PULSE SENTINEL

Distributed Anomaly Detection & Reasoning

Not every alert matters, so know which ones do.

Pulse Sentinel analyses events across connected sensors and systems to identify unusual activity, correlate related signals and **assess the confidence of potential threats or operational issues.** It helps operators understand what matters, why, and what needs attention first, standalone or feeding prioritised insight into Consilium and other command environments.

Distributed | Reasoned | Trusted | Edge · On-Prem · Hybrid | UK-Sovereign

Deploy as a standalone reasoning service, or as the prioritised-insight layer across the wider **Espanaro** product ecosystem.

WHAT IS PULSE SENTINEL

Distributed anomaly detection, reasoning and confidence scoring

Pulse Sentinel analyses events across connected sensors and systems to identify unusual activity, correlate related signals and assess the confidence of potential threats or operational issues. Rather than treating every alert equally, it helps operators understand what matters, why it matters and which events require attention first. It can operate as a standalone reasoning service or feed prioritised insight into Consilium and other command environments.

THREE PRINCIPLES

Distributed

Analyse activity across multiple sensors, sites and systems.

Reasoned

Correlate events and assess their combined operational significance.

Trusted

Provide confidence scores and supporting evidence for each output.

THE CHALLENGE & THE OUTCOME

THE CHALLENGE

Modern operational environments generate large volumes of sensor data, alerts and status information. Individual devices can identify threshold breaches, but they rarely explain whether activity is meaningful, related or credible.

This creates **alert fatigue, delays investigation** and places the burden of correlation entirely on operators.

OPERATIONAL VALUE

Pulse Sentinel delivers:

- → Reduced alert fatigue
- → Earlier anomaly detection
- → Correlated sensor insight
- → Confidence-scored alerts
- → Explainable reasoning

THE APPROACH

Pulse Sentinel ingests alerts, telemetry and events from connected sensors, applies **operational baselines and correlation** to identify unusual behaviour, and assigns **confidence scores** so operators can prioritise activity by severity, credibility and mission context, with supporting evidence preserved for review and audit.

WHAT PULSE SENTINEL DOES

Turn raw sensor events into prioritised insight

Pulse Sentinel ingests events from across your estate, learns what normal looks like, and returns confidence-scored, prioritised outputs to the operators and systems that need them.

- Ingests alerts, telemetry and events from connected sensors and systems.
- Learns or applies operational baselines to identify unusual behaviour.
- Assigns confidence scores to anomalies, alerts and inferred events.
- Prioritises activity according to severity, credibility and mission context.
- Correlates related signals across sources, locations and time.
- Preserves supporting evidence for operator review and audit.
- Publishes outputs to dashboards, workflows, APIs and command systems.
- Operates standalone or feeds prioritised insight into Consilium.

CORE CAPABILITIES

Three building blocks for distributed reasoning

01

Data Ingestion & Baselines

Connect event streams and establish expected operational patterns.

02

Anomaly Detection & Correlation

Identify unusual activity and link related signals across sources, locations and time.

03

Reasoning & Confidence Scoring

Assess combined evidence, infer significance and express confidence in each output.

INGEST Events, alerts and telemetry → **CORRELATE** Link signals across sources → **SCORE** Confidence and significance → **PRIORITISE** Surface what matters first

INTEGRATION BY DESIGN

A reasoning layer across your connected environments

Pulse Sentinel is designed to operate across diverse sensor and data environments. It can ingest events from existing systems, apply reasoning across multiple sources and return prioritised, confidence-scored outputs to operators, dashboards or command platforms such as Consilium.

INTEGRATION AREA	SUPPORTED APPROACH
Sensor & device data	Events, alerts and telemetry from physical and digital sensing systems.
Application interfaces	APIs and structured data formats including JSON and XML.
Message & event distribution	Event-driven and message-based integration patterns including MQTT and DDS.
Video & surveillance systems	Integration through platforms and interfaces including ONVIF and RTSP where applicable.
Command & workflow systems	Outputs can be consumed by Consilium or integrated into third-party operational tooling.

DEPLOYMENT OPTIONS

Deploy where the mission needs it

EDGE / SITE

Close to the sensors

For local processing close to sensors and operational systems.

ON-PREMISES

In your network

For controlled networks, secure facilities and locally hosted operations.

HYBRID

Best of both

For distributed environments spanning edge, site and central services.

BUILT FOR CONTROLLED ENVIRONMENTS

Assurance considerations

- **Explainable by design**

Confidence scores and supporting evidence accompany every output for operator review.

- **Bandwidth-aware**

Supports distributed and bandwidth-constrained deployment patterns across sites.

- **UK-sovereign**

Engineered in the UK with direct access to the product and delivery team.

REPRESENTATIVE USE CASES

Where Pulse Sentinel makes the difference

Critical Asset Monitoring

Detect unusual equipment, environmental or site behaviour before it becomes a significant incident.

Multi-Sensor Surveillance

Combine weak or ambiguous signals from different sensors into a stronger operational assessment.

Distributed Site Operations

Compare activity across multiple locations while maintaining local processing and resilience.

Trials & Evaluation

Assess new sensor combinations, detection logic and operational concepts within controlled pilots.

WHY PULSE SENTINEL

Explainable, distributed reasoning, built in the UK

- ✔ Reduces the volume of unqualified alerts presented to operators.
- ✔ Finds relationships that individual sensors cannot identify alone.
- ✔ Supports earlier intervention through continuous anomaly detection.
- ✔ Feeds prioritised insight into Consilium and other command environments.
- ✔ Supports distributed and bandwidth-constrained deployment patterns.
- ✔ Can operate independently or as part of the wider Espanaro product stack.
- ✔ Makes machine-generated outputs easier to assess through confidence scoring.
- ✔ UK-sovereign engineering with direct access to the product and delivery team.

Not every alert matters, so know which ones do.

Pulse Sentinel analyses events across connected sensors, correlates related signals and assigns confidence scores so operators can focus on what matters first.

TECHNICAL SUMMARY

At a glance

Product type	Distributed anomaly detection, correlation and reasoning software.
Primary function	Convert multi-sensor events into a confidence-based pulse of activity, giving insight into system health and operation.
Architecture	Modular, integration-led and deployable across distributed environments.
Deployment	Edge, on-premises or hybrid.
Interfaces	APIs, structured data, event streams and configurable adapters.
Users	Operators, analysts, security teams, site teams and technical integrators.
Lifecycle	Suitable for discovery, rapid trials, pilot deployments and operational implementation.

HOW TO ENGAGE

A straightforward path from first conversation to operations

STEP 01

Discovery

Understand the sensor estate, operational environment and the events that matter most.

STEP 02

Sensor-Integration Workshop

Shape data sources, baselines and reasoning around your mission and constraints.

STEP 03

Pilot

Evaluate Pulse Sentinel in a controlled deployment ahead of wider operational rollout.

Turn disconnected sensor events into prioritised, explainable operational insight.

Speak to Espanaro about a Pulse Sentinel discovery, sensor-integration workshop or pilot deployment.

Book a discovery session

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