DASSAULT SYSTEMES

SIMULIA

3DEXPERIENCE R2017x

SIMULIA STRUCTURAL DURABILITY VALIDATION

Structural Durability Validation is an application included in the Stress Engineer role for durability assessment of designs 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
- Easy switch between linear and nonlinear static

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

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

Durability
- Load history
- Base surface finish
- Local surface finish

Elements
- Abaqus C3D10I elements (for Structural, Frequency, 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 estimate plot (contour)
- Fatigue life (repeats to failure)

- Plot management
- Display control and rendering options

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

Animation
- Animation player
- Animation options

Sensors
- Reaction force on selected restraints

Reports
- Word report
- PowerPoint report

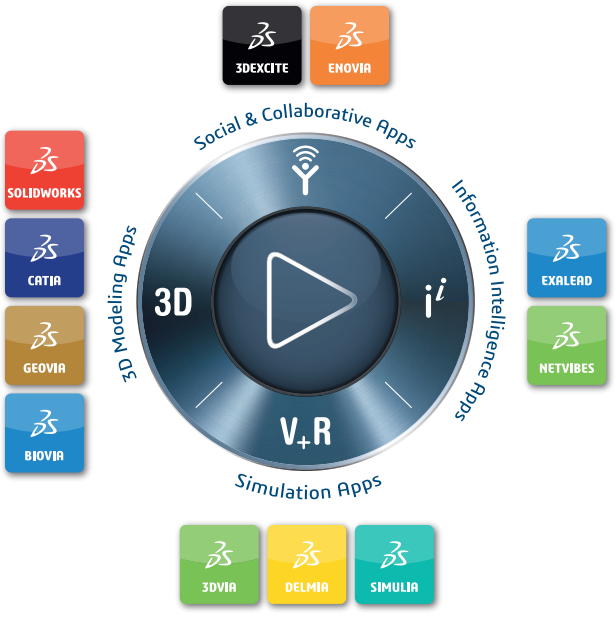
Results Visualization Options
- Local
- Remote

PROCESS AUTOMATION
- VB and Python scripting

SUPPORTED PLATFORMS
- Windows 7/8/10 64-bit

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