

Industrial Semantic Interoperability Summit 2026

Opportunities in Aeronautic Industry

June 09, 2026

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Introduction

In the Aerospace industry, aftermarket services are increasingly built around the capability to acquire, process, and analyse In-Service Aircraft data



AIRCRAFT IN SERVICE

Operational aircraft continuously generate technical and operational data



DATA COLLECTION & TRANSMISSION

Flight, maintenance, and health monitoring data are received from the fleet



DATA ANALYSIS

Advanced analytics enable trend monitoring, reliability & logistic analysis and FRACAS



AFTERMARKET SERVICES & SUPPORT

Improved reliability, optimized maintenance planning, fleet availability, and continuous product improvement



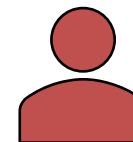
OPPORTUNITY



Industry



Customer



Supplier

Stakeholders are showing interest in new technologies, and are available in being proactive

New Technologies Serving Aviation

Data, connectivity and analytics are transforming the way we operate, maintain and optimize aircraft and operations. Innovation drives efficiency, safety and sustainability across the industry.



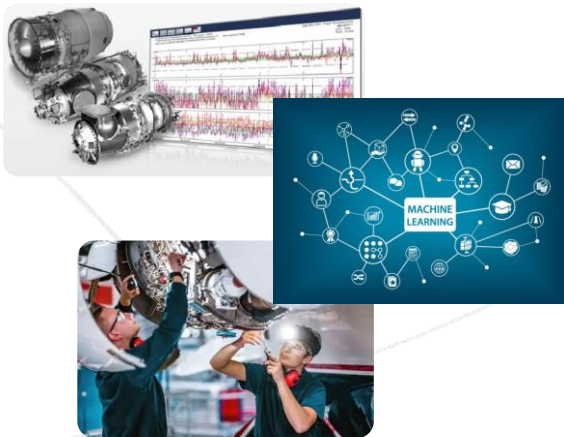
DIGITAL SERVICES

Integrated Digital Services provide real time visibility across operations, assets and performance.



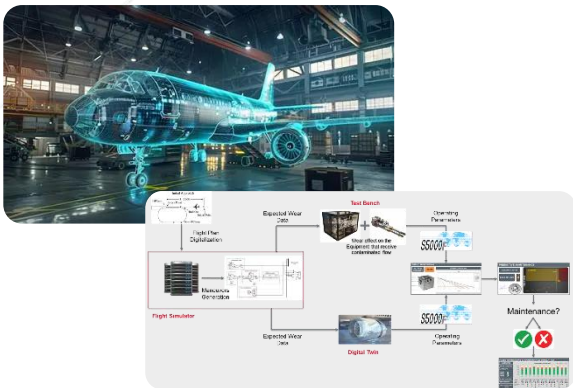
PREDICTIVE MAINTENANCE

Advanced data analytics and machine learning can predict failures before they occur, minimizing downtime and optimizing maintenance



DIGITAL TWIN

Digital Twins replicate aircraft and systems in a virtual environment to simulate, analyse and optimize performance



SMARTER TECHNOLOGIES, STRONG OPERATIONS. THE FUTURE OF AVIATION IS DIGITAL.

The challenge: Lack of a Global Data Standard

One of the main barriers to enable advanced technologies in aviation is the **lack of a global standard** for data formats.

WHY IT SLOWS DOWN



Real-time data flow is delayed

Data must be aligned and converted before it can be used.



Extra step for format alignment

An additional process is required to reconcile different data formats.



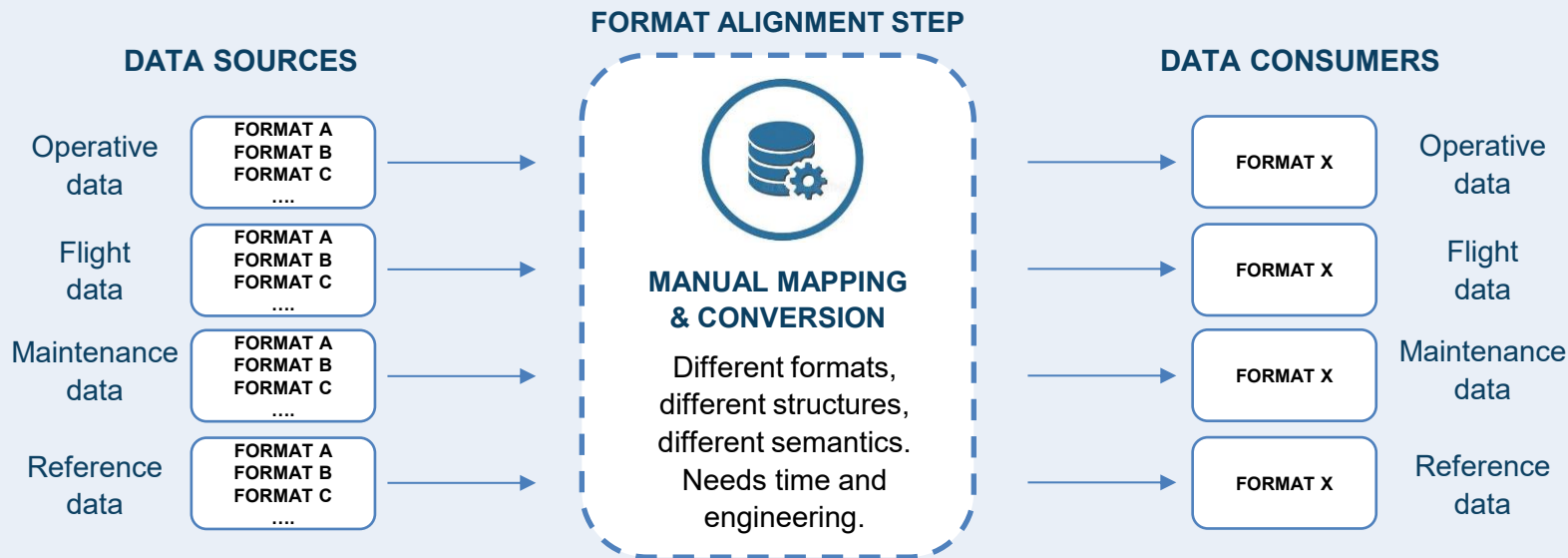
Every new Customer must be mapped

Each partner or system requires custom integration and mapping.



Higher cost, longer time to value

Complex integrations reduce agility and increase operational costs.



THE SOLUTION: INTEROPERABILITY

Enable seamless data exchange to accelerate real-time operations and innovation



1. ADOPT A COMMON STANDARD

All stakeholders use the same global standard for data formats.

- Consistent high-quality data
- Seamless real-time exchange
- Lower integration cost
- Faster time to value



2. PROVIDE SMART TRANSLATORS

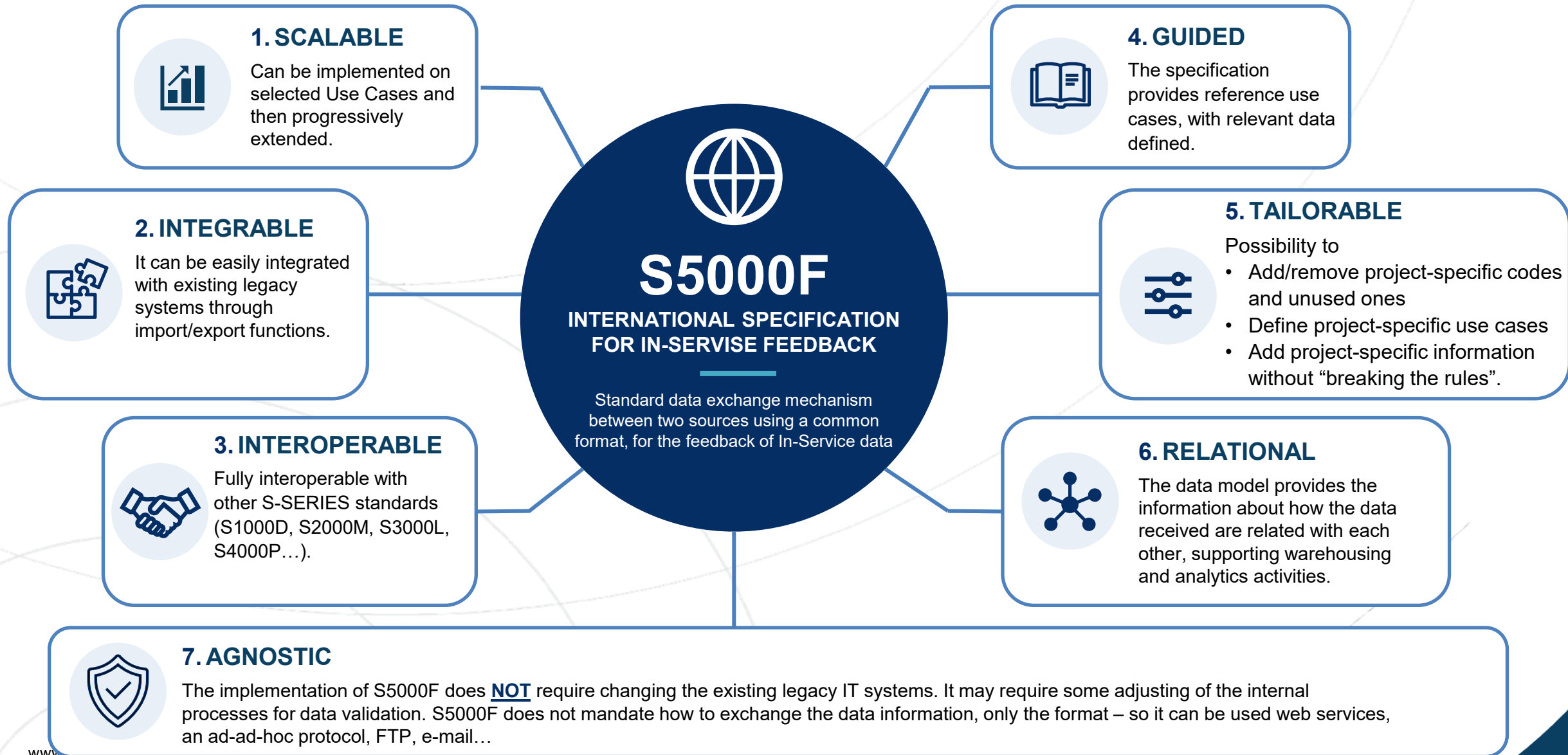
The industry delivers automatic translators standards to ease the transition.

- Interoperability across different systems
- Backward compatibility
- Gradual migration
- Broader adoption of innovation



Interoperability is the key to “unlock” the full potential of new technologies in aviation

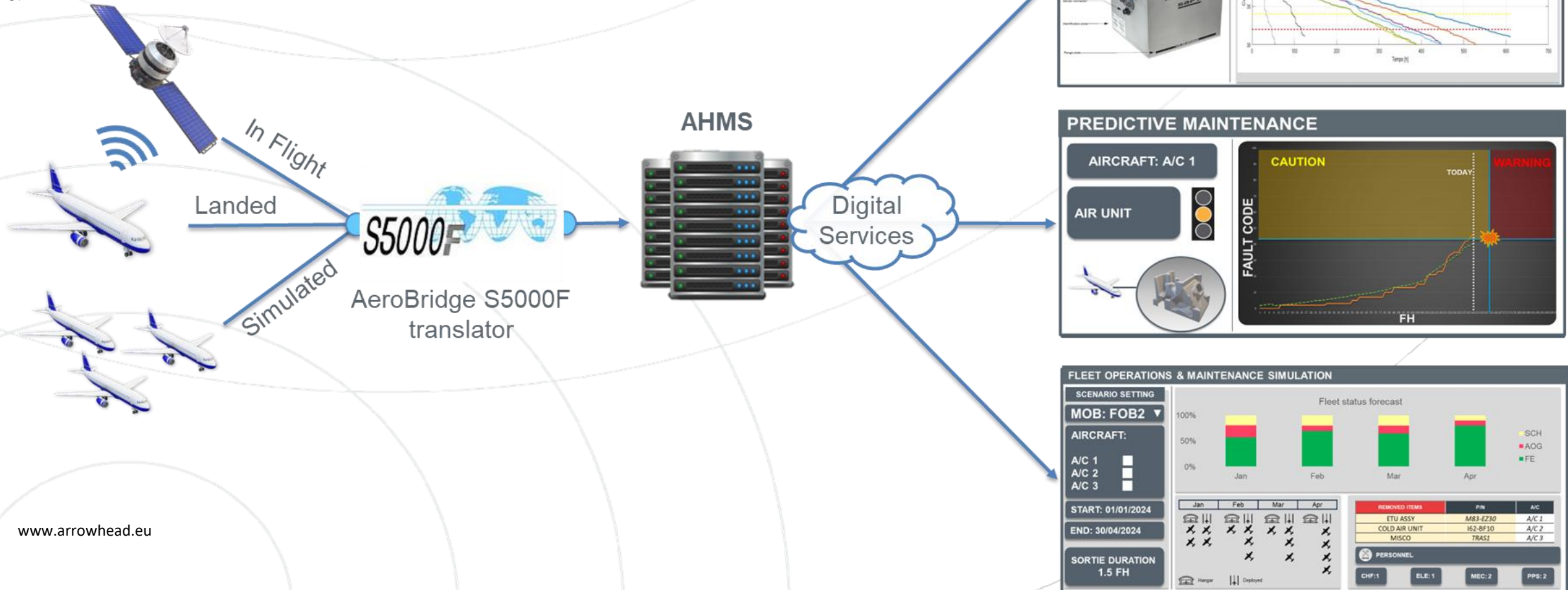
S-SERIES S5000F – In-Service Feedback



Arrowhead fPVN - AHMS

Within the Research Project Arrowhead fPVN, it has been developed a modern Aircraft Health Management System which will:

- Collect data from different input feeding scenarios
- Exchange data using a standard format based on S5000F and S-SERIES data model thanks to AeroBridge S5000F Translator
- Provide new Digital Services: Trend Monitoring, Predictive Maintenance and Fleet Operations & Maintenance Simulation

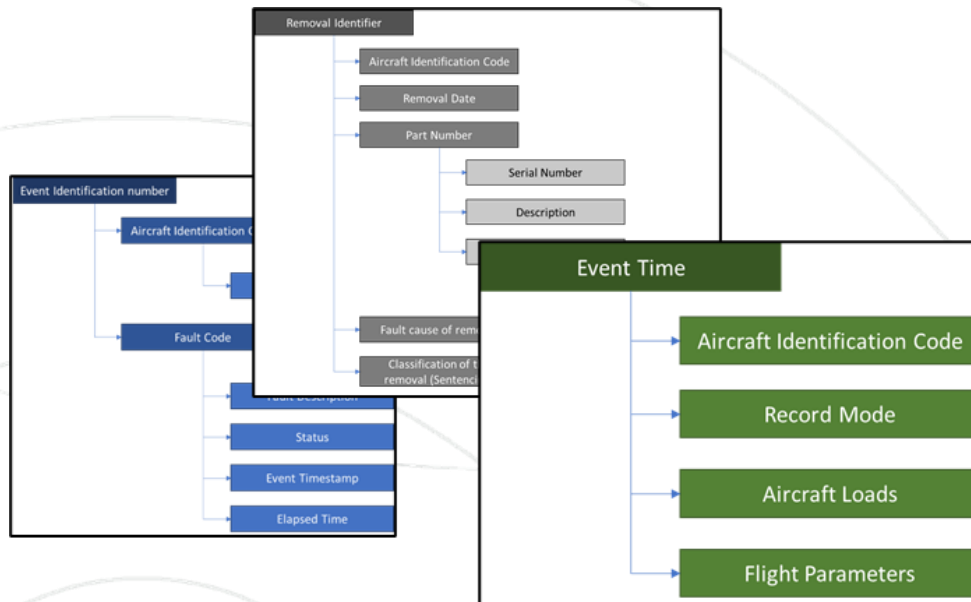


AeroBridge S5000F Translator (1/2)

In order to develop the Translator, the activities have focused on two interconnected streams:

Identification of dataset to be exchanged

Starting from the three input feeding scenarios, several families of data have been identified, producing a simplified schema of the relevant available information.



Development of a S5000F translator prototype (AeroBridge)

The AeroBridge prototype is an application under development written using Python, that will evolve throughout the entire AfPVN project. Its main capabilities will be:

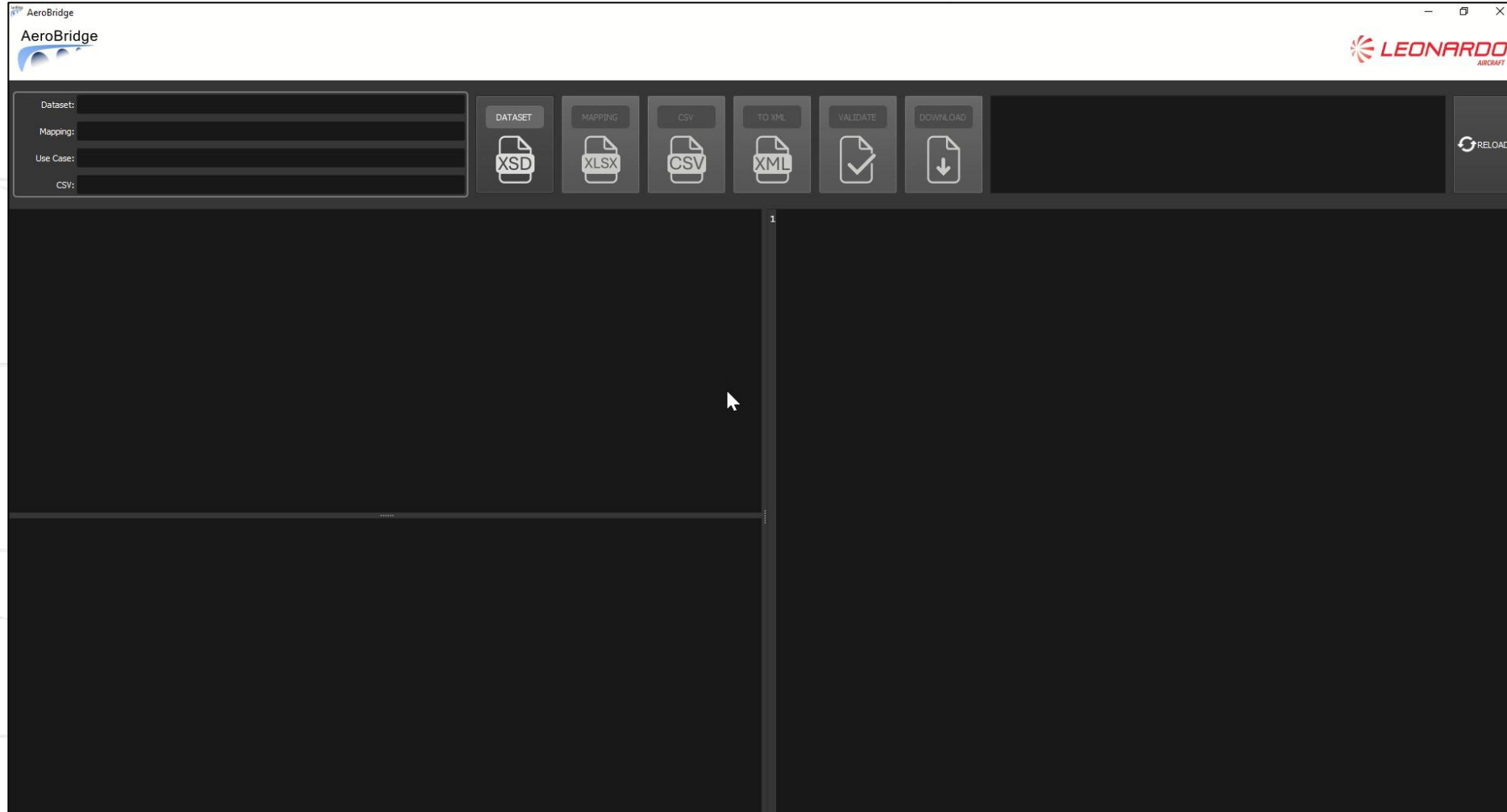
- to receive as input the mapping between the raw data and S5000F attributes
- to gather all the information from the official XSD of S5000F
- to automatically generate the XSD for the specific Use Case and produce the XML message.

AeroBridge



AeroBridge S5000F Translator (2/2)

The translator has been designed to operate automatically in the backend during data exchange activities. Additionally, for the purposes of this project, a demonstrator has been developed to illustrate the product's functionality and demonstrate its potential applications and benefits.



Conclusions



STATUS

- Stakeholders have a clear understanding of the opportunities offered by **Interoperability**.
- The **AeroBridge S5000F Translator** supports the translation of data for mapped use cases.
- Next Generation Programs are being developed with **S5000F** implementation requirements.
- **Digital Services** are already available to Customers; however, proprietary data must first be mapped to enable integration.



Next Steps

- To start activities of **Data Mapping** with all the Long-standing Customer
- To improve the **AeroBridge S5000F Translator** by incorporating AI algorithms that can recognize data without the need for a mapping phase.
- Implement a pipeline within **Digital Services** capable of ingesting XML files.
- Develop more sophisticated Digital Services enabled by real-time data acquisition.

**Thank you
for your attention**