ARES

SECURITY

Protecting the World's Most Critical Assets

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Briefing Agenda

- ASC Overview
- ASC Roadmap Strategy and Progress
- AVERT Solutions
  - Advanced Behavior Module
  - Virtual Tabletop
- Summary & Discussion Points

ARES Security Corporation

Overview

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. 50 employees work amongst our three facilities in Northern VA, SC, and NM.
- Our technology is used by 60% of the commercial nuclear market in the North America, several entities within the Department of Energy and 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) is a nuclear security best practice organization

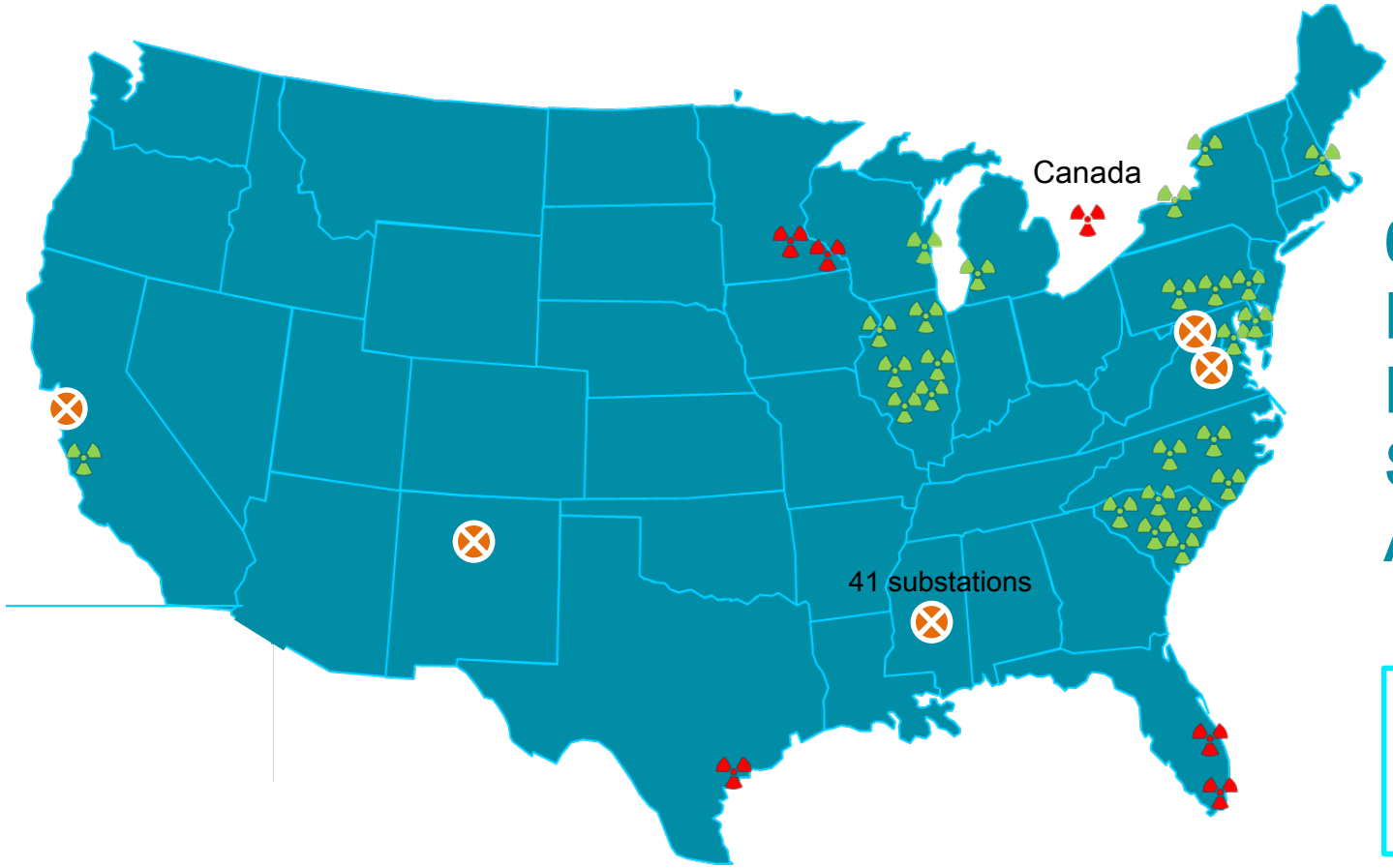
ARES Security AVERT Installations

International

- Canada
- UK
- Singapore
- South Korea

Gov/CIP/Trans

- AVERT



60% of the North American Nuclear Market Share (14% have All Hazards)

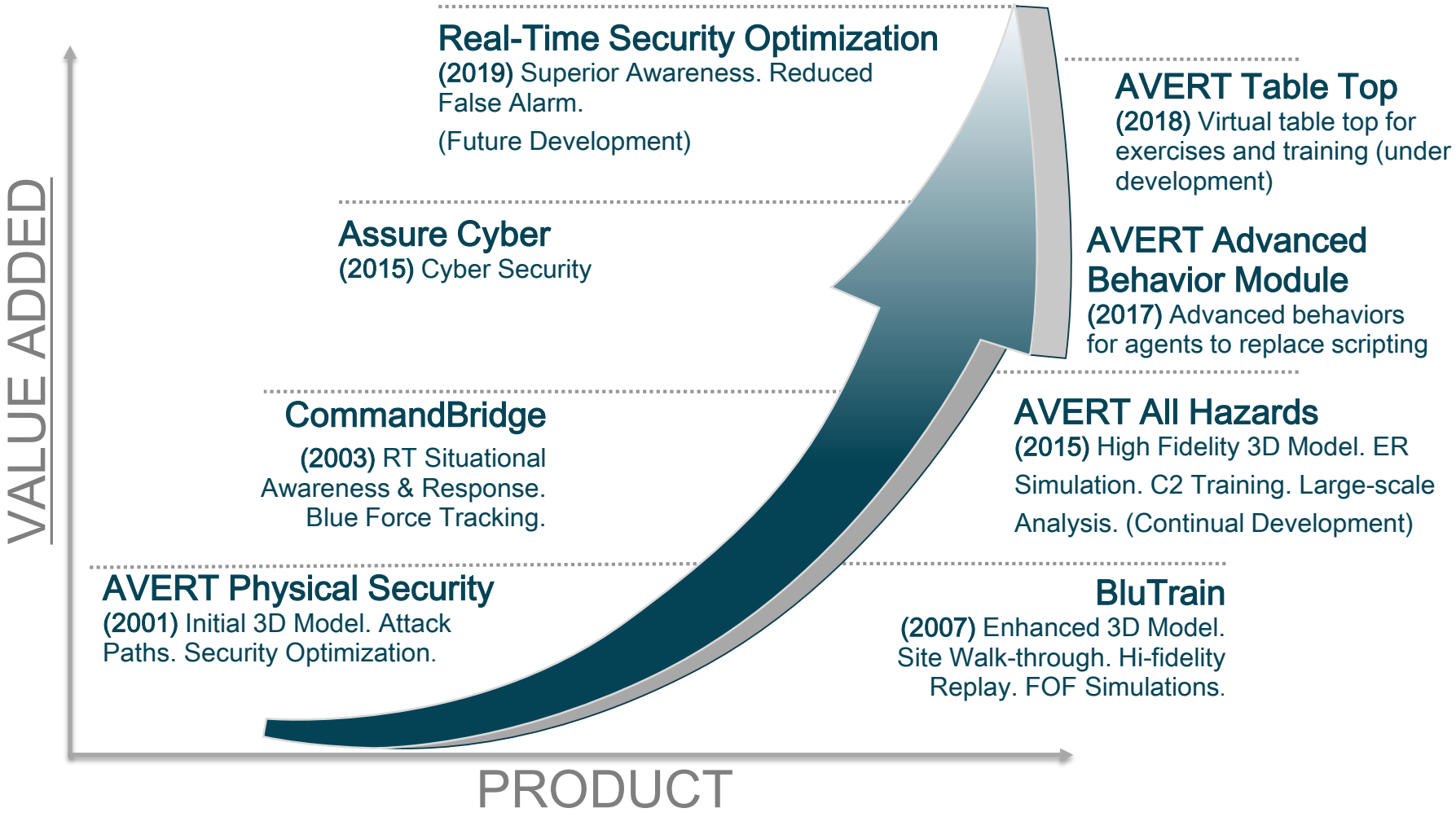
Nuclear

- AVERT
- All Hazards

ASC Product Roadmap

Strategy and Progress

Technology Vision: Growing Value for Customer!



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AVERT Solutions

Advanced Behavior Module

Advanced Behavior Module

1. Current AVERT works well in environments where changes in tactical decisions during the event are not drivers to the final outcome.
2. As the threat and defensive strategies evolve, more detailed modeling of agent tactical decisions is required.
3. In early versions of AVERT a scripting language was used to modify behaviors dynamically during the simulation to address situations where tactical decisions do impact the outcome.
4. Advanced Behaviors is a programmatic way to invoke conditions and states to better simulate tactical decisions. This approach is superior to scripting because it can be tested and maintained version to version. Scripting was done as paid services for customers. Scripts were not typically transportable model to model.

AVERT Advanced Behaviors

- Long List of Advanced Behaviors has been created. Starting list below is being prioritized by market and customer requirement.
- Goal is one behavior per quarter. Provided to licensees with AAH or as part Advanced Behavior module.

Change Path in Combat (Complete)
Sniper (released in 8.2) Complete
Advanced Breaching (Complete)
Change Objectives (Complete)
Dynamic Barriers (Complete)
Remotely Operated Weapon Systems (Complete)
Equipment Disbursement and Resupply (Complete)

Suppressive Fire (Q1-2018)
Cover and Concealment (Q1 2018)
Guard Proficiency
Communications
Preparing the Battlefield “Cyber”
Other behaviors as required by clients (TBD)

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Advanced Behavior List

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

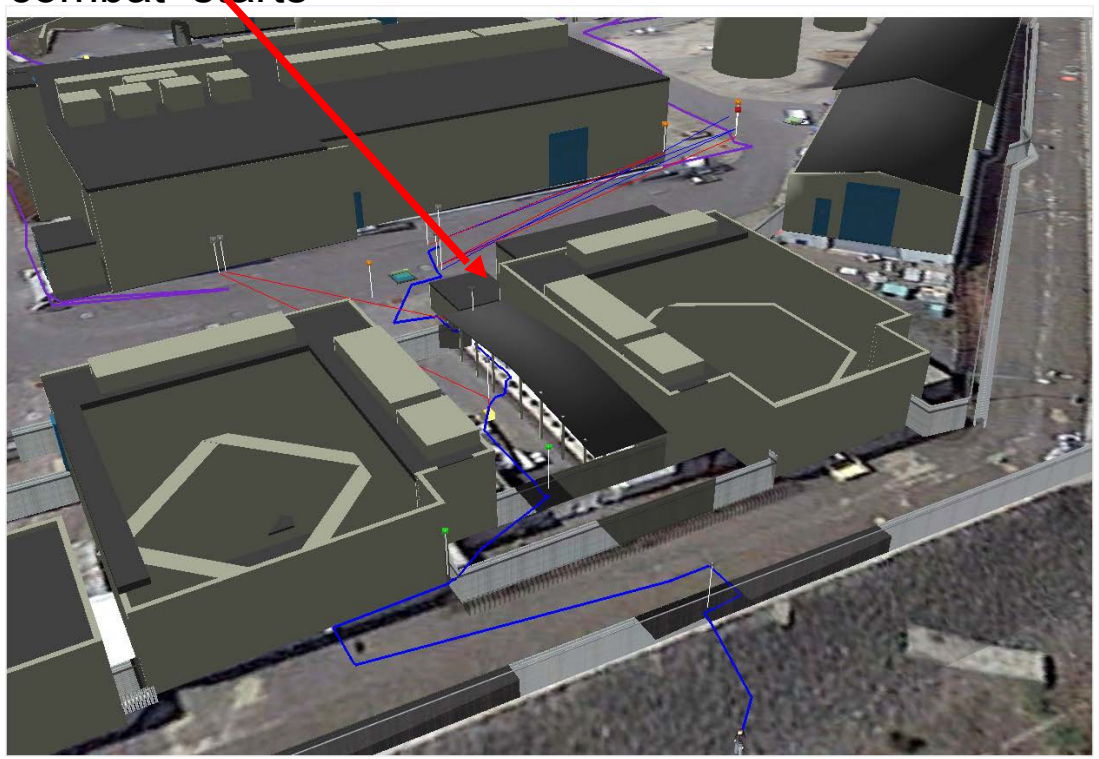
Conditions	States
*Arrived at Agent	*Add to ROWS Group
*Arrived at Objective	*Change Objective
*At Simulation Time	*Disable Barrier
*Delay Timer	*Disable Path Override
Engaged	*Disable Behavior
*Objective Achieved	*Enable Barrier
*On Acquire Equipment	*Enable Behavior
*On Any Detection	*Enable Path Override
*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

*Advanced Behavior license required

Advanced Behaviors: Change Path Strategy in Combat

Red and Blue agent behavior in AVERT meets Nuclear Industry requirements

Adversary continues on Fastest path once combat starts



Adversary changes to Combination path – can retreat from heavy fire at this point

Example of Sniper Capabilities (Advanced Behaviors)

- Designate multiple targets
  - Targets may be
    - AVERT objectives
    - Designated guards
  - Users hould be able to define priorities
    - Priorities may change as attack progresses
  - Sniper must balance achieving objectives with self-defense
    - Can't ignore an immediate threat while trying to shoot a target
- 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
    - 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

Effects of Cover and Concealment and Suppressive fire:

- Cover and Concealment Effects
  - Agents move to cover points at start of combat
  - Initial implementation: user-identified cover points, AVERT determines which is most advantageous
  - Future implementation: automatically identify areas of cover
- Suppressive Fire Effects
  - Not following proper procedure
    - A BRE guard could fail to exercise proper port management
    - A chasing agent could break pursuit
  - Effects on ability to return fire
    - Suppressed agent fails to fire
    - Suppressed agent fires with lower Ph/PK
    - Suppressed agent fires with lower fire rate and higher Ph/Pk
    - Combinations of the above

Effects of Guard Proficiency:

- AVERT to have ability to set detailed proficiency levels for each guard post.
  - Proficiency to include detailed training levels, down to specific tasks required to perform in order to comply with procedures.
  - Includes ability to “dial in” to guard combat experience levels to test first time under fire and susceptibility to suppressive fire effects.
    - Inexperienced guards have a wider range of possible reactions to suppression than experienced guards
    - Inexperienced guards are more susceptible to suppression
- Ability to assess and model planned guard roster and indications of where roster, based on proficiency, may lead to less optimum results.

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.

AVERT Solutions

Virtual Tabletop

What are Tabletops for?

1. Train and exercise shift security supervisors' (or equivalent) decision-making ability in response to events.
2. Evaluate proposed procedures or equipment.
3. Exercise and evaluate command or senior executive staff with respect to policy and procedures, MOU's, mutual aide support, communications, and strategies.
4. Preparation of Force-on-Force exercises.

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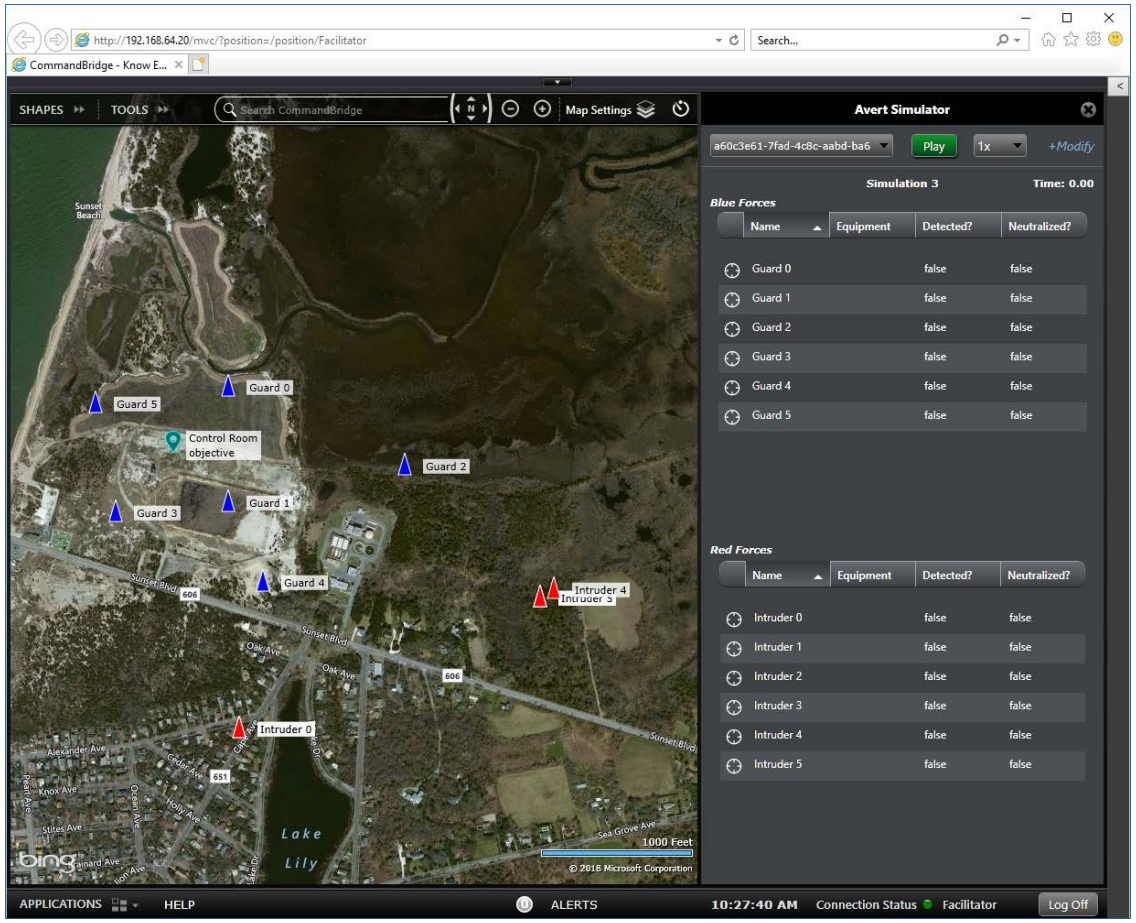
Virtual Tabletop



- AVERT calculates likely outcomes of the exercise scenario at critical decision points.
- Users will be able to redirect forces, change behaviors at different critical decision points.
- Play scenarios, pause, interject new behavior for AVERT to simulate, review results and make further adjustments
- Uses proven products: CommandBridge as UI for red and blue forces, and facilitator

Virtual Tabletop Roles

1. Facilitator/Controller
   A. Determines tabletop scenarios using AVERT
   B. Identifies "interesting" attacks within an AVERT scenario
   C. Leads discussion of alternative actions, lessons learned
   D. Sees location of all forces during tabletop exercise
2. Red Team
   A. Plays AVERT adversaries
   B. Can change adversary behavior (objectives, tactics, etc.) during a tabletop exercise
   C. Sees only red and *detected* blue forces during tabletop exercise
3. Blue Team
   A. Plays AVERT guards
   B. Can change guard behavior (objectives, tactics, etc.) during a tabletop exercise
   C. Sees only blue and *detected* red forces during tabletop exercise

Virtual Tabletop Workflow

1. Facilitator determines tabletop scenarios using AVERT, identifies “interesting” attack within an AVERT scenario
2. Facilitator plays back attack
3. At some time of interest (TOI), facilitator halts playback
4. Red and blue teams determine alternative actions, submit them
5. Changes are submitted to AVERT, and the simulation is re-run
6. Updated simulation is played back

AVERT Virtual Tabletop Mockup

Command and Control, Decision Support, Virtual Training, and Playback for Live Emergency Response Exercises

Scoreboard
- ❖Status metrics on scenario
- ❖Rate overall performance to rank commanders

Higher Fidelity Model
- ❖Combat
- ❖Movement
- ❖Line-of-sight

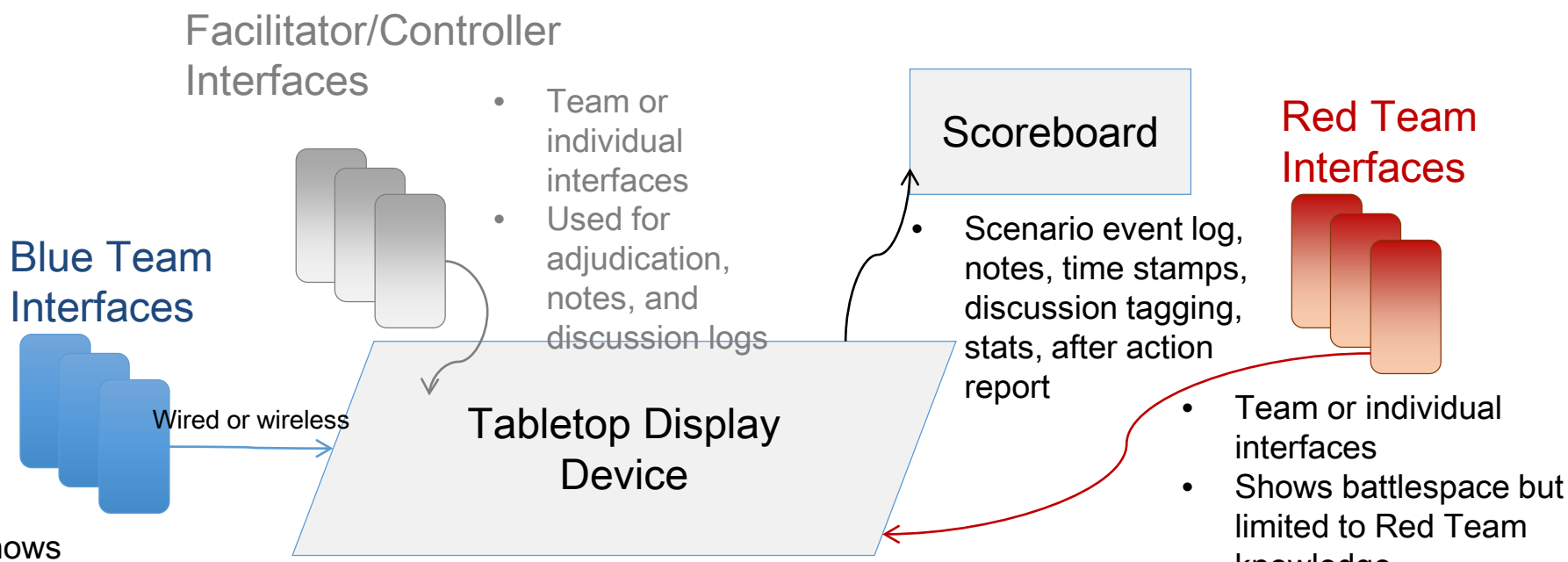
Modify Scenarios
- ❖Add future events on the fly
- ❖Remove responders

3D View
- ❖Select assets and resources
- ❖Deliver commands to respond

Practice Dispatch
- ❖Select assets and resources
- ❖Deliver commands to respond

Timeline View
- ❖Record, replay, & rewind
- ❖Walk team through CONOPS for familiarization

AVERT Virtual Tabletop- How it Works



- Shows battlespace but limited to Blue Team knowledge
- Used for planning until execution on the main table

- Shows virtual battlespace and scenario history up to current time
- Allows for variable permissions to be shown corresponding to different knowledge sets (perfect, blue, red, limited minimum)
- "Limited min" set is the set of mutual blue/red knowledge
- Should have Nav and GUIs for req'd functions (fcns: rewind, replay, alternative scenario dev, place asset, move asset to waypoint, fire weapon x at y, use equipment, attempt barrier, etc)

- Team or individual interfaces
- Shows battlespace but limited to Red Team knowledge
- Used for planning until execution on the main table
- Can pre-load attack scenarios to main table for White Team review

Questions