

Moldex3D

# Moldex3D CADdoctor<sup>®</sup>

The Genius Doctor for 3D Data

Heal, Repair, and Polish Your Design for Perfect Mesh



## CADdoctor's Data Leverage

- Enable multi-CAD data exchange between Moldex3D preprocessing and multi-CAD platform
- Auto heal broken surfaces and geometry distortion in CAD models
- Simplify geometry structure
- Reduce the effort of BLM generation and save time on preprocessing
- Support various native CAD formats

## Translation & PDQ (Product Data Quality) Validation

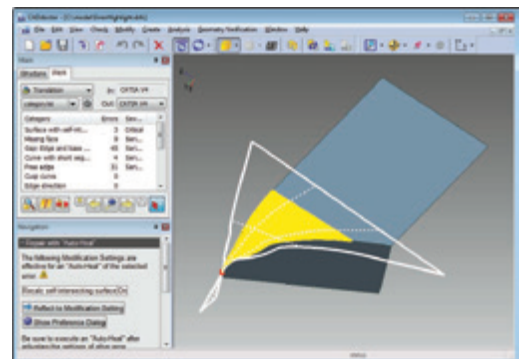
Interoperability is a fundamental requirement for the efficient re-use of Multi-CAD throughout the product life cycle.

### CAD Data Validation and Repair

3D data translation for efficient re-use requires a robust error detection scheme. The ability to heal while maintaining form, fit, and function in the destination case or scenario is crucial. These functions result in perfect CAD Data Integrity, especially for small elements, tiny segments, complicated parts, and large gaps.

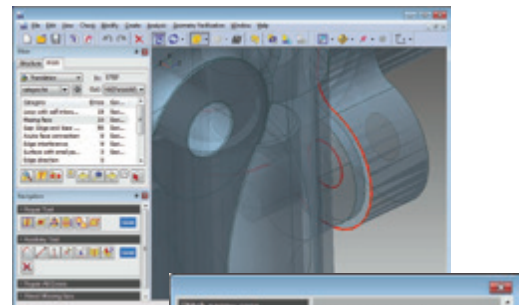
#### Detect and View PDQ Errors

CADdoctor is based on Elysium's experience in data translation, which has produced validation criteria necessary to meet the stringent requirements of Automotive, Aerospace and National Standards. CADdoctor allows for the creation of perfect CAD formats in the native CAD systems. Those formats meet the validation PDQ guideline per MILSTD/ISO/VDA/SASIG/JAMA/JAPIA. CADdoctor automatically detects and lists all errors in a textual dialogue box, with automatic 3D model auto-location and auto-zoom, to provide instant visual representation of all errors.



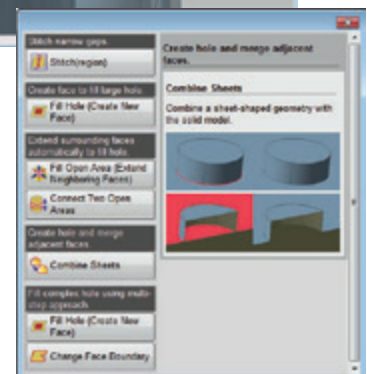
#### Repair PDQ Errors Automatically

Most CAD files contain geometric errors which will be detected by PDQ Check. A single click on the "Auto Heal" icon starts the automatic heal process without any operator intervention. CADdoctor can auto-adjust the geometry and/or position of faces and edges within the tolerance of the source CAD system. All repairs are conducted while maintaining consistency with the original data.



#### Repairing PDQ Errors Interactively

The Interactive Healing function is designed to repair extremely severe errors which remain after the Auto Healing process. The appropriate repair command icons will be displayed once an error is selected in the list. Users can check each error visually, and repair with a displayed icon. CADdoctor "Guide" will assist users in selecting the appropriate heal command in case there are several possible healing scenarios.



# Geometry Simplification

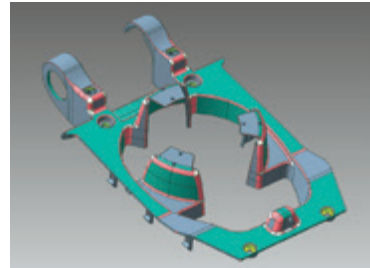
CADdoctor users can optimize 3D data destined for consumption within downstream processes such as Toolpath Generation, Mesh Complexity, CAE Calculations, and 3D Printing. The benefits include reduction of analysis time, mesh size, and model size.

## Feature Recognition and Simplification

The Geometry Simplification Option reduces model's complexity by removing unnecessary design features.

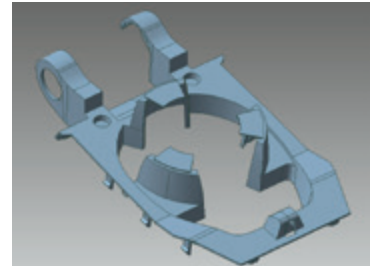
### Feature Recognition

Feature Recognition allows automatic identification of features such as fillets, holes, bosses, ribs, and steps. CADdoctor can operate on any B-rep due to proprietary geometry interrogation techniques. CADdoctor provides systematic Feature Recognition integrated in the user interface to allow display and categorization of features.

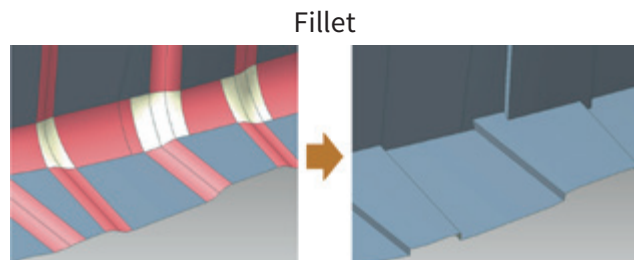


### Feature Simplification

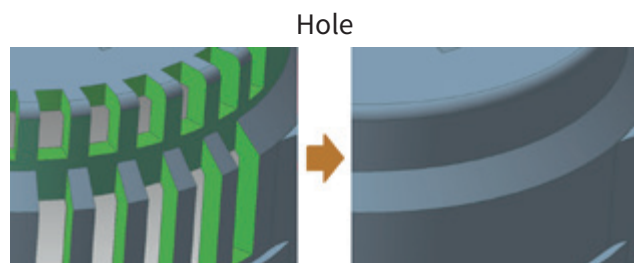
CADdoctor utilizes a non-destructive technique to remove features without damaging the original geometry or compromising the model quality. This process allows the end user to either select a specific feature, a group of features, or an entire category of features. Once a feature has been removed, adjacent faces are extended to repair the section of the model which has been eliminated.



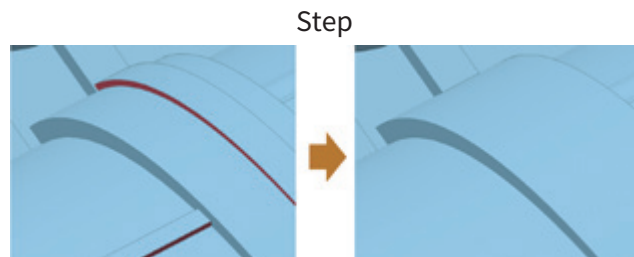
Fillets are automatically detected by capturing radius as the threshold is developed by removing the fillet. Upper and lower limits of the threshold can be set depending on the purpose, allowing to: detect all fillets with set radius, detect only the fillets with certain radius, detect fillets that are under set radius.



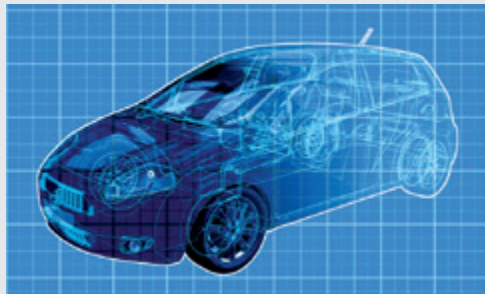
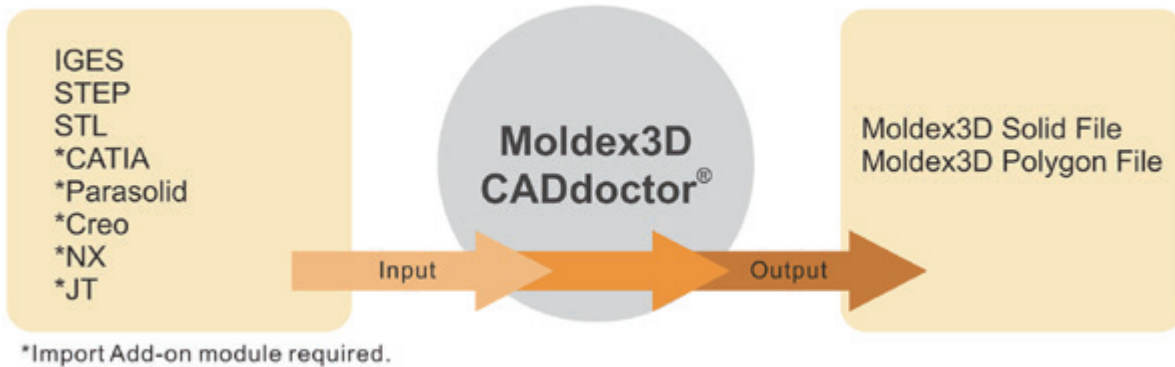
Both round holes and generic holes can be detected and removed. Three options are available. The round hole auto-detect and removal feature refers to the maximum or minimum diameter of the round hole as threshold. The generic hole auto-detect and removal feature refers to the width of the hole as the threshold. By selecting a face to find holes, the manual feature supports detection and removal of any opening as a hole.



Tiny step between two planar surfaces can be merged into one plane. The gap between the surfaces is set as the threshold. Tiny step is determined when the threshold is within maximum gap between two planar surfaces parallel to the step. The step will be removed and the planar surfaces merged.







### Heightened Technology with Incredible Accuracy

Automatic error healing is the key to maximize 3D data. When an error is found through PDQ validation, repairing in the original CAD system would be ideal. However, it is not very practical, because the process can be very labor intensive and the same errors can persist. Healing requires sophisticated geometry interoperability and is applicable for various tools which leverage 3D data.



### Adherence to Geometry Interoperability

Geometry editing, such as change to a FEM model, or adding mold elements may be required when leveraging 3D data. This type of editing requires work on various CAD data using explicit operation. In these circumstances, the feature tree cannot be relied upon and operation must proceed strictly by using the geometry. CADdoctor geometry optimization provides advanced editing functionality, which utilizes geometry and topology to support 3D data editing to the maximum.



### Sustained through Tight Partnership with CAD Vendors

When translating CAD data, it is important to accommodate the characteristics of each CAD system. An example would be mathematical representation of a ridgeline of a solid model which is different depending on the CAD system. CADdoctor examines the representation and makes a precise adjustment to the geometry based upon the intended target CAD system. CADdoctor has formed technical partnerships with all major CAD vendors to handle various CAD data in the most efficient and effective way.

**Moldex3D**



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For more information, please visit [www.moldex3d.com](http://www.moldex3d.com)

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