VANDERLANDE

WHITE PAPER

Airport Passenger and Baggage Journey Changes

Contents

*Any references to "disinfection" are referring generally to the reduction of pathogenic bioburden and are not intended to refer to any specific definition of the term as may be used for other purposes by the U.S. Food and Drug Administration or the U.S. Environmental Protection Agency.

Summary

The ongoing health crisis is driving change within the airport ecosystem. Airports and airlines are forced to consider a future much different to the recent past. These changes present the industry with new opportunities to evolve their operational approaches to passenger flows and how checked luggage is processed. Understanding how these operational changes interface with the passenger and baggage journey is essential to successfully adapting to the ongoing health crisis. Vanderlande continues to analyze the processes surrounding the flow of passengers and their baggage throughout the travel journey. As a result of our analysis, we have identified essential changes in the passenger and baggage journey that will help airports and airlines make strategic operational decisions for the immediate future, 2021 and beyond.

Total estimated read time: 16 Minutes

The Starting Point

Passengers

Airports and airlines typically have a relatively consistent pattern of operations, with predictable daily and seasonal fluctuations. Since the significant security changes implemented following 9/11, the end-to-end passenger process has been relatively routine. The passenger and baggage journey have remained consistent for more than fifteen years.
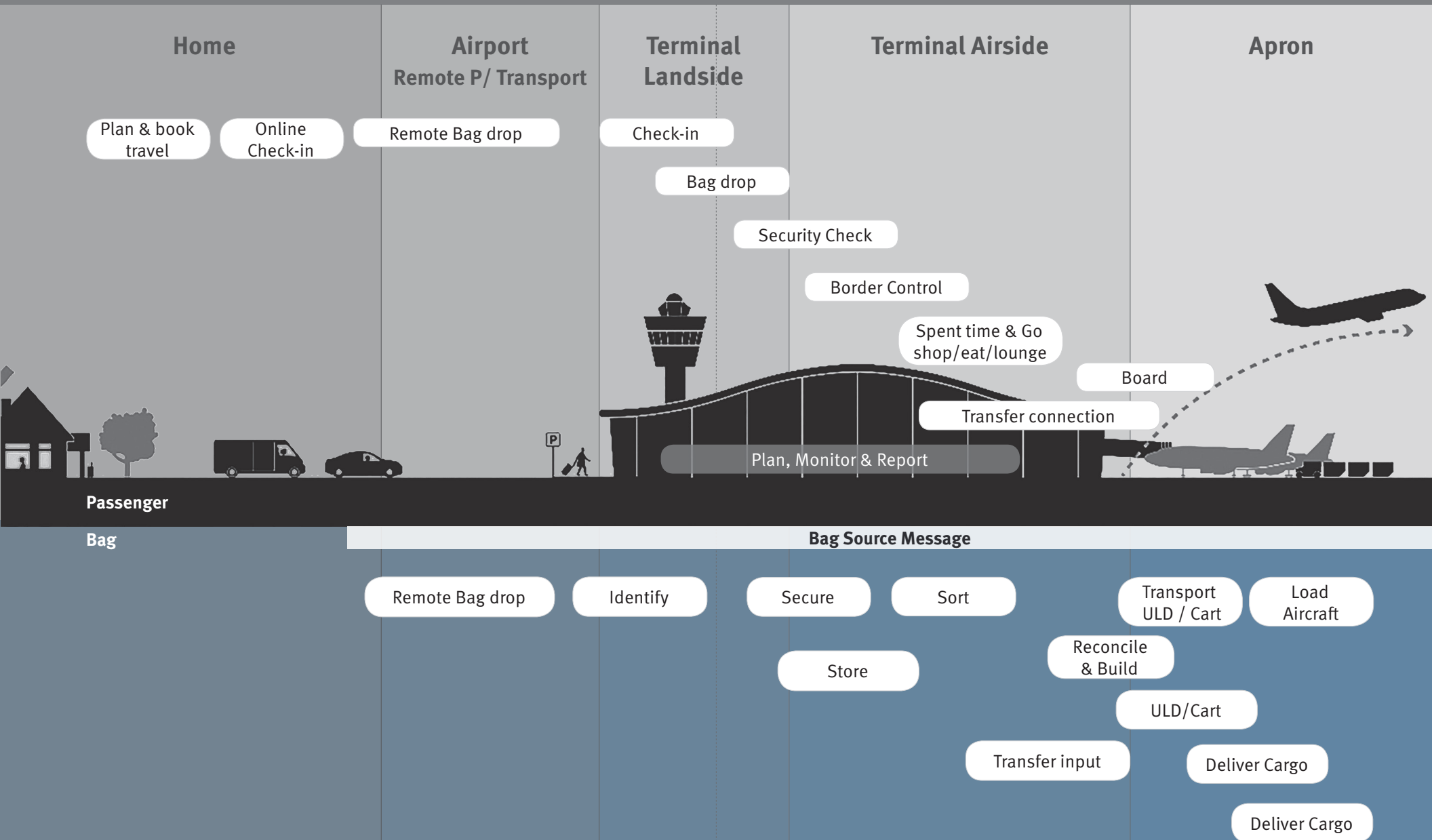
Prior to COVID-19, passengers could book travel online, use their mobile devices to check-in, use a self-bag drop or check-in kiosk, and move through TSA checkpoints without major disruption. The passengers' familiarity with the departure process ultimately led to boarding a flight and an 'on-time' departure. Likewise, passengers were familiar with the arrival process. They knew the process of transferring from one terminal to another, navigating to a connecting flight, and picking up their baggage from reclaim.
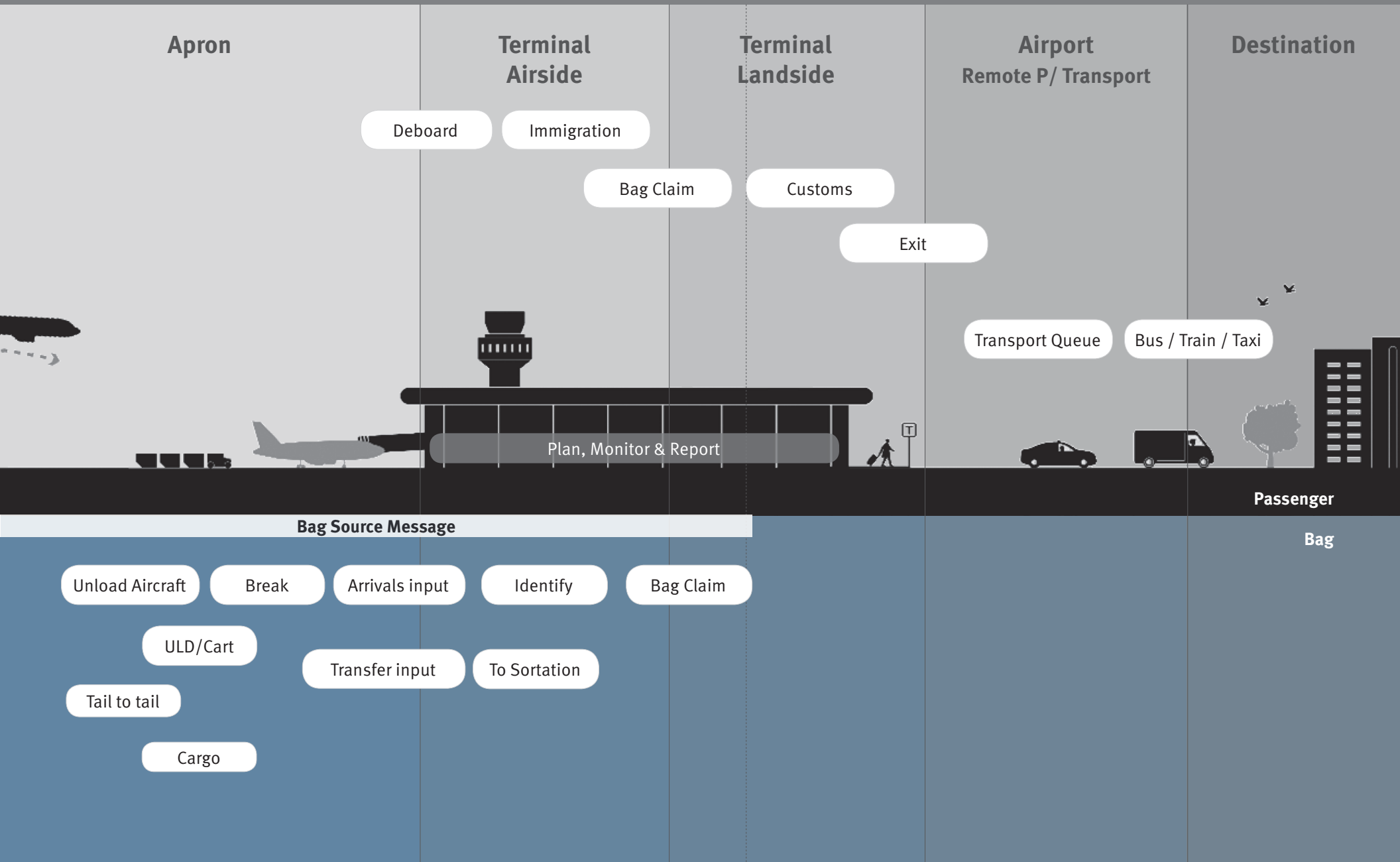
Baggage

Similarly, what goes on 'behind the scenes' with checked luggage has remained the same, including: bag tagging; reading of the tag by an automatic tag reader; screening for explosives or other prohibited materials; hand searching for prohibited materials; sortation to a makeup carousel; and finally, the bags being manually loaded onto the aircraft. The arrival of luggage at an airport is much simpler. After unloading the plane, bags are put in carts to be moved to either a transfer input for another flight, or brought to the arrival input where bags are placed on conveyors that move them to claim carousels so they can be reunited with passengers.

Departure process: 2019

Home
Airport
Remote P/ Transport
Terminal Landside
Terminal Airside
Apron

Passenger

- Plan & book travel
- Online Check-in
- Remote Bag drop
- Check-in
- Bag drop
- Security Check
- Border Control
- Spent time & Go shop/eat/lounge
- Board
- Transfer connection

Plan, Monitor & Report

Bag

Bag Source Message

- Remote Bag drop
- Identify
- Secure
- Sort
- Store
- Transfer input
- Reconcile & Build
- ULD/Cart
- Deliver Cargo
- Transport ULD / Cart
- Load Aircraft
- Deliver Cargo

Arrivals process: 2019

Apron

Terminal Airside

Terminal Landside

Airport
Remote P / Transport

Destination

Deboard

Immigration

Bag Claim

Customs

Exit

Transport Queue

Bus / Train / Taxi

Plan, Monitor & Report

Passenger

Bag Source Message

Bag

Unload Aircraft

Break

Arrivals input

Identify

Bag Claim

ULD/Cart

Transfer input

To Sortation

Tail to tail

Cargo

Passenger & Baggage Process Changes 2020 - 2021

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Different areas within the airport ecosystem are expected to change

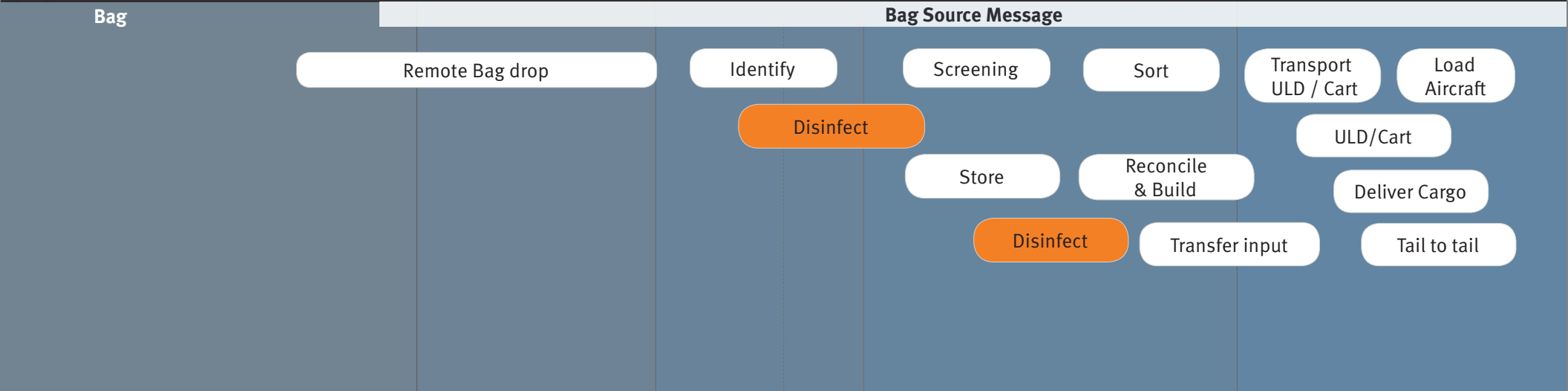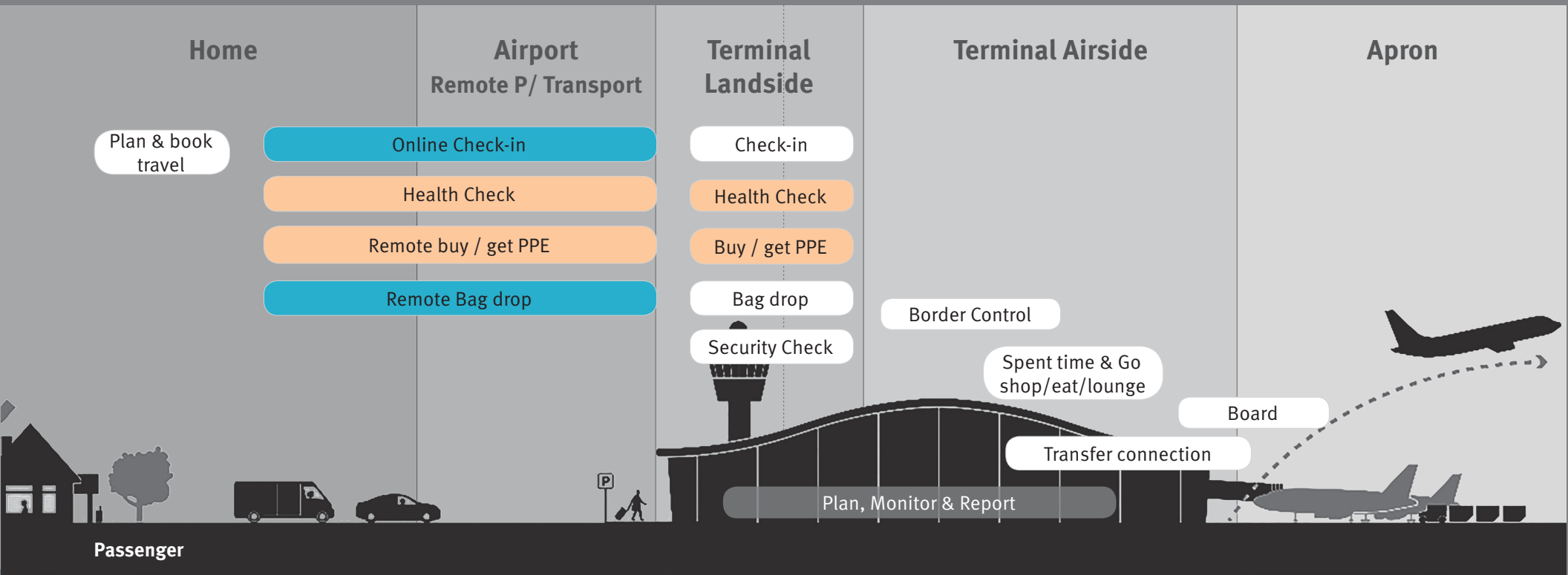Simpliflying "The Rise of Touchless Travel" Report 2020
https://simpliflying.com/guidance-airlines-covid-19/

The COVID-19 pandemic has, and will, continue to change the airport ecosystem drastically. Airlines, airports, passengers, staff, and supporting stakeholders can no longer operate as they did before COVID-19. The impact on the airport ecosystem and overall operations directly affects the passengers' end-to-end journey – requiring changes to the way passengers and their baggage move through the airport.

Airports must rethink their operational processes throughout the entire passenger and baggage journey. This means modifying current procedures and incorporating new ones. Airports and airlines must consider changes in several key areas: self-serve check-in processes; staffing and passenger flows; health screenings; social distancing protocols; and sanitation measures.

Departure process: 2020 - 2021

Home	Airport Remote P/ Transport	Terminal Landside	Terminal Airside	Apron

Passenger

- Plan & book travel
- Online Check-in
- Health Check
- Remote buy / get PPE
- Remote Bag drop
- Check-in
- Health Check
- Buy / get PPE
- Bag drop
- Security Check
- Border Control
- Spent time & Go shop/eat/lounge
- Board
- Transfer connection
- Plan, Monitor & Report

Bag

Bag Source Message

- Remote Bag drop
- Identify
- Screening
- Sort
- Transport ULD / Cart
- Load Aircraft
- Disinfect
- Store
- Reconcile & Build
- ULD/Cart
- Deliver Cargo
- Disinfect
- Transfer input
- Tail to tail

Online check in

To incorporate the necessary operational changes, airlines should consider expanding the online check-in process. By starting the online check-in process earlier, airlines can aid downstream planning in the airport terminal and the resultant processes. One factor that impacts these processes is personnel availability. The drastic decline of air travel and the resulting financial contraction have unfortunately necessitated a large airport and airline staff reduction.

Accommodating new operational procedures with reduced staff poses challenges. Allowing earlier check-ins provides opportunities for more efficient and flexible staffing options. This also serves as a means for all airport ecosystem employers to balance their staffing requirements with actual demand, while prioritizing safety for employees and the traveling public.

Self-Service

Airports and airlines can further augment their safety strategy by providing additional self-serve check-in options – such as remote self bag drops. Increasing the availability of remote bag drop locations on the airport campus will disperse passenger gathering points. For example, having a remote self bag drop point in a parking garage will allow and promote social distancing within the check-in process. Providing more self-service points earlier in the passenger journey will facilitate expedited travel throughout the airport terminal and improve processing efficiency while delivering significant cost savings to airport stakeholders.

"Touchless" touch points

Once inside the terminal, airports should consider 'touchless' biometric self-service options throughout the passenger journey. The use of touchless processing solutions can help reduce the spread of pathogens, thus encouraging customer confidence in air travel. By implementing biometric capabilities at check-in and bag drop, airports can decrease the opportunity for disease transmission.

Adding touchless processes to the passenger journey will reduce the use of traditional transactions with ticketing agents and the exchange of physical objects. Using touchless technologies also protects airport security operations personnel, such as the TSA. For example, utilizing biometric readers (i.e. facial recognition) for clearance through security checkpoints minimizes the need for physically exchanging items, therefore providing a more hygienic environment for both the traveling passenger and security agent.

Touchless technologies such as facial recognition, fingerprinting, and iris scanning have been available for years. The airport ecosystem has already started to adopt various types of touchless biometric exchange points, such as e-gates. The health crisis has created opportunities for the accelerated adoption of biometric technologies throughout the passenger processes, both landside and airside.

PPE

While the requirement to wear masks on planes has already been well-publicized by the airlines, sometimes passengers forget or may refuse to wear them. Many airlines and airports require some form of face-covering from the time the passengers go through security until they land at their destination. To promote mask adherence, some airports and airlines choose to make personal protection equipment (PPE) (i.e. masks, gloves, sanitization wipes, etc.) available for purchase at the airport or ticket counter check-in.

Security screening

The security screening process is not as autonomous as check-in processes. Inherently, the security screening process requires more human intervention. Checkpoints remain high-traffic areas where passengers must converge to get their hand luggage and themselves screened. With the proper protocols, safety features, and advanced technologies, increased human intervention does not need to translate to an increased health risk.

Implementing social distancing measures and physical barriers such as plexiglass between passenger stations and security operator stations will help passengers feel as safe as possible within the screening lanes. However, passengers still have to touch trays to divest their belongings. Airports can use UV-C germicidal light, such as the UV-C disinfection developed by Vanderlande, to safely sterilize the trays. These disinfecting array systems return disinfected empty trays to new passengers entering the security lane. Passengers can be confident that the tray in which they are placing their belongings has been disinfected just before they handle it.
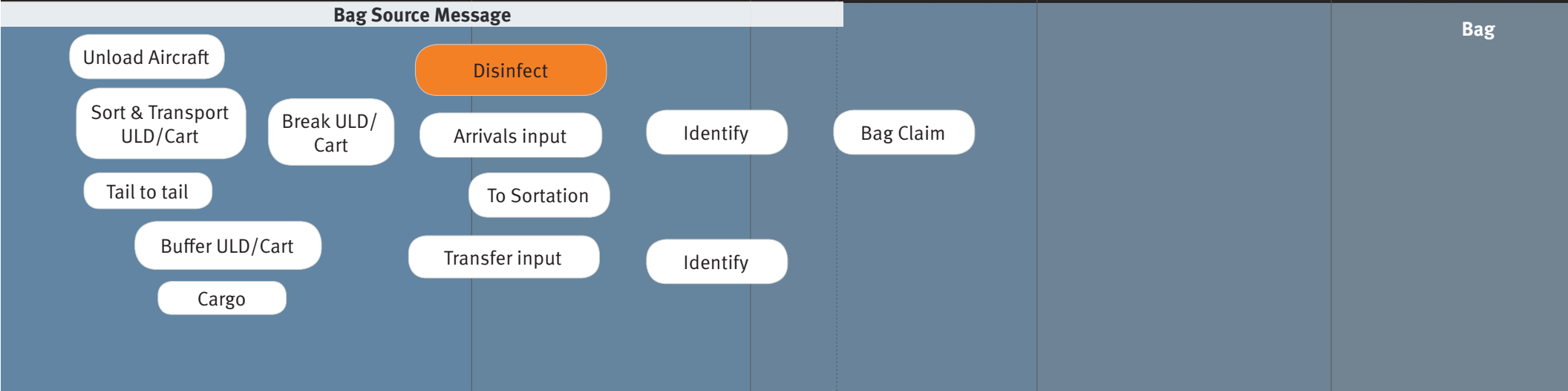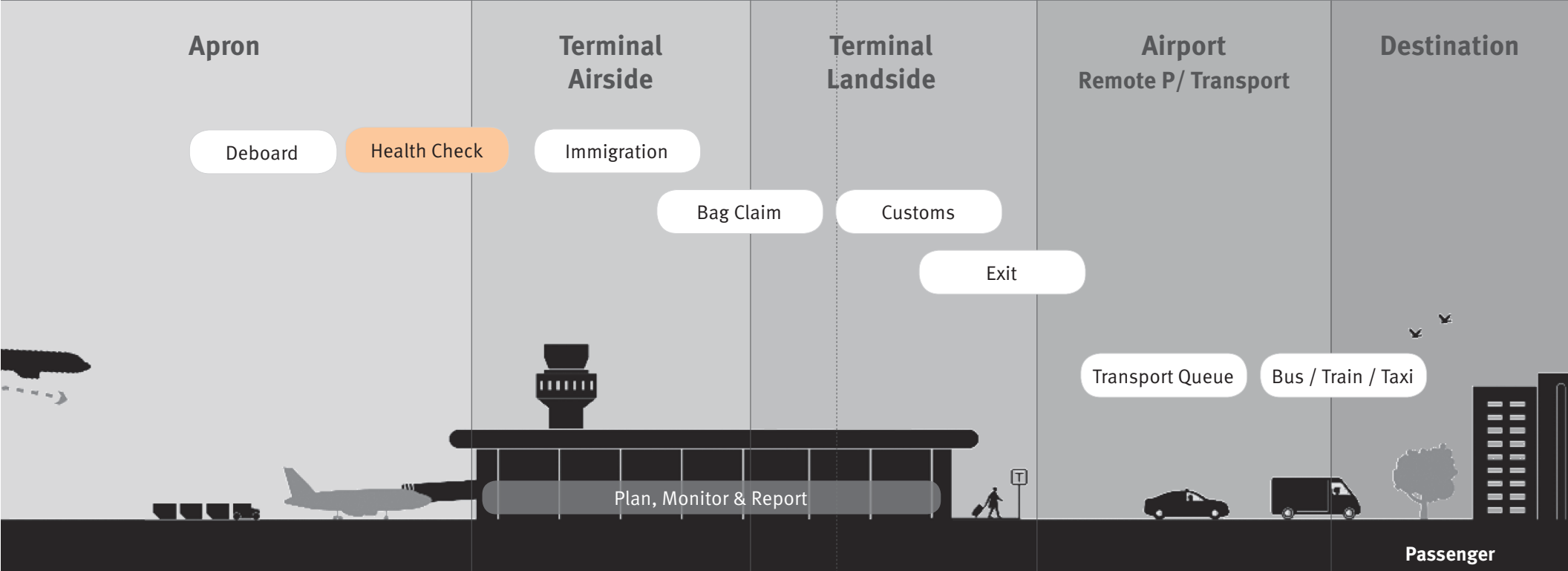
These disinfecting arrays offer airports an efficient and sustainable way to gain back passenger confidence while ensuring passenger and security safety. Additionally, the technology is available today with Vanderlande's Multiplex Screening Software, which allows remote viewing of each bag passing through the checkpoint. This software solution can significantly reduce the number of security agents needed to be physically stationed at the passenger checkpoint at any given time, lowering the exposure between passengers and security agents.

Baggage

As the passenger goes on their journey, checked bags are routed through the baggage handling system. There is a need to disinfect the bags and provide a higher safety level for airport workers and security officers who may be handling the baggage either at the ticket counter, in the TSA screening area(s), or loading the aircraft. Vanderlande believes that implementing the right disinfection protocols requires a holistic analysis of the airline's specific baggage system. A strategic sanitation solution may include a combination of misting stations and UV-C disinfection stations at various points in the system. Implementation of the disinfection processes is anticipated to be exclusively on airside baggage handling systems.

Arrivals process: 2020 - 2021

Apron	Terminal Airside	Terminal Landside	Airport Remote P/ Transport	Destination

Apron **Terminal Airside** **Terminal Landside** **Airport** Remote P/ Transport **Destination**

Deboard   Health Check   Immigration

Bag Claim   Customs

Exit

Transport Queue   Bus / Train / Taxi

Plan, Monitor & Report

Passenger

Bag Source Message

Bag

Unload Aircraft

Disinfect

Sort & Transport ULD/Cart   Break ULD/Cart   Arrivals input   Identify   Bag Claim

Tail to tail   To Sortation

Buffer ULD/Cart   Transfer input   Identify

Cargo

Passenger & Baggage Process Changes 2020 - 2021

Health checks

Upon arrival, disembarking passengers may face a new process, such as health checks. It is uncertain if these checks will only be needed for specific flights, such as international flights and those originating from a health hotspot, or all disembarking flights.

Baggage

As passengers arrive and make their way through the airport to baggage claim, the checked baggage is processed and prepared to be reunited with its owner. Arriving passengers want assurance that their checked luggage is clean. Increasing passenger confidence in clean and safe travel conditions includes a robust effort to disinfect arrival bags and communicating this process to passengers. A way of sharing the disinfection process with passengers may consist of displaying a video of the behind-the-scenes effort to disinfect baggage, or a detailed animation of the disinfection process. This type of communication provides clear evidence that the airlines are proactively providing a clean and safe travel environment, raising the traveling public's confidence.

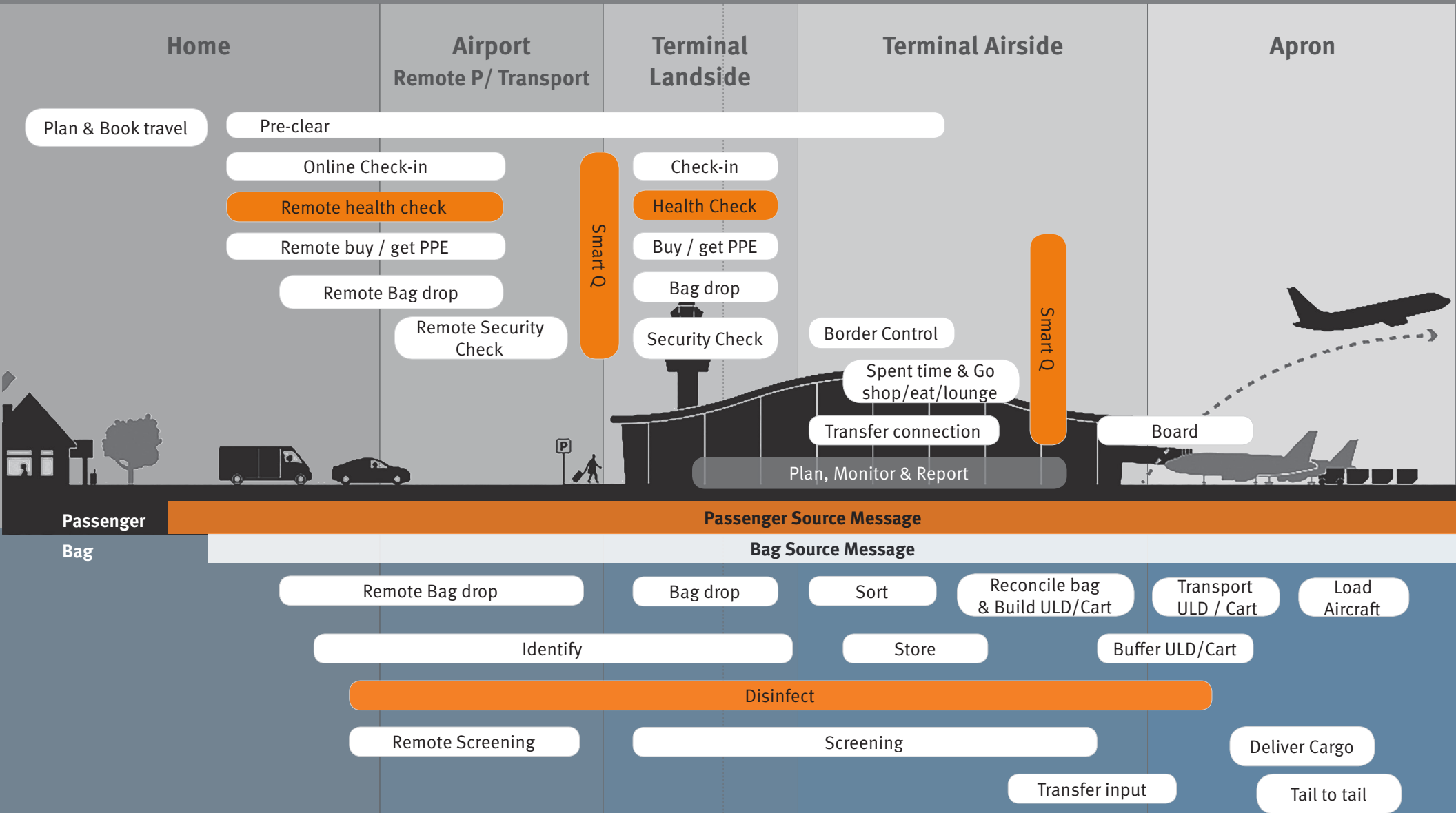# Passenger & Baggage Process Changes 2021 and Beyond

As the airport ecosystem begins to regain its footing, additional process changes are anticipated. When the volume of passengers increases, more effort will be required to ensure a clean and safe travel environment. Further enhancement and improvements of the passenger and baggage journey include advanced digital passenger tracking and process completion affirmation. Vanderlande anticipates that as the need for contact tracing increases, this trend will migrate into the airport ecosystem, requiring a more accurate record of the actions of passengers and their belongings.

For the foreseeable future, the need for social distancing will continue. However, building larger airport terminals is not the answer to this challenge. Having the capability to accurately predict when passengers will be at specific waypoints in the airport will enhance safety and security while maximizing space utilization within the airport.

Departure process: 2021 and Beyond

Home	Airport Remote P/ Transport	Terminal Landside	Terminal Airside	Apron

Plan & Book travel

Pre-clear

Online Check-in — Check-in

Remote health check — **Health Check**

Remote buy / get PPE — Buy / get PPE

Remote Bag drop — Bag drop

Remote Security Check — Security Check

Smart Q

Border Control

Spent time & Go shop/eat/lounge

Smart Q

Transfer connection — Board

Plan, Monitor & Report

Passenger — **Passenger Source Message**

Bag — **Bag Source Message**

Remote Bag drop	Bag drop	Sort	Reconcile bag & Build ULD/Cart	Transport ULD / Cart	Load Aircraft

Identify — Store — Buffer ULD/Cart

Disinfect

Remote Screening — Screening — Deliver Cargo

Transfer input — Tail to tail

Passenger Flow

As the ability to record the passenger journey becomes more advanced, the implementation of smart queueing will increase. Smart queueing will enable travelers to make 'reservations' for various points along their journey. Allowing passengers to select time blocks for check-in, bag drop, and their arrival at security checkpoints, airlines and airports will increase the safety and security for both passengers and airport employees. Airports will be able to leverage artificial intelligence (AI) technology to predict the passenger's location throughout the airport terminal. Consistently predicting the passenger's point along their journey can provide an improved experience.

Security

The local security authority will decide on changes to the passenger security checkpoints to ensure security layers are maintained. New security processes must be scalable and flexible to protect the traveling public and the airport ecosystem. Based on the current technology available, the widespread implementation of computed tomography (CT) based detection is inevitable. This has proven highly efficient and is adaptable for detecting a wide range of prohibited items.

While the remote viewing of images is available and in use today, such as Vanderlande's Multiplex Screening Software, this technology has not been widely adopted. Utilization of wide-area networks – which Vanderlande has already implemented at several international airports – will enable screening to be performed in an offsite, centralized screening room near the airport or even regional hubs. This solution allows airports to more efficiently manage screening through peaks and valleys, reduce costs, and increase security effectiveness through specialization. Implementation of these security elements will provide a layer of personal health and safety for both passenger and security officers, as more processing of the traveling public can be done from remote imaging locations.

Cohesively connecting these disparate technologies is a real challenge. As the need for digitization increases in the post-COVID-19 environment, a common platform to use the growing data, such as VI Connect, is critical. Getting usable 'real-time' data from the airport's ecosystem, and applying that information to improve the passenger journey will become increasingly important.

PSM

Our research indicates that collecting relevant data from the passenger journey requires establishing a new industry standard. Creating a 'passenger source message' (PSM) to collect information about the passenger journey is the first step to evolving the passenger journey of the future. Airlines and airports must agree on a method to share vital information related to each passenger while maintaining the privacy rights of the individuals who are traveling.

A PSM would be similar to the industry standard 'baggage source message' (BSM), which airlines currently use to track checked baggage along its journey. PSM could also be utilized as a contact tracing method within the airport ecosystem. PSM contact tracing would align with the use of mobile devices to notify an individual of any possible COVID-19 viral exposure. A PSM would affirm and time-stamp the completion of various stages along the passenger journey. As this data is compiled, the PSM could be utilized, in conjunction with AI, to improve the predictability of the passenger journey. By so doing, the PSM can route the passenger through designated waypoints.

For example, traveler 'John Smith' has checked-in online in advance of his departure from the airport. By leveraging information captured through the PSM and utilizing AI, the airport can forecast John's arrival at the airport terminal. By predicting his arrival, he can be assigned a lightly loaded baggage check-in location, which aids in maintaining social distancing throughout the airport check-in systems. Similar forecasting methods can be used to assign John Smith to specific areas throughout the rest of his journey within the airport ecosystem. Forecasting and assigning can be extended as far as the boarding gate, allowing John to arrive on time while maximizing his social distancing profile.

The PSM could also provide airport concessions with significant opportunities to service passengers. To support health and safety measures, many airlines no longer provide meals or snacks during

flights. Passengers must arrange their own provisions. As John moves through his journey, he can reserve food for pickup at specific times within the airside airport terminal. The convenience of scheduling a food pickup will increase his level of satisfaction with a clean and timely experience. Additionally, this becomes a means by which airport concession revenues can be enhanced.

Further process enhancements could become available with the adoption of PSM. As an example, risk-based screening could be enhanced by providing a comprehensive profile of the passenger. Integrating enhanced passenger data with real-time security status of checked baggage, security checkpoint affirmations, and approval to board via e-gates at departure lanes will be achievable.

Arrivals process: 2021 and Beyond

Apron	Terminal Airside	Terminal Landside	Airport Remote P/ Transport	Destination

Deboard

Smart Q

Health Check

Immigration

Smart Q

Bag Claim
Bag Claim
Bag Claim

Customs

Meet & greet & Exit

Smart Q

Transport Queue

Remote Bag Claim

Bus / Train / Taxi

Plan, Monitor & Report

Passenger Source Message
Bag Source Message

Passenger
Bag

Unload Aircraft

Disinfect

Sort & Transport ULD/Cart | Break ULD/Cart

Arrivals input | Identify

Bag Claim
Bag Claim
Bag Claim

Remote Bag Claim

Tail to tail

To Sortation

Buffer ULD/Cart

Transfer input | Identify

Cargo

Baggage

Currently, the available technologies dictate operational decisions that affect the passenger baggage reclaim process. With few exceptions, all checked bags from a specific flight are routed to a single baggage claim unit. Having a single point of collection often results in crowding as passengers wait for their luggage. This crowding is completely contrary to the recommended, and sometimes mandated, social distancing required to support passenger safety.

A distribution of baggage will need to be made to practice social distancing in baggage claim areas. This distribution will require a form of electronic messaging to communicate with and advise the passenger of the arrival location of the checked bag. This messaging could be amobile device app, connected with the PSM (defined earlier). This type of scenario can create distribution of a single flight arrival to multiple carousels.

For example, distribution could split a flight into three separate groups alphabetically, with each group being assigned to different baggage arrival carousels. Using current infrastructure, this solution would require arrival baggage to be physically sorted. While this could be done manually, adding automated sortation for arrival baggage to the airport would be recommended to ensure a positive customer experience.

Conclusion

To restore customer confidence in flying, a report by airline strategy firm SimpliFlying predicts that over 70 different areas within the airport ecosystem are expected to change or be developed from scratch. Determining which changes to the airport ecosystem should be temporary and which should be permanent can be a challenge. With financial constraints, uncertainty, and a crisis of passenger confidence, the need for strategic planning and forecasting is more significant than ever.

The complexities of adapting an existing airport ecosystem to accommodate the necessary changes brought on by the COVID-19 health crisis require insightful analysis on an airport-by-airport basis. Implementing the right operational approaches and technologies in this ecosystem, enables airports and airlines to make strategic decisions that will help them navigate the present challenges and promote success beyond 2021.

Key Takeaways

› Airports must partner with an experienced global provider to build a flexible and strategic operational plan.

› A one-size-fits-all solution does not exist.

› Airports and airlines must act now to help secure consumer confidence.

› Airports and airlines must evolve to ensure that they are well positioned when the demand for air travel inevitably returns.

› Data and technology will be key to adapting to the post-COVID-19 environment.

› Passenger confidence depends on the airports' and airlines' dedication to health and safety.

› Analyzing the passenger journey is key to implementing operational changes that will improve customer confidence.

› Low-tech solutions can be leveraged during the transition to more permanent solutions.

› Use PSM to create a more efficient and enjoyable journey for passengers.

› Increase the use of self-service processes.

› Invest in technologies that will integrate disparate aspects of the airport ecosystem.

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