

Critical Infrastructure Protection

Wide-Area Situational Awareness



Introduction

The world's critical infrastructure provides the essential services that underpin our society and are the unseen backbone to each nation state's health, security, and economy.

Critical infrastructure is not something at the forefront of the public consciousness, yet it facilitates our everyday lives. Should access to critical services be cut off, society would quickly shut down and without food, power, communications, and water, our civilized way of life would cease to function.

Natural disasters, criminal activity, and increasingly hostile attacks designed specifically to cause disruption, all have the potential to significantly damage the critical infrastructure that a country or continent depends upon.

Making sure the right safeguards are in place to protect individual assets is vitally important and requires the right systems and tools to facilitate collaboration with public bodies.

It's a task that is increasingly fulfilled through intelligently integrated surveillance.



What is Intelligent Integration?

Traditionally, security systems used to protect critical infrastructure assets have been implemented and managed separately. However, as threats to critical infrastructure have evolved, so too has the technology designed to guard against them in terms of both what it can do and how it is used. A holistic approach is increasingly becoming a favoured strategy for those involved in critical asset protection.

The first step to achieving this is to audit site systems in order to identify those crucial to security, safety, and operations. Using a surveillance command and control platform, these vital yet disparate solutions can then be brought together and managed within a single, unified environment.


Site systems that can be integrated include:

- Access control
- Intruder detection
- Communications
- Virtual perimeter tripwires
- Cameras – fixed, PTZ, analog or IP, thermal and multi-spectral (color, mono, thermal, explosion-proof)
- Emergency incident alarms
- Public help points
- Building management systems
- Microwave sensors
- Fire, smoke, temperature, and hazardous fume alarms

Intelligent integration takes this concept to the next level and involves utilizing command and control software to not only collate the data, but analyze it as well.

Incidents, anomalies, or meter reading deviations (e.g. gas levels, light levels, or temperatures), from any number of sub-systems and from multiple geographical locations, can be identified and cross-referenced against set parameters. This effectively enables operators to differentiate between meaningless events and meaningful situations that require further investigation or response.

It's a valuable tool to distinguish real threats from collective 'noise'.



Delivering against Safer Cities objectives requires multi-agency collaboration and communication. The technology is ready and available to make this happen.

The Practical Benefits of Intelligent Integration for Critical Asset Protection

Effective protection for critical assets is often based on decision processes. Feeding the most accurate data into that system is the best way to ensure decisions are based on facts, not assumptions.

Here are some examples of practical applications for different types of critical asset.

Power Distribution Network

Theft can leave power distribution networks compromised (i.e. copper theft). Video, audio, PIR activations, and other alarm inputs from analog and IP cameras located at different (often remote and/or unmanned) substations/operation rooms, are streamed directly to a central security management center to protect against potential breaches. By alerting operators to incidents in real time, site safety protocols are implemented more efficiently, thereby protecting both employees and the general public.



Water Treatment Plant

Any abnormality picked up by the intruder detection and access control systems immediately alerts security teams by streaming live footage from cameras nearest the triggered alert zone. Footage covering any potential water access points, i.e. to identify attempts at intentional contamination, can also be monitored. The system can be programmed to prioritize data from water quality detection systems and trigger workflows to guide operators through required response protocols such as area shut-downs.



Airport

Data from baggage X-ray scanners, integrated with surveillance and communications systems, ensures that a live alert is prioritized on security control room video wall monitors in the event of an issue being logged by personnel in the screening area. The control room team can then view the same X-ray footage as the baggage scanning crew, while nearby surveillance cameras monitor wider activity automatically. A separate white paper on airport surveillance is available here (<https://bit.ly/48llrAG>).



In each of these examples, having a system that recognizes and makes sense of data, analyzing information correlations that might otherwise be missed, enables informed decision-making. Alerts can prompt automated action to initiate customized workflows based on standard operating procedures (SOPs) to improve personnel responsiveness.

As all systems are integrated into a single unified platform this ensures that any action is also logged and married with the appropriate data-set. If necessary, evidence is recorded and stored in case of prosecution. A comprehensive audit trail is also available, which can be used for training purposes and future infrastructure protection planning.

What do Critical Asset Protection Teams Need to Consider When Implementing an Integrated Surveillance Solution?



✓ ENSURE SYSTEM COMPATIBILITY

It is important that any command and control platform implemented is open architecture i.e. supports open protocols such as ONVIF, OPC, MODBUS and is database agnostic. This maximizes the ability to integrate systems from multiple third-party vendors and also ensures that any existing legacy technology can still be utilized.

This is particularly important in terms of camera technology as many city center surveillance solutions are currently 'analog-heavy'. An open architecture solution facilitates a hybrid approach so legacy analog cameras can be viewed and managed alongside newly implemented HD IP cameras. This also has cost saving implications as it avoids authorities having to replace technology that is still capable of fulfilling an important function. The hybrid approach allows migration to a complete IP system at a time and budget suitable to the customer.



✓ THINK ABOUT SPECIFIC NEEDS

Systems can be tailored to meet exact site requirements and to detect specific events. For example, a solution could be programmed to identify when movement of items such as cable drums occurs in conjunction with 'unusual' staff shift patterns or access control anomalies.



✓ CHOOSE THE RIGHT CAMERA FOR THE RIGHT JOB

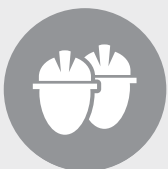
When designing an integrated surveillance system it is important to choose the right cameras for specific applications – this should be based on a risk and hazard analysis and take into account the ease of integration, how they will be maintained, their accuracy, and affordability. Find out more about cameras here (<https://bit.ly/46mFU9B>).



✓ THIRD-PARTY COLLABORATION

When keeping assets and infrastructure safe, it is important to address third-party interests and opportunities for collaborative working. Installing remote evidence management software facilitates secure 24-hour access by key third-party organizations, such as police or customs and border patrol, in line with data protection principles.

The benefits and efficiencies are widespread, including reduced hours for control room staff reviewing incident footage, reduced costs, a strong evidence chain, and improvements with incident reaction times and procedures.



✓ THE IMPORTANCE OF STAFF SAFETY

Intelligent integration is as much about safety as it is about security – it's an area that is often overlooked. Pairing access control - and associated systems - with surveillance monitoring and control provides a much clearer picture of who is on site at any one time, what their status is, and how that relates to other site processes/incidents.

For example, at a gas plant, sensors could be set to alert security operators of dangerous gas levels. Footage from cameras in the immediate vicinity can be used to monitor staff evacuation and emergency service response. Individuals identified in those areas from the footage could have their site clearance immediately upgraded to enable them to evacuate via the nearest exits.

These systems are particularly relevant for ensuring safety in lone worker scenarios.

The Future of Critical Infrastructure Surveillance

The integration opportunities discussed here are not future-gazing or theoretical. They are available now and are already being implemented by organizations across the globe.

All those responsible for critical infrastructure, particularly in countries experiencing infrastructure-led growth, have an important opportunity to take advantage of technology in order to safeguard their vital assets and make the towns and cities they serve safer.

Customization is key and that can only come when software suppliers work in partnership with integrators and end-users. Command and control solutions can be configured to deliver integrations and workflows that meet exacting

requirements, but tailoring to that level requires a thorough understanding of needs. 'Off-the-shelf' in the world of critical infrastructure protection simply will not deliver desired results.

Technology is only part of the equation. Understanding the needs of the customer and developing partnerships with industry leaders will enable the intelligent integrations that can truly revolutionize the way critical infrastructure protection professionals work.

For more information about Synectics technology solutions, visit our website: synecticsglobal.com.

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Synectics designs integrated end-to-end surveillance control systems for the world's most demanding security environments. We excel at complex projects that require innovative, tailored solutions with high reliability and flexibility, specifically for casinos, oil and gas, marine, public space, banking, transport and critical infrastructure applications.

With over 30 years of high security systems experience, field proven products, and expert support personnel in the UK, US, Europe, UAE and Asia Pacific, Synectics offers its clients turnkey networked solutions for comprehensive protection and peace of mind.

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