Ansys

SYSTEMS

Ansys medini analyze Solutions for Functional Safety in Aerospace

Ansys medini analyze provides manufacturers of electronic components and systems in the aerospace domain with dedicated support for functional safety analysis. The safety analysis of such systems is a precondition for obtaining necessary certifications and may consume more than half of the overall development effort. Ansys medini analyze customers report an up to 55% decrease in efforts for functional safety analysis and a similar decrease in time-to-market. Additionally, inconsistencies in the functional safety analysis work products are eliminated, and the certification process is accelerated, especially with respect to design changes.

System Functions

Failure Conditions

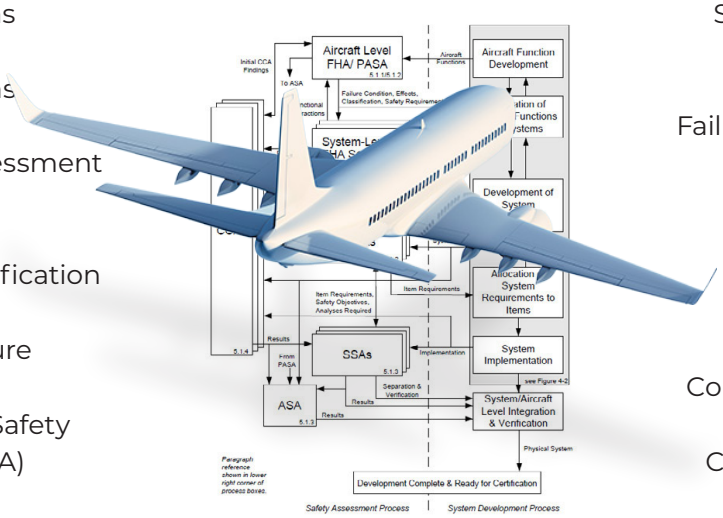
Functional Hazard Assessment (FHA)

Failure Condition Classification

System Architecture

Preliminary System Safety Assessment (PSSA)

Safety Requirements



System Safety Assessment (SSA)

Failure Mode and Effect Analysis (FMEA)

FMES/FMECA

Fault Tree Analysis (FTA)

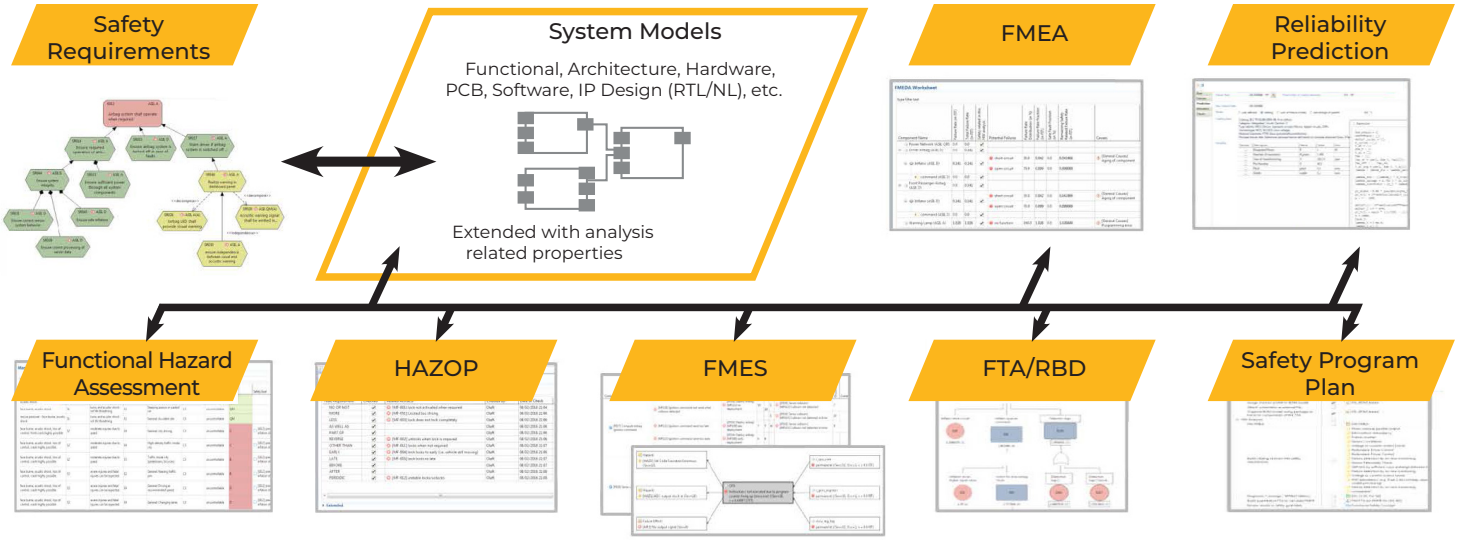
Common Cause Analysis (CCA)

Configuration Management

Change Management

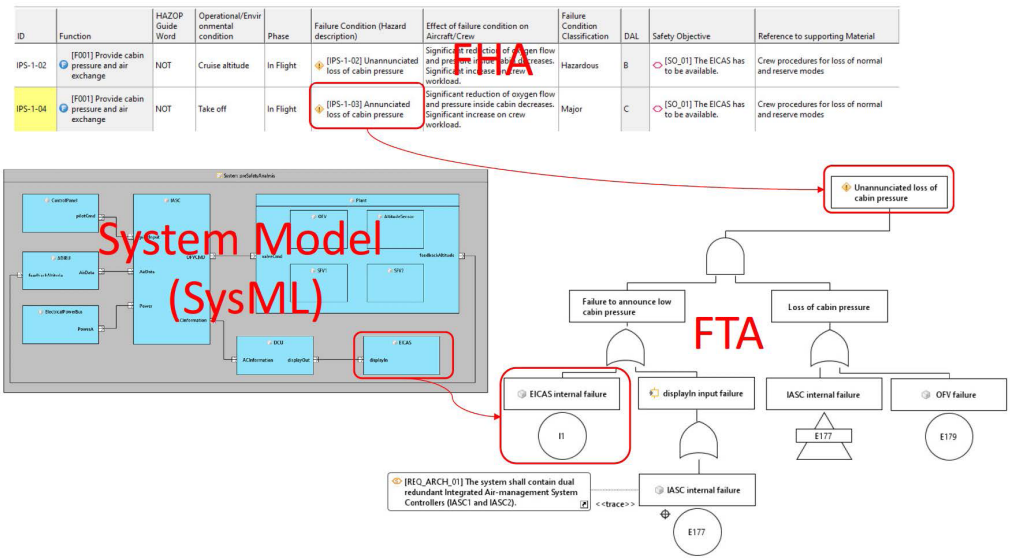
The safety analysis of aerospace systems is carried out in parallel with the system development. Analysis methods utilized include functional hazard assessment (FHA), failure condition classification, Fault Tree Analysis (FTA), Reliability Block Diagrams (RBD), Failure Modes, Effect and Analysis (FMECA/FMES), and Common Cause Analysis (CCA). These methods need to be carried out at various levels ranging from aircraft-level through systems to the detailed-item level. With Ansys medini analyze, these safety analysis methods can be performed at each of these levels. And, in contrast to existing point tools, Ansys medini analyze is fully integrated and model-based.

Ansys medini analyze supports standard safety analysis that conforms to ARP4754A, ARP4761, and MIL-STD-882E for aerospace systems. With its integrated Systems Modeling Language (SysML) modeling capabilities, Ansys medini analyze enables safety analysis utilizing the information available in the models. This eliminates the need for duplication of data while performing the analyses and keeps these consistent with the actual engineering models and with each other. Furthermore, rich traceability among all model elements — including the safety requirements — is enabled, allowing users to conveniently demonstrate the overall safety of an aircraft or system. The necessary documentation is generated with Ansys medini analyze's report generation functionality. These reports are fully customizable to the needs of the customer.



Ansys medini analyze support for aerospace includes:

- Model-based toolset centered around SysML supporting safety assessment according to ARP4754, ARP4761, and MIL-STD-882E.
- Safety Analysis methods: Functional Hazard Assessment (FHA), Fault Tree Analysis (FTA), Reliability Block Diagrams (RBD), Failure Mode, Effect and Criticality Analysis(FMEA, FMECA), Hazard and Operability Studies (HAZOP), Failure Modes and Effects Summary (FMES), Common Cause Analysis (CCA), and more.
- Built-in reliability prediction according to MIL-HDBK-338B and failure rate handbooks such as MIL-HDBK-217F, HDBK-217Plus, Electronic Part Prediction Database (EPRD), Nonelectronic Part Prediction Database (NPRD), and many more.
- Tight integration of architectural/functional design models with quality, reliability and functional safety analysis methods.
- Capturing and management of safety requirements providing complete end-to-end traceability.
- Integration with modeling tools such as Cameo Systems Modeler/MagicDraw, IBM® Rhapsody, MATLAB®/Simulink® Stateflow®, and more.
- Seamless integration of requirements and configuration management such as IBM Rational DOORS, PTC Integrity™, Jama.
- Teamwork with detailed compare-and-merge and server-based configuration management (SVN, git, etc.).
- Customizable solution including work product/documentation generation.
- Fully integrated with Ansys tools for embedded software development and simulation, for example Ansys SCADE Suite and SCADE Architect.



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