3DEXPERIENCE®

STRUCTURAL ANALYSIS ENGINEER
3DEXPERIENCE USER ROLE

ASSESS STRUCTURAL INTEGRITY OF PRODUCTS WITH POWERFUL FINITE ELEMENT BASED SIMULATION TECHNIQUES TO GUIDE DESIGN DECISIONS

Design Simulation powered by proven world-class Abaqus Realistic Simulation technology in a seamless, intuitive, and modern user interface within the **3D**EXPERIENCE® platform.

Structural Analysis Engineer provides a broad environment to conduct structural static, frequency, buckling, modal dynamic response, and structural thermal simulation of parts and assemblies within the **3D**EXPERIENCE platform. It boosts innovation in product engineering and fosters collaboration in an intuitive environment using state-of-the art Abaqus simulation technology.

State of the art interaction between CAD, PLM, and CAE

With Structural Analysis Engineer, users build simulation models directly on the design geometry. Tight associativity with CATIA and SOLIDWORKS means that simulation and CAD always remain synchronized even after design changes. It provides access to advanced simulation technology within a consistent and intuitive interface.

Simulation management and collaboration leveraging the 3DEXPERIENCE platform

Simulation is managed as a core value of the 3DEXPERIENCE platform through the capture, management, and re-use of simulation IP allowing it to become a true corporate asset.

The 3D Space of the **3D**EXPERIENCE platform offers for all users simplified and powerful management of data and content. The embedded 3D Search enables engineers to easily find data such as geometry, material and simulation models improving productivity.

High performance results visualization, particularly for very large models

High performance visualization tools support efficient post-processing of large-scale simulation data including an option to use remote machines for rendering and visualization computation. Structural Analysis Engineer enables interrogation of realistic simulation results with speed, clarity, and control on the desktop for enhanc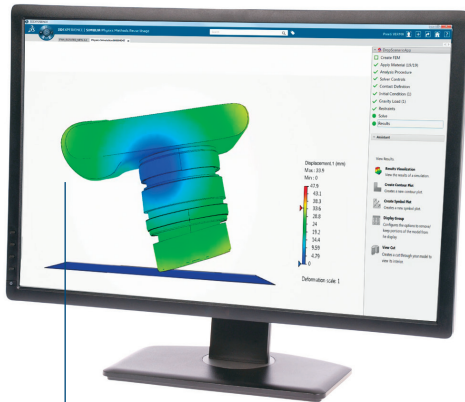ed decision making. Extensive tools and controls for results display can be used for advanced and collaborative post-processing while utilizing High Performance Computing (HPC) resources to perform results visualization. Simulation Review application offers Web based visualization of the geometry and simulation results for a unique collaborative experience around Simulation assets.

Key Functionalities

Structural Analysis Engineer delivers proven world class Abaqus technology in a seamless and powerful user interface on the **3D**EXPERIENCE platform so that design engineers can get the benefits of virtual testing for informed technical decisions-makings. It offers:

- Analysis of sequential loading events (mult-step analysis)
- Linear and nonlinear structural static analysis
- Thermal and sequential thermal-structural analysis
- Dynamic response analysis including frequency, modal transient and modal harmonic analysis
- Advanced nonlinear material options including engineering plasticity for metals and hyper elasticity for rubber
- Simulates realistic behavior under a variety of structural loading and boundary conditions
- Robust meshing tools, including rule-based meshing, with 1D, 2D, and 3D elements
- Advanced capabilities for deformable, intermittent contact (surface pairs, automatic detection, general contact and initialization) between parts and assemblies
- A wide selection of connection and connector options for modeling fasteners and mechanisms
- Efficient post processing tools to interpret and understand product behavior

Part of a complete SIMULIA portfolio

Structural Analysis Engineer is one of the roles among the complete SIMULIA **3D**EXPERIENCE portfolio so manufacturing companies can find adequate solution to their evolving needs, always in the same user interface. From Design Simulation to Design Optimization to Multiphysics Simulation to Simulation process Management, SIMULIA delivers realistic simulation applications that enable users to explore real world product behavior.

Image 1: Backhoe arm mechanism arm actuation model analyzed with Structural Analysis Engineer to optimize product design.

Our **3D**EXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3D**EXPERIENCE® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 210,000 customers of all sizes in all industries in more than 140 countries. For more information, visit **www.3ds.com**.

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