

SimManager™ for Aerospace

Simulation Process and Data Management

Introduction: Aero Market needs for SDPM

Trend to address requirements for greener aircrafts in an increasingly competitive market, is leading worldwide OEM and their supply chain to:

- Introduce new technologies like composites light weight structure, more electrical systems, in services driven functions as e-taxi
- Slightly reduce design & development cycles, as well as recurring costs
- Maintain low cost ownership of aircraft
- While de-risk these new technology in early design cycle by broader exploration of associated architectures.

Associated to the fact A/C structures systems end equipment are submitted to a wide range of operational loads, this creates a strongly growing simulation need in many disciplines while transverse collaboration represents the largest room to progress margin versus sole domain optimal.

Simulation Process and Data Management

As for other industry, Aero Market demands and competitive pressures continue to drive product design and development teams in organizations, big and small, to rapidly innovate, while keeping the costs low. Performance, safety, and reliability are some of the challenges faced by all organizations, aero segment has additional burden like long term archiving, driven by regulatory requirements, collaboration across the extended enterprise while preserving each stake-holder its own IPR, which can consume significant resources if the design process is not efficiently implemented.

During the past few decades, simulation has taken the center stage in helping companies design and develop innovative products. In addition to reducing physical prototyping costs, simulation enables engineers to explore a bigger design space and thus more design possibilities, which is very cost effective especially when physical testing is cost-prohibitive. Simulation also provides much greater insight than physical testing earlier in design process.

With its rapid rise in awareness and popularity of simulation methods like Finite Element Analysis, and Computational Fluid Dynamics, there has been exponential rise in the amount of data created and available to engineers. Data volumes have increased nearly 1000 times for a typical automotive OEM over the past decade. This raises new challenges for design and development community to efficiently manage the massive amount of data generated by simulation, and to quickly obtain relevant answers for the design questions.

Simulation Process and Data Management addresses this need for companies of all size, helping the companies manage the simulation data, while saving significant time and resources. MSC Software is a leader in providing this technology to engineering community through its robust, configurable, and easy to use platform of SimManager.

SimManager

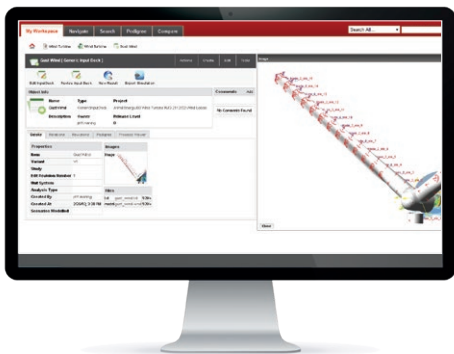
SimManager is a web-based simulation and test data management system for all simulation data and processes. With support for all the steps from project initiation to final report generation, SimManager

addresses some of the most important issues encountered by analysis groups, which results in higher simulation throughput and efficiency at a lower cost. With SimManager, users gain the benefits of:

- Efficient management of data in a central, searchable environment
- Reduced time spent in repeatable tasks
- Improved simulation efficiency enabling you to assemble and run thousands of simulations
- Increased productivity with support for High Performance Computing (HPC) environment
- Faster answers to design questions with quick sorting of terabytes of data
- Customized, faster report generation to meet your documentation needs
- Traceability of entire simulation pedigree for quicker responses
- Interoperability with legacy tools
- Configurable collaborative work requests targeting multi-disciplinary experts



Home page content personalized for optimal efficiency per user.



Study framework tracks product performance against targets.

Process Management and Automation

- Automation reduces manual execution of intensive, repetitive simulation tasks and processes
- Work request and workflow notification keep projects on track and enable management oversight
- Dashboards enable quick evaluation of studies and scenarios relative to design targets
- Built-in job queue interface optimizes execution of simulation processes and solver runs
- Simulation processes, input and output are documented via Audit Trail
- Open support of tools and applications, including MSC, 3rd party, and in-house applications
- Leverages existing hardware and software infrastructure
- Web-based configuration enables fast deployment

Enterprise Integration

- Integrated access to SimManager from MSC applications
- Web-browser access to 3rd party simulation applications and other popular engineering tools
- PDM integration using PROSTEP OpenPDM technology
- Integration with Requirements Management systems
- Fully compatible with job queuing and submission systems including PBS Pro, LSF, Sun Grid Engine, and Oracle Grid Engine
- Test Data integration and comparison

Proven Scalability and Business Results

- Adopted by industry leaders in automotive, aerospace, consumer goods, electronics, shipbuilding and other industries
- Proven performance scalability supporting thousands of users globally
- Configurable to support multiple global locations
- Unites discipline and simulation teams to support complex systems development

Capabilities

Simulation Content Management

Store, protect, distribute simulation files and methods (MSC, 3rd party, in-house)

Configurable data presentation

Object lifecycle management (revisions and release levels)

Automated pedigree/audit trail capture

Intelligent search and retrieval

Data comparison (curves, values, reports, etc.)

Role based access control

Object-level security

Simulation Process Management

Process capture and re-use

Automated model variant rerun

Process version control

Automatic job queuing and submission

Process chaining

Automatic process and data output capture

Systems Engineering

Multi-disciplinary analysis

Configurable dashboards

Results comparison to other results and targets

Enterprise Scalability

Proven Scalability capable of simultaneously running 1000's simulations by 100's of users and managing Petabytes of data

Enterprise performance (load balancing, failover, multi-site deployment)

Integration with non-MSC applications (any 3rd party CAE commercial, HPC, PDM, RMS, TDM)

Platforms Specifications

Web application server integration

Relational database integration (Oracle, SQL Server, Post-greSQL Server)

Distributed Vaults to ensure efficient file transfer

Configurable Enterprise Authentication (Database, LDAP, Active Directory, SSO Systems)

Out-of-the-box quick-start configuration

User Interface Key Features

User-friendly interface to support engineering CAE processes

Workspace-driven access to data, processes, search, and navigation

Customizable workspace to maintain the context of work-in-progress simulations and data

Home Page personalization

User interface configuration of user access, projects, objects, monitoring, and processes



Automated pedigree tracking captures complete data and process trail.



Dedicated Search Workspace provides intuitive filtering for fast down-selection.



Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

MSC Software, part of Hexagon's Manufacturing Intelligence division, is one of the ten original software companies and a global leader in helping product manufacturers to advance their engineering methods with simulation software and services. Learn more at [mscsoftware.com](https://www.mscsoftware.com). Hexagon's Manufacturing Intelligence division provides solutions that utilise data from design and engineering, production and metrology to make manufacturing smarter.

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