



Solution Brief

Going the Distance: Airport Perimeter Surveillance

Detecting unauthorised access along airport perimeters is a large-scale challenge, and ubiquitous perimeter surveillance solutions each present unique capabilities and limitations.

In this Solution Brief, Optic Security Group's Adelaide-based OpticIQ Lab provides a high level comparison of several surveillance technologies relevant to airport perimeter scenarios, including visible spectrum, thermal, and panoramic CCTV, and radar.



The Challenges

Recent years have seen several highly publicised perimeter security breaches at airports internationally. Intruders gaining unauthorised access to restricted areas of airports have caused damage, disruption, and put lives at risk.

Under the Aviation Transport Security Act 2004, certain airports must have and comply with a transport security program (TSP), which includes requirements to deter and detect unauthorised access to airside areas.

But airport perimeters are typically many kilometers long, and traditional approaches to surveillance tend either to be inadequate or excessively expensive.

With security controls concentrated in airport terminal buildings, hangars, workshops, and staging areas, long airfield perimeters are relatively vulnerable to unauthorised access.

Perimeter fencing and security signage provide for a degree of deterrence to casual trespassers, but they are of no deterrence to a highly motivated perpetrator.

Perimeter security patrols and fence systems and alarms deliver additional deterrence as well as the ability to detect intrusions. But patrols are periodic, and alarms do not deliver the levels of situational awareness needed to stage an informed response.

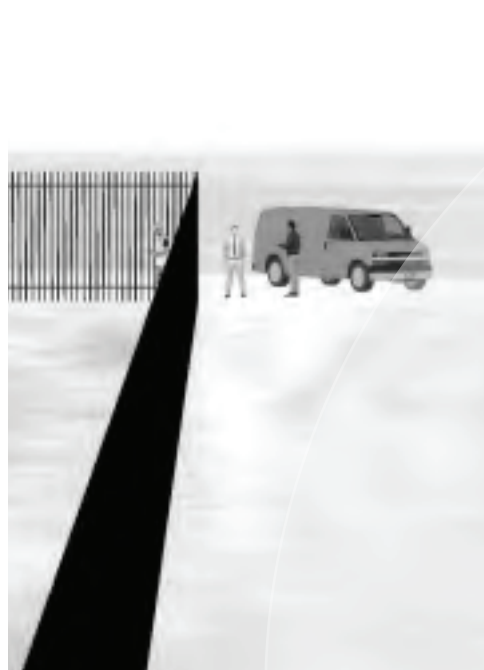


Visible Spectrum

Certain models of visible spectrum CCTV cameras (HD or 4K) possess built-in zoom lenses that can detect intruders (using analytics) at distances of over 300m. But that's in daylight conditions only.

In low-light or night-time conditions, visibility is dependent on either (i) sufficient lighting along the fence length, or (ii) built-in Infrared illumination. Dependence on infrared will result in a reduction in the maximum distance of person "detectability" to between 80 and 140m.

With perimeters in excess of 10km in length, ubiquitous surveillance of airport fencelines using only visible spectrum cameras would require significant camera and lighting infrastructure investment - and significant cabling or transmission issues.



Thermal Cameras

Thermal cameras with long focal length lenses can cover fence distances of up to 300m. The thermal standards for detecting a person are based on Johnson's criteria, which is defined by a 10pix/m resolution, delivering images of persons in silhouette form.

The key advantage of thermal is that it works day and night without the need for additional external illumination. But this comes at a cost - typically 5~10 times the cost of a typical visible spectrum camera.

Panoramic and RADAR

Multi-sensor panoramic cameras offer a more powerful solution. One unit can achieve detection distances up to 3km and wide coverage of up to 180°. They can take the place of several standard CCTV cameras but are more expensive per unit.



This detection performance is sufficient for an AI-enabled panoramic camera to detect a person (or other object) and raise an alarm. Face recognition can be achieved at distances of around 600m.

Radar solutions are capable of detecting persons at distances of up to 1,000m, with a single unit's coverage at around 120°. They can be paired with a PTZ camera to automatically lock onto objects of interest.

Both panoramic and radar solutions are low maintenance and can offer a wide range of additional AI object recognition capabilities and ability to interface with a range of security and other systems.

The Logipix multi-sensor panoramic solution, for example, delivers object classification up to 3km, real-time GPS coordinates of persons/objects of interest, high-resolution footage to incident response units, and an airside analytics suite.



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About Optic Security Group

Optic Security Group provides converged security risk management solutions serving the needs of enterprise and government clients across Australia and New Zealand.

Optic delivers networked and integrated physical security and safety system design, installation, service, and maintenance to major airports in several Australian states and territories, in addition to customers in the broader aviation and border security sectors across Australasia.

OpticIQ, a division of Optic Security Group, researches and develops emerging security technologies, and advises in relation to technology risk and Responsible AI. The Adelaide-based OpticIQ Lab is a sovereign capability for the development, testing, training, and deployment readying of advanced analytic and AI-enabled security technologies.

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