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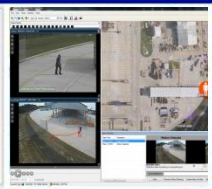

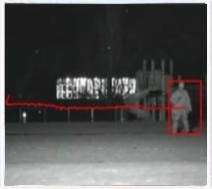

Geospatially Integrated Surveillance Systems

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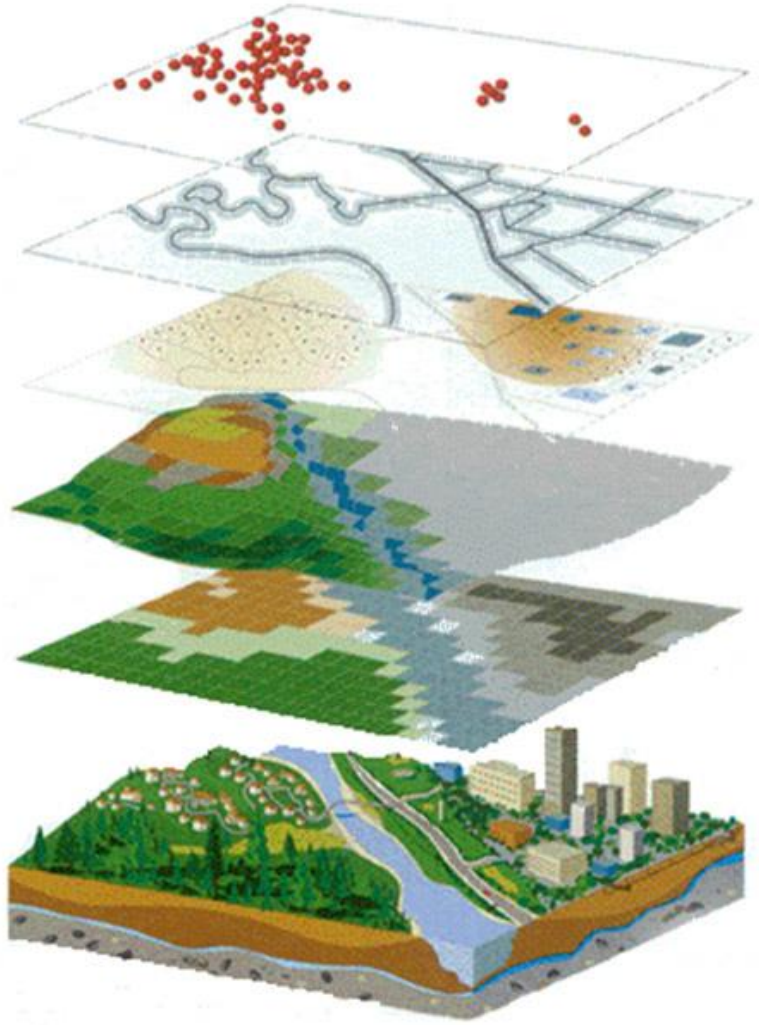
Detect – Analyze - Respond

Geospatially Integrated Surveillance Systems

- What is Geospatial?
- Geospatial Perimeter Sensors
- Integrating Sensors for better awareness and efficiency



Definition

geospatial

Syllabification: (ge·o·spa·tial)
Pronunciation: /ˌjēōˈspāSHəl/

Definition of **geospatial**

adjective

Geography

relating to or denoting data that is associated with a particular location.

What Makes a Surveillance System "Geospatial?"

- Map Based Presentation of Date (AKA GUI)
  - Sensor Location (Static, Often Dynamic)
  - Target Information (Location, Type, Distance)
  - Map Based control and sensor interaction
- Sensor Data includes "Real World Position" data
  - In Real Time
  - And in Meta Data (Database Information)
- Integrated Sensors – Sharing of positional information
- Ability to use this data in real time and forensically

Geospatial User Interface


What Security Sensors are Considered Geospatial?

Geospatial Security Sensors

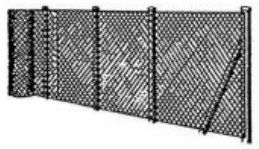
Radar

GPS

Smart Phones

Security Cameras

Integrated Geospatial Command and Control



Intelligent Fence Sensors

RFID

Beam Break Detectors

Access Control

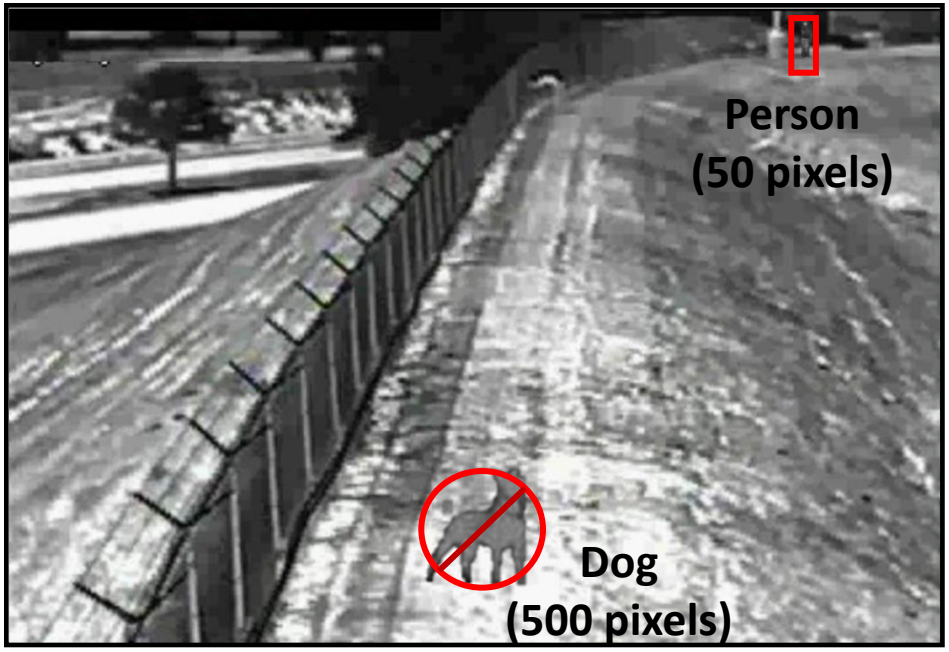

How Geospatial can help Seaports?
CMA CGM

Security Cameras

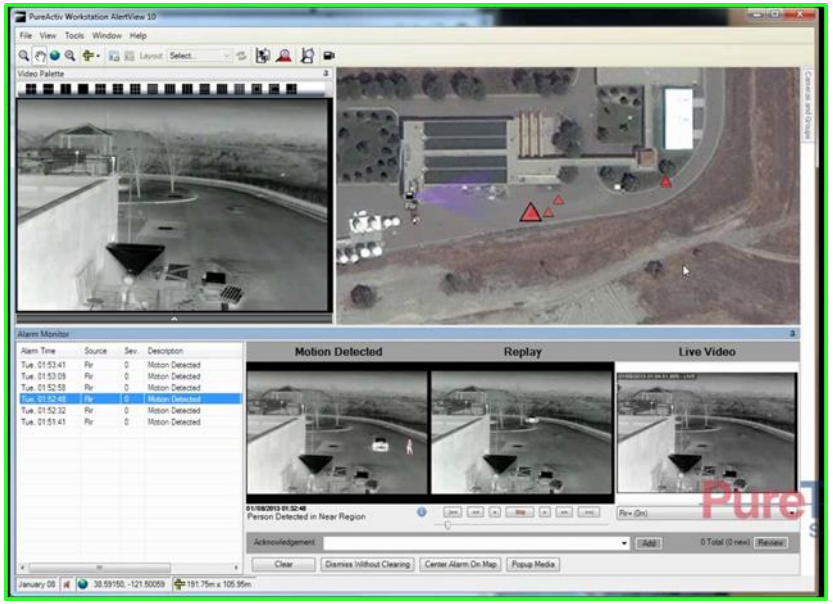
“Georeferencing” allows fixed cameras to be *geospatial*

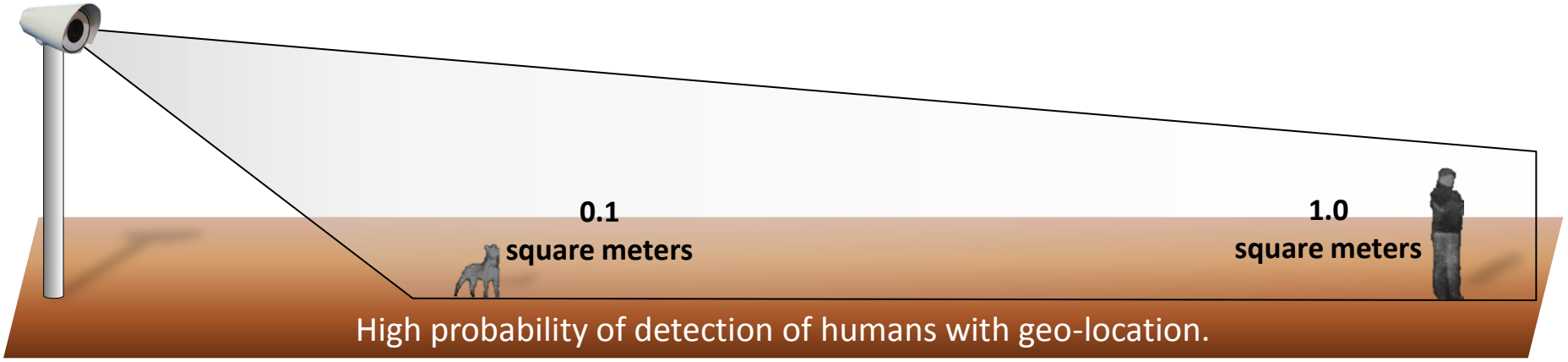
- Enabling security cameras to be short range radars

Geospatial Security Cameras



Real world location and size.



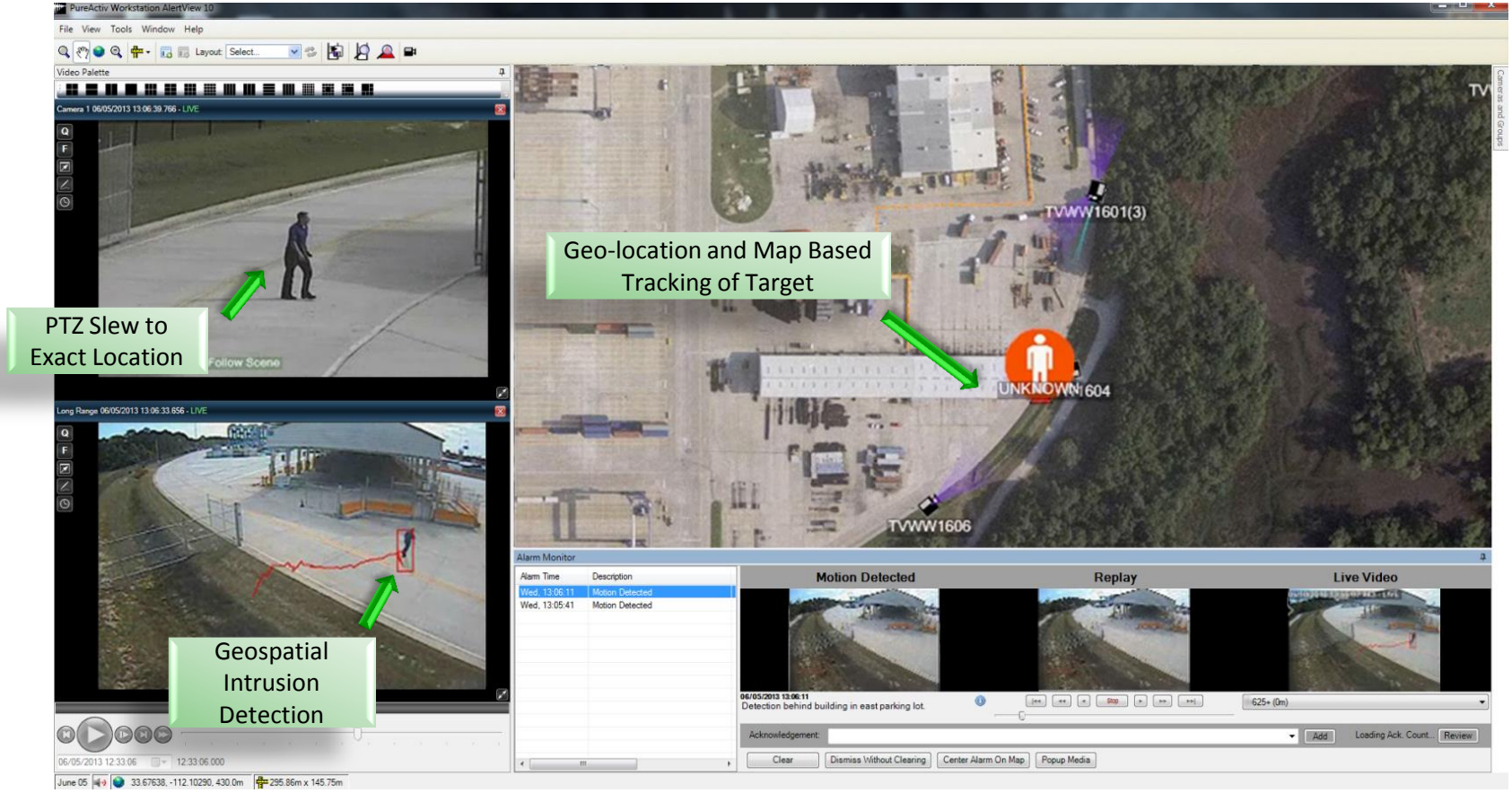


High probability of detection of humans with geo-location.

Security Cameras – Map Based Control

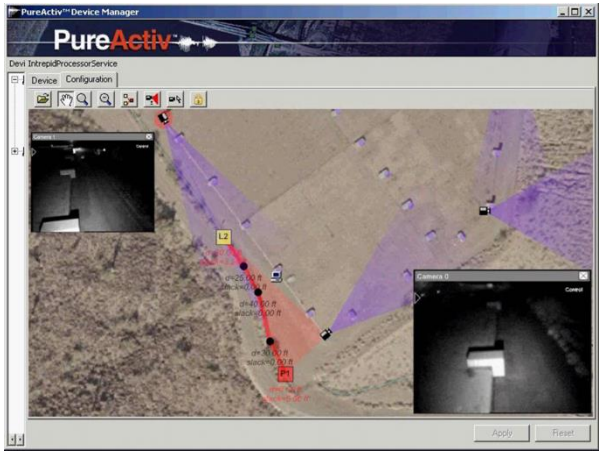
“Georeferencing” also enables PTZ cameras

- Manual Control & Automatic



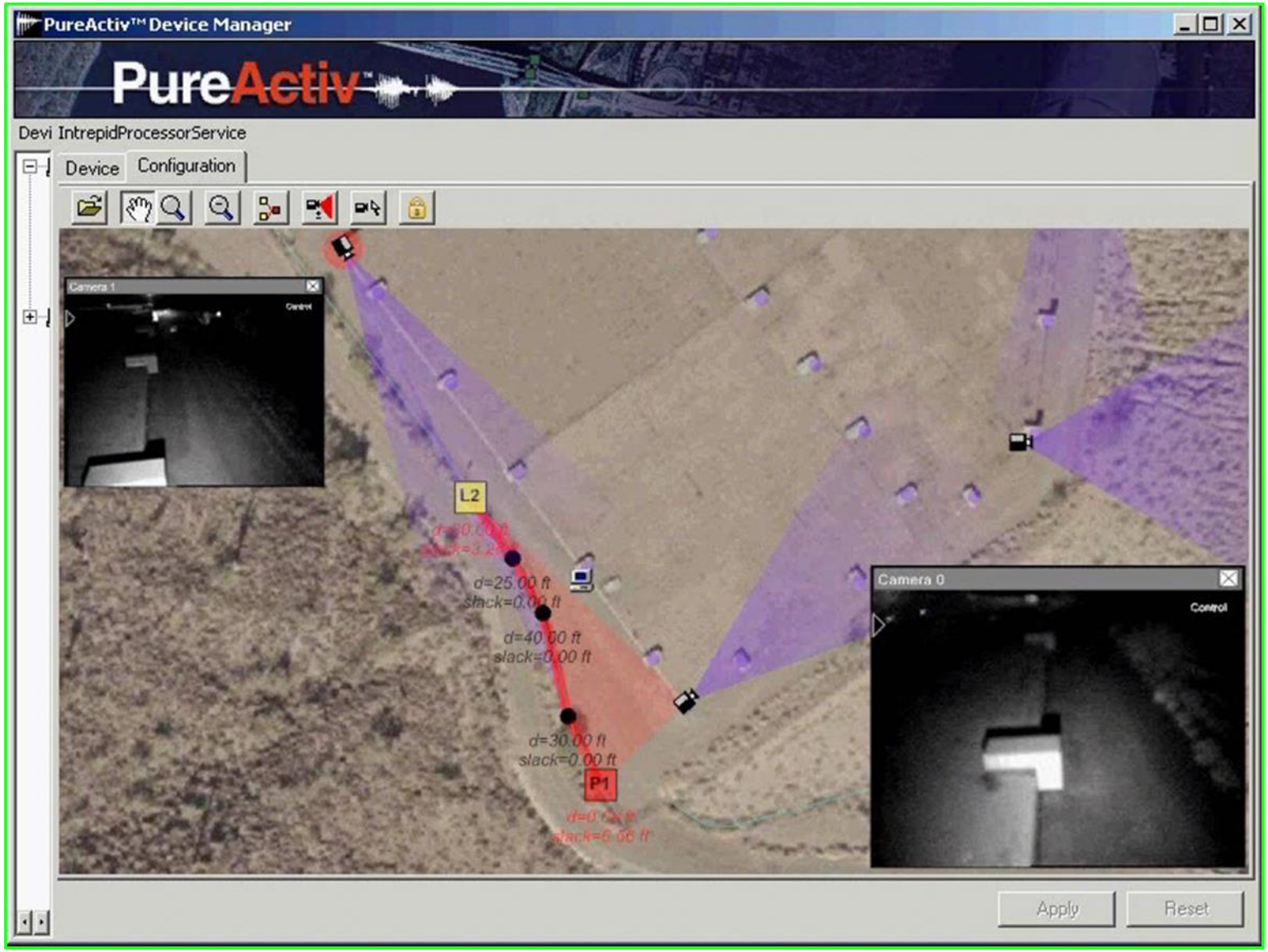
Fence Intrusion Automated Response

How do geospatial sensors play together to react to an intrusion along a fence line?



- The Smart Fence Detects the intruder
- The fence sends the alarm data to the VMS, which includes the location along fence where the event occurred.
- The geospatial VMS translates the linear location into latitude, longitude and elevation
- A geospatial PTZ camera is then automatically cued (Pan, Tilt & zoom) to exact location of intrusion
- If equipped, the PTZ can utilize Geospatial video analytics to ID the intrusion or ignore potential nuisance alarms.
- An Icon representing intruder type is displayed on map based for quick operator identification
- The PTZ Camera then automatically follows intruder until he is out of range or the operator takes manual control

Fence Intrusion Automated Response



Slew to Radar Cue – Visual ID

Using geospatial sensors to automatically provide visual radar confirmation

- The Radar Detects a target and coordinates with camera, much like the fence example.
- Additionally, the radar can continue to update the camera as the target moves.
- Targets can be tracked by manually selecting a target from map

Slew to Radar

Map Based Target Selection

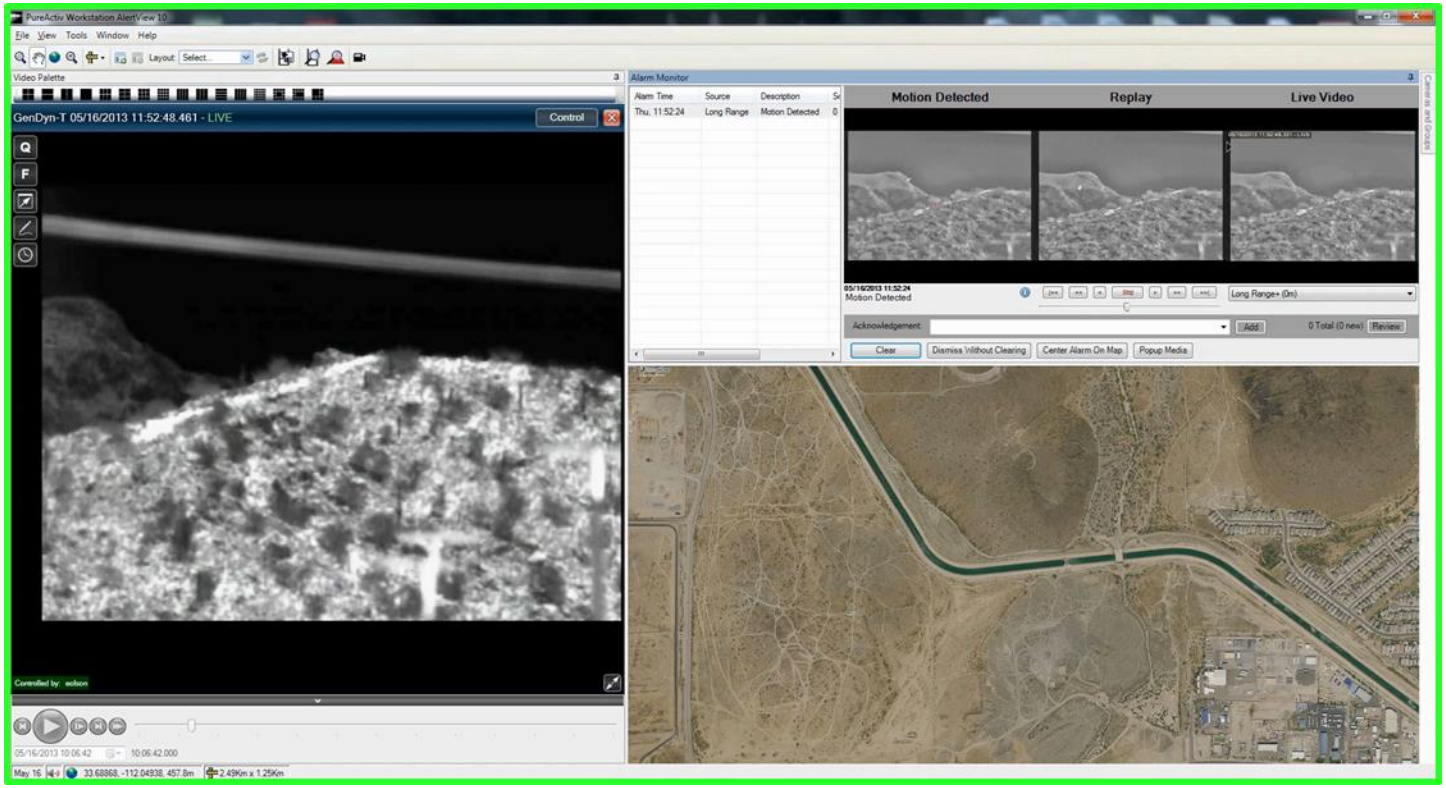
Slew to Access Control, RFID, Proximity Sensor

Even “pseudo” geospatial sensors can be responded to automatically

- Intelligent Zoom - A geospatial system can intelligently adjust the zoom based on the targets real location in relationship to the cameras real location. (5 Km to 100 m)

100m

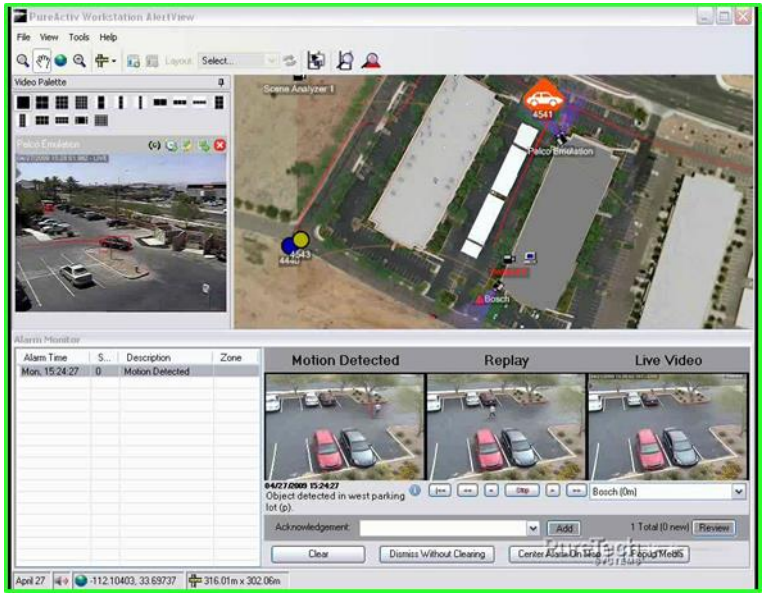
5 Km



IFF – Identify Friend or FOE

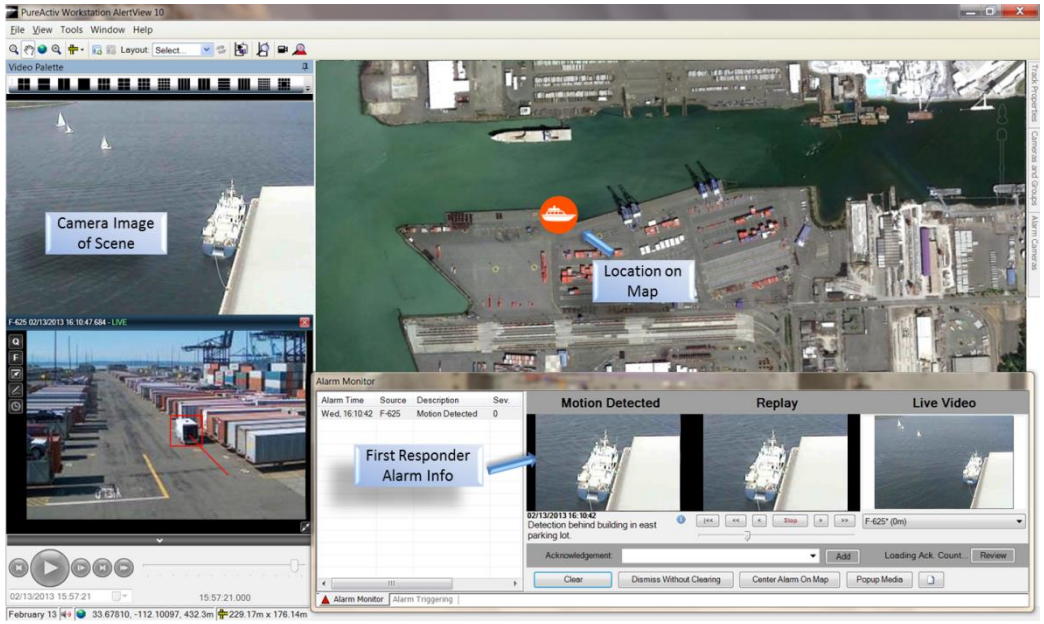
What happens when a single target creates multiple targets - Radar, GPS, Video?

- “Friends” have GPS
- A Geospatial VMS compares location, determines that the targets are a single target and represent a “friend”.
- This data can be remembered while track persists.



First Responder Alarm

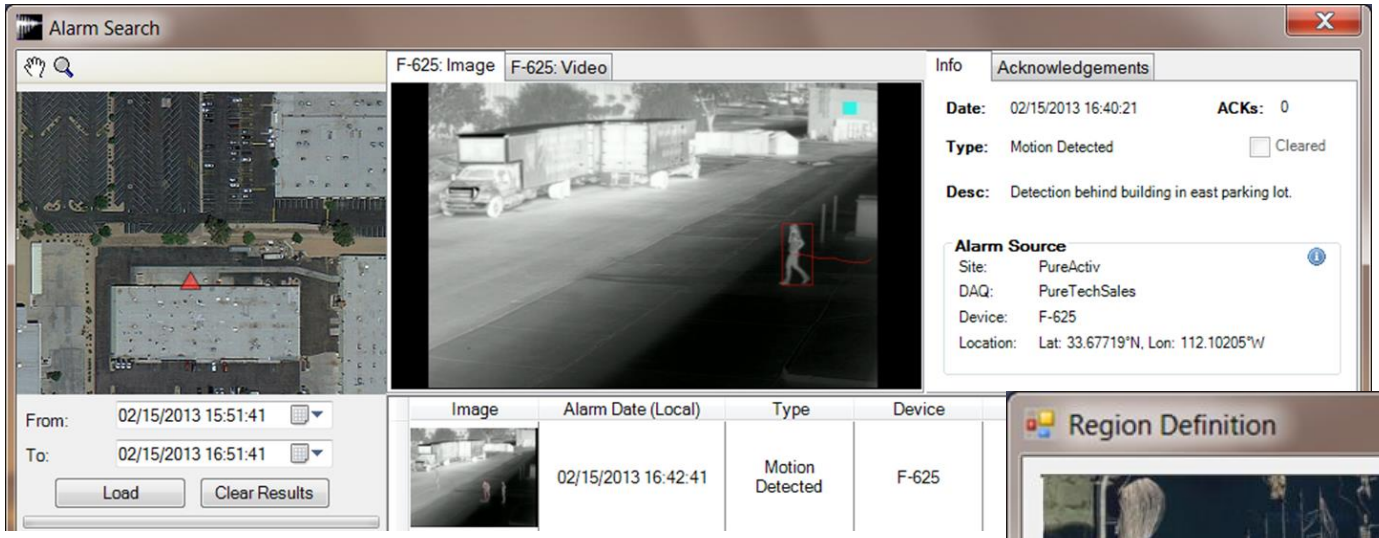
- First Responder Captures Smart Phone Image
- Smart Phone App sends the alarm info, including lat/long/elev to VMS
- First Responder Action Appears as an Alarm
- Location appears on map, Can steer directly to incident.



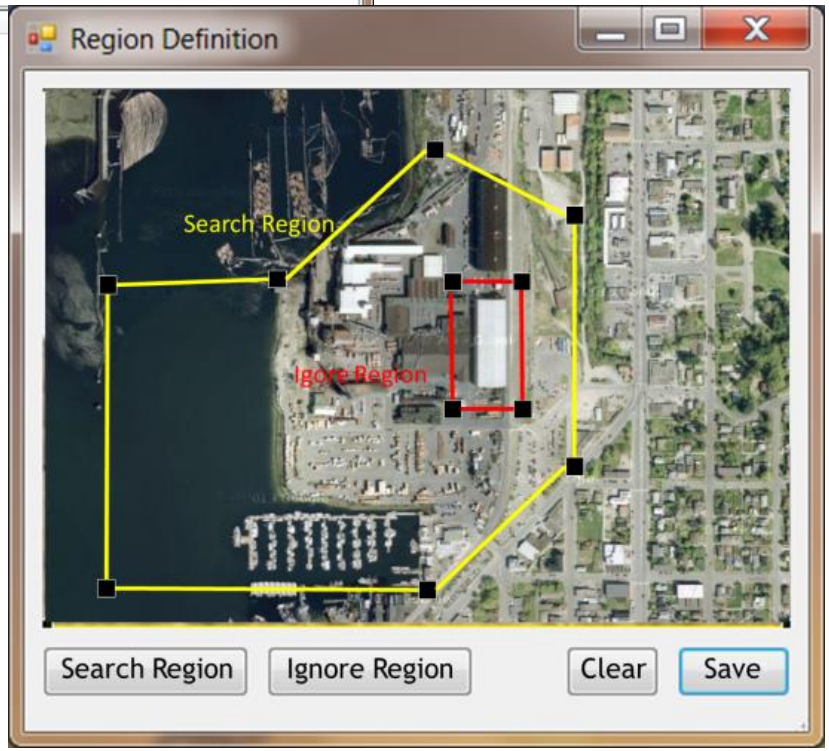
First Responder Alarm

Alarm Management & Forensic Search

- Each Alarm includes location information



- Alarms can be searched by “Area of Map”



Map Based Scenario Replay

- "GUI" Replay of Event
- What operator was seeing, sensor positions, map locations
- Data Review– Who was controlling sensor, detailed target info

Wrap Up

- Seaports have some tough security problems
  - Land Side, Water Side
  - Vast Perimeters
  - Many moving assets
  - Variety of Security Sensors
- Need to quickly gain perspective of event
- Need to communicate the event to others and react efficiently
- Ability to review new events or research past events
- Integrating Geospatial Sensors is an effective means to meet these needs

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Question?

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