

FUTURE SPACE TRANSPORTATION FLPP SPRING SESSION 2026



ESA FIRST! AVIONICS & GNC

COMPANY INFORMATION

Company: GMV

Location: Spain

Founded: 1984

Employees: >3500



Mission: Our goal is to support our clients' processes by means of technologically advanced solutions, providing integrated systems, specialised products, and services covering the whole life cycle. These range from consultancy and engineering services to the development of software and hardware, the integration of turnkey systems, and operational backup.

ACTIVITY

Project name: Data Distribution Service over Time Sensitive Networking (DDS-TSN)

Objective: The main objective of this activity is to create a middleware software library that unifies the capabilities of DDS and TSN technologies, to add fault tolerance, scalability, modularity and interoperability to embedded systems.

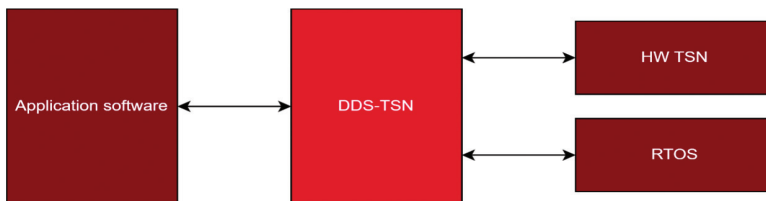
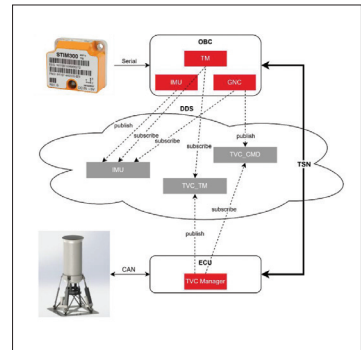
Applications: This middleware library can be used in many embedded applications for any system that needs reliable and real-time communications between nodes, such as launchers, satellites, as well as in non-space applications such as robotics.

TECHNOLOGY AND INNOVATION

What we developed: The diagram below shows the idea of the DDS-TSN library, which is a middleware between the application software and the basic layer, which contains the low-level TSN drivers and the operating system capabilities.

To demonstrate that the library is valid for space applications use case, the library was tested in a representative environment, adding data handling capabilities via DDS-TSN library to a real mission, specifically in the most critical loop between IMU sensors, GNC algorithms and TVC actuators.

Unique features: This middleware library unifies DDS technology operating at the application layer with TSN advantages, adding real-time and fault tolerance capabilities.



KEY RESULTS

- Design and implementation of DDS over a TSN library
- Tested in representative launcher environments.
- Tested in multiple operating systems (RTEMS and Linux)

NEXT STEPS AND MARKET READINESS

Roadmap: The next step is the qualification of the library to be used in space systems.

Opportunities: Available to industry partners for launcher applications