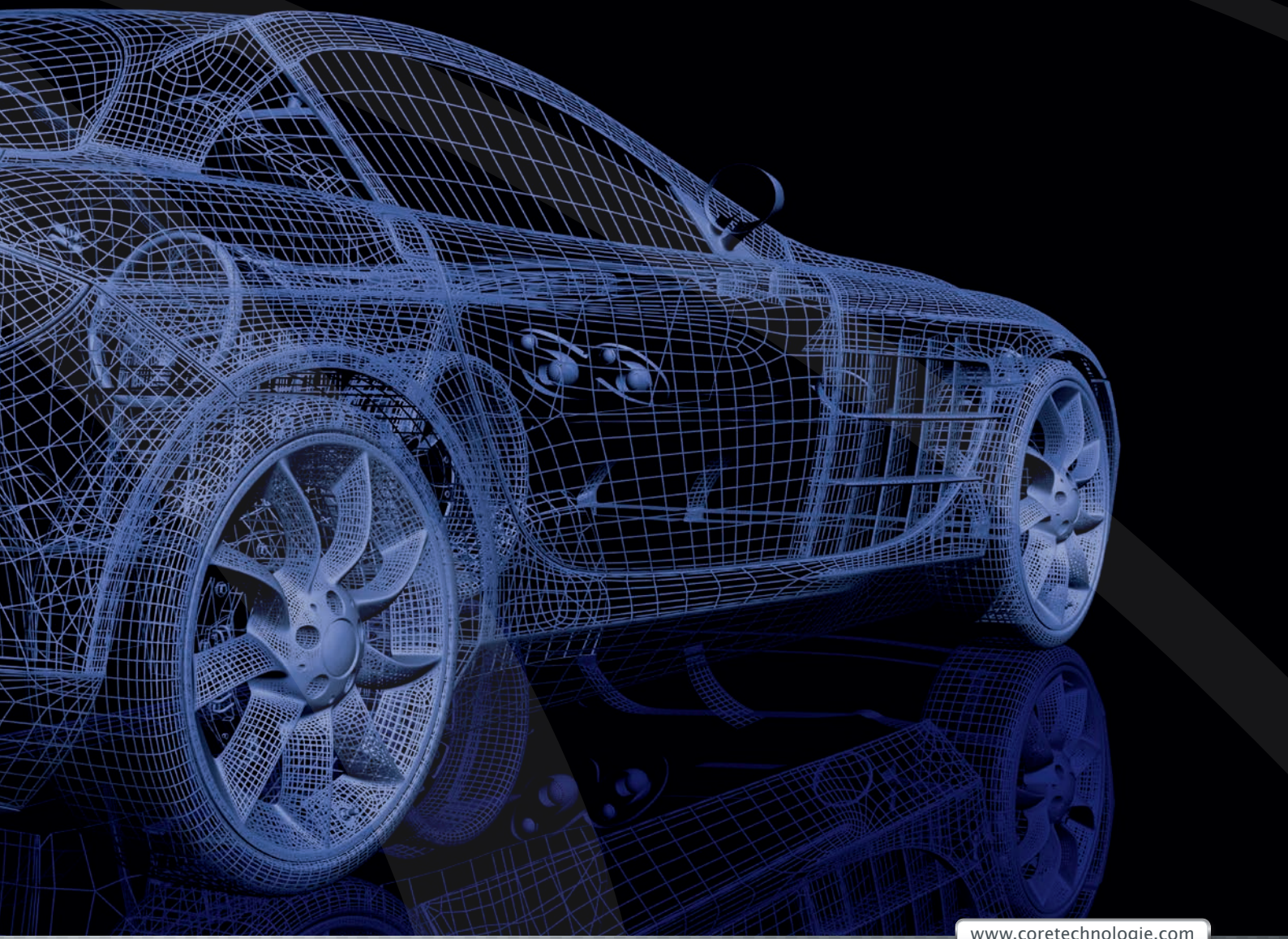
CAD INTEROPERABILITY SOFTWARE SUITE



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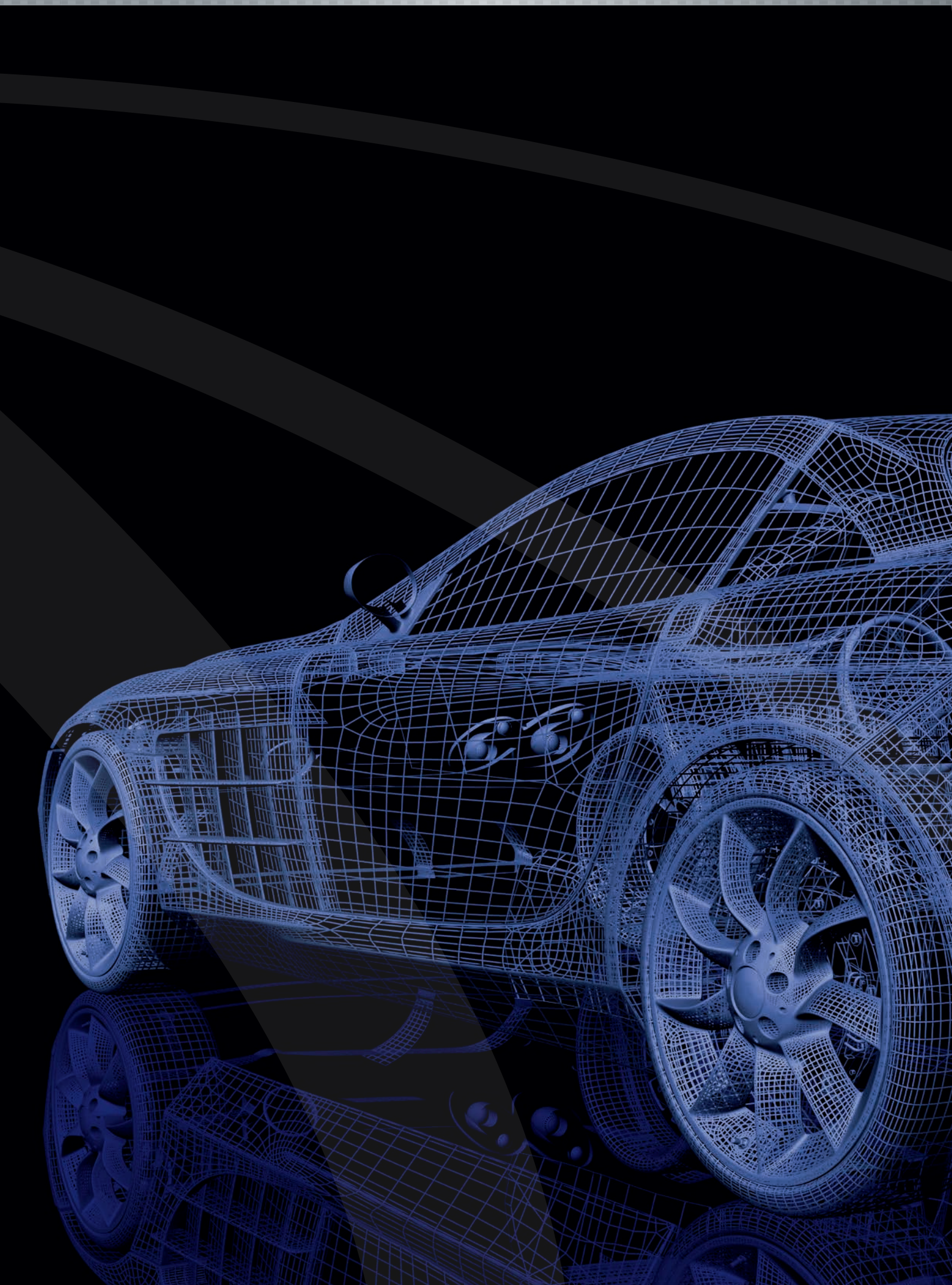
3D EVOLUTION©



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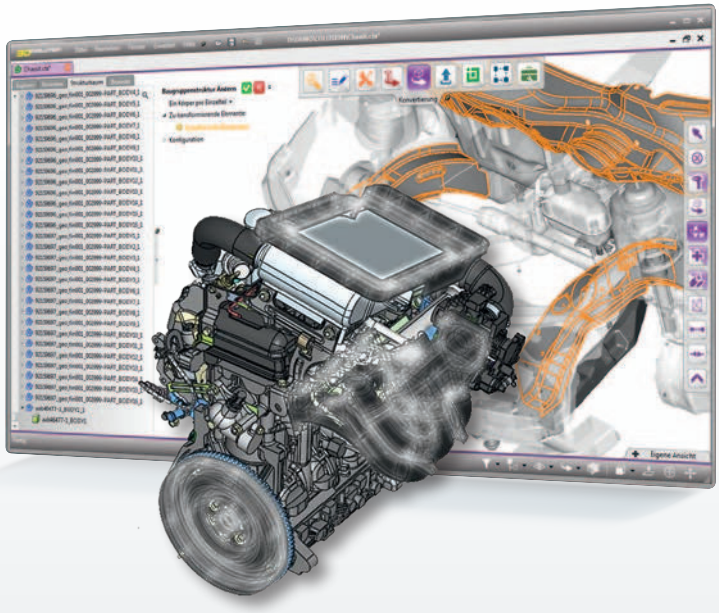
3D_Evolution® Conversion Engine is today's leading MCAD collaboration suite.

POWERFUL CONVERSION ENGINE

Today, collaborating and sharing 3D data within MCAD environments is a major requirement for a seamless PLM-process and increased CAD data exchange capabilities are an important competitive factor.

The new, redesigned geometry kernel of 3D_Evolution© supports procedural as well as cyclic surface definitions of the modern CAD systems to avoid approximate NURBS conversions. The exclusive and powerful healing technologies combined with the fastest conversion processand our 64-Bit technology are taking CAx interoperability to a new level.

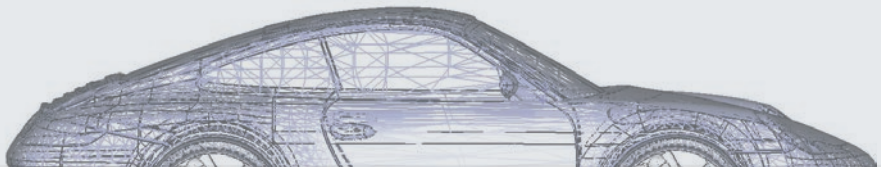


MCAD FORMATS AND MORE

3D_Evolution is designed for a flexible and easy data exchange with your customers, suppliers, and engineering partners supporting all interoperability requirements of design, engineering, FEA, CAM and digital factory.

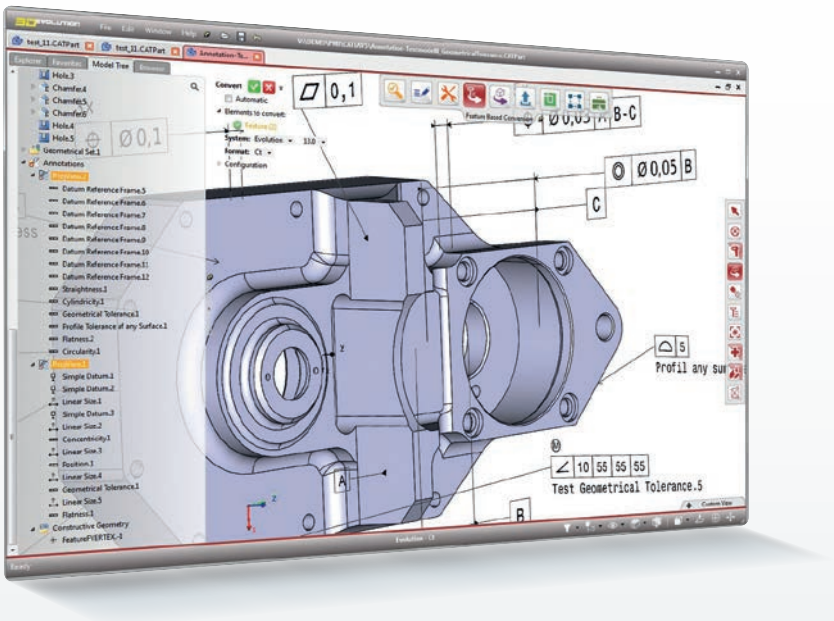
CT CoreTechnologie software develop by itself and supports all primary systems and data formats such as CATIA®, NX™®, Creo®, I-deas™®, SOLIDWORKS®, Robcad™®, JT®, STEP, PDF ... and many more.

Getting certified by Daimler for JT data exchange is easy using 3D_Evolution. The software is certified by Daimler for supplier data conversion and guarantees perfect JT interoperability with all current CAD systems.



PDQ CHECKER AND ADVANCED HEALING TECHNOLOGY

Our PDQ Checker ensures the quality of 3D models regardless of format or generating system. Used in the design process or checking incoming and outgoing CAD data, the 3D_Evolution PDQ Checker verifies all 3D geometries in accordance with SASIG and VDA 4955/2 specifications. The checker results are displayed on the 3D model and the user can utilize our advanced healing technology to resolve modeling errors or just save a certified report to share the PDQ status with others.



MODEL BASED DESIGN (MBD) READY

Using PMI, functional tolerances and annotations directly on the 3D model in order to reduce the usage of drawing representations is a goal to improve usage of 3D data and increase collaborative workflow.

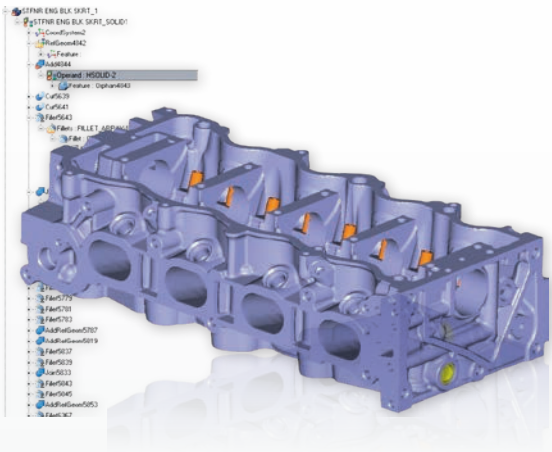
3D_Evolution is MBD ready: it does not only display and convert the geometry, but also all associated elements like semantic PMIs, annotations as well as meta data.

Errors are displayed on the model and can be filtered according to the error type. Special repair functions allow an easy and fast correction of the models.

3D_Evolution's Feature Based technology converts 100% functional CAD models, maintaining features, parameters, PMI, metadata and associative drawings.

THE FUTURE OF INTEROPERABILITY

Today, companies are looking for interoperability that goes beyond the need for CAD translations as a boundary representation (B-Rep) of 3D models. Our innovative Feature Based technology gives companies the freedom to optimize human resources within MCAD environments and convert legacy data without losing product knowledge and time. In addition, the software offers special features such as the conversion of associative 2D drawings. CT plug-ins for all major CAD systems enable an automatic remastering process for all major CAD systems.



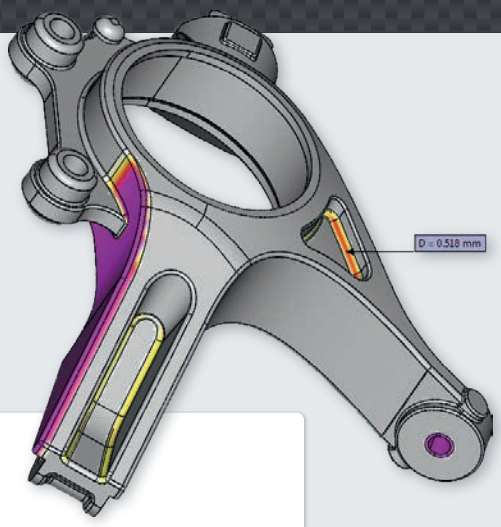
INDEPENDENT INTERFACES

Our native interfaces extract the history, features and related parameters directly from the binary file, without requiring access to a license or the API of the original CAD system. By importing CAD data directly, all necessary information can be retrieved extremely rapidly and without any limiting factors.

3D AND 2D ASSOCIATED ADAPTIVE REMASTERING

3D_Evolution´s Feature Based technology performs an adaptive optimization of the model´s history, taking full account of the feature types and the data structure of the target system. Plug-ins available for major CAD systems automatically remaster the adapted feature based models, maintaining assembly structure, features, MML (Multi models Link), 2D associate and related parameters like: Dimensions, sections, views, PMI, attribute, naming, colour, layer, metadata as well as B-Rep geometries. The feature-sketches contain the original constrains and are fully editable in 3D_Evolution as well as in the target system.

If the parametric model contains surfacic bodies or imported solids, our proven healing functions allow for optimal data quality of these entities and thus a stable remastering process of the subsequent feature operations in the target system.

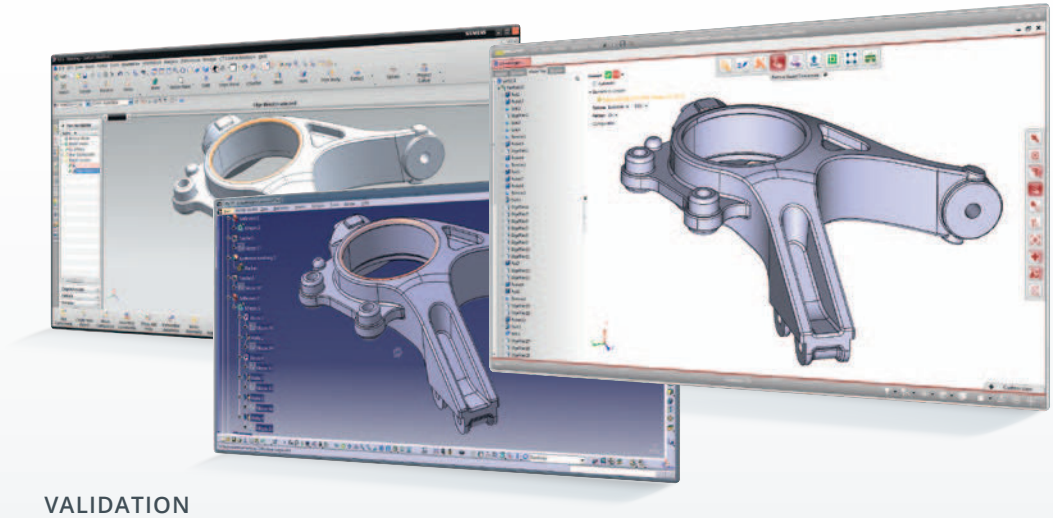


FEATURE CHECK

3D_Evolution is equipped with a smart Feature Based checker, which follows a similar behavior of the conversion engine. The principle is simple, before making the feature reconstruction, check if there are some known issues which can be detected and use the extended GUI to fix those issues first. The “feature check” tool can also be used to establish a functional check that verifies that some design rules are respected in the model parameters.

FEATURE REPORT

After a conversion a fully and very understandable report as XML presents all information´s about the migrated model.



VALIDATION

After conversion, the shape of the original parts and assemblies can be compared with the converted models to validate the resulting geometries. If a difference is detected, the log file lists the maximum deviation and the software creates a lightweight visualization displaying variances in detail.

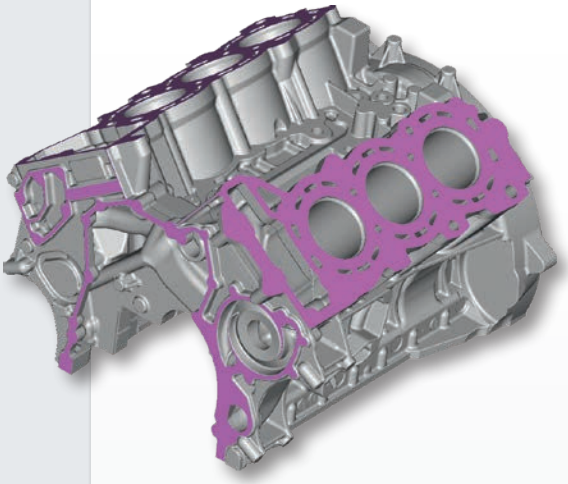
FEATURE COMPARE

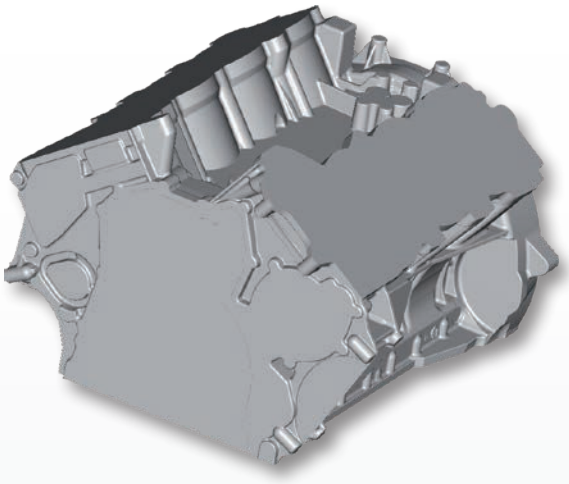
Our compare tool can now also compare parameters and the feature tree. Using this tool -after a migration, the software presents all adaptations of the parameters which are necessary and indicates if any features are missing in the tree. It is a perfect analysis and validation tool the feature based migration. Usage in conjunction with the geometric checker provides an overview of conformance from both the geometrical and the functional point of view. Like the geometric compare tool, the feature compare tool is also a perfect way to track changes made between two revisions of the same model from the specifications point of view.

Protect your intellectual property and create „light“ models.

IP PROTECTION AT THE PUSH OF A BUTTON

With a simple push of a button, the Simplifier creates bounding geometry from parts and large assemblies. This technology is the most efficient IP protection for 3-D models currently available. This unique technology also creates lightweight models used for digital mock ups and virtual reality applications in order to minimize the handling of large assemblies.





SOLID QUALITY

The Simplifier removes the interior geometry of a model, providing perfect lightweight solids of the bounding geometry, thus making it easy to handle for further use any CAx System. Simplified models can be converted to all B-Rep or tessellated formats available in 3D_Evolution.

BOUNDING SHAPE

With this function it is now possible to use closed geometries and to generate assemblies or individual bodies of an assembly. This option can be used for calculating by the smallest possible package dimension or to extreme simplification of an external geometry.

Furthermore, this tool presents the option of minimal bounding shape and it allows different body types which can be generated by parts of the assemblies. The result of using the special contour type creates a model or a single component.

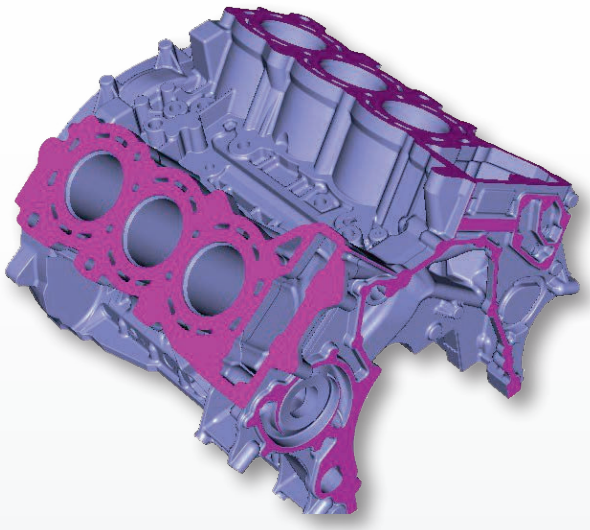
Another high developed option is by using the bounding shape function to create different bounding shapes within an assembly. 3D_Evolution automatically selects the best possible body shape generated by each part. The results displayed only the generated contours.

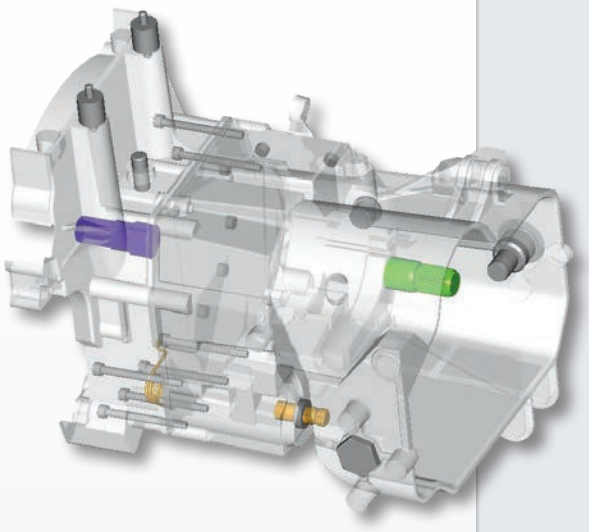
Reduction of CAD file size.
Perfect Voxelization.

SIMPLIFIER DETAILS

Details, e.g. specific holes or other features that should be excluded from simplification can be selected by the user before the process is started.

Bodies can be deleted automatically by name, e.g. *DIN* or *M12*, listed in a text file. A minimum volume can also be defined -bodies falling below this value will be deleted automatically during the process.





AUTOMATIC SIMPLIFICATION

The simplification process can also be executed in a -fully automated batch mode controlled by the Enterprise Data Manager. Using batch mode, Simplifier facilitates the automatic simplification of extremly large data volumes within the shortest time.

SHRINKWRAP

The Shrink Wrap function which creates bounding geometry from parts and assemblies providing a lightweight solid model. Furthermore, the unique function can also filter exterior information like outside faces or outside bodies and interior like inside faces or inside bodies. Before each model, assembly, body or solid body is analyzed, this function generates a tessellated assembly. Using the additional configuration, smooth geometry, results in a fine and flat appearance. The Shrink Wrap function computes a simplified model in order to match the initial geometry.

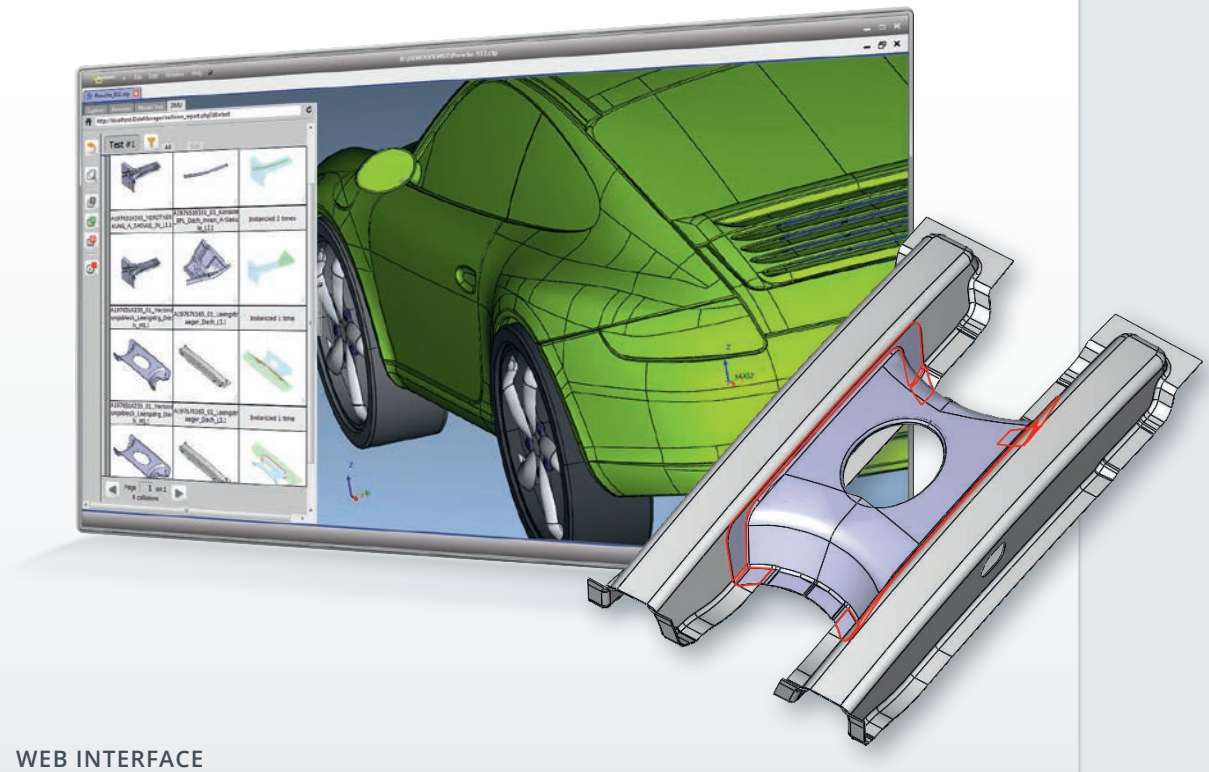
By separate handling of the assembly and part files using distributed multiprocessor computation 3D_Evolution reaches an unrivalled performance.

Enterprise Data Manager – the EDM tool allows a superfast multiprocessor batch process.

THE POWER OF A CUSTOMISABLE BATCH PROCESS

From its origin, 3D_Evolution was designed to work in batch mode and give the user a way to completely customize the batch process via a rich scripting language. Used in conjunction with Enterprise Data Manager (EDM), the batch process can be even more powerful. EDM opens functionalities like multiprocessing and multi-computer distribution management.

Complex workflows using multiple scripts or in parallel order allows processing of extremely large data volumes within the shortest time, using hardware resources optimally.



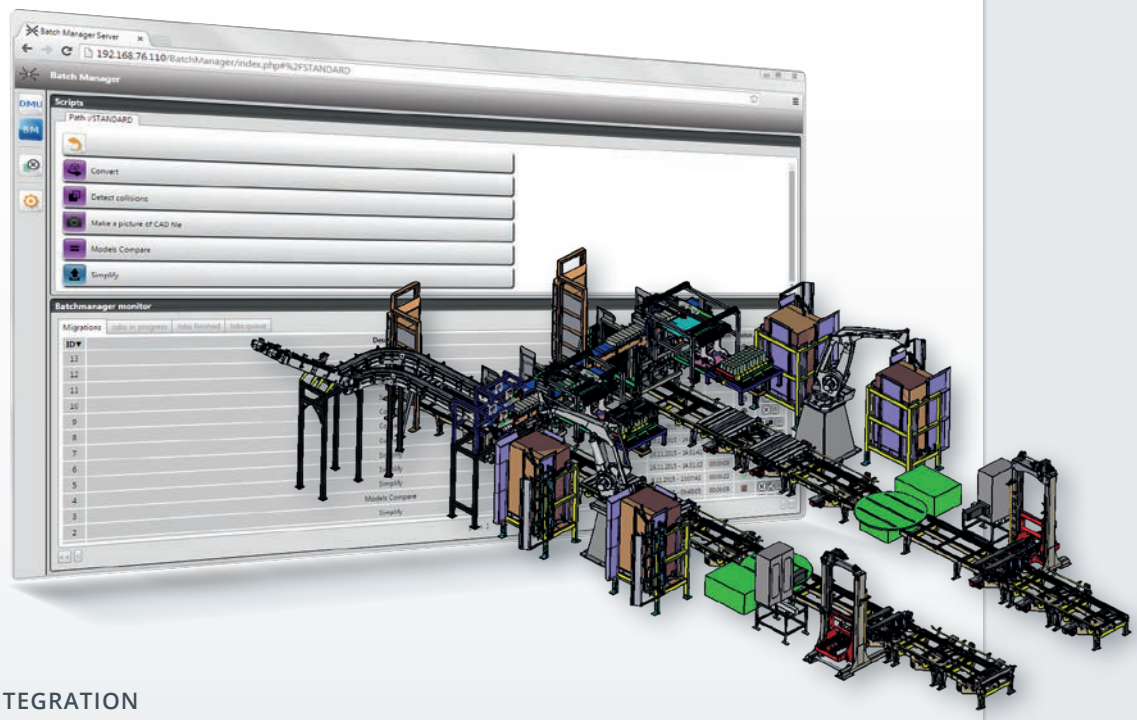
WEB INTERFACE

The Enterprise Data Manager web interface allows users connected to a global company network to access 3D_Evolution in batch mode. Conversion tasks are processed in the central job list on the Enterprise Data Manager server. The server also includes a user management system that can control access to the service and be used to send email notifications to the user when requested job is complete. For easier integration, the user management system can be connected to a LDAP server.

Designed for a seamless-integrated process, it is the ideal enhancement for your PLM environment.

COMPLEX DATA MANAGEMENT

Thanks to the data base integration, Enterprise Data Manager can manage links between parts in complex product structures as well as revisions. Now, it is possible to have an intelligent process that knows which part has to be rebuilt first or it can make iterative computations that update just needed elements when a new revision comes up. The data-base is also the perfect tool to store, sort and filter all kinds of meta-data and provides a fast and efficient way to reuse information in the scripts.

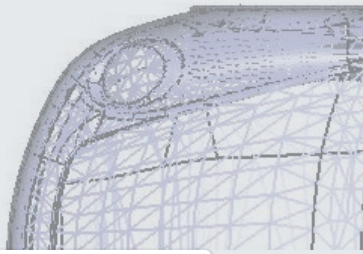


PLM INTEGRATION

PLM integration is easy and fast – because 3D_Evolution can be launched in a highly customizable batch mode from a simple command line. The simplest to the most advanced commends can be associated into any PLM or SAP application.

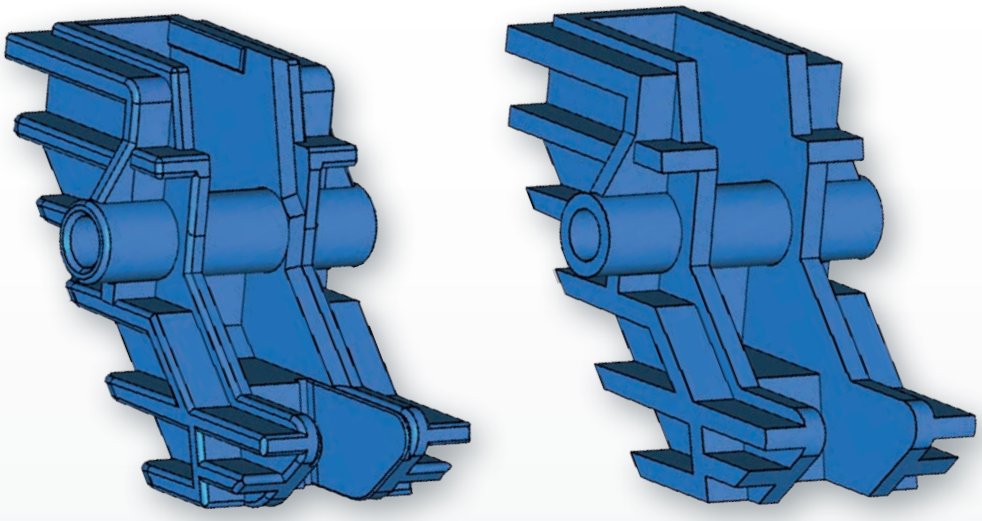
Combines an easy-to-use graphical user interface and a powerful scripting language for process integration and automation. The flexibility and scalability offered by 3D_Evolution means it is immediately ready to launch in any MCAD environment.

FEM Tools bridges the gap between CAD and CAE with easy-to-use functionalities.



INDEPENDENT QUALITY

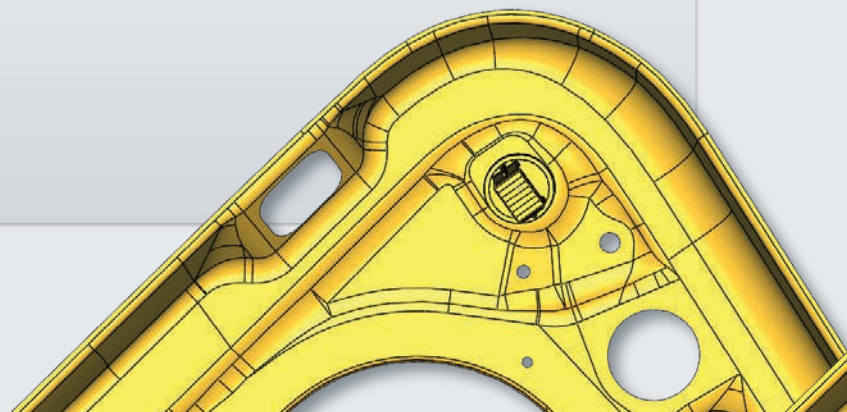
Interfaces for all major formats are making CAE analysts independent from access to a CAD system. Check, healing and conversion functions ensure perfect model quality, while easy-to-use manual functions help to repair extremely difficult geometries – for a fast and focused model clean-up.

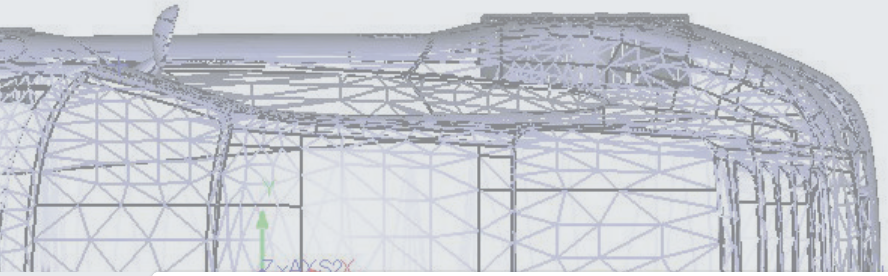


MODEL CLEAN-UP AND DEFEATURING

Fast and automated defeaturing functions are removing rounds, chamfers, holes, letters and internal geometry within seconds. Robust direct modeling functions and an integrated CAD module allow the manipulation and generation of geometry without going back to a CAD system.

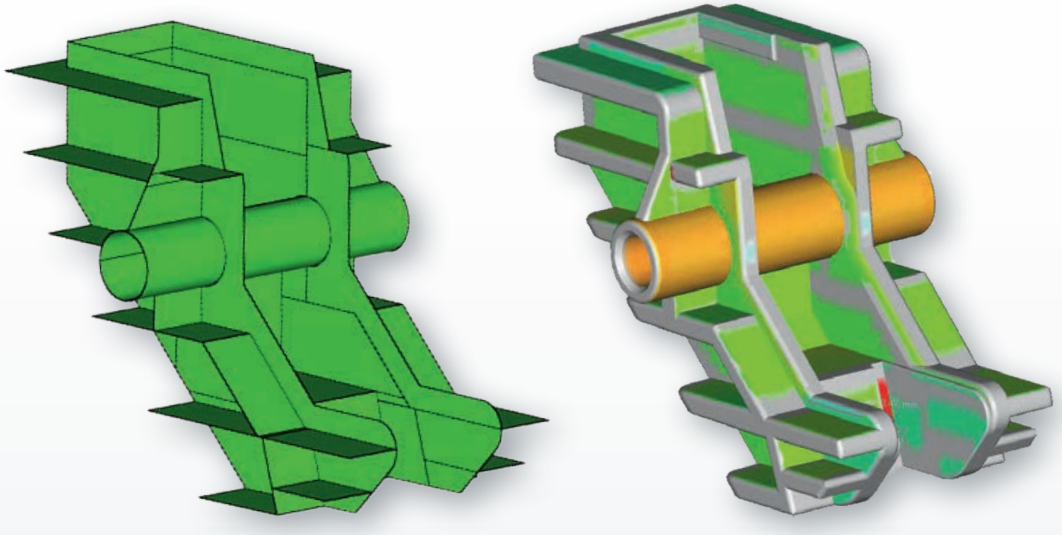
In addition mature clean-up functions resolve quality problems such as gaps and overlapping elements on CAD models in a fast, easy-to-use and highly automated way.





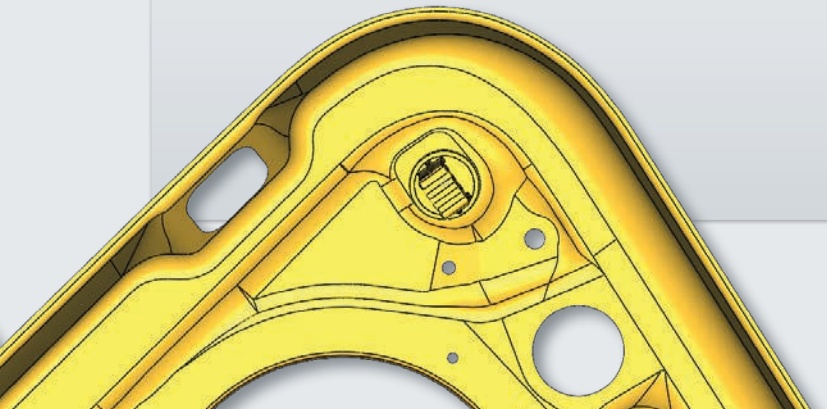
MIDFACE

This clever tool creates midfaces from solid bodies and automatically trims the resulting faces for a connected high-quality sheet body. A wide range of semi-automatic functions efficiently reduce the time needed to create perfect midface models. Several parameters to limit the maximum wall thickness and draft angle help to automate the process. The wall thickness of the original solid is attached to the midface model and can be saved in FEA-specific formats such as Nastran.



MERGING FACES

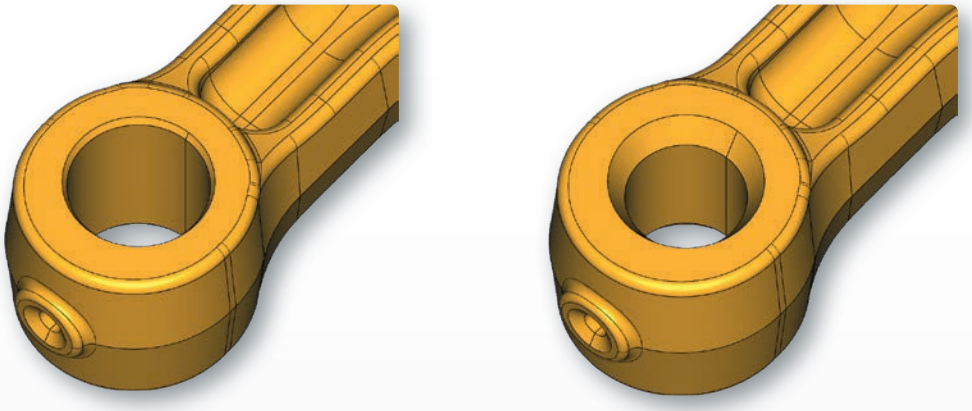
The automatic metaface function merges tiny faces and the basis surfaces at the push of a button. The elimination of problematic minielents reduces the total number of faces by approximately 40-70%. For a mximal automation the process can be controled by several parametersto limit the complexity of the resulting surfaces. Depending on the geometry, the elimination of minifaces results in up to 75% less faces. Thanks to Metaface, geometry can now be meshed and handled easily for CFD and CAE calculations resulting from an efficient reduction of elements.



Direct Modeling, Quick Sketch and Geometry Creation.

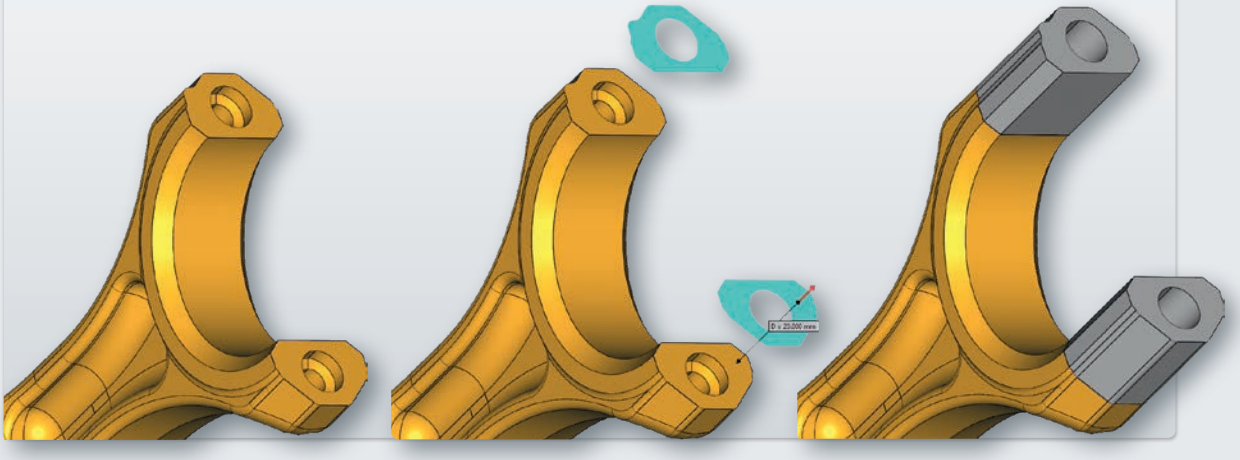
DIRECT MODELING

The function of Direct Modeling enables an easy-to-use and reliable manipulation of existing geometry. This tool allows several options of modeling such as: translation, rotation, scaling, changing the radius or creation of new geometries through the function of Quick Sketch.



GEOMETRY CREATION AND QUICK SKETCH

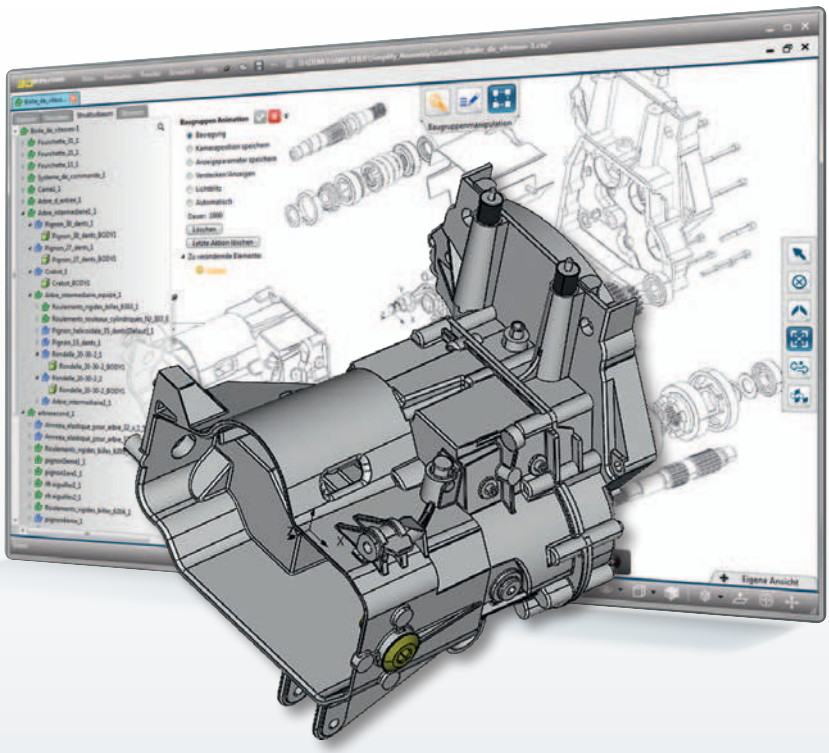
The Quick Sketch tool is an easy to handle tool that is helpful to quickly create curves or sketches, which can be used directly as is or as a base element to create surfaces or volumes by extrusion. Geometry creation is another way of using the Direct Modeling. These tools are really convenient to quickly create a geometrical element, which can be used for any other function in 3D_Evolution without having to go back to the original CAD software to create this supplemental geometry.



Animations and 3D Explosion View.

ASSEMBLIES MANIPULATION AND ANIMATION

Assemblies manipulation offer some function to modify quickly and easily the position of assembly components. They can be moved and positioned relatively to other component. An other usage is the fast creation of exploded assembly representation. The assembly modification can be recorded and replay step by step. At last action, the complete sequence can be recorded in a movie file.



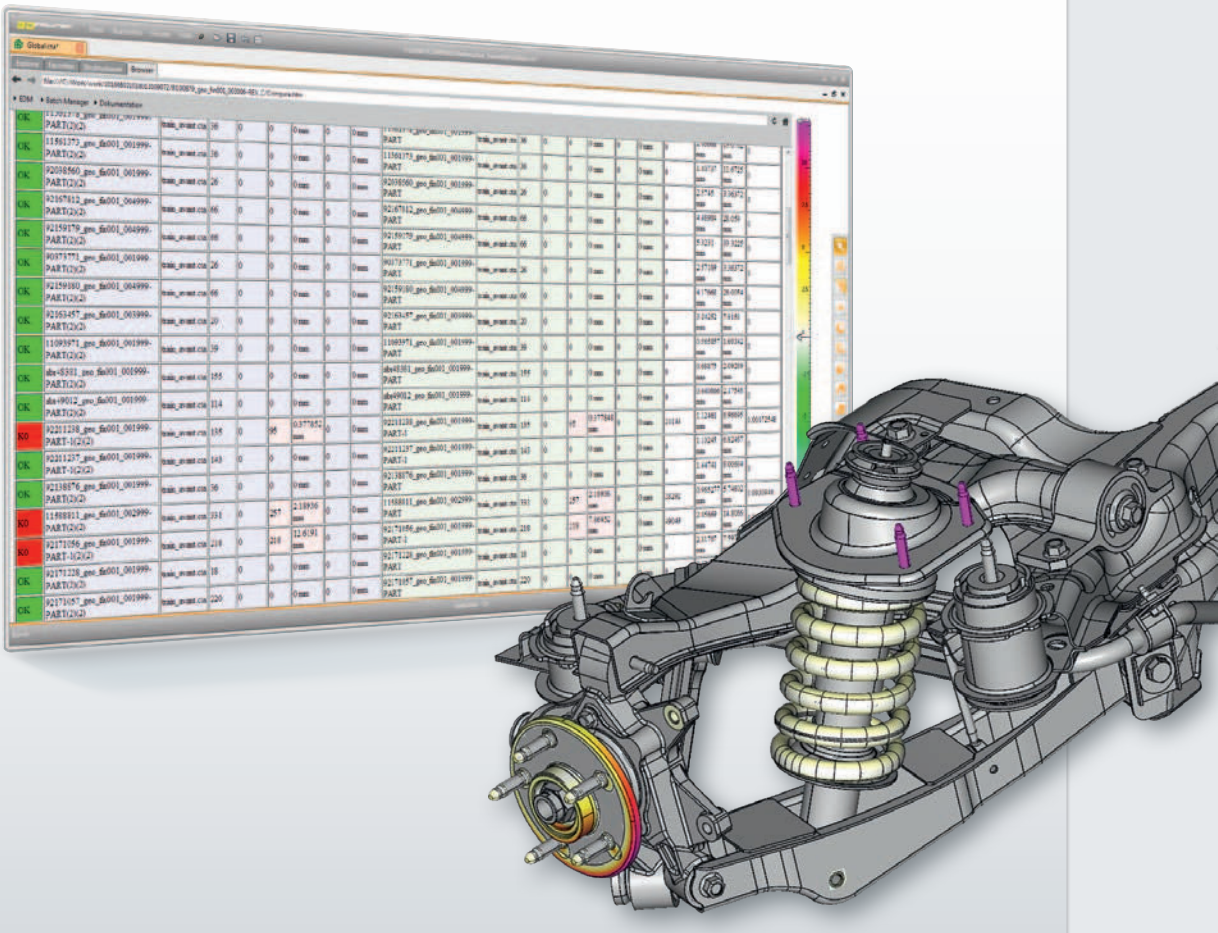
SECTION, SPLIT AND BOOLEAN OPERATIONS

Numerous manipulation functions are also available in order to allow fast creation geometrical elements from existing model. In few click, section curves can be easily created for one or multiple elements like complete assembly and reuse as real 3D curves. More standard CAD function like boolean operation or split geometry are also available in order to let our users a fast and easy way to create geometry without making a round-trip with the original CAD software.

Advanced Analysis for Comparison.

ASSEMBLIES, PMI, ATTRIBUTES, FEATURES, GEOMETRIC COMPARISON

Advanced Compare reliably and swiftly indicates and displays variances between different 3-D geometries. Parts and assemblies of different formats can be compared with customized accuracy. The powerful 3D_Evolution graphics provide a clear overview. Discrepancies are highlighted with a color scale and filter functions which allow for an easy interactive analysis. Geometric variances can be detected along with, separated assembly structures as well as comparing PMIs. Performed in batch mode, the Advanced Analysis functions create reports in different formats that fit to different usage (print, display on screen) and a lightweight viewer format as a graphical output.

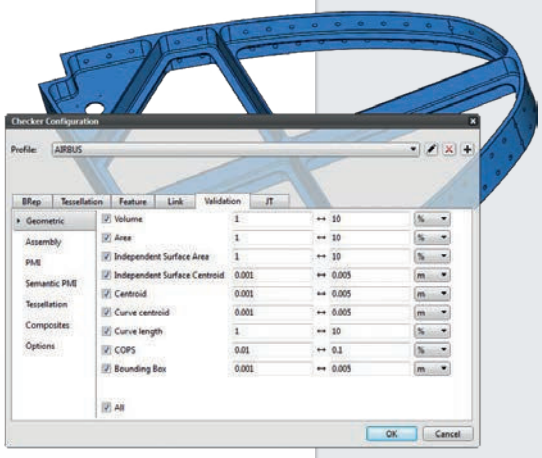


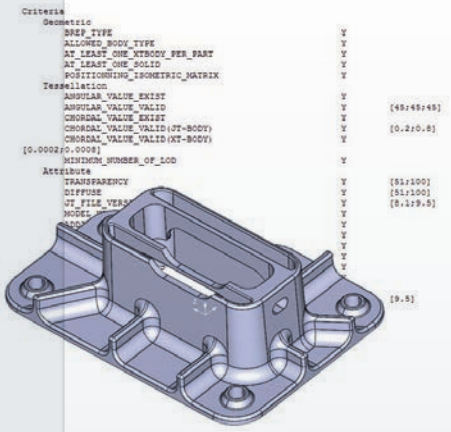
Advanced Analyze, Quality Check and Validation Tools.

LTAR GVP VALIDATION

This tool has been developed in close collaboration with the aerospace industry to validate CAD data for Long-Term Archival and Retrieval (LOTAR).

Based on the Geometric Validation Properties (GVP) values written in the STEP AP 242 files by the CAD system generating the 3D models the data will be read and checked by the independent 3D_Evolution kernel validating these values. In addition a log file meeting all LOTAR requirements will be created. As with all check functions this process can be performed also in batch mode. It is also available for JT format.





JT DATA CHECK

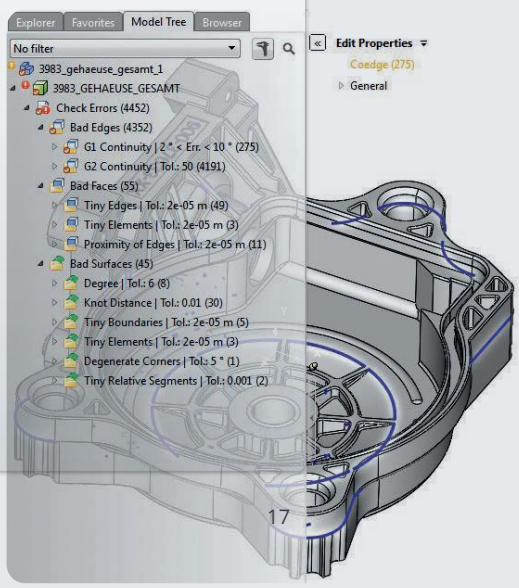
The JT format offers many different possibilities to describe structure and geometry as well as tessellated information. To check if a JT file created by an application is meeting specific standards the JT checker is an easy solution. At the push of a button the tool checks all relevant criteria defined by a free definable user profile.

After a check of the moniker identifier it is also possible to correct the monikers of a given model automatically. User-defined profiles make it easy to verify if data is approved, e.g. for a JT data exchange with Daimler.

VDA AND SASIG QUALITY CHECK

The certified 3D_Evolution© Quality Checker verifies all 3D geometries independent of the CAD format. It is the only conversion tool that is certified in accordance with SASIG/PDQ and VDA 4955/2 specifications.

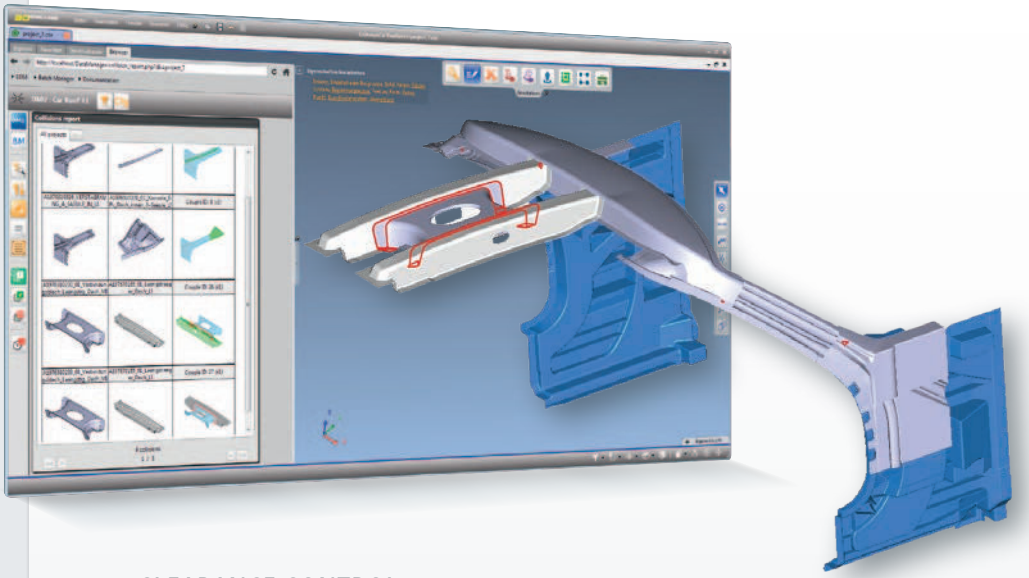
Failures on faces, surfaces, curves and topology are accurately displayed on the model. The listing of error types in the Checker's tree structure allows for systematic selection of the geometries and error clearings. 3D_Evolution has also specific automatic healing and interactive clean-up functions.



Advanced Analysis for DMU.

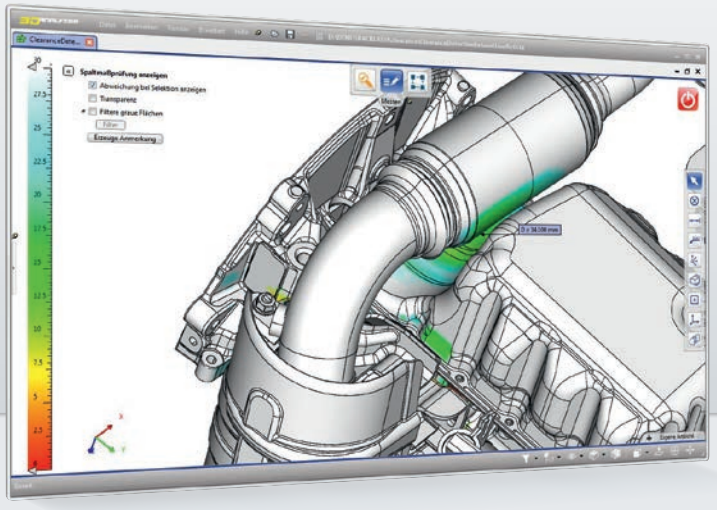
COLLISION DETECTION

For digital mock-up our reliable Collision Detection tool finds intersections between parts in assemblies. Parts with allowed intersections can be listed in a XML file and can then be excluded from the process. The detected collisions are highlighted by intersection curves while the model is displayed as transparent. The collision report file contains the list of all collided parts as well as the related fully functional 3-D and the collision curves.

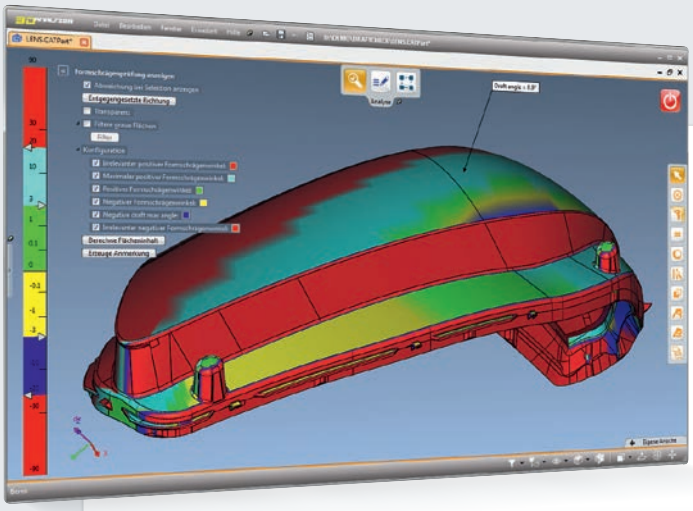


CLEARANCE CONTROL

This technology is important to ensure the quality of assemblies, e.g. to avoid vibration noises caused by parts outside a defined clearance interval. A clearance can also be checked within parts to avoid design errors causing manufacturing problems. Reliability, high-resolution display as well as outstanding performance are shared between all Advanced Analysis modules.



Advanced Analysis for Geometry.



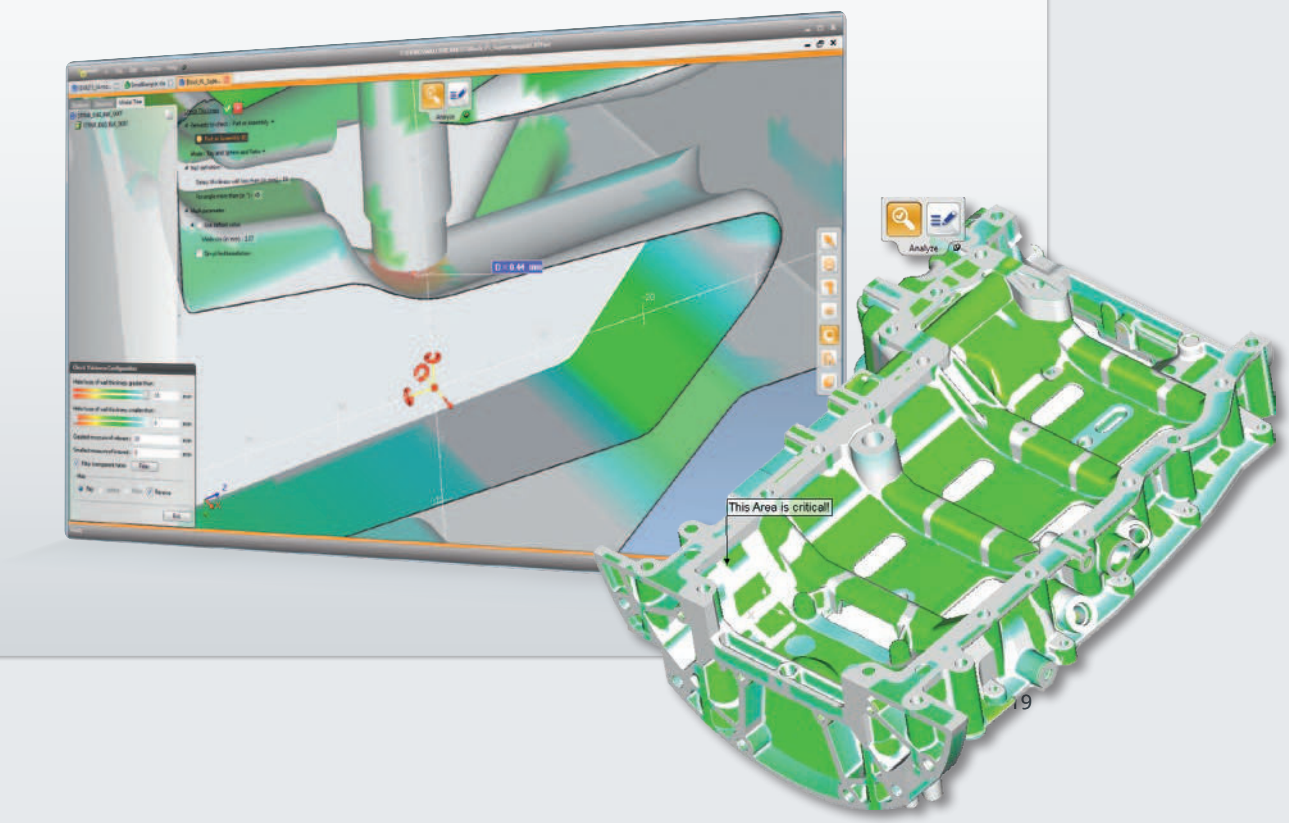
DRAFT AND UNDERCUT ANALYSIS

Draft Analysis and Undercut Analysis are two highly-developed tools that analyze and test the feasibility of removing a part from a mold.

Both tools are responsible for the correct application of drafts for surfaces and bodies. All results after using these two tools are displayed on a color map showing the draft angle across the part. This allows users to quickly determine areas of draft. Through the solutions of 3D_Evolution -the software allows a user to define specific values for X, Y and Z for Draft Analysis.

THICKNESS CHECKER

The Thickness Checker indicates areas of critical, user-defined wall thickness, e.g. in casting parts. Areas where the wall thickness falls below or rises above the defined value are clearly highlighted and can be displayed separately while the values are indicated by color. The Thickness Checker technology saves precious resources, increases quality and avoids costly changes at early stages of product development.



CORETECHNOLOGIE

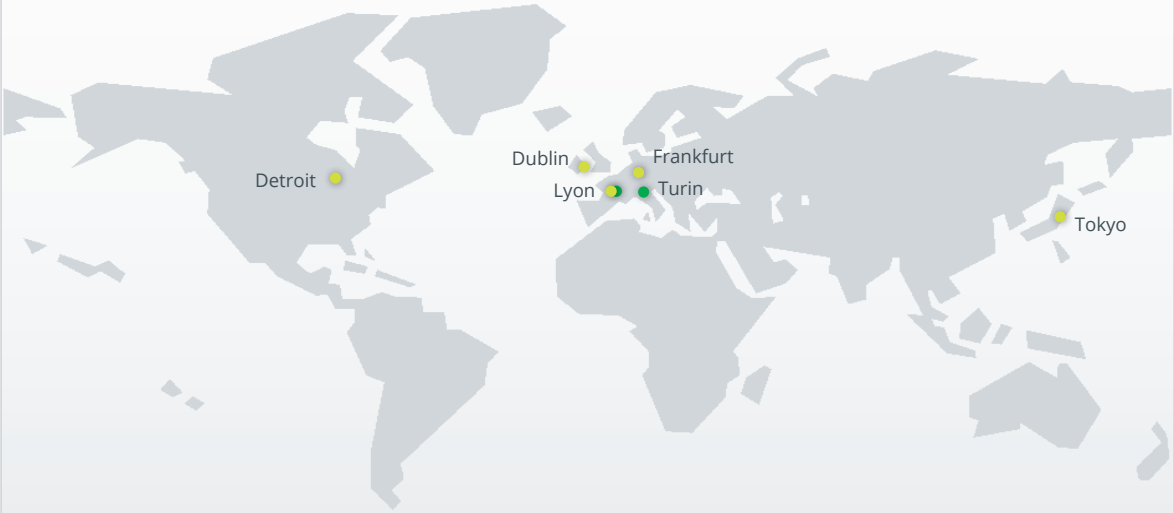
ABOUT CORETECHNOLOGIE

CoreTechnologie is an international software developer with locations in Germany, France, USA, Italy, Japan, India, and Ireland. In the CAD interoperability universe, CoreTechnologie is the leading global producer of the most comprehensive 3D conversion and collaboration software tools available today.

Our goal is future-oriented development and customer centric technology to optimize interoperability, thus helping organizations to streamline their Product Life Cycle management.

We work with highly professional automated processes, and we are always one step ahead of the latest technology. The top priority for us is that our software has the possibility to adapt to all customer requirements.

CoreTechnologie's customer portfolio comprises more than 600 customers from several sectors including automotive, aerospace, mechanical engineering, and consumer goods industries.



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