



**YOUR PARTNER  
FOR LAND SYSTEMS**

Established more than a century ago, Thales is an international electronics and systems group, serving defence, aerospace, services and security markets.

The company works with governments and businesses on every continent.

Thales has operations in more than 30 countries and employs 62,000 people.

The Group generated 10.6 billion euros in revenues in 2003.



# Powering the transformation of land forces >>>

**P**atterns of conflict have changed. Threats are increasingly asymmetrical, adversaries dispersed and unpredictable. More and more frequently, modern land forces are engaged in complex urban settings where civilians are harder to protect, or on out-of-area peacekeeping missions as part of international coalitions. It is ever more crucial to protect friendly forces and minimise collateral damage, and the need to plan for the post-conflict phase is more pressing than ever before.

As the global context changes, tighter budget constraints and the wider availability of new technologies — particularly new information and communication technologies — are driving a far-reaching reappraisal of military capabilities.

Land forces are undergoing a transformation as military organisations optimise deployments to gain rapid superiority through information dominance, more effective coordination of assets in the battlespace and an early strike capability on key strategic targets.

Thales offers skills and technologies that are critical to achieving these operational objectives and we are committed to supporting our customers throughout this deep-seated transformation. Our solutions are innovative, effective and competitive – and they are designed to comply strictly with operational requirements.

Prime Contractor

Systems Integrator

Architect

Interoperability

Network Enabled Capability

# Prime contractor for land systems



With more than 30 years experience, serving more than 100 customers worldwide, Thales offers all the key capabilities required for land operations. In land systems alone, Thales generates more than 2 billion euros in revenues.

## Providing decision makers with the key capabilities that boost operational efficiency

Thales brings together all the key competencies needed to propose value-added solutions – coherent sets of integrated functions designed to produce the desired military effect at a given time and location and at least cost.

Underpinning our comprehensive approach to land systems is a coordinated capacity for operational analysis, systems architecture and operational concept development.

This is the mission of the Battlespace Transformation Centre, the Thales centre of excellence for armed forces transformation.

Thales' key strategic technologies include optronics, communications, armaments, ground surveillance sensors and robotics, as well as information systems, data security and intelligence. In addition, we have the capacity and the expertise to seamlessly tie together these high-tech systems into a large-scale "system of systems" for land forces. With software radio, downloadable crypto, active and passive sensing, data and image fusion, low-data-rate video and many more key technologies at our fingertips, we are in a position to optimise the operational efficiency of tomorrow's land forces.

### Teaming for Transformation

Through the Battlespace Transformation Centre, Thales works in close cooperation with its customers to design and develop innovative solutions supporting Network Enabled Capabilities, Network Centric Warfare and C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance).

The Battlespace Transformation Centre is a powerhouse of skills critical to transformation: operational analysis, systems architecture and operational concept development. To support these developments Thales is federating demonstration and experimentation facilities dedicated to NEC in all air, land, naval and joint theatres of operations.





## Integrated, modular and interoperable

Working across the complete sensor to shooter chain, Thales develops solutions for its customers that are integrated, modular, interoperable and cost-competitive – solutions that deliver the performance expected of them in any type of operation (peacetime support, high-intensity conflict, coalition warfare, etc.):

- > **Cooperative fighting systems**
- > **Surveillance and reconnaissance systems, combat systems, command & control systems**
- > **Manned vehicles, mini-UAVs and unmanned ground vehicles (UGVs) integrated systems**
- > **Soldier systems**



### System integration expertise

Thales is delivering the French Forces with the new generation Atlas C41 Artillery system. For this programme Thales has integrated the system on more than 5 different types of platforms and a total of 400 vehicles.

## Partnership with our customers

Committed to teamwork with its customers and industry partners, Thales can propose a spiral development approach to land forces systems, starting with legacy systems and backed by a full range of customer support services. From upstream needs analysis to in-theatre support, we provide a comprehensive service offering, including PFI arrangements where appropriate, tailored to emerging operational requirements and new procurement practices.

## Towards network-enabled combat

Thales solutions are designed from the outset to deliver a sustained military capability in a perpetually changing context. They offer the performance and scalability needed to power the transformation of the armed forces as the concepts of Network Enabled Capability and Network-Centric Warfare come of age.

### First steps in developing a cooperative fighting system

In 2003, the French Defence Procurement Agency selected Thales and Giat Industries to design and build a system concepts simulator known as SIM EC3 to baseline potential architectures for the BOA, the future French cooperative fighting system. The BOA will synchronise operations formerly conducted by independent combat platforms (armoured vehicles, short-range artillery, helicopters, infantry soldiers, robots and mini-UAVs) and optimise deployment of sensors and command systems.

# From Sensor to Shooter



A modular offering of surveillance and reconnaissance, command & control and combat systems, designed as the building blocks of a military capability that relies on speed, flexibility, early warning and precision.



## Surveillance and reconnaissance systems

Surveillance and reconnaissance are the key to battlespace visibility and the timely establishment of a Common Operational Picture.

Thales' modular tactical reconnaissance systems are fully enabled for network operation as required. Different classes of vehicles (light, medium, armed) deploy different sensor suites (radar, optronic, electronic warfare, etc.) and integrate all the data processing and distribution resources required. Together, they provide a deployable, modular and highly responsive networked tactical reconnaissance capability.

Working with our customers, we optimise a distributed architecture to support the surveillance and reconnaissance assets that will fulfil the missions in hand. Built around this open architecture, integrated operational systems can then deliver the highest performance at lowest cost.

### A comprehensive range of sensor systems

Thales provides the key elements in this surveillance and reconnaissance capability, such as the Spyder electronic warfare system, Sophie thermal cameras, Squire and BOR radar search and tracking systems and the Miniature Intrusion System (MIS). Any number of individual elements can be integrated by Thales on manned or unmanned vehicles or within soldier systems.

**Detect**

**Identify**

**Understand**

**Decide**

**Act**

## Command & Control systems

The basic objectives of any command system are to analyse and assess the threat as fast as possible, decide on the most suitable manoeuvres, then quickly issue orders. Thales offers optimised CCIS systems that leverage advanced modelling and simulation tools, high-performance decision-support systems and a high-data-rate communications capability so that commanders can achieve these objectives with maximum efficiency.

Building on its across-the-board experience at all levels of command, Thales is in a position to harmonise information, communication and command systems across the battlespace and to boost overall performance through greater interoperability.

## Combat systems

Defeating targets earlier and at greater distances while affording better protection for friendly forces calls for cooperative deployment of Line of Sight (LOS) and Non Line of Sight (NLOS) weapon systems, all suitably protected to enhance survivability.



### Present across the complete command chain

Thales offers armed forces a range of secure, interoperable solutions, and has developed command and control information systems (CCIS) for several levels of command - such as SICF in France, SICBEL in Belgium, ATS in Canada, SIMACET in Spain - as well as a comprehensive offering of simulation, training and support tools including SCIPID, Centaure.

Thales proposes integrated combat systems ranging from short-range mortar systems (towed or vehicle-mounted) to the C4I Atlas artillery fire automation systems, and including air-launched rocket systems, active protection for armoured vehicles, and area protection systems for projected forces. After detection and identification of threats in sensitive areas (forward positions, city neighbourhoods, etc.) this type of system neutralises enemy formations before full combat can ensue.

Thales also offers a range of turrets, from manned turrets to the latest generation of unmanned Remote Weapon Systems.

### Advanced vehicle-mounted mortar

Drawing on its experience in mortar systems, in service in 24 countries, Thales offers an advanced vehicle-mounted mortar: the 120 2R2M. Equipped with automatic firing aids and an inertial navigation unit, it offers high mobility, short deployment and withdrawal times, and enhanced crew protection. With its advanced fire control system, the 2R2M system is designed for full compatibility with a network-enabled environment.





# From Soldier systems to platform networks



Infantry soldiers, manned vehicles and unmanned vehicles including robots and UAVs are the key nodes in the digitized battlespace. In a cooperative engagement, each node makes a coordinated contribution to operational superiority – and overall detection, protection and combat capabilities can be optimised as a result.

## Soldier systems

Infantry soldiers of the future will need to adapt to widely differing threats and environments. They will play a critical role in the information and command chain. And they will need the capacity to identify and defeat targets with surgical precision in daylight or at night. These are the key operational objectives of the Thales soldier system offering.

Thales offers long-term soldier system solutions for all types of missions, from peacesupport to high-intensity combat, for all environments from open areas to city streets, and for all weather conditions. Fully enabled for cooperative engagements, they revolutionise the operational effectiveness of infantry soldiers, significantly enhancing their C4I capabilities, lethality, mobility, survivability and sustainability.

### A key player in soldier modernisation programmes

Thales has been selected to take part in most of the world's soldier modernisation programmes, including FIST in the United Kingdom, IdZ in Germany and Normans in Norway. As prime contractor for FIST, the largest soldier modernisation programme in Europe, Thales is working in partnership with the MoD to select, procure, and then deliver and support the best system for the British infantry. Thales has also established a NATO-wide industrial working group on soldier system standardisation with a major objective to promote interoperability between national soldier systems.







**Mobility**

**Lethality**

**Survivability**

**Sustainability**

## Vehicle systems

Fighting vehicles are becoming increasingly complex, serving as platforms for growing numbers of systems that need to operate together. Thales is a recognised leader in the design and optimisation of complex vehicle electronics (vetronics) systems with functions such as detection, combat ID, tactical navigation, fire control, threat warning and countermeasures, battle management, and vehicle health and logistical status reporting.

These solutions are in service in more than 20 countries and have been installed on board more than 150 different vehicle types. Building on its experience in the design, production and delivery of military vehicles (BUSHMASTER, HMEV, HMEE), Thales is positioned as vehicle systems prime contractor for new-build or retrofit programmes.

### From full vehicle prime contractorship to vetronics integration

Thales' experience spans design, installation, integration, vehicle manufacturing. More than 25,000 platforms have been integrated, comprising 150 different types of land platforms: shelters, light vehicles, armoured tracked or wheeled vehicles - 500 kg to 6000 kg. Integrated platform references include: Bushmaster & HMEV, air defence systems (Martha, Crotales, Samantha, Shahine), combat systems (Atlas, 2R2M,...), recce systems such as BGTI, C2 platforms (Socrate, ValoRITA, BIGSTAF, etc).



## Tactical mini-UAV systems and ground robotics

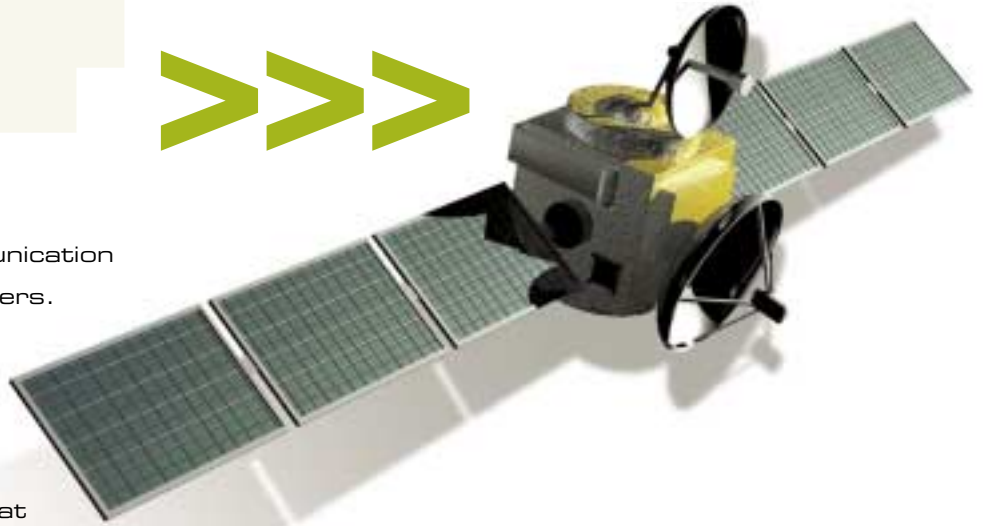
Mini-unmanned air vehicles (UAV) systems and unmanned ground vehicles (UGV) are playing an increasingly important role, providing combatants with additional surveillance and reconnaissance support. Based on more than 15 years' experience of robotics technologies and its holistic view of the airland theatre, Thales offers comprehensive mini-UAV/UGV systems solutions to its customers.

### Operational demonstrators

Thales has developed mini-UAVs and UGV system demonstrators, including SYRANO, DARDS and AZIMUT. In field tests, these demonstrators have shown the operational benefits of unmanned systems, in particular in overcoming the low visibility of the battlefield and improving platform and crew survivability by avoiding direct exposure to hazards.



# Getting forces Connected



New information and communication technologies are force enablers.

They tie together sensors, command systems and weapons into networks as required, raise the operational tempo, and defeat targets faster and farther away using detailed information that is both reliable and timely.

In addition, they provide higher mobility, greater flexibility, better protection and better security for forces in the field.

Thales draws on extensive know-how in communication systems, data processing and data analysis to optimise these capabilities.



**Acceleration**

**Precision**

**Information Superiority**

**Interoperability**

**Survivability**

## Communication systems

> To guarantee seamless information flows between all producers and all users

- > Open systems architectures that comply with military and/or civil standards to improve interconnection and interoperability while guaranteeing security (e.g. Tactical Internet).
- > Development of key radio and networking technologies:
  - new wide-band waveforms for high-data-rate transmissions;
  - networking layer for ad hoc mobile networks;
  - Software Defined Radio for multi-mission, multi-band, multi-channel capabilities.
- > Dual technology (IP, WLAN, etc.).
- > Expertise in secure mobile tactical communications and networks:
  - CNR such as F@stnet, WLAN, LOS, satcom, etc;
  - Tactical Internet;
  - Air defence communication networks.

### Leader in defence communications

- More than 500,000 radios in service worldwide, including F@stnet, PR4G, MBITR, SEM, etc.
- Leading software radio developments: MMR, high-data rate waveform and demonstrator, SDR/SCA demonstrator, SCA waveforms development, JTRS Cluster 2 handheld radio (JEM).
- Mobile tactical networks: RITA 2000 (French and Belgian Armies), ARISTOTE (French forces - Land, Air, Navy), MSE (U.S. Army), RBA (Spain), BIGSTAF (Germany), TS9000 (Sweden), TADKOM (Norway), etc.
- Communication networks based on MIDS terminals for tactical air defence systems (MARTHA, SAMP-T).
- Military Satcom: SYRACUSE III (France), Modem XXI (France), CHEETAH (UK), PSC 506 (UK), etc.

## Information processing and analysis

> To manage exponential growth in data volumes, spot vital intelligence early and make relevant information easy to exploit

- > Time-constrained text & data mining tools using powerful algorithms for applications such as classification of texts by level of criticality and semantic analysis for automatic summarisation and gisting of information flows and repositories.
- > Multi-sensor data fusion tools to cross-cue data from a wide range of sensors (optronics, radars, SAR, etc.).
- > Development of 3D modelling tools.
- > Studies on land forces intelligence coordination, from planning and tasking of sensors to establishment of a Land Tactical Picture supported by demonstrators such as STARS.

# Land & Joint Systems

>>> at a glance

Land & Joint Systems is a prime contractor, communications and optronic equipment supplier and value-added service provider to armed forces and security forces worldwide. Land & Joint Systems brings together the key capabilities needed to develop and support fully integrated, network-enabled, interoperable solutions that contribute to the operational superiority required for mission success.

With its multi-domestic network of companies in 19 countries and a staff of 12,600, Land & Joint Systems offers the strong local presence required to develop and support tailored solutions for customers throughout the world.

## A local partner with worldwide capabilities



## Key Figures

- > € 2.5bn revenues
- > 12,600 employees
- > Operations in 19 countries
- > 30% of revenues invested in R&D

**THALES**

Land & Joint Systems

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