Lifecycle visualization – path planning

Add-on option for automating the definition of collision-free extraction paths

Benefits

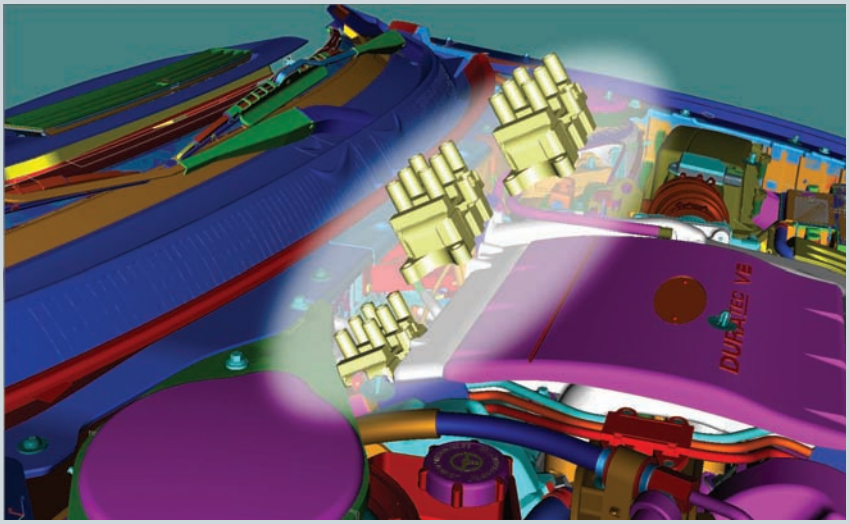
- Drives design for assembly processes that you can use to tightly package complex products together
- Automatically generates extraction paths even in highly complex packaging scenarios
- Establishes streamlined extraction path and motion envelopes to define keep-out areas and ensure assembly/disassembly
- Provides multi-CAD environment support enabling swept volumes to be exported and re-used for design work in today's most popular CAD systems

Features

- Add-on for Teamcenter's lifecycle visualization suite at the professional and mockup service levels
- Ability to generate a swept volume of the part traversing along the motion path, including moving components
- Geometry simplification including the ability to remove the internal geometry for a part or set of parts

Summary

The Teamcenter® suite of lifecycle visualization solutions provides an add-on path planning option to enable packaging engineers to automatically define collision-free extraction paths for components being evaluated in the context of accessibility, maintainability and assembly/disassembly studies. The path planning option also enables packaging engineers to create motion envelopes (swept volumes) they can use to communicate clearance requirements, as well as to define keep-out zones.



Design for assembly

Teamcenter's path planning option enables packaging engineers to design for assembly by defining collision-free extraction paths and creating motion envelopes.

Today's product designs have become increasingly complex, requiring product developers to tightly package multiple parts together. Accessibility, serviceability and ease of assembly/disassembly are critical functions that need to be supported to successfully design and layout these complex products.

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Features *continued*

- Batch processing capabilities (Windows only) including the ability to specify parameters to automatically generate motion envelopes on a batch schedule
- Parallel processing capabilities, including the ability to use multiple CPUs to perform path planning calculations

Most industries now require product designers to gain as early an understanding as possible of the manufacturability and maintainability their designs. Teamcenter's path planning option enables product teams to determine whether it is possible for manufacturing to cost effectively assemble a proposed product. Similarly, designers can use the path planning option to understand whether field personnel will be able to easily service a product and minimize its down time in a customer setting.

Extraction paths

The add-on path planning option enables product teams to quickly find collision-free extraction paths for components and assemblies in instances where the extraction path is complex or otherwise not obvious to a packaging engineer.

Teamcenter enables users to automatically determine a viable extraction path – as well as to define the rotational and translational degrees of freedom of the component. Teamcenter is especially adept at providing an easy and flexible approach to a smooth solution even in instances where:

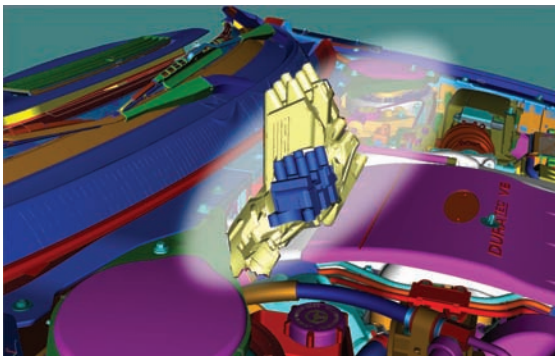
- The component to be removed is already interfering with other components
- The starting position needs to be "unstuck"
- The user wants to guide the solution along a preferred direction for the extraction path

Static envelopes and motion envelopes

Products are increasingly designed with accessibility to their components and assemblies in mind. As a result, designers need to define keep-out regions that must be left clear to allow for assembly/disassembly. Teamcenter supports the definition of swept volumes from within a static assembly, as well as swept volumes generated by dynamic components that move during an extraction.

Teamcenter creates motion envelopes within multi-CAD assemblies by leveraging JT™ technology, Siemens PLM Software's CAD-neutral 3D format. JT's flexibility as either a faceted representation or an exact surface representation enables users to adjust quality controls to balance a designer's need between precision and performance.

Geometric envelope of a swept volume.



Completed extraction path.

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