

July 28, 2017

BETA CAE Systems announces the release of the v18.0.0 of its software suite



About this release

BETA CAE Systems, is proud for bringing simulation to a next level, with the new v18.0.0 of its software suite. Beyond the groundbreaking enhancements to ANSA, EPILYSIS and META, the new product, KOMVOS-SDM Console, is now integrated to the BETA suite.

KOMVOS, the new addition to the legacy BETA Suite, is an innovative Simulation Data Management platform for the interactive browsing, visualization and handling of all data related to CAE analysis, from PDM extractions to simulation runs, key results and reports.

Further beyond, with a plethora of revolutionary tools and groundbreaking solutions, v18.0.0 unquestionably addresses all challenges involved in the contemporary CAE industry, successfully combating all bottlenecks introduced by modeling complexity in any application area, while offers a significant boost to the operations of the CAE modeling process as a whole.

The new version 18.0.0 of ANSA adds value to the multi-disciplinary concept of our pre-processor, introducing a broad range of new features and enhancements to existing ones, reinforcing overall process consistency, accelerating user performance, and providing a considerable increase in productivity.

EPILYSIS, following its initial objective to bridge the gap between pre- and post- processing, comes with extended functionality in diverse areas, while the significant acceleration in the overall process execution is definitely one of its main assets in v18.0.0.

The new version of META extends the capabilities of post-processing with the introduction of pioneering tools and cutting-edge approaches, coupled with multi-purpose solutions for any process on demand, high levels of automation, as well as an impressive performance.

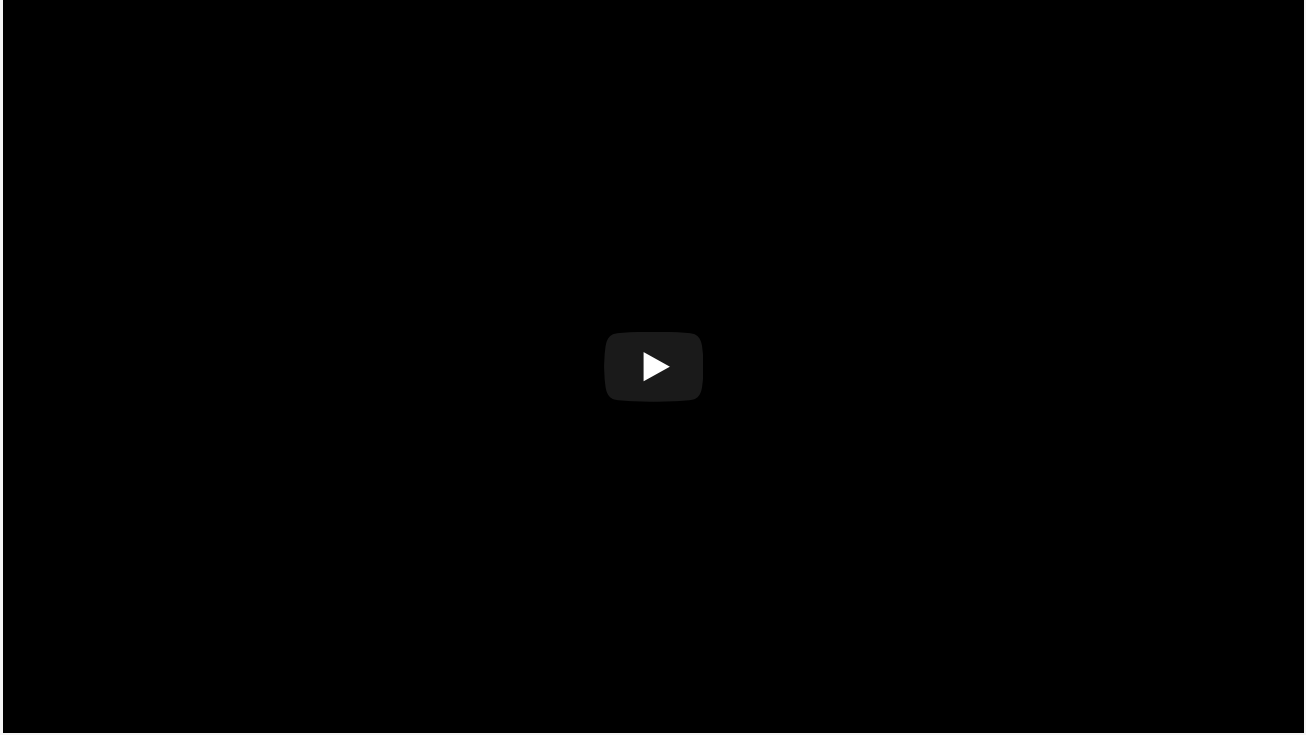
The highlights of our new software solutions are listed below. Do not miss:

- The game-changing functionality for meshing and mid surface extraction.
- The extended capabilities of META via the implementation of Virtual Reality in post-processing, captivating the perception and cognition of any given FEA workflow from a closer and more realistic perspective.
- The abundant developments that took place in the graphics engine and visualization capabilities of META, addressing the need for photo-realistic visualization and post-processing of simulation results for divergent engineering tasks.
- The promising potential for Web Collaboration that ANSA and META "Remote Viewer" offers, promoting efficient task management and progressed co-operation between team members and clients.
- The most anticipated, dedicated Inverse Forming tool.
- Our dedicated solutions on Marine and Offshore design applications, hosted under a brand new menu with accompanied exhaustive functionality.

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Video - Latest developments & New Products in BETA's product line



New tools & Highlights

Introducing Virtual Reality

Extending the capabilities of META, v18.0.0 provides a unique experience in processing FEA results from a closer and more realistic perspective via the implementation of Virtual Reality in post-processing.

Via the support of the HTC VIVE VR headset, v18.0.0 offers a virtual walk-around a real-size simulation model, physical focus on areas of interest and, above all, integration of VR capabilities in any given FEA workflow.

Visualization and Collaboration capabilities

Use your mobile device to take control of ANSA and META on your PC, even from a different time zone. ANSA and META "Remote Viewer" addresses this challenge in v18.0.0, with a port and an IP address as the sole prerequisites.

An impressive variety of graphics improvements in META adds value to the post-processing of results: Rendering Materials, Smooth Light, Spheres, Line Integral Convolution (LIC), Antialiasing, together with significant performance improvements, are some representative examples in this field.

Updates in CAD data translation

The new "translation" library (CT_2017_SP0), which has been incorporated in ANSA v18.0.0, enables the reading and translation of NX11, Creo 4.0 F000, SolidWorks 2017 and Inventor 2017 files. Furthermore, NX11 files can be translated based on the NX-Open toolkit.

Model & Data Management

Since the most important case during the model build up is a comprehensive model organization, BETA CAE Systems has come up with new data types that facilitate the set up for a simulation run.

Specifically, we discretize the CAE data into 5 distinct types: Parts & Connections, Subsystems, Simulation Models, Loadcases and Simulation Runs.

All these data types are efficiently handled via a constantly evolving environment, Model Browser, that offers the ability to the CAE analyst

to work either as a single unit on a project or as a member of a team.

These new data types come to fully support Data Management, not only in ANSA, but also in SPDRM implementations.

Process Automation

Two main pillars are the outstanding innovations in this area.

Great Improvements in performance and functionality, such as various core improvements to speed up execution time of functions, like accessing Element Nodes, Collecting entities and improving the overall performance of an average script - leading to the development of tools in script indistinguishable from the native functionality.

New advanced functionality, for example the ability to save and retrieve custom data in the ANSA DB, new compare API, new API functionality, user draw modes and, last but not least, BETA GUI available in stand-alone python/jython module.

Meshing

ANSA v18.0.0 introduces new concepts and tools that radically change the rules of the meshing game.

Automatic mid-surfacing of complex casting parts is supported by a brand new algorithm with significantly improved results. This powerful upgrade, combined with the new Align Manager fixing tool, provides impressive process acceleration.

Feature Manager, on the other hand, hosts all feature-related functionality under one single "hyper-tool", facilitating the workflow process even more.

Furthermore, FE Perimeters introduction and handling has radically altered the meshing workflow concept. The existence of FE perimeters allows the FE mesh to be handled exactly like geometry and this is obvious in already available functions, previously devoted only to geometry. This results in a significant speed up of the whole improvement process (Num +/-, Cut, Join etc.).

New algorithms for the Extrude tool along with the redesign of the user interface make the generation of mapped/sweepable volumes trivial and faster.

Also the new tool Solid Builder offers advanced capabilities to create new elements with a single selection step, saving clicks and time.

Solutions for NVH

Process and Loadcase setup has never been easier with the implementation of Loadcase Assistant, while loadcasing is now streamlined even more with the introduction of new entity types, such as the Assembly & Loadcase Points (A/LC Points).

Moreover, easy and efficient identification of the Root Causes of poor performance for NVH Analysis can take place through a vast variety of tools and features, including Bush Sensitivity, Transfer Path Analysis, Mode Contribution, Energy Map, Grid Participations and System Modes Participations.

New 3D Plots, such as MAC3D, Nyquist and Sand dune provide an even greater means of communication of the results to the analyst, while MAC, AutoMAC and Driving Point Residues (DPR) drastically extend the capabilities of Modal/FRF Correlation Tool even more.

These come along with dedicated features for Powertrain NVH, such as the calculation of Equivalent Radiated Power (ERP) results from Modal Response, as a combination of Eigenmodes, Loads and Panels Definition. Not to be missed handy features, such as the brand new animation bar in META, providing view via Frequency and not via State ID, with scrollable capabilities as well.

Towards the performance acceleration, EPILYSIS comes with impressive advancements in the NVH field: A significant performance boost in SOL103 with AMLS method and extended Contact Simulation with the implementation of Glued Contacts, assisting in this way model flexibility by automatically connecting two bodies with dissimilar meshes.

Solutions for Durability

NASTRAN Header can be set up, handled and even saved efficiently and quickly through the respective Loadcase Setup Assistant. The setup of many different models in the same database, the comprehensive overview of all model setup variations and loadcases, as well as the easy handling of modifications can be considered as the main advantages of this tool.

Moreover, models for Abaqus Eulerian Analysis can now be fully set up via specific element types and by allowing multiple material definitions, while liquids and gases can be modeled using equation of state materials.

Solutions for Crash & Safety

Regarding the model composition for crash solvers, as the process reaches the application of some solver actions on the data, ANSA makes it easy offering a solver keyword agnostic working way.

Once a file is fetched in the Model Browser, no matter if it is a subsystem or a loadcase item, ANSA recognizes all the source information that this file holds. This information in combination with the attributes that characterize the presence of a subsystem/loadcase item in a simulation run are stored as metadata. This way, files are self-contained. As a result the data exchange is easier and files can be re-used to different projects. Finally, using a high level of automation, Model Browser can apply a bulk realization of the desired solver run files.

v18.0.0 comes with several upgrades in the Safety field. A new mode for dummy-seat depenetration using EPILYSIS, for the deformation of

the springs that are underneath the seat's cushion, has been added. A tool for low speed tests is now available. Finally, Marionette tool offers a pre-simulation set up for LS-DYNA Positioning Loadcase through a wizard.

Kinetics Solver Enhancements

Kinetics solver capabilities are now brought to another dimension through Simulation Scripts, which are actually interactive session files that build an advanced process of consecutive simulations that may have different conditions.

Moreover, the Geometry, as well as the Results of Flex Bodies can now be automatically exported in .op2 files, while through a brand new Flex Builder Interface the analyst can easily create modal reduced files (of type .mnf, .flx) on the fly, starting from a Rigid Body entity and using EPILYSIS solver.

Solutions for CFD

High model complexity, increased size handling and reduced processing time are only some of the challenges constantly emerging in this field.

Addressing these, v18.0.0 provides enhanced quality of surface wrapping, improved robustness of smoothing algorithm for Hexablock, Layers and thin wall meshing for Hextreme, while the Light Volume Representation algorithm, dedicated for the handling of CFD meshes, allows the manipulation of bigger models, occupying less memory, operating with significantly increased performance.

Solutions for Composites

The introduction of Templates in Layers enables the analyst to quickly define layers with common area, selectively inherit Layer attributes from Templates, as well as modify Layer Templates to update inherited attributes accordingly.

On top of that, the Optimization job set up for Optistruct significantly accelerates the model build up phase, while reducing the human error factor to the minimum.

Moreover, the new menu Composite, introduced in ANSA v18.0.0, succeeds in organizing and simplifying the workflow of modeling composite components, offering an efficient layout of both hard-coded and additional script functionality.

Solutions for Stamping

ANSA provides reformist solutions in this area with the implementation of the inverse method through the dedicated Inverse Forming tool, predicting in this way the final thickness, strains and initial blank shape of a stamped part, based solely on its final shape.

The Thickness and Thinning fringe plots, available through this tool, identify areas where excessive thinning occurs, while the Forming Limit Diagram identifies areas of the part susceptible to wrinkling and/or tearing.

Solutions for Morphing & Optimization

From concept design to final testing, new version 18.0.0 brings enormous performance and versatility to the optimization problem set-up with a series of new toolbars introduced in META: Size & Topometry Optimization for NASTRAN SOL200, Parametric Topometry Optimization for Permas, Topology Optimization to facilitate post-processing from NASTRAN, TOSCA and LS-TASK – and not to be missed the full support of Topology Optimization for EPILYSIS.

Solutions for Marine Design

v18.0.0 comes with a new menu, dedicated on Marine, hosting useful functionality oriented to Marine and Offshore applications. Activated through the Menubar >Modules>Marine, it enables the user to import AVEVAMarine, FORAN and ShipConstructor model information, apply loads, balance the model on a wave profile, create and handle beams, among other actions. Detailed documentation can be found within the functions On-line Help and in the Marine Applications tutorial.

For more details about the new software features, enhancements and corrections please, refer to the Release Notes document.

Compatibility and Supported Platforms

ANSA files saved by all the first and second point releases of a major version are compatible to each other. New major versions can read files saved by previous ones but not vice versa.

META Project files saved from version 18.0.0 are compatible and can be opened by META version 16.0.0 or later. To be readable by META versions earlier than v16.0.0, they have to be saved selecting the option "Version <16.0.0".

Support for 32-bit platform has been discontinued for all operating systems.

Download

Where to download from

Customers who are served directly by BETA CAE Systems, or its subsidiaries, may download the new software, examples and documentation from their account on our server. They can access their account through the "user login" link at our [web site](#). Contact us if you miss your account details. The Downloads menu items give you access to the public downloads. Customers who are served by a local business agent should contact the [local support channel](#) channel for software distribution details.

What to download

All files required for the installation of this version reside in the folder named "**BETA_CAE_Systems_v18.0.0**" and are dated as of **July 28, 2017**. These files should replace any pre-releases or other files downloaded prior to that date.

The distribution of this version of our pre- and post-processing suite is packaged in one, single, unified installation file, that invokes the respective installer and guides the procedure for the installation of the required components.

For the installation of the software on each platform type, the .sh installer file residing in the folder with respective platform name, for Linux and MacOS or the respective .msi installer file for Windows, 64bit, have to be downloaded.

In addition to the above, optionally, the META Viewer is available to be downloaded for each supported platform.

The tutorials and the example files reside in the folder named "TUTORIALS". This folder includes the complete package of the tutorials and example files, and a package with only the updated ones.

The Abaqus libraries required for the post-processing of Abaqus .odb files are included in the installation package and can be optionally unpacked.

Earlier software releases are also available in the sub-directory called "old" or in a folder named after the product and version number.