

FUTURE SPACE TRANSPORTATION FLPP SPRING SESSION 2026



ESA FIRST! AVIONICS & GNC

COMPANY INFORMATION

Company: Qascom

Location: Italy

Founded: 2004

Employees: >100

Mission: Qascom is an engineering company offering security solutions in satellite navigation and space cybersecurity. Qascom competences has established itself as one of the European key players in GNSS authentication and security. Qascom is committed to growing its worldwide leadership in robust PNT and it heavily invests in research and innovation.

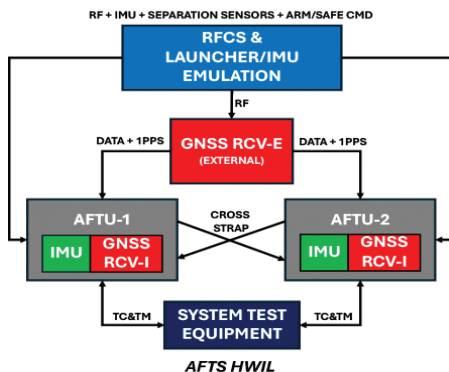


ACTIVITY

Project name: LoCRAFTS - Low Cost and Reliable Autonomous Flight Termination System.

Objective: Develop a Low-Cost Autonomous Flight Termination Unit (AFTU) prototype.

Applications: Expendable and reusable launchers and sounding rockets, reducing operational complexity and improving mission flexibility.



AFTU-1 Prototype

TECHNOLOGY AND INNOVATION

What we developed: A low-cost AFTU that uses robust navigation techniques based on fault detection algorithms and failure-tolerant trajectory monitoring based on multiple navigation solution voting logic to improve system reliability.

Unique features:

- **Dual-use capability** for GNC navigation and range safety
- **INS/GNSS hybridisation with FDIR/FDE algorithms** to enhance robustness against jamming, spoofing, and satellite, receiver, or IMU failures
- **Cross-strapping and multiple-solution voting logic** for fault tolerance.
- **Configurable trajectory-monitoring software** compliant with FAA and RCC directives, implementing different monitoring strategies:

Azimuth limits

Maximum/minimum altitude vs. downrange

Maximum/minimum flight-path angle vs. downrange

Instantaneous Impact Point (IIP)

Destruction Limit Line (DLL)

Uncontrolled Area Region (UAR)

Inhibit Gate Region

Two-point gate

Orbital gates

KEY RESULTS

- Developed a AFTU prototype able to reach TRL-5.
- Developed a high-fidelity Hardware In the Loop (HWIL) test environment based on RF Constellation Simulator (RFCS), emulated inertial sensors (IMU) and launcher interfaces.
- Demonstration of the robust AFTU performance through extensive testing in deviated trajectory scenarios introducing navigation threats and failures.

NEXT STEPS AND MARKET READINESS

Roadmap:

2027 AFTS demonstrated in operationally relevant environment (TRL-7).

2029 Certification, qualification, and flight readiness (TRL-8).

2030 Flight-proven certified AFTS (TRL-9).

Opportunities: Looking for commercial opportunities and partners, ranging from small launch companies interested in in-flight testing of our AFTS technology to companies specialising in the development of safety-critical software and hardware.

Target Launch: Flight-proven AFTS available from 2030 onwards.

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