THE FUTURE OF AIR TRAVEL

HOW DIGITAL TRANSFORMATION IS REINVENTING THE AIR TRANSPORT EXPERIENCE

IDEMIA

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THE NEED FOR DIGITAL TRANSFORMATION

The future of air travel is here. Already over the last few years, we have seen a significant shift towards more convenience for travelers, from the booking process to crossing the border at their destination.

Through digital transformation, paired with the transformation of the air community's operational processes, a seamless, paperless journey is possible. It takes advantage of the comprehensive array of services that you offer to your customers without ever compromising your customers' natural wish for privacy and confidentiality. It will improve passengers' experience by reducing stress and waiting times, which in turn will lead your business to expand economically and shine on the international scene.

Today, the air transport community is experiencing unprecedented traffic growth. In 2018, airlines carried 4.3 billion passengers on scheduled services, an increase of 6.1% from 2017. This increase in passenger flow physically translates into longer waiting lines, from check-in to boarding, as well as flight delays.

Passengers today are often stuck in a repetitive cycle of waiting in line for long periods and repeatedly pulling their passports and boarding passes out of their pockets at multiple checkpoints in their journey. This increases their frustration and level of stress.

According to the latest projections, the number of travelers is going to double in under 20 years. The air transport community does not have enough time and resources to expand their infrastructures and it does not have the capacity to double the space already used by airports. To overcome this situation, it needs to optimize the use of existing infrastructures. A key solution is to implement new passenger processes: a change in focus from the masses to the individual and from the world of physical identity to the world of biometrics.

"Since infrastructure projects are costly and often disruptive, a data-driven understanding of future demand [...] provides airport planners and investors with the necessary information to build effective development strategies"

Angela Gittens, ACI World Director General


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"The world needs to prepare for a doubling of passengers in the next 20 years. It's fantastic news for innovation and prosperity [...]. It is also a huge challenge for governments and industry to ensure we can successfully meet this essential demand"

Alexandre De Juniac, IATA's Director General and CEO

CURRENT STANDARD PASSENGER PROCESSING OPERATIONS:

Departure

- Authenticate passenger
- Verify ID for bag drop
- Verify boarding pass at security
- Check rights to leave country
- Verify identity & boarding pass at boarding

Transfer

- Deplanement
- Check rights to enter another plane
- Issue travel document (BCBP)
- Check boarding pass at security
- Verify identity & boarding pass at boarding

Arrival

- Deplanement
- Check rights to enter country
- Check rights to pass customs

START YOUR DIGITAL TRANSFORMATION NOW

Current manual controls are not 100% foolproof. A global approach is needed when introducing automation and self-service at all required touchpoints. The ability to share trusted data between various stakeholders is key to simultaneously enhancing the passenger experience and making the process more efficient for everyone.

For airlines, it will make boarding swifter and more efficient, enabling passengers to take off and arrive at their destination on time. This, in turn, will enhance their reputation and image and strengthen customer loyalty – all of this without compromising security.

For airports, digital transformation will reduce passenger processing times on departures and arrivals as well as increase the quality of service and security.

Both airports and airlines benefit through:

› secure and fast passengers identification

› improved departure On-Time Performance (OTP)

› increased revenues (non-aeronautical or ancillary)

› optimization of resources, especially infrastructure and labor costs

› improved customer satisfaction and quality rankings (ASQ ranking or Skytrax) through a smoother traveler experience

› the opportunity to offer individualized services to passengers (for example a tailored retail offering which could increase revenues)

To enjoy all these benefits, three aspects need to work hand in hand in the digital transformation process:

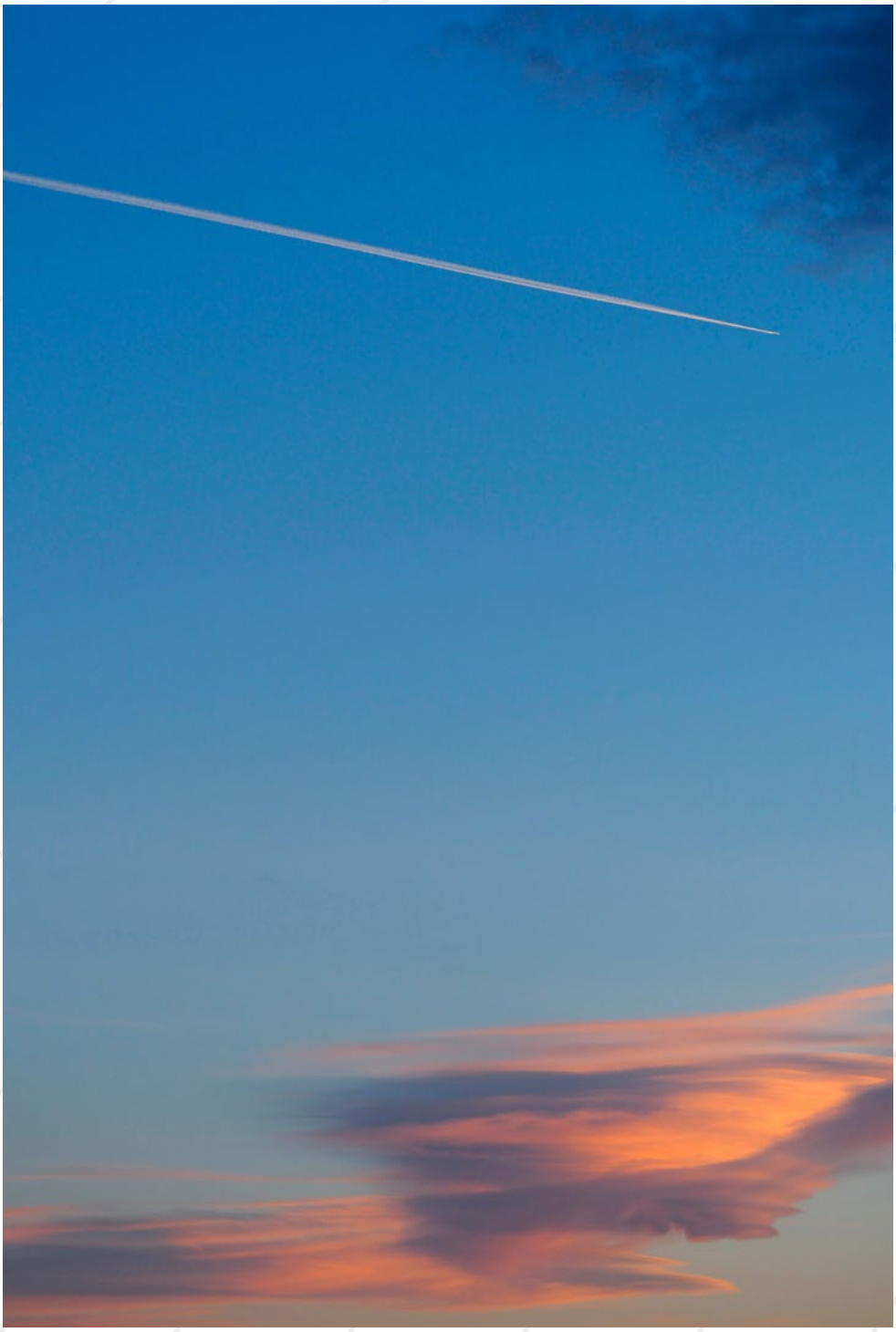
› Passenger enrollment

› Passenger identity management

› Data privacy and security

Passenger enrollment

Passenger enrollment is the cornerstone of passenger processing operations. It is where the digital transformation starts. It requires a reliable and genuine digital identity based on travel document authentication and control, coupled with biometric acquisition and matching. Passenger enrollment can take place **either remotely, anytime, anywhere** with travelers using their smartphones, or at the airport, for example at kiosks and self-service bag drop.



This digital identity becomes a secure, genuine single token that cannot be forged, exchanged or modified during the process.

In full compliance with privacy concerns, it contains all the relevant information needed at every step of the journey:

› Passengers' biometrics (up to three: face, iris, fingerprints)

› Passengers' travel document information

› Passengers' boarding pass information

By benefiting from the features of biometrics, the single token is as secure as can be. Why? Because biometrics is the only way that guarantees only you can be you. Whether it is face, iris or fingerprints, biometrics is what constitutes the safest, most accurate form of a passenger's identity. In this sense, it is robust, extremely reliable and genuine.

Passenger identity management

Upon the creation of the single token, passengers are identified at the different touchpoints of the airport journey – and they can be anticipated: no need to show any documents.

An effective identity management system is key for a frictionless and secure passenger journey. It integrates:

1. Single token lifecycle management

Near real-time passenger data collection and update is vital for effective operational passenger processing operations. Passenger information must be processed by a separate, reliable identity management service.

2. Reliable identity verification

Biometric authentication or identification verifies that the identity is genuine. Biometric authentication is about being able to authenticate a passenger's biometrics against a biometric identity that they claim to be theirs and that already exists somewhere. This so-called 1:1 match or verification is different from the 1:N match, or identification, where a traveler's biometrics are searched against a database of thousands of stored biometric data. For a biometric system to be successful for airport and airline operations, it has to be:

› **secure** with the latest anti-spoofing and cyber security capabilities

› **fast** to avoid bottlenecks and deliver as close a walk-through experience as possible

› **accurate** to avoid high false rejection or false acceptance rates

› **culture, age and gender proof** in order to simplify the process for both genders and every ethnicity

› **user-friendly** by minimizing the effort needed by the passenger to capture good quality data quickly, thus avoiding any inconvenience or unsettling experience during the biometric capture process

› **multi-biometrics ready (face, iris, fingerprints)** to accommodate even the most demanding use cases

3. Secure data sharing between stakeholders

For a whole identity management system to be truly frictionless and smooth, it has to be fully integrated and match the specifics of the different stakeholders' rules and processes. Furthermore, the solution has to be scalable, as it has to adapt to the different architectures already in place, and not the other way around. Stakeholders are not limited to airports or airlines. Airports and airlines do have travelers' data within arm's reach, but the next step is to render this data available to government agencies and the different stakeholders of a traveler's

journey (hotels, car rentals, other travel operators). It is about creating a network of stakeholders who can interact with one another and create an overall seamless travel experience.

Data privacy and security

A passenger's biometrics and biographical data has to be treated with the utmost care. Across the two leading actors in the social networking business, more than 90 million users saw their personal data exposed in 2018. Such breaches can have a devastating effect on a business's reputation not to mention the decrease in its share price. More than that, for passengers, having their data breached could lead to fraud and all sorts of malevolence.

Additionally, new legal frameworks (EU GDPR* for instance) on data protection come with their fair share of rights and duties. Stakeholders now have an obligation to put in place IT architectures that protect citizens' data. On the other end of the spectrum, citizens now have a legal right to demand that their privacy is honored, not forgetting that in case of data privacy violation companies may be subjected to fines of up to 4% of their revenue. It is therefore vital that the question of privacy be addressed. All of this implies:

- **Data retrieval:** Personal data shall be adequate, relevant and not excessive in relation to the purpose or purposes for which they are processed.
- **Data protection:** Biometric information must be managed according to the latest data privacy requirements and meet regulatory frameworks.
- **Data encryption:** Traceable data must provide the ultimate clarity and be signed and encrypted.
- **Data storage:** Personal data processed for any purpose or purposes shall not be kept for longer than necessary for that purpose or purposes.
- **Data consistency:** Agreed standards ensure that data captured from different sources and used in different processes is entirely consistent.
- **Anticipation and prevention:** The architecture ought to anticipate and prevent privacy-invasive events. This implies that data should be processed and stored in compliance with national regulations.
- **User rights management:** Appropriate technical measures shall be taken against unauthorized or unlawful access and/or processing of personal data and against accidental loss or destruction of, or damage to, personal data.

*General Data Protection Regulation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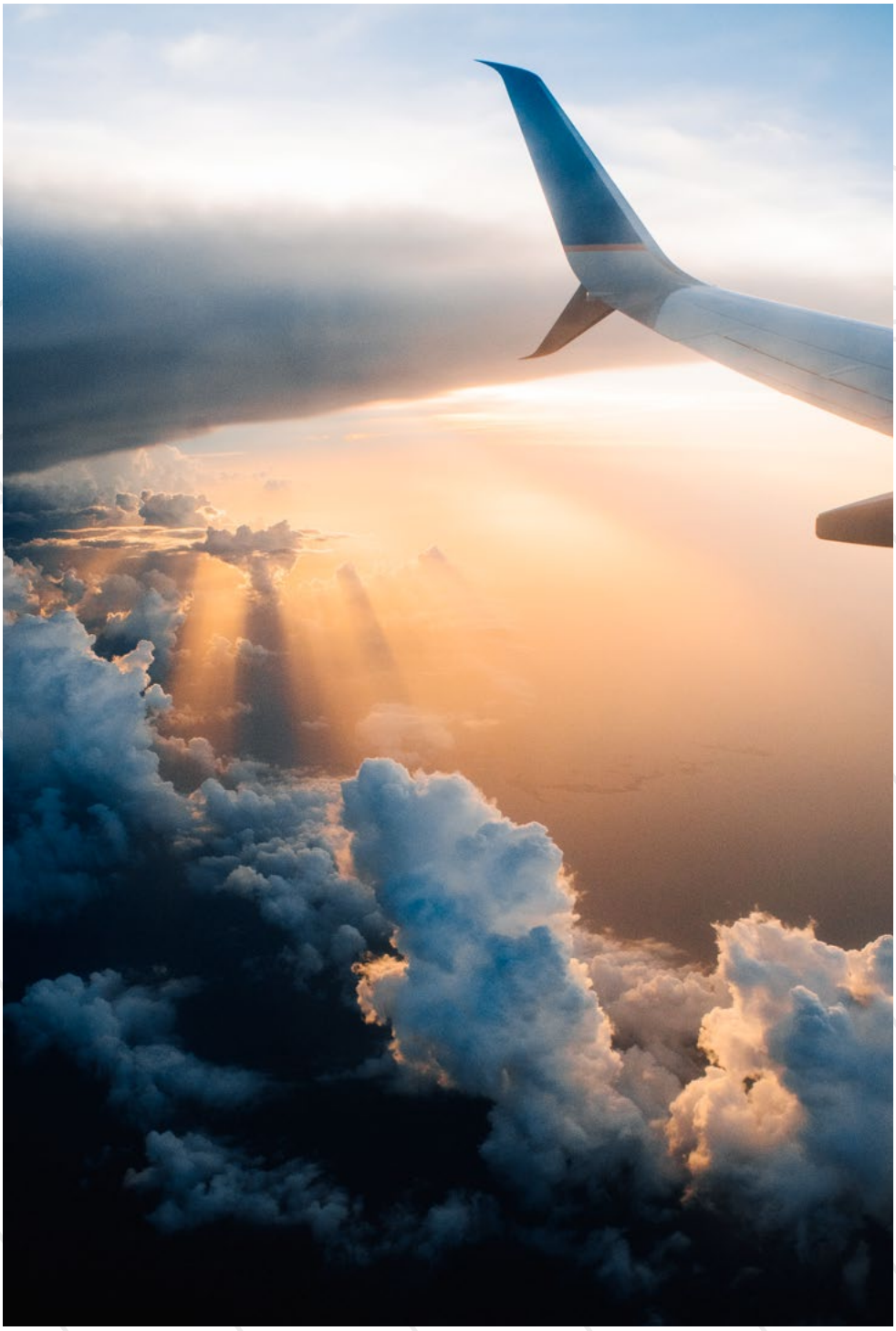


THE OUTCOME: A SEAMLESS JOURNEY

Based on our experience, we can draw a typical passenger's journey for you to have a clearer idea of what our solution entails.

Passenger enrollment: The tip of the iceberg

Along with travel document authentication, passengers can now use their biometrics to prove their identity, remotely or at the airport.

Multi-channel enrollment and touchless, multi-biometric capability are key for the passengers' convenience.

The enrollment phase represents the first part of the process. In this part, passengers will create the single token, which may be created at the self-service bag drop, kiosks or even from the comfort of the traveler's home. All of this can be completed straight from your biometric-enabled mobile app.

Once created, this single token will be the key to unlocking physical and digital doors throughout the journey.

› On-the-go enrollment

Passengers can register on their smartphones, from the comfort of their homes or on their way to the airport.

Start check-in in the airline app

Passport authentication

Liveness detection & ID verification

You are now ready to fly!

› At-the-airport enrollment

Whether at a kiosk, check-in counter or self-service bag drop, passengers can enjoy contactless biometric identification. They only have to look at the camera or wave their hand to enroll.

Identity management: The hidden part of the iceberg

While the enrollment pillar deals with the creation of the single token, the identity management pillar emphasizes the passenger experience using this single token.

› Airside zone secure access

With their single token, passengers enter the restricted area by simply waving their hands or looking at the camera.

› Automated border control and Entry/ Exit checks

No more queuing at borders! Passengers' risk profile and right to leave the country are checked in a few seconds. IDEMIA's multi-biometric solution is designed to improve passenger throughput and convenience while increasing security.

› Lounge access

Frequent and business class passengers can access the lounge through a single look or wave of the hand and enjoy VIP services until departure.

› Biometric boarding

Passengers can experience speed and convenience through the boarding process. With their single token, they just have to walk through the biometric eGate.

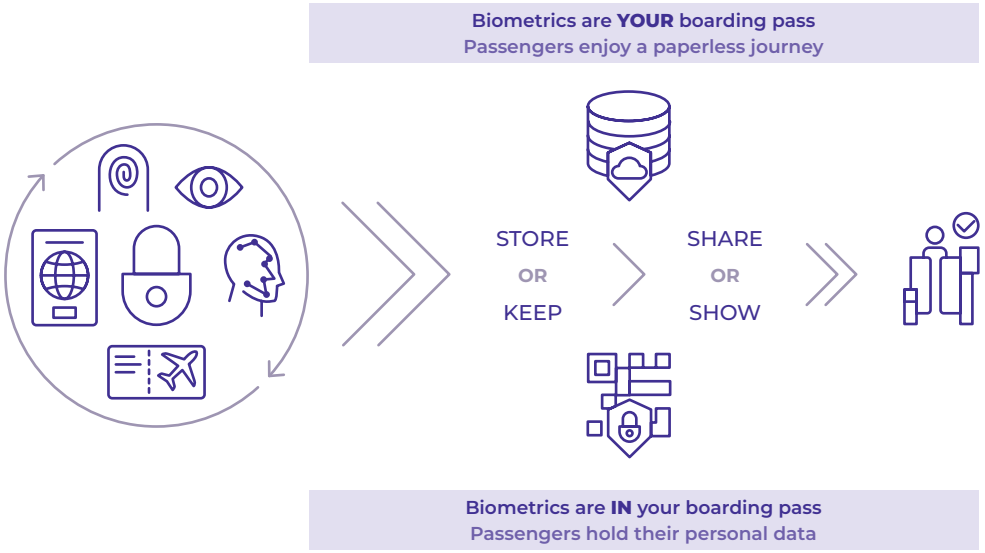
Data privacy

Data privacy is of utmost importance. IDEMIA's biometric boarding pass is completely GDPR-compliant and allows airports and airlines to let their passengers choose one of two alternatives:

› They can choose to let their biometrics be their boarding pass and enjoy a paperless journey.

› Or they can can choose to have their biometrics encrypted into a bar code. Passengers would have a physical document but still enjoy a stress-free journey with a digital trusted identity.

Regardless of the scenario chosen, passengers can be identified at every step of their journey, while being confident that their wish for privacy is respected.



YOU AND US

Depending on legal frameworks, and the privacy policies you want to put in place, we can work with you to set up a centralized database. We can also facilitate dialog with data privacy agencies in order for you to be able to deploy such a solution.

IMPLEMENTING A SEAMLESS JOURNEY

Offering a seamless journey to passengers at the airport will strengthen loyalty and make airlines and operators shine on the international scene. But what is needed to put such a system in place?

	AIRLINE & AIRLINE ALLIANCES	AIRPORTS & AIRPORT OPERATORS
Passenger enrollment	**To-Dos:** · Upgrade check-in app and collaborate with airports for biometric touchpoint integration **Benefits:** · More reliable information on your passengers to provide them with more personalized services	**To-Dos:** · Deploy/upgrade/retrofit self-service touchpoints in the airport **Benefits**: · Improve your KYC* strategy to promote better interactions during the journey
Identity management system (IMS)	**To-Dos:** · Worldwide staged deployment for all commercial networks **Benefits:** · Everywhere, the same experience for the passenger · Less risk to get fined for INAD** due to stronger identity checks · Increased customer loyalty with an unforgettable experience · Reduced boarding time and staff allocation · Identity services potentially available for other parties (local authorities, hotels, car rentals, travel agencies) · Act as an identity provider for other parties (local authorities, hotels, travel agencies...) to offer new added value services and widen your network	**To-Dos:** · Staged deployment terminal by terminal (or airport by airport) to mitigate risk on operation **Benefits**: · Speed up airlines' boarding to increase aircraft turnaround · Everywhere, the same experience in all terminals of all airports · Identity services potentially available for other parties (local authorities, hotels, car rentals, travel agencies) · Act as an identity provider for other parties (local authorities, hotels, travel agencies...) to offer new added-value services and widen your network · Increase airports' reputation and attractiveness

* KYC: Know your customer

** INAD: Inadmissible. Passengers have been or will be deemed ineligible for legal entry into a country.

YOUR QUESTIONS HAVE ANSWERS

As an airport, how will this be integrated into my existing systems?

We advocate for an easy update of the touchpoints. We add a service layer that is independent from existing government, airport and airline systems. You will be able to complete your usual passenger processing through your departure control system. This independence provides you with the opportunity to deliver new services. Our ID management platform is interoperable and easy to integrate into an existing IT infrastructure. It can be hosted in the airport or in the cloud.

How do I handle exceptions? How do you take care of travelers who do not meet age or height requirements?

We make available exception and intervention services from a desk anywhere and/or locally with a mobile app to support airport staff, and we have developed group processing services. This will ensure that every exception is taken care of, without interrupting the flow of passengers.

How can I deploy this solution?

The solution will evolve at your own pace. You can start with a proof of concept at one gate to try out the solution and ensure the hardware and the software work well. You may then move on to a more complete solution deployed terminal-wide, airline-wide or alliance-wide. Additionally, the solution we offer deals with both departures and arrivals: it is a true home-to-home journey. It delivers the ability to link arrivals to departures.

Will the airport operators have a clear general view of the different lanes and wait times?

Of course! It is paramount that the solution you choose comes with a display of all checkpoint lanes, boarding gates or access control points with current process time, wait time and key performance indicators. Additionally, a proper situation awareness tool should indicate bottlenecks, alarm levels, and prevent close-down of lanes for maintenance.

How can you be sure that a digital identity is safer than a physical piece of ID?

A trusted digital identity is the cornerstone of an effective passenger facilitation process. When it comes to remote registration, a passenger's identity verification must use numerous domains (watchlists, internet footprint, background checks, etc.) to perform evidence validation, identity verification and counter-fraud checks. This ensures the widest population coverage, a strong defense against remote identity fraud and a smooth, stress-free user experience.

Is there an alternative for countries that do not support the storage of biometrics?

An alternative option is to create a biometric boarding pass. This solution involves encrypting passengers' biometric facial data in their boarding pass barcode. This means that passengers are in full control of their personal data at all times and the airport can benefit from all the opportunities that a digital process offers. The biometric boarding pass solution meets all data protection requirements, is totally GDPR-compliant, and addresses the principles of confidentiality, as well as personal data protection laws and regulatory requirements. There is no risk that the biometric data could be extracted from the boarding pass and duplicated.

ABOUT IDEMIA

IDEMIA, the global leader in Augmented Identity, provides a trusted environment enabling citizens and consumers alike to perform their daily critical activities (such as pay, connect and travel), in the physical as well as digital space.

Securing our identity has become mission critical in the world we live in today. By standing for Augmented Identity, an identity that ensures privacy and trust and guarantees secure, authenticated and verifiable transactions, we reinvent the way we think, produce, use and protect one of our greatest assets – our identity – whether for individuals or for objects, whenever and wherever security matters. We provide Augmented Identity for international clients from Financial, Telecom, Identity, Public Security and IoT sectors.

With 13,000 employees around the world, IDEMIA serves clients in 180 countries.

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