



PARIS AIR SHOW - LE BOURGET 2015

Identifying and countering the threat

ISR, a key function when it comes to knowledge of the adversary and mastering the pace of operations, is also the core of Airbus Defence & Space's activities: whether satellite systems (platform and ground segment) for acquiring and processing images and electromagnetic signals or even MALE and tactical drone systems. These are key tools for armed forces faced with adversaries that are diffuse and unpredictable. Secondly, dealing with the threat, whether it be airborne, land-based or naval, requires robust effectors with sufficient reach: this is the raison d'être of MBDA, the European missile systems specialist.

Pléiades

The pair of **Pléiades** very-high-resolution optical satellites, for which Airbus Defence & Space is prime contractor, represents a technological and qualitative leap over previous generations. With a resolution of 50 cm, they cover a large swath allowing more targeted imaging, making the constellation a valuable tool, notably for coverage of urban areas. As dual systems, these satellites can be programmed via two types of access: a Defence channel, used by the Ministry of Defence, and a civil channel. The exceptional agility of **Pléiades** makes it possible to minimise programming conflicts and better meet the simultaneous needs of all users.



With their near-daily revisit capability, the **Pléiades** satellites, which are operated by Airbus GEO Intelligence, enhance situational awareness and quickly provide armed forces with a precise, up-to-date cartography, essential for “first entry” capability, as was the case during the planning of Operation Serval. Airbus Defence & Space, in concert with the DGA and the CNES, and with its partner TAS, is working on defining the successor to the **Pléiades** satellites, which could enter service early next decade. In addition to meeting defence requirements, Airbus GEO Intelligence must indeed have a successor for Pléiades by 2020 in order to face strong competition, mainly from the Americans, on the THR imagery market with Digital Globe.

Provide armed forces with a precise, up-to-date cartography, essential for “initial entry operations”

Observation satellites – Export

A world leader on the export market for Earth observation satellites, by meeting the growing requirements of emerging countries in terms of autonomous space imagery capabilities, Airbus Defence & Space offers powerful, cost-effective solutions within short delivery times. Tailored to specific customer requirements, these high-resolution observation satellites offered on the export market are particularly well-suited for dual use (defence, paragonovernmental, agriculture, etc.). In 2014, the government of Peru acquired the **PeruSat-1** observation satellite, which is to be put into orbit in 2016.

CSO

In December 2010, Airbus Defence & Space won a contract to supply two **Composante Spatiale Optique (CSO)** satellites, destined to replace the Hélios-2 very-high-resolution satellites. A third satellite, partially financed by Germany, will complete the constellation by increasing its efficiency, notably in terms of its revisit capability. Featuring very-high- and extremely-high-resolution capabilities, **CSO** represents a technological leap in terms of resolution, capabilities, rapid access to data and frequency of passes over areas of interest.



Ceres

The goal of signals intelligence (SIGINT) satellites is to detect, locate and characterise from space signals sent by adversary systems, notably telecommunications transmitters and radars. Several demonstrators and upstream studies programmes have been launched (Essaim in 2004, and Elisa in 2011) and used experimentally during operations, in order to prepare for the arrival of the operational system called **Ceres** (Capacité de renseignement électromagnétique spatiale – electromagnetic space intelligence capability). Included in the 2014-2019 Military Planning Law, it is currently in development and is expected to be launched in 2020. Airbus Defence & Space is managing agent and co-prime contractor for the project and responsible for the space segment; Thales Systèmes Aéroportés is co-prime contractor responsible for the mission and payload. This strategic tool will enable the observation of all areas of the world, free of the access limitations faced by ships and aircraft. With **Ceres**, France joins the United States and Russia in the very exclusive club of countries with SIGINT satellite capabilities.

COMSAT NG

Airbus Defence & Space will be a major player in the **COMSAT NG** military and telecommunications satellite programme, the successor to the Syracuse constellation used by the Ministry of Defence. Airbus Defence & Space will be responsible for the production of one of the two satellites, which will benefit from the know-how of the group, number two worldwide on the satcom market and a leader in the electric propulsion sector. Integrated on the Eurostar 3000 platform, this type of system offers reductions in both weight and volume (propellant tanks are replaced by a much lighter and less bulky plasma generation system), which offers, depending on requirements, the possibility of increasing the satellite's capacity or reducing its mass to allow it to benefit from lower launch costs. Airbus Defence & Space is today the world leader on the "all-electric" satellite market in the 3T range and beyond. In addition, Airbus Defence & Space is the trusted operator of military and communication satellites in several countries (among which France and the United Kingdom) and has the structures, satellite capabilities and skills to further reinforce this position.

Harfang

In service with the French Air Force since 2008, the **Harfang** MALE drone system (Medium Altitude Long Endurance) offers the acquisition of information in real-time (images or videos), both during the day and at night. It was deployed by the French Air Force for three years in Afghanistan, where, operated from the Bagram base, it carried out more than 500 missions totalling nearly 5,000 flight hours. The **Harfang** was then deployed in Libya, from the Italian base of Sigonella, as part of Operation Harmattan. In January 2013, it took part in Operation Serval, from Niamey, where it clocked more than 3,000 flight hours (based on data available in April 2014) during nearly 200 missions. Now a key link in France's ISR measures in Operation Barkhane, the **Harfang**, in February 2014, exceeded 10,000 flight hours during external operations.



MALE 2020

A joint initiative of Airbus Defence & Space, Dassault Aviation and Finmeccanica, the **MALE 2020** project aims to provide European armed forces with a surveillance drone. **MALE 2020** should have an endurance of at least 24 hours and will notably feature a SAR radar, COMINT/SIGINT capabilities and a cutting-edge optronic pod. It will be capable of carrying out land or maritime surveillance missions, both by day and at night, and will benefit from a system of ground stations that are interoperable on EU, UN and NATO standards, allowing long-distance deployment thanks to a SATCOM link. A detailed definition proposal was submitted to French, German and Italian ministers of defence, who in May 2015 drew up a joint statement of intention regarding the launch of a definition study, in preparation for the drone's development phase.



Provide European armed forces
with a surveillance drone



TANAN

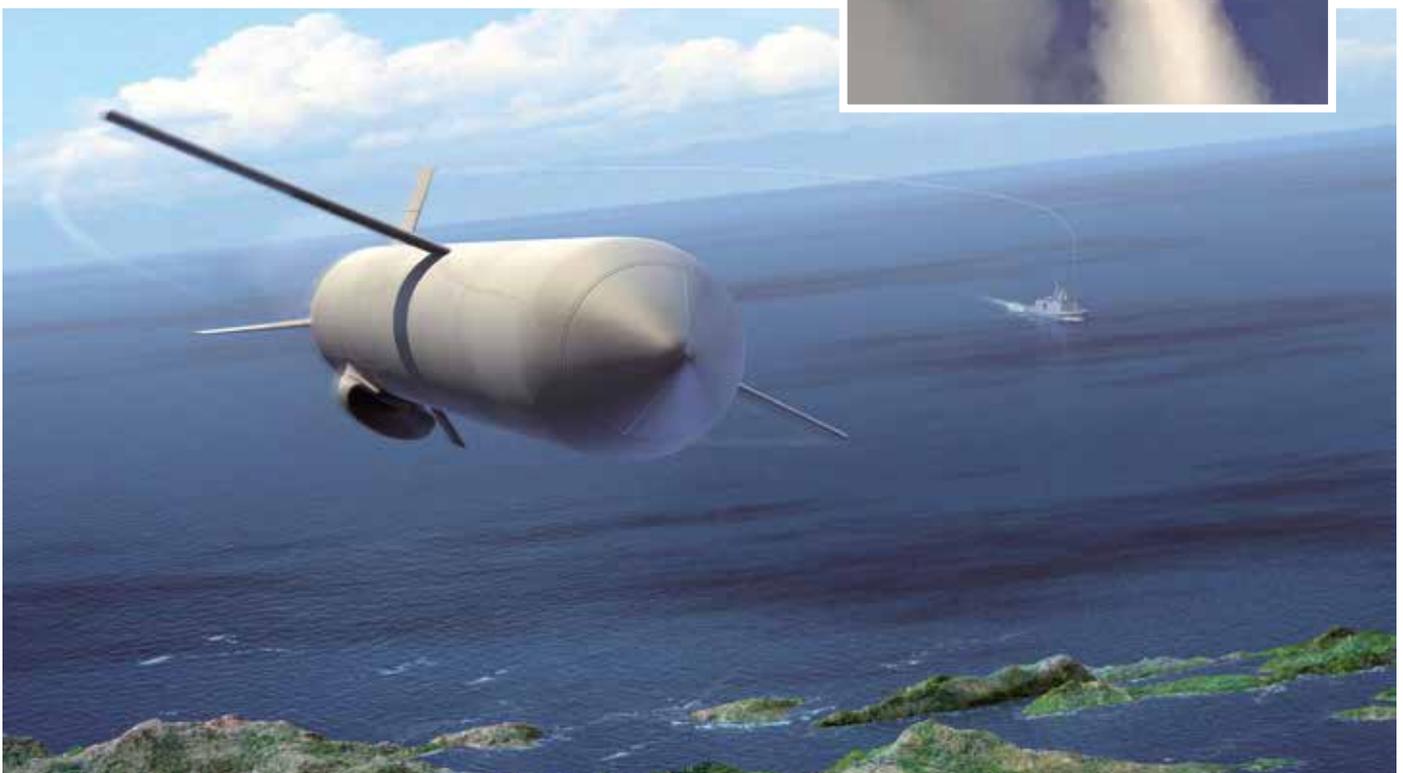
TANAN, a new-generation VTOL (Vertical Take-off and Landing) tactical drone, is designed for maritime and land operations. This weaponisable embarked surveillance drone extends a ship's detection considerably, and thus augments its capabilities during surveillance missions, or in countering asymmetrical threats. Flexible and versatile, relying on a powerful diesel engine whose reliability has been tested and on cutting-edge equipment, **TANAN** can carry out missions over distances of up to 100 nautical miles/180 km, with 80 kg of payload (optronics,

radars, GE, etc.). Its robust and secure data link, the result of experience acquired, notably during operations, with MALE drone programmes, provides bandwidth suitable for the transfer of data from new-generation payloads. The basic design of the **TANAN** drone allows it to integrate a wide variety of military payloads, which sets it apart from its competitors. Its load capacity and its modularity permit simultaneous loading of several payloads, including weapons (68-mm rocket or missile).

MdCN

The ultimate sovereignty weapon, the **Missile de Croisière Naval (MdCN - Naval Cruise Missile)** will provide the French Navy with an unprecedented in-depth first strike capability, from surface vessels or from submarines (on FREMM frigates in 2015 and on Barracuda SSN in 2018). It fulfils prevention, protection (anti-terrorism activities and counter-proliferation) and projection requirements, while minimising collateral effects. With a range of several hundred kilometres, it can destroy moderately hardened infrastructures (shelters, buildings and strategic installations, etc.) with metric precision. In addition to its firepower, the **MdCN** will give the French Navy a real tool for intimidation, particularly when carried by a stealth system, such as an attack submarine. On 19 May, 2015, the multi-mission frigate “Aquitaine” successfully fired an **MdCN** on the testing range of the DGA’s missile testing centre, off the coast of Ile du Levant. This is the first time in Europe that a surface vessel has fired a cruise missile.

An unprecedented
in-depth first strike capability



Aster Block 1NT

Based on the Aster 30, which is fitted on the SAMP/T systems of the French Air Force and the Italian Army, the Aster Block 1NT will be capable of intercepting ballistic missiles with a range of 1,500 km and dealing with the emerging threat of anti-ship ballistic missiles (ASBM). A development contract is expected this year in the framework of Franco-Italian cooperation. The Aster Block 1NT is moreover being considered for use as a weapon aboard the new PPA class of Italian patrol vessels recently announced by OCCAR. The technologies introduced with the Aster Block 1NT will make it possible to transform this missile into even more powerful versions that could be developed within a broader European framework, like the Aster Block 2 missile.



METEOR

The **Meteor** is the world's most advanced long-range air-to-air missile. The result of cooperation among six countries (France, the United Kingdom, Italy, Germany, Spain and Sweden), it largely outclasses its Western competitors thanks to its ramjet propulsion, which provides an unequalled reach (more than 100 km), very high speed (Mach 4) and exceptional agility. This capability will help reinforce European strategic autonomy by giving air forces tactical superiority over all kinds of adversaries. The **Meteor** is due to enter service in 2015 on the Gripen and in 2018 on the Rafale and Eurofighter. The first integration firing on a Rafale was successfully carried out on 24 April 2015.



MMP

The **MMP** (Missile Moyenne Portée, or Medium Range Missile) is the first completely infocentric 5th generation ground combat missile. It fulfils the requirements of the French army for anti-tank or support teams with the infantry or cavalry. A decision in favour of this programme was made following the French Army's detailed study of U.S. and Israeli equipment offered on this segment. The successor of the Milan, it comes with major enhancements, such as "fire-and-forget" capability combined with a "man-in-the-loop" capability, firing from a confined space, a firing range of 4,000 metres and the capability to be integrated within the battlefield's infocentric system. The **MMP** will enter service in 2017.

SCALP

The **Scalp** cruise missile is the product of the first missile programme carried out within the framework of Franco-British cooperation, decided on during the creation of MBDA. It is a vector fired from a safe distance and capable of dealing with the most staunchly defended targets, thanks notably to a robust infrared imagery terminal guidance system and a powerful warhead. The **Scalp** is fitted on Rafale, Mirage 2000, Tornado (under the designation Storm Shadow) aircraft and will soon equip Typhoons. It has largely demonstrated its efficiency since it was first used in 2003 by the Royal Air Force in Iraq, then by the French Air Force and several other air forces in Libya in 2011, with a total of 100 missiles fired. The Franco-British cooperation begun with the Scalp continues today with a joint MLU project as well as studies on a family of Franco-British long-range missiles known as FCASW (Future Cruise and Anti-Ship Weapons), confirmed at the Brize-Norton summit in January 2014.



M51

A major player in the field of deterrence, Airbus Defence & Space is prime contractor for the design, development, deployment and maintenance of the new generation of French ballistic missiles, the **M51**. More than half of the 4,000 engineers and technicians working on the programme belong to Airbus Group, which is also responsible for its implementation system at the operational base of Ile Longue (Brest) and aboard the SNLE (SSBN). Put in service in late 2010 aboard the SNLE “Le Terrible,” the **M51** intercontinental ballistic missile features (M51.2 version) a greater reach, superior robustness against attacks and six oceanic nuclear warheads (TNO) that are more powerful than the previous TN75s. The M51.2 is expected to enter service beginning in 2015 (on “Le Triomphant”) and until 2018 (on “Le Téméraire”). In July 2014, Airbus Defence & Space was awarded a contract for the development of its successor, the M51.3, which will feature a new-generation warhead and a new propulsion system.

