IntelexVision Insights

A SERIES OF SECURITY INDUSTRY WHITEPAPERS

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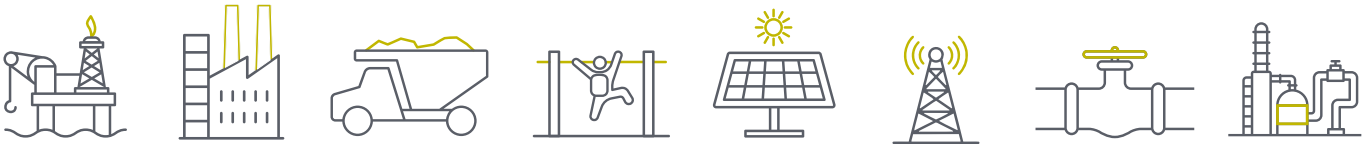
Protecting critical remote infrastructure

IntelexVision SEE BEYOND

Protecting critical infrastructure with AI empowered video surveillance

Uninterrupted operation of civil and enterprise infrastructure is vital for the smooth functioning of both societies and the economy. Protecting remote assets such as open pit mines, pipelines, power plants, solar farms, borders, oil & gas refineries, offshore platforms or telecommunication towers from unauthorised access, theft, vandalism, and attack presents a major challenge to businesses and governments.

This paper focuses on iSentry's TREX motion analysis combined with the iSentry Deep Learning and Logic layers. iSentry has been successfully deployed in multiple countries to protect remote infrastructure and assets.



Remote infrastructure and asset monitoring: the challenges

Protecting remote assets is expensive and complex. Critical infrastructure is often located significant distances away from police, security control rooms and other authorities.

The larger the site containing a valuable asset, the longer it takes security personnel to find and stop intruders, vandals and trespassers. Bad actors have more time to do damage and they're less likely to be detected and caught. Adding extra on-site security teams is an option but is expensive.

Regular patrol teams are an alternative. While they cost less, operatives are on site only at set times or when notified of an incident.

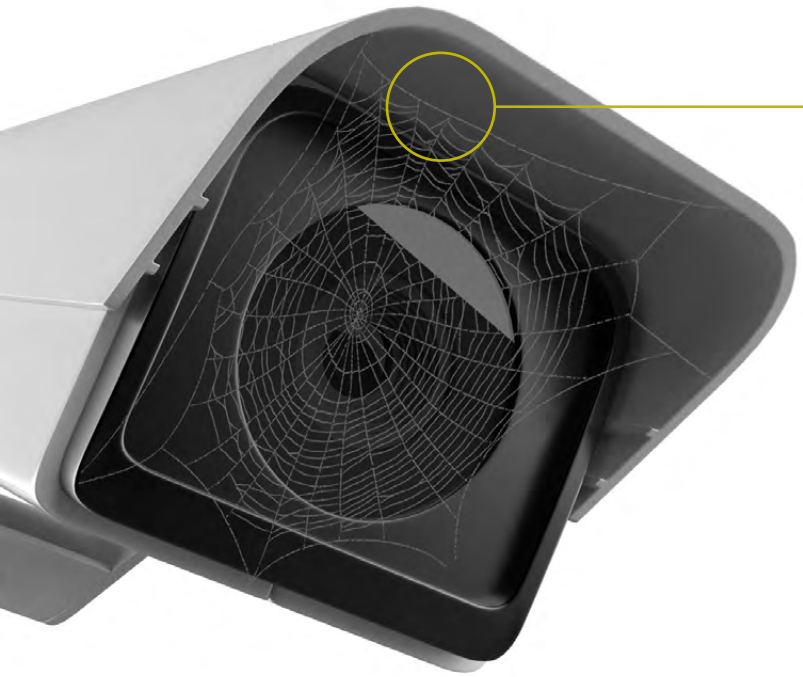
A recurring challenge in remote locations is separating true alerts from false positives caused by environmental noise, typically growing vegetation, moving foliage, wind, fog and rain. In addition, remote camera systems are not maintained and serviced as often as urban cameras. This means that **spiderwebs, dirt and other obstructions often increase further the already high number of false alarms.**

Detecting intrusions in these remote sites at night is yet another problem, due to little or no available external lighting, meaning that thermal imagery is the standard. This results in superior night-time performance but at low resolution, with limited object classification and resulting contrast issues at day-time temperatures.

Finally, video analytic solutions for remote locations still must overcome the additional restriction of limited connectivity/bandwidth availability while still having to deliver accurate results.

All of this means that control room staff spend much of their time assessing a constant stream of CCTV videos that end up being false positives.

Current video analytics solutions in the market typically use basic motion triggers to identify potential targets. They have poor classification mechanisms for thermal imagery where a high pixel density is necessary, making them ineffective even at short distances. Furthermore, very few solutions detect small targets at great distances, meaning a larger quantity of cameras becomes necessary. Last but not least, even fewer solutions can run on PTZ imagery.



Even the thread from **a spiderweb** can result in a false alert

Monitoring software requires a **clear image** to detect and classify what exactly is moving

The solution

How iSentry works

iSentry is an Artificial Intelligence-powered video analysis platform. It can be installed on new systems as well as the vast majority of existing CCTV systems.

The iSentry Platform is exceptional at target acquisition thanks to its ability to learn the environment covered by cameras. This allows iSentry to accurately extract true target information in challenging conditions. It can distinguish between moving foliage and true targets so that it delivers minimal false negatives. Its proprietary neural networks perform industry-leading thermal object classification.

The platform provides an expert configuration ability to eliminate environmental noise. Its multi-scene analysis detects small targets at great distance as well as accurate human tracking and classification at short distance, simultaneously on the same view. iSentry is also capable of running on PTZ cameras, providing autonomous scene stability tools and alert suppression during camera movement from a preset to the next.

iSentry is a smart, non-invasive security platform that respects privacy and does not process any personal identifiable information.

*iSentry is a full spectrum **AI Analysis** platform for real-time monitoring of video surveillance imagery. Our unsupervised networks extract relevant data from the imagery through behavioural anomaly detection (Unusual Behaviour) or advanced motion analysis (TREX). This data is then processed by the iSentry Deep Learning and Logic layers to **provide relevant, contextualised, and actionable real-time data** to control rooms and first responders.*

The benefits of iSentry

UP TO
60%
REDUCTION
IN CAPEX

Fewer cameras needed, implying lower costs of camera acquisition, installation and overall infrastructure (fewer cameras require less poles, cabling, conduits, routers, power, UPS, etc.)

Cameras can be installed at higher elevations because of the system's tolerance to camera vibrations or environmental noise, generating better quality detection and wider areas of coverage.

No need to replace current CCTV systems, as iSentry is hardware agnostic.

UP TO
75%
REDUCTION
IN OPEX

More cameras per operator: Up to 10x resulting in a significant reduction in direct and indirect operating expenses.

iSentry delivers vastly superior detection rates with reduced false positives using fewer cameras and reduced infrastructure.

Case studies

Case 1: Reducing Capex

Thanks to our 3-level sequential architecture, we reduced the cameras our client needed as well as the required resolution and optic on each camera, while increasing overall detection efficiency.

TREX Premium (with detection ranges greater than one kilometre on fixed cameras) enabled our customer to reduce **Capex by 31%**. This was achieved by optimising the project from the originally proposed 29 thermal cameras (with optics from 13mm to 60mm) to only 16 thermal cameras, all with 19mm lenses.

Case 2: Reducing Capex

By using **TREX Elite** for PTZ cameras (with detection ranges greater than one kilometre), a customer in Spain achieved an improved level of coverage versus the originally proposed fixed camera solution. The iSentry Trex Elite technology enabled the replacement of 30 fixed cameras with 9 PTZ cameras (8 PTZ with 500m range laser illumination and 1 thermal PT camera with a 75mm optics and a VGA thermal sensor). This saved the customer **59% in Capex**.

Case 3: Reducing Opex

By combining **iSentry's anomaly detection** (Unusual Behaviour) and advanced motion detection (TREX), an IntelexVision customer in Latin America with several thousand CCTV cameras *increased the number of cameras monitored in real time by a single operator position by a factor of between 4.4x and 7.9x* (night/day time variation).

OPERATIONAL TRANSFORMATION AND COST EFFICIENCY THROUGH SUPERIOR TECHNOLOGY

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