

3DEXPERIENCE **WORKS** STRUCTURAL SIMULATION PORTFOLIO

	STRUCTURAL DESIGNER	STRUCTURAL ENGINEER	STRUCTURAL PERFORMANCE ENGINEER	DURABILITY PERFORMANCE ENGINEER	STRUCTURAL MECHANICS ENGINEER	DURABILITY AND MECHANICS ENGINEER
KEY CAPABILITIES						
INTEGRATION WORKFLOW						
SOLIDWORKS® Connector Save SOLIDWORKS data on the cloud-based 3DEXPERIENCE® platform directly from SOLIDWORKS	*	*	*	*	*	*
Full Design Associativity Enable efficient what-if scenarios that update your simulation model for any change made with a CAD application connected to the platform	●	●	●	●	●	●
USER INTERFACE						
User Assistant Follow an interactive wizard to set up, run, and review results of simulations	●	●	●	●	●	●
Physics Methods Reuse Customize the User Assistant to streamline the setup and solving of complex simulations			●	●	●	●
PLATFORM						
Data Access and Management Access the latest product design information from a single, centralized, secure location on the cloud	●	●	●	●	●	●
Engineering Collaboration Collaborate in real time, exchange ideas, and manage tasks across disciplines on the cloud	●	●	●	●	●	●
Lightweight Results Review Review and share simulation results in real time on the cloud	●	●	●	●	●	●
SOLVING TECHNIQUES						
Abaqus Implicit Static Analysis Solve static problems of deformable parts and assemblies	●	●	●	●	●	●
Abaqus Implicit Dynamic Analysis Solve nonlinear transient and quasi-static problems such as snap fits			●	●	●	●

KEY CAPABILITIES

Abaqus Explicit Dynamic Analysis

Solve nonlinear dynamic problems such as drop test and impact

•

•

fe-safe Durability Analysis

Solve linear and nonlinear fatigue analysis with stress-based and strain-based fatigue methods allowing high-cycle and low-cycle fatigue analysis

•

•

SCENARIO

Linear Analysis

Run static, thermal (steady-state), frequency, and buckling studies with frictionless contact interactions and small sliding

•

•

•

•

•

•

Advanced Linear Analysis

Run modal transient and model harmonic studies

•

•

•

•

•

Nonlinear Analysis

Run nonlinear static, thermal (transient), visco/creep studies and axisymmetric idealization of 3D models

•

•

•

•

Advanced Nonlinear Analysis

Study explicit dynamic, post-buckling, random vibrations, complex frequencies (with possible preloading effects), piezoelectric response, and unstable collapse of nonlinear structures

•

•

Sequential Multi-Step Simulations

Set up automatic sequential loading in one simulation

•

•

•

•

Abaqus General Contact

Automatically set up component contact

•

•

•

•

•

•

Design Exploration

Find the best design based on performance objectives, working with SOLIDWORKS and 3DEXPERIENCE parameters

•

•

Durability Analysis

Run realistic fatigue loading defined by any number of structural events from elastic or elastic-plastic structural analysis; multiple load events can be used to replicate entire test schedules, including inter-event transitions and manufacturing effects

•

•

MODEL

Connections

Set up modeling of multiple components in an assembly

•

•

•

•

•

•

Comprehensive Meshing Capabilities

Create high-quality meshes for solids, shells, and beams

•

•

•

•

•

Rule-Based Meshing

Set meshing size and specifications (holes, fillets) for automatic high-quality mesh creation

•

•

•

•

•

Model Assembly Design

Apply automated modeling to rapidly set up a simulation model mesh on a complex assembly

•

•

•

•

KEY CAPABILITIES

Geometry Preparation & Simplification

Automatically remove undesired geometry (holes, fillets, logos), extract mid-surface, and partition geometry for hex meshing

					●	●
--	--	--	--	--	---	---

MATERIALS

Nonlinear Materials

Explore a wide range of materials including the following properties: hyper-elasticity, plastic or permanent deformation, creep deformation, viscoelasticity, and more

		●	●	●	●	●
--	--	---	---	---	---	---

Fatigue Materials

Use database of fatigue materials with high-quality stress- and strain-based data for over 350 common materials

				●		●
--	--	--	--	---	--	---

Material Calibration

Use test data to calibrate model behavior

					●	●
--	--	--	--	--	---	---

RESULTS

Basic Post-Processing Tools

Generate reports, contour/vector/iso-surface plots

●	●	●	●	●	●	●
---	---	---	---	---	---	---

Advanced Post-Processing Tools

Create XY plots (field, history), path plots, view cuts

	●	●	●	●	●	●
--	---	---	---	---	---	---

Material Rendering

Create stunning visuals coupling material rendering with simulation results

	●	●	●	●	●	●
--	---	---	---	---	---	---

High-Performance Visualization

Accelerate the visualization of results, even on large models

	●	●	●	●	●	●
--	---	---	---	---	---	---

COMPUTATION

Local and Cloud Computing

Run simulations on your local computer or in the cloud

●	●	●	●	●	●	●
---	---	---	---	---	---	---

High Performance Computing (HPC)*

Expand the computing capacity of your local computer and on the cloud

●	●	●	●	●	●	●
---	---	---	---	---	---	---

● *Included*

* *Requires an additional role*

Our 3DEXPERIENCE® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the 3DEXPERIENCE Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our 3DEXPERIENCE platform and applications, our customers push the boundaries of innovation, learning and production.

Dassault Systèmes' 20,000 employees are bringing value to more than 270,000 customers of all sizes, in all industries, in more than 140 countries. For more information, visit www.3ds.com.



3DEXPERIENCE®