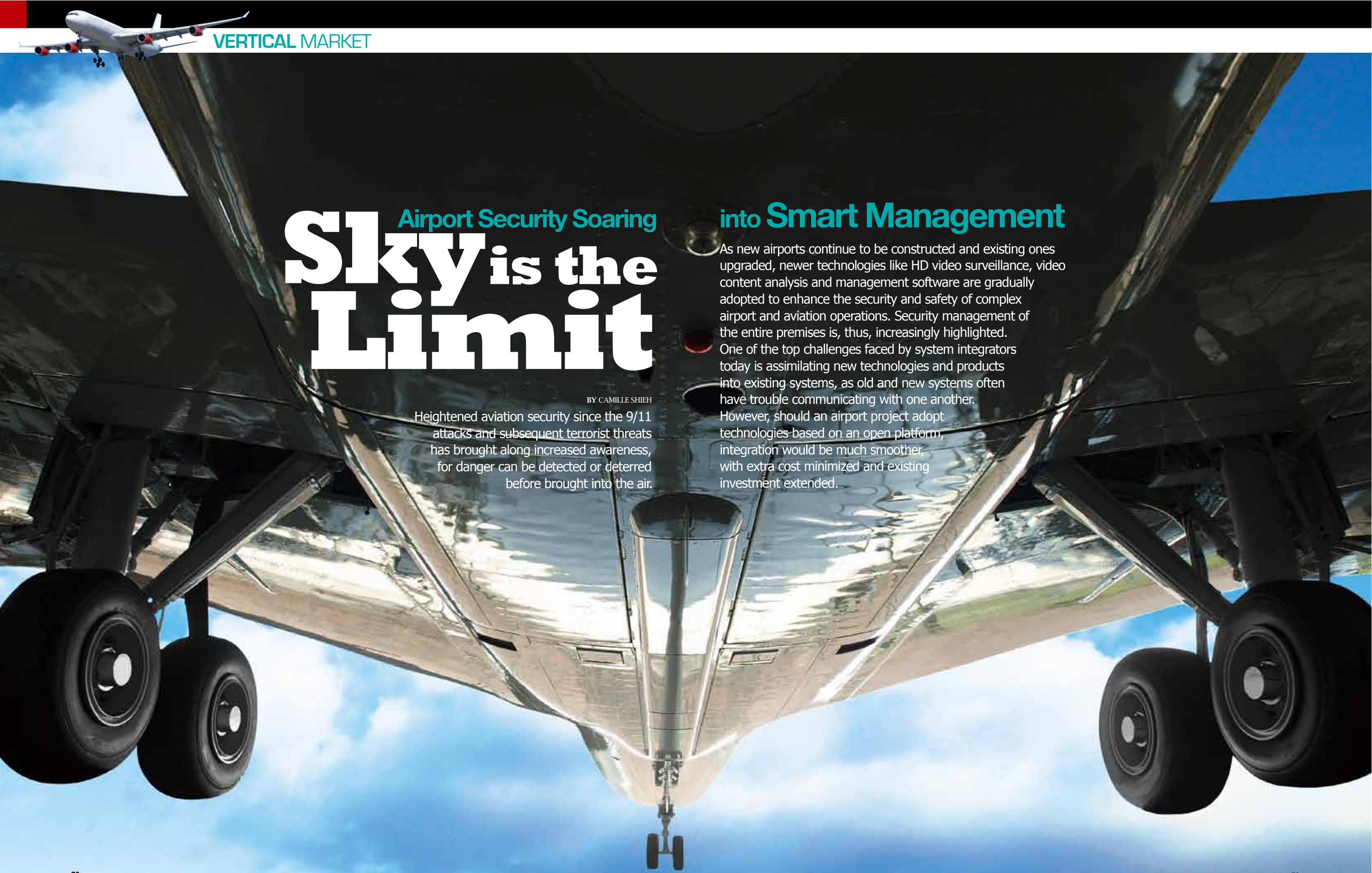


Airport Security Soaring

Sky is the Limit

BY CAMILLE SHIEH

Heightened aviation security since the 9/11 attacks and subsequent terrorist threats has brought along increased awareness, for danger can be detected or deterred before brought into the air.

into Smart Management

As new airports continue to be constructed and existing ones upgraded, newer technologies like HD video surveillance, video content analysis and management software are gradually adopted to enhance the security and safety of complex airport and aviation operations. Security management of the entire premises is, thus, increasingly highlighted. One of the top challenges faced by system integrators today is assimilating new technologies and products into existing systems, as old and new systems often have trouble communicating with one another. However, should an airport project adopt technologies based on an open platform, integration would be much smoother, with extra cost minimized and existing investment extended.

Uwe Karl, Head of Airport Solutions, Siemens Building Technologies

Mark Wilson, VP of Marketing, Infinova

Arjan Bouter, International Sales Manager at Nedap

Julian Harris, Research Analyst for Aerospace and Defense in North America, Frost & Sullivan

Art Kosatka, CEO of TranSecure (a member of the Association of Independent Aviation Security Professionals)

Gerard Otterspeer, Product Marketing Manager for CCTV, Bosch Security Systems

James Chong, CTO of VidSys

Larry Lien, VP of Product Management at Proximex (an ADT Security Services company)

Rolland Trayte, President of FutureSentry

Jim Kennedy, President of Inex/Zamir

Joshua Koopferstock, Director of Marketing, Feeling Software

It is common to find restaurants, retail shops, cafes — and even hotels, spa centers and casinos — in today's airports. "As airports provide a global transportation network among cities, they are important hubs and have considerable regional economic significance, giving the cities they serve great commercial advantages over those that do not have them," said Uwe Karl, Head of Airport Solutions, Siemens Building Technologies. "Airports will undoubtedly continue to grow in number, and existing airports will continue to grow in size in order to satisfy the increasing demand for mobility. The systems employed to protect them, therefore, need to accommodate such growth, with a smooth migration path to allow systems to expand easily."

NEWER, BIGGER, BETTER

The mature markets in North America and Western Europe see a continuation of security upgrades. "The sales outlook is promising as threat has not lessened," said Mark Wilson, VP of Marketing, Infinova. "The biggest need requested by airports in North America is HD video surveillance."

The US market is continuing at a good pace, fueled by the events of 9/11 and carried through up until the Obama administration, said Mark Moscinski, VP of Safety and Security, System Development Integration. "Federal stimulus funding has also kicked in for many airport security projects with design phases giving way to implementation projects; in fact, we seem to be only at a halfway point through the federal funds for the realization of our current projects."

In the last few years, large airports in Europe have had more difficulty with growth than smaller airports, and this trend will continue in the next five years, said Arjan Bouter, International Sales Manager at Nedap. "In Europe, large airports are looking for more flexible solutions to curb the impact of disruptions by extreme weather conditions and other disasters."

Newer airports in the Middle East and Asia will also challenge the European ones, Bouter continued. "Obviously, this will have an effect on security management systems; new safety and security platforms will contribute to a lower TCO that improves the competitveness of European airports."

New and upgrade projects in emerging markets, such as China, India, Southeast Asia, Eastern Europe, Russia and Latin America, see healthy growth in number. "We recently completed a project for 22 airports in India, in addition to other major projects in Easter Europe and the Middle East," Wilson said. "For these projects, we used a combination of analog and HD cameras, and in many cases, they are taking advantage of the existing fiber optics."

These regions are characterized by strong expansion. For instance, China has planned over the next five years 55 new airports to cover the expansion of traffic, Bouter added. "These regions will implement new security platforms, often based on open standards."

Many airports in these regions are also undergoing a "face-lift," and usually for these projects, HD and megapixel technologies are sought after in conjunction with advanced software like video content analysis (VCA), said Aluisio Figueiredo, COO of Intelligent Security Systems.

Overall, the physical security market for airports is expected to double by 2016, said Julian Harris, Research Analyst for Aerospace and Defense in North America, Frost & Sullivan. "Perimeter security is growing significantly due to technology innovation and the push to protect patron safety. We see fiber-optic fencing experience more growth than traditional fencing, as the former continues to be invested in."

In video surveillance, Harris sees more IP surveillance installed at larger international airports, while smaller airports opt for analog technology with less integration of disparate security systems. "In terms of access control, fingerprint readers tend to be adopted by larger airports, while smaller airports stick to standard access control protocol, suggesting that larger airports are exploring more options."

Biometrics will continue to play an increasingly crucial role, agreed Scott Mahnken, VP of Marketing, Bio-Key International. "Convenience and security are paramount in airports, and biometrics are virtually impossible to corrupt yet involve no cards, passwords or tangible assets. Documents may be forgotten, but we will always have our fingerprints or other biometric attributes."

GOVERNMENT INVOLVEMENT

As most airports are state-owned, municipal, state and federal governments are crucial players in determining what security measures need to be set up in airports. "There is a maze of security and regulatory issues facing every airport," said John Diedam, VP of International Sales, Ingersoll Rand Security Technologies. "It starts with a thorough understanding of Title 49 CFR Part 1542 of the US Homeland Security's Transportation Department, ranging from who must be in charge, how to become compliant and airport tenant security programs, to security of various locations within the airport, law enforcement and access control. The first objective is to reduce the complexity of this and all other pertaining regulations, along with the security ramifications."

Next, one needs to determine and resolve airport security and fire safety vulnerabilities, Diedam continued. "Security could be almost perfect if everything was locked down and nobody could come or go, but that's not feasible. What needs to be done is to assure that security is at a high level but innocents can escape when needed. There's a compromise, and they are typically found within the regulations aforementioned and local codes and regulations."





In the U.S., every commercial airport is owned and operated by a local government entity — city, county, state or port authority — each with its own political structure, funding capabilities, environmental/noise requirements and security/law enforcement support, said Art Kosatka, CEO of TranSecure (a member of the Association of Independent Aviation Security Professionals). "There are federal regulations, as well as state and local building and electrical codes and fire and life safety codes, which must be met."

"We often see that local or state governments are strongly involved in the economic development of the region/country where the airport is situated," Bouter said. "Under such circumstance, local solution providers are often favored to take on new or upgrade projects."

Airports are used as hubs to create new business in many places, observed Gerard Otterspeer, Product Marketing Manager for CCTV, Bosch Security Systems. "At times, international consultants such as ADPI, COWI-Larsen, Bechtel and Parsons set the security standards in airport projects while they help clients plan and design aviation construction projects."

NEW ≠ BEST

While there are strict and high security requirements, not all airport projects use the latest technologies the security industry has to offer. "Airport clients are very savvy customers, knowing what they need and insisting that their integrators and manufacturers provide systems that meet their expectations for both performance and budget," Wilson said. "With even new construction projects, it is not unusual to see analog video implanted in areas where it sufficiently does the job. In fact, there are many hybrid and coexisting systems at airports."

"Airports focus on leveraging as much of their existing technology as possible; they do not have a rip-and-replace mentality," said James Chong, CTO of VidSys. "Additionally, they tend to wait to use new technology until it has been proven in the marketplace."

"Generally, we like to think in terms of first providing an initial concept of operations (ConOps) for the customer — what are you doing, why do you need it, where is it required, what is the threat you are addressing and what are the priorities," Kosatka said. "This should drive the technology decisions, one of which might be that new technology in consideration isn't right for the airport's actual needs at all."

Securing airports is a complex undertaking, remarked Larry Lien, VP of Product Management at Proximex (an ADT Security Services company). "Airports are continuously looking for ways to improve ConOps to best protect passengers and employees, as well as avoid poor publicity and lost revenue from security incidents. Some airports leverage the latest technologies to fit specific project requirements. They evaluate many factors to make the decisions, including the benefits, risk factors, costs and ROI for new technologies. Newer technologies, such as HD cameras, offer significant advantages because airports may leverage fewer cameras but still cover a large area. However, airports must still consider the ability of newer technologies to communicate with existing systems and fit within the ConOps."

In airport projects, proven brands, solutions and products are preferred, while current technologies are followed in a general fashion, Otterspeer observed. "HD and even full HD products have gained popularity in this kind of projects for applications like forensic search and wide-angle viewing; however, during the course of a project, the technologies used can change." Technologies used are much influenced by the consultants in many cases.

HD AND VCA

Using HD video streaming can help extend the life of the existing analog cabling of an airport surveillance system while providing better forensic evidence and the zero latency needed for live monitoring using PTZ camera controls, Wilson said.

In airport security, the devil is indeed in the details. "HD delivers a wide-screen format that captures more useable image content, reducing the amount of empty sky or foreground in a scene if a wide-viewing angle is needed, such as at baggage claim areas," Otterspeer said.

Motion sensor technology has certainly improved and can now detect farther and more precisely than previous versions, said Rolland Trayte, President of FutureSentry. "Solar-powered wireless sensors offer simple installation and add the detection range to 1,000 feet. Advanced applications can also add analytics to further ensure robust detection and reliability of alarming inputs, and enable the system to 'learn' the difference between uniquely shaped objects."

Adoption of VCA for airport monitoring remains low, despite a visible growth in the last couple of years. "VCA is used in about less than 10 percent of airport projects currently, with potential to grow moderately to 15 to 20 percent in the next few years," Harris said. "Security standards are not in place yet to get this widely adopted in the market."

Actual applications, Otterspeer added, include line crossings for external perimeters and wrong-way or loitering detection for strategic locations such as air traffic control towers, customs gates and aircraft ramps. "VCA is used from site to site, depending on what the project requirements are," Moscinski said. "Currently, simple analytics are used most often, as the technology still has several barriers to overcome, such as unsatisfactory hit ratios and high FARs. Simple VCA like motion and object detection can help identify when someone has crossed checkpoints from the nonsecurity to the security side, alarm relevant personnel and provide evidence to assist with tracking and identifying the intruder. We see the most active VCA evaluation now taking place for use in perimeter security."

KNOWING WHAT AIRPORT CLIENTS NEED

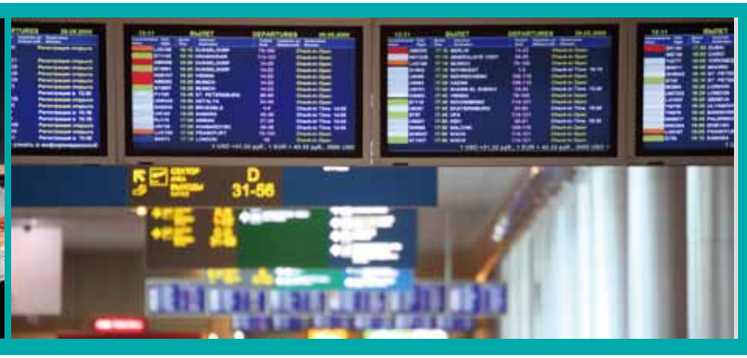
Airport clients do not have a rip-and-replace mentality. Before designing a solution that follows the latest technology hypes, walk through the following with potential clients:

- Provide an initial concept of operations (ConCops);
- Assess which parts of the existing systems can be kept; and
- Propose a solution with suitable new technologies that would also integrate well with the existing systems.

Another key technology identified is ALPR, which is very common these days at Tier-1 (major) airports and is becoming increasingly common at Tier-2 and even some Tier-3 airports, said Jim Kennedy, President of Inex/Zamir. "The primary use is for parking revenue management to prevent ticket-swapping fraud and subsequent revenue losses. Increasingly, we are requested to provide a 'list-matching' capability to our system so that local authorities can be immediately notified if a vehicle that is on a watch list enters a specific parking facility."

The disappointment with VCA often stems from undelivered functions it promised in the beginning, Figueiredo said. "Many vendors are pushing less-than-ready VCA products out to customers to make quick cash even if the technology is still not mature enough for real-life usage, ultimately creating more problems for customers. The accuracy of VCA reading is, on average, 85 percent or better when utilized in a controlled environment with strategic camera position and correct lighting."

HD, megapixel cameras and video analytics may provide improved information and situational awareness, but they introduce enormous operational costs in terms of bandwidth and storage requirements, and other issues such as forensic capability and privacy.



DRAWING TOGETHER

In expansion projects, such as a midsize, domestic airport scaling to large, international airport or a large-scale airport expanding current facilities, new security systems and technologies, such as HD video, IP-based video and VCA, are often introduced. "These new technologies cannot be installed independently of other existing security systems and require shared information," Lien said. "Security operators must use different consoles and different systems to manage incidents. The costs associated with operating independent and nonintegrated systems, such as training, additional skills required for reporting and longer incident response time, are significant."

Yet connecting disparate systems under one central command is no easy task. "We face a lot of problems with legacy systems," Figueiredo said. "Sometimes, there is no documentation, no SDK, or the company responsible for the system simply went out of business. System integrators (SIs) like us basically have to make sure that the systems work together through the use of an open-platform approach."

"Typically, each installer/integrator is focused on making sure its own system is installed and runs correctly," Lien added. "Expectations of how to integrate and what an integrated system can realistically accomplish could often be miscommunicated. Entities that require communication between systems should find an experienced SI that can help them set clearly defined goals for their environments."

For security purposes, central management software like physical security information management (PSIM) is a good way to maintain unified control over different systems in operation. "A true PSIM solution enables one complete and intelligent security system by aggregating information from various subsystems and automating processes as appropriate to effectively manage situations," Chong said.

PSIM software is a good option whenever doing a significant expansion or a new project, added Joshua Koopferstock, Director of Marketing, Feeling Software. "Multiple systems, mapping and SOPs should be combined within a single software package, and this common operating picture in airports is becoming increasingly important as security systems become bigger and more complex as the facility expands in size." To facilitate smooth integration of hardware and software, as well as the old and the new, adopting an open approach that grants partners with access to their SDKs and APIs is vital, Koopferstock said.

"Oftentimes, SIs and PSIM vendors combine their knowledge of and expertise in physical security technologies, process management, and security policy and compliance to provide organizations with a complete situational awareness and management solution," Chong said.

In addition, SIs and airports should work together to consider their ConOps and how the systems should function after integration, Lien remarked. "Understanding process flows, automating tasks, correlating information and giving usable information to operators will help airports optimize their operations and realize cost savings."

Many are now focused on quickly identifying situations and disseminating the information to the guards, police and other necessary agencies in real time, Chong said. "Airports are also starting to use a single security asset, such as a camera, for multiple uses. For example, security may use a camera to see if someone is walking around the runway, while air side operations may use the same camera to verify if the gate is available for an arriving flight."

The growing complexity of daily airport operations demands equally diversified security systems. Smoothly integrated systems, such as access control and people tracking, will help with the fluidity of security management on aviation premises. Biometrics, the new kid on the block for airport access control and ID authentication, will be explored next.