

Simcenter 3D environment for LS-Dyna

In addition to model definition capabilities, the LS-Dyna environment enables bi-directional import/export capabilities that enable you to import current or legacy LS-Dyna data files and results, as well as export run-ready LS-Dyna input data files.

Using Simcenter 3D to create LS-Dyna models

Simcenter 3D's powerful geometry editing and meshing capabilities are ideal for pre- and postprocessing models for LS-Dyna. Simcenter 3D simplifies the modeling process by integrating high-end analyst modeling tools with world-class geometry capabilities that assist you with developing analysis models faster than with traditional CAE preprocessors. Adding the LS-Dyna environment to Simcenter 3D enables you to build LS-Dyna run-ready input data files, so little or no intermediate

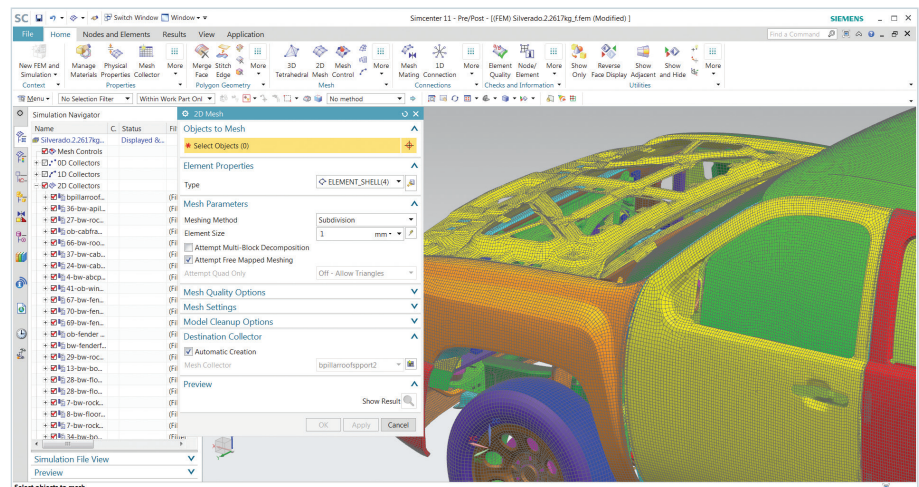
Accelerating pre- and postprocessing for impact analysis

Benefits

- Enables engineers using Simcenter 3D to generate finite element models for the LS-Dyna solver
- Simplifies the LS-Dyna modeling process by enabling engineers to create analysis models based on geometry
- Reduces or eliminates intermediate manual processing of data files by generating run-ready decks directly from Simcenter 3D
- Immerses engineers in the LS-Dyna environment by using familiar LS-Dyna terminology and extensive support of LS-Dyna-specific elements and entities

Summary

The Simcenter 3D environment for LS-Dyna enables engineers to build finite element models and define solution parameters for the LS-Dyna solver. The environment immerses engineers with familiar LS-Dyna language for element definitions, loads and boundary conditions, solution parameters and other common LS-Dyna nomenclature.



Dataset courtesy of the National Crash Analysis Center at George Washington University.

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processing is ever needed. In addition to building LS-Dyna models, the Simcenter 3D environment for LS-Dyna imports solution results directly from LS-Dyna .d3p results files into Simcenter 3D for postprocessing. The environment delivers import/export capabilities so you can import LS-Dyna data decks into Simcenter 3D for modification and then export run-ready decks for solution.

Elements and other entities

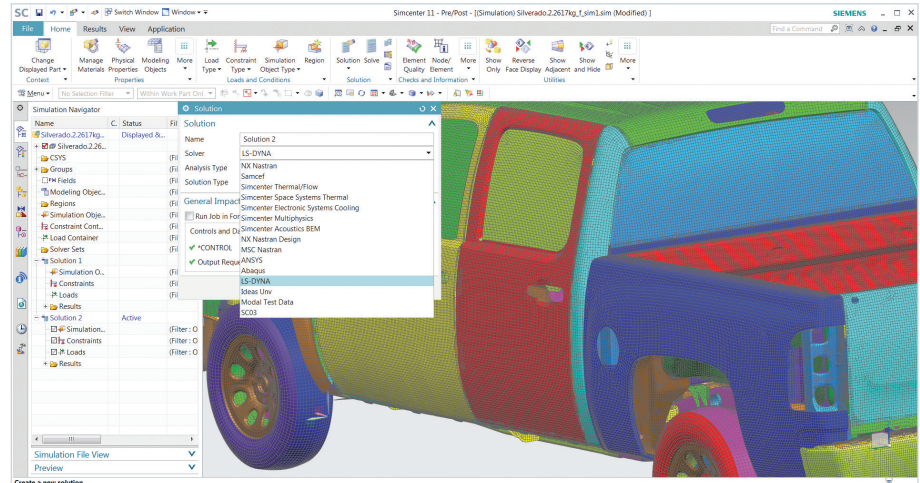
A wide variety of elements and other model entities are supported.

0D elements

- Element mass: Structural mass element
- Element inertia: Lumped inertia element assigned to a node

1D elements

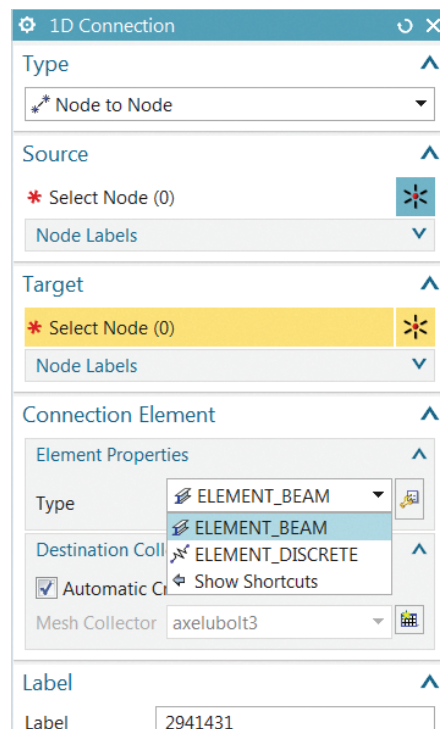
- Element beam: Two-node 1D linear beam element (beam, truss)
- Element beam offset: Section properties (created automatically when you define offset and use default orientation)
- Element beam orientation: Section properties (created automatically when you define orientation but not offset)
- Element beam offset orientation: Section properties (created automatically when you define both orientation and offset)
- Element discrete: Two-node 1D element (spring, damper)



2D elements

- Element shell (3), (4), (6), (8): Three-, four-, six- and eight-node 2D thin-shell elements
- Element shell thickness: Thickness extracted from midsurface (created automatically)
- Element shell offset: Thickness offset (created automatically when you define offset)

- Element shell beta: Material orientation (created automatically when you define the angle in element associated data)
- Element shell MCID: Material orientation (created automatically when you define material coordinate system in element associated data)
- Part composite keyword is supported in Simcenter 3D Laminate Composites



3D elements

- Element tshell (6), (8): Four-, six-, eight- and 10-node 3D solid Hex6 and Hex8 elements
- Element solid (4), (6), (8), (10): Four-, six-, eight- and 10-node 3D solid elements for isotropic materials
- Element solid ortho: Material orientation for orthotropic/anisotropic materials (created automatically when you define material orientation). Material orientation is defined by two vectors.

Boundary conditions

- Surface-to-surface contact
- Single point constraint
- Constrained node set
- Rigid wall definition
- Initial velocity

Note: A complete list of LS-Dyna export entity support is provided in the Simcenter 3D online help documentation.

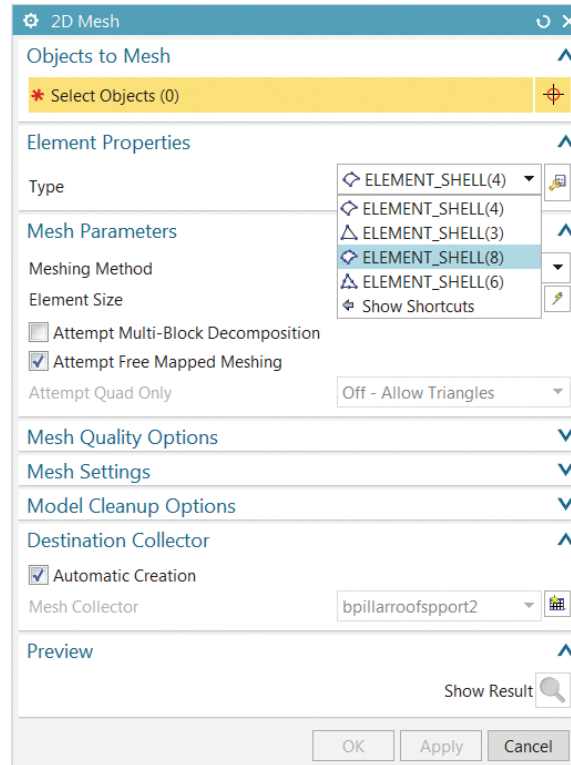
Compatibility

The LS-Dyna environment is compatible with the following LS-Dyna releases:

- LS-Dyna R9.1.0 or earlier

Supported hardware/OS

The LS-Dyna environment is an add-on module within the Simcenter 3D product suite. It requires a license of either Simcenter 3D Engineering Desktop or Simcenter 3D Structures as a prerequisite. It is available on all Simcenter 3D supported hardware/OS platforms (Windows and Linux).



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