

FUTURE SPACE TRANSPORTATION FLPP SPRING SESSION 2026



ESA FIRST! AVIONICS & GNC

COMPANY INFORMATION



Company: Sener Aerospace and Defense

Location: Spain

Founded: Working in the space industry since 1967

Employees: >1400

Mission: Sener Aerospace and Defense, part of Sener group, has been driving space engineering, aerospace manufacturing, and space exploration since 1967. The company provides products and technology for satellites and launchers in institutional, telecommunications, and scientific programmes.

Consortium:

Sener Aerospace and Defense

Project leader and AFTU design responsible

Maia Space

Provider of launcher system requirements

Andøya Space

Provider of launcher regulation requirements

Indra-Deimos

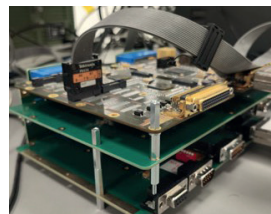
Provider of GNSS technology

ACTIVITY

Project name: LoCRAFTS (Low-Cost and Robust Autonomous Flight Termination Systems)

Objective: The primary objective was to develop an Autonomous Flight Termination Unit (AFTU) that can be integrated across a wide range of European launch vehicles, including both expendable and reusable launchers, to replace or augment traditional ground-based flight termination systems.

Applications: The main use case of this technology is the space launcher sector, in particular small and medium launchers (expendable or reusable), where the cost of the traditional flight termination systems increases drastically. For legacy launchers, the main use case is the upgrade of its traditional termination system to fully autonomous ones. This technology is also applicable for dual use applications, in particular long-range UAVs and defence platforms.



TECHNOLOGY AND INNOVATION

What we developed: The developed AFTU embeds flight safety decision making directly onboard a vehicle, eliminating reliance on ground-based termination infrastructure. It combines a certifiable, safety-critical avionics architecture with integrated hybrid navigation (GNSS + IMU) and configurable mission rules to autonomously assess vehicle behaviour in real time and command flight termination if safety limits are exceeded.

Unique features: The main innovations introduced by the AFTU developed within LoCRAFTS are:

- **Certification driven safety architecture:** safety critical avionics, functional segregation, redundancy, and fail-safe logic designed from the outset for certification.
- **Hybrid low-cost navigation embedded:** integrated GNSS+IMU providing a standalone solution.
- **Modular and scalable design:** adaptable to different launchers, missions, and regulatory frameworks.
- **Compatibility with legacy systems:** can operate in piggyback or shadow mode alongside traditional FTS, easing adoption and certification.

KEY RESULTS

- Reliable, certifiable and cost-effective AFTU design covering the needs for the current and future European launchers.
- AFTU concept validated with a functional engineering model tested in a relevant environment, achieving TRL 6.
- Strong stakeholder validation, including requirements reviews, design input, and letters of support from European launchers and spaceports.

NEXT STEPS AND MARKET READINESS

Roadmap:

2027: Design consolidation, flight representative model, and drone-based flight testing (TRL 7); qualification and environmental testing (TRL 8).

2028: Incremental launcher flight demonstrations; piggyback, shadowed, and fully autonomous to achieve full certification (TRL).

2029+: Commercial deployment and industrialisation.

Opportunities: Looking for partners for launcher integration and flight testing.

Target Launch: 2028–2029.

Contact: Sergio Ramirez Navidad

 sergio.ramirez@aerospacial.sener

 group.sener/en

 linkedin.com/company/sener