WEEDING OUT CONTRABAND

Thermal imaging surveillance for intrusion detection

# Weeding out Contraband

Executive Summary

Perimeter detection for corporate and government entities has been lacking and in a state of decline. Many technologies have risen but innovation with those technologies has been deficient. Recently, House Bill H.R. 36996 was introduced by Representative Michael McCaul, R-Texas, which seeks to strength the Department of Homeland Security's ability to protect 16 critical sectors including defense, health, energy and food. These actions are being taken by the U.S. House of Representatives because of the increased threat to critical infrastructure. Significant portions of H.R. 3696 have to do with increased security for critical infrastructure locations, particularly intrusion detection into highly sensitive areas such as the power grid, natural gas and other critical industries. Long range intrusion detection is at the forefront of security initiates throughout the U.S. and abroad. Most security professionals are being challenged with detecting an attack before that attack arrives at the front door.

Scenario

TIR was approached by a law enforcement agency that was having trouble with contraband drops to inmates at a county jail. The nature of the jail complex was such that there was no perimeter fence, due to county/municipal code, to deter the public from entering the jail complex property. Specifically, the jail complex had a gardening and greenhouse area where inmates would be supervised for rehabilitation outside of the actual jail structure. While inmates would be out in the garden and greenhouse areas, they would retrieve contraband that had been dropped during the night by nefarious members of the public. The garden and greenhouse area was located 300 meters from the jail but still on the jail complex property. Public roads surround the jail complex so members of the public have access to the country roads and property which also contained the animal shelter building.

Requirements

- Detection Solution must:
    - Be a cost effective solution.
    - Be able to detect an intrusion during the day and night.
    - Provide specific geo-location of the intrusion so that axillary security measures can be deployed.
    - Alert multiple parties in real time in control center and via email and text.
    - Substantially decrease the number of patrols being performed by uniformed officers.
    - Provide constant surveillance and situational awareness.
    - Have analytics so as to ascertain the nature of the intrusion whether man or vehicle.
    - Must interface with existing camera systems for a slew to cue operation.
    - Must have recording capability to review history.
    - Must be non-intrusive to the property and county code.
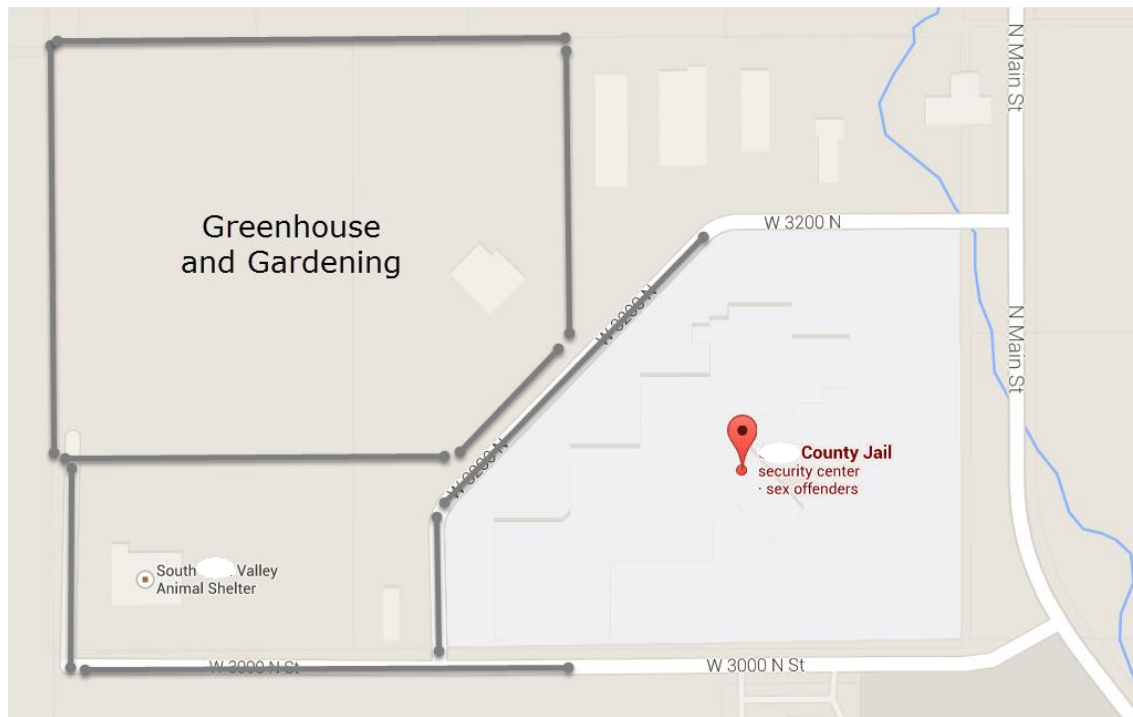
*Areas outlined in Dark Grey lines are the areas of concern.

Current Detection Measures.
The Jail Complex has low light PTZ cameras that would offer surveillance during the day and at dusk. The intrusion detection distance throughout the "dark" hours was insufficient and the PTZ cameras did not provide visibility past the jail structures and foliage; therefore, security personnel were continually dispatched to physically verify every potential intrusion threat. Over the course of the last year, security personnel were dispatched 7 times per night for possible intrusion threats. The Jail Complex and animal shelter areas are exposed for intrusion.

Solution Proposals

- Fixed Thermal Cameras

Fixed thermal cameras were proposed to the jail complex to solve the issue of intrusion detection for contraband drops. Fixed thermal cameras were able to provide the detection distance, real-time situational awareness, and nighttime visibility needed. A 19mm fixed thermal camera from an industry leading Camera supplier was evaluated. It was determined that 10 fixed thermal cameras would be needed to cover the various angles and distances at the property. Retail cost of the 10 camera solution was $70,000 USD without VMS, Analytics, Geospatial technology or installation. All combined the installation for a long range detection solution using 10 fixed 640x512 19mm cameras for the jail complex was in excess of $127,000.

- Thermal Radar

Thermal Radar proposed a cost effective, geo-spatial, low light/no light, 360° intrusion detection solution for the county jail complex. Thermal Radar provides constant thermal surveillance and situational awareness with onboard thermal analytics for Edge reporting and notification. Thermal Radar also provides geospatial calculations for accurate intrusion location data as well as 360° recording capability. Thermal Radar proposed an installation on the top of an existing power pole and, by utilizing the built in Wi-Fi capability of the TIR camera, no significant wiring or cabling was required for installation. Viewing and recording the TIR camera feed was accomplished using the IP Thermal Radar viewer software and integration with the jail VMS solution was proposed separately.
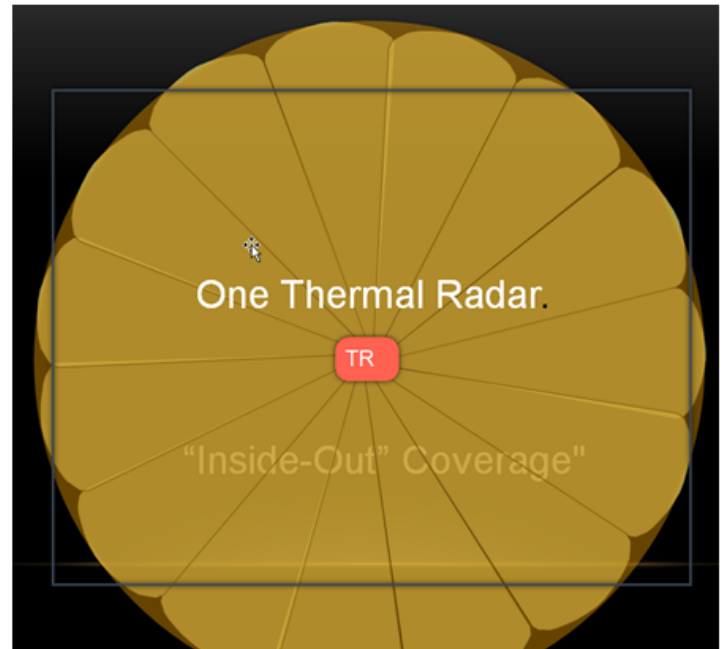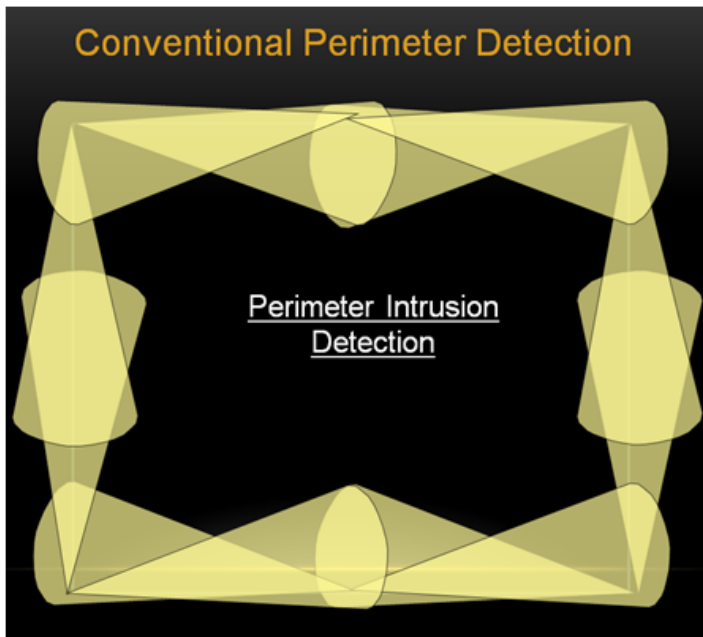
Challenges
During installation, jail complex administrators experienced some networking challenges; specifically with the Windows firewall settings and the county mandated firewall settings for correctional facilities. County network administrators were brought in to assist with the networking of county infrastructure. In addition, the TIR use case included the training of jail security staff to use the TIR viewer in order to evaluate the intrusion alerts that the camera was generating. Jail personnel had never used thermal imaging before and although the TIR camera was generating alerts and providing valuable data and metadata on the intrusions, jail personnel still needed to determine a course of action following intrusion detection. The process of responding to alerts needed refinement with the security staff.

Results

TIR was granted the install for the county jail. Jail administrators were satisfied that all requirements were met or exceeded and that no requirement had to be sacrificed for budgetary concerns. TIR was able to meet or exceed requirements while doing so at a cost savings of 75% of the quoted amount for a multi-camera install. Strong consideration was also given by jail administrators about the installation and maintenance time requirement for 10 cameras vs. 1 TIR camera. In addition to meeting all of the stated requirements, the TIR solution contributed to officer safety by decreasing the number of engagements the officers needed to address as most vehicle and pedestrian traffic in the areas of concern were detected, observed and assessed to be normal public movement in these areas. The TIR solution accomplished the stated requirements and mitigated contraband drops in the Garden and Greenhouse areas of concern. As an added benefit, the TIR Solution provided unparalleled nighttime visibility for surveillance of the property in general and notifications to jail complex security forces of all activity on the property and not just the perimeter.

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** TIR Camera place in the #1 position, while the red circle shows camera coverage area.

TIR Product Summary

Thermal Radar is an award-winning camera solution combining a high-performance 360° thermal camera with an intelligent geospatial platform that provides for a state-of-the-art observation and intrusion detection solution. Thermal Radar's 360° camera is capable of observing and detecting heat signatures from human beings, vehicles, animals, fires as well as liquid leaks and frankly any type of heat source that a user may need to detect. This standalone sentry keeps a watchful eye viewing thermal images of intrusions up to 500 meters away for a human being and 1500 meters away for a vehicle and will immediately alert user defined contacts of abnormalities through its GSM, CDMA, LAN, Wi-Fi or satellite communication network. Thermal Radar is also extremely energy efficient using only 5 watts of power so as to run off of solar power if necessary and can integrate into a variety of existing network security solutions.

Thermal Imaging Radar has been awarded the highest honors for security, technology and innovation including the following:

- Popular Science Magazine - Best Security Invention of 2014
- ISC West – Best Imaging Product of 2014
- ASIS International 2013 Accolades Award
- Utah Innovations Award for Best Computer Hardware Device 2014

Contact Thermal Imaging Radar about the hottest intrusion detection solution on the market today. TIR is cost effective, easy to install and provides surveillance and detection to more area than any commercial detection product in the industry. www.thermalradar.com