



Touchless and Self-Service Technology

The background of the slide is a photograph of an airport security checkpoint. The image shows a white metal detector with a red light on the left and a white walkway leading through a black conveyor belt. The scene is overlaid with large, semi-transparent geometric shapes: a large green arrow pointing right, a large blue arrow pointing right, and a smaller green arrow pointing right. The overall aesthetic is modern and clean.

# TOUCHLESS & SELF-SERVICE TECHNOLOGIES

APRIL 2021

# The Scope of the Document

## Introduction

### Part One - High level Concept of Operations

### Part Two - Pilots undertaken or in progress

## Conclusion

The industry views the definition of “touchless” as providing an environment where documents are not exchanged, hardware is not touched, and passenger identity can be validated through use of biometrics and expansion of industry applications that enable digital identity.

AAAE's ACT Touchless Working Group is investigating the use of Touchless technologies within airports. At present, deployments within airports exist at both check-in and boarding gates and are directed by airline initiatives. There are also plans on behalf of TSA to incorporate touchless technologies into the Security Screening Checkpoints (SSCP) process.

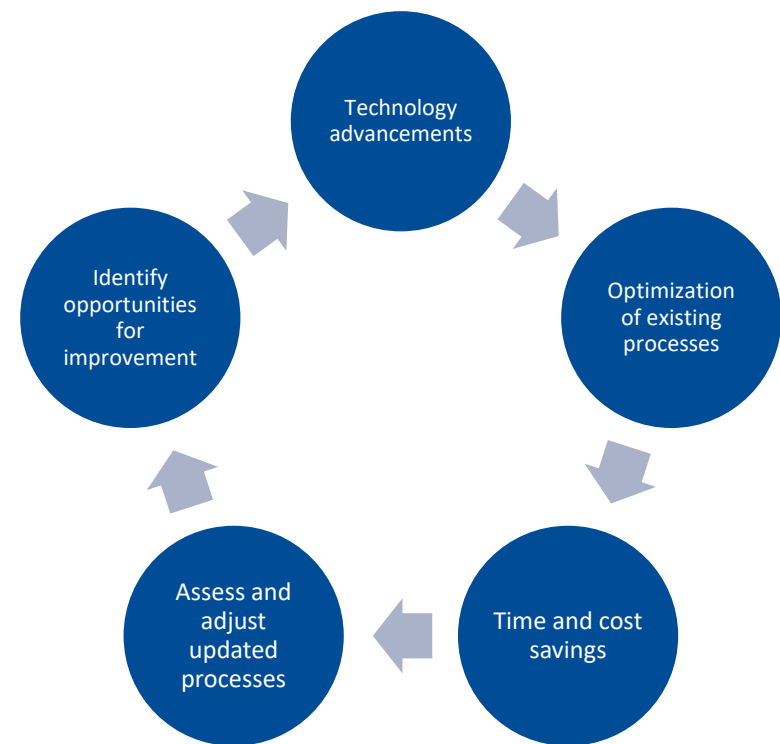
This document is intended to guide airports through possible touchless integration within their existing processes to create more efficient and sanitary experiences for passengers and employees alike.



# Background

Primarily for customer experience and time/labor savings, the collective aviation industry has been exploring touchless passenger solutions for some time. The current COVID-19 Pandemic has placed airports and airlines in an unsustainable situation and has accelerated the need for touchless solutions. This current situation impacts not only the traveling public but also airline and airport frontline staff and Transportation Security Administration (TSA) employees.

It is critical that the industry plans to enable solutions that will better position aviation for the future. Indeed, perceived “nice to have” innovations in commercial aviation have often matured into industry “need to have” standards through crisis. This paper speaks to enabling touchless travel through the airport as a key enabler to our emergence from the current COVID crisis as well as adapt to the changing technology landscape, with applications and benefits that are likely to set a new industry standard into the future.



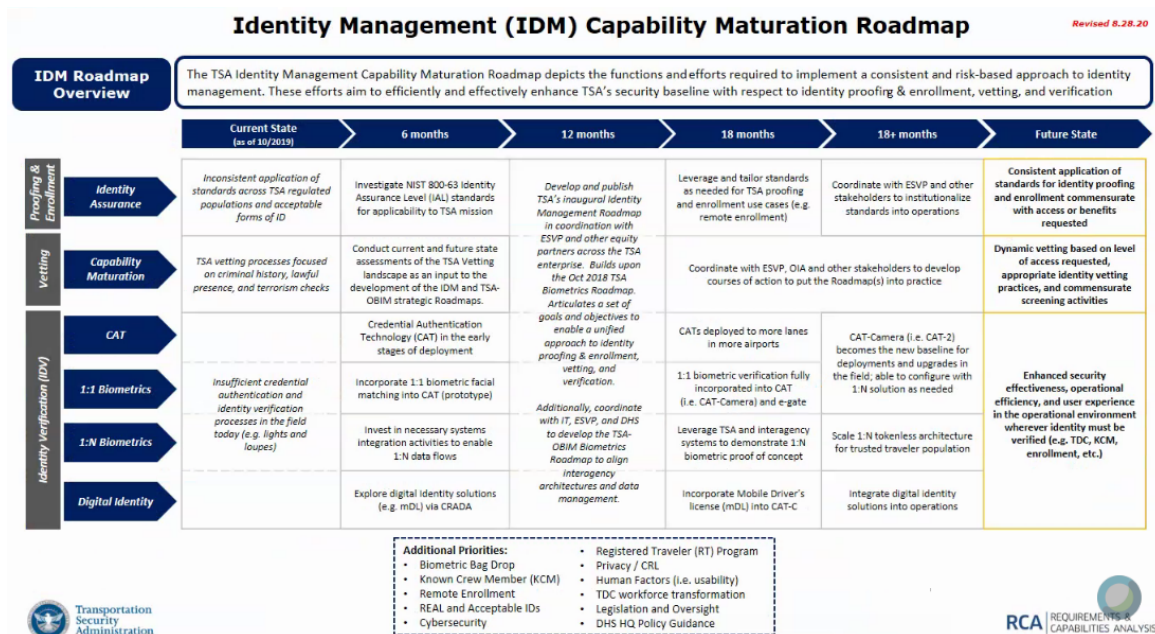
# PART 1 – CONCEPTS OF OPERATION

# Current TSA Identity Management Roadmap

The industry views the definition of “touchless” as providing an environment where documents are not exchanged, hardware is not touched, and passenger identity can be validated through use of biometrics and expansion of industry applications that enable digital identity.

The TSA is moving forward with the Credential Authentication Technology platform to validate self-reported data against the Secure Flight system and to incorporate biometrics in the future. Though roadmaps still include manual handling of government issued identification by the passengers with TSA hardware.

While biometrics enable a touchless environment, it is only one aspect of a touchless journey. The airlines have started to use Quick Response or QR technology to control hardware and eliminate the need to touch kiosks, self-bag drops, and other airline hardware used for travel.



# Digital Identity Management

ONE-TIME ENROLLMENT

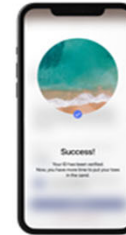
Enabling convenient & secure consent-driven biometrics sharing



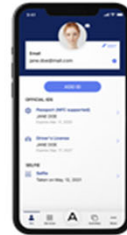
Jane  
Airside Customer



1. Jane downloads the free App and adds her passport and/or driver's license

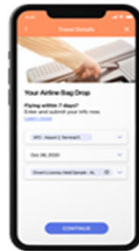


2. Jane's ID Documents are validated and biometrically matched

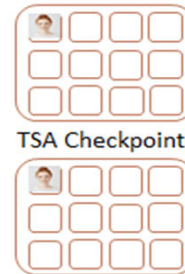


3. Jane's verified ID is added to her profile

POWERS MULTIPLE SERVICES



5. Jane consents to share her ID information and biometrics with her airline for one or more services

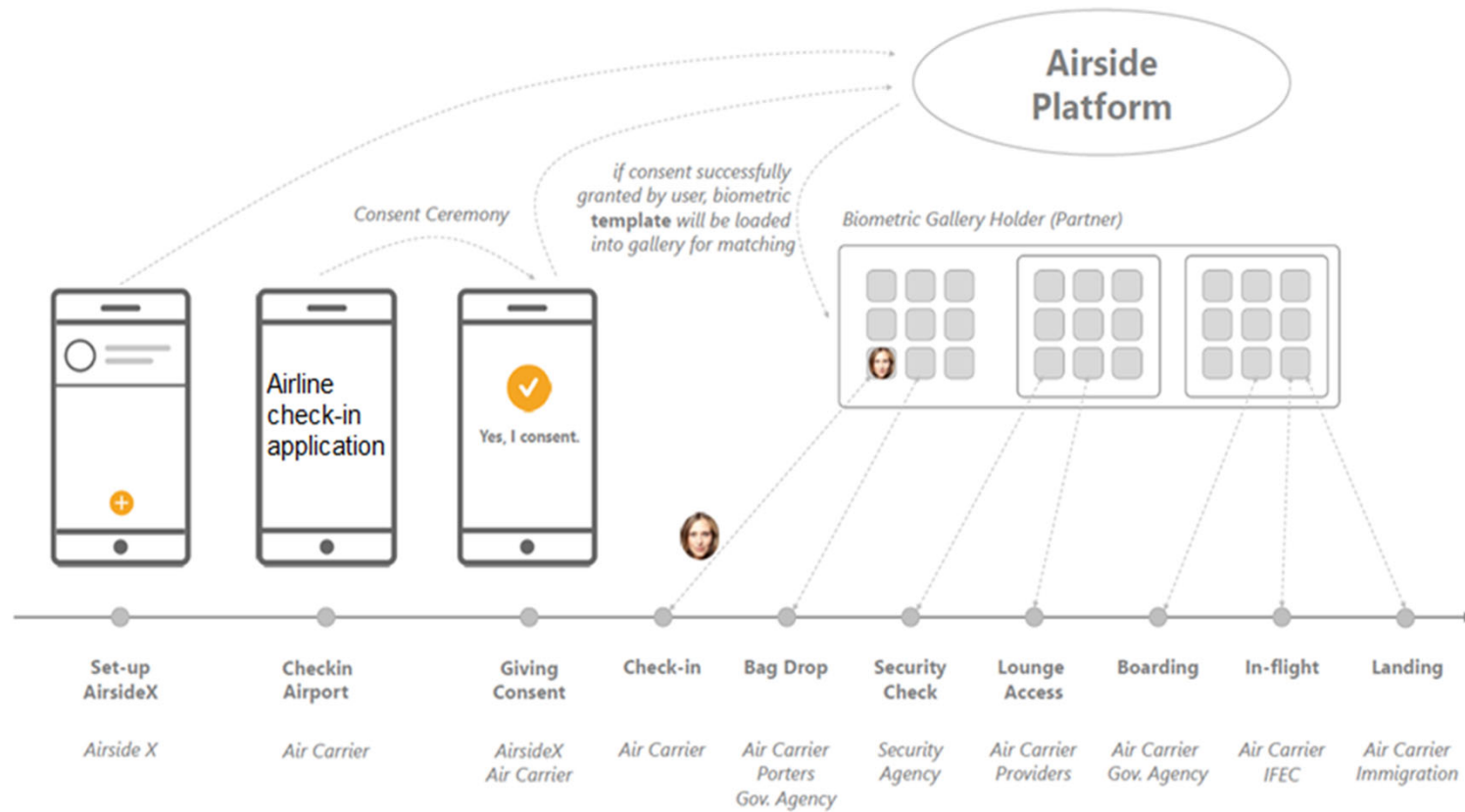


6. Jane's biometrics are accessible to the gallery for the consented time frame and purpose



7. Jane is successfully matched at camera for safe and secure access

# Identity Management in the Airport Customer Journey



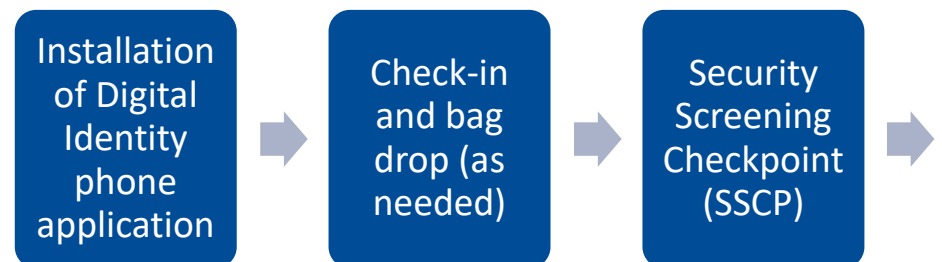
# Step One: Digital Identity & Airline Check-In

The existing process is largely manual and requires touchpoints with human physical interaction. TSA requires that a passenger's identity listed on a boarding pass be confirmed against their government issued identity document and that said document has not expired. This is completed by the airline when a bag is checked in and again when the passenger is processed by the TSA Document Checker (TDC). If a passenger goes directly to SSCP without checking a bag, their identity is confirmed by the TDC.

The industry would encourage TSA to allow software applications to validate the passenger's identity to their government issued identification document through biometrics, creating a digital identity. The software provider application completes all these steps allowing the passenger to be in control of when their digital identity can be used. The passenger will then determine when it is shared, and with whom it is shared.

The airline also is required to determine if the self-reported data of Secure Flight information in the booking is the same as those being used for travel. If not, the passenger data must be changed, sent to TSA, and a new boarding pass issued. This change is a qualified update to TSA.

Each software provider will have different methods of providing encrypted protection protocols for storage and sharing of the digital identity. TSA will need to provide Policy requirements for the application providers regarding the approval process. The TSA policy would provide the required process for biometric verification of an individual against their government issued identification, and the authentication process of the government issued ID. This policy should be consistent with policies that DHS has issued in other similar situations (registered traveler, biometric bag drop, biometric exit (CBP), etc.).

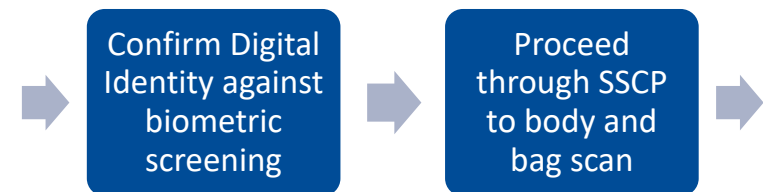




# Step Two: Security Checkpoint

For TSA security purposes, a digital identity tied into Credential Authentication Technology, enhances the security process. TSA could physically modify their checkpoints enabling a touchless electronic gate experience where the technology would enable passengers to enter sterile areas with TSA employees in secure locations, in the checkpoint area, overseeing the process but not requiring immediate contact with each passenger. Customers would utilize their phones and present a QR code to initiate the biometric process of identity validation, all without documents changing hands.

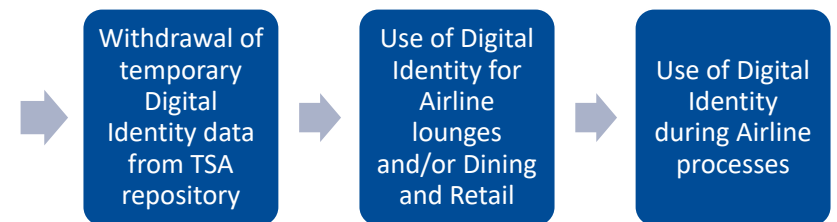
This requires broad thinking and a change in policy. This would transform the checkpoint into the checkpoint of the future enabling TSA to focus on security and not managing passenger queues. A redesign of the checkpoint could allow one TSO to manage a bank of e-gates, from a distance, promoting officer safety, reducing the density of the checkpoint, maintaining social distance, and having a positive impact on TSA's future budget.



# Step Three: Using the Digital Identity

With the digital identities stored in the temporary platform galleries, the application provider would download the digital identity into a Biometric Gallery for each airport to be used by touchpoint authorized providers of service at the airport. In the previous slide depicting the Customer Journey, seven different touchpoints are identified as points of contact within an airport. Each of those touchpoints, when authorized to use the digital identity, would download an encrypted data set of the passenger information to be used, eliminating all requirements for touching or manipulating any hardware, allowing access through that touchpoint, where the identity verification is required. Once the transaction is completed, based on business rules established for that transaction, the digital identity dataset would be withdrawn.

For airlines, this digital identity use would enable biometric identification at check-in kiosks, ticket counters, self-bag drops, lounge access, and boarding flights. Even baggage claim processing of lost luggage could be improved for airlines. There are also use cases that could be explored for point-of-sale services throughout the airport and inflight services.



## PART 2 – SUCCESSFUL APPLICATION OF TOUCHLESS

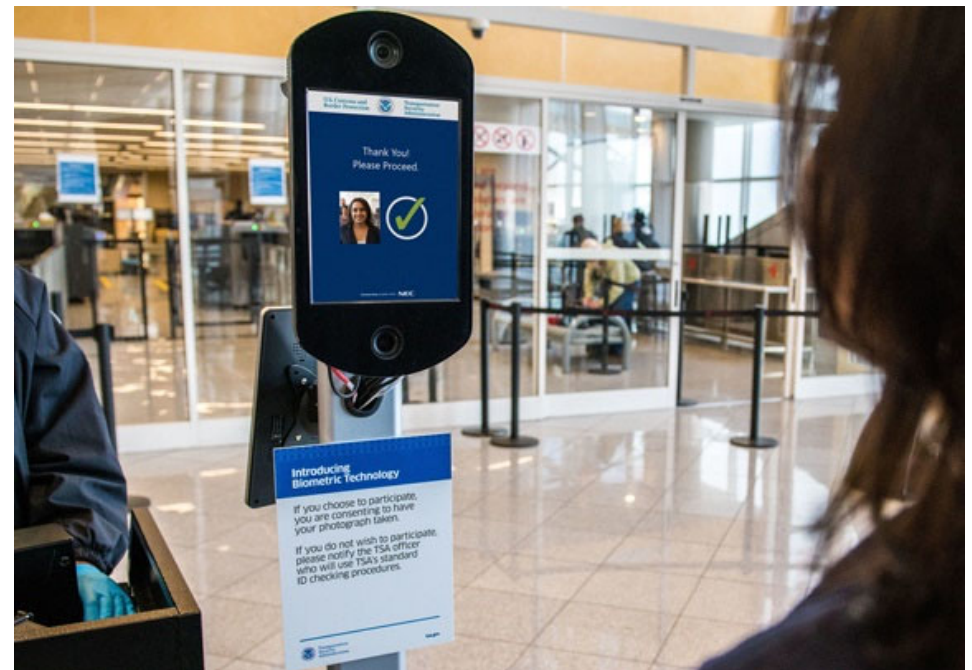
# Biometric Technologies

## 1:1 Facial Recognition

- Machines verify a live image capture against the image on a credential (e.g., passport or ID photo)
- 1:1 facial matching does not require a database of pre-staged images, since the passenger's ID contains the reference photo to which their live face will be matched

## 1:N (one to many) Facial Recognition

- Facial identification capabilities by utilizing a database of images
- This solution is currently being developed for the TSA PreCheck™ Application Program and CBP Global Entry Program trusted traveler populations. CBP's Traveler Verification Service is being utilized to compare a passenger's live image to gallery of pre-staged enrolled reference photos.



# Complementary Touchless Environments

- Allows the passenger to use hardware without touch
- Various solutions with differing ease of installation evaluated

## Gesture control



- Requires extra HW.
- Not intuitive.
- Not easy to use.
- Not suitable for all passengers.

## Touchless screen



- Screens (HW) replacement needed.
- Application screen to be adapted with big buttons.
- High cost.

## Voice control



- Increases atmosphere noise.
- Difficult to isolate if devices are close.
- Clear pronunciation required.
- Privacy concerns.

## Optical sensors



- Requires extra HW.
- Application to be adapted.
- Not recommended for complex functions.

## Smartphone



- SW solution, no extra HW needed.
- Remote installation.
- Web browser based, not extra app needed.
- Suitable for Android, IOS and other OS.
- As easy to use as the normal process itself.
- Highly cost efficient.

# Existing Examples of Biometric Use

## 1:1 Identity Matching

- Spirit Airlines LGA ORD Self-Bag Drop



- Delta Airlines MSP Self-Bag Drop



## 1:N Cooperation with TSA and CBP Using CBP/TVS

- LAX TBIT Gate Access Self-Boarding w/ CBP/TVS



- Delta Airlines MSP PoC w/ TSA



## 1:N Digital Identity PoC with TSA and American Airlines





# Case Studies – Spirit Airlines at LaGuardia and O’Hare

- System/Vendor: 1:1 and Materna
- Uses: Domestic and International passengers on all Spirit flights out of LGA and ORD using Passports and Drivers Licenses. Match in real time at self-bag drop
- Implementation Date: 1Q2020
- Expansion: 2021 to other airports in the U.S.



# Case Studies – United and San Francisco International Airport (SFO)

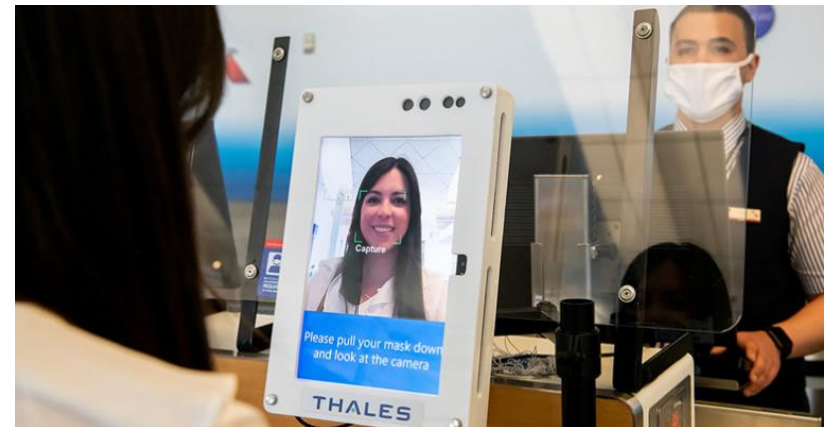
- System/Vendor: Facial Recognition/SITA
- Uses: Passengers on some domestic flights with United can link driver's license to their facial biometric at check-in
- Date Implemented: 2021
- Currently used for international boarding, plans to implement for domestic flights and expand throughout SFO





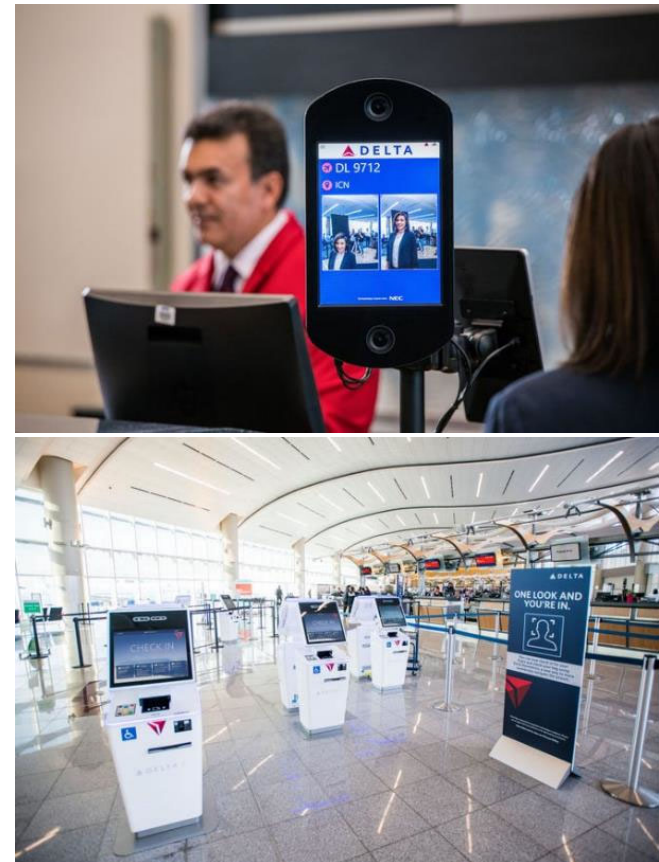
# Case Studies – American Airlines at Dallas Fort Worth International Airport (DFW)

- System/Vendor: Facial Recognition & QR codes/Thales
- Uses: Voluntary biometrics for baggage drop as well as Admirals Club access
- Data Implemented: 2021
- Testing for future biometric boarding
- Currently in Terminal D for international travelers with plans to expand
- No customer biometrics are ever stored after use



# New Pilots – Detroit Airport (DTW)

- TSA is testing a biometric facial identification to verify a passenger's identity at our security checkpoint using the Customs and Border Protection (CBP) Traveler Verification Service, which compares a live image taken at the checkpoint to a gallery of pre-staged photos that the passenger previously provided to the government (e.g., a passport or visa application).
- Used for Trusted Travelers only
- Existing use of biometrics within DTW at Delta Check-In and boarding locations since 2018
- Customers flying direct on international flights through Delta, Aeromexico, Air France, KLM, or Virgin Atlantic can begin using biometrics for:
  - Check-in at kiosks in lobby
  - Baggage drop off
  - Identification for TSA checkpoint
  - Boarding flight
  - CBP processing for international travelers arriving to the U.S.



# International Case Study: Single Token Solution

- Vendor: Vision-Box
- System: Orchestra Digital Identity Management Platform
  - A touchless and contactless passenger processing technology
- Use: Secured design, supply, testing, commissioning and maintenance of system at Kuala Lumpur International Airport (KUL) in Malaysia
- Technology: Software platform using block-chain architecture to further protect passenger identities
- Biometrics from check-in, baggage drop off, security, through to boarding



# Other TSA Pilots

## Self-service CAT with a camera (1:1)

- Ronald Reagan Washington Airport (DCA)
- Phoenix Sky Harbor International Airport (PHX)
- Indianapolis International Airport (IND)
- Miami International Airport (MIA)
- Volunteer passengers may choose not to have a photo taken by the camera but will still need to place their document in the CAT device for authentication.

## Facial Recognition

- Hartfield-Jackson Atlanta International Airport (ATL) International Terminal F
- Pilot provides alternative verification process for passengers when beginning screening at TSA security checkpoint
- Joint pilot with TSA and CBP providing end-to-end experience
- Optional process for international passengers to use biometric recognition for checking baggage

# Summary and Next Steps

- The ACT Touchless Working Group identified the need for the shared technology platforms implemented in key processes such as passenger processing and security to continue to evolve to offer improved flexibility and customer experience.
- The customers in this context are also the agents representing stakeholders such as TSA, CBP, and the airlines and the need for safe and efficient processes that leverage technological improvements.
- The airports, represented in the ACT working group and through the wider AAAE membership, are enthusiastic to collaborate as a group to help define and manage the implementation and support of standardized technology solutions that deliver improved customer experience, safety and security, in the interests of increasing the efficacy of U.S. airport processes.
- The security checkpoint process is one of the most challenging in any airport environment, and the airports represented in this ACT working group are committed to working together to seek ideas and solutions, and partner to test and prove these solutions in real world environments.
- The progress the TSA has made in implementing automated check-point processes, and the roadmap for further improvements in these technologies, including CAT-2 and Identity Management, are recognized by the airport community as enhancements that bring clear value in the current situation. We welcome further initiatives from TSA as the roadmap of solutions develops.
- In conclusion, this working group sees an opportunity to organize with a clear structure and leadership, to collaborate with TSA to accelerate the testing, piloting and roll-out of technologies and processes to continue to protect and improve the experience for agents and passengers.
- This approach has the potential to reduce the costs of implementation across the U.S. airport community, help with procurement and management processes, and ensure that our industry can move at pace to respond to the unknown challenges of the future, while maintaining the highest standards of security and efficiency in our nations airports, and we welcome the opportunity to enhance our collaboration with the TSA to achieve this.

**The Touchless and Self-Service Technology Working Group has been actively supported by a range of airports, terminal operators, and industry participants.**

**Airport Participants**

**Industry Participants**

**Leadership**



**Justin Erbacci**  
Chief Executive Officer, LAWA



**Paul Drury**



**Chris McLaughlin**  
Chief Operating Officer, Denver



**Gary McDonald**

**Working Group Members**



**Jodie Brinkerhoff**  
Vice President, Innovation, DFW



**Andrew Gibson**



**Paul Puopolo**  
Executive Vice President, Innovation, DFW



**Daniel Dunn**

**Martin Boyer**  
Vice President & Chief Information Officer, GTAA



**Steve Bennett**

**Pierre Lanthier**  
Director, Business Transformation, GTAA



**James Kissmer**  
Manager, Improvement & Innovation, JFKIAT

**Robert Bergman**  
Senior Manager, Operations, JFKIAT



**Ardene Blackhall, C.M.**  
Communications Engineer, LAWA

**Edmund Quintana**  
Senior Manager, Baggage Systems, JFKIAT

**Thierry Sarr**  
Project Manager, Strategic Operations, LAWA



**Eduardo Valencia**  
Chief Information Officer, MSP

**Grant Firestone**  
Special Projects Coordinator, LAWA



[AAAE.ORG/ACT](http://AAAE.ORG/ACT)

