

Experts for Reliable Solutions

Safety-critical software development
for complex industrial & defence systems

About Us



Founded in **2011** and headquartered in **Karlsruhe, Germany**, we are your **trusted partner** for **air-traffic & defence engineering**



Specialized in **Complex Data Analytics, Functional Safety, Embedded Systems Development** and **Artificial Intelligence** with proven experience in **mission-critical applications**



Experts in **safety-critical software** and **embedded systems** according to **ED-153, IEC 61508, ISO 26262, MIL-STD 882**

For over a decade, we have been a trusted engineering partner to support Air-traffic & Defence vendors, **helping them develop, enhance, adapt, localize, and integrate** their technologies while ensuring full compliance to the relevant safety and compliance standards.

We specialize in advanced algorithm development, sensor fusion, automatic data analysis, and **embedded software** engineering—delivering high-performance, **safety-critical solutions** tailored to meet the stringent demands of modern defence and air-traffic management operations.

As an independent and **vendor-aligned engineering partner**, we offer a non-compete approach, focusing on compliance readiness, system optimization, and seamless market integration.

Enhancing Mission-Critical Systems with Proven Expertise

As software complexity increases across all industries, safety-critical systems in areas such as **aircraft assistance, secure black channel communications** through real-time data transfer and **highly automated vehicles** are facing unparalleled challenges.

These applications require **strict certification** and approval to **eliminate systematic errors**, significantly raising the bar for development and verification efforts.

We have established our **functional safety expertise** by successfully tackling complex projects in **aviation** and **defence** sectors. Our specialized **end-to-end approach** includes **system engineering, conceptual design** and **robust testing**.

From **initial analysis** to **full implementation** – we apply our extensive experience and proven methodologies to **ensure safe, compliant, and resilient systems** that meet the critical demands of today's advanced technological landscape.



System-Engineering
for mission-critical applications



Integration into
Embedded System



Specification, Architecture,
Prototype & Test Cases



Support with
System Verification

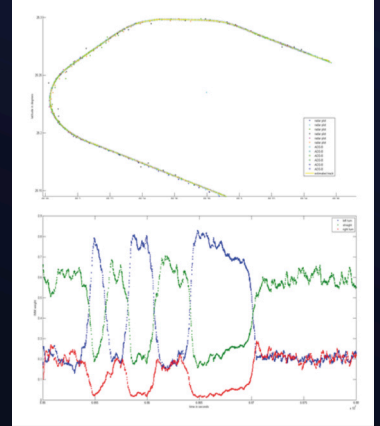
Success Story | Air Traffic Surveillance System

In this project we focused on developing a highly reliable algorithm for a **Surveillance Data Processing System (SDPS)** to create a precise **Air Situation Picture** for **air traffic control**. The developed **algorithm** processes and **merges data** from **multiple radar sources**, including **primary radar**, **secondary radar**, **ADS-B**, and **Wide Area Multilateration (WAM)**, ensuring a cohesive and accurate overview of the airspace activity.

Our team designed specialized **data association** and **track update algorithms** to efficiently **assign radar measurements to individual aircrafts** and accurately **calculate** their **position** and **speed** in a 3D environment. Leveraging a rapid prototyping approach, the **implementation** strictly **adhered** to **EUROCAE ED-153** standards and underwent **extensive testing** with both real and simulated data to **guarantee performance** and **accuracy**.

The final algorithm was then seamlessly **integrated** into an existing SDPS, **enabling** the system to **autonomously correct** measurement **errors** and **provide** a comprehensive, **real-time air situation picture** and a safer, more reliable **air traffic management** of complex airspace environments.

Detected Flight Trajectory Maneuver vs. Sensor Data



Success Story | I/O Data Black Channel Communication System

We partnered closely with our customer to develop their first **SIL3-compliant modular product family** for mission-relevant I/O data exchange via secure, **black channels**. Our team led the complete **project coordination**, including **system engineering**, and worked side-by-side with the customer's engineers to create a robust, modular solution.

This flexible product family includes various **I/O modules** with configurable **safe inputs** and **outputs**, **adaptable** across **multiple applications**.

In addition to managing the overall development, we contributed our domain-specific expertise in embedded software development and **conducted**

extensive testing to ensure full **compliance to functional safety standards**. We established structured processes, while collaboratively **enhancing** the **customer's toolchain** to meet SIL3 standards, guaranteeing compliance across all development stages.

The **result** of this collaboration was **a range of SIL3-certified products**, meeting stringent safety requirements and **adaptable to a wide range of applications**. By designing a safety-critical system concept, refining it into **precise specifications** and **architecture** and providing the according **tests cases**, we supported our customer in achieving **reliable, high-quality solutions** for mission-critical environments.



We are committed to providing reliable solutions that enhance both safety and performance in complex, safety-critical environments. Let us be your trusted partner for engineering mission-critical systems.