

ARES

SECURITY

Protecting the World's Most Critical Assets

Presented by:  
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# Briefing Agenda

- Who is ARES Security
- What is AVERT
- What is the Advanced Behavior Module?
- Why Advanced Behaviors.
- Summary & Discussion Points

# Who is ARES Security

- Our modeling & simulation engine was developed under a DTRA sponsored SBIR grant in 1999
- Subsequent SBIR grants and years of extensive testing and development in conjunction with the NNSA, DOD, and the U.S. commercial nuclear market followed
- ARES Security spun out of ARES Corporation in 2012
- ARES Security became a standalone company in 2015 and had revenues in excess of \$10mil in 2016. 40 employees work amongst our three facilities in Northern VA, SC, and NM.
- Our technology is used by over 60% of the commercial nuclear market in the U.S., the Department of Energy, the DoD, and other critical infrastructure asset owners
- We have a proven solution



#### DoD Accredited

- Sponsored by the Defense Threat Reduction Agency, US Air Force & US Navy
- Accredited for assessment at nuclear storage facilities



#### DOE Accredited

- Depended on to evaluate vulnerabilities at NNSA facilities
- Used to optimize force protection capabilities at high-consequence facilities



#### DHS Certified

- The only SAFETY Act Certified Software to conduct vulnerability assessments
- Provides users liability indemnification from acts of terrorism

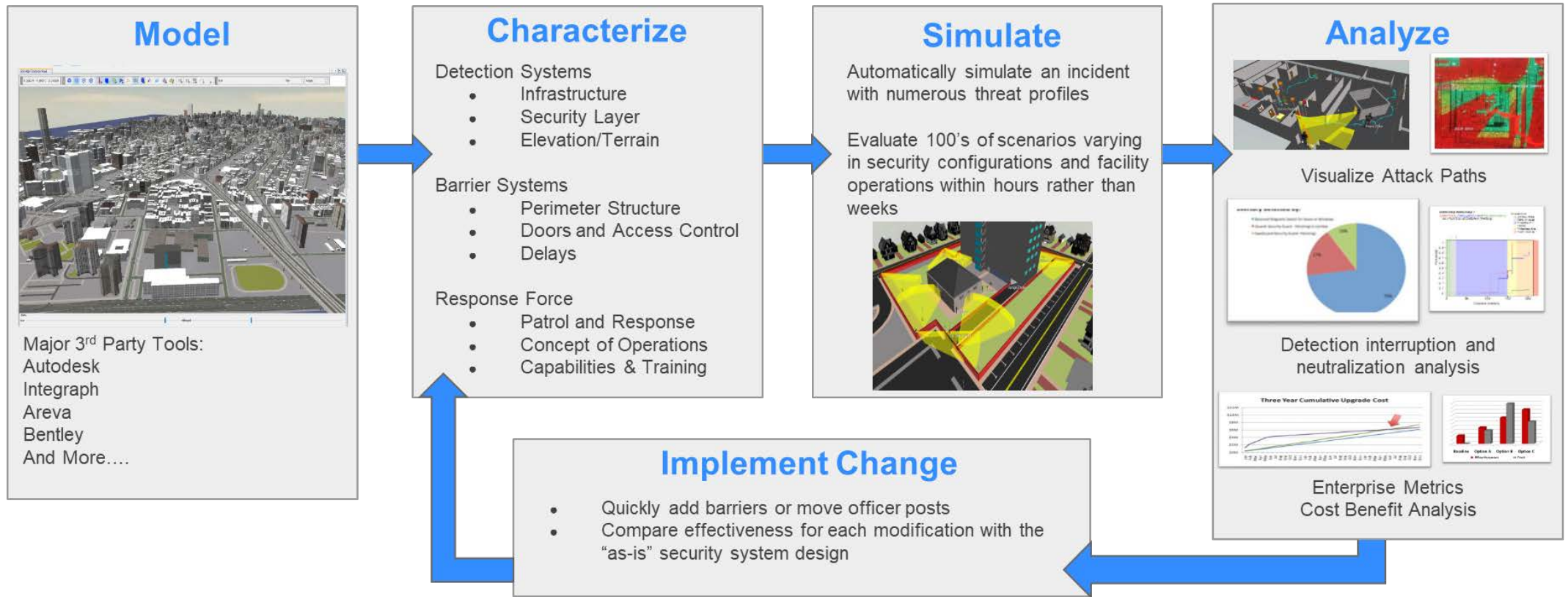


#### World Institute of Nuclear Security Published

- Projects featured in the Best Practices Guide for Nuclear Security
- WINS ([www.wins.org](http://www.wins.org)) is a nuclear security best practice organization

*Protecting the World's Most Critical Assets*

# AVERT Process



ARES leverages Modeling and Simulation to quickly perform defense in depth and sensitivity analysis: Characterize, Simulate, Analyze, and Optimize to support the decision making process.

# Advanced Behavior Module

- Current AVERT works well in environments where details of tactical operations during the event are not drivers to the final outcome.
- As the threat and defensive strategies evolve, more detailed modeling of agent tactical decisions is required.
- Advanced Behaviors provides higher fidelity, repeatable, clear capabilities to better simulate tactical activities and actions and collect the necessary data for more detailed analysis.
- As forces are removed from the site, special tactics, and behaviors such as cover and concealment, sniper, and advanced breaching become more important to the results and detailed analysis of the outcomes.

# Advanced Behavior List

- Many new conditions and states
- Support for specific scenarios
  - Adversary team switches objectives
  - Barrier enabled on scenario event
  - ROWS
- Support for Armory scenario
  - One guard can go to armory, pick up weapons, deliver to unarmed guards

Conditions	States
Arrived at Agent	Add to ROWS Group
Arrived at Objective	Change Objective
At Simulation Time	Disable Barrier
Delay Timer	Disable Path Override
Engaged	Disable Behavior
Objective Achieved	Enable Barrier
On Acquire Equipment	Enable Behavior
On Any Detection	Enable Path Override
On Equipment Setup	Force Detection
On Neutralization	Give Equipment to Agent
On Start	Go to Agent
Within Linear Range of Hostile	Go to Objective
	Override Equipment Stages
	Override Path Strategy
	Override Target Priorities
	Pick Up Equipment
	Weapons Free
	Weapons Tight

# What do they do?

Advanced Behaviors provides options for users to change the behavior of an agent dynamically based on certain events as the simulation progresses.

Much more advanced capabilities for detailed modeling of combat actions is now available.

Examples.

- Snipers can engage various targets changing as the simulation progresses.

- Guards and adversaries can take advantage of 'taking cover' and engaging in combat from cover points as they progress.

- Effects of cyber attacks and insider threats can be modeled.

- Adversaries can proceed in protective groups using stealth and protection to better reach targets and engage the blue forces.

- Effects of communications failures and equipment failures can be modeled.

# AVERT Advanced Behaviors

- Behaviors are continuously being created based on customer feedback.
- As behaviors are developed, all customers with advanced behaviors and on maintenance, receive the new behaviors.
- Each new behavior has a predominate theme, but can be used for many new capabilities. For example, weapons free vs. weapons tight per agent was added for the 'sniper theme', but can actually be used for any scenario where rules of engagement are important.

Remotely Operated Weapon Systems  
(Complete)

Change Path in Combat (Complete)

Sniper (Complete)

Advanced Breaching (Complete)

Equipment Disbursement and Resupply  
(Complete)

Team/Agent Stealth (Summer-2018 Release)

Suppressive Fire (Summer-2019 Release)

Drone/Anti Drone/IED (Summer-2019 Release)

Cover and Concealment Complete (Summer-2018 Release)

Guard Proficiency

Communications

Preparing the Battlefield "Cyber"

Other behaviors as required by clients (TBD)



# Example of Sniper Capabilities (Advanced Behaviors)

- Multiple, flexible, configurable target selections
  - Sniper can engage various targets such as a set of critical defensive guards or systems (ROWS).
  - AVERT ABM will prioritize and engage these targets, based on the unique conditions in each simulation.
  - Sniper will also ensure their own survival.
  - Provides 'overwatch' capabilities.
- Relocation
  - Sniper can move when breach team reaches an objective, or other condition
- Rules of Engagement
  - Specify conditions that must be met before sniper can fire, for example
    - Being fired upon
    - Designated agent or group of agents being fired upon
    - Designated agent or group of agents reaching an objective
    - Proximity of breach to security force
    - Time expired or many other conditions.

# Effects of Cover and Concealment :

- Today AVERT's agents (adversaries or guards), without Advanced Behaviors, will run directly at weapons fire and not take advantage of protection or avoid fire.
- Cover and Concealment greatly enhances survivability and increases fidelity in combat where the adversaries and guards are engaged and cover is available.
- Cover and Concealment Basic Capabilities
  - When under attack, or an attack is imminent, adversaries will move to cover points, when advantageous, to improve their survivability and allow them to neutralize the opposing forces.
  - The agent will take cover and limit their exposure to counterfire. They will only be exposed to counterfire during the times they are firing on the opposing force.
  - They will stay in that position until they either neutralize their threat or need to move forward based on time.
  - AVERT determines the optimal cover locations and methods to engage for the adversaries and guards to achieve their objectives.

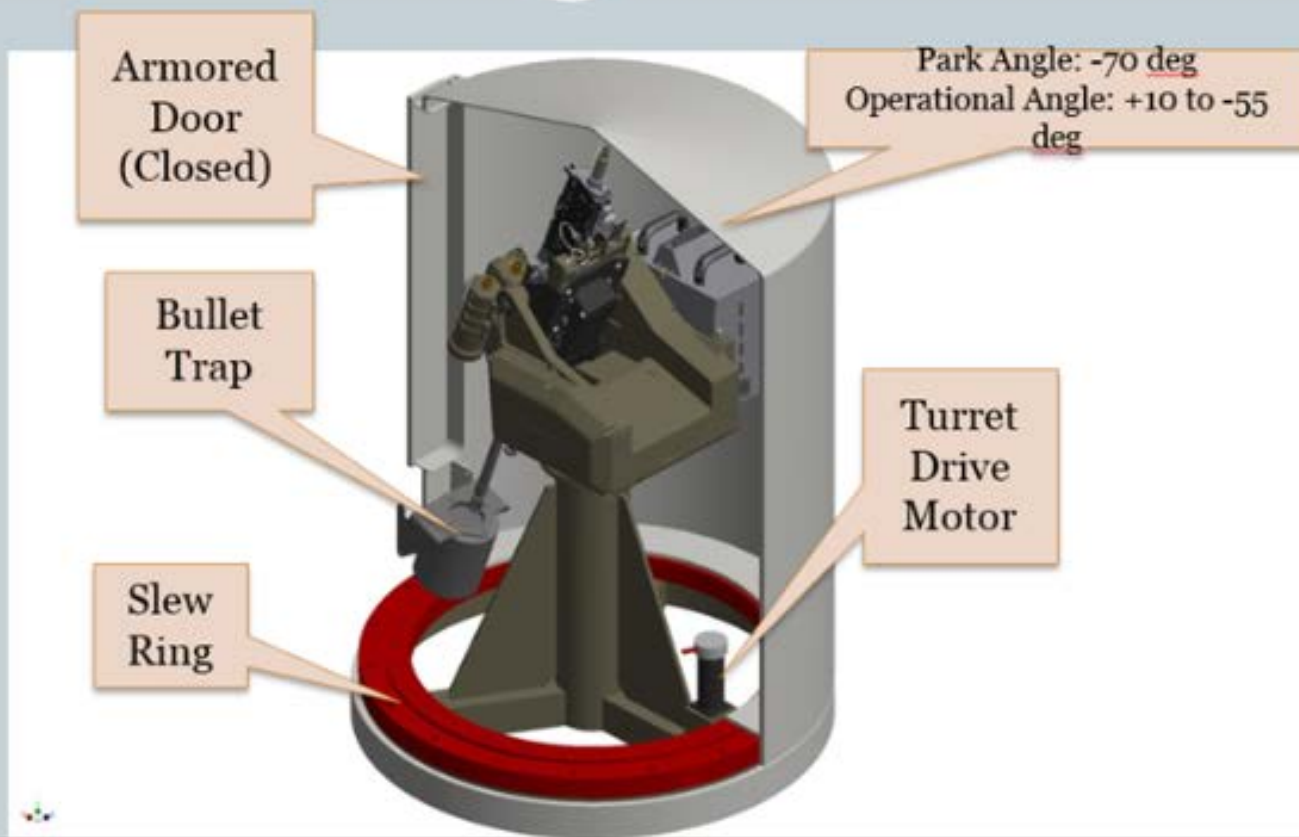
# Example of “Preparing the Battlefield”:

- Primarily to support modeling a “successful or partially successful” cyber attack.
- Adversaries disable detection capability
  - PIDS section disabled
- Adversaries disable delay capability
  - Unlock doors
- Adversaries use delay capabilities against defenders
  - Block response teams from taking a direct route to their stations
  - Lock defenders out of critical areas
- Can be used to support design and justification for hardening or protecting primary and secondary IT/Nexus points for critical command and control infrastructure.
  - Hardened Camera systems
  - Advanced and hardened nexus points
  - Critical control cable way points.

# Examples of ROWS

- Lethal and Non-Lethal Weapons
- These are Precision Remotes' weapons
- Precision Remotes – A Blackwing Company
  - <http://www.precisionremotes.com/>

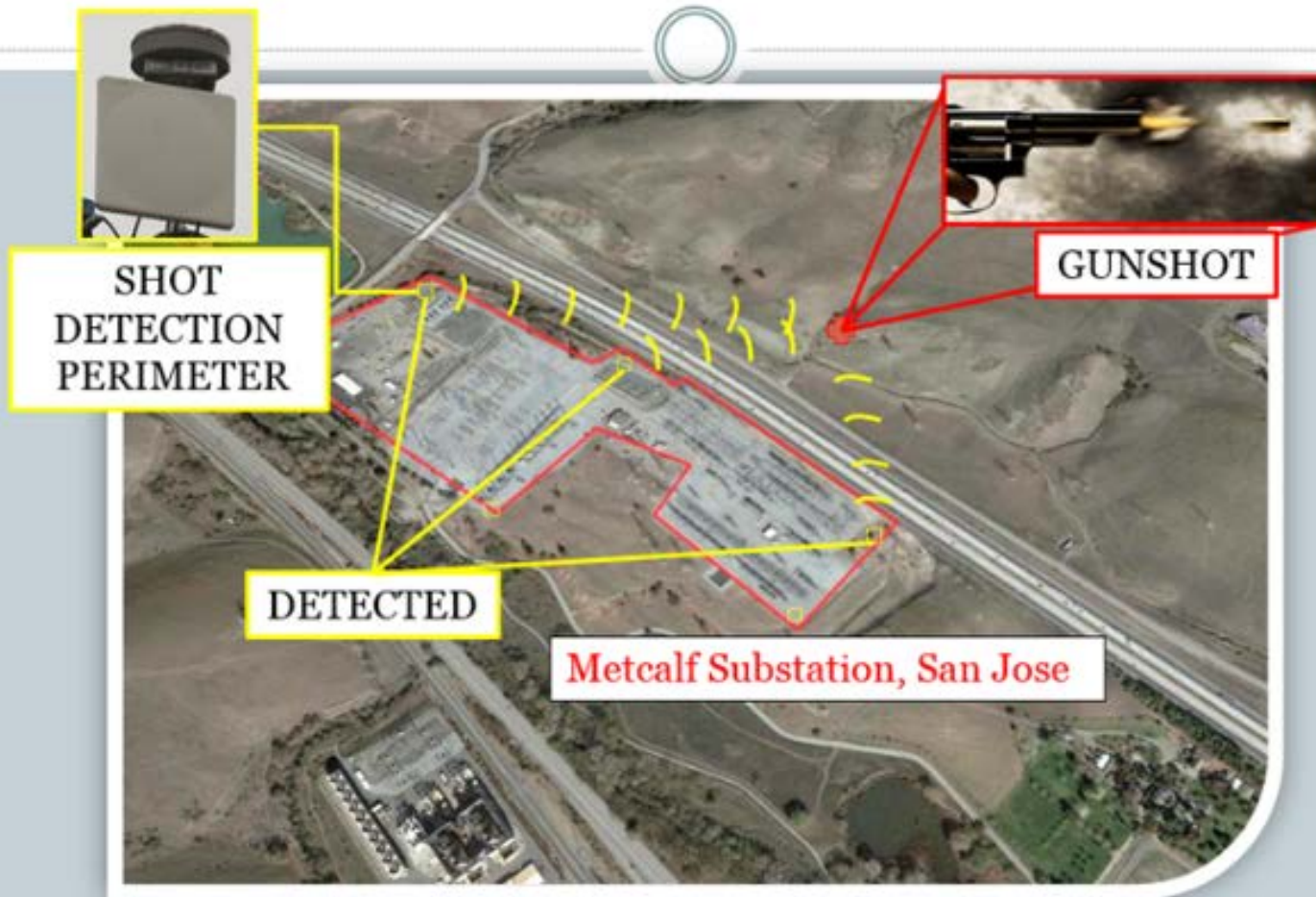
## Lethal ROWS Housing



## Non-Lethal Engagement



# Detect

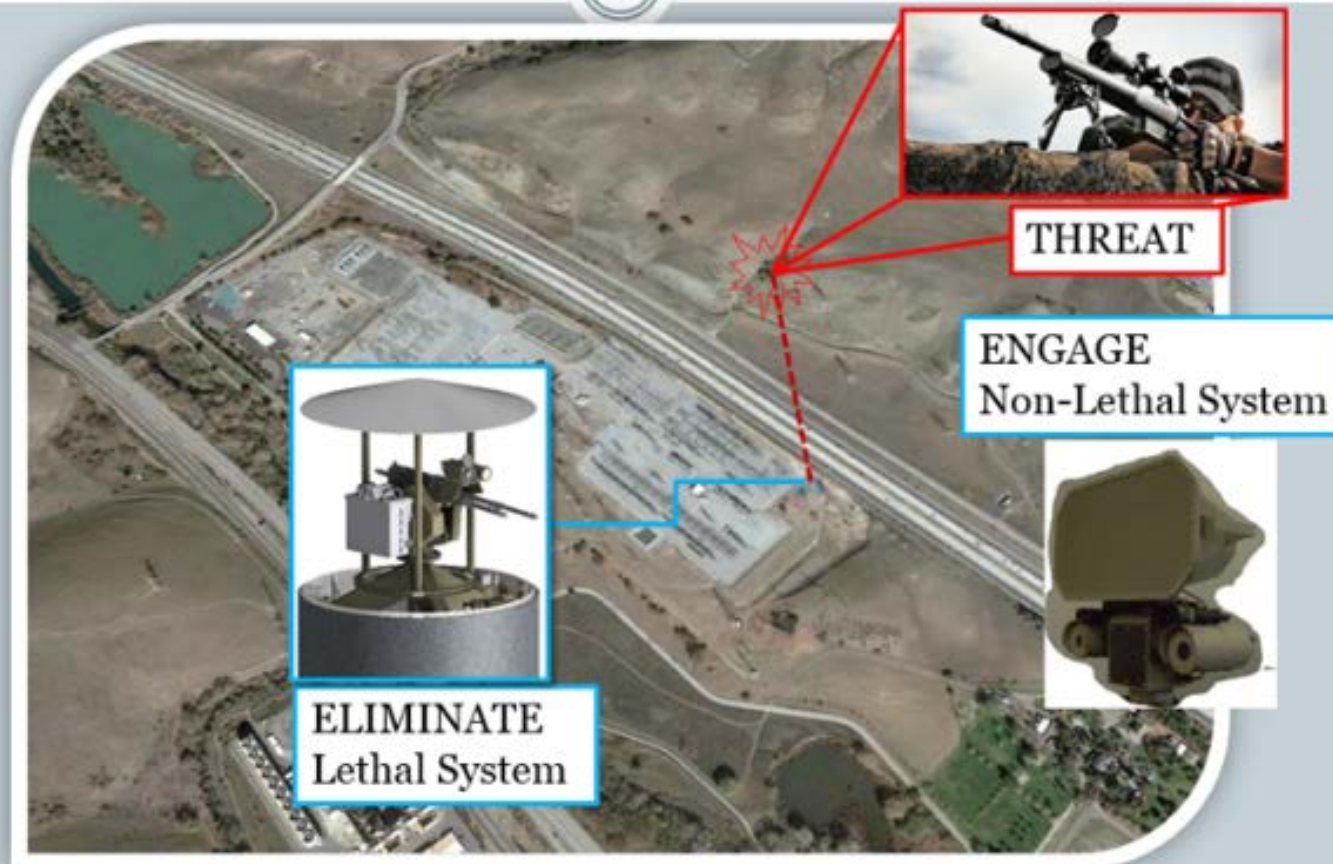


# Assess



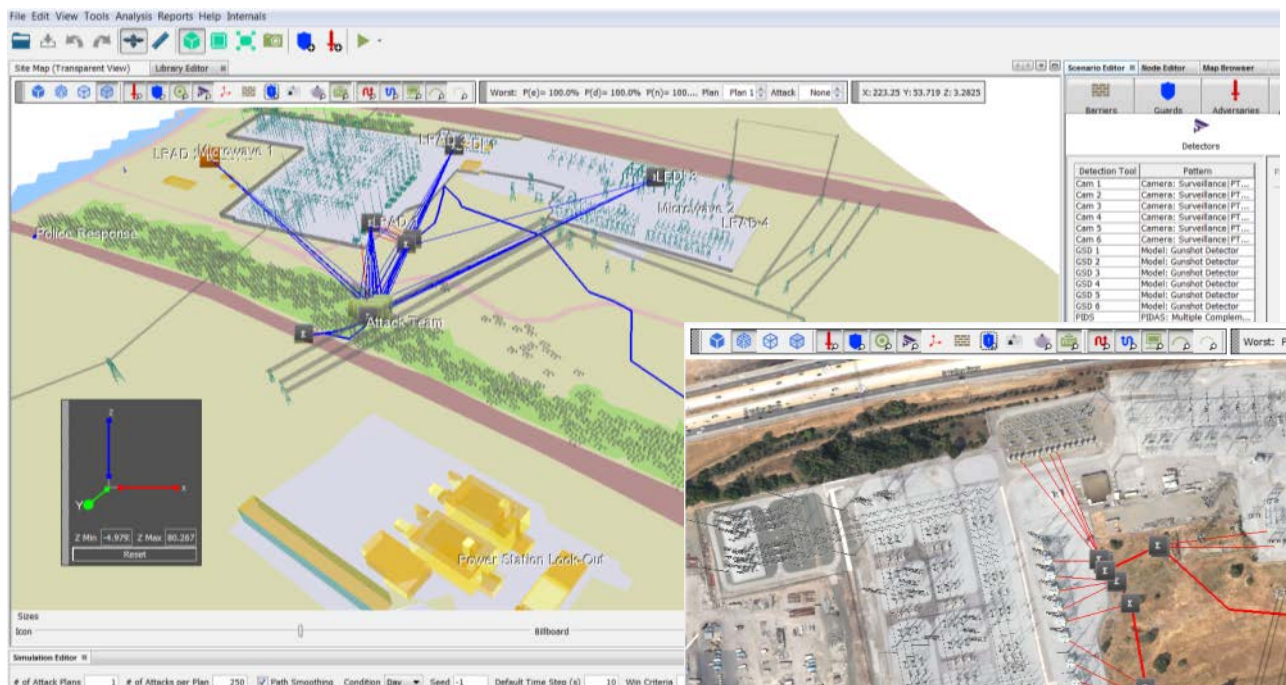


# Engage/Eliminate Threat

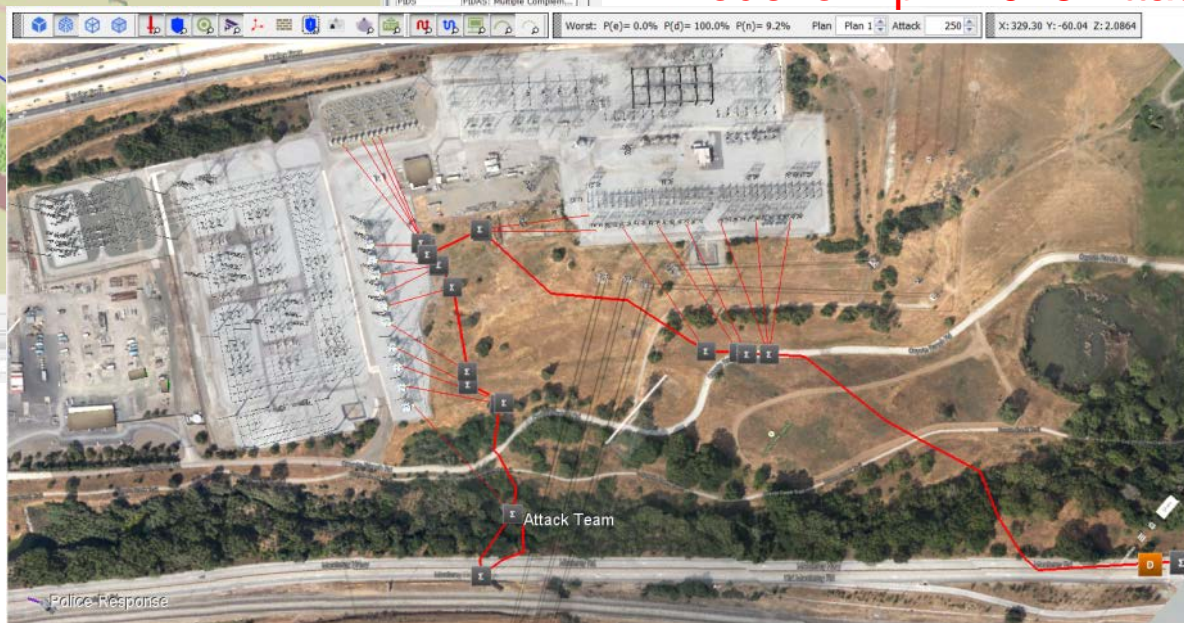


# AVERT Model of ROWS (Non-Lethal)

AVERT simulates the critical elements of the attack scenarios including all site structures and topography, Police and Guard responses, the ROWS non-lethal neutralizations, the attack pathways, shots fired against the target equipment, the escape route, and other factors.

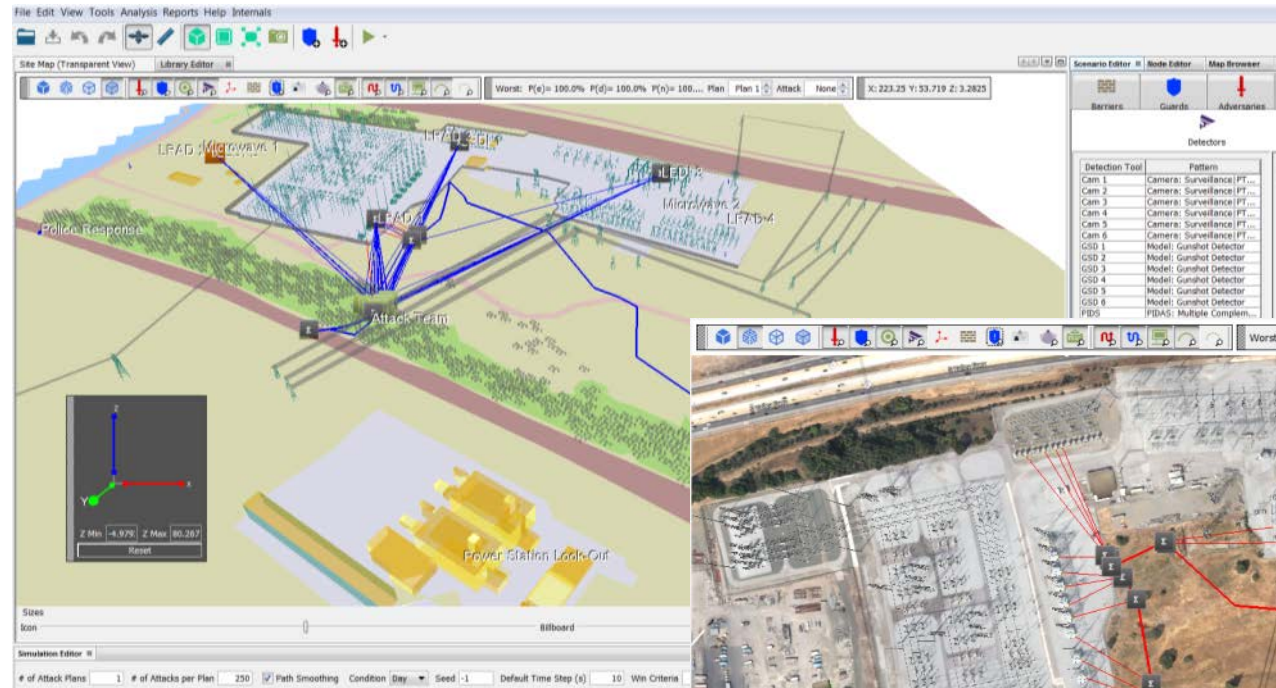


Model of April 2013 Attack

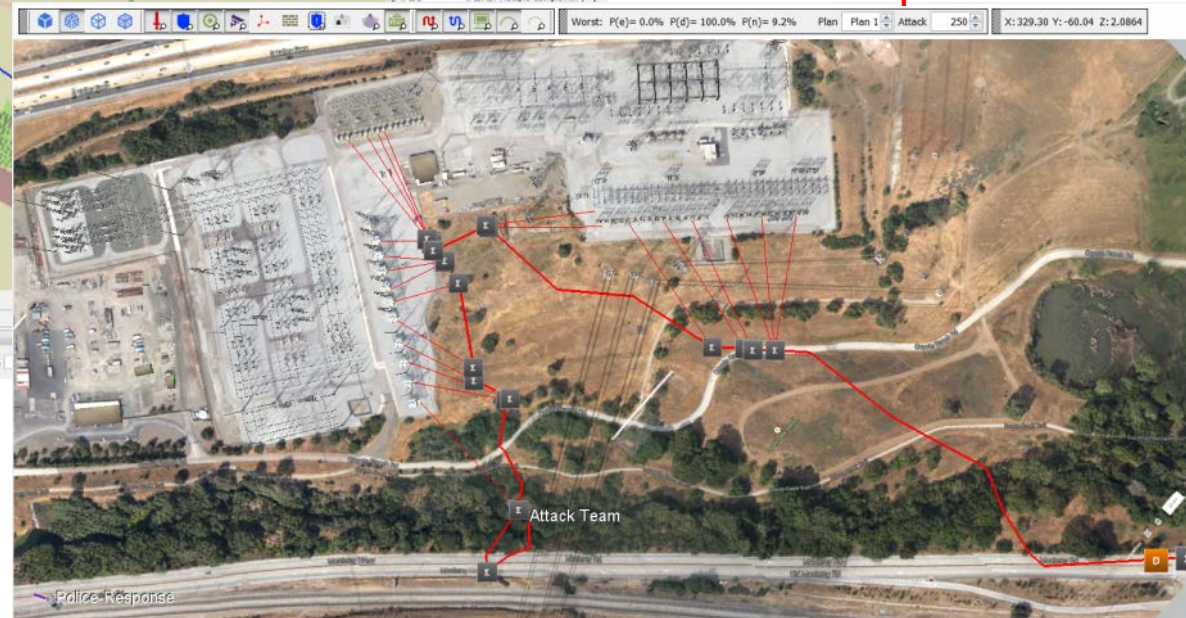


Model of ROWS Defense

AVERT simulates the critical elements of the attack scenarios including all site structures and topography, Police and Guard responses, the ROWS non-lethal neutralizations, the attack pathways, shots fired against the target equipment, the escape route, and other factors.



Model of April 2013 Attack



Model of ROWS Defense

# UAV example

ARES is working with the US Air Force on several areas, one of which is modeling UAVs:

- Adding more fidelity in the AVERT air terrain
- Advanced Behaviors used to model various UAV approaches:
  - Blue and Red Force UAVs
  - Operator controlled platform
  - Pre-planned flight plan for UAV platform
  - Model station times, recharge times to optimize fleet size
  - Supervisory control
  - One UAV operator with one or many downlink video users

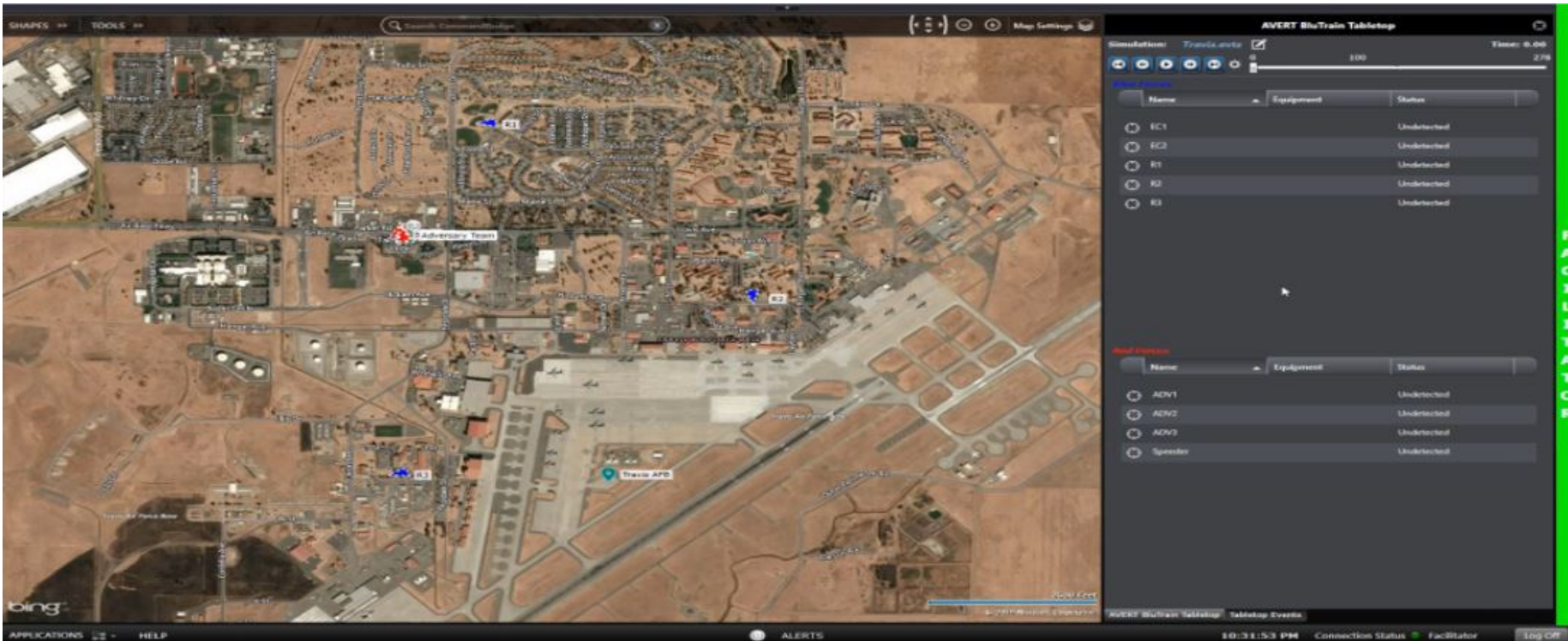
# RECAP OF AF183-005

## AVERT 3D Modeling & Physical Security Assessment of Travis AFB



# AVERT VIRTUAL TABLETOP RESULTS

- Build a demonstration Virtual Tabletop Exercise for Travis AFB SF



# Questions