TRANSFORMING ENGINEERING:

The Strategic Advantage of Flexible, Integrated Simulation Solutions

DASSAULT SYSTEMES

INTRODUCTION

Engineering organizations worldwide face mounting pressure from fragmented simulation tools, rising software costs and the constant demand for faster innovation cycles. Traditional organizational approaches that require managing disconnected data streams, juggling multiple licenses and navigating complex pricing structures are no longer sustainable. SIMULIA is transforming this landscape by unifying modeling, simulation and data management on the **3DEXPERIENCE**® platform, delivering a comprehensive solution with flexible licensing that optimizes spending while accelerating product development.

At SIMULIA, we address the core challenges of simulation-driven design: data silos, file-based data exchange, license complexity, resource inefficiencies and unpredictable costs. Our goal is to:

- Provide cloud-enabled scalability and a flexible licensing model for adaptable simulation capabilities and cost predictability.
- Remove barriers between physics domains.
- Deliver seamless multiphysics simulation that accurately reflects real-world product behavior.

By consolidating previously fragmented workflows into a single, cohesive environment, engineering teams can focus on innovation rather than managing tools.

This comprehensive approach delivers tangible benefits, including reduced cycle times, improved product performance and significant cost savings that directly impact the bottom line.

> “The shift toward a connected simulation process represents more than just technological advancement—it's a strategic imperative for organizations seeking competitive advantage through digital transformation.

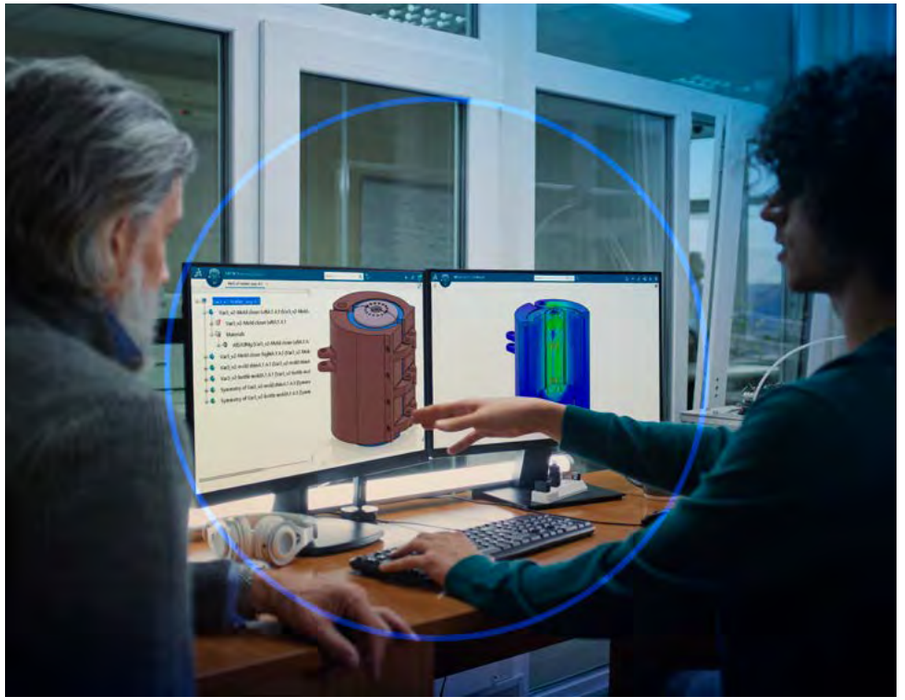
PROCESS TRANSFORMATION

Unified Modeling and Simulation (MODSIM) revolutionizes traditional workflows by integrating all simulation activities within the **3D**EXPERIENCE platform. This unified environment eliminates the inefficiencies associated with data exchange between disconnected tools, creating a seamless connection between design and analysis phases.

Seamless Design Integration

The foundation of MODSIM lies in its common data model, which ensures that geometry changes automatically propagate to all simulation models. This eliminates the manual rework typically required when design modifications occur, reducing human error and accelerating the validation process. Engineers can confidently explore design alternatives, knowing that simulations will accurately reflect the latest design iterations while ensuring full traceability.

Design exploration becomes systematic and comprehensive through the use of automated parametric studies. Rather than running individual simulations manually, MODSIM enables engineers to define design spaces and automatically evaluate multiple configurations. This approach identifies optimal solutions faster while reducing the uncertainty associated with limited design exploration.



Faster time to market[1]

Reduce late-stage failures[2]

Speeds innovation, cuts uncertainty[3]

Reduce cost[4]

1—Hyundai Everdigm, Knust-Godwin, METSÄ BOARD 2—Neta Auto, 3—Knust-Godwin, Assystem, METSÄ BOARD, AIRBUS 4—Neta Auto, CALOI

PROCESS TRANSFORMATION: AI-POWERED PERFORMANCE PREDICTION

Advanced artificial intelligence (AI) and machine learning (ML) capabilities transform how product development teams approach simulation. Creating a Virtual Twin Physics Behavior model enables rapid evaluation of design options, providing performance predictions in seconds rather than hours.

AI-enabled MODSIM can help create reusable, high-value simulation workflow templates, ensuring the consistent application of best practices across the organization. This standardization frees simulation experts to focus on advanced challenges while enabling the broader team to utilize sophisticated analysis techniques.

This democratizes access to simulation, enabling those with limited simulation expertise to make informed decisions early in the development process.

UNIFIED LICENSING MODEL: SIMPLICITY AND FLEXIBILITY

Traditional simulation licensing models create operational complexity and resource waste. SIMULIA's Unified Licensing Model (ULM) addresses these challenges through a token-based system that adapts to project needs while eliminating license sprawl.

Dynamic Resource Allocation

The token-based approach enables organizations to access SIMULIA's simulation portfolio on the **3DEXPERIENCE** platform—including Abaqus, fe-safe, CST Studio Suite, PowerFLOW, Simpack, Tosca and Isight—through a shared licensing pool. SimUnit Tokens are reserved during usage and become available for other applications afterward, maximizing resource utilization across different physics domains and project phases.

This flexibility proves particularly valuable for organizations with varying simulation needs. A structural analysis team can use tokens in the morning, while electromagnetic specialists access the same license pool in the afternoon. The dynamic allocation eliminates the waste associated with dedicated licenses that remain idle during off-peak periods.

Flexibility in Access

Use tokens to unlock a variety of SIMULIA tools, adapting to your project's needs and real time.

Cost Efficiency

Eliminate the overhead of multiple licenses; One shared pool covers every application.

Collaborative Optimization

Enable multiple teams to leverage licenses efficiently across departments.

OPTIMAL COLLABORATION

Multiple teams can use licenses efficiently across departments, eliminating the artificial barriers that traditional licensing creates. Rather than purchasing separate licenses for each physics domain or user group, organizations can optimize their total simulation investment across all applications and users.

In addition to the SimUnit Tokens, the model supports peak usage coverage through consumable credits. This dual approach accommodates flexible workloads that can be supported using credits for extended analyses.

Scalable Investment Strategy

Organizations can profit from this scalability, ensuring that license costs align with actual usage patterns rather than theoretical maximum requirements.

The transition to the Unified Licensing Model enables scalability and simplifies renewal schedules with more predictable budgeting.

CLOUD-ENABLED SCALABILITY FOR MODERN ENGINEERING

Modern engineering challenges demand computational resources that exceed traditional desktop capabilities. SIMULIA's cloud-enabled approach provides on-demand access to high-performance computing (HPC) resources, eliminating infrastructure limitations and enabling organizations to scale their simulation capabilities dynamically.

On-Demand Computing Power

3DEXPERIENCE platform on the cloud offers HPC-on-demand capabilities. This enables engineers to scale computational cores according to specific analysis requirements. Complex simulations that might require days on local workstations can be completed in hours when distributed across cloud-based parallel computing resources. This acceleration enables more thorough design exploration within project timelines, improving final product quality.

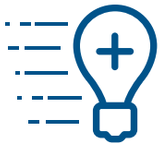
Pre-configured cloud HPC environments eliminate the complexity typically associated with setting up parallel computing. Engineers can access enterprise-grade computing resources immediately, without requiring extensive IT support or infrastructure investment.

HPC Power Within Reach

Moderate Initial Investment

Predictable Budgeting

Hybrid Usage Flexibility



Focus on Innovation, Not Infrastructure

Democratizing Simulation and Analysis

MINIMAL IT MANAGEMENT

The rapidly deployable Software as a Service (SaaS) compute service can be operational within a day, providing immediate productivity gains.

The cloud environment also ensures access to the latest computational hardware, simulation methodologies and solver improvements. Organizations benefit from continuous capability enhancement without managing software updates or license installations across multiple systems.

Secure Collaborative Environment

Cloud-native collaboration tools enable geographically distributed teams to work together effectively while maintaining intellectual property protection. Secure sharing mechanisms ensure that the right stakeholders access appropriate models and results, fostering innovation without compromising confidentiality. This capability proves particularly valuable for organizations with global engineering teams or those collaborating with external partners and suppliers.

The cloud environment also ensures access to the latest simulation methodologies and solver improvements. Organizations benefit from continuous capability enhancement without managing software updates or license installations across multiple systems.

With SaaS, all IT hardware required to run Dassault Systèmes software, including network servers, data storage and cloud compute resources, is provided on an elastic, on-demand basis with any of our **3DEXPERIENCE** roles.

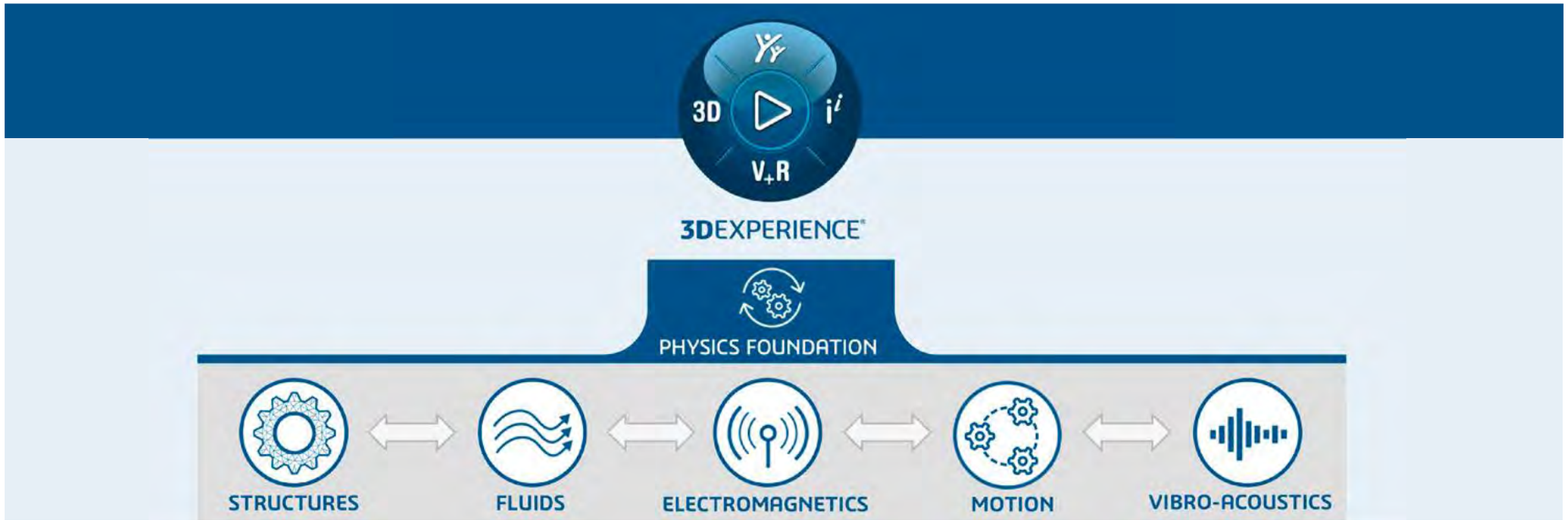
COMPREHENSIVE MULTIPHYSICS SIMULATION VALUE

Engineering challenges rarely involve a single physics domain. Real-world products experience complex interactions between structural, thermal, fluid and electromagnetic phenomena. SIMULIA addresses this reality through comprehensive multiphysics capabilities that enable engineers to analyze these interactions within a single environment.

Broad Physics Portfolio

The SIMULIA portfolio encompasses linear and advanced nonlinear **Finite Element Analysis (FEA)**, covering structural mechanics from simple stress analysis to complex contact and material nonlinearities. **Electromagnetic (EM)** capabilities span the frequency spectrum, from low-frequency motor analysis to high-frequency antenna design. **Computational Fluid Dynamics (CFD)** tools analyze everything from internal flows to complex aerodynamic interactions, while **Multibody Dynamics (MBD)** describes mechanical system behavior and **Vibro-acoustics** addresses challenges including noise, vibration and harshness **(NVH)** characteristics.

This comprehensive coverage eliminates the need for multiple specialized tools from different vendors. Engineers can address coupled physics problems directly, analyzing how thermal expansion affects structural performance, how electromagnetic heating influences material properties or how fluid-structure interactions impact system stability. **These coupled analyses provide insights that single-physics approaches cannot deliver**.



PREDICTABLE PRICING IN AN UNCERTAIN MARKET

SIMULIA maintains transparent, stable pricing that enables confident long-term planning. This pricing stability, combined with powerful simulation capabilities, delivers exceptional value in the current market environment.

Cost-Effective Performance

The combination of stable pricing and comprehensive capabilities delivers superior value compared to fragmented alternatives. Organizations can access advanced multiphysics simulation capabilities at a lower total cost of ownership, particularly when considering the efficiency gains from unified workflows and reduced IT overhead.

The Unified Licensing Model further enhances cost effectiveness by eliminating the overhead associated with multiple vendor relationships, diverse support contracts and complex license management. These administrative savings compound over time, **delivering ongoing operational benefits beyond the direct software costs**.

TRANSFORM YOUR ENGINEERING CAPABILITIES WITH SIMULIA

The engineering landscape continues to evolve, with successful organizations using flexible, integrated simulation capabilities to accelerate innovation while effectively managing costs. The SIMULIA approach addresses the fundamental challenges facing modern engineering teams: fragmented tools, escalating costs, resource inefficiencies and collaboration barriers.

By incorporating MODSIM capabilities, comprehensive multiphysics simulation, cloud-enabled scalability, unified licensing and predictable pricing, SIMULIA enables organizations to optimize their simulation investments while enhancing their engineering capabilities.

Organizations implementing SIMULIA solutions gain competitive advantages through faster time-to-market, improved product performance and reduced development costs. These benefits compound over time, creating sustainable competitive advantages in increasingly demanding markets.

Ready to optimize your simulation environment and unlock your team's full potential? Request a comprehensive analysis of your current simulation environment and discover how SIMULIA can transform your engineering capabilities while optimizing costs. Contact us today to begin your journey toward unified simulation excellence.

AI/ML-powered MODSIM

Avoid disconnected workflows between CAD and CAE. MODSIM integrates modeling and simulation, reducing inefficiencies and enabling scalability.

Flexibility Without Complexity: Unified Licensing Model

SIMULIA's token-based Unified Licensing Model adapts to project needs, eliminating license sprawl and simplifying operations.

Cloud-Enabled Scalability and HPC

SIMULIA's token-based Unified Licensing Model adapts to project needs, eliminating license sprawl and simplifying operations.

Comprehensive Multiphysics Toolset, One Strategy

SIMULIA's token-based Unified Licensing Model adapts to project needs, eliminating license sprawl and simplifying operations.

Predictable Pricing

SIMULIA's token-based Unified Licensing Model adapts to project needs, eliminating license sprawl and simplifying operations.

Dassault Systèmes is a catalyst for human progress. Since 1981, the company has pioneered virtual worlds to improve real life for consumers, patients and citizens.

With Dassault Systèmes' **3D**EXPERIENCE platform, 370,000 customers of all sizes, in all industries, can collaborate, imagine and create sustainable innovations that drive meaningful impact.

For more information, visit: **www.3ds.com**

3DEXPERIENCE®

Europe/Middle East/Africa
Dassault Systèmes
10, rue Marcel Dassault
CS 40501
78946 Vélizy-Villacoublay Cedex
France

Asia-Pacific
Dassault Systèmes
17F, Foxconn Building,
No. 1366, Lujiazui Ring Road
Pilot Free Trade Zone, Shanghai 200120
China

Americas
Dassault Systèmes
175 Wyman Street
Waltham, Massachusetts
02451-1223
USA

Virtual Worlds for Real Life

DASSAULT SYSTEMES