



SIEMENS



Siemens PLM Software

A&D firms achieve program excellence with integrated verification management

Integrating virtual and physical testing enables delivery of products on schedule and on budget

Benefits

- Reduces program risks to schedule, budget and deliverables
- Improves program performance with single verification management system
- Increases traceability of requirements from program through design, analysis and test
- Reduces verification costs with improved planning and execution
- Enables proactive management of requirement compliance with real-time reporting
- Accelerates program audits with accurate up-to-date documented deliverables and activities

Summary

The complexity of aerospace and defense (A&D) products and the number of requirements that they must meet to gain customer acceptance continues to grow. As a “system of systems” comprised of software, hardware and electronics, A&D products involve lengthy, multidisciplinary development programs and interrelated verification activities to gain customer or regulatory agency approval. Whether it is a commercial airliner, weapons platform or a spacecraft, failure is not an option.

A&D companies compete in a global market place and execute programs with multiple global partners and suppliers. To be successful in this environment, A&D companies must demonstrate their ability to consistently execute programs across the extended organization, delivering products that meet requirements on schedule and on budget.

The Siemens PLM Software Verification Management solution enables companies to achieve this goal by connecting requirements to all tasks and data involved in the verification process, providing complete visibility and traceability across planning, design, analysis, test and final conformance reporting.

Providing full lifecycle traceability

Programs must meet requirements that are set by their customers, contained in their contracts and meet company product standards for design and safety, as well as industry requirements from regulatory authorities such as the Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA). Teamcenter® software from Siemens PLM Software enables all program activities to be driven by these requirements, from initial program goals to the individual components that will make up the final product. With Teamcenter, full product lifecycle trace-

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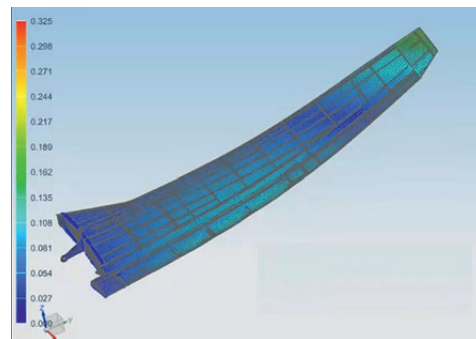
Features

- Requirements management
- Verification planning and execution
- System analysis and test
- Schedule management
- Change management
- Configuration management
- Test article and equipment definition and history

ability makes it possible to ensure that all requirements have an approved verification method, that the method is executed and that appropriate results are recorded to support achievement of the requirements.

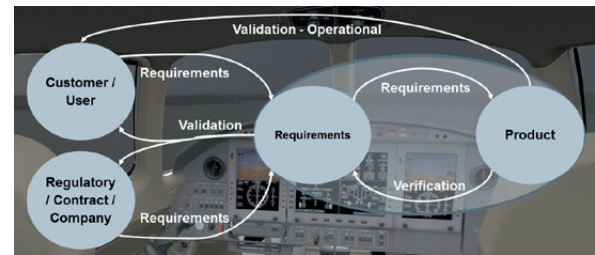
Synchronizing analysis to design and test organizations

As a full product lifecycle solution, Teamcenter can be used to communicate requirements to all disciplines in the product development process as well as changes to those requirements. This single collaborative source of requirements permits design, analysis and test organizations to work in unison to make sure that analysis and simulation models are synchronized with design models for both production and test articles, and to the physical test articles to ensure conformance to requirements across disciplines. By synchronizing these models, simulations representing the production design as well as all the modifications made to the test article remain valid for proving achievement of requirements.



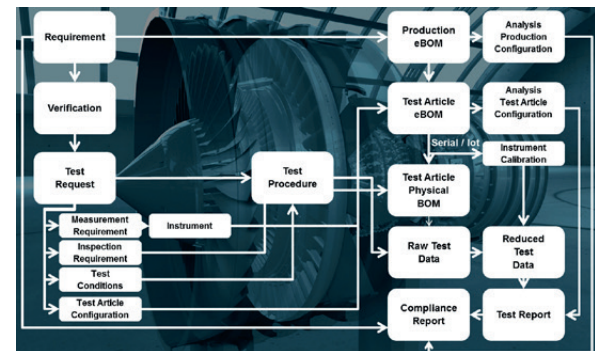
Tracing the test to the physical test article

Physical tests are a necessity for aerospace and defense products, and it is imperative that tests prove that the requirement has been met. Proving a test result is valid requires a sequence or thread can be followed from requirements to be verified to test plans that prove attainment of objectives, and test articles and equipment that are configured properly to support the tests. Teamcenter establishes the path from requirements to test plans to test article to confirm that a test is required, properly



planned and accurately executed. If changes in requirements or the product design occur, Teamcenter can be used to immediately provide full visibility of their impact on plans, test articles and tests, including those already run that need to be re-executed.

Teamcenter also maintains the complete history of all test articles and equipment, enabling full traceability to past test articles or analytical model configurations. In addition, Teamcenter provides complete instrumentation traceability: from measurement requirements defined by engineering in the test request; to the instrumentation plan; to the physical instrument installed on the test article and its calibration data through to the raw data and the reduced engineering unit data used for reporting conformance.



Integrating the verification management system

Moving from planning what to do to actually doing it requires task definitions, scheduling and management. Teamcenter provides scheduling and management functionality for all verification activities to link engineering, manufacturing, procurement and test to support long

lead planning, resource utilization and execution of the verification activities. Verification requirements are linked to supporting documentation for virtual and physical test configurations, test plans, test procedures and test results to enable complete status reporting of the process. This holistic approach to verification ensures efficient usage of resources and provides visibility into the process to ensure that deadlines are met.

Verification Management Catalyst Accelerates Time-to-Value

Siemens' Verification Management catalyst provides aerospace and defense companies with best practices, process support and a proven fast track template to facilitate implementation.

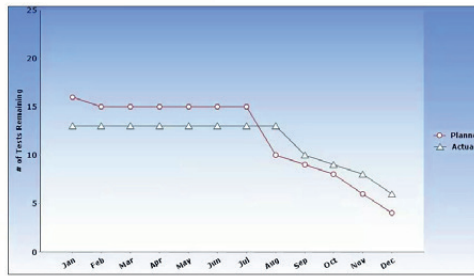
To accelerate implementation, the verification management catalyst tailors the broader Siemens PLM solution elements specifically to support the verification management business process in the Aerospace and Defense industry. The catalyst provides the Aerospace and Defense companies the ability to execute the following key business processes:

- Requirements allocation to Integrated Product Teams (IPTs), functional organizations, work breakdown structures (WBS), systems, and assemblies.
- Verification planning by creating a master verification plan.
- Verification through analysis and simulation.
- Verification through physical testing.
- Recording end-to-end.

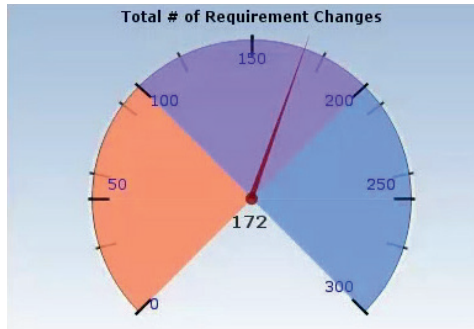
The Siemens PLM Software verification management catalyst accelerates time-to-value for implementing PLM for Aerospace and Defense, while providing an environment for swift adoption of future software enhancements and related technologies.

Conclusion

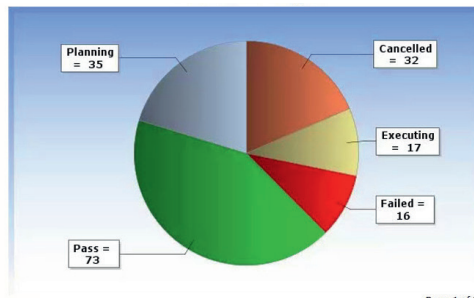
The Verification Management solution in Teamcenter empowers A&D companies to successfully execute their programs on schedule and on budget by providing visibility and closed-loop requirement traceability into all activities of the verification process to confirm requirement compliance. With efficient planning,



Verification program performance report



Requirement stability report

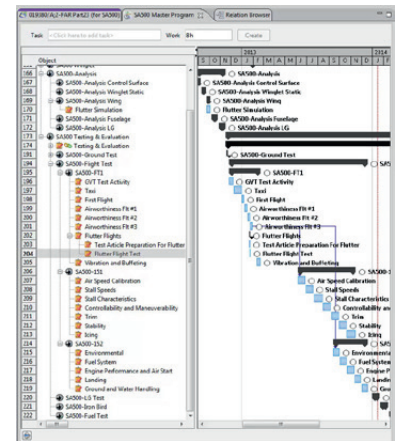


Verification Status	Requirements	Verification Method	Test Status
ALL	173	--	--
SAS00	173	--	--
Cancelled	32	--	--
Executing	17	--	--
SAS00FT6001	REQ-003372	Similarity	Pass
SAS00FT6001	REQ-003373	Test	Executing
SAS00FT6001	REQ-003374	Analysis	Pass
SAS00FT6001	REQ-001124	Similarity	Pass
SAS00FT6001	REQ-001125	Analysis	Pass
SAS00FT6001	REQ-001126	Similarity	Pass
SAS00FT6001	REQ-001127	Similarity	Pass
SAS00FT6001	REQ-003362	Similarity	Pass
SAS00FT6001	REQ-003363	Analysis	Failed
SAS00FT6001	REQ-003364	Test	Executing
SAS00FT6001	REQ-003365	Similarity	Pass
SAS00FT6001	REQ-000001	Similarity	Pass
SAS00FT6001	REQ-001123	Test	Executing

Verification status report

simulation, analysis and test execution in an integrated environment enabling confirmation of requirements achievement, Teamcenter supports program audits and reduces the time and cost of verification that ultimately improves program performance.

Additionally, Siemens PLM Software provides the verification management catalyst to accelerate customer deployment and solution productivity via a set of industry best practice templates and configuration components.



Schedule

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