



APPLIED CAX

**Explore Altair's
comprehensive portfolio**

Siemens completed its acquisition of Altair Engineering Inc. in March 2025, uniting two established leaders in industrial technology. The addition of the Altair team and technology positions Siemens to deliver the most comprehensive Digital Twin on the market, ensuring companies can bring complex products to market faster.

This guide explores key features of Altair's main platforms: Altair RapidMiner, Altair HyperWorks, and Altair HPCWorks.

Altair RapidMiner

RapidMiner is a powerful data analytics and AI platform that empowers users of all skill levels to unlock insights from their data. It moves projects quickly from conception to production, updates existing SAS and Python environments, and supports both desktop and cloud environments. Key features of RapidMiner include:

AI built for enterprise scale

More than one million people use Altair AI Cloud and Altair AI Studio to build production-scale data pipelines and machine learning models. The software is code-optional and intuitive. Drag-and-drop building blocks make it easy to transform and augment data. This supports both coders and non-coders. Flexible delivery models provide the scale that enterprises require, whether deployed on desktop, in the cloud, or across hybrid environments. Full generative AI functionality is included, allowing teams to extend analytics with modern AI techniques.

An alternative SAS language environment

RapidMiner includes a complete, high-performing alternative SAS language environment. Organizations can run SAS language programs without licensing software from SAS Institute. Python, R, SQL, and SAS language workflows can be mixed within the same environment. Deployment options include cloud, on-premises platforms, and hybrid setups. Code analysis tools and an experienced support team assist throughout the migration process, from assessment and proof of concept to full rollout.

Data transformation

Self-service preparation allows users of all skill levels to access, transform, and use data for decision-making. The platform delivers leading PDF and Microsoft Excel extraction capabilities and automates data normalization and preparation from virtually any source. By automating these processes, organizations streamline workflows, improve efficiency, and reduce the risk of human error.

Altair RapidMiner

Advanced analytics

RapidMiner supports visual analytics across real-time, time-series, and historical data. Dashboards refresh at nanosecond rates and are designed without requiring users to write code. Teams can build dashboards for post-trade analytics, anomaly detection, and KPI tracking. This enables faster insights and broader access to analytics across the organization.

Knowledge graphs

A semantic, graph-based data fabric layer can be applied over existing enterprise data landscapes. This adds real-world meaning to structured and unstructured data sources. Data is constructed into knowledge graphs at enterprise scale. This approach eliminates data silos and enables new levels of on-demand business insight by connecting analytics, AI, and operational data.

IoT capabilities

RapidMiner extends analytics to smart products and connected systems. Organizations can quickly build scalable and secure web and mobile applications that communicate with devices in real time. The platform supports fast data storage and querying, large-scale user onboarding, and fine-grained access control.

Altair HyperWorks

Altair HyperWorks is one of the most comprehensive computer-aided engineering (CAE) platforms available today. This platform introduces powerful innovations in physics-based simulation, high-performance computing (HPC), and AI. The latest release brings together physics solvers, multiphysics integration, and machine learning within a unified engineering environment. Discover the key features of Altair HyperWorks:

Accelerated model build and assembly

Engineering teams can now manage large and highly detailed assemblies with greater efficiency. This reduces development timelines for enterprise-scale simulations.

- Large and complex assemblies load and update almost instantly, minimizing delays during model preparation.
- Model building, meshing, and connector creation are significantly faster to streamline setup for intricate structures.
- Integrated data management ensures consistency through shared standards across teams and programs.
- Enhanced navigation and editing tools deliver smooth performance even when working with massive assemblies.

AI-driven simulation and design exploration

Advanced intelligent modeling capabilities enable rapid design exploration. This delivers near-instant predictions and accelerates validation across structural, thermal, and multiphysics disciplines.

- Generative algorithms automatically develop and refine optimized geometries, which speeds up early-stage design.
- GPU acceleration dramatically reduces training time for reduced order models (ROMs).
- Expanded AI coverage supports predictions across additional domains, such as vectors and smoothed-particle hydrodynamics (SPH).
- Browser-based tools allow users to generate data, train models, and deploy AI-driven simulations without installation.

Multiphysics integration for complex systems

Unified solvers and cross-domain coupling enable accurate and efficient multiphysics simulations to improve reliability from design through validation.

- AI-assisted acceleration enhances solver efficiency and shortens iteration time.
- Advanced optimization methods balance electromagnetic performance with mechanical durability for improved motor and system designs.
- Simplified workflows streamline reliability testing for electronic and battery systems.
- Electromagnetic simulations run up to 40% faster, and propagation modeling up to 20 times faster.
- Expanded radar and EMC capabilities for next-generation applications.

Altair HyperWorks

Advanced structural and impact analysis

Enhancements in structural and impact simulation deliver improved accuracy, speed, and correlation with real-world performance for high-fidelity models.

- Increased precision with automatic mesh refinement during topology optimization.
- Expanded response-spectrum capabilities provide deeper insight into dynamic behavior and load prediction.
- Broader compatibility with common crash models simplifies data exchange and reuse.
- New composite and foam material models enable more realistic impact behavior and improve test correlation.

Particle, fluid, and material behavior

New modeling methods provide the true behavior of particle interactions and bulk materials. This improves safety and performance simulations while also providing new manufacturing materials.

- Shape-based particle modeling more accurately represents bulk flow and packing behavior.
- Python-driven automation streamlines and customizes discrete element method (DEM) workflows.
- Coupled solvers support advanced studies of high-temperature environments and battery safety.
- Expanded manufacturing material models enhance realism across engineering simulations.

Enhanced design and motion exploration

Improved visualization and motion modeling tools provide engineers with greater flexibility when evaluating and refining designs.

- Multi-window analysis enables side-by-side comparison of results for faster decision-making.
- Implicit modeling and warp-up tools allow precise draping and surface-based geometry adjustments.
- Solver outputs can be saved in common formats, simplifying downstream data sharing and AI model training.
- Motion enhancements introduce expression-based inputs, modular assemblies, and mirrored systems for quicker setup and iteration.

Altair HPCWorks

Altair HPCWorks is a high-performance computing (HPC) and cloud platform designed to help organizations manage complex computing workloads across on-premises, cloud, and hybrid environments. The platform supports HPC and high-throughput computing workloads while helping teams improve productivity, optimize resources, manage costs, and simplify system administration. Discover the key features of Altair HPCWorks:

Improve workload management

Effective workload management is essential for maintaining productivity in HPC environments. Altair HPCWorks includes advanced workload management and job scheduling capabilities designed to support a variety of computing requirements. The platform supports storage-aware scheduling while also providing monitoring, reporting, forecasting, budgeting, I/O profiling, and flow dependency analysis. These capabilities help organizations improve throughput and better align computing resources with business priorities. Altair HPCWorks also supports advanced scheduling environments, including exascale workloads, distributed computing environments, hardware emulation systems, and high-volume operations for common semiconductor design.

Streamline HPC environments

Managing HPC infrastructure can become difficult as environments grow and become more complex. Altair HPCWorks helps administrators maintain productive HPC environments with centralized tools for managing, optimizing, and forecasting resources. The platform includes advanced analytics that support data-driven planning and decision-making. Administrators can perform workload simulations and what-if analysis to determine the most effective ways to scale resources and manage cloud computing, HPC clusters, and local/distributed systems.

Enhance team collaboration

Engineering and research teams often need access to computing resources from multiple locations. Altair HPCWorks allows users to share work, edit application data, and manage workloads without downloading large files, ensuring everyone can access critical HPC resources without an IT expert. The platform's HPC portal allows users to run solvers, view progress, manage data, and access 3D remote visualization through web, desktop, or mobile interfaces. Its open architecture also allows organizations to integrate third-party applications without additional software development, making job submission quick and easy.

Altair HPCWorks

Reduce license and infrastructure costs

Software licensing and resource allocation can become major expenses in HPC environments, especially for specialized applications such as electronic design and automation (EDA).

Altair HPCWorks includes tools for license allocation, management, and optimization that help organizations reduce licensing costs and improve utilization. Teams can use data analysis and visualization tools to better understand software usage and make informed decisions about future investments. The platform also supports license sharing across multiple locations and business units to improve efficiency and reduce unnecessary software spending.

Expand computing capacity with hybrid cloud resources

Hybrid cloud computing continues to grow as organizations scale beyond traditional data centers. Altair HPCWorks supports hybrid cloud computing and cloud bursting strategies that help organizations expand resources during peak workloads. The platform helps organizations migrate compute-intensive workloads to the cloud while supporting multi-cloud deployments and flexible resource provisioning. Automation tools simplify cluster management, while spend management tools help teams monitor and control cloud costs, reducing expenses and improving time to results.

Simplified HPC deployment with Altair Unlimited

Altair HPCWorks includes Altair Unlimited as a part of a turnkey platform available both on-premises and in the cloud. Altair Unlimited combines software, system administration, and infrastructure services into a single platform with a user-friendly web portal. The platform also provides unlimited use of a wide range of Altair solver software for mechanics, fluids, electromagnetics, optimization, and visualization. With it, teams can run CAE software on a secure and scalable platform that simplifies access to HPC infrastructure.

Core solutions within Altair HPCWorks

The Altair HPCWorks platform includes several solutions designed to support HPC management and accessibility, including:

- [Altair PBS Professional](#)
- [Altair Access](#)
- [Altair Accelerator](#)
- [Altair Unlimited](#)

Interested in implementing these Altair tools in your workflows? [Contact us.](#)