CASE STUDY

Enhancing Executive Protection and Public Safety Through Photogrammetry

How AeroVis Uses ACSL's SOTEN Drone to Increase Situational Awareness and Mission Readiness

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Introduction

Executive protection (EP) and public safety teams are under increasing pressure to anticipate risk to their clients rather than react to it. Advanced planning, situational awareness, and precise coordination are no longer optional, they are mission-critical. To approach this, some of these teams are implementing advanced technology into their workflows to increase readiness and reduce risk when running an operation.

AeroVis is a U.S.-based drone solutions and technology firm specializing in aerial data collection, executive protection, public safety support, and advanced security assessments. Leveraging emerging technologies, AeroVis helps clients identify vulnerabilities, plan for contingencies, and reduce exposure to dynamic threats across urban, rural, and complex environments.

To support these missions, AeroVis has integrated ACSL's SOTEN drone, a secure, NDAA-compliant, Japanese-manufactured small unmanned aircraft system purpose-built for mapping, inspection, and data integrity. ACSL is a leading drone manufacturer focused on delivering high-precision, secure aerial solutions for government, infrastructure, and public safety applications in the United States.

By combining SOTEN's advanced mapping capabilities with photogrammetry workflows, AeroVis creates detailed 3D models of environments before a principal arrives, transforming how executive protection and public safety teams prepare for and run operations.

Who is ACSL?

Japan's largest drone manufacturer, ACSL Ltd., was founded in 2013 and became publicly listed on the Tokyo Stock Exchange in 2018.

In 2023, ACSL Inc. established its U.S. headquarters in California to bridge the evolving demands of the American commercial drone market with Japan's advanced, security-focused UAS innovation. Backed by leadership with experience from global aerospace and drone leaders, the company was built to deliver enterprise-grade, NDAA-compliant solutions.

In 2025, ACSL accelerated its growth across the United States, expanding its dealer network, enterprise partnerships, and operational footprint to meet rising demand for secure drone platforms. That same year, ACSL launched the TAITEN Smart Controller, designed for demanding field operations with enhanced daylight visibility, mission control functionality, and secure system integration.

Further strengthening its modular ecosystem, ACSL introduced the SAMO dual thermal-optical payload in collaboration with FLIR, combining high-resolution visual imaging with trusted thermal technology into a single, swappable solution. Together, these advancements underscore ACSL's continued investment in secure, adaptable drone systems purpose-built for critical missions in the U.S. market.

The Use Case: Photogrammetry for Executive Protection and Public Safety

Executive protection operations have a higher fail rate not because of a lack of personnel, but due to insufficient awareness of the environment. Blind spots, concealed approaches, elevation changes, and complex building geometry can all introduce risk, especially in unfamiliar locations.

AeroVis uses the ACSL SOTEN drone to perform pre-event aerial mapping missions, capturing high-resolution imagery that is processed into accurate photogrammetry-based 3D models. These models provide EP teams with a shared, spatial understanding of the operating area long before boots hit the ground.

Key applications include:

- Pre-event site security assessments
- Route and motorcade planning
- Rooftop, facade, and perimeter analysis
- Identification of blind spots and areas of interest

Rather than relying solely on static, top-down maps or ground-based walkthroughs, AeroVis delivers three-dimensional situational awareness, allowing teams to visualize threats from the same vantage points an adversary might exploit.

The Challenge: Increasing Visibility and Awareness Before the Mission Begins

Executive protection professionals face an uncomfortable reality: reactive protection has a low success rate. According to an analysis of 141 incidents, industry expert Ivan Ivanovich calculated the success rate of protection teams responding to an unexpected threat at only **17.75%**. In addition, a vast majority of these incidents occur while the principal is entering or exiting their vehicles. AeroVis' team looks to change that number through the adoption of emerging technology and better preparation.

Obstacles being faced:

- Teams must process too many variables in real time
- Environmental complexity limits line-of-sight awareness
- Ground-based perspectives fail to capture vertical and spatial risk

Without comprehensive pre-planning, EP teams are often left reacting to threats instead of controlling variables ahead of time.

AeroVis set out to address this gap by using aerial photogrammetry as a force multiplier, enabling better preparation, clearer communication, and faster decision-making when seconds matter.

The Role of Photogrammetry in Safety and Protection

Photogrammetry transforms overlapping aerial images into precise, measurable 3D models. For executive protection and public safety teams, this means:

- **Improved spatial orientation**: Teams can understand elevation, angles, and sightlines that are invisible in 2D maps
- **Identification of blind spots**: Rooftops, balconies, stairwells, and obscured approaches are easier to analyze
- **Shared reference points**: Grid references and labeled areas allow air and ground teams to communicate clearly
- **Repeatable planning**: Models can be reused, updated, and compared over time

In real-world operations, AeroVis uses these models to create grid reference graphics and shared digital maps, allowing ground personnel to orient themselves instantly, reducing confusion and improving response coordination.

Where ACSL Fits Into AeroVis' Workflow

SOTEN's Modular System

For AeroVis, mapping aerial operations utilize ACSL's SOTEN drone, chosen for its precision, security, and operational flexibility. SOTEN integrates seamlessly into AeroVis' executive protection and public safety workflow, supporting both photogrammetry missions and a growing number of other aerial applications.

A key advantage of SOTEN is its swappable payload system, which allows AeroVis to adapt quickly to changing mission needs. For photogrammetry, the team uses SOTEN's standard 20-megapixel, 1-inch sensor payload with a mechanical shutter, a critical component for capturing crisp, distortion-free imagery while the aircraft is in motion. This ensures reliable image quality for accurate 3D model generation.

For other use cases, AeroVis can quickly switch to the SAMO thermal payload, enabling thermal awareness and data capture without the need of another aircraft. Now, the team can easily switch to real-time area monitoring as needed. Combined with SOTEN's foldable, compact design and stable flight performance, the platform supports rapid deployment and consistent data capture in time-sensitive environments.

Where ACSL Fits Into AeroVis' Workflow

TAITEN Smart Controller and TAKEOFF Mission Planning

AeroVis operates SOTEN using the ACSL TAITEN smart controller, featuring a 7-inch, 1500-nit display optimized for daylight visibility. The large, bright screen allows operators to monitor flight and camera data clearly while maintaining situational awareness in the field. Additional use cases for TAITEN include displaying the live feed to separate screen(s) so EP teams can monitor areas of interest.

Mission planning and execution are handled through ACSL's TAKEOFF application, which enables AeroVis to conduct pre-planned photogrammetry flights. AeroVis' team has two options for executing the operation; arrive on site and plan the mission while in the field or use the downloadable maps option to pre-plan the flight ahead of time. Both options utilize the TAKEOFF app to define flight paths, control overlap and altitude, and standardize camera angles, ensuring consistent data capture across complex environments.

These pre-planned missions reduce time on site while maximizing data quality, allowing teams to arrive prepared with a detailed understanding of the operating area rather than building situational awareness under pressure.

Where ACSL Fits Into AeroVis' Workflow

Secure, NDAA-Compliant Operations

When supporting government and high-risk clients, security and compliance are essential. SOTEN is NDAA-compliant, manufactured in Japan, and designed with secure data handling at its core. This allows AeroVis to operate confidently in government, law enforcement, and public safety environments where trusted technology is required. By deploying a secure and compliant platform, AeroVis reduces risk not only in the physical environment, but also in how sensitive data is collected, processed, and shared.

Building 3D Models with Pix4D

After data capture, AeroVis processes imagery using Pix4D photogrammetry software to generate detailed 3D models, orthomosaics, and point clouds. ACSL's SOTEN platform integrates seamlessly into this workflow, ensuring captured data is optimized for post-processing.

Pix4D enables:

- Accurate spatial measurements
- Cloud-based sharing of models with stakeholders
- Historical timelines to track environmental or infrastructure changes

This capability is particularly valuable for recurring protection details or facilities where security leadership may change over time. Instead of losing institutional knowledge, teams can reference historical scans to understand how an environment has evolved.

Reducing Failure Rates Through Technology-Driven Preparation

As stated prior, the success rate for EP teams responding to an unplanned incident is sobering. This reality reinforces the need for proactive planning rather than reactive response.

By incorporating SOTEN-enabled photogrammetry into their workflow, AeroVis aims to:

- Reduce uncertainty before an operation
- Improve coordination between air and ground assets
- Move principals to safety earlier when threats emerge
- Control variables instead of reacting to chaos

Drones are not replacing close protection personnel, but they are dramatically improving how teams prepare for what lies ahead. They yield a higher ROI on pre-mission planning when compared to traditional approaches.

Conclusion

For AeroVis, ACSL's SOTEN drone is more than a mapping tool, it is a core component of mission preparation for executive protection and public safety operations.

SOTEN plays a vital role within AeroVis' operations. By enabling high-fidelity photogrammetry, secure data capture, and efficient pre-planned missions, SOTEN allows the team to anticipate threats, visualize risk, and prepare for multiple scenarios before a principal arrives on site. But for AeroVis, it is about more than capturing images, **it is about leveling the playing field** by streamlining communication and creating early warning capabilities that help teams stay ahead of emerging risks.

In executive protection, a well-known reality is that protection teams must get it right every time, while an adversary only needs to succeed once. In environments where failure rates remain high, technology-driven preparation can make the difference. Through its use of ACSL's SOTEN platform, AeroVis is redefining how executive protection teams plan, communicate, and protect. Setting a new standard for situational awareness and operational readiness.

AeroVis
DRONE SOLUTIONS

About AeroVis

AeroVis was founded by two aviators whose careers span more than 20 years in U.S. Army rotary-wing aviation and 18 years in military and DoD drone ops. Forged in high-stakes environments where precision, discipline, and accountability were non-negotiable, they are channeling that experience into raising the global standard for professional drone services. With an aviation-grade mindset at its core, AeroVis delivers structured, repeatable, and mission-ready unmanned operations across agriculture, infrastructure, energy, and security worldwide.

ACSL

About AeroVis

ACSL Inc. is the US subsidiary of Japan's largest drone manufacturer, ACSL Ltd. Established in California in January 2023, the company bridges the needs of the US commercial drone market with Japan's innovative drone solutions. The leadership team brings extensive experience from renowned companies like Boeing and DJI, supported by an advisory board with decades of industry expertise.