SIMULATION SYSTEMS FOR DEFENCE
MAXIMIZING OPERATIONAL EFFICIENCY
The Defence sector worldwide has been undergoing major transformations. Before the early 1990’s, doctrines, resources, equipments and processes were focused on preparing and managing conflicts against identified hostile countries. Now, threats and missions have become diverse and asymmetric -quickly emerging and mobile sources of international terrorism, geo-political disruptions to be addressed with remote forces, peace support operations in populated areas, joint forces operations and new constraints in terms of interoperability and security- and as a consequence platforms are also becoming more sophisticated and diverse.

Training requirements of military personnel evolve as regularly as the environment they operate in change. Armed forces are facing the necessity of increasing the operational efficiency of personnel while minimizing the overall expenditure of training and system life cycle costs.

Simulation has emerged as an effective way to train personnel at all the levels of responsibility, and to both develop and assess new tactics, techniques or procedures, and evaluate the efficiency of new weapon systems ; all at lower costs and in a safer environment. Simulation is also an indispensable means to optimize the costs of every phase of development during the whole life cycle of the system.

• Using synthetic training equipment, simulation for training allows armed forces to increase tactical, operational and strategic skills. Realistic virtual environments allow large scale mission training and rehearsal, without risk for either personnel or the environment.

• Using synthetic modelling techniques, Simulation Based Acquisition (SBA), enables procurement teams to analyse future platforms and determine the best balance of investment to meet the new operational needs.

THALES, THE EUROPEAN LEADER

For more than fifty years, Thales has demonstrated a proven expertise in developing training and simulation solutions, serving both civil and military applications. The Thales ethos is to act as a partner, understanding the changes to be made to adapt training solutions. Thales is committed to service quality that guarantees performance and system availability.
A SCALEABLE PRODUCT RANGE

For all synthetic training equipment requirements, Thales provides a complete cost-effective solution capability. This ranges from lower cost PC-based training aids, through fixed based systems trainers or full motion mission simulators, to the provision of complete and interactive, networked synthetic environments for large-scale military mission simulation. This scaleable product range allows Thales to assess the specific training needs of its customers thereby provisioning training equipment that offers optimum value for money.

A WORLDWIDE SUPPORT

For all the systems it delivers, Thales is committed to provide unparalleled customer support services to enable you to achieve maximum availability. Thanks to our international locations across the globe, we provide comprehensive and competitive support and maintenance services, where and when you need them, in a fast and effective way.

SYNTHETIC ENVIRONMENT EXPERTISE

Thales is a major leader in the area of Synthetic Environment Based Acquisition (SEBA) and Simulation Based Acquisition (SBA). In a representative synthetic environment we are able to take the design of platforms and or systems and engage them in realistic scenarios. This enables a comprehensive appraisal of operational capability and various interfaces, including the man-machine connection.

Thales endeavours to be the partner of choice in the provision of the finest training services and simulation equipment, to introduce innovative new solutions in all our fields of operation, to pursue ethical business practices and to ensure our customers benefit from the best solutions and from our motivated, enthusiastic and professional workforce.
Well over 300 land system simulators, and 100 helicopters simulators have been delivered to customers worldwide, bringing in new levels of performance and reliability. These training devices meet the most demanding requirements for military combined arms applications and missions.

**UNPARALLELED TRAINING CAPABILITY FOR MILITARY LAND FORCES**

Exploiting its extensive experience of synthetic training environments, Thales has developed comprehensive set of simulators and training aids for land forces, covering every level of army training requirements.

- Individual and crew training for technical skills acquisition
- Team training for tactical skills acquisition
- Collective training for on-the-field skills acquisition
- Combined arms training

**INCREASING HELICOPTER OPERATIONAL EFFECTIVENESS**

Designed to meet the exacting requirements for flight and mission training. Thales’ helicopter simulators provide the most sophisticated training environment. Our helicopter training devices family covers from PC based trainers to Full Mission Simulators. It features synthetic training capabilities for a wide range of needs, from technical to tactical training, for individual pilot and multi-crew joint training.

Thales latest innovations include Roll-in/Roll-out (RoRo) full mission simulators that are quickly reconfigurable to different platform types, allowing optimum training with minimum down-time.

Thales’ helicopter simulator and trainers provide the highest quality image generator -ThalesView- already qualified on JAA/FAA level D Full Flight Simulators. ThalesView has been developed and fine-tuned to fit with specific demanding helicopter training requirements.

**Land systems**

- Combat training simulation systems (including urban operations)
- Tactical training simulators
- Turret team training simulators
- Crew training simulators
- Artillery forward observation simulators
- Air defence trainers
- Driver training simulators for trucks
- Armoured vehicle and tank driving simulators
- Small arms training simulators

**Helicopter**

- Full Mission Simulators (FMS)
- Full Flight Simulators (FFS)
- Flight Training Devices (FTD)
- Flight & Navigation Procedures Trainers (FNPT)
- Cockpit Procedures Trainers (CPT)
- Helicopter Commander Tactical Trainer (HCTT – CHESS Aero)
- Computer Based Training (CBT)
Thales offers a comprehensive range of products from cost-effective computer based training, through specialised part task trainers, to the most sophisticated Full Mission Simulators. This breadth of capability and expertise has been recognised world-wide, with more than 160 simulators for military fixed wing aircraft in service with over 30 armed forces.

With today’s military scenario demanding speed, agility, coordination and stealth as critical factors, set against a background of an ever-increasing divergence of strategic roles and multi-force co-operation, demands on flight crew are greater than ever.

In this challenging environment, the need for a structured, progressive approach to training is paramount. In particular, full mission training and rehearsal in a simulator or as part of a synthetic environment has assumed a pivotal role, and one that provides measurable benefits in effectiveness, safety and cost.

**Achieving air superiority**

**A complete product family**

- Full Mission Simulators (FMS)
- Distributed Mission Training
- Full Flight Simulators (FFS)
- Fixed Based Flight Simulators
- Flight Training Devices (FTD)
- Unit Level Trainers (ULT)
- Weapons System Trainers (WST)
- Rear Crew Trainers (RCT)
- Systems Trainers
- Desk Top Trainers

**From technical to tactical**

- DeskTop Trainers
- Systems Trainers
- Flight Training Devices
- Computer Based Trainers
- Cockpit Procedure Trainers
- Flight & Navigation Procedure Trainers
- Small Arms Trainers
- Driving simulators: trucks - armoured vehicles - tanks
- Turret Team Trainers
Thales has participated in several major maritime domain programmes such as the UK CVF and French PA2. It has also produced many maritime simulators for submarine control and command team training. These include ship control and machinery control simulators for the navies of Europe, South America and Australia.

Command Team Trainers have been delivered providing simulation of Weapons, Sensors and Command & Control systems. Machinery Control Trainers have been delivered for conventional and nuclear ship propulsion systems.

The Thales approach has been to provide advanced simulation technology to enable training of executive and weapons officers, system operators and ships teams in all phases of ship operations.

**Product Family**
- Weapon system trainers (WST)
- Ship Control Simulators (SCS)
- Machinery Control Trainers (MCT)
- Submarine Command Team Trainers (SCTT)
- Sonar system trainers
- Electronic warfare Trainers
- Radar system trainers
- Tactical simulators

**training - For individual up-to**

- Full Flight Simulators
- Full Mission Simulators
- Flight Training Devices
- Full Flight Simulators
- Full Mission Simulators
- Tanks & Armoured vehicles crew simulators
- ChESS-Land Forces
- Computer based Virtual training
- Combat training centre in live environment

**Crew / Team**

**Combined Arms**
Continuous Thales investment in new developments aims at offering training solutions incorporating the most recent technologies, while reducing overall training costs and preparing for operational mission success.

**Advanced Operational Environment**

Operational realism, high accuracy, simulation consistency requirements are guaranteed by a family of dedicated tools developed by Thales, such as:

- **VirtualLab-CGF (Computer Generated Forces)**: a powerful and flexible software package providing realistic synthetic tactical environment to multiple applications.
- **VirtualLab-DTS (Dynamic Terrain Server)**: manages the terrain database and provides terrain services for distributed simulation and training applications.
- **VirtualLab-EC (Entity Controller)**: a DIS/HLA compliant solution for controlling, in real time, from a simple joystick a wide variety of vehicles and entities such as main battle tanks, light armoured vehicles, aircraft, helicopters, infantrymen, unmanned vehicles and robots.
- **VirtualLab-SNE**: offers a 4D weather model (space and time) allowing accurate simulation of weather data and effects.
- **ThalesScene**: a comprehensive and user-friendly toolset aimed at generating correlated databases for virtual environments.
- **ThalesView**: a real time visual software Image Generator which is capable of representing in real-time complex situations in a highly realistic visual environment.

**Distributed Simulation for Tactical Training**

Thales provides networked/distributed simulation which allows simulators on different sites and other platforms to be integrated into cohesive training courses and mission rehearsal. This enables joint forces to conduct complex virtual missions within a common visual and tactical interactive environment.

**Thales Engaged in the Preparation of the Future**

Thales expertise supports National and European Forces and Procurement Agencies in their new concepts development.

- Simulation Based Acquisition (SEBA) and BattleLabs.
- Implementation of new training & simulation technologies as well as definition and implementation of all international standards in the area of interoperability.
- NATO exercise: First WAVE, a mission training through distributed simulation.
Thales is a leading international electronics and systems group serving defence, aerospace, security and services markets worldwide. The Group employs 60,000 people throughout the world and generated revenues of more than 10 billion euros in 2005.