SWANSON RINK

Passenger Induction

The airport is a portal to a whole new world that opens up the second we step foot into an airport. Unfortunately, the illusion of easy transport dissipates when the passenger sees the endless amount of lines necessary just to make it to the gate. These long lines are repeated throughout the entire airport journey starting from bag drop and check-in, to security, and even on the automatic people mover.

Current Conditions

According to the Transportation Security Administration (TSA), in 2016, TSA officers screened 738,318,264 passengers (more than 2 million per day), which is an increase of 43 million more passengers than screened in 2015. In addition to screening more than 738 million passengers, TSA officers also screened 466 million checked bags and 24.2 million airport employees. The numbers are only expected to increase in 2017, challenging TSA, the airlines and the airports to manage this disparate process. The long lines are a result of three different entities currently involved in passenger induction, including:

The passenger experience today falls short of the expectations of even the ordinary traveler. Each of the above processes has a domino effect on the others, and can be especially frustrating when one of them does not function properly. Air travel of the past reflected the look and feel of a concierge experience. Today, it has evolved into an unmanageable fragmented affair, with the average traveler facing multiple queues and challenges.

Methods to Improve Travel Conditions

Travel should be an end-to-end positive experience, seamless, secure and efficient. The process should enhance the entire journey from the first step until arrival at the ultimate destination. The airport should be an alluring portal of conveniences along the way, not an intimidating burden.

For fifteen years, the industry has struggled to balance the development of viable security processes and travel safety. For airports, airlines and TSA, the processes necessary have been a huge challenge, but the industry is now at a point where many of these separate imposing methods can be improved, streamlined and yes; even made a part of a seamless journey for the traveling public. There is an opportunity to improve airline, airport and TSA processes; reducing costs, increasing productivity, and ultimately improving service to passengers.

The International Air Transport Association's (IATA) Fast Travel Program is intended to address this fail process. IATA identified six areas for improvement:

1 | CHECK-IN

2 | BAG DROP

3 | DOCUMENT CHECK

4 | FLIGHT RE-BOOKING

5 | SELF BOARDING

6 | BAG RECOVERY

Industry experts contend that other areas to be added to the IATA list include: Bag-tagging, security screening and transport within the airport. Historically each of these processes has been addressed independently, mainly because different stakeholders are responsible for each of these areas and they continue to be segregated.

More recently, there have been a number of innovations directed at each of the separate processes. These include the now ubiquitous smart phone boarding pass, automated baggage and checkpoint validation, self-tagging kiosks, automatic bag drops, automated screening and automated boarding gates.

In addition to these technologies, there is also software-driven wait and travel time data, as currently promoted by a number of software and business service vendors. These solutions use the predictive power of big data mining software to monitor and forecast passenger numbers, so that enough agents, screeners, and other staff can be deployed at the right times and in the right places so that passengers can know where backups exist. All of these solutions offer information that can reduce tension to a point, but it only partially addresses the fundamental problems that clog major airports and aggravate travelers. Process Consolidation – Passenger Induction

As planners, architects and engineers, we should carefully consider combining these disparate and disconnected processes. The primary goal should be to streamline the overall travel process. It should be possible to create a seamless travel experience that reduces costs and liability for the Airlines and Airports, all while helping TSA meet their obligation to provide premier security. In order to accomplish this goal, we must first understand the overall process as well as the individual components.

Passenger Induction includes all of the processes that are necessary to allow a passenger to proceed to their departure gate. These include at a minimum: passenger validation, automatic bag drop and checkpoint screening.

Critical to understanding the entire passenger induction process at airports in light of today's reality, is first acknowledging the fundamental roles of each constituent. Passenger induction requires a fiduciary role for the airport and the airline. One of the most critical aspects of travel is the real or implied legal and ethical obligation to each passenger made by airports and airlines when they offer their services. The position of trust afforded the traveler and their property is an implied contract, but this contract is the basis for transfer of passengers and their belongings as well as cargo.

Thus the process of passenger induction is one of great responsibility, but also one fraught with risk. Both the airlines and the airport assume this responsibility as couriers, and the responsibility then flows to their surrogates or agents to all travelers. It is proper management of that risk that affords both the airline and the airport, as well as their surrogate vendors, the opportunity to make money. Along the way, they must all address traveler needs and expectations beyond mere transit. This is where the challenge of collaboration is magnified and made even more difficult.

Passenger Validation & Custody Transfer

The first step in passenger induction for air travel is passenger validation, and often the worst possible introduction to the travel experience. That initial experience needs to be intuitive and frame the remainder of the journey. Induction must fundamentally confirm that as a passenger, you are who you say you are and it is your personal property that you possess. Historically that validation has been a manual process where an agent of the Airline checks a government issued photo ID and compares the image to the person in front of them. Though this manual process is sufficient, most of the time it can be less accurate than an automated biometric approach. The technical part requiring validation of documentation and verification can be done automatically, and with at least the same degree of accuracy.

Technology today will allow passengers to reliably capture their travel document data (e.g. passport, visa, ID cards, driving licenses etc.) and automatically verify that the travel document(s) data is sufficient to comply with the destination and transit requirements. Systems deployed in Europe also scan the boarding passes and validate with biometrics boarding details. Suitable protocols, when accepted by TSA, will make the technology available in the US as well.

The Solution: Technology Integration

The key to overall process improvement is integration of these various technologies. Unification of these processes will require collaboration of all stakeholders and likely the creation of new protocols.
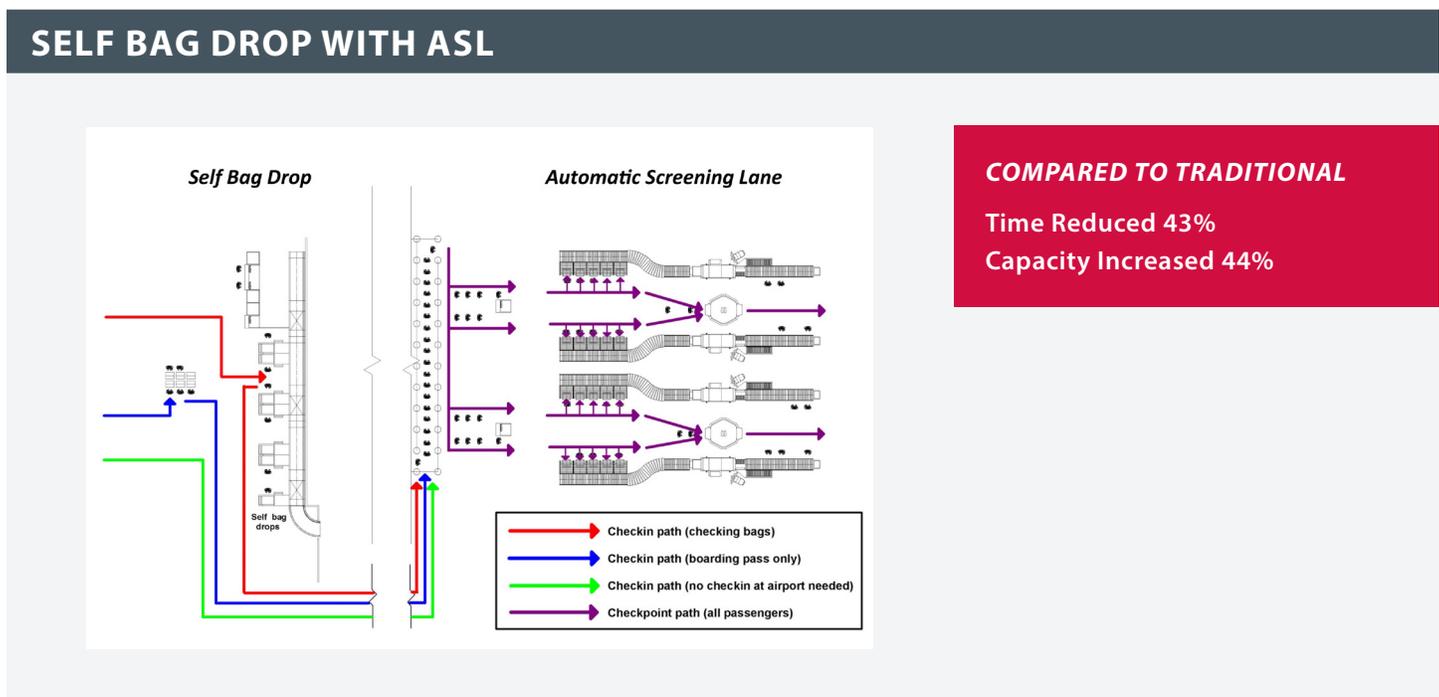
The integrated process starts with passenger validation. Upon entry to the airport the passenger would have two choices:

1. **If they have bags to check, then they go to a Self-tagging and Automated bag drop.**

2. **If they only have carry-on, then they move directly to an automated document checker.**

Passengers can self-scan their passport and boarding pass in either case, and then authorized access would be provided after biometric verification. The validation should only be done once, negating the need for multiple parties to provide ID validation; whether it is biometrically managed or directed by TSA. A touch-screen monitor at either type of kiosk would welcome the traveler with clear instructions and confirmation of status.
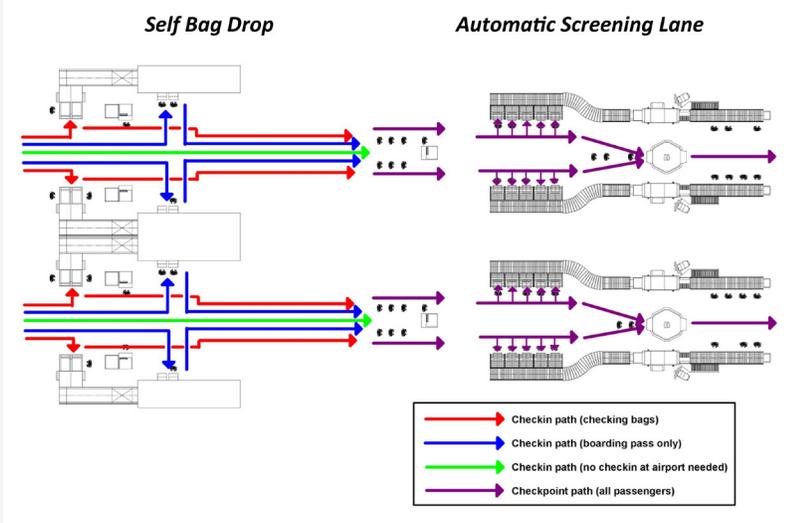
The next step is checkpoint screening. Here several stations are available for passengers; not one line where they have to wait for other passengers in front of them. After loading a bin with their possessions, each passenger pushes their bin directly onto an automated conveyor system that shuttles the bin to the screening machine. The passenger then walks through the X-ray screening or Advanced Imaging Technology (AIT) scanners. If a suspicious item turns up during X-ray screening, the bin is automatically routed to a separate conveyor via a Radio-Frequency Identification (RFID) tag on the bin. A TSA officer then checks the items in the bin with the passenger present. The empty bins are dropped onto a lower-level conveyor system that brings the bins back to the beginning of the lane for the next passenger's use.

Process simulations prepared by Swanson Rink strongly suggest that the combined processing for passenger validation, automatic bag drop and Automated Security Lane (ASL) - checkpoint screening can substantially reduce the overall process time and if properly designed, eliminate backups except for the absolute most serious systems failures. Passenger Induction should be minutes rather than hours to actually drop a bag, divest and walk through the scanner. The process would feel much more like boarding a train, with the enhancement of added security due to a higher level of ID validation.

SELF BAG DROP WITH ASL

Self Bag Drop

Automatic Screening Lane

Self bag drops

→ Checkin path (checking bags)
→ Checkin path (boarding pass only)
→ Checkin path (no checkin at airport needed)
→ Checkpoint path (all passengers)

COMPARED TO TRADITIONAL

Time Reduced 43%
Capacity Increased 44%

The overall process goal should be to improve flow and validation, and screening accuracy and reliability, all while reducing space and minimizing staff requirements. To accomplish this, the consolidated process must be simulated using real-time data; taking into account a broad range of failure modes for each sub-process and resource assignments. In addition, simulations have identified potential points where further improvements can be found.

LINEAR

Self Bag Drop   **Automatic Screening Lane**

Checkin path (checking bags)
Checkin path (boarding pass only)
Checkin path (no checkin at airport needed)
Checkpoint path (all passengers)

COMPARED TO TRADITIONAL

Time Reduced 40%
Capacity Increased 64%

Analysis so far indicates that there is a real opportunity to improve operations and reduce costs. Staff reductions can be made, screening reliability and accuracy improved, space for bag check, and screening can reduced, and most importantly, queues minimized if not eliminated altogether. Everyone wins. The airlines and airport cost go down. TSA can improve screening and reduce their staff and the passenger experience can be greatly improved.