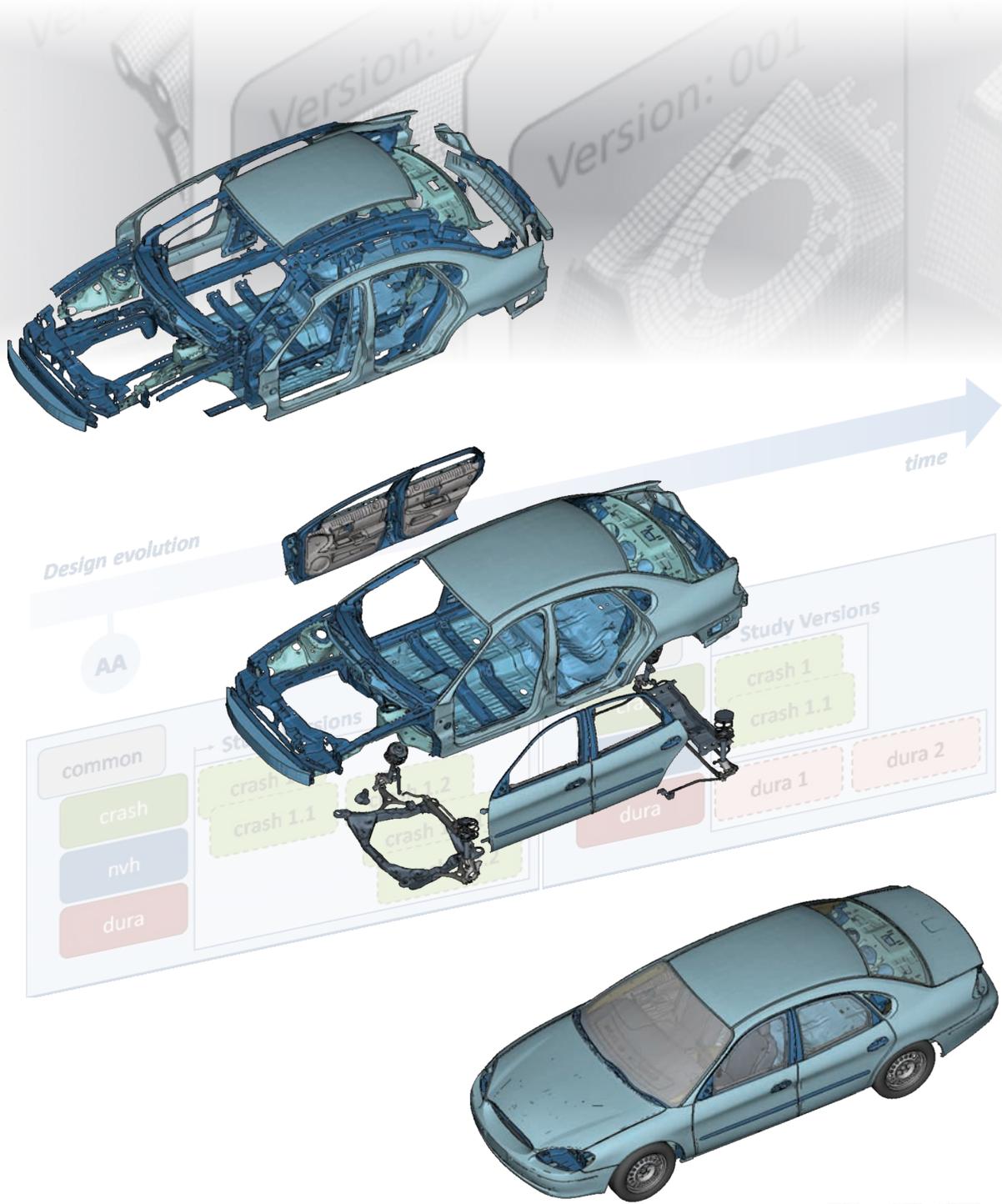


ANSA
PRE PROCESSOR

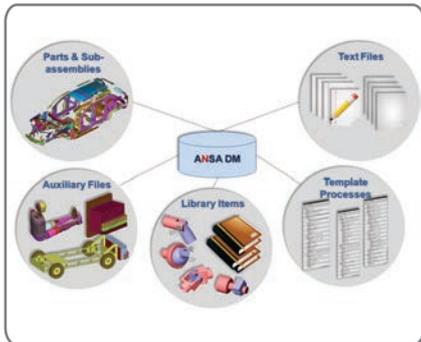


facilitating Data Management in ANSA



Data Management is unquestionably one of the most critical factors that contribute to the efficiency and productivity of CAE teams. The huge amount of data involved in pre-processing as well as the need for synchronization of the CAE model with the design evolution, intensify the need for flexible and inexpensive solutions that can bridge the gap between the PDM systems and the CAE-world and become a reference point throughout the CAE cycle.

Addressing these needs, BETA CAE Systems provides integrated solutions for the effective and cost-efficient management of data, starting from the PDM systems export and all the way to the output of the keyword file. Out of the box solutions for the interaction with PDM systems and breakthrough CAD input technologies ensure a smooth and effortless transition to the CAE world. From then on, the ANSA Data Management (ANSA DM) takes over, streamlining data exchanges between engineering teams and assisting the engineers in the model management on both ANSA- and Include- files basis.

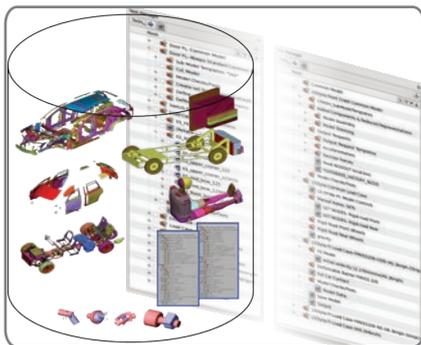


A library of pre-processing model data

The data management system integrated in ANSA enables the creation and maintenance of a library of part and sub-system representations. For parts, the library contains the ANSA representation of the geometries and the alternative mesh representations that are used in different load-case models, for all different CAD versions that have been released. For sub-systems, the library contains assemblies for different analyses and solvers, for all different CAD freezes.

Once an ANSA session is connected with a library of pre-processing model data, several core modelling tools like the Model Browser, the Batch Mesh Manager and the Product Tree Editor, make use of it in order to boost their performance and improve the efficiency of the CAE engineers.

Therefore, the data management system delivers a number of long anticipated capabilities, including the reuse of library and carry-over parts, the single-processing of multi-positioned parts and the version control of CAE model iterations, to name a few.



Interfacing with PDM/PLM Systems

In contemporary product development, the overall planning of CAE activities is based on the release dates of CAD data. Those dates trigger the initiation of numerous processes in CAE teams that always start with the transfer of the CAD data into the CAE environment. However, downloading and processing the relevant data-sets for CAE analysis has traditionally been a cumbersome procedure carried out by specialists only. Recognizing this bottleneck, BETA CAE Systems offers a complete set of solutions for the interfacing with PDM systems, in order to empower the CAE engineers to process CAD/PDM data working solely with tools they are familiar with.

ANSA offers built-in interfaces for importing product definition data from established PDM systems like Siemens PLM Teamcenter and Dassault Systemes Enovia, as well as a scripting API for the creation of custom interfaces for the handling of any data format. Through these interfaces, the CAE analyst can import the geometry and meta-data of the model directly in ANSA through a user-friendly GUI.



Supported formats

- PLMXML (TeamCenter, VisMockup, Smaragd)
- ISO STEP AP242
- FATXML
- STEP
- VPM (Enovia)
- Other...

"100%" & "150%" Model

Product Tree Editor

Interfacing with SDM Systems

With ANSA data management, it is possible to create the library of the pre-processing model data directly in a folder in the file-system. This "file-based" approach covers the needs of small teams but loses its efficiency as it scales at the complete discipline or enterprise level. Therefore, for larger scale applications at an enterprise level, ANSA data management offers a direct interface with SPDRM, the Simulation Process Data and Resources Manager of BETA CAE Systems.

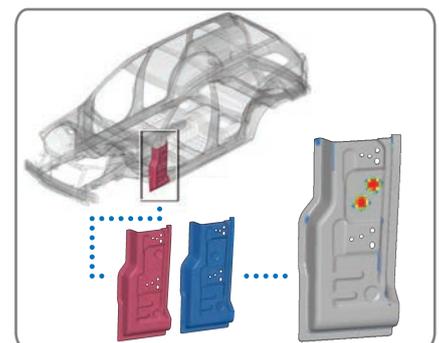
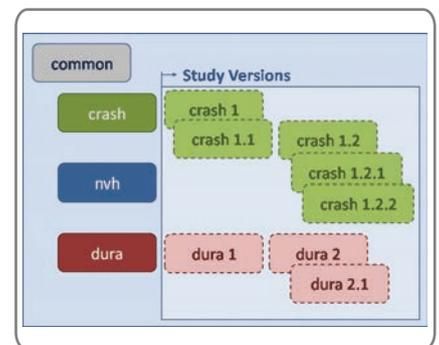
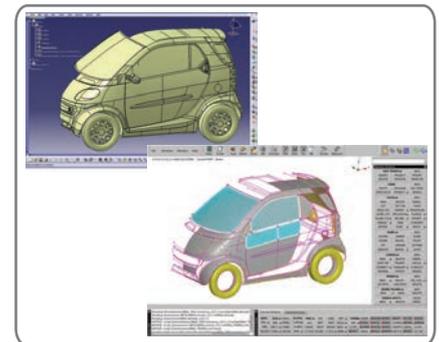
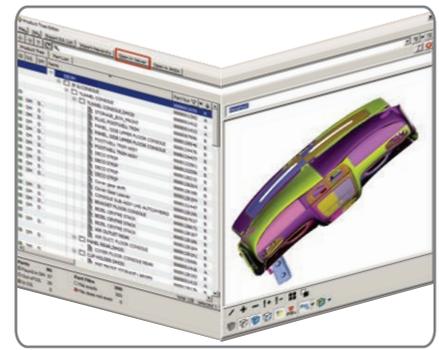
This enables the seamless use of the SPDRM data server for all model data I/O operations directly from within ANSA, combining the benefits of a server-based simulation data management system with the high-end model management tools of the pre-processor. Additionally, interfacing with 3rd party SDM systems is also possible. More information can be provided upon request.

CAD Input Technologies

The conversion of CAD data into ANSA files is one of the important starting points of the CAE workflow. Therefore, the CAD-Translators aim at the production of a high quality geometry result, providing the automatic tools for the preparation of the CAE "representation" of the components namely, automatic cleanup, mid surface generation, thickness and material assignment, interpretation of CAD/PDM-attributes (such as CAD version, release date and designer's name). The conversion phase is not limited to the geometric definitions, but it also expands to the extraction of assembly information like hierarchy and positioning data, as well as to the conversion of connection information (such as spot welds, seam welds, adhesives, etc.). The CAD input is supported for the following formats: CATIA, CGR, NX, JT, Pro/ENGINEER, SolidWorks, Inventor, IGES, STEP, VDA.

Representations Management

Different representations can be created and stored, facilitating the use of a component in multiple disciplines. Serving this purpose, representations can either be detailed or reduced FE-models. All the detailed FE-representations of a component are created by the Batch Meshing tool on a common geometrical basis. Reduced representations, like the lumped mass, are abstractions of a detailed representation, suited for a particular analysis. The Parts Representation Manager controls the generation of new representations and the direct switch from one to the other. Each representation can accept an arbitrary number of study versions, allowing the introduction of design changes on FE-model level.

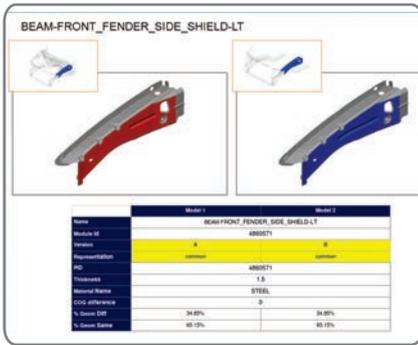


Features

- Direct input of product structure from CAD/PDM
- Direct open of CAD files in ANSA
- Multiple-instances recognition and special treatment
- Parts, groups and include files caching
- Study versions organization
- Check for DM Updates
- Compare tool
- Model variants handling
- Browsing based on queries

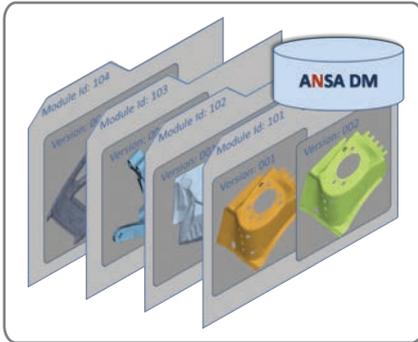
Benefits

- Direct generation of connections from CAD data
- Flawless translation of native CAD files into ANSA files
- Organization of all pre-processing data
- Maintenance of CAD/PDM meta-data in CAE model
- Synchronization of the CAE model with CAD evolution
- Collaboration among engineers and departments
- Assistance in decision making
- Adaptivity to existing practices
- Automatic updates notifications



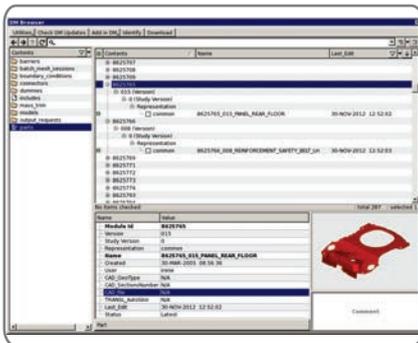
Compare

To assist and accelerate decision making, the Compare tool allows for the fast identification of differences in geometry, connections, and solver-specific definitions. From a single part to a full scale assembly, the organization of information, the easy navigation and the synchronization of the comparison report with the drawing area make the compare tool ideal not only for tracking changes but also for selective model updating, enabling the transfer of model attributes to the model at hand.



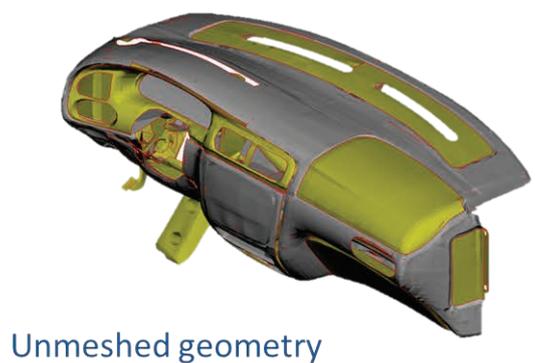
Updates notifications

ANSA DM makes the timely identification of component updates possible by monitoring all changes related to the model at hand. Newer CAD versions, study versions or plain file changes can be detected and, with the aid of the compare tool, engineers are able to decide whether the model should be updated or not. Identified updates are incorporated in the model by direct replacement of the respective older versions currently in use. During this process, all affected connection and mass information, as well as boundary conditions are automatically adapted to the model changes.



DM Browsing

The efficiency of any data management solution is dependent upon the ease with which the right data can be found. The DM Browser enables the identification of ANSA and Include files using predefined filters or user-defined queries. The creation and last-edit dates, the user name and the user comments are only a few of the file attributes that can be "scanned" by DM Browser. The results of a query can be directly merged in the model or replace their variants currently in use.

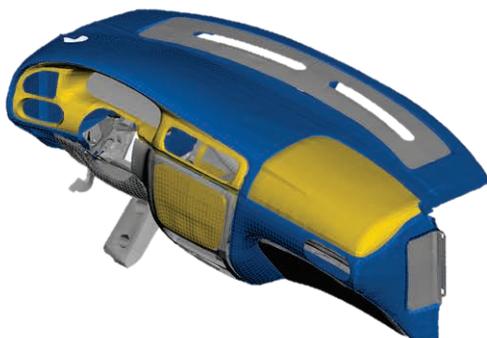


Unmeshed geometry

Compare



Meshed model of previous version



Automatic Classification	Action
Same Geometry - Different Attributes	Auto-Update
No Differences	No Change
Different Geometry	