

# CASE STUDY: Seattle Tacoma International Airport



## PERIMETER INTRUSION DETECTION SYSTEM (PIDS)

### Client

Faith Group is a member of the Design-Build team selected to deploy a Perimeter Intrusion Detection System (PIDS) for the Port of Seattle at Seattle Tacoma International Airport (SEA).

SEA is the largest airport in the Pacific Northwest and acts as a hub for major carriers such as Alaska Airlines and Delta Air Lines. The airport has an 8-mile fenced perimeter that was in need of a PIDS designed to limit incidents with dangerous hazards and safety threats such as wildlife and vehicles going on to the runways. The project aims to enhance airport perimeter security to ensure public safety and improve operational awareness.

### Challenge

The challenge typically observed with PIDS is the mitigation of false alarms, which can be caused by environmental incidents such as weather and blowing debris, as well as incidental alerts caused by passing vehicles. These types of alarms are valid incidents; however, not the intended incidents for PIDS alerting. If a system is consistently alarming, then operators begin to ignore them, and the PIDS no longer provides actionable intelligence. For these systems to be truly effective, the design must be sensitive enough to detect valid attempted breaches to the perimeter, and smart enough to filter out unintended alerts such as those referenced above. A big challenge the team worked on was configuring the system to accurately determine how and when to notify the client of a real emergency, thereby reducing false alarms. The airfield and perimeter at SEA have varied changes in elevation and challenges surrounding line of sight, field of view, and distance. The team needed to bring these real-world considerations into the solution to develop a system that would be capable of performing in the SEA environment.

### Solution

Phase 1 of the project had Faith Group host a proof-of-concept (PoC), pre-production system in the shared in-house Faith Group / Saefix Innovation Lab with the actual hardware to be utilized in the field at SEA. The PoC's purpose was to determine the various parameters needed to be set to have a fully functioning cohesive solution upon deployment. For the PoC, Faith Group put together several PIDS in tandem. Due to the varying environmental challenges with the location, such as elevation changes, line of sight, distance, field of view, and proximity to other neighboring activities, Faith Group proposed using a combination

### About



Faith Group

Founded in 2004, Faith Group is a women-owned firm specializing in security, network architecture & infrastructure, cybersecurity, audiovisual, safety, operational, and MEP/FP systems. Faith Group's expertise includes master planning, design & engineering, project & program management, construction administration, commissioning, and systems integration services.



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of detection solutions to include video analytics, fence fiber detection, radar, LIDAR and thermal imagery to achieve the desired use cases.

The PoC brought together radar, LiDAR, fiber optic fence line sensors, and video surveillance cameras, integrated with an industry-leading incident management platform, for testing and workflow development. This main purpose of the PoC testing and workflow development was to verifying incident response operations and to validate the developed Concept of Operations (ConOps).

To solve the previously mentioned concern related to false alarms, Faith Group developed a process and solution to filter out false alarms and also ensure that real incidents are captured. The design team coined the term dual modality for this solution, which means the system developed required two events from disparate systems to initiate an alarm. These events must be correlated with the same location at relatively the same time to produce a valid incident. With the dual modality, if the fence were to vibrate, and motion is detected inside on the radar, then this combination of related activity would send an alarm notification to the system, whereas motion detection alone would not.



*Figure 1: Dual-Modality*

## Results

The PIDS in the PoC were tested and validated against the CONOPS. Then, the successful solution was configured for dual modality to build a robust solution that can be implemented anywhere at the site. This flexibility allows for the system to be deployed in phases based on the design criteria for individual sections of the perimeter while reducing the occurrences of false or unwanted alarms at SEA.

After verification of the functionality and systems configuration in the Lab, Faith Group's design team assisted the Systems Integrator with the transfer and deployment of the PoC to the site at SEA, performing user acceptance testing and providing end-user training. The overall results of this PoC development have been successful so far. The PoC has been successfully deployed and approved by the end users and the full deployment of the PIDS has been funded.