



CASE STUDY /

Ansys medini analyze + ZF Group

"Ansys medini analyze has streamlined and accelerated functional safety analysis for hardware, software and systems — delivering possible efficiencies including an up to 50% reduction in the time devoted to these tasks."

Kamil Svancara.

Cyber Security Manager / ZF Friedrichshafen AG

Automotive systems supplier ZF Friedrichshafen AG utilizes Ansys medini analyze to drive agility, innovation and efficiencies in its embedded safety systems development and verification process. Ansys medini analyze has already reduced the time involved in functional safety analysis by up to 50% — and ZF is now applying medini analyze to cybersecurity analysis for an advanced driver-assistance system (ADAS) project.

Today's passenger cars and commercial vehicles incorporate complex, integrated electronic systems — many of which are developed by ZF Group. ZF continually enhances its systems in the areas of digital connectivity and automation in order to allow vehicles to see, think and act. The company is supporting the world's automakers in realizing their vision for autonomous driving, electric mobility and other innovations via its best-in-class technology solutions.



/ Ansys medini analyze + ZF Group

According to Kamil Svancara, Cyber Security Manager at ZF Friedrichshafen AG: “As a systems supplier for passenger cars, commercial vehicles and industrial technology, ZF Friedrichshafen AG places great emphasis on agility and innovation. To support exciting developments like autonomous driving and electric mobility, our R&D process must be fast, cost-effective and technically precise. Since 2014, many ZF projects relied on Ansys medini analyze to conduct functional safety analysis for our automotive electronics systems, growing from two licenses to over 50 today. By providing an easy-to-understand, visual representation of complex electronics and their integration points, Ansys medini analyze has streamlined and accelerated functional safety analysis for hardware, software and systems — delivering possible efficiencies including an up to 50% reduction in the time devoted to these tasks. Based on this success, in 2017 ZF's advanced driver-assistance system (ADAS) project team began to collaborate with Ansys to customize medini analyze for cybersecurity analysis. Just as medini analyze helped many ZF project teams deliver work products required by ISO 26262 for functional safety, it is also helping ZF's ADAS project team to efficiently deliver work products required by the upcoming cybersecurity standard, ISO 21434. ZF is a strong advocate for model-based engineering, and Ansys medini analyze helps to reduce the complexity of analysis for embedded systems.”

/ Challenges

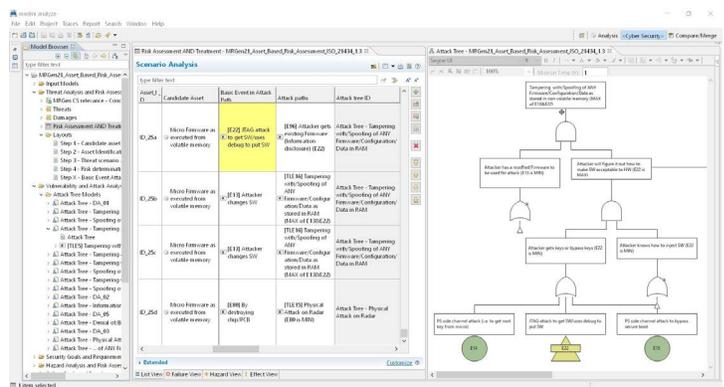
The global automotive industry continuously pushes to improve its time-to-market and reduce its costs while meeting functional safety demands. Embedded systems from automotive suppliers must be capable of operating reliably and safely under challenging environmental conditions. Since 2014, ZF has been a pioneer in applying Ansys medini analyze to its functional safety engineering practices, delivering significant benefits in terms of consistency and completeness of work products. ZF estimates a possible reduction in the time needed to complete functional safety analysis of up to 50% with the use of Ansys medini analyze. In 2017, a ZF ADAS project team collaborated with Ansys to customize medini analyze for the additional challenge of cybersecurity threat analysis for its integrated electronic systems.

/ Technology Used

Ansys medini analyze

/ Engineering Solution

- Many systems engineering teams at ZF have used Ansys medini analyze for functional safety analysis since 2014, making ZF an early adopter.
- ZF's Corporate Functional Safety Group recommends Ansys medini analyze for delivery of ISO 26262 work products.
- Ansys medini analyze has also helped many ZF project teams to deliver work products required by functional safety standards for the worldwide automotive industry such as ISO 26262 — as well as being required by automotive original equipment manufacturers (OEMs).
- Beginning in 2017, a ZF ADAS project team began collaboration with Ansys to customize medini analyze to meet the challenging task of cybersecurity threat analysis — e.g., threat analysis and risk assessment, attack tree — anticipating the eventual release of Ansys medini analyze for Cybersecurity, a standalone product.



/ Benefits

- The use of Ansys medini analyze for functional safety analysis has optimized the time involved in this process by up to 50% for the delivery of specific work products — making the entire embedded system development cycle much faster, while ensuring transparent consistency, traceability and completeness.
- By applying Ansys medini analyze for both functional safety and cybersecurity threat analysis, ZF project teams are looking to optimize their investment in Ansys software.
- As Ansys medini analyze helps identify functional safety and cybersecurity issues at a very early stage of product development, the ZF ADAS project can deliver more innovative systems and speed up the product development cycle.
- By eliminating hours of manual work and having the work products for functional safety next to work products for cybersecurity in the same tool, Ansys medini analyze increases staff productivity and consistently helps ZF's ADAS project team to optimize its engineering budgets.
- ZF engineers on many projects have found medini analyze's model-based approach very intuitive and user-friendly, making even the complex electronics architectures easy to understand and visualize.

/ Company Description

ZF Friedrichshafen AG

ZF is a global technology company and supplies systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. ZF allows vehicles to see, think and act. In the four technology domains — Vehicle Motion Control, Integrated Safety, Automated Driving, and Electric Mobility — ZF offers comprehensive solutions for established vehicle manufacturers and newly emerging transport and mobility service providers. ZF electrifies different kinds of vehicles. With its products, the company contributes to reducing emissions and protecting the planet.



ZF, which acquired WABCO Holdings Inc. on May 29, 2020, now has 162,000 employees worldwide with approximately 260 locations in 41 countries. In 2019, the two then-independent companies achieved sales of €36.5 billion (ZF) and \$3.4 billion (WABCO).

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