

Trends in Airport Security

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The challenges facing today's airport security decision makers become ever more complex, as additional processes traditionally outside of their scope of responsibility have to be considered. These include passenger flow management, higher capacity aircraft, differing passenger security classification criteria, legislative compliance and the increasing pressure of operational uptime and profitability.

Trend 1: Intelligent wide-area surveillance

The implementation of any comprehensive security policy usually involves a multi-layered approach with the first line of defense being the surrounding airport perimeter. Highly publicized incidents such as the Brussels Airport diamond heist or a jet-skier unwittingly breaking John F. Kennedy Airport's security systems have cast the spotlight on perimeter security. State-of-the-art solutions for effective perimeter security detection include long-range conventional video and thermal-imaging surveillance cameras, false alarm resilient presence and motion detection sensors, as well as ground-radar detection and tracking.

Using intelligent policy zones and virtual barriers, these systems detect, track, and classify activity, enabling operators to see what is happening throughout the whole area in real-time. Once deployed, these external detection systems can be operated through intelligent management platforms to automatically qualify and identify unauthorized attempted access well beyond the airport boundary and contain potential risks before they pose a threat to operations and assets.

This facilitates airport security operators to be alerted and react to extraordinary events and suspicious behavior aided by pre-defined and approved workflows.

Today's large-scale surveillance solutions filter critical events from camera and other

sensor input, graphically displaying results via a comprehensive digital map on a single screen. Integrated three-dimensional analytics determine particular object attributes, supporting operators in pre-qualified classification of all activity and incidents.

Moving further inwards from the absolute perimeter, the airport apron, where aircraft are parked, loaded, unloaded and refueled, is an extremely high-risk and sensitive area. To counter the threat of unauthorized access, state-of-the-art video systems with intelligent algorithms are being implemented to track objects and persons, and to interpret and define routine aircraft servicing operations while parked within the apron area. These solutions facilitate the immediate detection of extraordinary activities and maintain a constant state of vigilance, ensuring the security of aircraft and associated assets.

Trend 2: Optimizing existing terminal infrastructure

The need for controlled and efficient transfer of passengers traveling to or arriving from destinations with differing security credentials within a common terminal area is a challenge facing many of today's airports.

In these situations, immigration and customs procedures are performed in segregated areas under very particular conditions, but often using the same terminal infrastructure. Solutions are needed to eliminate the possibility of passengers or objects being transferred from one controlled zone to another. Unique measures are now being installed in airports to facilitate the automated transit between only predefined and pre-approved areas and restrict the crossing between, for example, Schengen and non-Schengen areas as well as domestic and international terminal facilities.

One solution addressing such challenges, for example, allows passengers to access existing common-use elevators to travel between terminal levels with differing active security policies. When an elevator is called, the absence of passengers or objects is assured through detailed scanning of the elevator cabin by multiple surveillance and thermal imaging cameras, together with 3D motion detectors. The process is completed within seconds, ensuring the elevator is empty before setting off and no breach of security through the transfer of persons or objects is possible.

Trend 3: Managing the passenger flow

Despite recent economic setbacks, air travel continues to grow globally. The resulting formation of bottlenecks and queues is a key issue facing today's airports. Stringent security procedures compound the problem, necessitating passengers to arrive hours before boarding and restricting their movement within the terminal. Adequate numbers of staff must be in position to manage all corresponding processes and the expected facilities must also be available. Balancing this provision of optimum service against cost and the consequences of unexpected delays is a truly complex task.

The ability to measure and manage queues is a key element in optimizing airport operations. Technologies such as flow-monitoring and predictive analytics can enable airports to capture and access data in real-time, supporting them in making the most effective decisions. These include the automated validation of boarding passes and staff scheduling and response to real-time passenger activity.

Utilizing accurate passenger flow data offers airports the opportunity to enhance operational efficiency, optimize terminal layouts, and to reconfigure retail areas and increase revenues as a result of a better understanding of passenger behavior. Real-time data of expected and actual waiting times is increasingly being provided to passengers and has been proven to reduce the potential for passenger frustration and dissatisfaction, in turn improving the airport's reputation and securing repeat business. Monitoring capabilities can be used to track assets such as wheelchairs and vehicles for passengers with reduced mobility, ensuring their availability when needed.

Trend 4: Biometric identification and verification

For a number of years, researchers have been developing highly secure authentication techniques that use the recognition of biological characteristics for enhanced security and improved convenience.

There is an increasing demand from the airport sector for the more wide-spread use of biometric verification technology to complement and increase the security of traditional access control and identification solutions. Unauthorized access to secure areas tops the list of airport security threats: The potential misuse of staff and

contractor ID badges to gain access to unauthorized areas within an airport requires a highly effective yet user-efficient means of providing additional security levels. As biometric solutions become more cost effective and reliable, their use is certain to increase. Various technologies such as fingerprint, face, iris and retina scanners for identity validation have had differing levels of success, as some technologies face user acceptance or reliability issues.

Palm vein detection is among the latest technologies being introduced into the market, utilizing one of the most effective and widely accepted identification techniques, through the contactless and safe scanning of human vein patterns within the palm of the hand. Verification readers use infrared technology to scan the blood vein patterns within seconds and typically validate the pre-stored characteristics of the registered user's card, ensuring the card is only used by the true owner. The unique palm vein patterns of each human individual are complex, and the position of the veins remains unchanged for life, ensuring identification is extremely reliable with even skin defects or superficial injuries not affecting the performance of the reader.

Trend 5: Centralized and integrated command and control

These trends ably demonstrate that the security industry is responding to today's challenges and addressing the needs of airport operators. Within an airport however, certain security solutions can compromise the efficient flow of passenger and air traffic. It is therefore important that problems or threats are identified early and dealt with reliably, with systems working together to ensure an optimum level of reaction and response. Integrated solutions enhance security, increase efficiency and reliability while reducing airport operators' exposure to risk and improving the overall passenger experience. Command and control platforms from experienced suppliers are a critical part of the day-to-day running of an airport and provide a coordinated, timely and appropriate response to all security and safety incidents.

The key success element to such management platforms is the ability to implement them properly: Effective resource management and process workflows ensure that a calculated reaction is put in place following all pre-meditated events, safeguarding the interests as well as mitigating the liability of the airport and its stakeholders.

Only a limited number of security solution providers can offer a dedicated airport portfolio as well as the necessary knowledge, global reach and project experience required to meet the demands of today's airports. Fewer yet are fully able to deliver integrated airport projects, supporting clients through technical design and specification, project management, training and long-term service. With its Siveillance airport portfolio and an array of comprehensive services, Siemens offers solutions for today's airport security challenges.

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