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### **Video surveillance – a vital ingredient in integrated security**

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**2007 marked a milestone in human history with, for the first time, more than half of the world's population defined as living within urban areas. With this figure expected to increase to 60 percent by 2025, the increasing economic importance of cities as the drivers of future growth is clear and with it the vital role that airports have to play in providing the world's transportation hubs. While this expansion and concentration of the population in conurbations inevitably brings with it significant environmental challenges – challenges that airports themselves are heavily involved in addressing – it also means that ensuring safe and secure transportation has never been more important.**

Security has always been a fundamental issue for airports, from the ever present threat of terrorism to enforcing the strict rules and regulations that govern airport operation. An integral part of any airport's security provision is video surveillance, or CCTV as it is often known. However, like all other elements of the security equation, it has had to respond to the shift in approach from one of simply reacting to an incident to actually trying to prevent the incident happening in the first place. This has largely been achieved through the introduction of intelligent algorithm-based technology.

### **From passive to active monitoring**

One of the problems identified with conventional video surveillance is that it is passive. Research has demonstrated that that an observer viewing two monitors with automatic image switchover will miss up to 45 percent of all activity in scenes after only 12 minutes. After 22 minutes, this increases to up to 95 percent. It could legitimately be argued that this is a human rather than a technology failing but given that the two must work in tandem to be effective, where the fault ultimately lies is largely irrelevant. This research was based on only two monitors; however an airport control room, given the wide area surveillance required, will often have considerably more,

further increasing the difficulties for the security personnel who are expected to spot potential threats unaided.

With the advent of IP (internet protocol) based video surveillance products and systems rather than their analogue predecessors, opportunities have been harnessed to automate many of the identification processes. By adopting intelligent software algorithms and video analytics, cameras use the algorithms to detect specific activities and scan for suspicious behavior, objects or individuals. One of the more obvious applications for such technology in an airport is the use of facial recognition software to assist authorities in picking out individuals marked on “watch lists”. But the benefits certainly do not end there. Behavioral recognition technology can be used to program cameras to recognize a number of other potential threats, from unattended objects and cars spending too much time parked in a certain area to congestion hotspots and passengers moving outside pre-defined areas. In each case, the system can be set to provide an automatic alert if a potential threat is identified. This alleviates the boredom for the security personnel which can seriously compromise the effectiveness of a video surveillance system, allowing them to focus on potential threats and stop attempted security breaches before they occur.

### **Integration is key**

Having recognized that intelligent software in video surveillance is a significant step forward, video surveillance alone is in no way a comprehensive solution for airport security. Siemens airport specialists undertook a project which involved interviewing around one hundred experts and insiders from the fields of socio-economics, air transport and airports. Entitled “Future of Airports 2030”, the objective was to identify the trends and challenges that airports and their suppliers faced, working out a concept for the airport of 2030. One of the strong messages that came out of the research was the need for increased integration of the different elements of the security process – video surveillance, intrusion detection, access control, alarm management and evacuation – as well as taking this integration further, recognizing the capability that already exists to include building automation as well as fire detection and suppression systems to optimize performance and energy efficiency, another significant focus for airports. The project also highlighted the trend for other modes of transport, such as rail travel, to become more closely integrated into airport system planning in certain regions. Again, this strengthens the argument for integration, providing a central point from which to monitor and respond to threats.

### **Bodø Airport, Norway**

While the scale and the approach adopted will change from airport to airport, the fundamentals of security remain the same and the benefits of integration hold true whatever the size of the airport.

An example of how video surveillance systems can be integrated to protect both exterior and interior operations is provided by Bodø Airport in Norway where Siemens installed intelligent Wide-Area Video Surveillance.

As the main domestic airport in Norway, Bodø provides flights to Oslo and other larger Norwegian towns, as well as being a hub for regional airline flights to the Lofoten islands and managing jet operations to major domestic destinations. In 2007 it served approximately 1.5 million passengers. In 2009 Siemens received the order from Avinor AS Norway, the operator of Bodø Airport and the company responsible for the entire Norwegian airport network system, for an Intelligent Siveillance™ video surveillance system. The requirement from Avinor was for the video solution to effectively monitor important areas within the airport buildings, including baggage handling, security checking and an area designated as the “Critical Part of the Security Restricted Area”. Externally, security was also required for parked aircraft, as well as generally improving the efficiency of the day to day operations at the airport.

The system features Siveillance™ SiteIQ from Siemens for wide area surveillance. With this intelligent video solution, the airport achieves a significantly higher level of security, combined with additional operational savings from improved resource planning and security management. In designing the system, the on-site team paid particular attention to the exact positioning of the individual cameras and, importantly, their viewing angles, to optimize detection rates. The particular environmental conditions of Bodø were also taken into account in a detailed report which served as the blueprint for the system design.

The intelligent video solution features over 60 cameras connected to Siveillance™ SiteIQ to monitor outdoor and perimeter security areas, with the queues at check-in counters and security control posts also managed through this intelligent video approach. An automatic number plate recognition system from Siemens has also been installed for vehicle surveillance at many of the airport gates. Also, the digital video recording system for virtual matrix (streaming) functions and event recording, plus the airport video management system from Siemens have been installed.

The various elements of the system, including the integration of existing dome cameras, are all routed to a single display, with an aerial photograph of the airport used to indicate movements in the form of icons which represent people, cars, trucks and planes. In the event of an alarm, the respective video image appears on the display in a “picture-in-picture” mode and on pre-defined alarm monitors. A sophisticated user and access rights concept was developed in co-operation with Avinor to allow specific access privileges to the system from designated locations across the entire airport.

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