SPECTRA: France 2030 supports the development of an AI-enabled mission computer with RF sensor for maritime drone surveillance

Backed by the French government under the France 2030 plan, the SPECTRA project (Sensors Processing with Enhanced Capabilities for Threats Resilience and Autonomy) aims to develop an intelligent technology module dedicated to detecting and locating radio communications for maritime surveillance by drone.

This module integrates an airborne communications intelligence (COMINT) sensor, an embedded artificial intelligence computer, and a secure GNSS chain. The system is designed to operate autonomously through onboard data processing, limiting dependence on data links.

The project's ambition is to deliver a sovereign solution for both civilian and military use, with communication signal detection and identification performance to be validated during a maritime demonstration on the BOREAL drone.

France 2030 and BPI France support

Selected under the France 2030 “Excellence in Robotics and Intelligent Machines” program and managed by Bpifrance on behalf of the French government, the initiative is part of national efforts to strengthen the robotics and smart equipment value chain. The 36-month project has a total budget of €2,166,136, partly funded by the French government under the France 2030 program.

An all-French consortium covering key technologies

The project highlights France’s focus on technological sovereignty, bringing together complementary national partners:

- **M3 Systems** designs embedded solutions for critical environments in surveillance, space, and defense. With 13 years of experience operating long-endurance drones, it contributes expertise in multi-sensor fusion, secure GNSS, and embedded computing.

- **SDR Technologies**, an SME specializing in RF signal processing, provides hardware, processing software, and engineering services for defense and security clients across Europe, along with standardized products for spectrum monitoring and space communications.

- **Sherpa Engineering**, a system-engineering SME, brings more than 25 years of experience in modeling, control systems, and applied AI, particularly for automotive and aerospace industries.

Two specialist subcontractors reinforce the consortium:

Embrya is a deeptech startup from the ISAE-Supaéro ecosystem (Toulouse), specialized in developing and optimizing Artificial Intelligence algorithms for deployment on

constrained embedded platforms, maximizing the energy efficiency of AI processing and their real-time performance.

- **Tilt GNSS**, a French consultancy, provides expertise in innovative, secure GNSS positioning, passive detection, and authentication technologies for critical sectors.

Once completed, the maritime demonstration will validate the system's performance and help pave the way for commercialization. The partners aim to deliver an intelligent, embedded surveillance module ready for integration into drone platforms and suited to both civilian and dual-use applications—a step toward making it a reference solution in the smart-payload market.