

ACTi

Physical Security End-to-End Solution Provider

SMART MOTION DETECTION

A practical white paper for AI-powered object-specific motion alerts,
false-alarm reduction, and event-driven security operations

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Document purpose

This white paper explains the value of Smart Motion Detection for professional security projects and positions ACTi AI-enabled cameras as part of an integrated video surveillance ecosystem. It is written for system integrators, consultants, security managers, facility managers, and procurement teams.

1. Executive Summary

Smart Motion Detection improves traditional motion detection by focusing on meaningful object movement rather than every visible change in the scene. Conventional motion detection analyzes frame-to-frame changes and may generate alarms from trees, reflections, shadows, rain, insects, or lighting changes. ACTi describes Smart Motion Detection as an AI-based algorithm inside ACTi cameras that analyzes video frames, detects predefined object types such as people or vehicles, and sends alarms to the VMS only when those objects move in the camera view. [1]

For end users, the strategic value is fewer nuisance alarms, faster verification, and better use of operator attention. For system integrators, Smart Motion Detection creates a stronger solution story than basic pixel motion: it links AI object filtering, motion rules, VMS event handling, video verification, and response workflows into one practical security design.

ACTi's technology page also emphasizes that the solution can be used with ACTi NVR and Windows-based NVR 3 servers, where the VMS can handle alerts through video pop-up, sound alert, email alert, and related event actions. [1]

Core message

Smart Motion Detection should not be evaluated only as a camera feature. It should be evaluated as an event-quality control layer: identify the right object, confirm that it is moving, ignore irrelevant background changes, trigger the right alarm, and guide operators toward a timely response.

Key takeaways

- Smart Motion Detection helps reduce false alarms caused by non-security scene changes such as shadows, reflections, moving trees, and lighting variation.
- The key difference is object-specific motion: a person or vehicle must be detected and moving according to the selected alarm logic.
- Object filtering allows different applications to include or ignore people, vehicles, or other supported object types depending on the operational requirement.
- The best deployments connect camera-side detection with VMS/NVR actions such as pop-up, sound alert, email notification, event recording, and escalation.
- Deployment quality matters: camera placement, field of view, target size, object speed, lighting, false-alarm tuning, and response SOPs directly affect project success.

2. About ACTi Corporation

ACTi Corporation is the writer and publisher of this document. ACTi is a Taiwan-based international company founded in 2003 and serving customers in more than 100 countries. ACTi positions itself as a physical security end-to-end solution provider with a portfolio that includes IP cameras, analog cameras, network video recorders, hybrid DVR, VMS software, workstation applications, web clients, access control, central management, system health management, and integration with third-party systems. [2]

In video surveillance, ACTi provides cameras, recording platforms, standalone and software-based VMS options, and integration paths for real-time video verification. In access control, ACTi supports management of people and vehicle access through readers, door stations, and integration with video systems. In control center deployments, ACTi's Central Management System is designed for multi-site monitoring, TV wall operation, and large project scalability. [2]

ACTi also emphasizes AI-enabled security. Its AI portfolio includes deep-learning cameras and analytics functions that support detection, tracking, counting, classification, recognition, and identification of people, faces, vehicles, license plates, and other object types. For Smart Motion Detection, this broader ecosystem matters because object-specific alarms become more useful when they can be recorded, verified, searched, escalated, and integrated into the operator workflow. [2]

Why ACTi is relevant to Smart Motion Detection projects

ACTi strength	Project relevance
End-to-end system scope	AI cameras can be planned together with VMS, NVR, CMS, access control, alarms, and third-party systems instead of being treated as isolated devices.
Security-industry experience	ACTi corporate materials state more than 20 years of security-industry experience and adoption across vertical markets. [2]
AI and metadata direction	Object-specific motion events become more actionable when combined with AI analytics, event metadata, and central monitoring workflows.
Integrator-friendly portfolio	Multiple camera form factors allow system integrators to match Smart Motion Detection to different installation sites and budget levels.

3. What Smart Motion Detection Means

Motion detection in video surveillance means using video content to determine whether movement has occurred in front of a camera. Conventional motion detection commonly compares scene changes across multiple frames. This can work for basic awareness, but it may also generate false alarms when the scene changes for reasons that are not security incidents, such as tree movement, light reflections, shadows, or other background motion. [1]

Smart Motion Detection adds AI-based object understanding to the motion rule. Instead of treating every pixel change as equally important, the camera analyzes video frames to detect supported object types, such as people or vehicles, and sends an alarm only when selected object types move within the view. ACTi explains that users can specify which object type should be included in the alarm and which types should be ignored depending on the application. [1]

This makes the feature especially useful in scenes where objects may be visible but should not always trigger alarms. A parked vehicle, for example, may remain in view without generating an alarm, while a vehicle that starts moving can immediately notify the security team. [1]

Conventional motion detection vs. Smart Motion Detection

Dimension	Conventional motion detection	Smart Motion Detection
Primary signal	Scene or pixel change across frames.	AI-confirmed object motion, such as person or vehicle movement.
Typical false alarms	Trees, reflections, shadows, rain, lighting changes, insects, or irrelevant background movement.	Reduced by filtering for supported object types and selected motion behavior.
Operational result	More alarms may require manual review and tuning.	More actionable alarms help operators focus on meaningful events.
Best role	Basic change awareness or low-risk sites.	Security-driven event initiation where alarm quality matters.
Best combined use	Can be used as a simple trigger where false-alarm tolerance is high.	Use with VMS/NVR actions, visible verification, recording, and SOP-based response.

Terminology note: Smart Motion Detection is not simply people detection or vehicle detection. It specifically focuses on the movement of the selected object type. [1]

4. Core Technical Concepts

Smart Motion Detection decisions should be made from both a security-operation perspective and an AI-analytics performance perspective. The following concepts help procurement teams compare products accurately and avoid under-designed deployments.

Concept	Practical meaning
Object classification	The camera identifies supported object categories, commonly people and vehicles, so that alarm logic can focus on objects that matter to the site.
Object motion	The alarm depends not only on whether an object exists in the scene, but whether the selected object type moves according to the configured rule.
Frame-by-frame analysis	ACTi describes Smart Motion Detection as an AI-based algorithm that analyzes every video frame and detects specific object types. [1]
False-alarm filtering	Background motion such as trees, reflections, and shadows can be ignored because the system focuses on predefined moving objects instead of generic scene changes. [1]
Object inclusion / exclusion	The user can choose which object types should be included in the alarm and which should be ignored depending on the application. [1]
VMS event handling	Camera-generated alerts become operational when the VMS/NVR handles them through video pop-up, sound alert, email alert, recording, or escalation. [1]
Scene design	Camera height, angle, target size, lighting, lens, background contrast, occlusion, and object speed affect detection confidence.
Acceptance testing	Proof-of-concept testing should measure true alarms, false alarms, alarm latency, verification quality, and operator response.

Specification interpretation

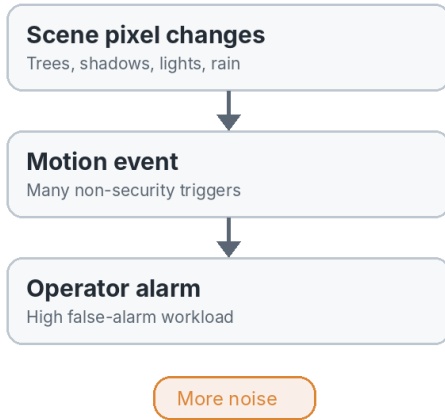
A single specification rarely determines real-world performance. A camera may support AI analytics, but the actual alarm quality still depends on field of view, mounting angle, object size, speed, lighting, environmental clutter, firmware capability, event rule configuration, and VMS integration. Smart Motion Detection projects should therefore validate the target object, target distance, background movement, expected alarm behavior, and pass/fail criteria during site design.

Procurement warning

Do not compare Smart Motion Detection solutions only by resolution or camera appearance. Object category support, analytics accuracy, rule configuration, VMS event support, false-alarm controls, cybersecurity, environmental durability, and acceptance-test evidence are often more relevant to project success.

From conventional motion to Smart Motion Detection

Conventional motion detection



Smart Motion Detection

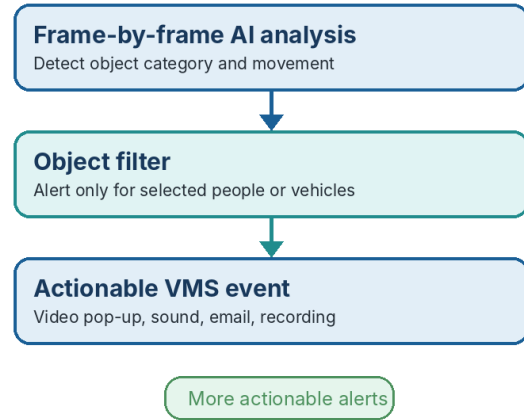


Figure 1. Smart Motion Detection improves alarm quality by filtering generic scene changes into object-specific motion events.

5. High-Value Applications

Smart Motion Detection is valuable wherever the customer wants motion alerts but cannot afford excessive nuisance alarms. It is especially useful in outdoor, semi-outdoor, and public-facing environments where background movement is common and operator attention is limited.

Application	Operational value	Typical locations
Perimeter intrusion alerts	Detect moving people or vehicles in restricted boundary areas while reducing alarms from trees, shadows, or background motion.	Fences, yards, warehouses, logistics centers, utilities, government sites, construction areas
Parking lot movement alerts	Notify operators when vehicles move in monitored areas while ignoring parked vehicles that remain stationary.	High-value parking lots, fleet yards, logistics yards, car dealerships, campus parking
After-hours facility monitoring	Focus alarms on moving people or vehicles during non-business hours when any movement may require verification.	Schools, factories, offices, warehouses, public facilities
Entry and driveway monitoring	Trigger events when selected object types move through approach roads, gates, loading areas, or entrances.	Vehicle gates, building entrances, loading bays, guardhouses, industrial sites
Critical-area protection	Reduce manual monitoring workload by alerting only when meaningful movement occurs in sensitive zones.	Server rooms, equipment areas, rooftops, storage rooms, restricted corridors
Control-room event prioritization	Transform many camera feeds into event-driven monitoring where operators review alarms rather than continuously watching all screens.	CMS centers, multi-site command rooms, transportation monitoring, campus security

Value by stakeholder

Stakeholder	Main benefit
Security manager	Fewer nuisance alarms, faster incident awareness, and better use of guard resources.
Facility manager	Improved monitoring of entrances, loading areas, parking areas, and restricted operational zones.
Control room operator	Event-based monitoring reduces dependence on continuously watching many live feeds.
System integrator	Creates a higher-value AI solution opportunity beyond standard camera replacement.
Procurement team	A well-scoped system can reduce operational noise while improving security response quality.

6. System Architecture

From an NVR or VMS perspective, Smart Motion Detection cameras can behave like standard IP surveillance cameras while adding AI-generated motion events. The camera analyzes video, determines whether a predefined object type is moving, and sends alerts to the VMS/NVR. ACTi states that Smart Motion Detection cameras can be used with ACTi NVR and Windows-based NVR 3 servers, where the VMS can handle alerts by video pop-up, sound alert, email alert, and more. [1]

Typical event-driven workflow

1. Detect - The camera captures the scene and monitors supported object types.
2. Analyze - The AI algorithm checks video frames for predefined objects and movement.
3. Filter - Background scene changes are ignored when they do not match the configured object-motion condition.
4. Trigger - The camera sends a Smart Motion Detection event to the NVR/VMS/CMS.
5. Verify - Operators review live view, event pop-up, snapshots, video clips, maps, or adjacent cameras.
6. Respond - The organization follows SOPs such as guard dispatch, email notification, access control action, or alarm output.
7. Record - Video, timestamps, event metadata, snapshots, and operator actions are retained for investigation and audit.

Reference architecture

Layer	Role in Smart Motion Detection
Field layer	AI cameras, visible-light cameras, PTZ cameras, access control readers, alarms, sensors, and intercoms.
Network layer	PoE switches, uplink infrastructure, VLAN segmentation, cybersecurity controls, and bandwidth planning.
Recording layer	NVR/VMS receives video streams, Smart Motion Detection events, snapshots, and metadata; stores video evidence.
Management layer	CMS/control center aggregates events across sites, displays maps/TV wall views, and supports centralized response.
Response layer	Operator SOPs, guard dispatch, notifications, alarm outputs, third-party integration, and reporting.

Integration principle

Smart Motion Detection creates value when the alarm is connected to a response workflow. A camera that detects moving objects is useful; a camera that detects moving objects, filters false motion, records evidence, alerts the right people, and guides action is a solution.

Smart Motion Detection - reference architecture

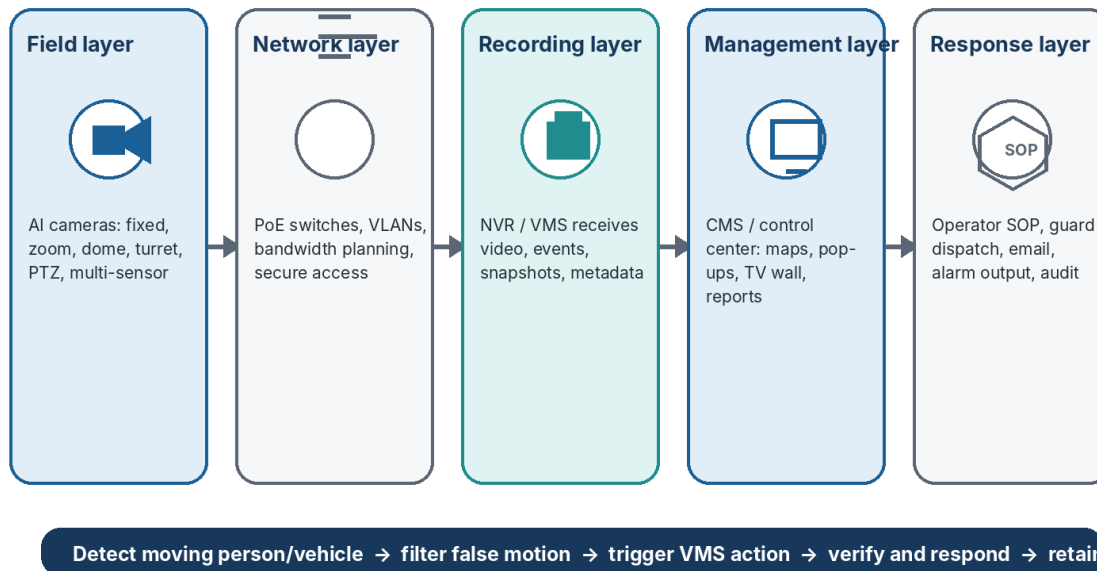


Figure 2. A practical Smart Motion Detection architecture connects camera-side AI events to VMS/NVR handling and operator response.

7. ACTi Product Portfolio Overview

ACTi's product pages describe a broad surveillance portfolio that includes IP cameras, video management systems, access control, network peripherals, accessories, system health management, and related tools. ACTi also states that its camera portfolio includes form factors such as dome, box, bullet, and cube, along with special features such as zoom, PTZ, 360-degree coverage, and covert designs. [3]

For Smart Motion Detection, the most relevant portfolio view is not a single model list but a solution-fit view: fixed cameras for stable scene monitoring, zoom cameras for adjustable coverage, dome/turret cameras for general outdoor and indoor security, PTZ cameras for operator investigation, and multi-sensor cameras for wider-area situational awareness. Specific model selection should be confirmed from the latest ACTi product pages, datasheets, firmware release notes, and quotation documents before project submission.

Portfolio categories

Category	Where it fits
Fixed bullet cameras	Outdoor corridors, perimeters, building approaches, driveways, loading areas, and parking zones requiring stable object-motion alerts.
Fixed dome / turret cameras	Entrances, corridors, lobbies, outdoor public areas, campus zones, and sites where compact installation is preferred.
Zoom cameras	Scenes where the integrator must adjust field of view during commissioning or where target distance varies by installation point.
PTZ / speed dome cameras	Wide-area monitoring, patrol routes, manual investigation, and sites where operators need controllable view direction.
Multi-sensor / panoramic cameras	Wide-area coverage where multiple viewing directions are needed from one mounting point.
NVR / VMS / CMS platforms	Event handling, video pop-up, sound alert, email notification, recording, search, central monitoring, and reporting.

Product type and use-case fit

Product type	Form factor / role	Use-case fit
AI-enabled fixed cameras	Stable fixed-view video analytics	Perimeter monitoring, entry points, parking areas, loading bays, restricted zones.
AI-enabled zoom cameras	Adjustable coverage with analytics support	Sites requiring FOV tuning during project design or commissioning.
AI-enabled PTZ cameras	Movable investigation and patrol	Wide outdoor sites, perimeter scanning, operator-controlled follow-up.
Recording platforms	Event receiving and evidence storage	VMS/NVR event actions, video recording, pop-up notification, audit trail.
Central management	Multi-site event supervision	Control centers, TV wall operation, maps, reporting, and escalated response.

Product availability, detailed specifications, analytics support, and regional part numbers should be confirmed from the latest ACTi product pages, datasheets, and quotation documents before project submission.

8. Deployment and Procurement Guidance

Smart Motion Detection projects are most successful when site design begins with the event to be detected rather than a specific camera name. A parking-lot movement project, a perimeter-intrusion project, and an after-hours facility-monitoring project may all use Smart Motion Detection, but their lens, mounting, rule configuration, VMS actions, and acceptance criteria can be different.

Design questions before selecting a camera

- What is the target event: moving person, moving vehicle, after-hours movement, perimeter movement, entry-zone movement, or parking movement?
- Which object types should trigger the alarm, and which object types should be ignored?
- What target size, speed, and distance must be detected?
- What environmental conditions must be handled: shadows, rain, insects, headlights, reflections, wind, trees, glare, darkness, or crowded scenes?
- What response action should occur after an alarm: video pop-up, sound alert, email, guard dispatch, alarm output, door action, or emergency escalation?
- What evidence retention period, metadata retention, privacy rules, and cybersecurity controls are required?

Procurement specification checklist

Procurement item	What to define
Detection objective	Specify the target event and object type, not only the camera type.
Object categories	Confirm supported object types and whether people, vehicles, or other objects can be included or ignored.
Scene conditions	Document lighting, background motion, target distance, mounting height, angle, and expected object size.
VMS/NVR integration	Confirm event transmission, event names, pop-up action, sound alert, email alert, recording action, and metadata handling.
Cybersecurity	Define account management, firmware update process, network segmentation, secure protocols, and access control.
Environmental durability	Specify IP/IK rating, operating temperature, mounting accessories, cabling, surge protection, and maintenance access.
Acceptance testing	Define test target, test distance, pass/fail criteria, alarm latency, false-alarm tolerance, and documentation.

9. Operational Best Practices

Smart Motion Detection is an operational system, not only a camera setting. The camera must be installed, configured, validated, monitored, and maintained in a way that matches the user's risk profile. The following practices help reduce false alarms and improve incident response.

Configuration and alarm tuning

- Create separate rule profiles for different zones, such as perimeter line, gate area, loading bay, parking lane, walkway, lobby, or restricted area.
- Select the object type that matters for the use case; avoid sending alarms for every supported object when only one category is relevant.
- Avoid placing detection zones over uncontrolled background motion such as trees, reflective surfaces, high-glare areas, moving machinery, or public roads unless they are part of the target event.
- Use schedules where risk changes by time of day, work shift, weekend/holiday mode, or site operating status.
- Combine Smart Motion Detection alarms with live video, event clips, maps, and adjacent cameras to reduce unnecessary dispatch.
- Document the alarm meaning and response action in the VMS/CMS operator SOP.

Maintenance and governance

Practice	Reason
Periodic verification	Test alarm rules at defined intervals using approved test conditions and document results.
Lens and housing cleaning	Keep the field of view clear; dirt, water, obstruction, spider webs, or housing issues can degrade analytics.
Firmware control	Maintain firmware versions, release notes, update approvals, rollback plans, and cybersecurity review.
Operator training	Train operators to interpret Smart Motion Detection events, distinguish real alarms from environmental patterns, and escalate correctly.
Evidence review	Confirm that event clips, snapshots, timestamps, metadata, and operator notes are retained as required.
Continuous improvement	Review false alarms, missed alarms, seasonal changes, and response time metrics to refine configuration.

Deployment design: start from the event, not from the camera

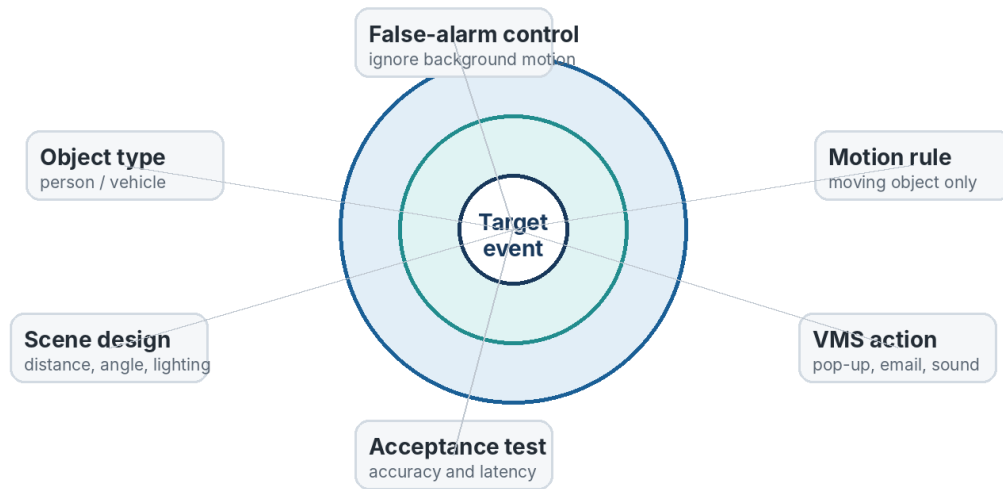


Figure 3. Deployment planning should begin from the target event and acceptance criteria.

10. Evaluation Checklist

Use the following checklist during site survey, proof-of-concept testing, tender preparation, or project handover. It is intentionally practical and can be adapted into an internal worksheet.

Area	Acceptance question	Done
Business objective	Risk and use case are clearly defined.	☐
Site survey	Distances, mounting points, angles, blind spots, background motion, and lighting conditions are documented.	☐
Target definition	Object type, size, speed, direction, and required detection confidence are defined.	☐
Camera selection	Resolution, lens/FOV, form factor, analytics support, environmental rating, and mounting accessories are selected.	☐
Analytics rules	Object categories, motion zones, schedules, sensitivity, and false-alarm controls are configured.	☐
VMS/NVR integration	Video streams, event triggers, pop-ups, sound alerts, email alerts, recording actions, and metadata are tested.	☐
Cybersecurity	Accounts, passwords, network segmentation, update process, and secure access are reviewed.	☐
Acceptance test	Pass/fail criteria, test objects, distances, alarm latency, false-alarm tolerance, and report format are agreed.	☐
Operations	SOP, escalation path, training, maintenance, and reporting are completed.	☐

Suggested POC success metrics

- Detection accuracy for agreed object types and distances.
- False alarm rate under normal operating conditions.
- Alarm latency from camera event to VMS/CMS operator notification.
- Quality of live view, snapshot, or event clip used for verification.
- Operator response time and action completion rate.
- Evidence completeness: event clip, timestamp, camera name, object category, and operator notes.

11. Related Keywords and Terminology

The following keyword reference groups collect common terms related to Smart Motion Detection, AI motion alerts, object-based video analytics, false-alarm reduction, VMS/NVR integration, and security operations.

Core topic keywords

smart motion detection, AI motion detection, intelligent motion detection, video motion detection, smart motion alarm, object-based motion detection, AI-based motion alarm, motion detection camera, security motion detection, video analytics motion detection, intelligent video surveillance, motion detection for security cameras, AI security camera motion detection, object motion detection, people vehicle motion detection

False-alarm reduction keywords

false alarm reduction, reduce false alarms, avoid false alarms, motion detection false alarms, tree movement false alarm, shadow false alarm, reflection false alarm, rain false alarm, background motion filtering, smart alarm filtering, nuisance alarm reduction, false motion filtering, alarm noise reduction, actionable security alerts

People and vehicle detection keywords

person motion detection, people detection camera, vehicle motion detection, vehicle detection camera, moving person alert, moving vehicle alert, person and vehicle classification, AI person detection, AI vehicle detection, object classification camera, person vehicle alarm, moving object detection, object type filtering, predefined object detection

Security and perimeter keywords

perimeter motion detection, intrusion motion detection, outdoor motion detection camera, fence line motion detection, driveway motion alert, gate motion alert, restricted area motion detection, after-hours motion detection, parking lot motion detection, loading bay motion detection, warehouse motion detection, facility security motion alert, smart perimeter surveillance

VMS and NVR integration keywords

motion detection VMS integration, motion event NVR, AI camera VMS event, security camera event pop-up, video pop-up alarm, sound alert VMS, email alert camera, NVR motion event, VMS alarm handling, camera event metadata, event-driven surveillance, video verification workflow, smart motion detection NVR

Camera and system keywords

AI IP camera, smart surveillance camera, analytics camera, intelligent IP camera, outdoor AI camera, dome AI camera, bullet AI camera, turret AI camera, PTZ AI camera, multi-sensor AI camera, security camera analytics, edge AI camera, deep learning camera, ACTi AI camera

Industry and vertical-market keywords

industrial smart motion detection, factory motion detection, logistics warehouse motion alert, campus motion detection, government facility surveillance, parking lot AI motion detection, transportation site motion detection, critical infrastructure motion detection, utility site surveillance, construction site motion alert, retail perimeter motion detection, office after-hours motion detection

Procurement and project keywords

best smart motion detection camera, AI motion detection for system integrators, motion detection for end users, smart motion detection white paper, motion detection procurement checklist, AI camera tender specification, false alarm reduction camera, smart security camera evaluation, VMS motion alert specification, NVR smart motion detection, smart motion detection acceptance test

Common question phrases

what is smart motion detection, how does smart motion detection work, how to reduce motion detection false alarms, motion detection vs smart motion detection, people detection vs motion detection, vehicle detection vs motion detection, how to choose an AI motion detection camera, how to test smart motion detection, how to set motion detection zones, how to connect motion alerts to VMS

Additional related terms

object-based alarm, AI event trigger, motion zone, detection zone, analytics rule, alarm threshold, alarm sensitivity, event clip, alarm verification, security workflow, incident response, false positive reduction, operator workload reduction, event metadata, AI video analytics, edge analytics, security automation, centralized monitoring

12. Source Notes

This white paper is based on ACTi public source pages and general Smart Motion Detection system-design practices. Product details should always be reconfirmed against the latest ACTi datasheets, firmware release notes, regional availability, and quotation documents before formal project commitment.

Ref.	Source
[1]	ACTi Corporation, 'Smart Motion Detection', official technology page. URL: https://www.acti.com/technologies/smart-motion-detection . Accessed: May 20, 2026.
[2]	ACTi Corporation, 'About ACTi', official corporate page. URL: https://www.acti.com/corporate . Accessed: May 20, 2026.
[3]	ACTi Corporation, 'Products', official product overview page. URL: https://www.acti.com/products . Accessed: May 20, 2026.

Revision note

This document is a marketing and technical education white paper. It is not a regulatory certification, safety standard, or final project design. Always validate detection performance in the target scene before deployment.

Prepared by ACTi Corporation

For Smart Motion Detection projects, confirm camera type selection, analytics capability, system integration, mounting accessories, and regional availability with your ACTi sales contact or authorized system integrator.

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