



## The AVRT Military platform: The Adaptive Virtual Reality Training solution

Utilising the latest cutting-edge virtual reality technologies, the AVRT platform provides a blended learning approach offering the ability to train for situations that would otherwise be logistically challenging, reducing the pressures on limited training facilities/areas and protecting the environment.

The AVRT Military system is commercially available and is currently deployed into real-world training with the Singapore Army.

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VIRTUAL  
REALITY  
TRAINING

## AVRT System Software Capabilities:

- Networked multi-user capability – any combination of human vs digital enemies or human vs human.
- Base library of 3D environments, enemy combatants and 3D weapons to be used in scenarios.
- Fully dynamic scenario controls including deployment of fully controllable and AI-driven scenario actors.
- Highly controllable and adaptive waypoint and cover system for AI enemies.
- Target shooting scenarios with marksmanship capabilities including shot grouping and laser muzzle trace (100m-300m indoor/outdoor range and 360° judgement scenario).
- Highly functional User Interface to allow customisation of objectives and scenarios.
- Full 3D replay facility including first person view and shot placement for effective After-Action Reviews.
- Capability to integrate 3<sup>rd</sup> party hardware such as haptic suits and gloves.
- Options to develop the software and hardware platforms further, based on requirements.

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**The AVRT platform uses fully free-roam wireless technology, coupled with multiple real-feel weapons and equipment.**

- There are no controllers**
- No buttons to learn**
- No multiple-choice menus to interrupt the learning**

**Instructors can live role-play against trainees by voice, by managing the actions of multiple VR characters or let AI-driven scenarios run to completion. Training scenarios are dynamic and consider the operational movement and actions that are expected of exercising troops.**

**Movement within the system is intuitive and comfortable to allow trainees to focus on the learning outcomes.**

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The AVRT platform is a new way of training that will supplement the toolkit of trainers:

The AVRT platform isn't intended to replace traditional firearms training procedures, be it simulated training, hands on practical training or live fire exercises.

AVRT is another asset in the instructor's tool-box that can aid the safe delivery of realistic training. AVRT enables the instructor to execute innovative and experimental decision-based training. VR training technologies enable better decisions to be made through advanced analysis and insights, especially under increased cognitive load. The AVRT platform gives trainers the ability to see through the eyes of the trainee in order to better understand their decision-making process.

More repetitions of critical training objectives for neutral or saved costs is the key benefit of VR training with AVRT.

## AVRT Military Datasheet

Element	Detail
Maximum tracked area	Unlimited (standard is 225 sq m but is fully modular)
Tracking type	Sub-mm accuracy, 6DoF IR external tracking
Portability	From 3x tactical/rifle hard cases + matting as required
Maximum users	Unlimited (licenced in 4 user blocks)
Weapons per user	5+
Weapon type	Real-feel firearm weapons with gas-blowback recoil
HMD Resolution	2448 x 2448 per eye (HTC Focus 3) 2064 x 2208 per eye (Oculus/Meta Quest 3)
Scenarios	Unlimited – build custom scenarios from the library
Scenario types	Full, live, instructor-led role-play or pre-scripted
Communication	Self-contained, secure wi-fi network



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## Natural Actions and Movements: Fully Free-Roam and Wireless Technology

The AVRT platform is built on reliable, self-contained consumer technology to avoid the need for costly custom-built VR hardware. Wireless hardware allows for natural movements and actions on a completely free-roam tracking area.

Soldiers can train in issued body armour and personal load-carrying equipment, greatly reducing the potential for training gaps.

This approach results in virtually zero adaption time for trainees, leaving them to focus on the learning outcomes.

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## Train Anywhere, Anytime: Fully Configurable and Scalable Training Environment

The AVRT free-roam tracking system uses a fully configurable training area and can be set up in any reasonably-sized open space. The tracking area can be scaled to any size to suit the training requirement with no impact on tracking effectiveness, allowing large teams to train together.

The AVRT system is fully portable, giving greater flexibility to training programmes – any venue can be a training venue.

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## Train as you Fight, Without the Risk:

Simulated real-feel weapons and hardware

Added to the VR hardware is industry-leading technology in the form of custom weapons and active real-world props based on firearms and equipment that are in use around the world. Virtually any weapon, with any sighting system can be built into the platform and used in multiple, so soldiers engage whilst fully equipped.

These weapons include Rifles, Carbines and Pistols as well as less-lethal devices. Weapon use is intuitive, gives haptic feedback to the user and can be holstered into existing tactical equipment to give a more natural training experience.

High-risk scenarios can be simulated including use of height to enhance training outcomes. Live or training ammunition is not needed, lowering the risk potential for exercises.

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## Exceptional After-Action Reviews:

Detailed Full 3D and First-Person replays

Scenarios can be viewed from the Soldier's perspective so that the trainer and the rest of the training group can see exactly what was seen at the time the action was taken. The whole training session can be recorded for review later if the organisation requires this.

Replays can be reviewed from any perspective within the scenario using a free-roaming camera. Advanced metrics display shot placement, distances, reaction times and Soldier biometric data throughout the training scenario and replay.

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## Challenge Soldiers Every Step of the Way: Completely Adaptive and Controllable Dynamic Scenarios

The AVRT instructor console allows configuration and adaptation of fully interactive scenarios using AI-driven or Instructor-controlled enemies and characters. This includes defining the environment, enemies and weapons during training setup and changing character behaviour, aggression, actions and even lighting conditions while the scenario is running live. The same scenario can have different outcomes for users that have trained with it previously or a fully repeatable situation can be configured for formative and summative assessment purposes. The AVRT system is significantly different from passive screen-based or 3D video VR training.

Networking allows soldiers to train together in the same virtual and physical space.

The system uses existing trainer skillsets to deploy established curricula and frameworks and can deliver current learning outcomes out-of-the-box with no costly changes to content or scenarios required.

## Increased Training Capability for Lower Costs:

### Virtual Reality Training Used to Drive Efficiencies

Increased quality and quantity of training for equivalent or reduced costs is driven by VR simulation using AVRT.

Single or restricted use items are simulated completely risk-free, saving significant costs whilst also mitigating training risks.

The capability of instructing and supervising personnel can be optimised using simulated digital characters and enemies.

Training venues, including denied and high-risk environments, are readily available in the system to maximise training exposure.

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## AVRT as an Advanced Integration Platform: Advanced Technologies to Enhance the Training Experience

Technology products such as Teslasuit and SenseGlove are able to integrate with the AVRT platform to achieve the best outcomes for users and trainers alike, with the AVRT team always seeking new use-cases for this technology.

The AVRT system can work with advanced motion systems from Delta Kinetic to add large scale moving platforms to add further realism to scenarios. These can include simulated Land Vehicles, Maritime Scenarios, Driving Simulation and more.



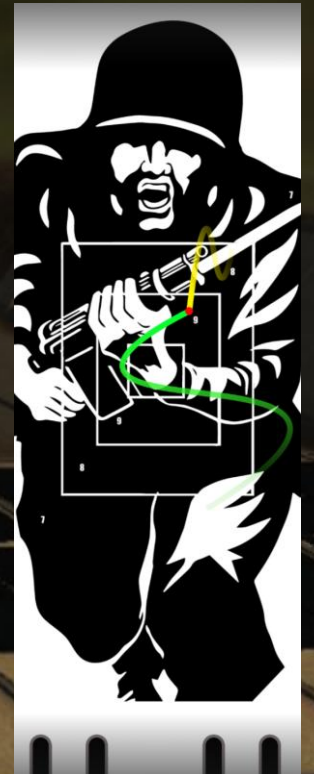
## Marksmanship Training with AVRT:

Multi-user 100m indoor range and 300m outdoor range with configurable targets from 3m to 300m. Exposure times, target delays and other variables can also be set.

360° Judgement target shooting range for drills and VR familiarisation.

Shot groupings with accuracy and timing metrics are displayed. The full anatomy of each shot can be assessed with pre-shot, shot fall, and post-shot laser tracing.

Advanced weapon attitude and status metrics are also available.

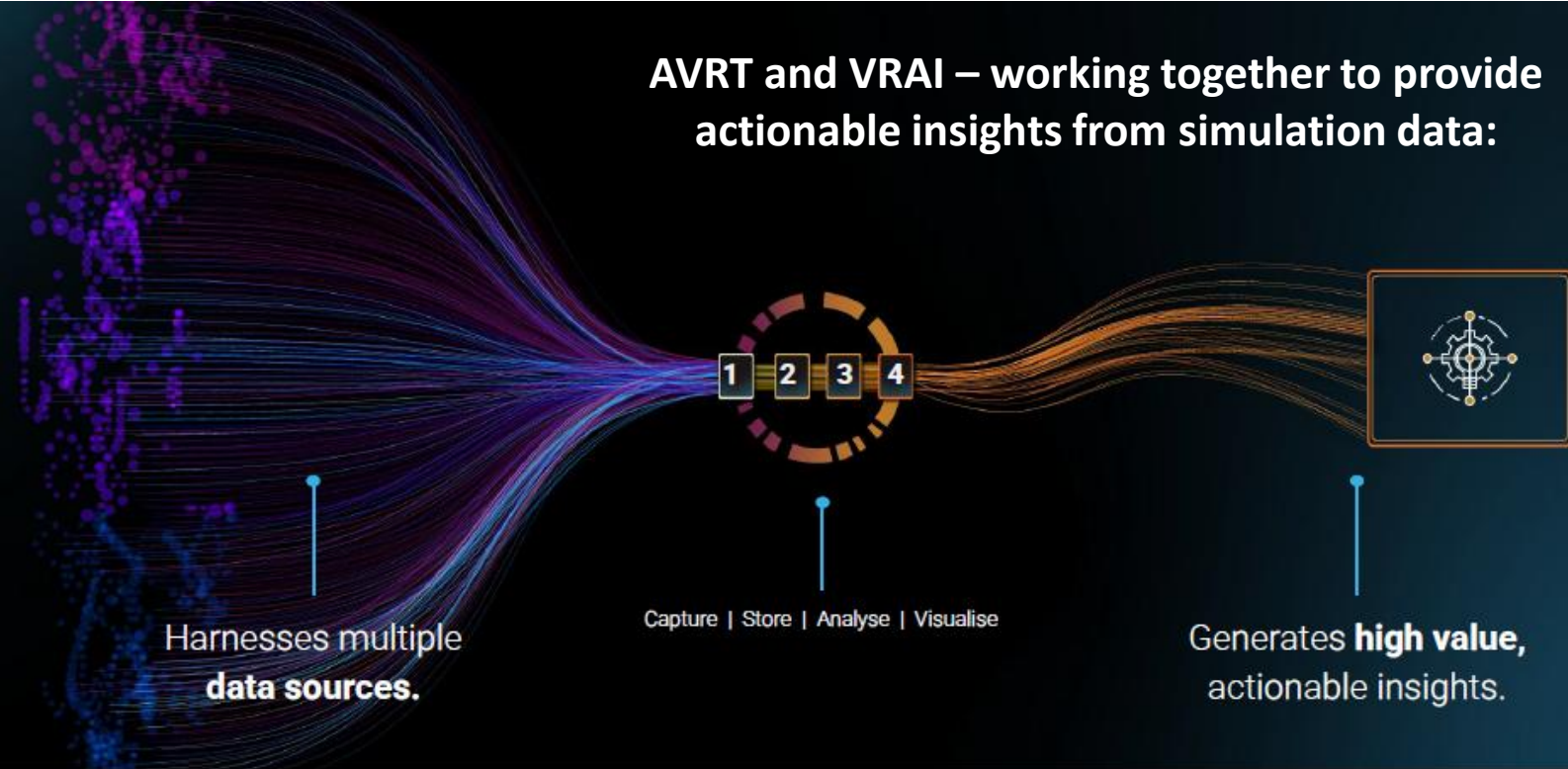




Transforms simulation data into **actionable insights.**



AVRT and VRAI – working together to provide actionable insights from simulation data:



Harnesses multiple **data sources.**

Capture | Store | Analyse | Visualise

Generates **high value,** actionable insights.

**HEAT adds value by integrating data capture and analytics into the training process.**

Delivering actionable insights that improve human performance, in less time, and lower costs.

**AVERT** ADAPTIVE VIRTUAL REALITY TRAINING





**Objective Metrics:**

Eye tracking, accuracy, timing, and cognitive load.

**Improved Training Outcomes:**

Trainers can focus on critical skills, trainees get measurable feedback.

**Secure & Scalable:**

Multi-user, high frame-rate simulations with encrypted data.

**Customisable Dashboards:**

Tailor analytics to specific training objectives or scenarios available.

**Scalable Insights:**

From individual trainees to collective training.

**Platform Agnostic:**

Works with multiple simulation engines and hardware.

**Multi-Source Data Capture:**

Integrates with VR, desktop, and wearable sensors.

**Data Centralisation:**

Ownership always remains with the customer.

**Clear Visualisation:**

Easy to read dashboards for trainers and trainees.

**Actionable Insights:**

Analyse performance, cognitive load, and skills metrics.





The AVRT Command Pack and all 12 AVRT HMD packs visible – HMD, Headphones, charging cables and weapon power banks (removed for transit)



The AVRT Command Pack, 12 HMD kits (6 visible), 6 CQB Carbine Rifles and 8 Pistol weapons

**The AVRT system is not experimental or a proof-of-concept.**

**In its Military configuration, it is used by the Singapore Army. Their 12-user system was purchased and deployed in July 2023**

**The system includes 20 weapons across 3 weapon types and the largest portable VR tracking system in the world at 400 sq. metres**