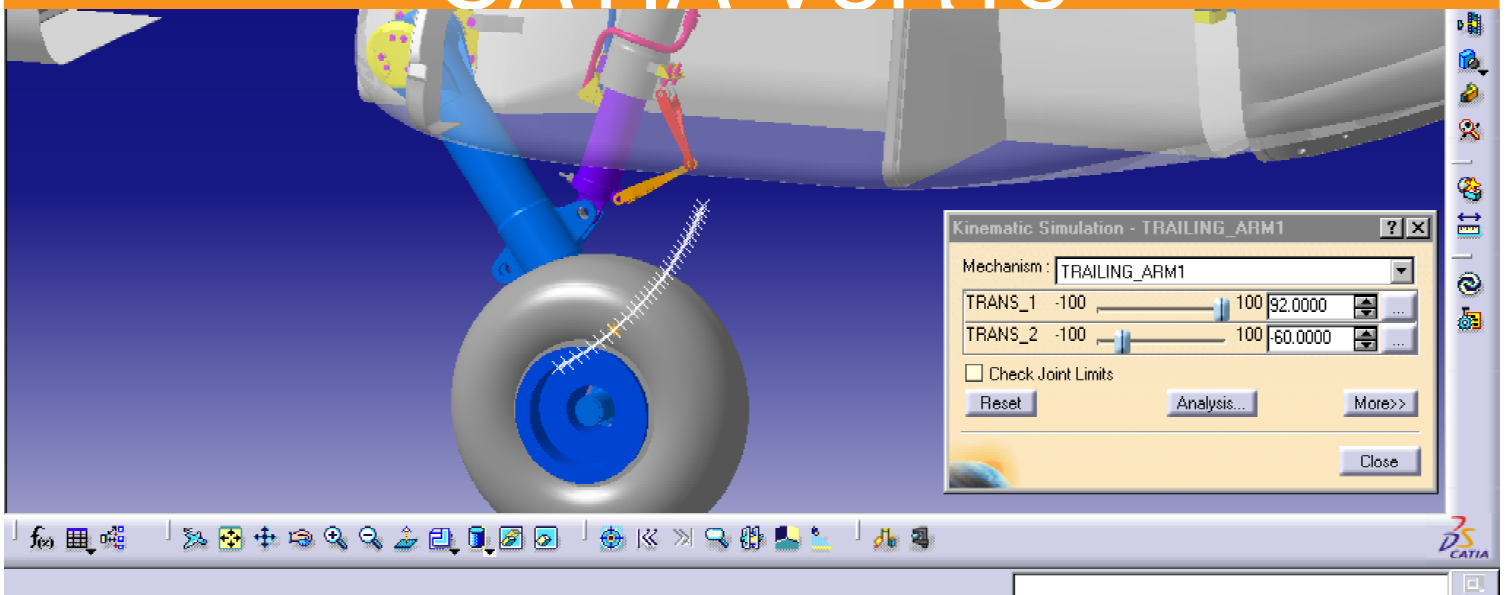


Product Synthesis
DMU Kinematics Simulator 2 (KIN)

CATIA V5R18





Product Synthesis

DMU Kinematics Simulator

Define, simulate, and analyze mechanisms for digital mock-ups of all sizes

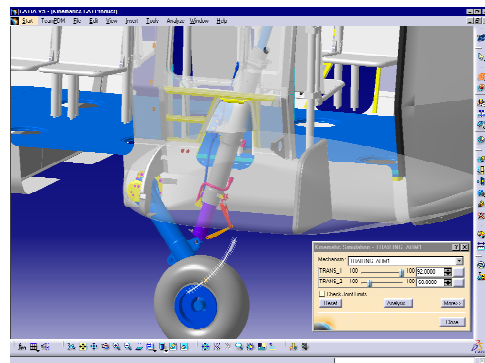
Product overview

DMU Kinematics Simulator 2 (KIN) defines mechanisms for digital mock-ups of all sizes using a wide variety of joint types, or by generating them automatically from mechanical assembly constraints. DMU Kinematics Simulator 2 (KIN) also simulates mechanism motion easily with mouse-based manipulation in order to validate mechanisms. DMU Kinematics Simulator 2 (KIN) analyzes mechanism motion by checking interferences and computing minimal distances. It generates the trace or the swept volume of a moving part to drive further design. Finally, it allows combined simulations through the integration with other DMU products.

Addressing people involved in activities ranging from the design of mechanisms to the functional verification of mechanisms, DMU Kinematics Simulator 2 (KIN) is targeted for all types of industries.

Product Highlights

- ❑ Automatically generates mechanisms from mechanical assembly constraints defined in ASD allowing quick and easy definition of mechanisms
- ❑ Simulates mechanism motion in order to validate mechanisms
- ❑ Analyzes mechanism motion dynamically with visual feedback by checking limits and interferences, and computing minimal distances
- ❑ Records motion analysis results to



- ❑ increase accessibility of simulation
- ❑ Generates useful information such as traces and swept volumes to be taken account for further design modifications
- ❑ Allows automation of mechanism creation and simulation through Visual macro programming
- ❑ Allows combined simulations through the integration with other DMU products
- ❑ Simulates and analyzes mechanisms involving any multi-CAD parts
- ❑ Preserves V4 customers' investment in Kinematics definition through V4 data integration

Product Key Customers Benefits

3D Mechanism based on...

16 types of joints are available: Revolute, Prismatic, Cylindrical/Actuator, Planar, Rigid, Spherical, Universal, Point-Surface, Point-Curve, Roll-Curve, Slide-Curve, Screw, Gear, Rack, Cable and Constant Velocity joints. Associativity is supported between the created mechanism and the used geometry

for most of joint types. Full V4 set of joints is supported for V5 creation and V4 to V5 upgrade. The user can define and verify joint limits (travel limits or joint stops) allowing to guide the design of the assembly and the design inside the mechanism.

Automatically generates mechanism...

Constraints defined in CATIA Assembly Design (ASD) product can be automatically interpreted as joints.

Simulates mechanism motion...

The user can easily simulate motion using the mouse, and is guided in his possible actions thanks to a copilot, which pops up icons under the mouse. The user can also create a wide range of kinematics laws allowing time-based simulation. The laws can be graphically visualized.

Analyzes mechanism motion dynamically...

During mock-up design review, users do not only need to view simulated kinematics but also analyze the mechanism's consistency with the functional specifications. DMU Kinematics Simulator 2 performs interference and clearance checking as well as computing the minimum distance. A 'stop on collision' option freezes the motion for detailed analysis.

Records motion analysis' results...

The user can replay a motion simulation, or save it as a video file.

Generates useful information...

DMU Kinematics Simulator 2 provides users the ability to define a point in a moving part and generate its trace in order to design cams. The user can also generate the swept volume of a moving part that is defined by a part moving through its entire range of motion. The swept volume can be reused in the clash analysis to check, during the digital mockup evolution, that the mechanism can still be operated. During a simulation with laws, it is possible to plot sensors according to Time but this functionality also offers the possibility to plot a sensor according to another sensor. This ability enhances the study of a mechanism offering a better way to qualify its behavior, or to improve its design. A user can

run for instance the simulation of an engine and plot the position of an inlet valve according to the rotation of the crankshaft.

Allows automation of mechanism creation and simulation through Visual Basic macro programming

Allows combined simulations... Multiple combined simulations are possible for advanced digital product synthesis when using this product in conjunction with other DMU products. For example, users can simulate and synchronize un-mounting procedures with a kinematics motion when both the DMU Kinematics Simulator 2 and DMU Fitting Simulator 2 products are installed.

Simulates mechanisms involving...

The data used to create the full digital mock-up may come from any number of supported data formats, including: CATIA, STL, IGES, OBJ (from Wavefront) or other multi-CAD environments. The kinematics simulation and associated kinematics analysis functions are identical whatever data format is used.

Preserves V4 customers' investment...

Users can browse and simulate V4 mechanisms involving multiple parts. All information related to the mechanism definition can be displayed (degrees of freedom, types of joints, etc.). The user has also the possibility to upgrade V4 mechanisms into V5 mechanisms.

ABOUT CATIA V5R18

CATIA is Dassault Systemes' PLM solution for digital product definition and simulation.

plm.3ds.com/CATIA

