DASSAULT SYSTEMES

SIMULIA

3DEXPERIENCE R2017x

SIMULIA STRUCTURAL VALIDATION

Structural Validation is an application included in the Stress Engineer role for structural and thermal simulation in a guided environment.

Geometry Associativity and Import

- Full support and associativity with 3DEXPERIENCE CATIA and SOLIDWORKS roles
- CATIA V5 geometry import
- SOLIDWORKS geometry import
- Associative SOLIDWORKS update
- Additional translators for common CAD formats

User Assistance

- Embedded Simulation Assistant for a guided user experience
- Control of simulation "contributing parts"
- Simulation Manager for easy review and modification of the simulation set up

Meshing

- Automatic tet meshing (surface meshing with tet filler by default)
- Automatic Octree 3D tet meshing (failover if default does not work)
- Adaptive remeshing (based on Octree 3D tet mesher)
- User mesh controls: global mesh density and local mesh specifications
- Mesh creation and visibility controls

Mesh Import and Export

- Abaqus input (.inp) files
- Nastran bulk data (.bdf) files

Material Properties

- Density
- Elasticity
  - Isotropic
  - Hyperelasticity
- Plasticity
  - Isotropic
  - Hill and Mises yield criterion
  - Tabular and Johnson-Cook hardening
- Temperature dependence
- Fatigue properties
  - Brown Miller: Morrow
  - Principal strain: Morrow
  - Cast iron: SWT

Material Assignment

- Material assignment, edit, and review tools

Material Import

- Material import from Abaqus input (.inp) file

Section Properties

- Solid

Connections

- Virtual bolt creation and replication
- Pin
- Spring
- Rigid

Procedures

- Linear static
- Nonlinear static
- Frequency (Lanczos)
- Linear buckling
- Heat transfer (steady state)
- Sequential thermal-structural
- Easy switch between linear and nonlinear static

Interactions

- General contact
- Contact interaction property (friction)
- Surface-based contact
- Contact detection
- Show contacting/disconnected/intersecting parts

Initial Conditions

- Temperature (for thermal-structural)

Loads

- Pressure
- Remote force
- Remote torque
- Bolt force
- Gravity
- Force
- Centrifugal force
- Applied translation
- Bearing load

Restraints

- Clamp
- Ball joint
- Displacement
- Temperature
- Slider
- Hinge
- Planar symmetry

Thermal Conditions

- Temperature
- Surface heat flux
- Volumetric heat source
- Radiation to ambient
- Film condition (convection)
- Gap conduction
- Gap radiation

Elements

- Abaqus C3D10I elements (for Structural, Frequency, and Thermal-Structural)
- Abaqus DC3D10 elements (for Thermal and Thermal-Structural)

Output

- Field output requests (automatic)

General Tools

- Clipping box
- Visualization management
- View and render settings
- Measure
- "Digger" to peel away parts

Execution

- Execution options: local interactive, local non-interactive, remote, cloud
- Execution licensing options: embedded(up to 4 cores included), tokens, consumable credits
- Job monitoring
- Store results on server or on local machine

Results Plots

- Model display (undeformed and deformed)
- Contour plot
- Interactive probing
- View cuts (with free-body force summation)
- Display groups
- Extrema display (min/max values)
- Fatigue life (repeats to failure)
- Active yielding plot (contour)
- Factor-of-safety plot (contour)
- Displacement plot (contour and vector)

- Mises stress plot (contour)
- Reaction force plot (contour and vector)
- Principal stress plot (tensor)
- Plastic strain (contour)
- Contact pressure plot (contour)
- Contact shear plot (contour)
- Compression-tension plot (contour)
- Simulation accuracy plot (contour)
- Frequency Mmode shape plot (contour)
- Buckling mode shape plot (contour)
- Temperature plot (contour)
- Heat flux plot (vector)
- Plot management
- Display control and
- rendering options

Display controls

- Rendering settings
- Legend controls
- Geometry display with results
- Plot layout control

Animation

- Animation player

Sensors

- Reaction force on selected restraints

Reports

- Word report
- PowerPoint report

Results Visualization Options

- Local
- Remote

PROCESS AUTOMATION

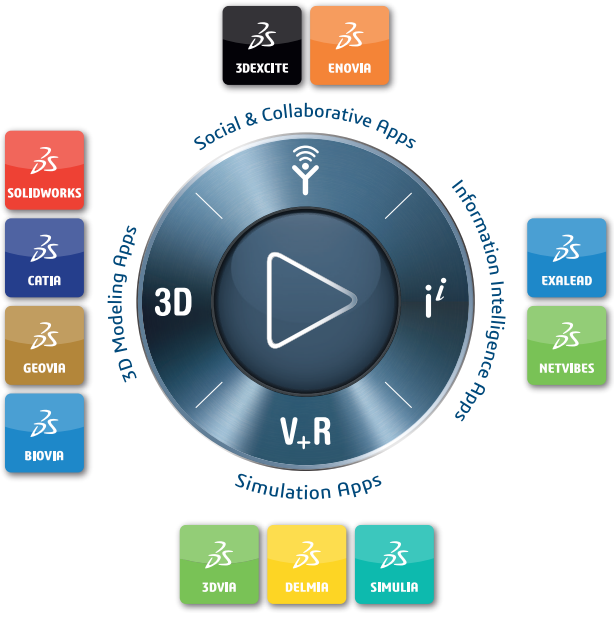
- VB scripting

SUPPORTED PLATFORMS

- Windows 7/8/10 64-bit

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