

ENGINEER REAL-WORLD PERFORMANCE WITH ABAQUS

Predict Behavior, Reduce Prototypes and Accelerate Development

Across industries, engineers face a familiar challenge: designs that look perfect in CAD often behave differently under real-world conditions. Physical testing is costly and slow and product performance depends on complex nonlinear and coupled physics at scales that traditional engineering analysis tools aren't able to address.

Abaqus changes that.

Whether used standalone or powering structural simulation in the 3DEXPERIENCE® platform, Abaqus delivers advanced scalable linear and nonlinear simulation and realistic material modeling. When accessed through the 3DEXPERIENCE platform, teams also benefit from seamless links from design to validation. Together, these capabilities help predict product behavior, reduce the need for prototypes, optimize performance, and innovate without compromise.

WHAT ABAQUS CAN DO FOR YOU



Nonlinear Structural Analysis

Challenge: "Complex deformations and contacts are critical to the behavior I'm trying to simulate."

Solution: Abaqus captures large deformations, contact, and nonlinear material behavior with unmatched accuracy, so your models mirror reality.



Multiphysics Coupling

Challenge: "Interactions between structures, fluids, electrical, and thermal loads are hard to analyze."

Solution: Abaqus is a coupled-field solver for structural, thermal, acoustic, electrostatic, pore pressure, and more, and provides co-simulation interfaces for external field solvers.



Cloud Solution

Challenge: "I need a comprehensive, scalable environment for structural simulation."

Solution: Abaqus on 3DEXPERIENCE Cloud combines class-leading FEA and cutting edge results visualization with powerful compute options and flexible licensing for any engineering challenge.



Advanced Material Modeling

Challenge: "Material responses have complex dependency on time, stress, temperature, and other fields."

Solution: Abaqus simulates metals, composites, rubbers, and other materials with high-fidelity, field-dependent models that help engineers design with confidence.



Linear Dynamics

Challenge: "Legacy tools for NVH and durability don't scale or accurately account for nonlinear base states."

Solution: Abaqus provides a unified model interface for linear and nonlinear simulations with eigensolvers that can run across hundreds of CPU cores on multiple compute nodes.



Implicit/Explicit Interoperability

Challenge: "My workflows rely on both implicit and explicit FEA simulation"

Solution: Abaqus/Standard and /Explicit provide implicit and explicit capabilities under a common interface with extensive interoperability to efficiently address complex multi-step structural workflows.

WHAT'S NEW AND BETTER IN ABAQUS

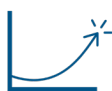
Nonlinear Materials	Mechanics & Contact	Performance & Scalability
Elastomer and Polymer Modeling Enhancements	Surface wear	Explicit GPU Acceleration
Material Cure Modeling	Improved Submodeling	DMP Eigensolvers for Frequency and Buckle Analyses
Frequency and Field Variable Dependent Damping	Surface Tension	GPU Iterative Sparse Solver
Paperboard	Coupled Battery Multiphysics	Fourier and Inverse Fourier Transform for Modal Analysis

THE REAL-WORLD PAYOFF: WHAT ABAQUS MEANS FOR YOUR BOTTOM LINE



Reduce Physical Prototypes

Validate designs virtually to reduce costly prototype iterations.



Accelerate Product Development

Identify performance issues earlier to reduce redesign cycles and keep projects on schedule.



Design with Confidence

Capture real-world behavior
with high-fidelity simulation
to support confident
engineering decisions.



Unified Simulation Environment

Connect design and simulation workflows to improve collaboration and continuity.

WHY ENGINEERS CHOOSE ABAQUS

What Slows You Down	How Abaqus Makes It Easier
Disconnected CAD–CAE workflows cause data loss and delays	Maintain design–simulation continuity with 3DEXPERIENCE
Simulations don't scale on high-core CPUs	Solve larger models faster with scalable CPU and GPU performance
Simplified models reduce prediction accuracy	Improve prediction accuracy with realistic material and multiphysics behavior
Different simulation tools with multiple models	Reuse models across simulation approaches to reduce setup time and complexity

Integrated with the **3DEXPERIENCE** platform, Abaqus extends simulation beyond analysis by connecting design, engineering, and validation workflows in a single collaborative environment, helping teams innovate faster and with greater confidence.

Abaqus—Simulate Reality. Engineer Confidence.

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' **3DEXPERIENCE** 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**

Virtual Worlds for Real Life

