At the Heart of Naval Performance

1910-1945
Communications and detection

At the end of the nineteenth century, research into the propagation of electromagnetic waves made it possible to test the first wireless communications between land and sea, and later between ships. In the period between the two world wars, scientific advances made it possible to detect obstacles and other vessels, improving the safety of navigation while, in military terms, removing major technological barriers and enabling significant tactical progress.

The Société Française Radio-Électrique, founded in 1910, supplies the Navy with its first shipborne radio sets during the First World War. The first radio direction-finders made it possible to locate enemy vessels through their radio transmissions.
Prior to the Second World War, the technical advances achieved laid the foundations of modern detection systems, initially installed on civilian ships before being fitted to naval vessels.

Commissioned in 1916, the battleship Bretagne was equipped with a radio system supplied by SFR (Société Française Radio-Électrique).

As early as 1941, even before her refit in the United States in 1943, the battleship Richelieu was equipped with an Electromagnetic Detection system, a precursor to radar.

Cuirassé Bretagne

Cuirassé Richelieu

1946-1967
Entry into the third air dimension

The French Navy and industry emerged enter a time of reconstruction. The efforts of sailors and engineers, the work sometimes carried out in secret during the war, the lessons learned from the conflict, and new international partnerships enabled France to catch up quickly.
First national achievements followed, laying the foundations for what would become the Defence Industrial and Technological Base.

After 1945, the aircraft carrier established itself as the new "capital ship". Commissioned in 1961 and 1963 respectively, the aircraft carriers Clemenceau and Foch were the first ships of this type to be designed and built in France after the Second World War. Detection must be faster and broader. Information must guide with precision the new weapons with which the French Navy was being equipped, while integrating detection and action capabilities within the electromagnetic spectrum. Defence electronics thus emerged as one of the pillars of French sovereignty.

Distinguished by their imposing radome, the Frigates Suffren and Duquesne were the first to be equipped with a three-dimensional air-surveillance radar, the DRBI 23. Its detection range and track capacity were exceptional for a first true 3D surveillance radar. These guided-missile frigates were also fitted with the entirely French-designed Masurca surface-to-air missile system. Throughout its successive upgrades, Masurca was equipped with a semi-active homing seeker developed by the Compagnie Générale de Télégraphie Sans Fil (CSF).

• Suffren and Duquesne frigates: 3D radar
• Masurca surface-to-air missile radar and guidance system

Radar fitted to Alizé anti-submarine warfare (ASW) aircraft

Standard M fighter aircraft

Aircraft carrier Foch and Clemenceau

• Electronic Warfare: ARBR, ARBB & ARBA detectors
• Sonar production

1968-1999
Nuclear deterrence

In 1965, General de Gaulle declared: *"The Navy now stands, and perhaps for the first time in our history, at the forefront of France's war-fighting power, and this will, in the future, become more and more true with each passing day."*
In 1972, the first operational patrol of the SSBN Le Redoutable brought France into the era of oceanic nuclear deterrence, while the conquest of space enabled the development of communications and intelligence capabilities. The Navy then assumed a leading role in France's defence.

Defence electronics established itself as a sovereign industry, while expertise in the digital domain continued to expand. Thomson-CSF was created in 1968 through the merger of Thomson-Brandt and CSF.
The achievements emerging from its production lines include guidance seekers for the Masurca and later Crotale anti-air missiles; guidance seekers for the MM38 anti-ship missiles and their variants; DUBV43 towed sonar; DUBM mine warfare sonar; self-propelled underwater vehicles; DSUV62 towed linear arrays for submarines; Jupiter radars for surface combatants; the Agave radar for Super Étendard; and later the RBE2 radar for Rafale. Expertise also expanded into exo-atmospheric space.

Underwater detection constraints related to bathythermic profiles limit the performance of hull-mounted sonars and require the deployment of detection equipment at greater depths, while nuclear submarines represent a significant threat.The company developed the DUBV43 towed sonar for the French Navy's anti-submarine warfare (ASW) vessels. From 1995 onwards, the DSBX1 solution marked a major breakthrough with the development of active very low frequency (VLF) sonar. CAPTAS-4, now fitted aboard the French Navy's frigates, is the direct heir to this legacy.

Super Étendard combat aircraft: Agave radar

Atlantic maritime patrol aircraft

Mine warfare: DUBM 11A

Light helicopter: dipping sonar

La Fayette-class frigate

F70 frigate (Georges Leygues class): DUBV 43 towed sonar and Very Low Frequency array

Le Redoutable SNLE (SSBN – ballistic missile submarine)

2000-2025
From the depths of the ocean to space

• Rafale multirole fighter aircraft
• ATL2 (Atlantique 2) maritime patrol aircraft

The Navy's action is no longer solely joint. It is conducted in coalition and in an integrated manner at sea, on land, in the air and in space. Developing the means for cooperation, intelligence gathering, information sharing and enhanced decision-making capacity in an ever more complex environment is becoming a priority as the volume of data generated continues to grow.

The creation of Thales in 2000 marked a new momentum for the company, whose international vocation was further strengthened through numerous structuring partnerships. The new generation of equipment with which navies — notably the French Navy — have been equipped illustrates the breadth of the Group's capabilities, against the backdrop of naval operations conducted at an ever-increasing pace.

For more than forty years, the armed forces have benefited from a sovereign satellite communications solution: SYRACUSE.
Thanks to this capability, French Navy vessels can communicate from theatres of operation across ever-wider areas of the world's oceans. Thales has provided the payload since the programme's inception.
Initially shared with civilian systems, SYRACUSE has been a fully military system since its third generation, launched in 2005.

• NFH90 NFH Caïman helicopter: FLASH dipping sonar and MU90 torpedo

CORE and SYRACUSE satellites

Aster surface-to-air missile (France – Italian programme)

FREMM multi-mission frigate: Herakles radar, CAPTAS sonar, Electronic Warfare

Suffren-class nuclear attack submarine (SSN)

2026...
Multidomain, multienvironment integration

The Navy must operate in a contested, multidomain and multienvironment setting that combines both physical and non-physical dimensions.
The evolution of command systems, information sharing, collaboration between stakeholders, operations and simulation are becoming key to success in naval operations. To achieve this, all challenges associated with the growth of interactions, functions and data require trustworthy solutions for end users.

Stratobus stratospheric airship

To support the French Navy in mastering the future dimensions of naval warfare and to ensure the operational superiority of forces, innovation is key. Thales continues to pioneer disruptive technologies: trusted AI developed through "cortAIx", edge computing, cryptography, open source solutions, 6G and quantum technologies, supported by outstanding scientific partnerships. Corporate Social and Environmental Responsibility (CSR) will remain at the heart of its priorities, as reflected in systematic eco-design, energy optimisation and the increased use of renewable energy sources.

Sea Fire equips the French Navy's new Defense and Intervention Frigates (FDI). Thanks to its four fixed flat panels, this active electronically scanned array (AESA) radar overcomes the refresh-rate limitations inherent to conventional rotating antennas. Featuring extended detection capabilities, it can simultaneously perform surface and air surveillance while providing fire control for the frigate's Aster missiles.

Thales's commitment to innovation continues to shape the future of naval autonomy.
The MMCM programme, co-developed with the French and British navies, represents a major technological breakthrough: autonomous and remotely operated systems can now carry out mine countermeasure missions with significantly reduced risks to personnel and equipment.

• Quantum technologies
• Artificial Intelligence (AI) – cortAIx
• Services (predictive support, operational availability, DMC recycling) – Thales Academies
• Electronic Warfare

DEFNET

FDI (Défense and Intervention Frigate): Sea Fire radar, Electronic Warfare

Future Patrol Vessel programmes

Underwater, surface and aerial drones

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