RPA/UAS
Training Solutions

Your worldwide
training partner
of choice

CAE

What company is the most experienced provider of RPA/UAS aircrew training?

We are.

CAE designs, develops and delivers more remotely piloted aircraft (RPA) and unmanned aerial system (UAS) training solutions than any other company. We provide aircrew training to more than 1,500 U.S. Air Force MQ-9 Reaper pilots and sensor operators annually. For the United Arab Emirates Air Force, we are delivering a turnkey training centre to provide classroom, simulator and live flying training to RPA aircrews. We also help support the training of the Italian Air Force by providing "zero flight time" capable RPA mission trainers. CAE is truly your training partner of choice for RPA/UAS training.

Training and Operational Support for Mission Readiness

The global growth of remotely piloted aircraft (RPA) and unmanned aerial systems (UAS) within militaries has expanded exponentially and is forecasted to continue on the same trajectory.

The use of unmanned systems for emerging missions including the transportation and direct delivery of cargo; remote inspection of pipelines and power installations; observation and control of transportation hubs, such as harbors and railyards; surveillance, assessment, and containment of forest fires and natural disasters; observation of critical natural resources;

support to public safety; and an increasing number of other commercial applications will continue to grow. This increase in the use of RPA/UAS capabilities creates a demand for highly skilled pilots, sensor operators and mission commanders.

As a global leader in training and simulation, CAE has unmatched experience, competencies and innovative technologies that are directly applicable to a wide range of RPA/UAS operations.

Who is the leading training systems integrator providing turnkey RPA/UAS training solutions?

We are.

CAE has the most experience and expertise to serve as your training systems integrator for world-class RPA/UAS training and mission rehearsal solutions. We are a world-class training and simulation company with over 160 sites and training locations in more than 35 countries. We train more than 120,000 defence and civil aviation crewmembers every year.

How We Provide Training Systems Integration (TSI)

Comprehensive training systems integration (TSI) solutions aim to deliver state-of-the-art and cost-effective training optimized to meet the particular requirements of every defence force. The TSI approach addresses the full-spectrum of the training continuum, from academic and simulation-based training to an integrated live-virtual-constructive (iLVC) environment for training and mission rehearsal.

CAE is uniquely positioned to help military organizations reduce the demand on uniformed personnel by providing highly qualified, ex-military training experts to deliver RPA/UAS training, allowing active-duty personnel to focus on operations. Our TSI approach is based on exhaustive training needs analysis and helps ensure greater efficiency and lower costs while meeting customer training and readiness requirements. CAE's cadre of RPA/UAS experts helps provide our military customers with skilled and proficient RPA/UAS operators while supporting force generation.

With our worldwide network of industry partners, CAE delivers comprehensive and turnkey training solutions, such as courseware, fundamentals training, mission training solutions, mission planning and analysis, simulators and training devices, and virtual/augmented reality solutions. In addition, we are an experienced provider of academic, simulator and live-flying training; integrated learning management systems with brief and debrief features; training centres; facility management and operation; and comprehensive in-service support solutions. As a TSI provider, CAE excels in all requisite skills and experience to provide immersive mission and operational training, including training systems that can be networked for distributed mission operations and training.

RPA/UAS Training Services

CAE combines its expertise in simulation and experience providing comprehensive training services to offer customized RPA/UAS training services in support of defence and security forces worldwide. In addition, CAE can leverage its decades of experience producing and licensing pilots under civil aviation authority regulations to support the introduction of unmanned systems for commercial applications.

CAE offers training services for RPA/UAS pilots, sensor operators, and mission commanders. The company has extensive experience and expertise developing and delivering comprehensive training solutions, from ab-initio training to type-qualification, recurrent training, and mission rehearsal for most types of unmanned vehicles and payloads.

CAE's RPA/UAS Training Services Portfolio Includes:

➜ Courseware;
➜ Full-spectrum UAS mission trainers;
➜ Aircrew and maintenance training devices;
➜ Instructor delivery of live and synthetic training for aircrew and maintainers;
➜ High-fidelity sensor and payload training;
➜ Mission training and rehearsal;
➜ Brief and debrief capabilities;
➜ Distributed mission operations centres;
➜ Training facilities;
➜ Training centre operations.

RPA/UAS Mission Trainer

CAE's RPA/UAS mission trainer can be tailored and customized for a variety of functions, including a combined open architecture with commercial-off-the-shelf hardware and simulation software to form a comprehensive, platform-agnostic training system.

Training Tasks and Experimentation Capabilities:

➔ Ab-initio training

➔ Basic flight operation and flight dynamics instruction

➔ Basic sensor payload operation

➔ Developing doctrine

➔ Developing weapon employment tactics

➔ Experimentation and evaluation of sensor payloads

Features:

➔ Air vehicle and ground control station (GCS)

➔ Typical payloads include:
   — Electro-Optical (EO);
   — Synthetic aperture radar (SAR);
   — Weapons;
   — Electronic Warfare/SIGINT

➔ Virtual environments include:
   — Open Geospatial Consortium Common Database (OGC CDB) and Dynamic Synthetic Environment (DSE);
   — Physics-based computer generated forces (CGF);
   — Supports distributed mission operations (DMO)

Capabilities:

➔ High-fidelity simulation

➔ Open architecture, with the ability to integrate customer processing, exploitation and dissemination (PED) systems

➔ STANAG 4586 compliant

➔ Unclassified and not regulated by the International Traffic in Arms Regulation (Non-ITAR)

➔ Configurable instructor operator station (IOS)

RPA/UAS Mission Trainer Configurations

CAE RPA/UAS Mission Trainer – Portable/ Deployable Solution

The portable/deployable version of the CAE RPA/UAS mission trainer is configured as a host with PC monitors. The portable solution is offered as a deployable kit, ideal for training in the theatre of operations. CAE's portable mission trainer host is connected to a series of monitors that provide GCS functionality, aircraft and sensor operation and training, and is configured per customer requirements.

CAE RPA/UAS Mission Trainer - Fixed-Base with Ground Control Station (GCS)

CAE's fixed-based RPA/UAS mission trainer with GCS is the full-size host with multiple image generators and servers. The GCS enables students to train and rehearse in a fully immersive virtual environment that replicates operational environments.

Aircraft-Specific RPA/UAS Training Solutions

CAE's aircraft-specific RPA/UAS mission trainer simulates a specific platform and is a solution that helps optimize operational readiness while minimizing the use of live assets to train and prepare the integrated mission team for operations. The comprehensive solution also prepares the integrated mission team (pilot, payload specialist, and commanding officer) in platform operating procedures, data interpretation and analysis, and team interaction. CAE's comprehensive training solution provides a complete mission training environment with networking capabilities to perform joint training with other simulators or trainers.

The aircraft-specific mission trainer helps maximize customer resources and cost-effectively enhances readiness.

CAE's aircraft-specific RPA/UAS mission trainer includes the following features:

➔ Aircraft-specific operational scenarios;
➔ Integration of cyber and space elements;
➔ High-fidelity, accurate sensor simulation;
➔ Mission training and rehearsal;
➔ Capable of delivering zero-flight time training so that up to 100 percent of the training syllabus can be done in synthetic training.

Example of an Aircraft-Specific Solution

Predator Mission Trainer (PMT)

Based on General Atomics Aeronautical Systems data and CAE's high-fidelity simulation models, CAE's Predator Mission Trainer is matched to a test guide that validates aircraft performance.

Benefits:

➔ Improved ground manoeuvres
➔ Highly realistic ground effect simulation on takeoff and landing for better launch and recovery training
➔ Simulation of the complete flight envelope and various degraded conditions and environmental effects
➔ High-fidelity sensor, datalink, and payload simulation
➔ Synthetic environment using CAE STRIVE CGF and Open Geospatial Consortium Common Database (OGC CDB) to provide a world-wide menu of environmental injects and simulations
➔ Provides high-quality scenes with CAE Medallion-6000XR image generators

Who can help optimize your RPA/UAS fleet and help maintain operational readiness?

We can.

CAE has proven processes, tools and knowledge to provide maintenance, support services and sustainment logistics to extend the lifespan of your RPA/UAS training system and live platform, and ensure they are available and concurrent. Our training solutions can also be used as tools to help improve the acquisition process and mission planning.

Beyond Training

Extending the use of simulation for planning, analysis and in-service support

Planning and Analysis

As a mission-planning tool, CAE's simulation-based solutions allow mission commanders to validate mission plans, ensuring the right assets are working optimally to ensure mission success. Within the synthetic environment, the team can rehearse the mission scenario prior to operations to identify any potential risks to the mission. The conclusions drawn during these rehearsals serve to alter plans and tactics to better prepare for operational missions.

CAE's RPA/UAS simulation-based solutions are a critical part of a system's integration as part of a systems integration laboratory to support option analysis, operational concept development, and system evaluation and integration. Simulation can also be used in support of the acquisition process to allow the teams to evaluate different RPA/UAS platforms and purchase the one that would best integrate with their existing capabilities. Running scenario-based analysis to assess platforms and payload capabilities can be conducted within the synthetic environment prior to the acquisition to ensure mission requirements can be met. The valuable data provided to decision-makers allows them to choose the most efficient and effective platform based on their operational needs.

In-Service Support Services for Unmanned Systems

As a leading training systems integrator, CAE offers a range of training and in-service support services, including:

➔ Facility design and management consulting
➔ Simulator and academic instruction (including pilot, crew, and maintenance technician training)
➔ Equipment maintenance and operation
➔ Training and test centre operation and management
➔ Upgrades and modifications to ensure concurrency with platform upgrades
➔ Logistics support
➔ Technical publications
➔ Courseware development
➔ Computer-based training
➔ Distance learning
➔ Training device relocation and re-qualification
➔ Systems engineering and software support

RPA/UAS Program Highlights

We have the experience and expertise to serve as your training systems integrator in the development of world-class RPA/UAS training and mission rehearsal solutions.

U.S. Air Force

CAE is the prime contractor responsible for providing MQ-9 Reaper RPA aircrew training to the U.S. Air Force at Holloman AFB (formal training unit), Creech AFB, March ARB and Hancock ANGB.

CAE delivers aircrew training to more than 1,500 U.S. Air Force MQ-9 Reaper pilots and sensor operators annually. We provide academic (classroom), simulator, and live flying instruction on the USAF MQ-9 program, which is the world's largest RPA training program. CAE has also delivered initial MQ-1 and MQ-9 training and instruction for a number of partner nations.

UAE Air Force

CAE is the prime contractor providing the United Arab Emirates (UAE) Air Force with a comprehensive RQ-1E Predator training solution that includes academic, simulator and live flying training. Additionally, CAE Maritime Middle East (MME) and the Khalifa Bin Zayad Air College jointly developed an RPA fundamentals course.

CAE established a training centre for the UAE Air Force where all RPA type conversion and mission training will be conducted. CAE designed and developed the courseware and comprehensive curriculum for academic training specific to the UAE Air Force's RQ-1E Predator medium-altitude long-endurance (MALE) RPA. To support the ground-based training system, CAE delivered desktop trainers and delivered a full suite of additional synthetic training equipment, including UAS mission trainers and high-fidelity, aircraft-specific RQ-1E mission trainers.

In addition to delivering the classroom and simulator training, CAE provides live flying instruction for UAE Air Force RQ-1E Predator aircrews.

Italian Air Force

CAE developed a Predator Mission Trainer for the Italian Air Force.

The high-fidelity Predator Mission Trainer was developed in cooperation with General Atomics and specifically represents the Italian Air Force's Predator A and Predator B aircraft. To develop the world's highest-fidelity Predator simulator, CAE teamed with the Italian Air Force and General Atomics to conduct flight test data gathering on an actual Italian Air Force Predator aircraft to ensure the highest fidelity simulation of flight systems and sensor payloads.

The high-fidelity Predator Mission Trainer was delivered to Amendola Air Force Base in 2018. The training system is capable of delivering "zero flight time" training so that Italian Air Force Predator pilots and sensor operators can make a rapid transition to flight operations without additional training on the actual aircraft.

About CAE Defence & Security

CAE's Defence & Security business unit focuses on helping prepare our customers to develop and maintain the highest levels of mission readiness. We are a world-class training systems integrator offering a comprehensive portfolio of training centres, training services and simulation products across the air, land, naval and public safety market segments. We serve our global defence and security customers through regional operations in Canada; the United States/Latin America; Europe/Africa; and Asia-Pacific/ Middle East, all of which leverage the full breadth of CAE's capabilities, technologies and solutions.

For more information visit our website
cae.com

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