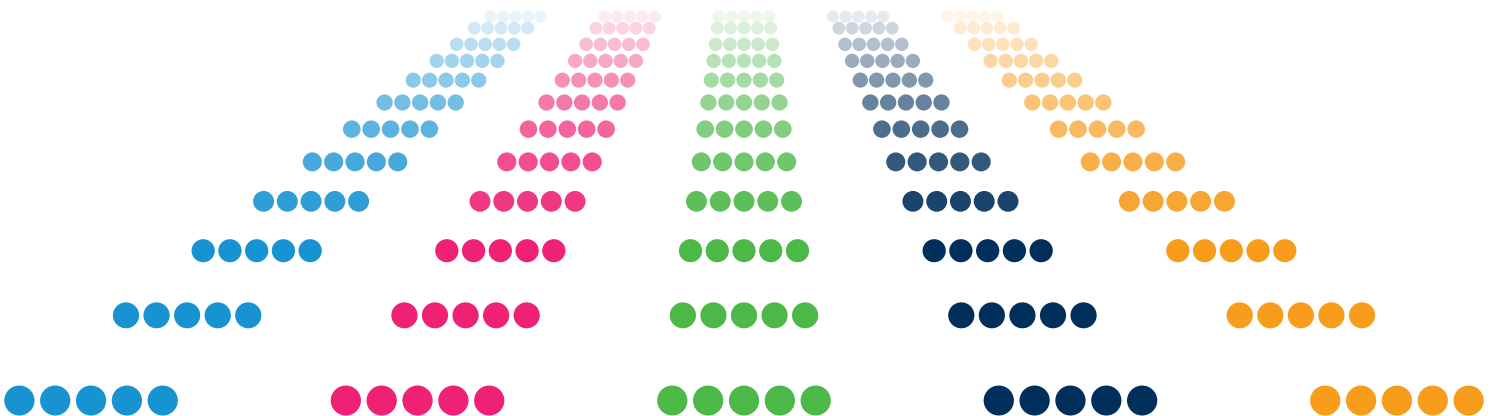
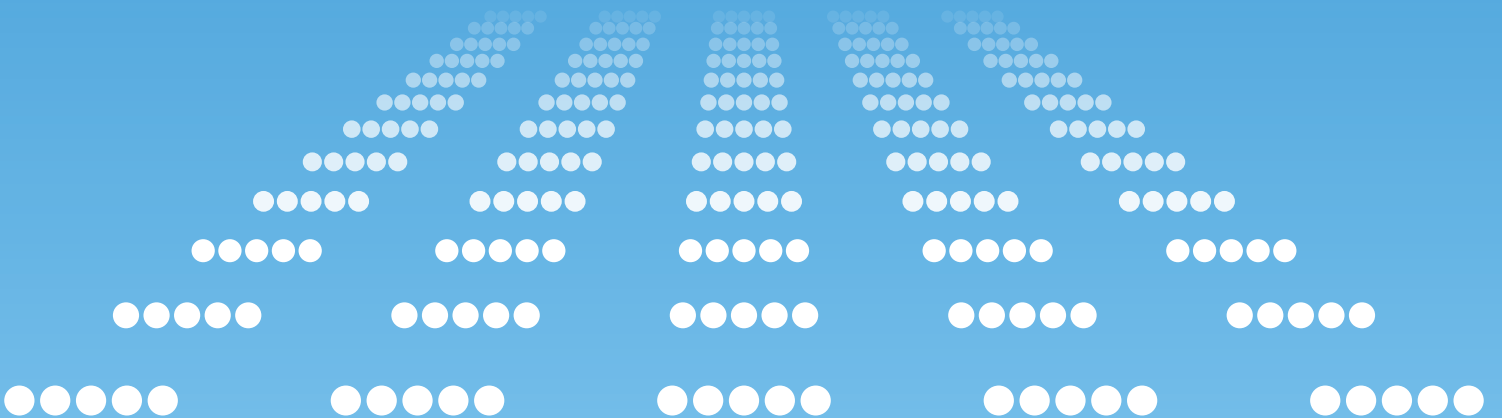




StB
Simplifying
the Business

Innovating better together





Foreword

The StB Think Tank started in 2011 to rethink the StB program following the completion in 2010 of the first series of projects: e-ticket, bar-coded boarding passes, common-use self-service kiosks, and the baggage improvement program.

The first edition of the White Paper contained new StB goals: airline products, customer information, hassle-free experience - and new StB projects, including New Distribution Capability. The 2012 edition proposed a vision of the perfect trip in 2020. This vision included elements which are on track, like transparency of product attributes. However, there are other elements, such as electronic visas, which have progressed with the introduction of electronic waivers, but are unlikely to materialize fully in the near future.

Throughout the years, the StB program has focused on delivering projects. For example, the Fast Travel project is closing and moving to operations, the NDC program is in deployment phase and is targeting critical mass by 2018 and the ONE Order project is submitting its standard for approval. In parallel, each year, the Think Tank explores new opportunities, such as the four 2016 themes: one identity, payment, baggage and open APIs.

- One Identity addresses the challenge of identifying passengers in both an online world and an offline world aiming to reconcile those identities. The various projects around the single token and biometrics show that the identity challenge is not new. However, one identity proposes a new approach with the potential to reach beyond identity checks.

- Payment is both a customer experience and a back-office topic discussed in financial groups. From a customer perspective, the challenge is to provide choice, transparency and convenience. With the proliferation of new methods of payment and rising security or fraud issues, this paper proposes an industry approach to streamline payments.
- Baggage is another area that has benefited from various innovation, from tracking to home tagging or delivery. However, there is still room for improvement towards the vision of a hassle free experience. At the age of self-driving cars, drones and artificial intelligence, customers expect a seamless end-to-end baggage process, as described in this paper.
- Open APIs is a technology concept supporting data sharing with travel partners in order to streamline the customer experience. This concept leverages previous StB projects to move from data ownership to data exchange, enabling better information sharing.

Overall, StB has not only covered the broader end-to-end customer experience (from shopping for a flight to bag collection), it has also added depth into the digital infrastructure supporting the services targeted to customers.

As we approach the end of a second cycle of project delivery (the first one from 2004-2010 and the second one from 2010-2016), now half-way to our vision of a 2020 perfect trip, we need to focus on the opportunities for improvement, innovation and simplification at the industry level.

Our ambition remains to simplify the passenger's journey.


Sincere thanks to all the contributors to this new edition of the StB White Paper. I look forward to hearing your feedback during the World Passenger Symposium.

Sincerely yours,





Eric Léopold
Director Transformation, FDS
IATA


2011





A road map to prepare for tomorrow's passenger
Five goals towards sustainable profits and better service


2012





IATA presents the New Simplifying the Business (StB) Program
Tomorrow's passenger journey will be simple, from travel shopping to airport security


2013





Simplifying the Business (StB)
Transformation in progress and explorations underway
Making the industry easier to do business with for both customers and partners.

2014



Simplifying the Business
Leading transformation for customer-centric air travel

2015



Simplifying the Business
Innovating better together to benefit the future passenger



Executive Summary

Each year, the StB Think Tank writes a White Paper that encapsulates the ideas and work completed throughout the year.

The StB Think Tank grows each year, fostering a shared interest for innovation in our industry. It consists of a subset of StB Steering Group airlines, airports, various aviation partners/bodies and technology providers. Together, the team brainstorms ideas and thoughts that will benefit all stakeholders across the industry. It is important to have as many stakeholders in the Think Tank as possible from across the industry, since every perspective matters. Moreover, the ideas discussed are complex and usually touch various points across the industry, therefore needing the collaborative work from all stakeholders across the value chain.

During the year, the ideas are worked on, and where possible, a proof of concept is developed for more meaningful conversation at the annual World Passenger Symposium.

While the initial Think Tank meeting collects hundreds of potential ideas from this diverse group, only a few completely disruptive ideas or innovations to improve existing processes are selected. Also, to ensure a broader outlook, “themes” were selected instead of single ideas.

This year, four themes were selected: baggage, open API, payments and one identity (that was elaborated from the 2015 idea).

The focus remains on collaboration and this will be evident throughout the document, especially in the introduction of the ideas.

Overview of the content

Section 1 Executive Summary

Introduces the overall StB program, vision and methodology

Section 2 StB Overview

Describes the StB goals and roadmap

Section 3 Current Projects

Provides the current status of StB projects

Section 4 Update on 2015 Theme

Provides an update on the 2015 theme

Section 5 2016 New Ideas

Introduces the four new ideas

Section 6 Conclusion

Outlines the next steps and conclusion

The White Paper will be widely discussed at the October 2016 IATA World Passenger Symposium (WPS) where the ideas will be articulated and debated.

Annual StB White Papers can be found at www.iata.org/stb



StB Overview

The Program

The Simplifying the Business (StB) program has been improving the passenger experience for over a decade. It is the only program that looks at the entire end-to-end passenger experience. Together with stakeholders from across the value chain, StB builds innovative solutions to transform the customer journey.

Benefits

The StB program benefits are for all involved stakeholders including passengers, airlines, airports, travel agents, ground handlers and system providers.

Goals

StB is comprised of **three comprehensive goals**.

Goal 1
Airline Products
Empower airline retailing
and merchandising

The Airline Products transformational projects include the New Distribution Capability (NDC) and ONE Order.

Goal 2
Real Time Interaction
Provide customers with trusted, accurate
and real-time information from all operators
throughout their journey

The Real-Time Interaction transformational projects include Travel Communications and Customer Contact Information.

Goal 3
Seamless & Hassle Free
Eliminate or optimize processes and
related wait times throughout the
passenger journey

The Seamless & Hassle Free transformational projects include 2015 ideas One Identity and Passenger Process Optimization at Airports as well as Smart Security, Baggage XML and Fast Travel. Security Access and Egress was successfully closed and moved to operations in 2015.

Unique Methodology

The key elements of StB are based on its methodology. This includes a rigorous project selection, based on specific criteria. There are also project phases, driven by stage gate reviews. The methodology is necessary to ensure a successful StB program.

Project criteria

In order for a project to be under the StB umbrella, it must meet one or more of certain criteria including: generate industry savings, deliver transformational industry change and bring benefits to airlines and passengers as well as other stakeholders. In addition, each project must have clear objectives/targets and tangible deliverable(s)/end goal(s) to deliver consistency and success.

Project phases

Using program cycles, the projects within the three goals are listed under five different phases: conceptualization, exploration, development, implementation and closure.

- **Conceptualization:** Illustrate and sketch the concept. Identify KPIs and reasons for the concept to be explored.
- **Exploration:** Assess feasibility and develop an industry business case based on the identified KPIs.
- **Development:** Develop the “product” (e.g., standard, recommended practice, implementation roadmap, etc.)
- **Implementation:** Implement the project, including industry mobilization and market adoption – according to the target roadmap.
- **Closure:** Ensure the vision/target was achieved and close the project as a StB project. The initiatives are now transferred to normal operations.

StB Overview

Industry mobilization and engagement

Another unique attribute is how StB mobilizes the industry to deliver the target when projects are in implementation phase. There are designated airline champions that own the process within their own airline. The mobilization effort also relies on strong support from IATA's Board of Governors (BoG) and Strategy and Policy Committee (SPC) – a subset of the BoG. In addition, there are workshops, and campaigns that are regularly delivered to the industry as well as communications including dedicated IATA webpages and social media.

Governance

StB Steering Group

The StB program is governed by the StB Steering Group (SG). The StB SG includes up to 15 airline members directly appointed by their CEO who advise IATA management on the StB program strategy and execution. The group provides IATA with guidance and ensures the StB projects are relevant and meet the needs of IATA members. Each member participates in the SG with an industry mindset, rather than an individual airline mindset. In addition, each member is responsible to brief their CEO on the activities of StB. Finally, the StB activities are reported twice a year to the IATA BoG and SPC, who review and guide the StB program.

StB Think Tank

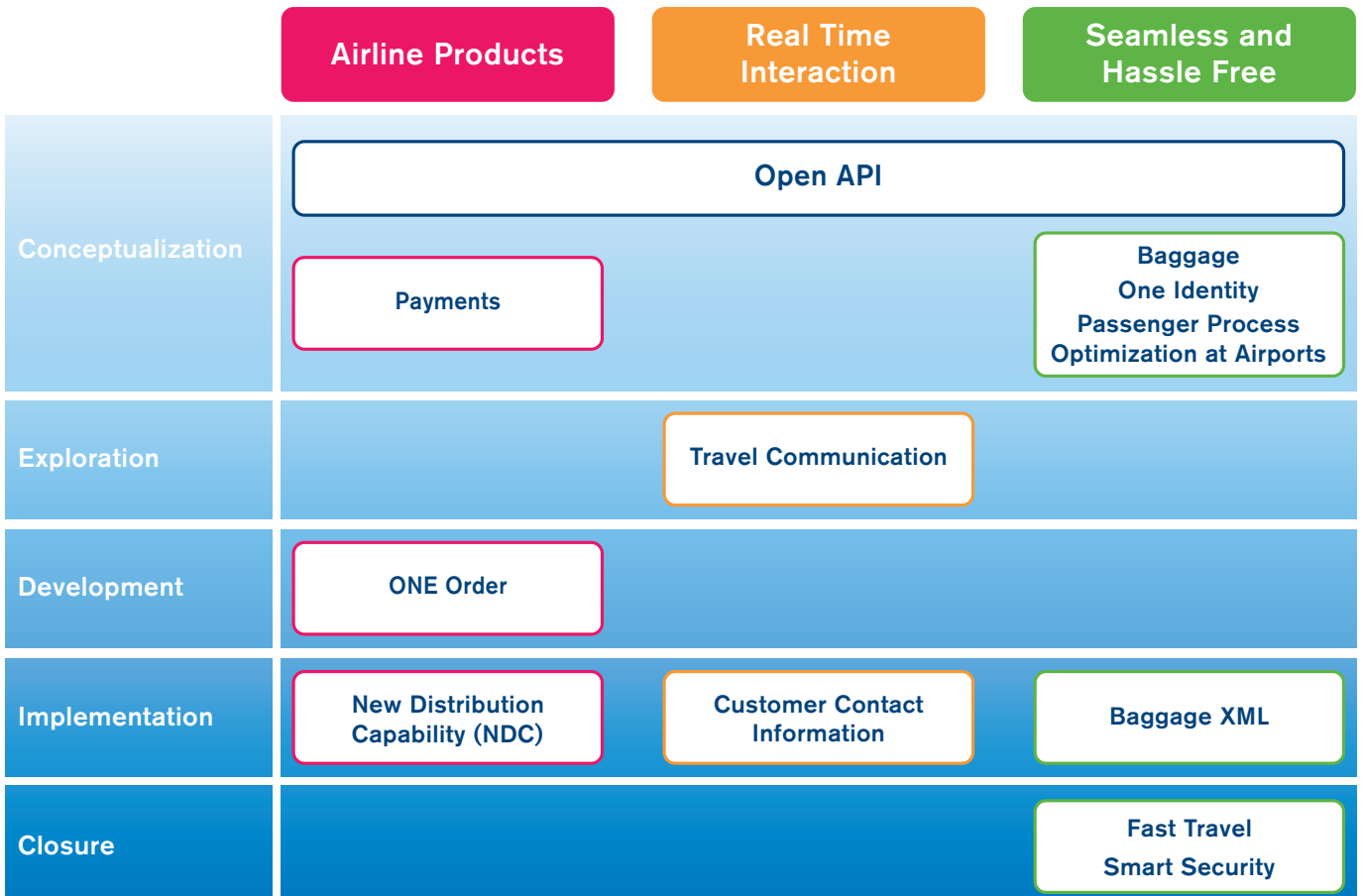
The Think Tank consists of an annual rotating membership of several StB SG members and other partners from specific industries – depending on the topics discussed. The Think Tank focuses on ideation and new initiatives that can potentially be pursued as a StB project. The StB Think Tank publishes this annual White Paper to stimulate conversation and share innovative ideas that will lead to industry transformation.

IATA World Passenger Symposium (WPS)

The WPS gathers stakeholders from across the industry to focus on the passenger. The WPS is important for the StB program, since it is an opportunity to highlight and discuss the StB projects as well as the work that has been done by the Think Tank – more specifically, the White Paper. It is the forum where IATA provides the industry agenda and strategy for the years to come on everything relating to passenger. It's also the place where standards are adopted and decisions are made through the various industry meetings taking place simultaneously.

In addition, a StB Executive Summit has been introduced to the 2016 WPS agenda to further align StB within a senior management, industry-wide audience.

Program Snapshot



Current Projects

There are several active StB projects that are listed below in more detail. Each project summary includes a status update on the defined 2016 targets. In addition, the project phase (conceptualization, exploration, development, implementation and closure) is listed under each project name. More information can be found on www.iata.org/stb

Goal 1: Airline Products

New Distribution Capability (NDC)

Implementation

NDC is a travel industry-supported program launched by IATA for the development and market adoption of a new, XML-based data transmission standard (NDC standard). The NDC standard enhances the capability of communications between airlines and travel agents and is open to any third party, intermediary, IT provider or non-IATA member, to implement and use.

IATA continues to engage travel partners across the industry to ensure alignment and cooperation with all stakeholders.

The target for 2016 was to achieve a cumulative of 20 NDC live airline deployments – airlines must be capable of exposing an NDC API, and responding to an agent request using the latest NDC schemas (i.e., NDC 15.2 or NDC1.1 as a minimum). This target was achieved by June 2016. It was also agreed that deployments would be validated via the new IATA certification process. A dedicated certification site is now available at www.iata.org/ndc where all certified players are listed on the NDC registry.

ONE Order

Development

ONE Order aims to move the industry toward a single airline customer order as opposed to a booking (PNR) and an accountable document (ticket/EMD). While NDC is increasing control and flexibility on the airlines side, ONE Order will drive substantial simplification inherited from paper based industry processes. The vision is articulated around three core principles:

- Customer oriented architecture
- Efficient billing and real-time synchronization of relevant info between all parties
- Simplified airline merchandising delivery

In 2016, a transition study was completed to define possible order management system implementation architectures and analyze impact across the industry. In addition, the ONE Order resolution has been drafted, and ready for adoption by airline members in October at the Joint Passenger Services Conference (JPSC).

Goal 2: Real time interaction

Travel Communication

Exploration

The travel communication vision is to provide consistent and accurate travel communication to passengers, and up-to-date information throughout the journey.

In 2016, the targets are to develop a proof of concept, a data charter and an industry business case. So far, over 50 use cases were established, and a pilot was conducted to demonstrate the technical feasibility. Furthermore, the pilot demonstrated that a single trusted source can be defined and that the passenger contact details will remain with the delivery channel solution the passenger signed up for.

Customer Contact Information

Implementation

The customer contact information project aims to enable airlines to interact with the customer at anytime and anywhere. The scope of the project was also to provide airlines with the ability to obtain the passenger contact details in the PNR by developing standards and recommended practices for contact information to be able to reach the customer with any relevant information pertaining to their journey (i.e., specific information in the event of disruption). In 2016, the focus was to ensure 25 Airline Passenger Service Systems (PSS) used by multiple airlines are able to accept the SSR CTC.



Current Projects

Goal 3: Seamless & Hassle Free

Smart Security

Closure

Smart Security, a joint IATA-ACI initiative, envisions a continuous journey from curb to airside, where passengers proceed through security checkpoints with minimal inconvenience, where security resources are allocated based on risk, and where airport facilities can be optimized.

In 2016, the aim was to deliver Smart Security Opportunity Assessments (SSOAs) at 20 airports confirmed in 2015. This was achieved in by July. In addition, another target was to get the 20 airports to accept 45% of recommendations for implementation.

The Smart Security project will close and move to operations in 2017. The team will continue joint efforts with ACI to keep pushing for improvements and standards.

Baggage XML

Implementation

The aim of the Baggage XML project is to focus on standardizing the data and the interfaces, by leveraging XML technology as well as redefining the overall information exchange architecture.

The project has adopted a data model driven methodology leveraging the IATA Industry Data Model to ensure cross-domain semantic alignment and interoperability. Baggage XML will modernize current legacy standards. This will lead to better baggage performance and lower airline costs.

In 2016, the Baggage XML Working Group will complete the Schema for PADIS approval and conduct a second pilot, as an integrated deployment, fed by production environment data and exchanging messages in XML.

Fast Travel

Closure

The Fast Travel 2020 vision is to offer 80% of passengers with a complete self-service suite throughout their journey, to provide better convenience and reduce queues. It consists of six projects designed to offer a range of self-service options that give passengers more control over their journey: check-in, bags ready-to-go, document scanning, flight re-booking, and self-boarding and bag recovery.

The IATA Board target for 2016 is to attain 40% global Fast Travel penetration. The Fast Travel project will close and move into operations at the end of 2016. The team has made great progress under StB. The program was developed and promoted throughout the industry to successfully achieve critical mass. Although Fast Travel will no longer be a StB project, the IATA team will continue to support the initiatives in operations.



Update on 2015 theme

Theme: the Big Picture

In 2015, the White Paper introduced the “Big Picture” of StB. The aim was to step back and map our end-to-end vision, including current projects and new ideas. The big picture was simplified into five major concepts: shop, order, pay, engage and experience.



Shop: includes everything from distribution to airline retailing and is represented by the NDC project.



Order: includes everything from complex processes to standard order management and is covered by the ONE Order project.



Pay: is a shift in focus from a “one size fits all” to a more customer-centric payment methodology. IATA continues to look into this area, and one of the 2016 ideas is on payments.



Engage: includes the engagement with passengers and is represented by the Travel Communications project.



Experience: included the entire customer journey. It was described as the “future end-to-end experience” which initially began as a potential project, but then made more sense to be incorporated into the StB overall vision.

2015

2016 New Ideas

In 2016, the Think Tank had a different approach. The focus remained on innovation and collaboration, and the “Big Picture” from 2015. In addition, there was a brainstorm exercise at the very beginning of the year, based on rethinking pain points in the industry. More specifically, what would we change or do differently if we were starting the airline business with a blank page? As a result of this brainstorm exercise, four themes were selected:

One identity



Payments



Baggage



Open API



IATA then partnered with Plug and Play, a Startup Innovation Platform, based in the San Francisco Valley, California. Plug and Play researched startups in the Valley based on the four themes. These startups presented their ideas to the Think Tank during an exhilarating meeting in the Valley. It was the first time the Think Tank participated in a session focused on start-ups and it proved to be a very valuable experience.

Meeting with the start-ups ignited new ways of thinking and looking at the themes. It also inspired the Think Tank to develop Proof of Concepts (PoCs) to further enhance the White Paper and the ideas therein. The PoCs will be presented at the 2016 WPS in Dubai. The goal is not to develop a solution at this stage, simply to present the validity of the theme/idea and to instigate more meaningful discussion.

2016



Vision

The StB's goal 3 "Seamless and Hassle Free" travel vision is to offer passengers a frictionless airport process allowing the possibility to walk through the airport without breaking stride.

Safety and security remains the number one priority and responsibility for all stakeholders within aviation. However, the approach taken to achieve this is divided, with each stakeholder taking steps to ensure their obligations are met with little or no coordination between parties. This results in a frustrating and repetitive process for the customer.

The vision of the One Identity initiative is to create a streamlined, friction-free process that allows an individual to assert their identity, online or in person, to the required level, while maintaining the privacy of personal data and enabling significant improvements to operational efficiency and security. This vision will be delivered through true collaboration between airlines, airports and governments.

Current situation

The combination of increasing passenger numbers, limited physical infrastructure, enhanced security requirements and legacy processes, result in more friction and a complicated, unpleasant experience for passengers.

Since its induction, the StB program has launched a number of initiatives to improve the passenger process, like Fast Travel, Smart Security and Automated Border Control. While these initiatives have certainly delivered great value for the passengers and the industry, their benefits remain

limited within their own scope. The industry has not yet managed to fully break these silos and needs to collaborate towards a solution that would apply horizontally across the whole process.

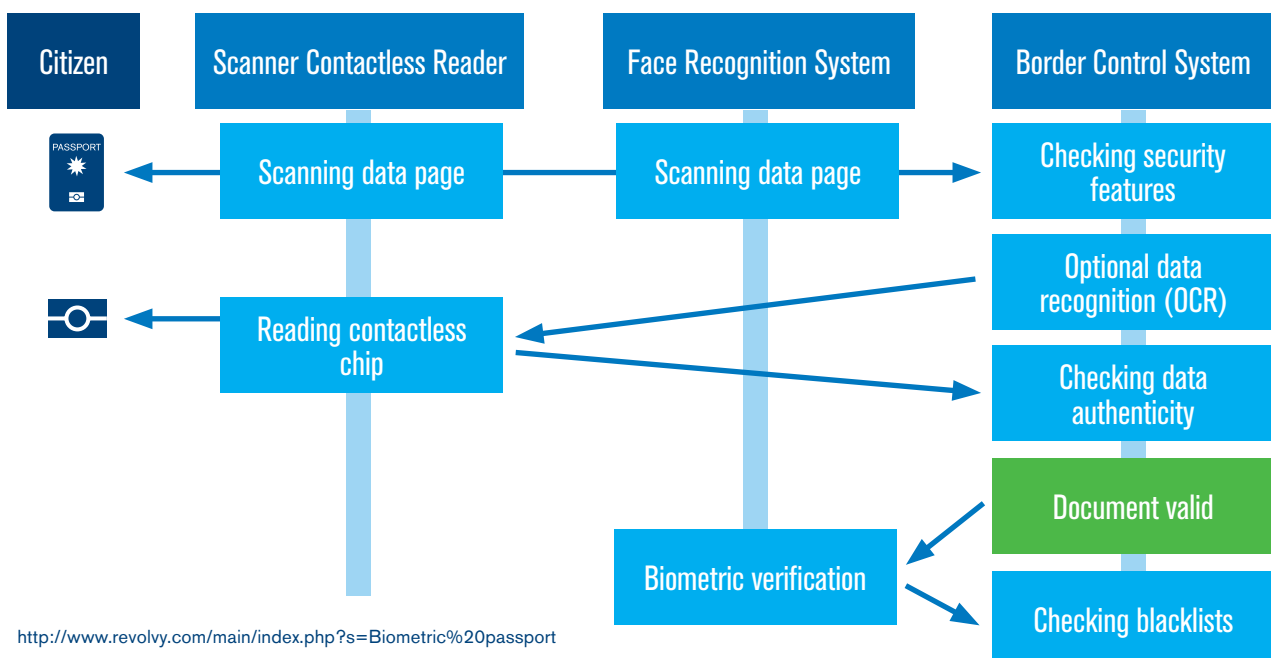
For international travel, the airline industry relies on passports to verify an individual's identity. Although created as a travel document to facilitate border crossing, the passport is used as a proxy for identity. The addition of machine readable zones (MRZ)¹ and the introduction of biometric passports² have improved data accuracy and the security of passports, however, they have done nothing to improve the speed and ease with which passports can be authenticated and verified.

To verify an individual's identity, the current process is complex, as described in the diagram below.

This process is cumbersome for the traveler. The aviation industry adapted its processes and procedures to work with the passport as an identity document, even though this was not the most convenient and efficient option.

Furthermore, in some cases, the passenger's identity is left unknown and they are treated anonymously (e.g. security screening). If a passenger's identity can be confirmed at any customer touchpoint, it would allow a more personalized customer experience to be delivered, efficiencies to be made and the opportunity to generate enhanced ancillary revenue.

However, to do this, the process to identify the passenger must be quick and easy for the customer. With the growing passenger numbers, our industry must find a way to remove this inherent cost and complexity to the business.



<http://www.revolvy.com/main/index.php?s=Biometric%20passport>

¹ http://www.icao.int/Security/FAL/Documents/2.API%20Guidelines%202013%20Appendix%20I%20MRZ%20Details_E.pdf

² http://www.icao.int/publications/Documents/9303_p9_cons_es.pdf



Case for Change

There are various aspects of this problem that the proposed solution must address:

- **Usability:** how do we create a solution that enhances speed and is simple and intuitive for the passenger?
- **Security:** how do we create a solution that directly and indirectly improves security?
- **Trust:** in a multi stakeholder environment how do we create an identity framework that is trusted by all involved?

Resolving the above problems together will give a unique opportunity to develop a single secured integrated passenger process, eliminating or simplifying drastically the multiple steps passengers have to go through currently. The outcome will be a true seamless and secure airport process for both departure and arrival, removing congestion and therefore the potential motivation for terrorist attacks like the industry has been facing recently at airport landside areas.

The proposed solution is supported by four concepts:

- Creation of a notarized digital identity to facilitate improved customer experience, speed and security**
Rather than require the traveler to present a physical passport at each and every touchpoint, we propose the use of a digital or virtual tokenized passport on a mobile device. This digital identity will be notarized by the issuing authority.
- Use of biometrics to confirm an individual's identity**
In recent years, the capability of biometric sensors has improved dramatically and will continue. Their availability on customer mobile devices could present an opportunity to make use of these smart devices instead of expensive, static airport infrastructure.
- Federated process that delivers enhanced security**
To enhance the identity assertion process further, it is suggested to use a federated approach to provide information from partners to help assess the customer's identity.
- Creation of a trust framework across the multiple stakeholders to improve facilitation and security**
The stakeholders within the aviation industry currently work in a silo'ed fashion with little or no coordination amongst interested parties. All too often the process to identify the customer is repeated at every touchpoint. This can be solved by the trust framework across the stakeholders.

How the solution could work

Enrollment



Step 1

Self-service online enrollment such as GOV.UK Verify (i.e., an UK government solution to prove who you are online). Once an individual asserts his/her identity online, an account/profile is created. The user may grant permission for certain stakeholders (e.g. mobile/email providers, social media, etc.) to help raise the level of identity assertion by sharing 'signals' (i.e., lost & stolen status of a mobile phone or compromised email accounts).



Step 2

In-person interview where identity is proven beyond reasonable doubt, the physical passport is checked.



Step 3

In conjunction with step 2, the identity is confirmed then the individual's biometrics are captured.



Step 4

Through one-way hashing – store a token (as with PCI compliance) of the identity to the distributed ledger (e.g. blockchain) signed by the issuing authority.



Step 5

Securely store a copy of the biometrics on the customer's device, along with a reference to the token on the distributed ledger.



Verification



Step 1

As a passenger approaches an airport touchpoint, they can use their mobile phone to assert their identity. Through wireless technology (Wi-Fi, Bluetooth, NFC, etc.) their information is sent from the device to the touchpoint as they arrive. Using FIDO2 technology it can be assured that it is the same person that enrolled on the device.



Step 2

The reference to the distributed ledger is retrieved and the issuing authority (the entity that performed the initial enrollment) and any additional certificates (e.g., more than one authority may certify/endorse the identity) is confirmed by use of digital signatures.



Step 3

Shared signals from any 3rd parties are verified – mobile phone lost and stolen status etc.



Step 4

If need be the verifying authority may verify against their own store of biometrics. FIDO2 could offer the capability to skip step 4 as this creates a 'hard' link between the data stored on the phone and the biometric authentication to access. However, this standard is relatively new and as yet is not adopted by all mobile phone manufacturers.

Next steps / Proof of concept

IATA, US and Canadian authorities are working on designing potential pilots to prove the one identity concepts articulated above. Furthermore, the pilots would be scoped on flights from UK to/from US, UK to/from Canada and Canada to/from US.





Vision

The vision is to enhance the passenger experience by enabling payments anywhere (omni-payment) as well as reducing the complexity on the merchant side.

The objective is to make payment processing simple, consistent and secure for the entire air transport industry, whilst reducing the cost of payment processing and related fraud across the entire industry.

Currently, IATA covers a number of initiatives with the intention of solving "The Payment Riddle": offer convenient, cheap and secure payments.

Today many friction points remain during the passenger journey, particularly on the day of travel, at the airport and in-flight where payments options are limited. Therefore, StB wants to *enable passenger omni-payments, with an industry fast time to market and cost effective solution.*

Current situation

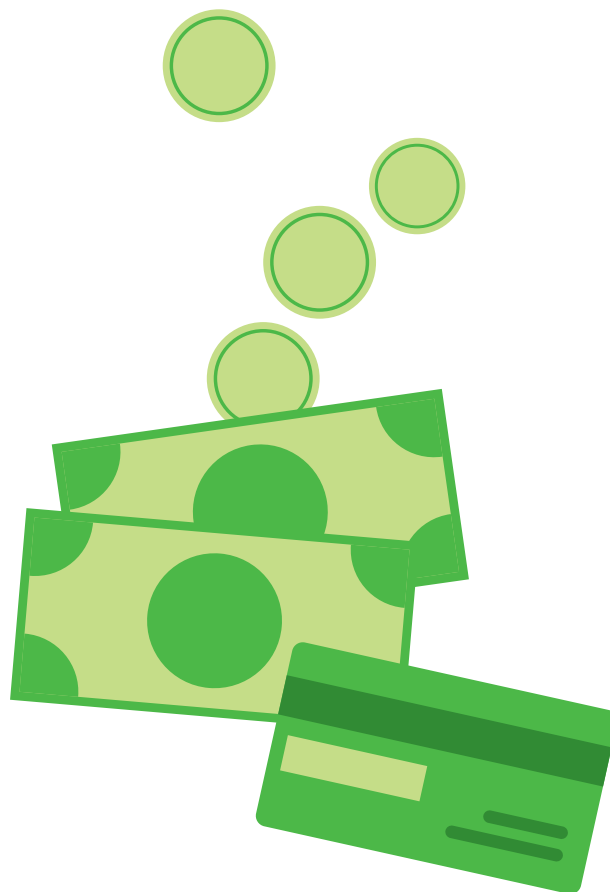
Current payment processes in the Air Transport Industry (ATI) are extremely diverse from a passenger perspective by geographic region of the world. There is considerable global variation in preferred forms of payment, banking services, payment acceptance and shopping methods. This is making payments processing increasingly difficult and airlines cannot cope with the expectations of all travelers worldwide.

Correspondingly the payment and settlement process and service level for airlines also varies considerably by region and channel. Some regions prefer cash or installment payments, while others are overwhelmingly driven by credit card. Direct distribution models appear to provide some more instant settlement for airlines, however indirect and interline settlement is too slow for the modern world, often taking between 7 and 60 days for an airline to receive payment.

Overall, payment relies on complex legacy processes that are mostly asynchronous and based on rigid formats across numerous entities. Integrating a new method of payment is challenged by existing workflow, infrastructure and integration across independent players in the supply chain, e.g., issuing banks, card associations, acquirers and processors.

Furthermore, to add another layer of complexity, there is a heterogeneous and multifaceted regulatory framework. Mixed and complex laws governing compliance, bank card regulatory issues, regional surcharges, data protection or privacy, complicate even more the payments environment.

Linked to these complexities is a high acceptance cost. Indeed, accepting and processing payments has become increasingly more expensive due to the rising costs of a transaction: Airlines pay more than US\$8B annually to process payments¹. This makes payment costs the most significant part of an airline's distribution cost. High merchant fees, manual handling, fraud-related costs (preventing fraud, covering fraud losses, false positives, etc.) and chargebacks add up to a high business cost. In fact, many payment related costs are still poorly understood since they tend to occur in different parts of the airline. Moreover, delays in payment transfers represent a significant cost (i.e., traveler payment latency, interline settlement processes).





Case for change

As airlines increasingly become retailers, and receiving payment grows in complexity, solving the payment processing component will be a key success factor.

The industry would need a solution that:

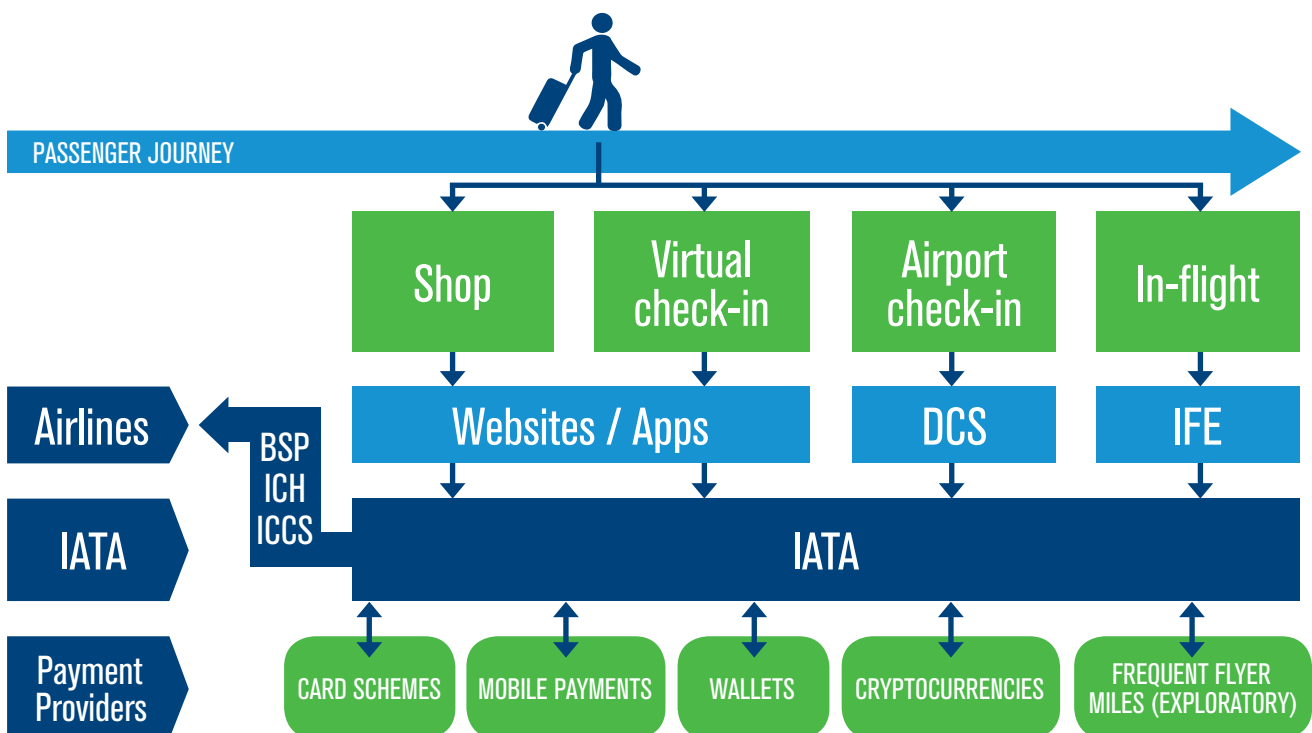
- Supports multiple payment methods throughout the passenger journey
- Standardizes payment process
- Standardizes interfaces for terminals/platforms
- Enables fast integration of new and alternative forms of payment
- Enables pay with frequent-flyer miles and/or other loyalty points (exploratory)

This service will address direct sales and IATA would act as a payment gateway router, providing the following to airlines:

- **Front-end integration:** APIs/SDKs or redirect to IATA payment platform website; to integrate with any airline platform (e.g., website, apps, etc.) during the entire passenger journey, from shopping to check-in to in-flight.
- **Payment authorization and processing:** IATA would manage all the payments authorization and connect air-

lines with any payment provider. The exact list of provider will be defined and the airlines will be enabled to activate different options in different markets and virtually for each order. Additionally, we would also like to explore the integration of frequent flyer miles payments, but this would come at a later stage.

- **Reporting:** IATA will provide all the needed elements to the airlines for internal reconciliation.
- **Settlement:** IATA will help process the payments and money will be received directly by airlines. In the cases that is not possible or if it would make sense to use IATA as merchant of records, once the money is received by IATA, money will be remitted back to the airlines with existing settlement solutions such as Billing and Settlement Plan (BSP), IATA Clearing House (ICH) or IATA Currency Clearing Services (ICCS).
- **Enhanced risk management:** having a full time team managing the relationship with the payment platforms, IATA will ensure compliance with existing rules (e.g., PCI DSS) and implement state of the art fraud prevention measures, managing potential frauds or charge backs on behalf of the airlines.
- **Additional services:** IATA will also provide services such as Dynamic Currency Conversion.





The benefits

Benefits for Passenger	Benefits for Airlines
<ul style="list-style-type: none"> ▪ Pay as you want, where you want (even more if non-airlines are included: e.g., airports) ▪ Reduce friction in payments to put passenger in control to “pay as they want, when and where they want” ▪ Empower certain types of customers (e.g., Corporate Travel Departments) ▪ Enable additional subscription services (e.g., annual fees, installments, etc.) 	<ul style="list-style-type: none"> ▪ More control: enable airlines to be in control of their payments strategy per market/country, per channel, per form of payment, per conditions (e.g., installments, surcharge, etc.) ▪ Cheaper deployments: reduce capital expenditure as well as development cost (e.g., integrating an alternative form of payment could take up to 1 year per airline) ▪ Reduced complexity: streamline different payment methods for agency/direct sales through using a single system connection to access all payment processors ▪ Visibility: monitor all payment related fees in one single place ▪ Centralization and reconciliation: one single place to get all info (including interlining) ▪ Enhanced fraud prevention: links to Industry Fraud prevention project ▪ Regulatory compliance: support scheme rules such as Payment Card Industry Data Security Standard (PCI DSS) 3.1 ▪ Faster time to market: faster technical implementation of additional forms of payment ▪ Market reach: reduce missed opportunities ▪ Frequent-flyer miles: facilitate usage of FFM across the industry and make them more liquid (exploratory)

Next steps

To demonstrate how we could integrate an alternative form of payment and how the payment process could be externalized into IATA in a transparent way for the passenger, we are putting together a mock-up in 2016.





Vision

The existing baggage infrastructure is at full capacity and no longer sufficient for future passenger volumes and customer expectations.

The current process takes a bag from point "A" to point "B" in a consistent and standardised way. For the passenger, the most important element is not that their bag is in the hold, but that their bag arrives at the predetermined place and time, as agreed.

Our vision is to re-invent the baggage process by providing real-time tracking and tracing, and robust identification. We can then change the model to ask ourselves: where should we collect from, how do we move the baggage and when should this be done, relative to the passenger's journey.

Current situation

Currently, the baggage separation (drop and pick-up process at the airport) is one of the most stressful components of the passenger's journey. The industry has not materially modified the process nor taken advantage of new technology to offer a better service to the passenger, (apart from improving the bag "lost" rate over time). Moreover, the industry is not necessarily doing a bad job dealing with the daily complexity of baggage handling, but it is lacking in transparency. There is no product differentiation, and we offer fundamentally the same service to every passenger, whether they are

travelling individually or as a family or if they are travelling for a short business trip or a longer leisure holiday. Below is a sample of different scenarios where passengers have different needs.

Every customer needs to physically take their bag(s) back from their ground transport, to the check-in desk and submit the luggage, (i.e., self check-in or via a desk).

There is no visibility once the bag has been dropped from that point on until the arrival, when there is a "free-for-all" scrummage on the collection of baggage, whereby anybody can walk away with any bag, with limited or no control. If the bag does not arrive, then there is little transparency in the process. Furthermore, passengers, and often even the staff in the arrival station, have no idea where it is, whether it is still a few minutes away or on the other side of the world on a missed connection.

Consumers now are much more demanding in regard to product transparency and being informed if there is a problem. IATA Resolution 753, to come into effect on June 2018, requires that airlines are able to report the delivery and acquisition of bags when the customer for the bag changes at three specific points, arrivals, transfers and loading. This will enable identification at key stages of the journey. However, there is no requirement to directly communicated to the customer.

As a result, there is very little trust in the process, leading travellers to generally do their best to avoid the process and bring carry-on baggage, which is then creating a new logistical problem.

	Couple, weekend away		I need it with me, I will take it in the hold
	Family, 2 week vacation		So much stuff, someone take it 2 weeks before me
	Business Man, overnight trip		No problem, I will take hand luggage
	Business Man, 5 day trip		Just make sure it's at the hotel by next Thursday



The plan to transformation

1. Robust identification

There needs to be a robust mechanism to identify the full baggage identification, which is made up of three components, bag, passenger, and journey. The XML schema, as approved by the IATA Passenger and Airport Data Interchange Standards (PADIS) will enable airlines to start transitioning to this XML in 2017. This will ensure there is supporting data behind the ten digit bag tag number. However, we should take this further and ensure all new baggage produced as the ability to electronically hold the ID of the bag, passenger and journey. IATA should incorporate the standards required to enable each manufacturer to record ID.

2. Streamline regulation

Regulation should be reviewed to ensure that it keeps up with technology and remains relevant and appropriate. For example, electronic bag tags do not generally transmit whilst a baggage tracker does transmit. As per current regulation of FAA Advisory Circular 91.21-1c, the baggage trackers must have two separate mechanisms to automatically turn off during flight. Currently there is no way to verify that the commercially available baggage tracking devices comply with this requirement.

3. Security

Processes and regulation need to be reviewed if we were to change the process to offer a luggage serviced independent to the passenger.

4. Mindset change – transparency

As an industry, we need to proactively share information with our customer. Therefore, we need to build in real-time updates to our customers so that they know the status of the baggage. This will continually build trust into the system. Airlines cannot continue to operate on a model where they decide if and when they tell the passenger the status of the luggage.

5. Embrace independent solutions

There are a quite a range of products now in the luggage sector which is using variations of the IOT technology, (either via 3G cards, Bluetooth, or LoRa). Currently, these devices are outside of the aviation ecosystem.

Embrace the independent suppliers who are providing tracking products. As an industry, we need a mechanism for them to be part of the ecosystem, so that they can share their data with the airlines, so that airlines are as informed as the customer.

6. Robotics

Even though there currently is a large degree of automation in the baggage process, we need to identify what roles the robotics technology play in the future.

7. Drones/Autonomous Driving Vehicles

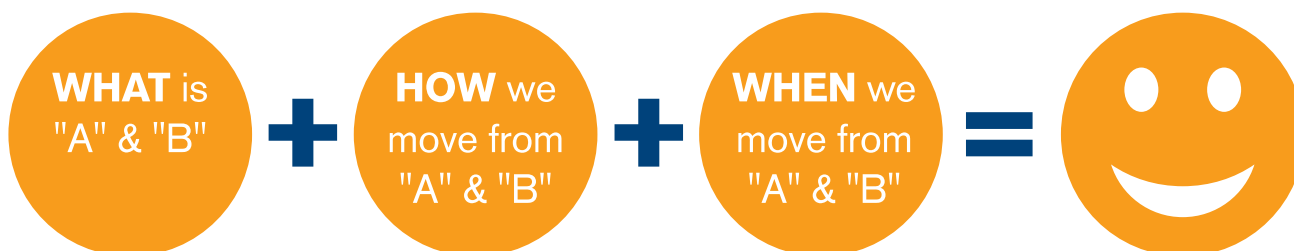
It is quite possible that drones or autonomous driving vehicles may become a key technology in the baggage process. This will become more important if we start to change the pickup point to be somewhere other than the airport, and if airlines utilise offsite facilities. The industry must start looking at the use cases for drones in baggage, and start to develop any specific regulation related to this.





Case for Change

The future state is made up of three business model components, that when re-designed, provide the opportunity to revolutionize the baggage industry. This new business model could enable passengers to take their luggage door-to-door ahead of time, optimizing the best possible route, improving customer satisfaction and minimizing cost.



Change WHAT the “A” and the “B” are

Airlines are currently moving baggage from “A” to “B”, where “A” and “B” are always currently airports. Airlines need to evolve this model to change what the “A” and “B” can be. For example, these drop off and pick up points could be anything from a house, hotel, office, to an unmanned “smart” depot next to the local newspaper shop.

With the evolution of internet purchases from dominant players such as Amazon, there is a delivery vehicle already passing through most neighbourhoods on a daily basis. Can airlines leverage off this or similar existing infrastructure?

This may require new business models, new partnerships or new services offered by the airlines. Particular capacities need to evolve to support this new capability. For example, hotels should have the capacity to store luggage for several days prior to a guest arriving. Baggage delivery in and out of airports could be done at a totally different location.

Change HOW we move from “A” to “B”

If an airline has the opportunity to change the starting point and the end point of the journey for baggage, and can change when they move the baggage, then this enables airlines to use the most efficient method possible. This may mean that we do not need to go airports, which can free up valuable space at airports.

Change WHEN we move from “A” to “B”

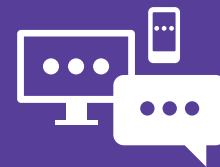
Traditionally, luggage has travelled with the passenger, however, this is quite often not the desire of the passenger. Passengers want to know that their luggage will be at their destination when or before they arrive. If this means that it is collected prior to the passenger departing, then this beneficial for both the passenger and the airline. Trials at various airports, allowing the passenger to drop of their luggage the night before a flight have proved very popular.

By changing the “when”, and combined with the “how” airlines have the opportunity to optimise the route to move the luggage from “A” to “B”. The service could be customised depending upon if it is an outbound or return leg.

Next steps

To achieve the vision, we propose the next steps to include the creation of a detailed feasibility study that will outline the fundamental changes necessary to the current baggage processes. This would include a detailed assessment of baggage tracking technologies for the consumer, review of regulation, security and modelling of the new process to change pickup and drop off points to improve how and when we deliver baggage.





Vision

Airlines and airports know that we need to talk to our passengers in a more personalized and quicker manner. In addition, passengers want to have a greater level of trust in the information with which they consume. However, it is not an easy task to publish trusted, accurate and timely information to passengers on a personalized level. Application Programming Interfaces (API's) may be the mechanism to solve this problem across the industry.

Our vision is to ensure that the data exposed from these individual airline API platforms is consistent in terms of definition, format and way this data is accessed (or exposed). This will enable maximum benefit from all users across the industry, from passengers, airlines, airports, ground handlers and any entity within the industry which wants to consume the information.

Note: In the context of this paper, "API" refers to Application Programming Interfaces, not Advanced Passenger Information.

Current Situation

APIs are becoming an important tool for business to business and business to consumer businesses to provide relevant, trusted and timely information and to reach new customers. APIs are commonly used in today's society. For example, whether it is checking the sports scores, train timetable or buying a sports ticket, all of this data is provided by APIs. The concept of data sharing for the airline industry has been an essential component of the industry's success. However, the role of data sharing is now changing dramatically.

Airlines and airports are at the early stages of investing in these API platforms, and we collectively need to encourage all airlines and airports to invest immediately into these platforms to ensure that they can contribute to these API ecosystems and API economies which promotes innovation, resulting in new business models and new methods to increase customer satisfaction.

Some key examples of APIs which are now common place in everyday life include:

- Expedia opened up their travel booking services to partners through an API to launch the Expedia Affiliate Network, building a new revenue stream that now contributes \$2B in annual revenue¹
- Salesforce (a \$55B cloud computing company) released APIs to enable partners to extend the capabilities of their platform and now generates half of their annual revenue through those APIs²

What is an API economy?

APIs are fundamental to modern business architecture. Moreover, they are a technical mechanism to share data between systems in a controlled way. Generally, they provide the linkage between one systems to another. This could be from one internal system to another internal system, or from an internal system to an external system.

Increasingly, API's also provide a foundation for a new type of business, which Gartner calls the "API economy", which is defined as "A set of business models and channels — based on secure access of functionality and exchange of data to an ecosystem of developers and the users of the app constructs they build — through an API, either within a company or on the Internet with business partners and customers"³

¹ <https://www.mulesoft.com/ty/wp/secrets-great-api>

² <https://www.mulesoft.com/ty/wp/secrets-great-api>

³ Gartner, *The API Economy: Turning Your Business Into a Platform (or Your Platform Into a Business)* Published: 19 February 2016 ID: G00280448





Case for Change

Within the airline sector we see the following benefits when investing in these API platforms:

1. Passenger communications

Consumer facing apps will now have a trusted source of information. This will result in the number of consumer facing apps to grow considerably. This is very good news for the passengers since it will enable them to have accurate information. Once the data is trusted, then consumers will continue to return and use the applications.

Airlines hold a wealth of information and can provide a large benefit to the consumers of this data. Below is the results from the 2016 IATA passenger survey. We can see that there is a high demand for passenger information, ranging from 85% of respondents requesting flight status, 60% for baggage status, and 58% for waiting times at security / border control.

2. Reduce usage of unauthorized data

By exposing this data, we hope to reduce the unauthorized usage of operational data. Typically, travel related companies “steal” airlines data by a technique called “screen scraping” where programs systematically copy data from a website.

3. Used to build mobile solutions

APIs enable mobile solutions to be developed quickly and plug into the corporate data sources in a low cost way.

4. Provide a new revenue stream

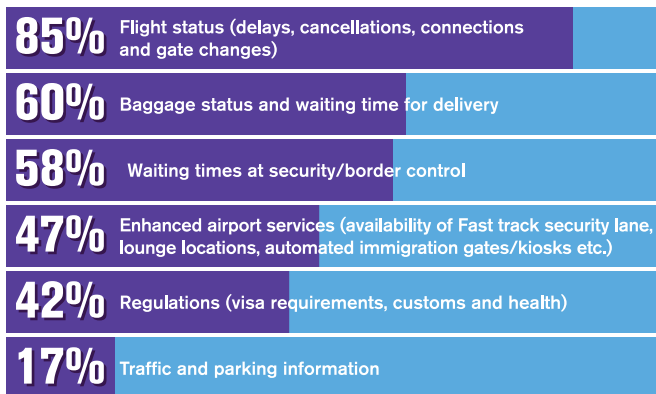
APIs can provide a new revenue stream by monetizing the data. However, it would be prudent at this stage of the ecosystem, so see this monetary stream as more of a cost offset rather than an outright revenue stream.

5. Promote innovation

By providing the development community with access to relevant airline information, airlines are then able to broaden their innovation ecosystems whilst becoming more agile and responsive. By opening up the innovation process, airlines will be able to then enrich the innovation gene pool and also gain valuable scale – more resources at a fraction of the price.

For the API economy to have maximum benefits across the industry, we have to achieve a level of critical mass. To achieve this critical mass quicker there are several components needed as shown in the table below.

Results from the 2016 IATA Passenger survey



Pillars for a successful API economy		
Define a Common Data Model <ul style="list-style-type: none"> IATA & ACI working on data model to create common definitions 	Build Common APIs <ul style="list-style-type: none"> Standardized output API Design API for a great user experience Optimize the API for a use Case Provide easy access via a developer portal, one step registration, sandbox, tutorials, sample code, developer community 	Build an Industry Ecosystem <ul style="list-style-type: none"> Provide an ecosystem which promotes ease of connection Develop certification program Publish lists of relevant APIs via an industry directory listing More data sources - promote more airlines and airports to create public APIs



Industry level – Co-ordinated approach

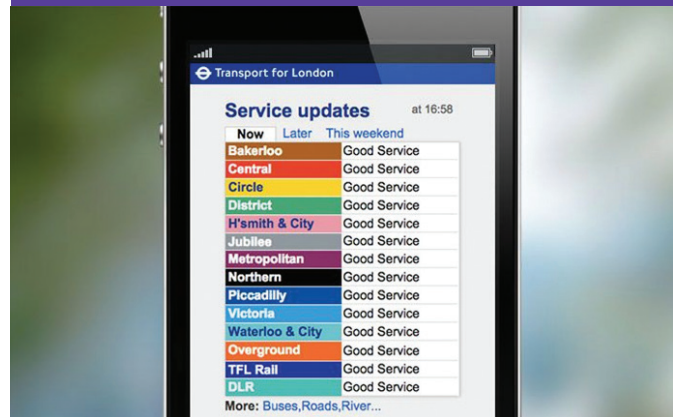
Our vision, from an industry perspective, it is critical that the data exposed from these individual airline API platforms is consistent in terms of definition, format and way to access to ensure that users across the industry can easily consume data sets from different airlines.

Next steps / Proof of concept

Airlines are missing opportunities if they do not leverage the power of open API economy. By leveraging this collaborative business model, airlines can leverage off the development community to drive innovation, share data on the airline's terms and expose their data to enable fast deployment of solutions to capitalise on business opportunities.

As industry, we should be investing in these API platforms in a co-ordinated approach to ensure that the consumers of these rich data sets can easily consume this information by having a consistent approach to data models, user access approach and API formats. To demonstrate how APIs could be used across the industry, three airlines and three airports were connected onto a common API platform, which expose departure time, flight status and departure gate information. The next step was to connect the Amazon Alexa, a hands free, voice activated artificial intelligence system. Now, a passenger can ask Alexa what time they need to leave for the airport, using trusted and real-time data.

Industry Example



Embed:

```
<div style="width:260px"><script language="JavaScript"
src="https://www.tfl.gov.uk/tfl/syndication/widgets/serviceboard/
embeddable/serviceboard-iframe-stretchy.js"></script></div>
```

Source: <https://tfl.gov.uk/forms/12425.aspx>

With the above example you can see that by inserting three lines of code into an app, the user can then have access to the level of service for all tube lines. Now imagine that you had to connect to each tube line individually, that would be both cumbersome and costly for the consuming entity TfL has enabled that you can have access to all lines via one connection.



 Shop

 Order

 Pay

 Engage

 Experience



Conclusion

The StB Think Tank will continue to focus on ideation and brainstorming new innovative ideas to explore throughout the yearly sessions. In 2016, the Think Tank added the development of Proofs of Concepts in addition to the usual brainstorming and creation of the White Paper.

In 2017, the Think Tank would like, in addition to ideation, to focus on the development of past ideas that have not got traction so far. This will ensure that the great work and momentum are not lost. Instead, we will continue to build on the ideas introduced in these White Papers. We will continue to work towards our 2012 original vision of the perfect trip by 2020.

Since its inception, the Think Tank continues to grow each year, attracting more interest and wider participation. Also, the format has evolved, to a more aggressive and challenging scope, interacting with different industries and start-ups who offer a whole new way of looking and doing things.

The StB Think Tank is one of its kind and maintaining its relevance is fundamental to the growth of our industry. We must continue to innovate and transform processes that simply do not work anymore. In doing so, it is important to keep as many participants from across the aviation industry as possible.

In addition to the Think Tank meetings, the team will listen carefully to the thoughts and discussions at the 2016 Executive Summit of the World Passenger Symposium. Views expressed there will guide the Think Tank and provide ideas for 2017, to be shared by senior executives from across the industry.

2016

Partnering for success

IATA wishes to thank all contributors to this paper.

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Partnering for success



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