidelines and a framework that will enable airlines to assess their maturity and take concrete actions.

01. Seven guidelines

As the world becomes increasingly digital, providing the best shopping experience and meeting customer expectations heavily relies on airline capabilities to move into a data-driven customer-centric retail strategy.

#1 Define your goals and business value

Data is useless if airlines cannot extract value from it. That is why it is essential to define the different purposes and use cases that will bring true **added value** and serve the global business objectives of the carrier. Airlines should then define **how data will help the company to be a better retailer**. As seen in the previous sections, there are a lot of business opportunities when it comes to leveraging data. **The goal is rather to define where to start.**

According to the results of the online survey, **airlines have a better opportunity to leverage data for their core business first**, i.e. focusing on air-related products and services such as personalisation of air ancillaries, dynamic pricing or offer construction.

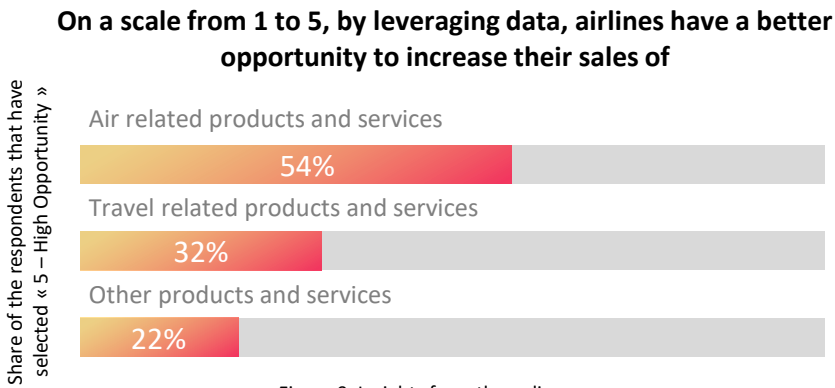


Figure 9. Insights from the online survey

Additionally, while it was stressed out that retailing should embrace the entire customer journey, the "**booking" phase** appears to have the highest potential to increase revenue and customer satisfaction, just before the **"post-booking"** and **"at the airport" phases.**

Finally, while NDC provides great opportunity to enhance distribution on third-party channels, it seems better to focus first on **direct channels**, starting with **web and mobile.**

Some respondents also recommended to start with a **low risk and high added value use case,** that can **persuade the company of the strong benefits of leveraging data** and thus to adopt a data strategy at a larger scale.

#2 Identify and access relevant data sources

The amount of data available to organizations is continuously growing. Airlines first need to **identify the relevant data sources** – not all data sources are – they could use to build a 360° customer view and to bring personalization to a new level, and **ensure they can access this data.**

Data sources, traditional and emerging, have already been described in the first section of the study. Some respondents suggested that **airlines should first focus on leveraging their own data**, and be sure they have **identified internal data sources**, across the organization. In a second phase, airlines should access useful third-party data such as **open-data** (e.g. social media, weather data) or partners data. Finally, to ensure they have access to data, **airlines should also pay meticulous attention to the contracts** they signed either with the **IT vendors** to which they outsource some of their technological capabilities, or the different **partners** they are working with, like hotels, car rental companies, etc.

Airlines should aim to get **contextual data** sources and **combine them with other sources to get** full picture of the customer in real-time. This is why it is important to break silos, and **provide a unique customer view,** through an **integrated data platform.**

#3 Setup a strong data governance

Once data sources have been identified, airlines need to set-up governance, by defining the different **practices and processes** that help ensure the **formal and consistent management** of their data assets.

In other words, airlines are to define who can access the data and how they can access it. They must ensure **security and compliance with the different privacy regulations** (such as the European GDPR or the CCPA) across all channels.

As a result, rules and processes will **enhance data quality, increase insight accuracy, and foster innovation across the organization.**

Security and privacy will **increase the trust customers have** in the brand and thus, the probability to share their information. By getting better control over their data assets, it will be easier for airlines to unlock the value of data.

#4 Get the right technology to turn data into actionable insights and business value

Technology, while it was not mentioned as a challenge in itself by the respondents, is however crucial to unlock the value of data. Indeed, it is the link that will **transform raw data into meaningful insights and drive business value**. The following enablers were identified to help airlines to leverage their data:

"Cloud-native open source solutions such as those offered by Netflix, Google and Amazon [can help airlines leverage their data]. These companies have proven how a company can implement its digitalization strategy and become a retailer respectively a big data company"
IT player

- **IT providers** offering different levels of services from consulting to technology solutions and **cloud-based platforms**. These companies help airlines to unlock the value of data and to become more customer and retail focused, while helping them overcome legacy structure limitations.
- **Open APIs** simplifying and accelerating inter-operations with business partners and fostering innovation by using and sharing new sources of data.
- **Data Management Platform** integrating data and providing a unique customer view, sometimes mentioned as a **foundation piece to leverage data.**
- **Data visualization** tools providing a clear understanding of the information and simplifying the democratization of data usage.
- **Data analytics using at different levels of maturity depending on the airline:** diagnostic, descriptive, predictive and prescriptive.
- Last but not least, **Artificial Intelligence, Machine Learning, Natural Language Processing** were not only used as buzzwords: airlines are starting to use these "methods" with different levels of adoption among the actors. **They enable airlines to provide hyper-personalization in a scalable way.**

"Our investment in Hopper, an app which helps travelers decide when to buy a flight, enables our data scientists to understand their machine learning models and thus, to enhance our offer."
Xavier Lagardère, VP, Head of Distribution, Lufthansa

Airlines usually diversify their IT sourcing strategy by **mobilizing both internal and external technologies.** There is also a growing trend among companies that **partner or even invest in start-ups**, so they can test innovative use cases with limited risks and a very short time to market.

#5 Bring new skills onboard and define the proper organization to spread data literacy

Having the right datasets and the right technologies to leverage them is an essential starting point but more important are the people who can

who **can not only process data, but who can understand the business value that it represents.**

"It is not only about finding data talents: every employee across the organization must be a data user"
Ambroise Fondeur, Chief Business Officer, Lagardère Travel Retail

Airlines are to ensure that their **data team works closely with the different business teams, regardless of the way they are organized**. Two types of data team organizations were mentioned in the interviews: a fully **centralized approach** and a more **hybrid model.** The centralized approach is adopted by airlines with a small and newly formed data science team. This structure encourages **learning from one another and aligning models.** With team expansion, team members can be assigned to a specific department, while still working together in a cohesive team. This hybrid approach facilitates the adoption of data across the company, and fosters innovation by sharing ideas across different departments: a model created first for a an operational use case could be replicable for retail purposes.

Indeed the key is to **spread their knowledge** and **empower the internal taskforce** by helping them understand and use data, so everyone across the organization become a "data user", as said by one respondent. Doing so will also **reduce the risk of poor data quality**.

Finally, smaller companies which cannot afford to hire data talents, can also **rely on networks of experts for punctual needs.**

#6 Make it all happen: the cultural U-turn

Results from the online survey show that 45% of the respondents selected "corporate culture" and 30% "leadership & engagement" as the main challenge regarding people.

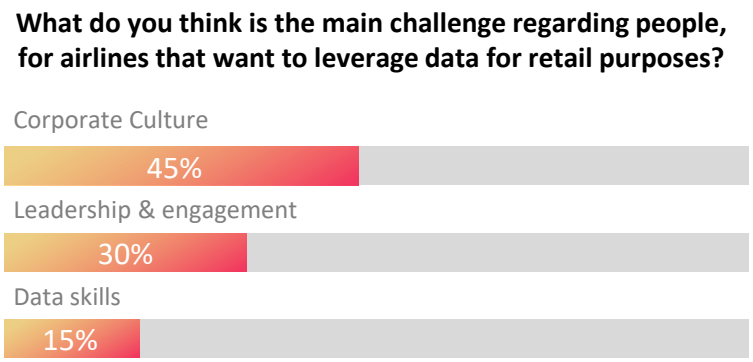


Figure 10. Insights from the online survey

Indeed, the most difficult shift is certainly **the cultural shift**: as seen throughout the study, airlines need to adopt a customer-centric retail approach, supported by a data-driven strategy. "Such a mindset will

allow airlines to seriously approach the required changes in organisation, IT, partner management to ultimately become customer centric and to catch up with other industries in modern, digital e-commerce." – an IT provider underlined in the survey.

A data driven approach requires both a top down and bottom up approach. More generally, "data and customer centricity should not be the affair of some touchpoints, or some services, it should be a **lifestyle across the organization**" as said by one of the respondent. It needs to be adopted and applied by everyone in the organization at every stage of the customer journey.

"Airlines need to adopt a test, fail & learn approach."
IT player

Moreover, data science use cases are often new and progress quickly. This is why airlines should consider **an iterative and incremental approach** with small steps working in an agile way, and accept to take risks. This way of working will foster innovation, reduce time to market and enable airlines to collect customer feedbacks rapidly. It is all about **"test, fail and learn".** Something that low costs may be keener to consider, most of the IT providers said.

Finally, airlines need the "magic ingredient" that makes all this happen and consolidates everything: the **top management support and sponsorship.** Without it, each project will remain an isolated initiative without bringing a true global value for the airline.

This sponsorship needs to be reflected concretely with a **consistent data strategy, well communicated across the organization**. It means that a clear roadmap, with the different components mentioned before, should be defined and supported by the right budget. Finally, the data strategy must also **be embedded in the global corporate strategy** as data should serve the company's objectives and not be handled separately.

"Data privacy, while it must be respected, should not be used as an excuse for not sharing data with the traveler ecosystem. It is only when the travel industry will have connected the information supply chain that airlines will be able to leverage the full potential of data, hence becoming true retailer and offering a complete customer experience."
Airline

#7 Open up at industry level

To provide the best customer experience**, travel actors should collaborate together**. Indeed, as one of the online survey respondent said "data belongs to the customer and it is to be used to make his/her travel better and thus needs to be shared with all players in the value chain". Such initiatives, that foster innovation by allowing the sharing of data and simplifying the implementation of partnerships, have already emerged across the industry.

The number of **bilateral or trilateral approaches** between travel actors – airlines, airports, travel retailers, IT providers or start-ups, that join forces by sharing data – is increasing. They aim to create a better and more complete customer experience.

"There would be legal and data privacy impediments for this, but it would be good to centralise all customer data to leverage for cross-industry insights and trends, as well as personalisation across multiple airlines / travel retailers"

IT player

IATA AIDM (Airline Industry Data Model), a common point of reference to store industry-agreed vocabulary, data definitions and their relationships, improves interoperability across the industry by facilitating the deployment data exchange standards.

IATA Open AIR program (or **Open API**) aims to facilitate the development of industry standards and best practices on data exchange by leveraging API technology in the airline industry. It provides the capability to consistently share data and thus simplifying the integration of multiple data sources and the implementation of partnerships across the supply chain in its entirety.

Common data platforms are also emerging between several actors and managed by a neutral party, where airlines share their data. Other initiatives of sharing data with travel actors have also emerged with IT vendors.

IATA Smart Travel Object project handles the data privacy issue by enabling the customer to define which data he wants to share with which companies, as being customer centric also means to give customers control over their personal data.

As actors are seeing the benefits of a **common and collaborative approach**, improvements in the coming years is expected to quicken.

02. Maturity matrix

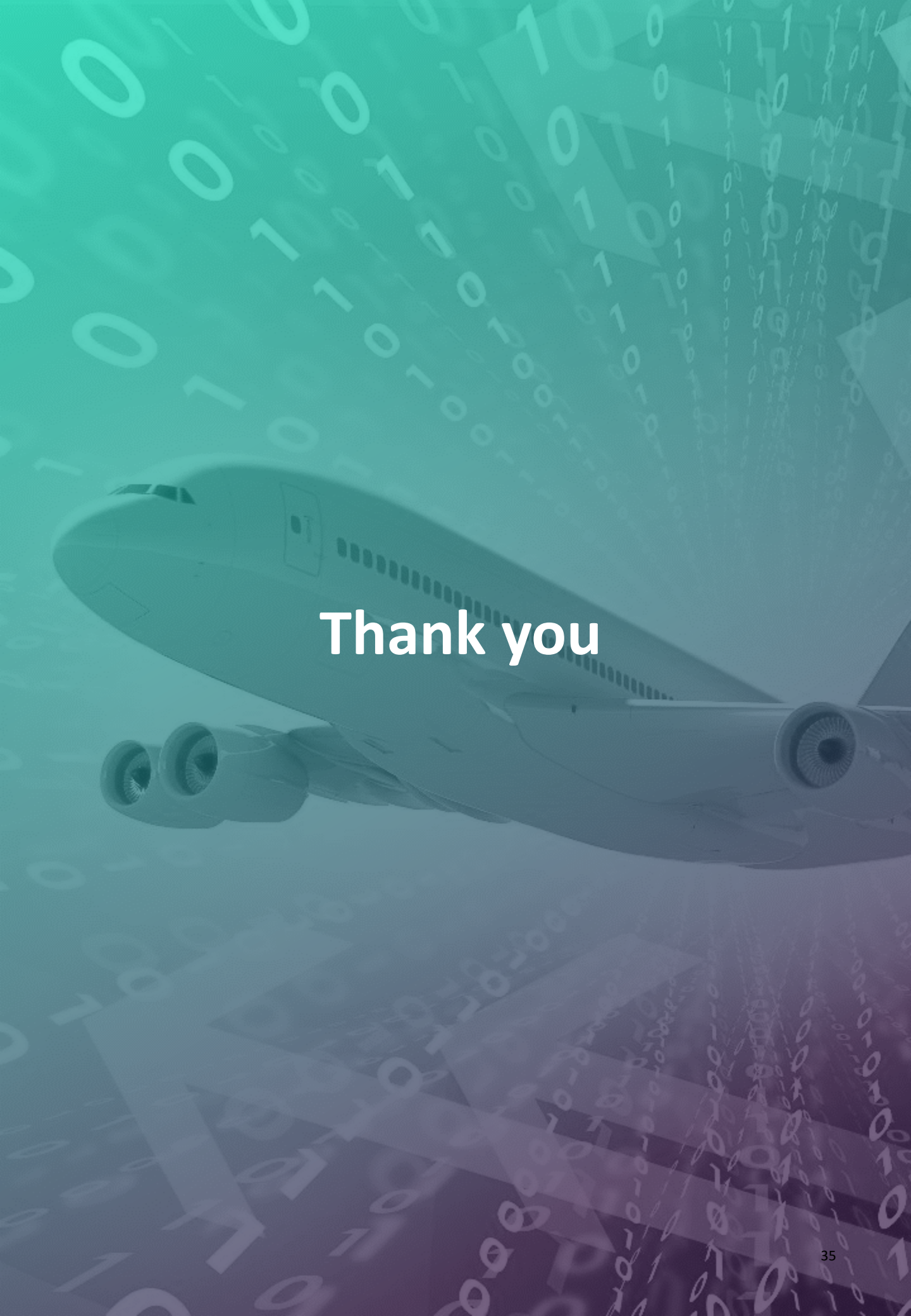
#LOW Organizations at the early stage of leveraging data and with a lot of opportunities for improvement

#MEDIUM Organizations already advanced in their data strategy but that still have room for improvement

#HIGH Organizations with a high maturity regarding their retail data strategy

#LOW	#MEDIUM	#HIGH
Only traditional customer data leveraged	New and external data sources integrated	Multiple data sources combined to enrich customer context and used in real time
Segment-based personalization, inconsistent customer experience, no visibility on the delivery	Finer segmentation and enriched customer experience	Hyper-personalization, full integrated travel experience with all actors of the ecosystem
Data processed in silos, access and security not clearly defined	Data platform with clear governance and defined access	Data shared with the industry in a secure and compliant way to benefit customer experience
Use of basic technologies ; mostly descriptive and diagnostic analytics	Use of some prescriptive and predictive analytics	Use of Artificial Intelligence, Machine Learning, Natural Language Processing, etc.
Very few or no data science skills available	Some data scientists but very few link with the rest of the organization	Data scientists working closely with business teams, data knowledge spread across the organization
Operational focused mindset	Retail-focused, customer-centric and data-driven mindset but risk averse ; no clear data strategy	Clear data strategy well communicated across the organization and sponsored by top executives ; test and learn mindset

Figure 11. Maturity matrix


Thank you