



# Training Solutions For Land Forces



# Overview

## Understanding Today's Complex Systems

Today's armies operate more sophisticated, complex and networked weapon systems than ever before. Challenges continue to grow and evolve in an era of persistent conflict, hybrid threats, increased operational demands and tempo against a background of limited resources. Joint and coalition interoperability are now a priority, while stability and reconstruction operations are commonplace alongside traditional kinetic operations. Together with the increased emphasis on collective and combined arms skills, the technical, information processing, and decision-making challenges place unique demands on training ground forces at all levels for full spectrum operations.

Within the digitized battle space, advanced command and control systems are essential tactical enablers, and to get the most from these tools, military customers need closely integrated operational and training solutions to maximize the ability of the human in-the-loop.



## CAE Offerings

- ✓ Advanced, Simulation-based Training Solutions
- ✓ Command and Control Constructive Simulation
- ✓ Combat Skills Training Systems
- ✓ Operational Support Solutions

CAE is uniquely qualified, by virtue of over 60 years of simulation and training support to military forces, to deliver your land-based human-systems integration, modeling, simulation, training and mission rehearsal solutions. By developing and integrating best-in-class technologies, rapidly creating stand-alone applications for any job in any region, and networking advanced weapons simulators operating in an interactive multi-spectral threat environment, we've earned our reputation as a leader in training and simulation. With over 7,500 employees in almost 30 countries around the globe, our experience, technology leadership, and focus ensure we address all your training and operational objectives while providing best value. The results are clear in training and operational support systems that will play a key role in the mission readiness and effectiveness of your ground forces to help them stay one step ahead.



# Training

## Operational Training Solutions

## The Foundation of Mission Accomplishment



**For any  
military, it  
all starts  
with training  
the way you  
will fight.**

Mission accomplishment is never guaranteed, but success in operations is better achieved through a comprehensive approach to training and readiness. Training must be systematic and structured to encompass the full range of individual proficiencies and team work necessary to prevail in the dynamic and dangerous conditions that our troops face on the contemporary battlefield. Training must be continuous to embed complex doctrinal principles, instill discipline and foster intuitive action. Most importantly, training must challenge at every turn to ensure that forces are prepared for the unexpected and are able to excel in the chaos and complexity of battle.

Successful ground forces are committed to full spectrum training and invest heavily to achieve and sustain readiness. Getting it right is first and foremost the result of deliberate training analysis based on sound subject matter expertise matched with innovative instructional systems design and focus on continuous progression.

In the midst of high operational tempo and budgetary pressures, industry partners are increasingly helping military forces to simplify the challenges and complexity of designing, managing and integrating training systems. The benefits of this approach are significant: freeing up scarce personnel, reducing costs, increasing training systems interoperability, and ultimately, lowering risk to the force.





## CAE Offerings

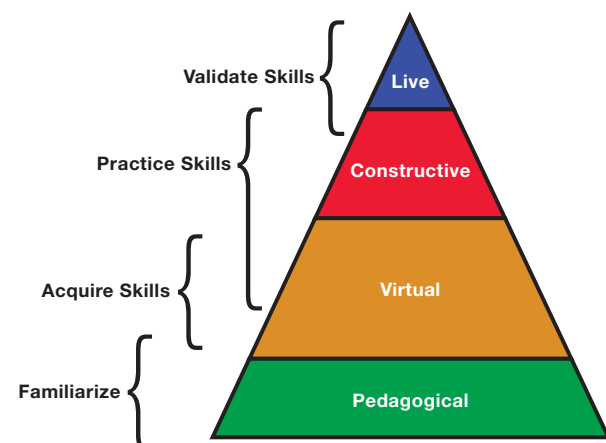
- ✓ Training Needs Analysis
- ✓ Self Paced e-Learning Solutions
- ✓ Scenario-based Intelligent Tutoring Tools
- ✓ Instructor Operating and Scoring Systems
- ✓ Training Management Information Systems
- ✓ Integrated Learning Environments
- ✓ Comprehensive Training Systems Integration

### Training is CAE's core competency

Producing a world-class training system requires a comprehensive understanding of every facet of training ... and the expertise to integrate all those components to work together flawlessly. Training starts with an understanding of learning and human cognition. CAE's proven expertise provides solid instructional analysis and design. To ensure the best learning outcomes, our interdisciplinary teams include innovative instructional designers and cognitive psychologists, game designers and media experts. CAE has all the requisite skills and capabilities of a training systems integrator. We are uniquely qualified to offer broad experience encompassing every aspect of training systems integration, a worldwide support footprint, and a heritage of unparalleled training technology innovation to meet the learning objectives of land forces.

CAE has a twenty-plus year legacy of designing and delivering simulation-based training solutions to ground forces. Designed to accelerate learning along a continuum, CAE situates learners in immersive content where they will familiarize, acquire, practice, and validate (FAPV™) critical skills in a way that leverages guided experiential learning. These simulations are optimized to efficiently train multiple critical tasks and emphasize "learning by doing," thus minimizing development costs while ensuring training requirements are met.

CAE's expertise extends from basic individual learning through to crew, unit and formation level training to cover the full spectrum of operational requirements for ground forces. Using a progressive approach to skill development and application, we exploit the full range of learning technologies, including web-delivered interactive 3D simulations, dynamic visualization techniques and intelligent tutoring tools.



# Command and Control

## Optimizing Leadership and Command Team Performance to Produce Agile and Adaptive Forces



The tempo and complexity of 21st century full spectrum operations are challenging leaders to be more flexible and adaptive than ever before.

Today, land forces are committed throughout the globe to joint and multinational conventional operations as well as multi-disciplinary counter-insurgency, security and stabilization, and humanitarian response missions. Each and every mission potentially carries strategic consequences of failure.

Given that real training exercises are constrained by high costs and environmental concerns, constructive simulation is the most effective method for providing commanders and their staff the required training.

CAE is a recognized leader in providing high fidelity constructive modeling and simulation for the training of commanders and staffs and their civil counterparts, at the operational and tactical levels, for both military and civil emergency operations.





## CAE Offerings

- ✓ Command and Control Constructive Simulation
- ✓ Common Environment/Common Database
- ✓ Integration of Live C2 Systems

CAE's GESI is a constructive simulation system designed to run comprehensive, multi-sided, free-play joint and combined computer assisted exercises (CAX) at tactical and operational levels. To exercise the decision making process in a complex environment, the commander and his staff require a realistic 3D representation of the battlespace. Reacting to command inputs, the synthetic battlespace produces both intended and unintended consequences that put a commander's reasoning to the test in real time.

CAE GESI is also optimized for use as a classroom education and training tool (SiTA) at military academies to bring officer cadets and junior officers up to tactical speed. This foundational training cements the underlying professional tenets of operations in the joint environment and is an essential digital aid for instructors to significantly accelerate training progression over traditional methods.

CAE GESI-EM (Emergency Management) is in operation at the Academy for Crisis Management, Emergency Planning and Civil Protection in Germany, and has been used in multiple civil-military and multi-agency exercises all over Europe. Training scenarios include natural disasters like flooding, storms and wildfires, but also man-made catastrophes like air plane crashes or terrorist situations. Emergency managers face tactical and logistical challenges in realistic environments, enabling agencies to test and improve their mission plans effectively and efficiently.



# Combat Skills Trainers

## The Key to Combined Arms Team Proficiency



The combined arms team is the cornerstone of the modern military force and effectiveness in operations increasingly depends on optimizing crew performance.

Immersive training is critical to acquiring the necessary skills to act instinctively and intuitively in a high functioning collaborative environment.

From fighting asymmetric insurgencies to combating peer adversaries, demands are becoming more varied and complex. Lessons learned from recent conflicts have brought a wealth of knowledge about what works best and this is changing the way that armies need to prepare for combat and non-combat missions.

Modern armies are focused on enhancing the tactical skills that integrate intelligence, firepower and manoeuvre in highly complex operations across a difficult battlespace. This is an extraordinarily challenging remit – and one in which only the best prepared armies can expect to achieve mission success. Simply put, realistic and cost-effective training solutions are critical to ensuring that troops are mission-ready.

CAE is a leader in land training systems that prepare soldiers for full spectrum operations. The foundation of our approach is to develop the most advanced high-fidelity, simulation-based combat skills trainers for a range of land systems to realistically and cost-effectively train ground forces for their mission-essential tasks.



## CAE offerings include simulators and training devices for:

- ✓ Direct Fire Gunnery
- ✓ Indirect Fire and Forward Air Control
- ✓ Full Motion Driver Trainers
- ✓ Air Defence Systems
- ✓ Virtual Maintenance Training Systems
- ✓ Tactical Combat Casualty Care Simulators



CAE's training solutions are flexible and deployable so that training is available to the soldiers even in the theatre of operations. Our training solutions can be optimised to meet specific training needs and budget. We can provide a range of simulation-based products, from deployable trainers through to highly sophisticated full-mission simulators. Each type of training device uses common simulation software for interoperability and upgradability. This flexibility allows the customer to select the 'best mix' to meet their specific training needs.

We apply our training and simulation expertise to support initial, continuation, and refresher training at individual or crew level, and can network simulators at the troop/platoon level and above for shared tactical operations. Gunnery stations are precisely simulated to allow for the development of skills such as target identification, tracking, lasing, and firing drills. Driver stations are designed to deliver comprehensive training for operation and navigation over every conceivable terrain and condition. Battle management systems can be stimulated to ensure that training occurs in a realistic C2 environment.

CAE offers advanced virtual operator and maintenance training systems for ground combat system maintainers to ensure they are equipped with the right set of skills to support and maintain complex equipment. For example, CAE has provided its maintenance training solutions to the US Army for the M1-series Abrams, M2 Bradley, and High Mobility Artillery Rocket System (HIMARS).

CAE can also help prepare your troops for combat casualty care with its simulation-based technology for healthcare. Our rugged trauma patient simulator called CAE Caesar is designed to enhance the initial and sustainment training of soldier medics involved in the care of trauma patients at "point of injury".



# Mission Solutions

## Operational Solutions that Support the Land Force



On the battlefield, complex operations require forces to interoperate and share information seamlessly.

Battle winning forces are those that optimize the use of their battlefield operating systems to command effectively, sense comprehensively, shield force vulnerabilities, sustain efficiently and act decisively. Network-enabled operations and improved C4ISR capabilities have become increasingly important to field operations. At home, defence organizations are shifting their program focus from platform development to capability development, recognizing that systems and equipment provide a function within an overall capability and their influence on the rest of the capability must be taken into account for personnel planning, process development, and technology interoperability.

CAE is constantly innovating with the most advanced technologies to provide the best possible capabilities to land forces around the world. Through its substantial internal R&D programs and human-systems integration expertise, CAE's objective is to further exploit simulation-based synthetic environments beyond training and into concept development and experimentation as well as direct mission critical support for today's complex battlespace.

CAE offers a wide-range of operational solutions to address the need for rapid and effective decision-making, human-system interaction, protection of communications and interception, threat identification on the terrain, and complete life-cycle support of fleets.





## CAE Offerings

- ✓ Human Factors Engineering
- ✓ C4ISR Integration and Mobile Electronic Warfare Technology
- ✓ Augmented Visionics for C-IED (VISR)
- ✓ Integrated Logistics and In-Service Support

Maximizing efficiency and safety in the theatre of operations is a critical concern for armies. CAE provides leading-edge technologies and solutions to maximize the efficiency of soldiers interacting with their environments. We provide human factors support to land programs and play a key role in requirements definition for a range of Army acquisition programs, such as the design and development of fire control systems, advanced human machine interface (HMI) design, assessment of soldier system technology, and the development and assessment of tactics, techniques and procedures (TTPs).

On the battlefield, making the right decision at the right time and the ability to interoperate and share information is essential. CAE's C4ISR solutions will provide unique interoperability capabilities needed to achieve information superiority spanning the entire communications, intelligence, sensors and command chains.

CAE's Volume-Based Intelligence, Surveillance and Reconnaissance (VISR) System integrates advanced sensor technologies for object detection and ground mapping with enhanced sensor/synthetic displays to dramatically improve situation awareness and provide real-time intelligence gathering, information rendering and improvised explosive detection (IED) to convoy commanders. The goal of the VISR project is to develop an effective system for IED detection capable of highlighting changes compared to a previous pass over the same area, all in real time.

With over 25 years of experience providing in-service support for a range of weapons platforms in Canada, CAE is an experienced and capable in-service support provider. Our proven methods provide fleet managers with a full-service, in-service support and integrated-logistics-support (ILS/ISS) capability that leverages modeling and simulation technologies to analyze, predict, and optimize the operational demands, maintenance, and supply and logistics networks required to support the entire lifecycle of the fleet, from acquisition through operations.





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