Product Highlights

- Pre-Processor for creation of high-fidelity models for vehicle crash analysis and safety evaluation
- Management of highly complex models including submodeling and include files
- Dummy positioning, seatbelt routing and seat deforming
- Airbag folding, including reference geometry generation
- Mesh quality module and penetration checker

**Altair® HyperCrash®**

Highly Tuned Modeling Environment for Crash Analysis and Safety Evaluation

Altair HyperCrash is a highly tuned pre-processing technology specifically designed to automate the creation of high-fidelity models for crash analysis and safety evaluation. Through a comprehensive and procedure-oriented toolset, HyperCrash improves and simplifies complex problems of creating a quality crash model.

**Benefits**

- **Reduce Model Assembly and Load Case Set-up Time**
  Go from days to hours with advanced model management procedures
- **Built-in solver logic**
  HyperCrash has built-in solver rules to avoid modeling mistakes during creation of most entities
- **Fast, High-Quality Model Creation and Set-up**
  Easily manage penetrations, intersections, model assembly contact management and dummy positioning
- **Capture and Re-use Corporate IP**
  The HyperCrash database enables organizations to seamlessly support standard and proprietary corporate engineering procedures and data structures
- **Database-Driven Part Replacement**
  HyperCrash enables part replacement at all modeling levels – component, subsystem and complete assembly
- **Fast and User-Friendly Model Building Environment**
  - A generic data model simplifies and optimizes model creation and modifications
  - Interactive, hierarchical model and connection tree view streamlines model management

**Capabilities**

**GUI**

HyperCrash employs a modern graphical user interface (GUI) to provide streamlined processes for building complex crash simulation models. Users can visualize, organize and manage all levels of modeling data and information with a point-and-click access to the tree-style browser. In addition, HyperCrash provides a fast and intuitive toolset for preparation and set-up of analysis input decks.
- Full access and control over all modeling entities through an intuitive Model Browser
- Cross reference: exposes how a specific card is used and how it relates to different keywords
- Model Browser
  - View complete model (entities, materials, properties, contacts, etc.)
  - Control entity display
  - Define include content
  - Search

**Multiple Solver Support**

HyperCrash is a multi-solver preprocessor with comprehensive interfaces to RADIOSS and LS-DYNA. A huge library of dummies is supported, the model checker prevents user errors before the export of a model and numerous tailored panels help to set up models for both solvers. HyperCrash also has an interface to read and edit PAM-CRASH models.
HyperCrash is a suite of safety tools for crash simulation and analysis. It offers a user-friendly interface to set up, edit, and check rigid bodies. This module provides a streamlined, modern graphical user interface and comprehensive model browsing and navigation.

**Safety Tools Module**

- Comprehensive support for over a thousand keywords
- Complete dummy positioning module
- Conversion between all supported solvers
- Belt systems
- Joints
- Connections

**Mesh Editing And Model Connections**

Users can modify and edit crash meshes from within HyperCrash or take advantage of the seamless integration with HyperMesh. Dependencies like contacts, loads and boundary conditions will be updated automatically. HyperCrash also offers many methods and options for editing and tuning a mesh for a crash analysis:
- Adding, duplicating and moving nodes
- Finite element creation (1D, 2D, and 3D)
- Split parts or move elements from part to part
- Renumber selected entities, parts or the complete model
- Clean the model by removing unused entities
- Create, modify and check rigid bodies
  - Full support for connection types (Spotweld, Mastic, Adhesive, and more)
  - User defined connection representations

**Quality Module**

The Quality module is a configurable and customizable set of utilities for evaluating the quality of a model by performing hundreds of different checks on the part, component and model level. A variety of checks are executed, ranging from simple element checks to part connectivity and modeling errors in the input deck. Users visually review the state of each check represented by status color (red, orange and green).

**Mass Balance**

The Mass Balance module completely manages the mass and inertia properties of each part as well as the entire crash model. After the masses are set for all parts and components, HyperCrash automatically balances the total mass of the model according to the mass on the front and rear tires. Also HyperCrash can:
- Display the center-of-mass locations for each part, rigid body and the complete model
- Check and report the mass, inertia and center of mass location of each part, component and rigid body
- Automatically fits the finite element model mass of each part based on the mass of the CAD part

For more information about HyperWorks products, visit [www.altairhyperworks.com](http://www.altairhyperworks.com)