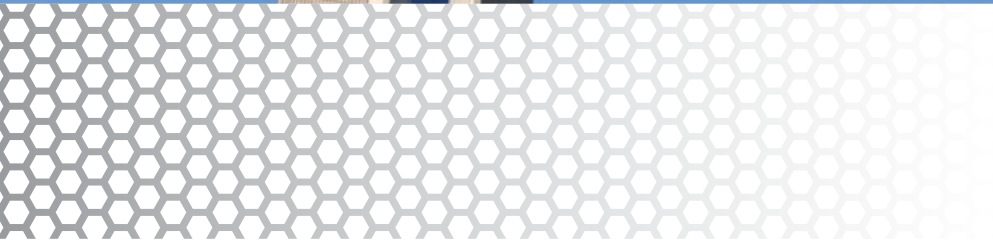


Airport Surveillance

Emerging Best Practice



Introduction

Global air passenger numbers continue to rise, fueled in part by aviation infrastructure investment in developing destinations and regions such as ASEAN. According to the latest research from the International Air Transport Association, global passenger traffic increased by 4.6% between January 2014 and January 2015.

The consensus among industry experts is that introducing improvements in air travel connectivity can be a key driver for economic growth. Accordingly, many countries are looking towards investment in airport infrastructure with the belief that it will attract interest from trade partners and tourist visitors alike.

Balancing the requirements of airport operators and the needs of the global passenger while protecting people and property in the face of multiple safety and security threats is therefore a growing challenge. This white paper examines emerging best practice in airport surveillance and security, highlighting the benefits, considerations, and opportunities.

The Importance of Situational Awareness


Modern, international airports are complex entities, with similar characteristics to small cities, and operate with diverse stakeholder needs. Today's airports are retail zones, workplaces, and busy transportation hubs channeling millions of passengers every year to destinations across the globe.

Keeping them safe, secure, and operationally efficient is an ever-evolving challenge.

Passengers need to pass smoothly from departures through to the plane, which means pinch points such as check-in, passport control, baggage security, and gate access have to be as efficient as possible, without compromising on security and safety.

Additionally, airport operators know that supporting profitable retail concessions is as important commercially as attracting airlines and passengers. This adds an extra dimension to protecting the operations of the airport, as employees of the airport and retail operations come and go on a daily basis and must therefore be protected.

All of these requirements make airports, perhaps more than any other type of environment, dependent on systems that are able to maintain and guarantee constant situational surveillance and awareness. So it is no surprise that surveillance solutions, which are capable of providing a holistic view of airport safety and security, can play a hugely important role in guaranteeing safe and secure operations.



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retail zones, workplaces,
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Managing Big Data



Airports already have some of the most advanced security and safety systems available, from baggage X-ray technology, access control, and facial recognition at passport control points, to state-of-the-art fire, smoke, and chemical detection systems.

Independently, each system is critical, but when viewed and managed collectively their respective data becomes even more powerful, as isolated events and incidents are brought together to form a holistic picture of what is happening across the airport.

Airports need to intelligently monitor what is happening at any point in time, across all operational areas, be it land-side, air-side, ATC, or waste management, by taking an inclusive view of all systems and the data they generate.

Capturing this kind of situational awareness is achievable if managed centrally through a surveillance command and control platform that is fully integrated with devices including cameras, access control devices, smoke and fire detection systems, as well as devices specific to the airport environment.

Such a solution enables data from the multiple sources to be viewed, managed, and, more importantly, understood in a single monitoring and control environment. From there it can be programmed to understand threat scenarios, flag anomalies, and guide operators through appropriate response protocols that are based on the airport's SOPs (Standard Operating Procedures).

Achieving this level of data awareness and control has important implications across every aspect of airport operations. It can assist in improving:

- **Passenger and staff safety**
- **Airport infrastructure security**
- **Passenger flow management**
- **Critical scenario management**
- **Training processes**

To understand these benefits more fully, it is useful to explore the passenger journey and key airport functions in more depth.

Pre-arrival Detection and Protection

Even before a passenger arrives at a terminal building, intelligently integrated surveillance solutions can assist operational and security teams to protect and serve their customers.

By combining data from multiple sources, surveillance systems can be programmed to 'recognize and respond' to developing situations relating to airport car parks, on-site rail/bus links, automated walkways, and other heavy footfall areas within airport grounds.

This is particularly important in terms of preventing incident escalation. For example, a traffic accident occurring outside a 'park and ride' pick-up point might not have any direct implications for the airport security or operations

teams, but this incident could cause passenger delays and potential bottlenecks at check-in, which in turn could have a negative impact on flights.

The level of integration now available with open-architecture command and control platforms means that systems can not only predict scenarios such as this, they can initiate response protocols such as emergency team/replacement transport service deployment. Operators could also be prompted to notify check-in desks of potential issues allowing them, for example, to restructure human resources to cope with problematic passenger influx.

While the traffic accident example relates to operational threat, airports must also

be alert to potential security threats that may be present 'beyond the front door'. In this respect, perimeter detection integrations are crucial. Most airports have significant physical perimeter protection, but supporting this with 'virtual perimeter' measures is now common.

Blending the visual power of thermal, high definition, and long range camera technology with access control system data, video analytics, and in some cases radar, ensures that airport security teams are aware of any potential breaches, or incidents of concern, long before risk to core operations reaches a critical level.



Data-driven Departures Support

The power of data integration can also be seen in applications throughout the departures building. An intelligently integrated surveillance solution can be programmed to 'understand' cumulative data sets from passenger check-in, baggage drop-off, passport control, or departure gates – to recognize the difference between isolated occurrences and data combinations that may require attention.

Automatically prioritized footage streaming (from cameras located closest to the potential threat) ensures control room operators can immediately focus on such incidents, while integrations with third-party software such as facial recognition or shape analysis can help identify and track objects or individuals that may be deemed 'of interest'.

Integrations with these types of specialist airport technologies also present significant opportunities for improving safety, security, and efficiency.

For example, integration with baggage X-ray scanners can ensure that a live

alert is prioritized on control room video wall monitors in the event of a concern being logged by security personnel in the screening area. The control room team can then view the same X-ray screening footage as the baggage scanning crew, while nearby surveillance cameras tilt and swivel to monitor wider activity automatically.

Because all data is being collated and processed within a single command and control environment, this also means that any information/controller action relating to an incident can be automatically logged and tagged to provide a full audit trail – useful for evidentiary or training purposes.

The benefits of data integration are not restricted to security applications. Surveillance can also play a key role in improved service and passenger experience, particularly through integrations with 'smart' technologies.

Take the use of tracking beacons – transmitters that issue push notifications to passengers' smart devices. These notifications aid foot

flow through an airport's most significant pinch points, improving customer experience and streamlining operations. The data generated by such systems, when integrated with other sub-systems through a central command and control platform, can provide valuable insights. This can further improve safety, security, and airport operations and also provide an important direct passenger communication route.

More recent innovations, such as digital self-check-in points and boarding card validation terminals, also present opportunity. Integrating data from such systems with visual information and movement analytics via a central command and control platform means that airport operators can understand passenger traffic trends. Accessing real-time data enables immediate response – for example managing excessive queues – while long-term analysis can support management strategies and infrastructure planning.

Surveillance can play a key role in improved service and passenger experience.



Intelligently Integrated Arrivals

Discussions surrounding airport security and efficiency measures often focus on departures – but integrated surveillance solutions can also play a beneficial role in terms of arrivals.

Before passengers even disembark, there are opportunities to utilize key features of an integrated surveillance solution, most notably relating to apron activity.

Airport aprons, where planes are parked and fueled, are understandably areas of concern.

As with perimeter protection, intelligent video analytic zones can be established to ensure any movement by unauthorized personnel is detected in specific zones, while sophisticated analytical integrations can be programmed to identify loitering or static items that should not be present with different alarm profiles established for each camera.

Surveillance as a training tool is also applicable here. From parking or refueling protocols to ground crew behavior surrounding planes, baggage, and air stairs, footage captured, stored, and tagged under specific scenario categories can be vital in optimizing personnel performance and for ensuring that key safety procedures are being followed.

In terms of arrivals, another trend we are likely to see more and more is collaboration between airline operators, airport security teams, and on-site police to securely share data through a centralized command and control solution, in order to track passengers 'of interest'.

For example, many airports now use facial recognition scanning at passport control. This data can be cross-referenced with profiles of passengers of interest, with the system then automatically programmed to alert personnel in the surveillance control room and track the individual's movements through the airport.

In specific cases (depending on the known risk level of the individual or behavior detected), workflows can also be programmed to prompt operators to contact on-site transport police and guide them through set protocols.

Scalability and Maximizing Investment

Intelligent systems integration offers many benefits, but it is important to note that there are also challenges. One of the biggest is scalability.

Airports grow. Terminals, runways, and supporting business developments are frequent additions – built reactively to cope with increased demand or as part of planned, staggered expansion. Whatever the reason for growth, airport operators need to be confident that any investment in surveillance solutions they make now will not be redundant further down the line and can easily accommodate new technology.

This is one of the reasons that an IP-based integrated surveillance system, anchored by an open-platform command and control solution, has such appeal.

Cameras can be added to the network with ease. New integrations can be implemented to meet changing security or operational needs; yet legacy technology – such as analog cameras – remains fully accessible. It's a cost-effective means of maintaining control and safeguarding against obsolescence.

The right surveillance systems supplier will always advise on scalability but there are other useful questions that airport operators should ask when researching solutions.



Conclusion

Airports know they must become smarter in order to manage disparate video and data streams in a way that provides an optimum outcome for all of their stakeholders. The challenge they face is significant but the latest technology means it is not insurmountable. There is no right or wrong answer in determining the appropriate solution.

A seasoned surveillance systems provider, with experience of developing multi-industry solutions of all sizes and levels of complexity, will be able to develop tailored solutions that incorporate any of the solutions discussed here. More importantly though, they will be able to offer advice and guidance on an individual case-by-case basis. When it comes to airport security, surveillance technology aligned with a fully integrated command and control system will answer many of the questions raised in attempting to ensure a safe and efficient environment for all stakeholders.

For details regarding Synectics' range of dedicated aviation surveillance solutions, visit synecticsglobal.com.



SURVEILLANCE Q&A

Will I still be able to use my existing analog system?

Yes. Using digital encoders and an intelligently integrated command and control platform, footage from existing analog cameras can be viewed digitally alongside data from new IP surveillance cameras.

Can I integrate with any airport system?

The key here is the term 'open architecture'. An open-architecture command and control platform can potentially integrate with any third-party system. It is data-agnostic. Implementing specific integrations may require collaboration between your surveillance systems supplier and third-party system vendor but in principle there are no insurmountable barriers.

What do I need to consider in terms of data storage?

IP-based surveillance solutions offer significant storage benefits over analog systems and vast amounts of information can be compressed to take up minimal system space. However, storage requirements do need to be factored into system design. For a more detailed look at this area, see our [storage white paper](#).

Are there specific types of cameras that are particularly suitable for airports?

Different types of cameras are suitable for different areas. For example, while HD IP cameras may be important for high-security pinch points, public areas of lower risk may not require this level of image quality. Externally, in low-light areas or for longer range surveillance, it may be that thermal cameras are the best option. Your system supplier or integrator will be able to advise on the best and most cost-effective combination.

What system protection measures are available?

One of the biggest concerns that airport operators have when deciding whether to introduce IP-based integrated surveillance solutions is system failure or security breach. Downtime for any reason is not an option given that airports are portals of national security. Ensuring the highest level of resilience and redundancy is therefore essential and something leading systems suppliers will always design into enterprise-class solutions offered for this demanding sector.



Synectics designs integrated end-to-end surveillance control systems for the world's most demanding security environments. We excel at complex projects that require innovative, tailored solutions with high reliability and flexibility, specifically for casinos, oil and gas, marine, public space, banking, transport and critical infrastructure applications.

With over 30 years of high security systems experience, field proven products, and expert support personnel in the UK, US, Europe, UAE and Asia Pacific, Synectics offers its clients turnkey networked solutions for comprehensive protection and peace of mind.

Synectics' Systems division is part of Synectics plc, a global leader in advanced surveillance, security and integration technologies and services.

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