CADDOCTOR TOP USE CASES

Altair Partner Alliance

# Data Optimization for CAE Analysis

Challenge

- Mesh quality of CAE data was poor, adding more work to the process of data preparation for CAE.

Solution

- Heal bad geometry with CADdoctor technology. Simplify features and create mid-surface suitable for meshing and CAE.

Result

- Reduced their CAE data preparation time by 40%. Higher quality of meshing was possible in HyperMesh.

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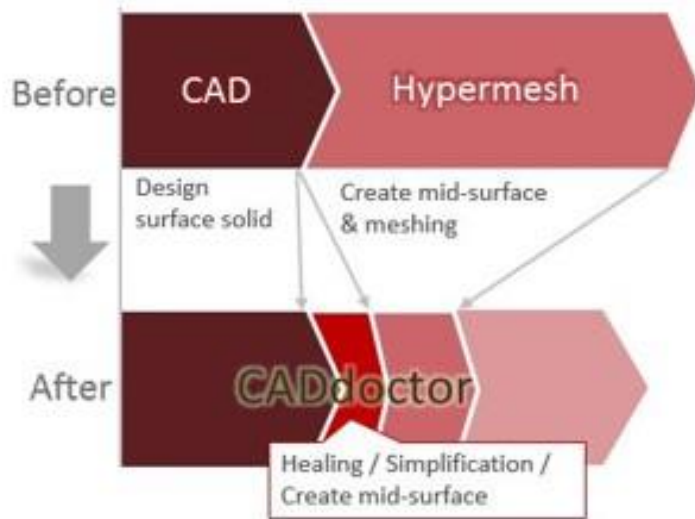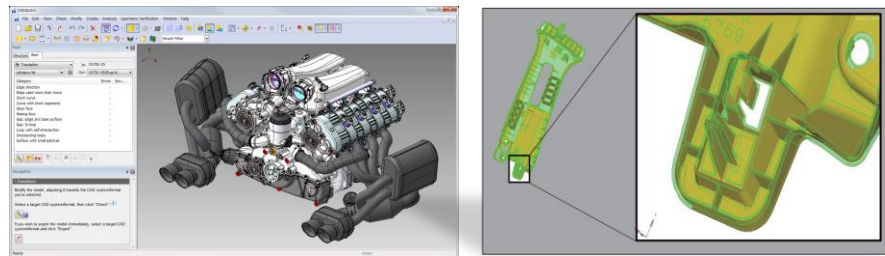
Data Healing for PDQ (Product Data Quality)

Challenge

- Quality of CAD data is poor for succeeding in downstream workflows

- Trying to work with multiple formats from external parties causes issues

Solution

- Heal bad geometry with CADdoctor technology

- Tolerance/topology adjustment for each target system

Result

- Easier data handling in downstream workflows, regardless of the format

TROESTER

EXCELLENCE IN EXTRUSION.

"Without using CADdoctor it would require utmost efforts to be able to process external CAD data with our CAD system."

Martin Wosnitza, IT-department
TROESTER GmbH & Co. KG

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Enveloping in Virtual Prototyping
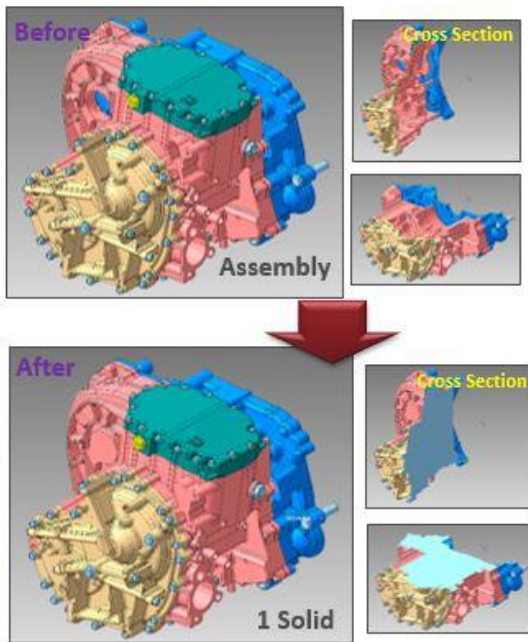
Challenge

- Importing data to use for virtual prototyping was taking too long

- Performance degrades when moving or scaling up/down a heavy model

Solution

- CADdoctor's enveloping function reduces the data size by solid enveloping and deleting inner parts

Result

- Smooth, stress-free investigation of assembly performance

- Effective for IP protection when data is exchanged with suppliers

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Reducing Time for Creating FEA Models

Challenge

- Capacity increasement leads to a need for reduced preprocessing time in simulations

- Create better mesh through geometry simplification

Solution

- Use CADdoctor Translation and Simplification platforms to reduce time in creating simpler models

- The creation of a CAD free of fillets chamfers, ribs and bosses, is much better for HyperMesh to handle in the creation of 2d and 3D mesh.

Result

- Meshing a model with the help of the CADdoctor will create higher quality mesh with fewer elements for engineers to repair.

"Creating mesh directly on a model you received from your costumer is simply not enough, you must simplify and clean your model, fast and easy! And in this gap the CADdoctor comes for help"

Konstantin Arhiptsov, Simulation department
Arkal Automotive

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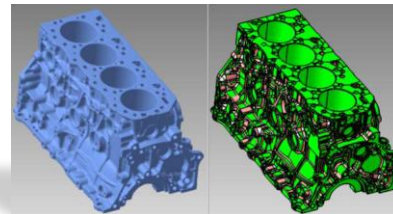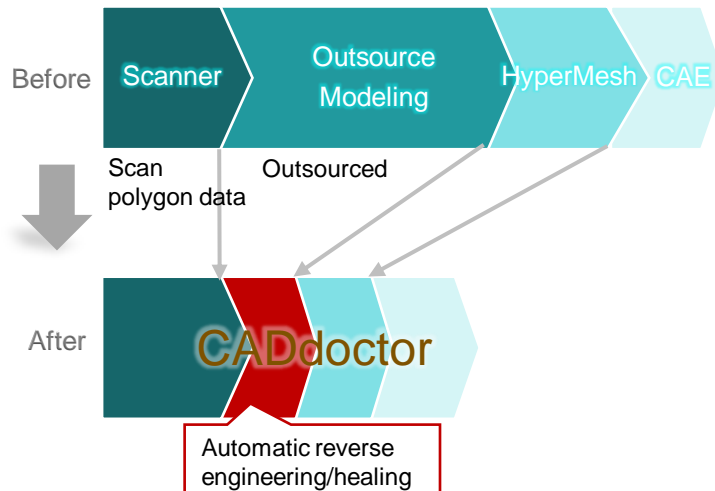# CADdoctor Reverse Engineering for Creating a CAE Model

Challenge

- Long lead time for creating CAD models as the scanned data was outsourced for modeling

Solution

- Use CADdoctor to automatically & semi-automatically create b-rep surfaces from STL polygon data

- Use CADdoctor polygon function to heal polygon for high quality b-rep data creation

Result

- Reduced their CAE data preparation time by 75%

- Faster meshing in HyperMesh

Before — Scanner → Outsource Modeling → HyperMesh → CAE

Scan polygon data   Outsourced

After — CADdoctor

Automatic reverse engineering/healing

Reverse Engineering (CADdoctor)

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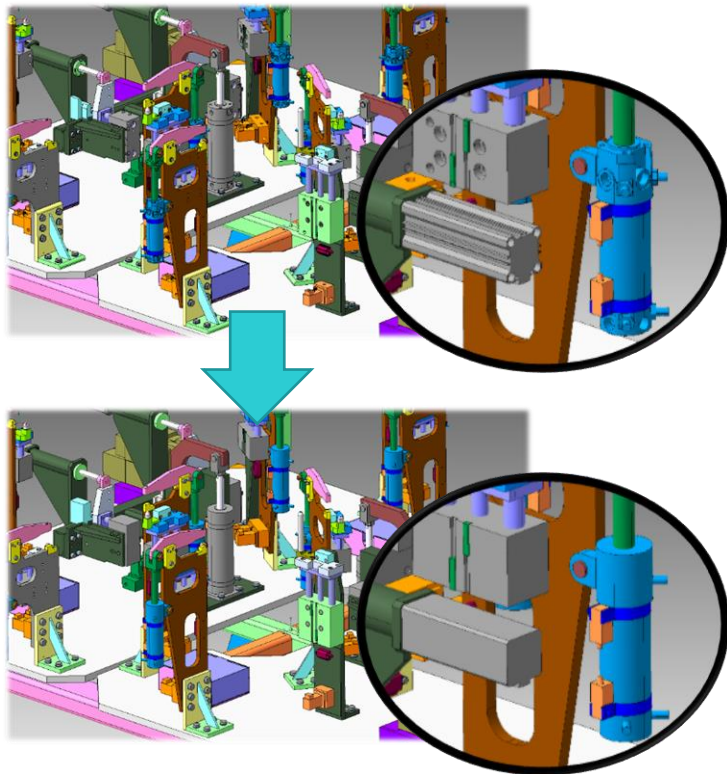# CADdoctor Enveloping Function for File Size Reduction

Challenge

- Problems with data exchange with the large data size

- Slow and stressful viewing experience with large data size models in some devices or software

Solution

- Automatically create a light-weight model from a huge assembly model

- Can remove holes, grooves, and protrusions

- Can replace volumes with simple shapes

Result

- Can be utilized in various scenes such as digital mock-up, interference check, translation to viewer formats, etc.

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# CADdoctor Enveloping Function for IP Protection

Challenge

- Had to manually remove technical design details on parts to prepare models that can be shared with partners without the risk of data breach or plagiarism

Solution

- Automatically delete internal geometry with a click of a button

Result

- Exchange complex datasets without security risk with much less time

- Easier handling with less data size

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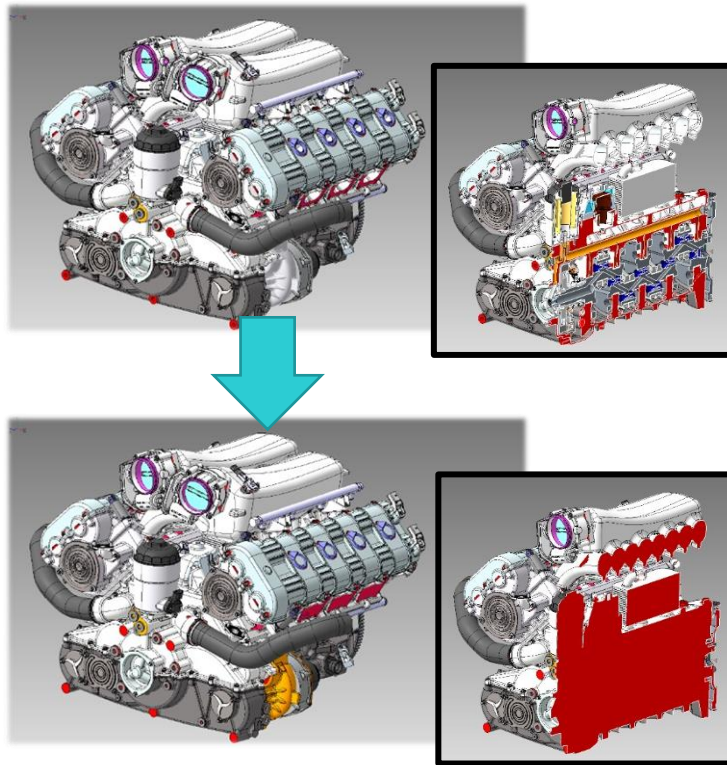
CADdoctor Reduced 80% of CAD Data Error Repair Time

Challenge

- When importing the data from the customers, there were many data errors related to CAD geometry such as not being able to enlarge, shrink, and modify 3D models. Also, there were gaps between the *edge and the *base surface and/or missing faces.

  Mold engineers had to find each error and repair them manually one by one paying attention not to change the original design intent. However, this approach took up a lot of time even just to find errors and affected the production lead time.
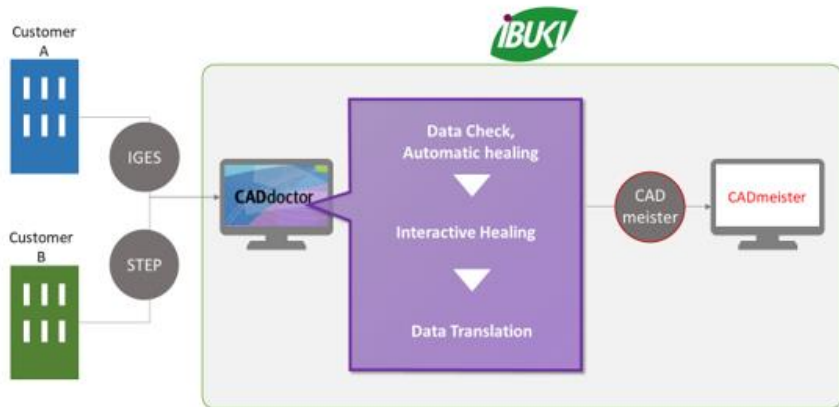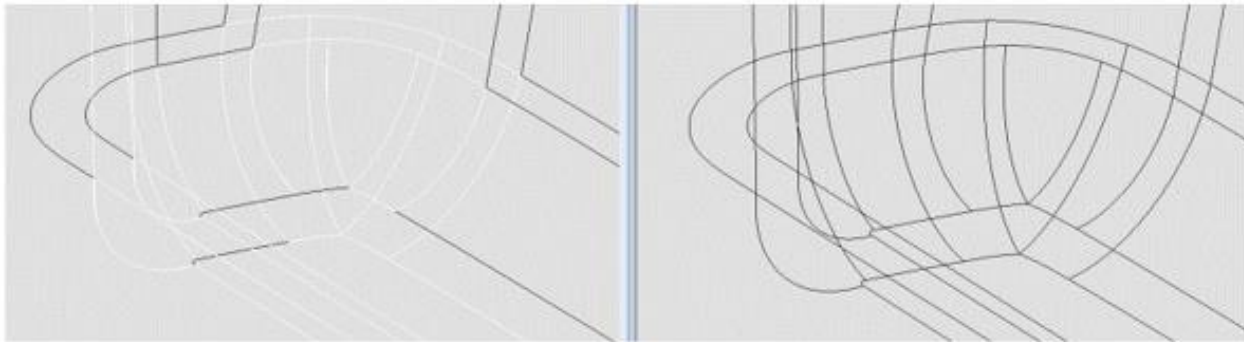

CAD Data Translation Flow with CADdoctor

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CADdoctor Reduced 80% of CAD Data Error Repair Time

Solution

- Implement CADdoctor to reduce CAD data error repair time and to increase their 3D CAD data quality for the purpose of improving efficiency for the entire production process.

Use Case of Data Translation with CADdoctor

Before

Missing faces are exist when opening the original CAD data with CADmeister

After

Missing faces are no longer exist after translating the CAD data with CADdoctor

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CADdoctor Reduced 80% of CAD Data Error Repair Time

Result

- Reduced data repair time significantly with the introduction of CADdoctor. As a matter of fact, the data repair time was reduced by 80% after a month.

  As the CAD data repair process became more efficient after the introduction of CADdoctor, engineers were able to focus more on design concepts and value-added processes.

  Repair times of data received from customers were evened out regardless of the data quality, and as a result, they were able to estimate development hours much easier and create development plans with more accuracy.

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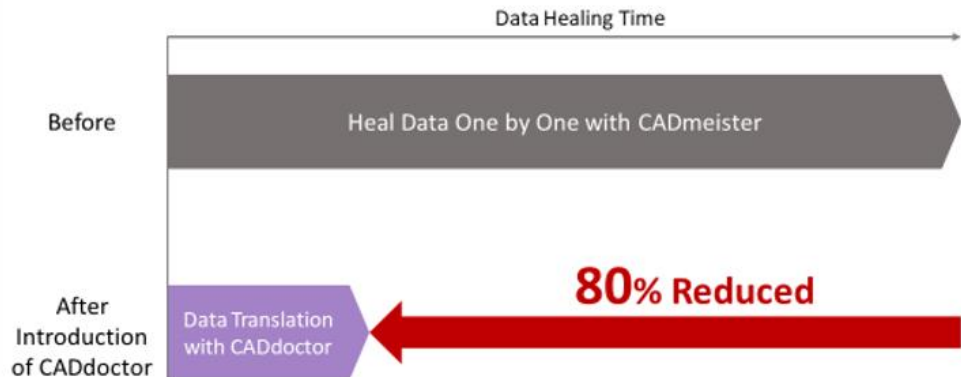
Connect CAD and CAM with High-precision 3D Data Conversion

Challenge

- Data Issues in CAD/CAM Data Transfer.

  Compatibility of 3D data between heterogeneous CAD-CAM has been a problem for many years.

  The poor-quality issue of 3D data created by the design engineers.

  A problem with the performance of the 3D data conversion tool, and an error that the processing path was not generated.

  Often experienced delays in development schedule because they had to fix data issues manually in CAM every time, they faced such errors.

Solution

- Add a new step in their design process; to convert the data using CADdoctor to open and work further in CAM. Bringing CADdoctor to Company Standards.

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Connect CAD and CAM with High-precision 3D Data Conversion

Result

- Dramatically reduced the manual correction work of data errors by 65 percent.

  In addition, even when some data errors remain in the CAD, the time required to transfer data to the CAM can be halved by performing automatic correction and partial interactive correction with CADdoctor before conversion.

  One of the key effects brought by CADdoctor is that design engineers are no longer wasting their time in fixing PDQ errors. They are now able to devote themselves to the creative work that they should be doing.

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