

Teamcenter Visualization Mockup – ClearanceDB

Using automated, rules-based checking to perform thorough and cost-effective product design validation

fact sheet

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► Summary

Teamcenter® Visualization Mockup's optional ClearanceDB software enables you to detect, resolve and manage spatial interference and interface issues that arise as your product design evolves throughout its entire lifecycle. By automating the process you use to analyze clearance conditions, you can identify design flaws that would otherwise delay the release of new product offerings, increase their costs and/or jeopardize their quality. ClearanceDB's rules-based capabilities are especially appropriate for determining how changing design decisions impact pairs of parts in your product design.

Benefits

Automates your checking and reporting process to facilitate faster, repeatable and more accurate clearance evaluation

Accelerates time-to-market by speeding up your clearance analysis process and minimizing design rework

Fosters product innovation by enabling designers to study more design alternatives in the same timeframe

Reduces design cost by enabling design engineers to integrate the entire product digitally

Reduces overall development cost by enabling product makers to catch design flaws early in the lifecycle before they result in costly manufacturing impacts

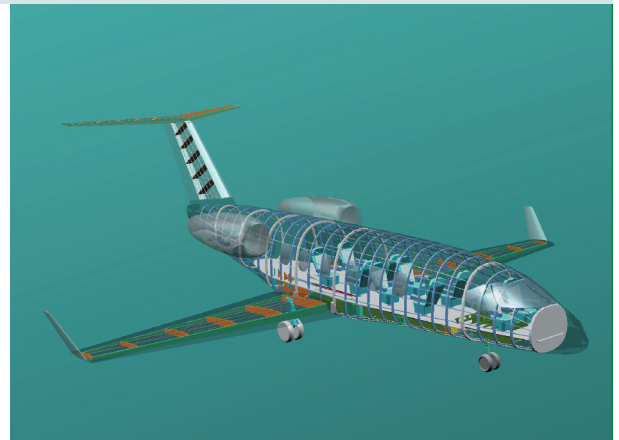
Improves product quality by eliminating the ad hoc manufacturing adjustments that need to be performed to adjust for previously undetected clearance problems

Automating your clearance analysis process

Teamcenter Visualization Mockup provides a robust clearance analysis capability called ClearanceDB that enables you to automate the process you use to check complex product designs for interferences and other spatial conditions.

Typically, ClearanceDB users adopt the following process when performing this kind of clearance analysis:

- Users establish specific rules that define what parts in your product design should be checked against one another, as well as any spatial requirements that should be considered. As your product design evolves, these part pairs provide you with a repeatable basis for validating your product design in terms of specific clash and clearance conditions
- Users initiate the clearance analysis by instructing Teamcenter to evaluate the product design in accordance with these previously defined conditions
- Teamcenter flags all potential clash/clearance problems and writes these flagged conditions into a database that your designers can access on an enterprise basis
- Users can view these flagged conditions and review their impact using a Teamcenter-maintained 3D digital prototype
- As users view these conditions and assess their validity, they can instruct Teamcenter to capture, document and track these issues until they are appropriately resolved
- After design engineers correct their designs and resolve the identified clearance problems, Teamcenter removes the corrected problem from the clearance database



Features

Automated clearance analysis
Database storage of clearance issues and their related status
Access to the clearance database through Teamcenter Visualization's Clearance Manager interface
Stored filters (search criteria)
Generation of text reports
Color reporting using 3D geometry
Windows and Unix support

Use case scenarios

One of UGS' customers estimates that it is saving approximately 70,000 hours each year by using ClearanceDB. The company expects to increase its savings to more than 135,000 hours per year as it expands the use of ClearanceDB across all of its product lines.

Business context

Typically, companies implement ClearanceDB because the process for performing clearance analysis on complex products can be time consuming and costly without a rules-based capability for repeatedly analyzing a product's high-level digital mockup, checking for clearance conditions and systematically rechecking these conditions over the course of a design's evolution.

Companies are particularly interested in avoiding panic fixes when parts or tools are being manufactured – or worse, impacts that occur when parts and tools reach the shop floor. Early clearance analysis methodologies would check a complex product's parts one part at a time. Many product makers believe that an automated process for rules-based clearance analysis can save each designer hundreds of hours when contrasted with these earlier approaches.

Equally important, without a real-time rules-based process, product makers have no assurance that some discrepant parts have not slipped through. This risk is especially critical during the early phases of product development when configuration and design definitions change quickly. Without an automated rules-based process, designers frequently are required to go through weekly clash reports in hard copy form. These high-volume reviews often place an enormous burden on a product's take-to-market schedule.

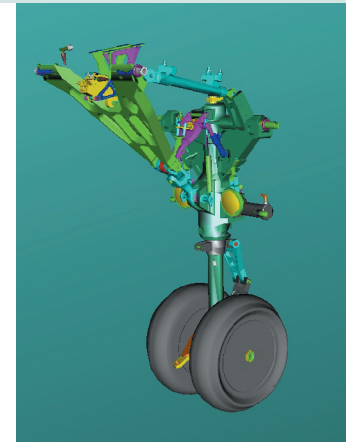
ClearanceDB is particularly effective because it enables designers to establish a part pairs database that defines which specific parts should be checked against each other on a repeated basis. An individual definition might instruct Teamcenter to abide by the following rules:

- Don't analyze any rubber seals for interference conditions
- Flag any exhaust system parts that appear within 50 mm of any electrical system parts
- Don't report any contact-only issues (0 to .01 mm)

Capabilities

Teamcenter Visualization Mockup's ClearanceDB option provides the following basic capabilities:

- Checks clearance conditions only when necessary, thereby eliminating redundant checking that otherwise takes place when clearance issues are reviewed
- Minimizes the number of results that you need to evaluate by applying rules-based, condition-based approach to clearance analysis
- Facilitates an automated clearance analysis process by providing end users with the most recent data/analysis in a constantly updated digital mockup
- Enables you to analyze and manage your clearance issues across multiple product configurations, derivatives and options by integrating your clearance analysis process into your Teamcenter-managed product lifecycle



Contact UGS

Americas 800 498 5351
Europe +44 (0) 1276 702000
Asia-Pacific 852 2230 3333

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