Future of Airport Security

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Table of Contents

1. Introduction

Airports and aviation industry are among those with which on-site security is most critical. Secure air transport service enhances connectivity in trade, tourism, political and cultural links between States.

Primary objective of aviation security is protection and safety of **_passengers, crew, ground personnel, general public, aircraft and facilities_** of an airport serving aviation against acts of unlawful interference perpetrated on the ground or in flight, various combinations of measures and marshalling of various human and material resources are implemented at the appropriate level through various programmes.

If aviation security achieves its primary objective then the chances of any dangerous situation, illegal items or threats entering into an aircraft, country or airport are greatly reduced. Airport security serves several purposes such as protects airport and country from any threatening events and reassure the travelling public/country that they are safe.

2. Evolution

Airport security has existed throughout most of the history of aviation industry. But various events throughout history have led to heightened security for those travelling on board aircraft. When aviation security did arise as a serious issue in the late 1960s, there was a need to adopt an international framework for addressing acts of unlawful interference. ICAO assumed a leadership role in developing aviation security policies and measures at the international level, and today the enhancement of global aviation security is a key objective of this Organization. Provisions for international aviation security were first disseminated as Annex 17 to the Chicago Convention in 1974, and since then have been improved and updated 16 times.

The first record of a hijacked aircraft is in 1930, when a Pan American mail-plane was hijacked by Peruvian revolutionaries seeking to drop leaflets over Lima. Security-related incidents tended to be dominated by aircraft hijacking for several decades thereafter, usually by persons seeking expeditious political asylum, rather than political leverage.

International security approaches followed this trend, with the gradual introduction of magnetic screening devices aimed at detecting guns and other metallic weapons being carried onto airplanes.

The situation changed dramatically in the 1980s with the appearance of terrorist bombings of aircraft. Beginning with TWA #843 and culminating in the 1988 bombing of Pan American #103 in Lockerbie, radical organizations sought to create terror and call attention to their causes by the destruction of aircraft in flight. This development, coincident with the rapid development of electronic systems, ushered in the modern era of aviation security. Following the 11 September 2001 attacks in the United States, security was heightened worldwide as both regulatory influences and heightened awareness combined to create a massive demand for new security technologies. Rapid introduction of new products and technologies ensued and continue in the current decade.
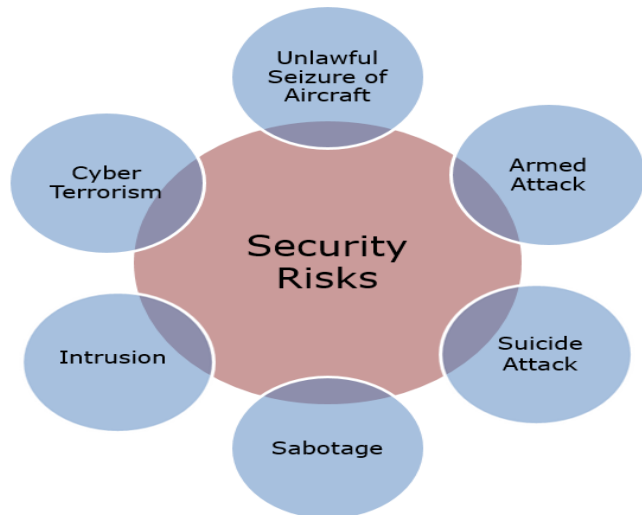
> **"Security"**
> Safeguarding civil aviation against acts of unlawful interference.
> This objective is achieved bya combination of measures and human and material resources.

3. Current situation of airport security

Airport security has witnessed various challenges over the years such as unlawful seizure of aircraft, armed attack, suicide attack sabotage, intrusion and cyber attack.

Aviation security is now increasingly relying on biometrics, big data, artifcial intelligence (AI) and behavioural analysis etc to mitigate aviation security risks.

This helps them reduce the workload of individual security staff and focus on high risk passengers and cargo.

- Current airport security system to mitigate the security risks include ***checkpoint, hold/hand baggage screening, access control and perimeter security technology.***

Checkpoint	• Metal detector (walk through and hand held) • X-ray Screening • Explosive Detection system
Hold Baggage & Hand Baggage screening	• Standalone XBIS (X-Ray Baggage Inspection System) • Inline Hold Baggage Screening System • Explosive Detection System
Access control	• Biometrics (Fingereprint scaneer, iris and facial reocognition) • Smartcard reader and credential technology. • Manned by seurity personnel (only aurhtorized personel are allowed)
Perimeter Security/Intrusion	• PIDS (Perimeter Intrusion Detection System). • Vedio analytics. • Fence mounted sensors.

"Historical Facts"

Sixty-nine acts of unlawful interference were recorded between 2011 and 2016. Twenty-one out of 69 incidents had fatalities (a total of 884 deaths). Facility attacks represented the highest number with 24 incidents (or 32 per cent), followed by unlawful seizure with 18 incidents (or 26 per cent), sabotage with 15 incidents (or 22 per cent) and other acts with 12 incidents (or 17 per cent). "Universal Security Audit Programme (USA) – ICAO"
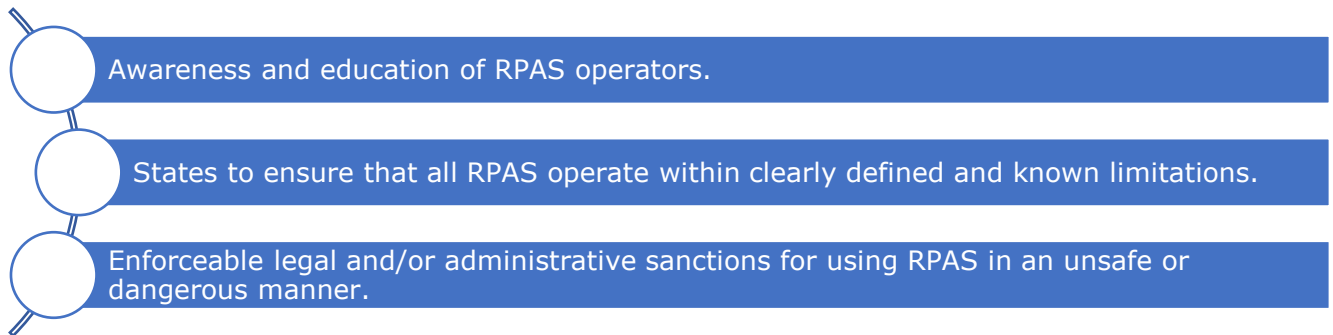
4. Challenges

4.1 REMOTELY PILOTED AIRCRAFT SYSTEM (RPAS)/DRONES

Remotely-piloted aircraft systems (RPAS), commonly known as drones, are increasingly used for commercial operations and recreational purposes. This has coincided with an exponential increase in reports of RPA operating dangerously close to manned aircraft and airports.As a result of growth in both commercial and recreational markets, RPA manufacturers and operators are seeking greater access to airspace, including that in which commercial aircraft are operating.

IATA highlighted the industry concerns during the ICAO High Level Safety Conference (HLSC) held in February 2015. These concerns are: Safety, security, spectrum, access to airspace, and regulatory considerations.

On 19 September 2018 – International Civil Aviation Organization (ICAO) Secretary General Dr. Fang Liu has concluded the UN aviation agency's "Unmanned Aviation Week" series of events, affirming the need for responsive regulatory frameworks to support the safe integration of unmanned air traffic innovations into the global aviation network. In this regard the Annex 1, provisions for the remote pilot licence were adopted last March by the ICAO Council, and that they are now available for voluntary use by States," she said. "In line with our ongoing No Country Left Behind (NCLB) initiative, ICAO has also begun to assist States in their effective implementation of this new guidance."

To ensure the safe operation of an RPAS, especially in close proximity to aircraft and airports there is a need for:

- ⃝ Awareness and education of RPAS operators.

- ⃝ States to ensure that all RPAS operate within clearly defined and known limitations.

- ⃝ Enforceable legal and/or administrative sanctions for using RPAS in an unsafe or dangerous manner.

> **Another concern is that drones might be used to launch a coordinated terrorist attack.**

4.2 CYBER ATTACKS

The perceived threats to aviation are more likely to be cyber threats than the conventional threats. Aviation industry is perhaps more dependent on technology than any other industry and crippling of one or more processes or procedures may be the immediate motive of a terrorist attack which may be a part of a larger sinister design and the complete consequence may not be apparent.

A cyber-attack may target:

Apart from the traditional IT infrastructure such as the email and the Internet, several potential targets for cyber-attacks exist within the realm of internal airport operations such as:

• Access control and perimeter intrusion systems
• Enabled aircraft systems
• Credential and Document management systems (CAD, blueprints)
• Radar systems
• Ground radar
• Network-enabled baggage systems
• Facility management
• Utilities
• Supervisory Control and Data Acquisition (SCADA)

Airport operations are so **inter-dependent and inter-connected** that a glitch anywhere can bring the airport to a standstill. We all directly or indirectly use the each other's' systems and more importantly DATA. The small information component from your office/ organization may be all that a terrorist outfit may need for a larger cause.

4.3 INSIDER THREAT

There is growing concern in today's world that an isolated few of those personnel we employ within our own operations could turn out to be the very people who target our industry and leave us vulnerable to an attack. Insider threats can take a wide variety of forms. They can be the sharing of sensitive procedures, attacks on information systems, smuggling goods or people into security restricted areas etc. If there is a way to cause damage or extract personal or financial gain, there is a vulnerability to an insider threat.

The new and emerging threats against civil aviation has become more worrisome because of the way and manner at which the laydown mitigating measures are being bye passed which cannot effortlessly be achieved without the connivance of "an insider" that is airport workers.

Potential Candidates of Insider Threat

- Airport staff.
- Stakeholder Airport Based Employees.
- Security Officers/ screeners.
- Law Enforcement Agents.
- Aircraft Crew Members.
- Disgruntled dismissed employees.

Factors that make Insider Threat a Challenge

- PTSD – Post Trauma Stress Disorder.
- Benefit of doubt for authorized personnel.
- Identity theft.
- Vastness of airport.

> ## "Insider Threat"
> A malicious threat to civil aviation that comes from within the industry, airport or airline etc. stakeholders, such as employee, former empployees, contractors or business associates, who have inside information concerning the organization's security practice, data and ICT system.

5. Future of Airport Security

Rapid growth in aviation industry market driven by factors such as low-cost carriers (LCCs), modern airports, advanced information technology (IT) interventions and growing emphasis on regional connectivity. The increased number of passenger is leading to capacity constraints to the existing infrastructure and facility, resulting in lengthier security queues, passenger discomfort and irritation. The resultant pressure and fatigue of the baggage screening officer may lead to suspicious items passing through undetected.

Current security checkpoint is the biggest obstacles to fast passenger throughput as well as it is stressful process for passengers and it is expected that the better use of data, new technologies and Vision to improve process will all be involved in mitigating much of the checkpoint obstacles and stress endured today.
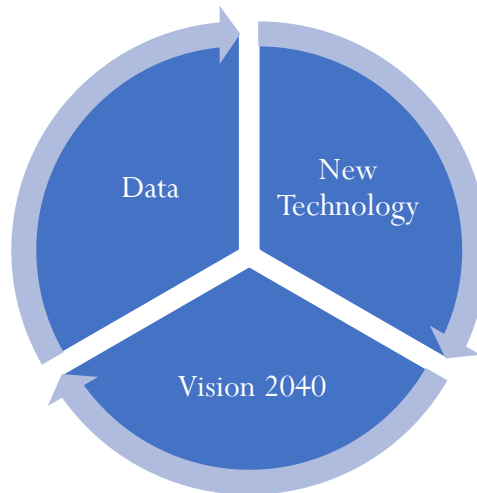
5.1 DATA

In a fast-growing industry like aviation, planners and investors require the most comprehensive, up-to-date, and reliable data. The aviation sector gathers and stores a large amount of valuable data – not just as an enabler of a smooth passenger experience, but for how passenger services can be personalized based on individual preferences. The challenge for airports lies in cutting out the noise of Big Data. In this regard, a vendor with expertise in IT services and data management can be a steady, dependable resource to help any airport seamlessly implement an IoT platform that simultaneously addresses the challenges that come with IoT device management.

Machine learning and predictive analytics represent the next big wave in airline digitization that uses data, analytics and predictive algorithms to determine a traveller's propensity to spend, and presents airports with a wealth of opportunities. The key lies in harnessing the ability not only to tap into the vast quantity of data being collected, but to establish a data-based platform that allows you to visualize the data and use it to improve operational efficiency and the quality of customer service, setting a foundation for long-term success.

5.2 NEW TECHNOLOGIES

According to the Airport Council International (ACI) Europe, an average 20% of total airport operating costs are related to security, with a large percentage of airport staff working on security-related activities. Airports and Airlines are looking forward towards new technology that reduces personnel cost and the amount of time spent verifying the risk of each passenger.

Aviation Security is becoming the test buds for new technologies, including ***Biometric System, CT Walkways, Advanced Imaging Technology, Suspect Detection System, Off-Airport Handling, Artificial Intelligence and other new and innovative technologies.***

5.2.1 BIOMETRIC SYSTEM

Using biometric scanning in place of traditional identity checks could lead to the best of both worlds in terms of security and convenience in the future. Atlanta Airport in the US state of Georgia just opened a terminal which is completely operated via biometrics, while still giving passengers the option to go through traditional channels if they are uncomfortable with the privacy implications of the technology involved.

This will become vastly more common in the future and means that things like facial and vocal recognition, in combination with fingerprint and iris scanning, will lead the charge to a safer, swifter air travel experience.

How Biometric technology is changing airport and facilitating travelers:

Fingerprint and facial-recognition technology have become part of everyday life for many of us. We rely on it to unlock our phones and laptops and even entrust access to our banking apps to the same technology.

In November last year, Delta Airlines, in partnership with U.S. Customs and Border Protection, unveiled the U.S's first fully biometric terminal, located at Maynard H. Jackson International Airport in Atlanta. Customers flying internationally via the terminal can utilize facial recognition "from curb to gate". Biometrics are used to check customers in via self-serve kiosks, to check baggage, to identify and validate customers at the TSA checkpoint, and to verify and board customers onto the aircraft. According to a press release by Delta Airlines the new biometric terminal has been an overwhelming success so far. This new technology is improving its customers' airport experience. "We are removing the need for a customer checking a bag to present their passport up to four times per departure – which means we are giving customers the option of moving through the airport with one less thing to worry about. Based on initial data collected by the airline, facial recognition at the gate is saving the airline an average of two seconds of boarding time per customer, or 9 minutes in total for each wide body aircraft. Off the back of this success, Delta Airlines plan to roll out a similar curb-to-gate biometric experience at their airline's hub in Detroit in late 2019. But this is just the tip of the iceberg. British Airways are now boarding passengers in Orlando, Miami, Los Angeles, and New York using biometric facial recognition, which is allowing them to board faster than ever before. And according to a study by SITA, specialists in transport communications and IT for the air transfer industry, 71 percent of airlines, and 77 percent of airports are planning major biometric programs in the next three years. If you haven't yet had the pleasure of your features being scanned and scrutinized by a computer, chances are you'll experience it soon.

5.2.2 COMPUTERISED TOMOGRAPHY (CT) WALKWAYS

Computerised tomography, or CT Scanners, are commonly associated with head injuries. However, the technology also proves useful when searching for liquids or dangerous goods in baggage entering the plane hold. Due to the large size and noisiness of the scanners, their use has been restricted to check-in luggage only and is conducted away from crowded areas to avoid disruption to passengers. Recent advancements in the technology has reduced the size and sounds associated with the scanners.

To take things one step further, experts in aviation security have suggested turning this technology into 'CT walkways', to replace the current conveyer belt security system for carry-on luggage. Instead of waiting for the person in front of you to search every inch of their bags and remove all shoes, belts and hats, the CT walkways would be able to detect any questionable items carried by passengers or in their luggage, as they pass through.

5.2.3 ADVANCED IMAGING TECHNOLOGY (AIT)

This uses non-ionizing electromagnetic radiation, similar to that used by wireless data transmitters to detect objects concealed on a passenger's body without physical contact. It applies necessary algorithms to the refected millimetre wave length signals to determine the location of possible anomalies. In case of anomalies, the security officer steps in and resolves the alarm with a patdown, with a total time of just 5-10 seconds per passenger. The next generation AIT is set to offer enhanced image resolution by using wide band antennas to provide advanced Automated Threat Recognition (ATR) detection algorithms.
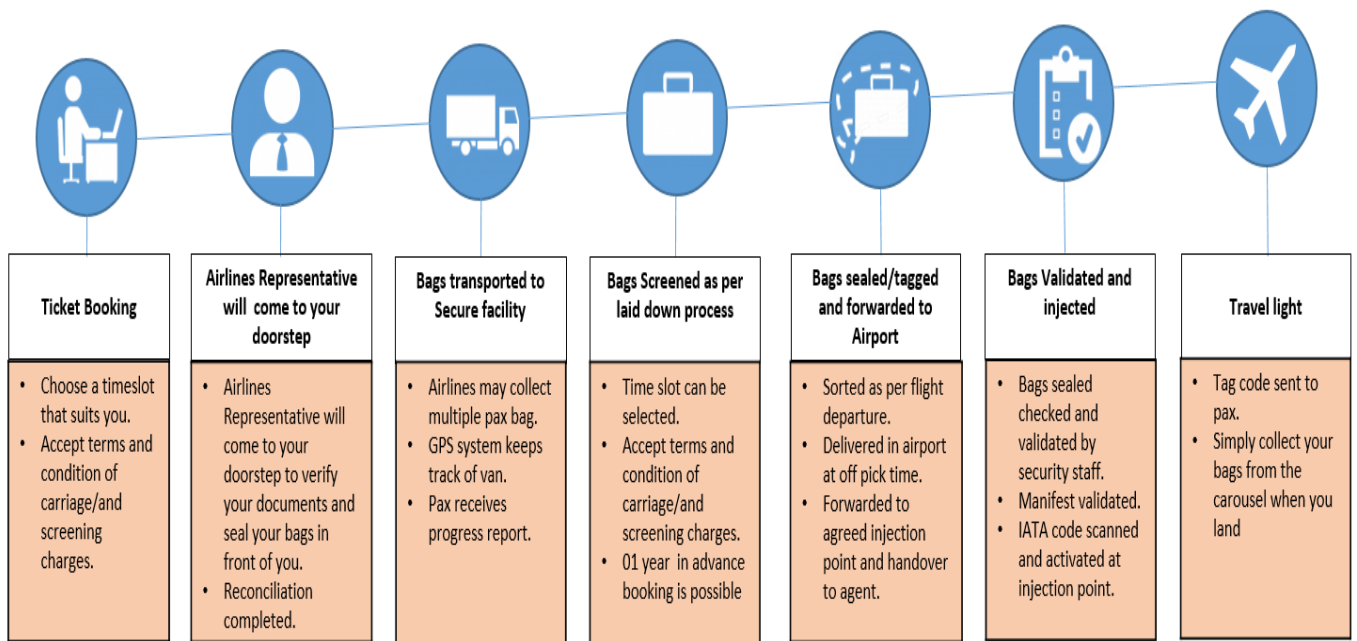
5.2.4 SUSPECT DETECTION SYSTEM (SDS)

It is an automated interrogation and background check technology to act as apolygraph for catching potential suspects. It monitors levels of different chemicals in apassenger's body and uses advanced algorithms to determine the threat level.

These technologies are currently being tested and deployed in the United States and Israel etc. These would be greatly beneficial for airports with high terror risk.

5.2.5 OFF-AIRPORT HANDLING

Off-airport handling can become future of hassel free flying. Airport ceck-in process for passenger and baggage will be minimized. Passenger's baggage would be picked up at convenient location and time slot, screening process can be done either at airport or off aiport and baggage transported to the airport for further validation and injection process.

Ticket Booking	Airlines Representative will come to your doorstep	Bags transported to Secure facility	Bags Screened as per laid down process	Bags sealed/tagged and forwarded to Airport	Bags Validated and injected	Travel light
• Choose a timeslot that suits you. • Accept terms and condition of carriage/and screening charges.	• Airlines Representative will come to your doorstep to verify your documents and seal your bags in front of you. • Reconciliation completed.	• Airlines may collect multiple pax bag. • GPS system keeps track of van. • Pax receives progress report.	• Time slot can be selected. • Accept terms and condition of carriage/and screening charges. • 01 year in advance booking is possible	• Sorted as per flight departure. • Delivered in airport at off pick time. • Forwarded to agreed injection point and handover to agent.	• Bags sealed checked and validated by security staff. • Manifest validated. • IATA code scanned and activated at injection point.	• Tag code sent to pax. • Simply collect your bags from the carousel when you land

5.2.6 ARTIFICIAL INTELLIGENCE (AI)

Artificial intelligence is the kind of behind-the-scenes technologyn computer science, artificial intelligence, sometimes called machine intelligence, AI involves engineering and programming of computer to perform a task that would normally require human intelligence. AI has boasted as a game-changer across so many industries.

AI is also a great opportunity for aviation industry, that will allow for increased safety, efficiency and capacity. Data sharing between all stakeholders in a trustable environment will be essential to the success of AI and should be supported by the development of open standards and a trustable environment.

Considering the potential for human error, aviation industry need to look for smart, cost-effective solutions using AI and Machine Learning technology which users could easily access. AI can also replace traditional measures to help determine whether or not passengers pose a threat, assessing people more quickly and accurately than human workers.

5.3 Vision 2040

Existing airport infrastructure cannot handle expected growth. ACI expects that passenger traffic will grow at an annualized rate of 4.1% and reach 20.9 billion by 2040. Many airports are near, at, or even exceeding their design capacities, causing congestion, lower levels of service, and passenger frustration. To improve passengers experience and service level International Air Transport Association (IATA) and Airports council international (ACI) have introduced some innovative projects e.g. Smart Security & One ID.

5.3.1 Smart Security

Smart Security is a joint initiative of International Air Transport Association (IATA) and Airports council international (ACI) that improves security outcomes in light of ever-evolving threats while delivering increased operational efficiency and an enhanced experience in the passenger and cabin baggage screening process. It does this through innovative technologies and processes combined with risk-based security concepts. Many of the technologies and process improvements spearheaded by Smart Security are becoming mainstream. For instance, lane automation, centralized image processing, and checkpoint management systems.

Smart security is the leader in driving security innovation for passenger and baggage screening. Smart security's goal is to strengthen security, improve passenger experience and, increase efficiency.
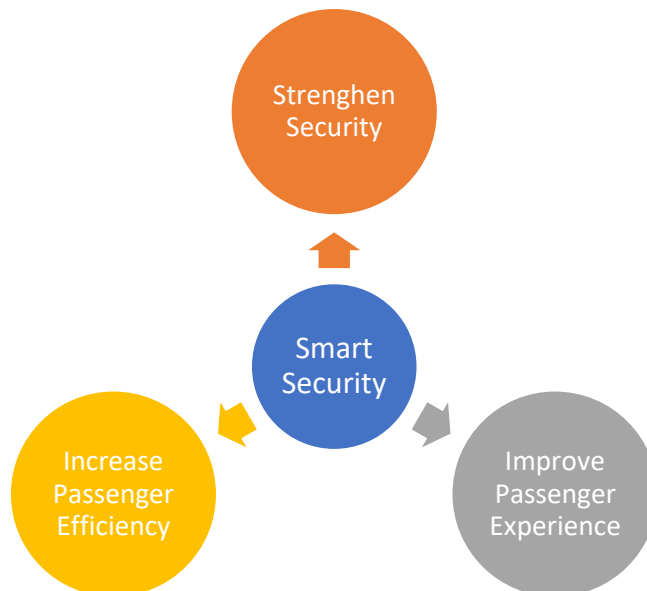
- **Strengthened Security:**
Focus resources based on risk and increased unpredictability. The use of new innovative technologies with advance capabilities that can include stand-off detection, artificial intelligence, automated threat recognition and global information sharing.

- **Increased Passenger Efficiency:**
Increased throughput with more passengers processed with lower levels of resources. Minimize the special requirements for the security operation in order for airports to use the space for other means.

- **Improved Passenger Experience:**
The creation of a seamless walking paced experience for passengers using various different screening capabilities creating a non-intrusive journey from curb to airside.

Smart Security will turn checkpoints into walk through gateway with the help of following:
• Data and risk score
• Off-airport baggage screening
• Stand-off detection
• CCTV, predictive and behavior analysis
• Biometrics and identity management
• Advanced / automated detection

Over the past few years, smart security have been tested and evaluated in partnership with governments, airports, airlines, and solution providers. Airports including London Heathrow, Amsterdam Airport Schiphol, Doha Hamad, Toronto Pearson, Melbourne and Changi are amongst those leading the way, with many more now looking at how Smart Security concepts can be incorporated into thei r operations.

5.3.2 ONE ID

One ID is one of the ambitious project of IATA for all stakeholders (passengers, airlines/airports and governments), this will enhance end to end passenger experience. The concept is secure, seamless, efficient and it will enable passengers to stremline their journey with a document free process based on identity management and biometric recognition.

• Introduction of this process will eliminate repetitive security check at airport as passengers will not be required to physically present documents in various combination at various touch point.

• The project proposes face, iris or fingerprint recognition (current technology) to seamlessly move passengers from curb to gate.

• With the simplifications in individual process, One ID will be one of the contributing factors that could spell the end of the legacy check-in process.

Benefits of ONE ID:

Passengers:

• Seamless experience to passengers with single identification
• Passengers will no longer need to juggle between different documents
• With a single identification, they will be easily recognized by all service providers
• This will eliminate repetitive processes, resulting in less queuing
• Ultimately, it will enable passengers to arrive at the airport ready to fly in nearly every travel scenario

Airlines/Airports:

• Cost-effectiveness & efficiency for Airlines/Airprots
• One ID will improve staff productivity by reducing time spent on manual ID checks
• It will also provide real-time visibility of where passengers are in the airport process, possibly allowing smart queuing
• This all will help optimize airport space efficiency
• Ultimately airlines will benefit from all the passenger process improvements with happy customers

Governments: enhanced security:

• One ID will enable improvements in border, aviation and airport infrastructure security
• It will help combat human trafficking and other cross-border criminal activities by reducing the possibility for individuals to cross borders under a false identity

6. Case Study I

Drone Incident at Gatwick Airport:

Event - Between 19 and 21 December 2018, hundreds of flights were cancelled at Gatwick Airport near London, England, following reports of drone sightings within 1 km (0.62 mi) of the airport boundary and close to the runway.

Impact – approximately 140,000 passengers affected and 1000 flights diverted/cancelled.

Brief Report –

Britain's second-busiest airport was locked down for 36 hours. Police believed a drone operator had intentionally disrupted flights, as whenever the runway was about to re-open, drone sightings were reported again. Various other airports around the world, leading to brief shutdowns of operations at Heathrow Airport.

On 20 December the military were deployed for help to end the unprecedented situation. On the samt day at 23:30 the airport confirmed the runway would remain closed and all flights were cancelled for the rest of the evening because of continued reported sightings.

21 December Airport reopened with limited capacity at around 06:00. At 09:30, Gatwick Airport chief operating officer Chris Woodroofe described the airport as operating at "almost normal runway conditions", and said it would be "back to normal" by the end of the day. At 17:30, the runway was closed again due to a suspected drone sighting, before being reopened at 18:23

22 December there were delays to some scheduled flights on 22 December, resulting from the displacement of crews and aircraft.

The RAF withdrew on 3 January 2019 after Gatwick spent £5 million on a system to prevent attacks.

Action Taken -

Runway was closed to avoid any undue incident.

Military were deployed following a request from Sussex Police for help to end the unprecedented situation.

RAF Regiment was deployed with an alternative system of Drone Dome – an Israeli-developed counter UAS system to counter the situation.

The event was considered to be an "extraordinary circumstance" by the The Civil Aviation Authority , and therefore airlines were not obliged to pay any financial compensation to passengers.

A drone enthusiast and his partner from Crawley, were arrested on 21 December by Sussex Police on suspicion of disrupting civil aviation "to endanger or likely to endanger safety of operations or persons" On 23 December, the couple were ruled out of the investigation and released without charge, having been questioned for almost 36 hours. No further arrests were made.

Despite a massive police operation and a £50,000 reward, police were unable to find the culprit.

Gatwick has confirmed that, in the days after the attack, it spent £5m on similar equipments to avoid such incident. Gatwick bought two sets of the AUDS (Anti-UAV Defence System) anti-drone system made by a consortium of three British companies.

Learnings -

Drone technology in the wrong hands can be weaponized and cause chaos. To counter such situation airports around the world need to be proactive and put stronger measures in place to prevent this kind of disruption from happening. The ease with which an individual or small group was able to bring Gatwick to a standstill is frightening. There's no reason to believe this weakness won't be exposed again. Airports and counter-drone companies need to step up to the plate and start delivering solutions to stop this from happening again.

7. Case Study II

Project: Elimination Of Boarding Pass Stamping at Chhatrapati Shivaji Maharaj International Airport (CSMIA), Mumbai.

Overview:
As per the regulatory authority direction stamping of boarding pass & hand baggage tag were carried out in India by Central Industrial Security Force (CISF) who is assigned cleared the passenger & their belongings in SHA. This process was introduced to identify the CISF screener in case the aircraft under security threat is landed and the stamp on boarding pass is found intact.

Approach:

- MIAL had opted to implement the DigiYatra process (An intiative by Ministry of Civil Aviation – Government of India) by validating 2D/ QR code on boarding pass to eliminate boarding pass stamping.
- The pilot project was executed with domestic leg of Air India, Jet Airways (now non-operational) and Vistara from Terminal 2, Level 3.
- E-gates validating 2D/ QR code on boarding pass were installed on east and west of domestic PESC entry point.
- At boarding gate airline ticket lift system was updated for passenger boarding status along with a pop up showing 'E-gate clearance' as an additional measure.
- CCTV at PESC entry points and individual frisking points were replaced with 04 mega pixel HD camera for monitoring the proceedings in the Frisking Area & can be used for any Forensic Analysis.
- Extensive trial was carried out and feedback was taken from all stakeholder (Airlines, CISF and Passengers)

Stakeholder engagement:

- A significant effort was put into understanding the stakeholders and their level of involvement and consultation.
- From the start, stakeholders were brought into the project team to ensure the solution met their needs and delivered mutually beneficial results.
- Technical requirements were gathered by the IT solution and vendor.

Results

CSMI Airport, Mumbai is the first airport in India to execute DigiYatra – Elimination of Boarding Pass Stamping with domestic leg of Air India, Jet Airways and Vistara from Terminal 2, Level 3. Which enabled to achieve following.

- No human interface while boarding pass checking as machine read documents guarantees authenticity/ genuineness of the traveller and blocks the wrong entry.
- Processing time does not depend on human factor.
- Frisker is assured of genuineness of traveller.
- The time taken for verification of boarding pass and consequent stamping is saved.
- Frisker can focus on core function of frisking.

8. Innovative Idea

- We need to look beyond the conventional idea of "building a bigger Airport to manage more Passengers" and we need to rely on Innovation with technology and not missing the human factor in decision making to manage the significantly increased passenger flow and security risk.

- To mitigate security risk considering passenger facilitation within the available infrastructure the aviation industry need to have sophisticated aviation security architecture, predictive data analytics programs and passenger flow management systems.

- An integrated security operation centre at all aiports can be helpful during any secutity threat or risk would be the new norm, wherein Airport Security, Regulatory Authority, Intelligence Agencies, Border control would be able to seamlessly store and share information with each other.

- In this evolving pahse of aviation industry it is also required to have enchanced detection capability facility and technical solutions, which can help in faster processing with lower level of investments.

9. Conclusion

Aviation security faces challenge related to ever growing passenger population, traffic and congestion. Air traveller now expect more efficient journeys than airports are currently able to provide. One of the key initiatives in this direction is "The ONE ID" which intends to give a seamless, hassle-free and paperless journey experience to every air traveler. Using cutting edge Identity Management and "Face recognition" technologies, it aims to simplify the Passenger processes at various check points in the Airport right from the terminal entry gate, check-in/ bag drop, security check and boarding gates.

To address evolving security threats. The world is changing rapidly through innovations in information technology. In this environment, airports need to be flexible and innovative to withstand rapid change.

Abbreviation:

ACI – Airports Council International
AI - Artificial Intelligence
AIT - Advanced Imaging Technology
ASG – Avaition Security Group
CT – Computed Tomography
CISF – Central Industrial Security Force
CCTV – Close Circuit Television
ICAO – International Civil Aviation Organization
IT – Information Technology
IOT – Internet of things
MIAL – Mumbai International Aiprot Limited
PAX - Passenger
PESC –Pre-Embarkation Security Check
RPAS – Remotely Piloted Aircraft System
SHA – Security Hold Area
SDS - Suspect Detection System

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