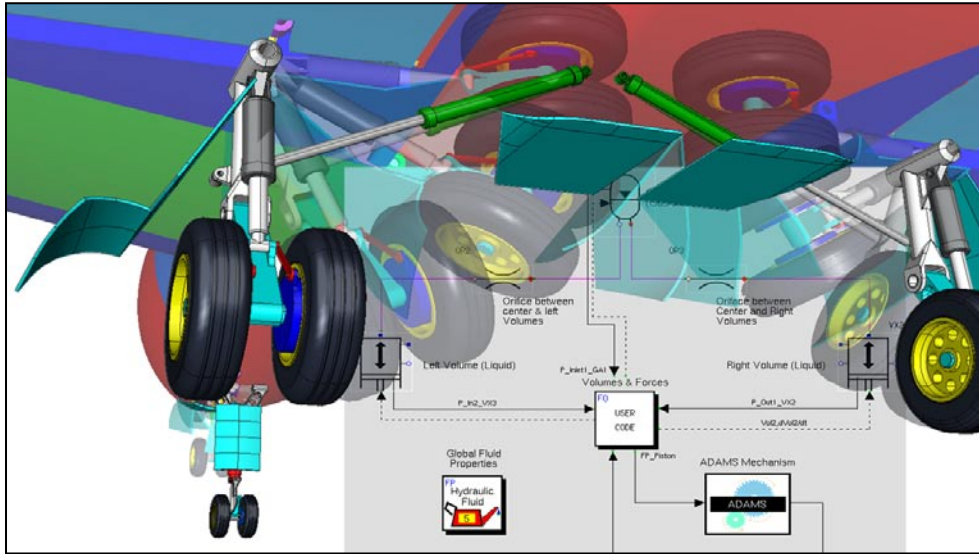


# MD Adams

## Multidiscipline Simulation System for Advanced Engineering Analysis



### MD Adams

Adams is the world's most widely used mechanical system simulation software. It lets you build and test virtual prototypes, realistically simulating on your computer, both visually and mathematically, the full-motion behavior of your complex mechanical system designs.

MD Adams (MD for "multidiscipline") complements MD Nastran as the solver technology behind the MSC SimEnterprise Simulation solution. A complete simulation system for advanced engineering analysis, SimEnterprise delivers the most complete portfolio of integrated simulation and analysis technologies available anywhere.

MD Adams supports coupled motion-structures simulation. The bi-directional integration with MD Nastran can be used for exporting Adams models to Nastran for a more detailed NVH analysis or for stress recovery and subsequent use with life/damage calculation.

### Multidiscipline Value

The value of a multidisciplinary approach goes far beyond an extensive set of analysis capabilities. MSC's MD Technology is optimized across multiple, integrated disciplines with the power to handle large-scale problems and take maximum advantage of current high performance computing environments. The multidisciplinary focus accelerates cross-the-board efficiency improvement by driving early design validation, improved product performance, and rapid insight into product lifecycle performance.

### Capabilities

- Build your virtual prototype by creating or importing component geometry in wire-frame or 3D solids.
- Use MD Adams' extensive library of joints and constraints to define part connectivity.
- Mimic your product's operating environment by defining internal and external forces acting on the assembly.
- Automatically incorporate 2D and 3D contacts in your model.
- Refine your models with part flexibility, automatic control systems, joint friction and slip, hydraulic and pneumatic actuators, and parametric design relationships.
- Define objectives, constraints, and variables, then automatically iterate to your optimal design. .
- Automatically generate linear models and complex loads for export to structural analyses.
- Obtain nonlinear results for testing complex, large-motion designs.

### Benefits

- Improve quality by quickly optimizing full-system performance.
- Increase innovation by exploring many design concepts quickly and efficiently.
- Drive manufacturing cost down by moving simulation technologies to the front of the new product development cycle.
- Explore more design alternatives, predict system-level functional performance, and accurately assess lifecycle service (safety, fatigue, durability) issues before making costly manufacturing commitments.

#### MD Adams Package Modules

In order to provide the most complete Multi-Body Simulation solution available, MD Adams has been packaged with a suite of modules. These modules allow the simulation of systems ranging from simple to sophisticated. The following section describes each module in more detail.

#### Adams/Flex

Adams/Flex allows the incorporation of component flexibility within your full-system simulations. Adding flexibility provides better insight into the behavior and life of your designs, allowing you to deliver higher quality products faster. Adams/Flex allows the use of existing linear FE models and is tightly integrated with MD Nastran and MD Patran.

#### Adams/Durability

Adams/Durability extends the capability offered by Adams/Flex to recover stresses on flexible bodies. Results from an Adams solution are combined with modal stresses from FE to more accurately predict the stress in a flexible body. These stresses and strains can then be used to complete a life/damage calculation with fatigue prediction software such as Fatigue.

#### Adams/Vibration

Adams/Vibration allows you to study forced vibration of your Adams models using frequency domain analysis. Adams/Vibration results can be used in NVH studies to predict the impact of vibrations on passenger comfort in an automobile train, plane or other vehicle. You can also include the effects of controls on the system behavior.

#### Adams/Controls

Adams/Controls helps you easily integrate the worlds of motion simulation and control system design in true Multi-Discipline fashion. With this Adams Module, you can incorporate your Adams models within block diagrams in your preferred control system design software. Alternatively, you can directly import actuators and/or controllers from the controls design software into the Adams simulation environment. Currently, Adams/Controls support both Easy5 from MSC.Software and Matlab/Simulink from The Math Works, Inc.

#### Adams/Exchange

Adams/Exchange allows the import of export of common geometry formats into and out of Adams. There is no need to recreate model geometry each time you transfer between CEA tools. You have your choice of Parasolid, STEP, IGES, and DWG/DXF formats. When you import you model from your preferred CAD system, you can use the model's geometric features to quickly position forces and constraints for your motion simulation.

MD Adams Package includes Licenses for:

- Adams/Solver
- Adams/Solver SMP (C++ Solver Only)
- Adams/Linear
- Adams/View
- Adams/Controls
- Adams/Durability
- Adams/Exchange
- Adams/Flex
- Adams/Insight
- Adams/PostProcessor
- Adams/Vibration

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