



# Safer prisons: Espirito Santo adopts AI-powered perimeter video security from Motorola Solutions

The Espirito Santo Department of Justice (SEJUS-ES) is deploying a cutting-edge perimeter video monitoring system featuring intelligent cameras from Motorola Solutions across ten of the state's correctional facilities.

This initiative is designed to strengthen safety and security across the prisons' perimeter, prevent escapes, identify suspicious activity and enable faster, more effective responses to incidents, detected by high-resolution, AI-enabled cameras. This project marks a significant leap forward in modernizing the state's correctional infrastructure, establishing Espirito Santo as a benchmark for technology-driven prison security.



**GOVERNO DO ESTADO  
DO ESPÍRITO SANTO**

**Espirito Santo Department of Justice  
(SEJUS-ES), Brazil.**

Prison system / State public safety.  
Deployment of AI-powered perimeter video  
monitoring across 10 penitentiaries.  
[sejus.es.gov.br/](http://sejus.es.gov.br/)

## **Motorola Solutions technology**

- Avigilon Bullet Cameras
- Avigilon PTZ Cameras
- Avigilon Servers
- Avigilon Operator Workstations
- High-Resolution Professional Monitors
- Avigilon System Design Tool for perimeter coverage planning

## Challenges

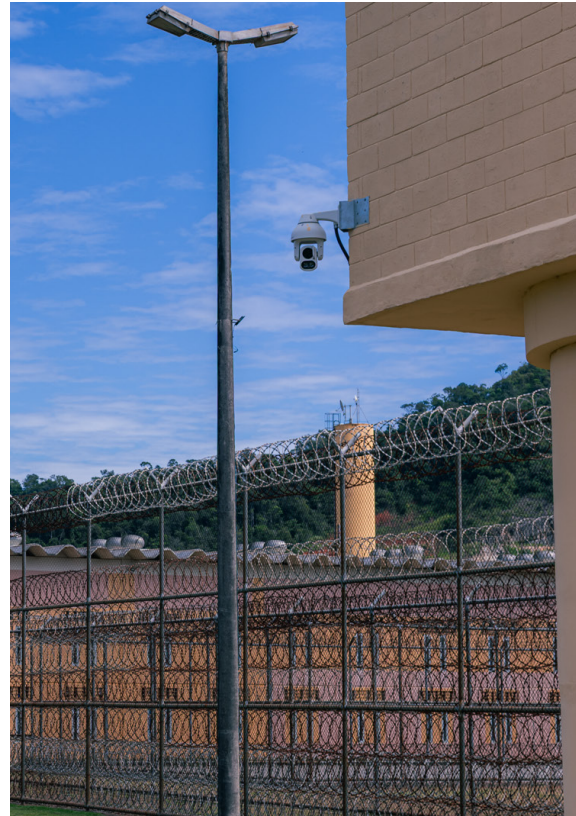
Prisons across Espírito Santo faced critical perimeter security challenges — particularly in isolated units located outside a larger complex. Previous incidents, such as escape attempts, highlighted the need for more effective solutions. The traditional model, relying on analog interior cameras and manual monitoring by security officers, was limited and vulnerable to human error. Aging prison infrastructure added another layer of difficulty to security operations, requiring structural adaptations before an upgrade.

## The solution

The project entails the installation of 160 high-resolution, AI-enabled cameras, strategically positioned to enhance comprehensive perimeter coverage for each correctional facility. SEJUS-ES, in partnership with Motorola Solutions, used the Avigilon System Design Tool to plan an efficient monitoring layout — enabling seamless coverage without gaps between cameras.

The solution also delivers advanced analytics capabilities, including intrusion detection in restricted areas, people and vehicle counting and categorization, license plate recognition (LPR), feature recognition integrated with state and federal public safety databases, anomalous behavior analysis and sound detection for incidents including gunshots, breaking glass and shouting.

The AI algorithm embedded in Motorola Solutions' video system allows for high-precision subject classification, capable of distinguishing between individuals, vehicles and critical objects while minimizing false alarms from non-threatening sources such as animals. This accuracy builds control room operator confidence in the system and allows alerts to be acted upon with greater speed.



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"This solution completely redefines how we approach video monitoring in the prison system. Before, we depended on an officer watching multiple screens and trying to spot anomalies. Now, with embedded analytics, it's the system itself that flags what's out of the ordinary — making surveillance more continuous, consistent and efficient.

By incorporating technology into the Penal Police workflow, we enhance facility security and actively contribute to the implementation of the state's public safety policies. Motorola Solutions provided more than just a modern solution — they took the time to understand the complexity and specific needs of the penitentiary system. I'm convinced this is just the beginning."

Rafael Pacheco — Secretary of Justice, Espírito Santo

The technology is capable of automatically identifying whether a person moving through the perimeter is an inmate, staff member or visitor based on pre-defined characteristics — generating personalized alerts accordingly.

## More about the solution

### Avigilon Unity Video

The Avigilon Unity Video 8 system combines the reliability of on-premises infrastructure with the convenience of cloud-based management, enabling centralized administration across multiple sites. It also supports remote access, secure video clip sharing, appearance search, LPR, feature recognition and detection of unusual activity or suspicious sounds. Real-time notifications can be delivered directly to mobile devices, enabling faster incident response.

### H6A Bullet and H5A IR PTZ Cameras

The Avigilon H6A Bullet camera is a powerful, intelligent solution for focused video security, delivering high-resolution video. Equipped with AI-driven video and audio analytics, it detects critical events and audio disturbances — such as gunshots or breaking glass — and alerts operators in real time.

The Avigilon H5A PTZ infrared camera is built to deliver wide, precise visibility even in low-light or no-light environments. With 360-degree rotation and long-range infrared illumination, this speed dome camera provides effective monitoring across large areas, including remote locations and extended perimeters. Its rugged design offers protection against water, dust, corrosion and impact (IP66/IP67/IP68 and IK10), making it ideal for demanding outdoor applications. The camera also features embedded intelligence with advanced object classification and auto-tracking capabilities.



### Key outputs

- 24/7 monitoring with automatic alert generation and delivery to authorized mobile devices
- Reduced risk of escapes and smuggling of contraband
- Real-time data assistance to enhance decision-making for penal officers
- Detection based on behavior, sound and unauthorized presence
- Feature recognition and LPR integrated with government databases
- Accurate categorization — even with obstacles or subjects in motion
- Reduced false alarms (no alerts triggered by animals or irrelevant objects)
- Remote access and the ability to share video with other agencies and states
- Intelligent perimeter monitoring with embedded AI
- Long-range video monitoring with night vision and low-light capability



## Use cases

The AI-powered perimeter video security system addresses a wide range of practical scenarios in a correctional environment. Below are a few examples that help improve penal police officer efficiency.



**Attention focus:** Through pop-ups and visual indicators, the system alerts operators when an alarm is triggered by the cameras deployed across correctional facilities.



**Feature recognition and appearance search:** The system identifies whether a person is an inmate, staff member or visitor through clothing, facial and object identification, and tracks them through different camera locations.



**Intrusion detection:** Alerts are issued when someone crosses restricted or prohibited zones.



**Vehicle and motorcycle recognition:** Automatic identification of suspicious or unauthorized vehicles near facility grounds, including the use of LPR analytics.



**Human-animal differentiation:** Prevents false alarms in areas where animals such as dogs, cats or capybaras may be present.



**Behavior analysis:** Monitors for suspicious movements, such as running, unusual body postures or individuals on the ground.



**Sound alerts:** Detects gunshots, shouting, breaking glass or other unusual noises through integrated microphones.



**Retroactive appearance search:** Tracking of individuals based on their image or characteristics. The system recognizes whether a person is an inmate, staff member or visitor, based on appearance and uniform, or through a reference image.



"We believe this partnership with Motorola Solutions significantly strengthens external security at our facilities. The system addresses both escape attempts and suspicious external activity, issuing real-time alerts that enable faster responses. Beyond that, the quality of the footage means that regulatory bodies can also access the recordings, fostering greater transparency and security for the people of Espírito Santo."

José Franco Morais Jr.

— Director General, Penal Police



## Results and next steps

The new system provides continuous monitoring, enhanced precision in threat detection and improved response capabilities. Artificial intelligence can help detect situations such as wall climbing attempts, unusual movement or unauthorized individuals or objects in the surrounding area — even in the presence of physical barriers like fences.

SEJUS-ES is currently optimizing its operational procedures for better alignment with the new technologies implemented, with training already in progress for over 200 operators. The system includes advanced search capabilities to assist with investigations and locating missing inmates, enabling swift tracking based on imaging.

Furthermore, automated analysis highlights key events in video footage, significantly reducing the time required for manual reviews. The system can also detect objects thrown over fences and other forms of intrusion or contraband.

## Implementation and technical highlights

Motorola Solutions goes beyond supplying cameras and software — Our team customizes the technology stack to meet the unique demands of each facility, enabling optimal coverage even in structurally complex and challenging environments. This technical rigor includes detailed planning and the use of coverage design tools. Delivery is preceded and complemented by our professional and managed services and support, resulting in a complete solution that is fully aligned with every institution's need.



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"This project brings real intelligence to prison perimeter security. It empowers officers to act with greater precision, while giving the state better tools for prevention and monitoring. At Motorola Solutions, we are proud to contribute with a comprehensive solution that integrates AI-enabled cameras, advanced analytics software and best-in-class infrastructure. More than visibility, our goal is to deliver operational intelligence — enabling security forces to act faster, smarter and more strategically. We are committed to supporting initiatives that modernize every prison system and strengthen the professionals at the front lines."

- Gustavo Ancheschi — President,  
Motorola Solutions Brazil



Motorola Solutions, Inc. 500 West Monroe Street, Chicago, IL 60661 U.S.A. [motorolasolutions.com](https://www.motorolasolutions.com)

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