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Incorporating



for VBS2 support



COMPLETE AIRCREW TRAINING SYSTEM (CATS)

CATS is a cost-effective solution to all aspects of synthetic and procedural training for aircraft crews, from crew interaction to hoisting and door gunnery.

**Save Lives.
 Save Money.**



Background

CATS History

In 2006, VSS CEO David Lagettie (founder of the VBS1/2 series of software) designed the Aircrew Virtual Reality Simulator (AVRS) for use by the Australian Defence Force. Seven of these systems continue to be used today in what was hailed by instructors as the most successful simulation project in Australian Army Simulation Wing history.

The next generation of synthetic training, the Complete Aircrew Training System (CATS), incorporates expanded configurations such as a physical/virtual hoist module, pilot cockpit, projection domes and replica door gunnery.

CATS is used by **Australian Defence Force, UK Ministry of Defence, European Defence Agency,** and civilian SAR provider **CareFlight.**

Virtual Simulation Systems (VSS)

VSS develops a broad range of simulation technologies, constantly innovating to deliver new solutions. From digital content creation (terrains and 3D models) to modular projection dome screens and custom simulators to meet any training need. VSS customers include the **ADF, UK MOD, Canadian Armed Forces, Raytheon, Thales, AgustaWestland, Selex Galileo, LaserShot, QinetiQ** and other major defence contractors.



CATS cockpit for tactical and whole crew procedural training

CATS Door Gunnery Module

CATS can be expanded with a range of door gunnery options at any level of fidelity. Training can be achieved using high definition VSS *Helmet Mounted Displays, VSS modular projection domes, or a combination of both (e.g. for maximum NVG realism).* Any type of replica weaponry with or without recoil can be supplied or custom-made by VSS, such as *MAG58/M240, M2, M3M or M134 Minigun.* *NVG, Stoppages and Runaways can all be utilized.*

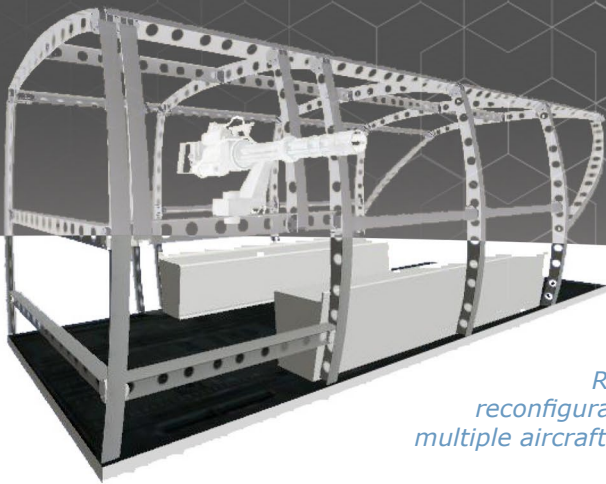


CATS features a wide variety of terrains, from the VSS Afghan Terrain Pack to urban environments such as Sydney. VSS can custom create any required geotypical or geospecific training area.

"Students are now at a far more advanced level before even entering the real aircraft. This saves time and allows the trainees to be much better prepared."

Quotes from senior Loadmaster instructors at Oakey ADF base.

"[T]he results have been amazing. Three training rotations will have 100% pass rates, which is unheard of - traditionally we have around a 25% failure rate. [This] training solution has been a huge success."



Rapidly reconfigurable to multiple aircraft types

Complete Aircrew Training System

Overview

CATS combines a multi-configurable airframe mockup, virtual reality tracking and simulation software in a cost-effective and flexible system that can adapt quickly to changing needs.

This approach has proven to be extremely reliable under extensive use, requires no dedicated on-site administrator, and allows rapid start-up/shut-down operation.

Operation

Crew members are equipped with Virtual Reality headsets and their positions are tracked in 3D space. Trainees view a high-fidelity representation of the aircraft and surrounding environment that is completely immersive. Trainees are free to move about the cabin mockup and operate as they would in a real aircraft, including lying down to view the craft's underside.

An Internal Communication System (ICS) allows crew members to develop and practice effective crew coordination. CATS presents a full crew mission environment either by the CATS instructor acting as the pilot, by incorporating a cockpit module, or by linking to an existing pilot simulator via HLA/DIS.



CATS Hoist Module

This hybrid physical/virtual module consists of a hoist system with a functioning pendant control modelled on any aircraft type. The virtual hoisting environment enables any situation: forests, cliffs, urban areas, or maritime scenarios with ocean swell. Hoist cables conform to terrain and objects to simulate standard techniques. Any role equipment can be modeled, including rescue strop and basket, and malfunctions simulated for advanced training.

Facilities

An Instructor Station with full After Action Review capabilities allows precise control over training and feedback.

A wide range of scenarios can be employed via real-time mission editors. Additionally, scenarios can be developed to recreate previous real missions to evaluate the decision making process.

Dynamic weather effects can be customised, and terrain can be imported or custom-made to geo-specific requirements.

Expansion Modules

- **Door Gunnery Module** - using VR or with Projection Dome
- **Hoisting/Winching Module**
- **Cockpit Module** - reconfigurable instruments
- **Marshalling Module** - deck or land, incorporates VSS Virtual Marshalling Simulator used by the RAAF, RAN and AAv.
- **Airborne Sniping Module** - using VSS MK1 virtual scope as used by Australian Special Forces and School of Infantry.



Enhance aircrew skill sets and develop positive crew habits in a high-fidelity benign environment, improving overall **safety** and **reducing costs**.

CATS Training Capabilities



Confined Area Operations

Cabin Security Training

Slope Landings (inc. one/two wheel)

Obstacle Awareness (Low Level/NOE ops)

Obstacle Clearances



External Load Operations

Situational Awareness

Rescue Hoist Operations

Pinnacle Approaches



Wire and Tower Awareness

Role Equipment Malfunctions

Inflight Emergencies

Ground Threat Awareness

NVG Training



Airborne Threat/Traffic Awareness

Formation Flying

Door Gunnery

Ship Operations/Deck Landing



Full Crew Interaction

Crew Resource Management

Instructor Training

Fast Roping

Trainee Remediation/Refresher Training

Airborne Sniping

Instructional Rehearsal

Instructor Standardisation/Development



Screenshots from VBS2 software