

**The evolution
of BETA CAE Systems portfolio
in a nutshell**

physics on screen

9th

**BEFORE
REALITY**

CONFERENCE

June 14 - 16, 2023
Science Congress Center

Munich, Germany

Blast from the Past!



Products map

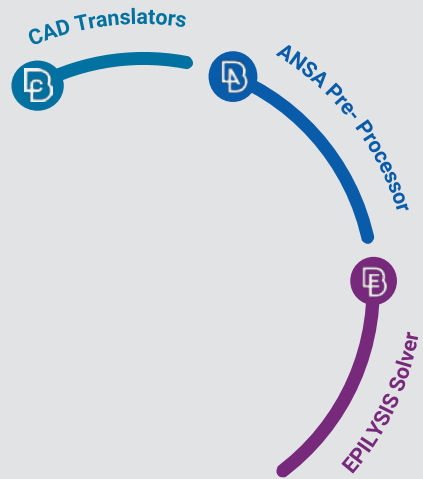


Products map



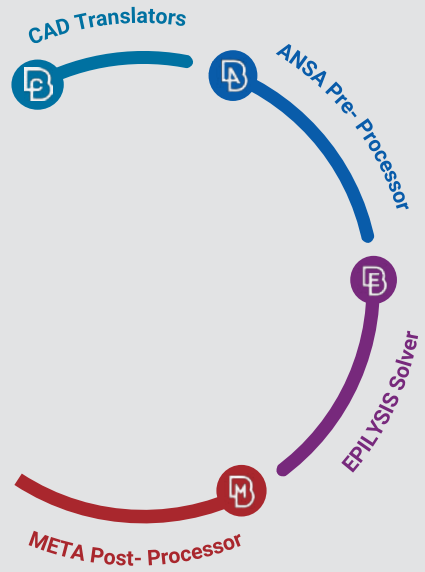


Products map





Products map



EPILYSIS
SOLVER

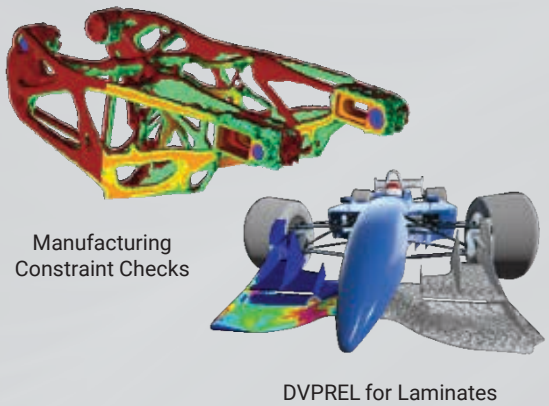


High performance computing with our FEA solver, EPILYSIS

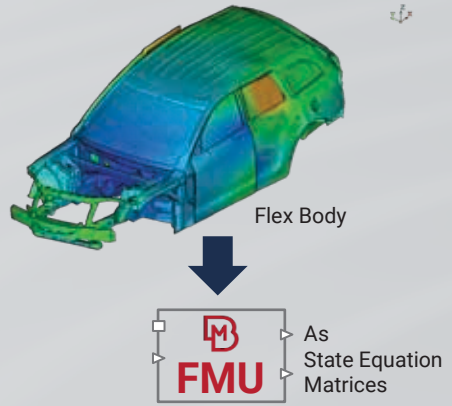
Accelerated Performance



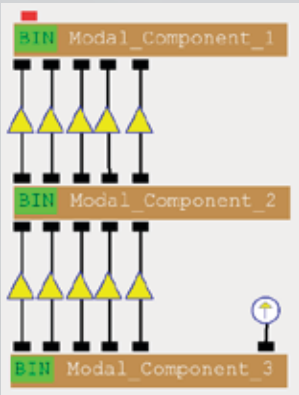
Optimization enhancements



Enhanced Flex Body Calculation



Modal Models

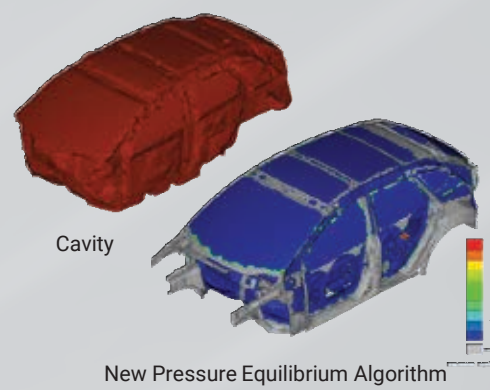


AMLS enhancements

```

AMLS PARAMETERS
=====
PARAM, AMLEDS = 700
PARAM, AMLEDS = 8000
PARAM, AMLEWA = 1.400
PARAM, AMLEWA = 5.000
PARAM, AMLEWA = 0.500
PARAM, AMLEWA = 1.700
PARAM, AMLEWA = 1.100
PARAM, AMLEWA = 0
PARAM, AMLEWA = 1.00
PARAM, AMLEWA = 20
PARAM, AMLEWA = 6
PARAM, AMLEWA = 0.000
PARAM, AMLEWA = 80
=====
AMLS INPUT TABLE
=====
NUMBER OF DOFS                               : 140976
BLOCK SIZE                                    : 720
SUBSTEP SIZE                                  : 1000
NUMBER OF RIGID BODY MODES KNOWN              : 0
TOLERANCE FOR RIGID BODY MODES                : 1.000 Hz
SHORTEST EXCITATION FREQUENCY                 : 0 Hz
GLOBAL CUTOFF FREQUENCY                       : 900,000 Hz
CUTOFF FREQUENCY FOR SUBSTRUCTURE REDUCTION   : 4500,000 Hz
CUTOFF FREQUENCY FOR DISTILLED REDUCTION      : 3600,000 Hz
CUTOFF FREQUENCY FOR SUBSTRUCTURE REDUCTION   : 900,000 Hz
CUTOFF FREQUENCY FOR BRANCH SUBSTRUCTURES     : 1550,000 Hz
OUTPUT DOF NUMBER                             : 100
OUTPUT DOF NUMBER FOR THE TOP LEVEL           : 100
  
```

New Fluid Structure Coupling



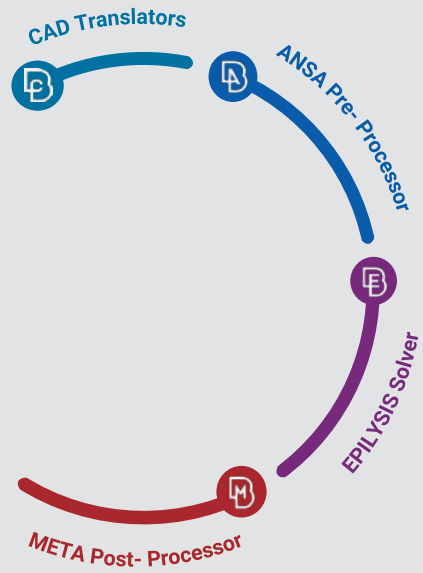


New features and enhancements in EPILYSIS

BETA CAE Systems

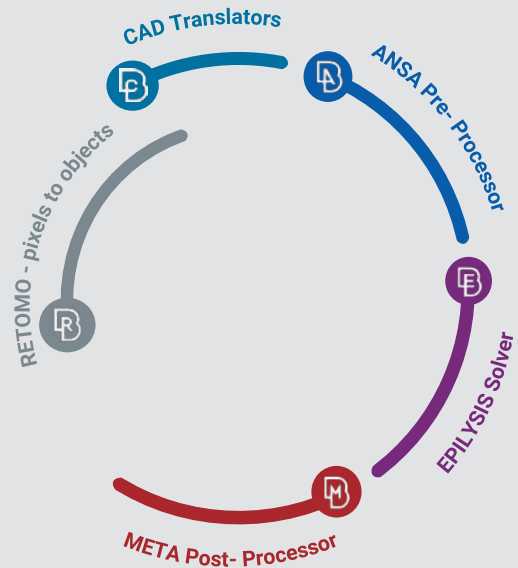
Thursday, June 15, 11:00 – 11:30, Session 5C | Jupiter

Products map





Products map



RETOMO - pixels to objects



RETOMO

PIXEL TO OBJECT

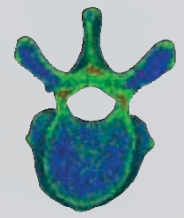


From image data to tessellated models with RETOMO

Material Mapping

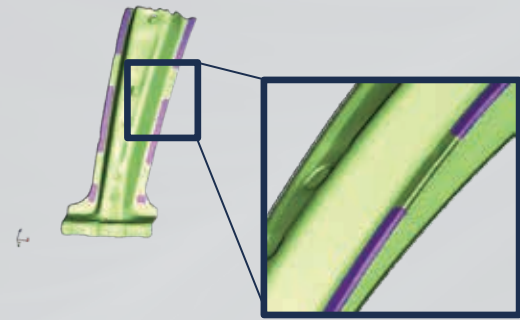


Intensity Image

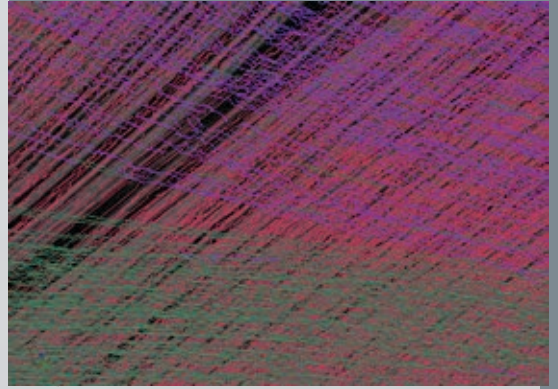


Mapped Material Properties in ANSA

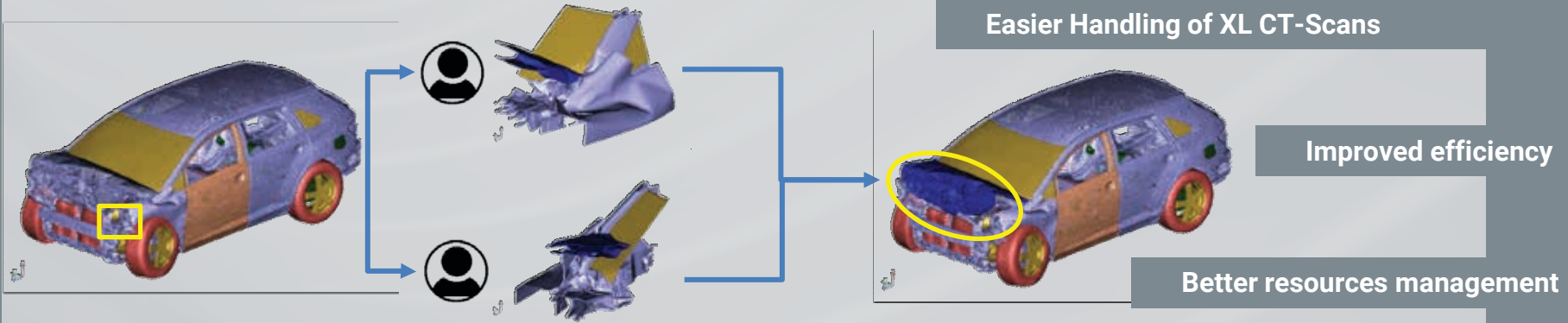
Automatic Flange detection



Fiber orientation analysis & tracking



Split / Merge Tool for XL CT Scans





Exploring the latest developments in RETOMO

BETA CAE Systems

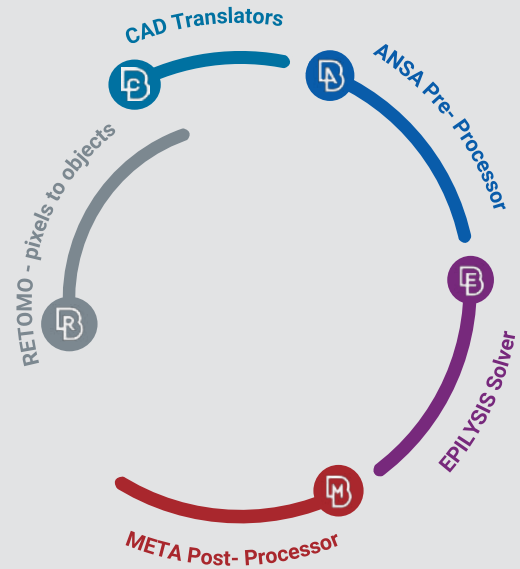
Friday, June 16, 11:00 – 11:30, Session 9D | Saturn



Fiber reinforced material CT Scan processing with RETOMO

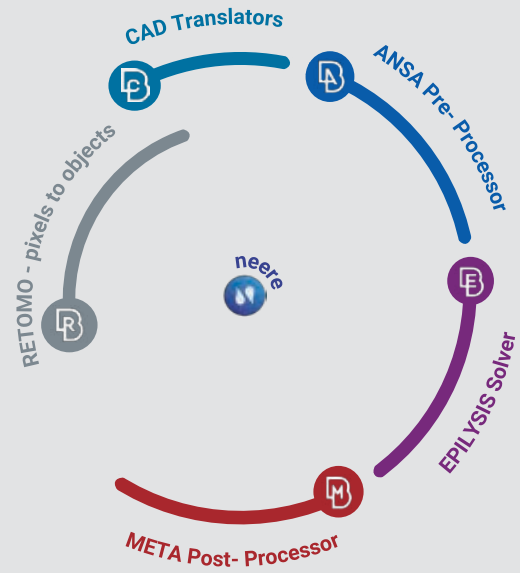
Friday, June 16, 12:00 – 12:30, Demo Session 9E | Venus I

Products map



neere

Products map





neere



neere

ENOUGH
WITH DISTANCE

Training sessions

Further BETA product support

Collaboration enhancements

Certified state-of-the-art security





NEERE: Beyond maturity, as a communications and training platform

BETA CAE Systems

Friday, June 16, 11:00 – 11:30, Session 9C | Jupiter

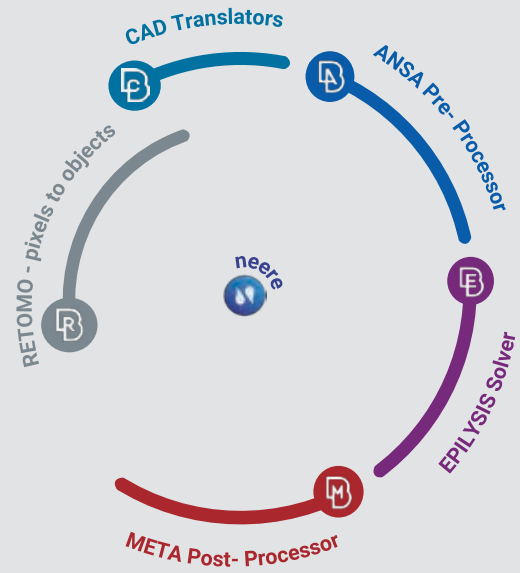


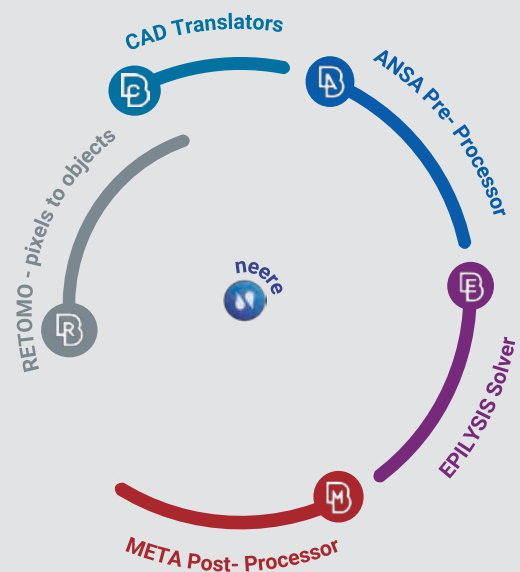
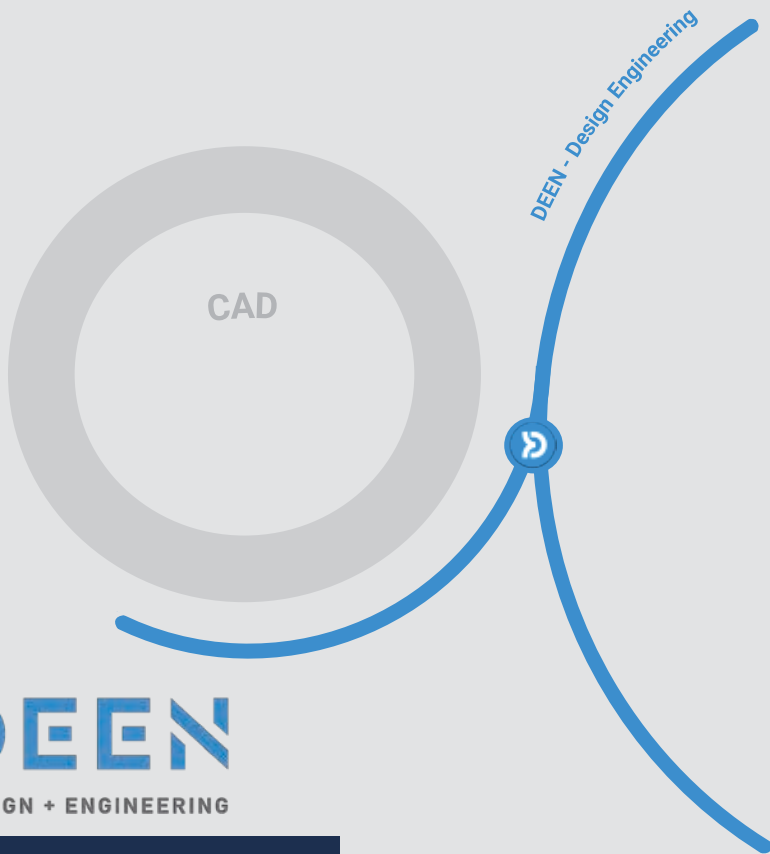
DEMO

Latest developments and employment of NEERE as a training platform

Friday, June 16, 12:00 – 12:30, Demo Session 9G | Mars I

Products map





DEEN
DESIGN + ENGINEERING

Products map



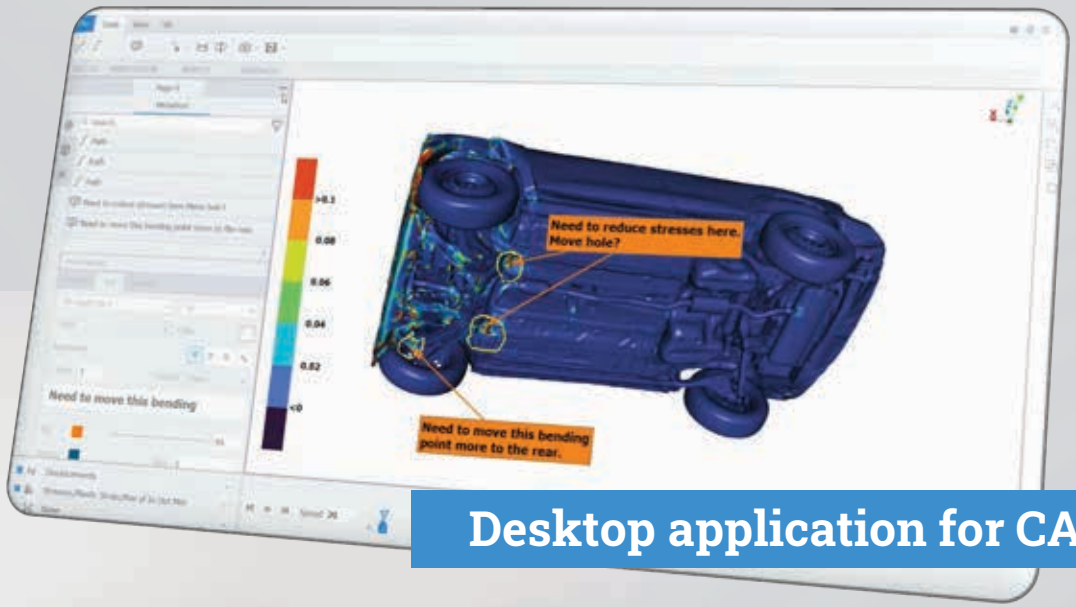
CAD

DEEN - Design Engineering



DEEN

DESIGN + ENGINEERING



Desktop application for CAD and CAE engineers

Review designs and simulation results

Allow designers to understand CAE proposals through an easy-to-handle tool

Boost product evolution cycles

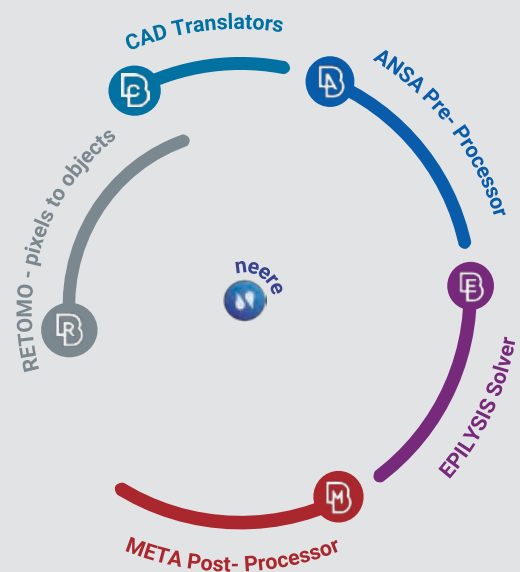
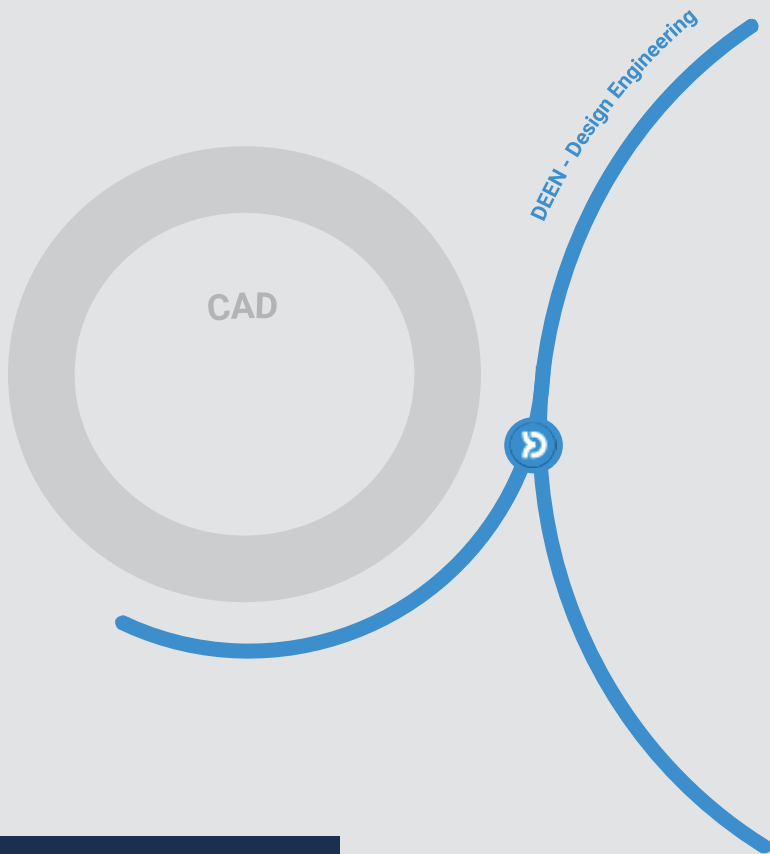
CAD

CAE

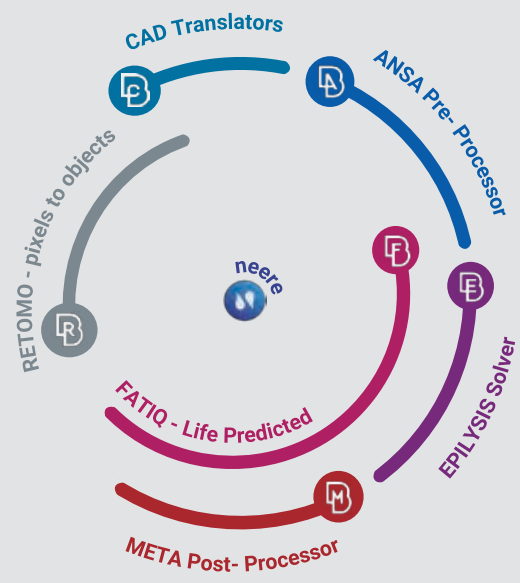
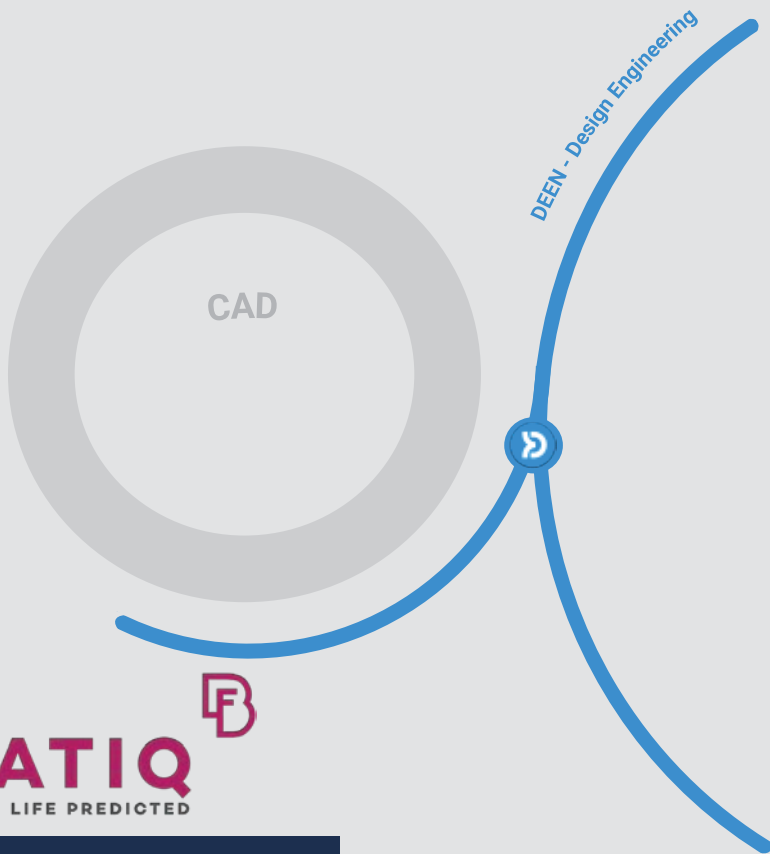


DEEN for simulation driven design

Wednesday, June 14, 16:00 – 16:30, Demo Session 3E | Venus I



Products map



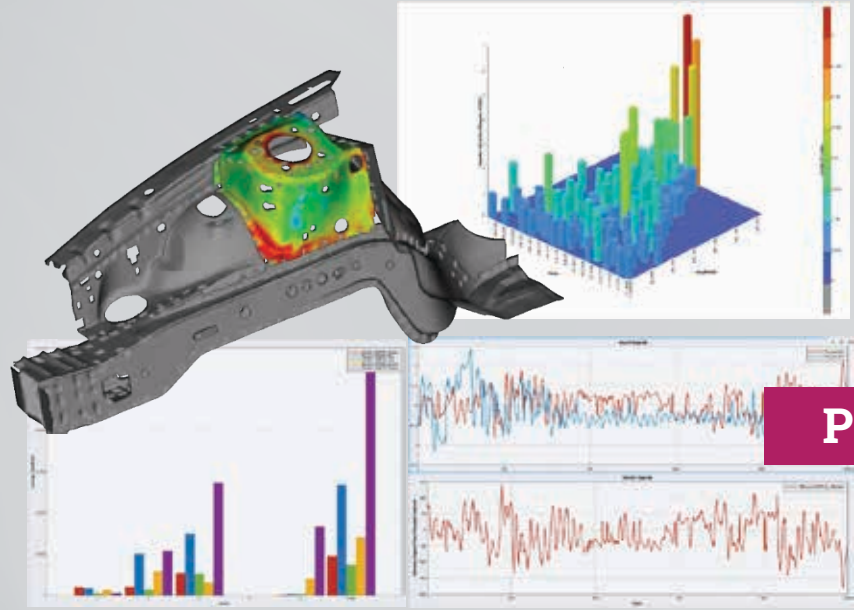
FATIQ
LIFE PREDICTED

Products map





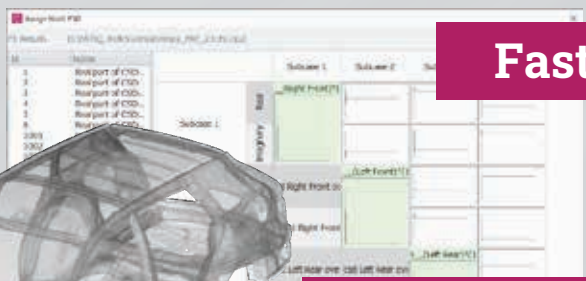
FATIQ
LIFE PREDICTED



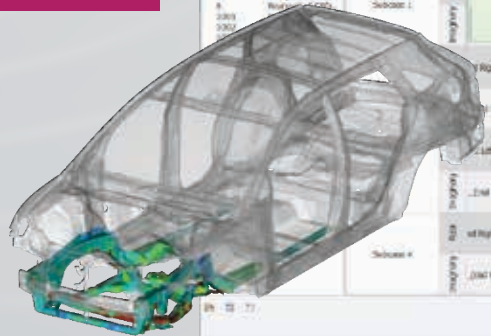
Pre-Processing using stepwise analysis setup

Stress-Life & Strain-Life Analysis

Frequency & Time Domain Calculations



Fast and accurate Solving



Interactive Post-Processing





FATIQ – The comprehensive platform for streamlined fatigue analyses

BETA CAE Systems

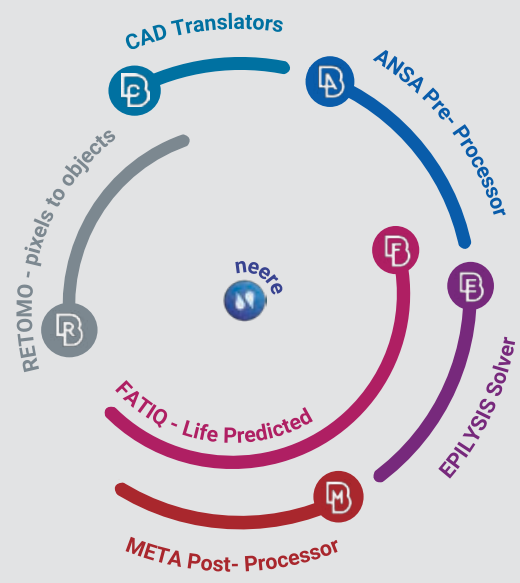
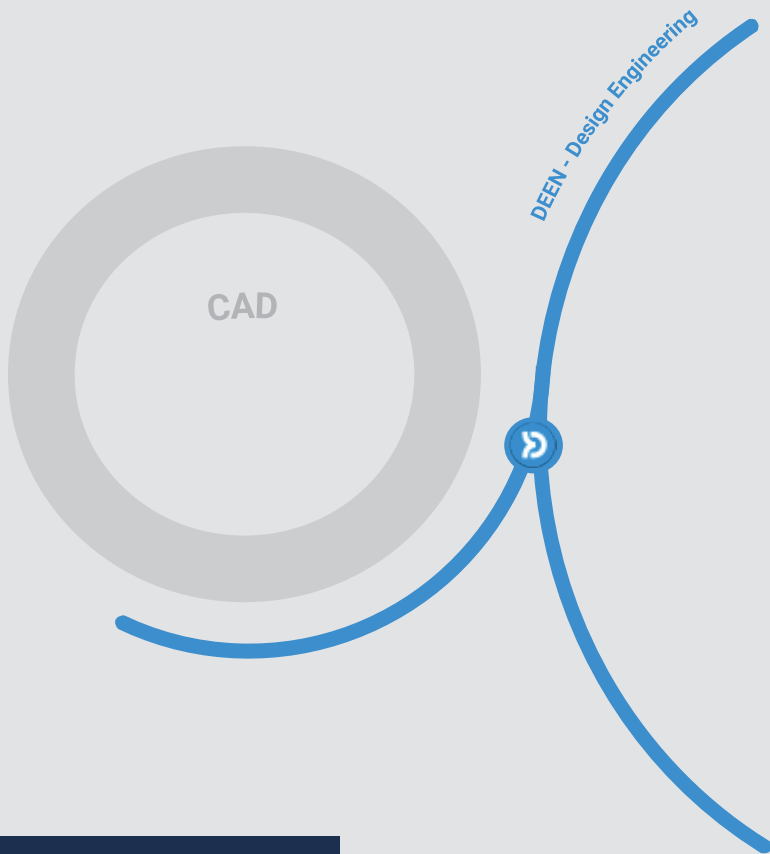
Thursday, June 15, 10:00 – 10:30, Session 4 | Audimax



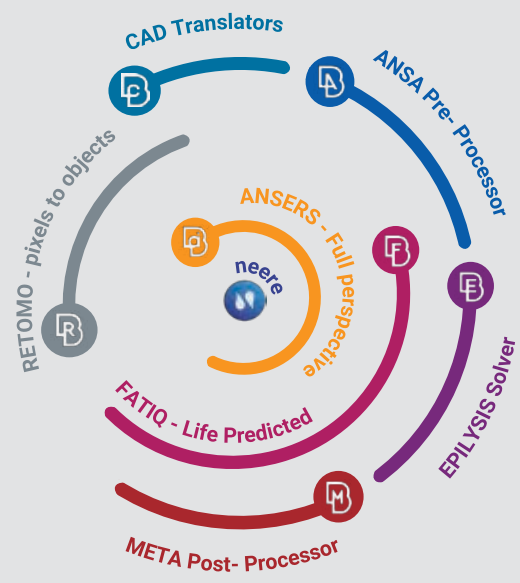
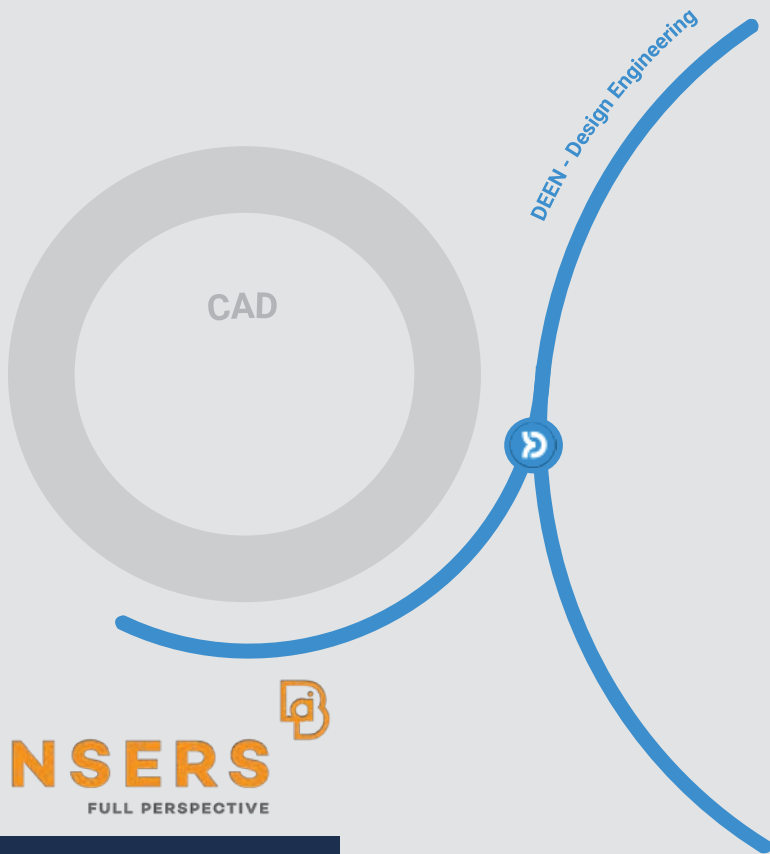
DEMO

Key features and use cases of FATIQ

Thursday, June 15, 14:00 – 14:30, Demo Session 6E | Venus I



Products map



ANSERS
FULL PERSPECTIVE

Products map

ANSERS 
FULL PERSPECTIVE





ANSERS

FULL PERSPECTIVE

Web application

Retrieving – Visualizing – Correlating – Sharing

Simulation & Physical test data





ANSERS: The single point-of-truth for simulation and physical test data

BETA CAE Systems

Thursday, June 15, 09:30 – 10:00, Session 4 | Audimax

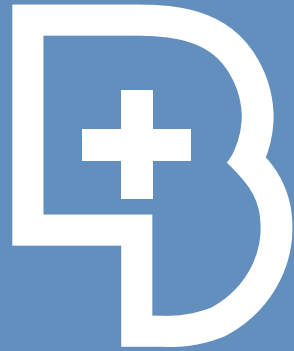


DEMO

ANSERS use cases

Thursday, June 15, 11:00 – 11:30, Demo Session 5F | Venus II

+add-ons



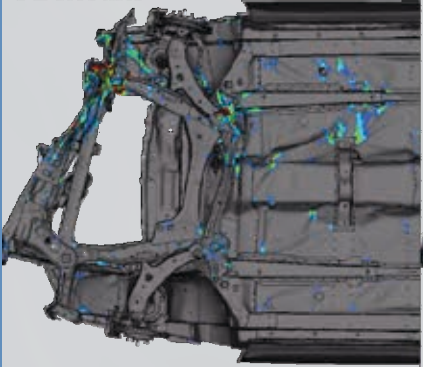


+Machine Learning
toolkit

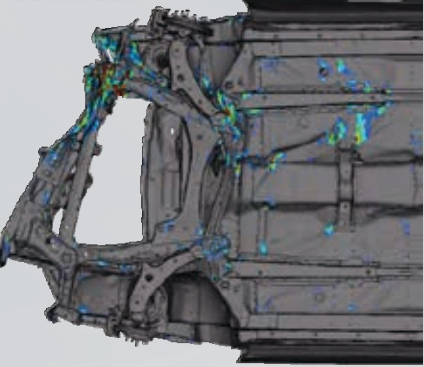
More brain power in
Engineering Simulation

Field Results Prediction

FE Results



Prediction

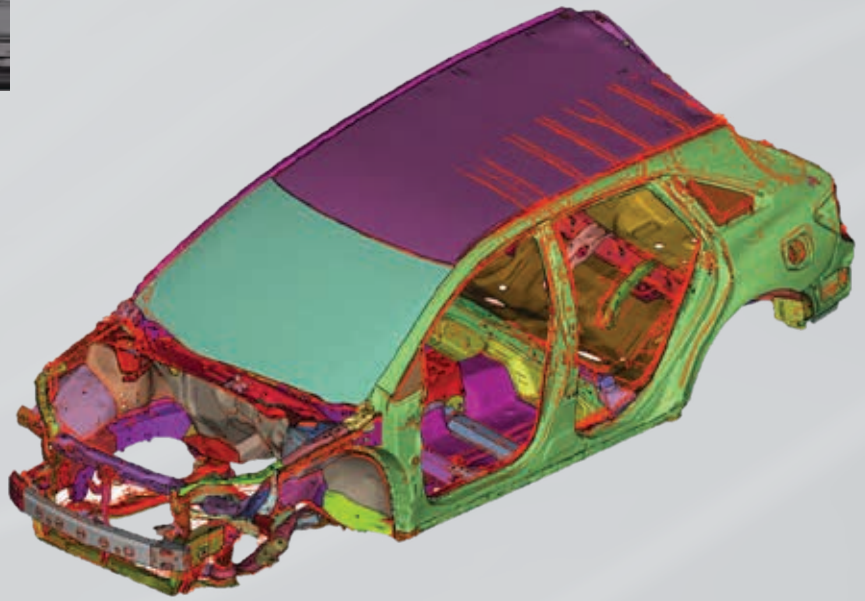


Elastic Modes Prediction

Response	Value (Hz)
First Torsional	27
First Lateral Bend	37
First Vertical Bend	33

Mode classification

Mode Number	
1	Vertical Bending
2	Lateral Bending
3	Torsional
4	Vertical Bending
5	Lateral Bending
6	Torsional
7	Torsional
8	Vertical Bending



More brain power in Engineering Simulation



Machine Learning Tools for accelerating CAE and unleashing Design Exploration

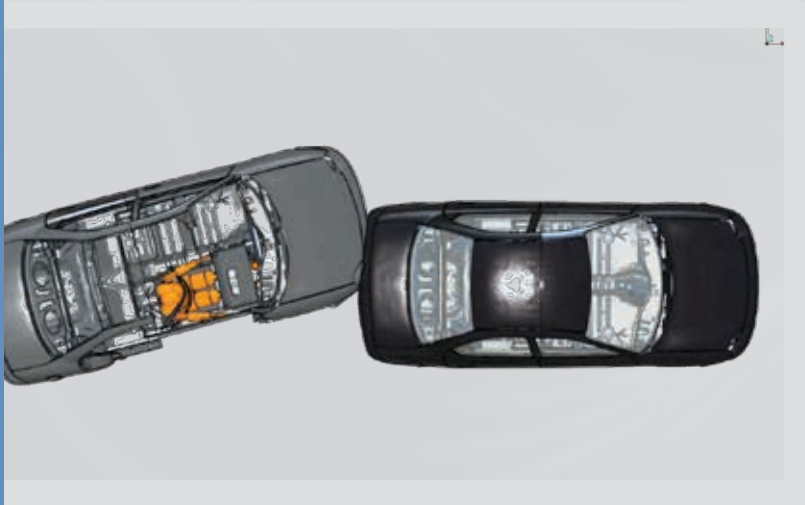
BETA CAE Systems

Friday, June 16, 10:00 – 10:30, Session 8 | Audimax



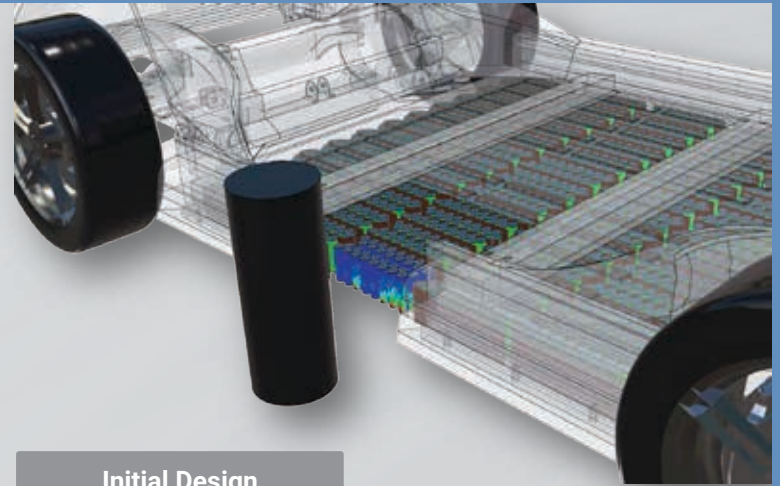
Machine Learning Design Variable and Feature-based training and simulation results prediction

Wednesday, June 14, 16:30 – 17:30, Demo Session 3E | Venus I



Occupant injury prediction

Safety features optimization



Initial Design

ML Optimization

Optimal Design



Eliminate damaged batteries

Mass constraint

More brain power in Engineering Simulation



Prediction of Occupant safety utilizing Machine Learning and CARLA Autonomous drive simulation software

BETA CAE Systems

Friday, June 16, 12:00 – 12:30, Session 9A | Audimax



Optimization and quick verification of an electric vehicle side-frame design using Machine Learning methods

BETA CAE Systems

Friday, June 16, 11:30 – 12:00, Session 9A | Audimax



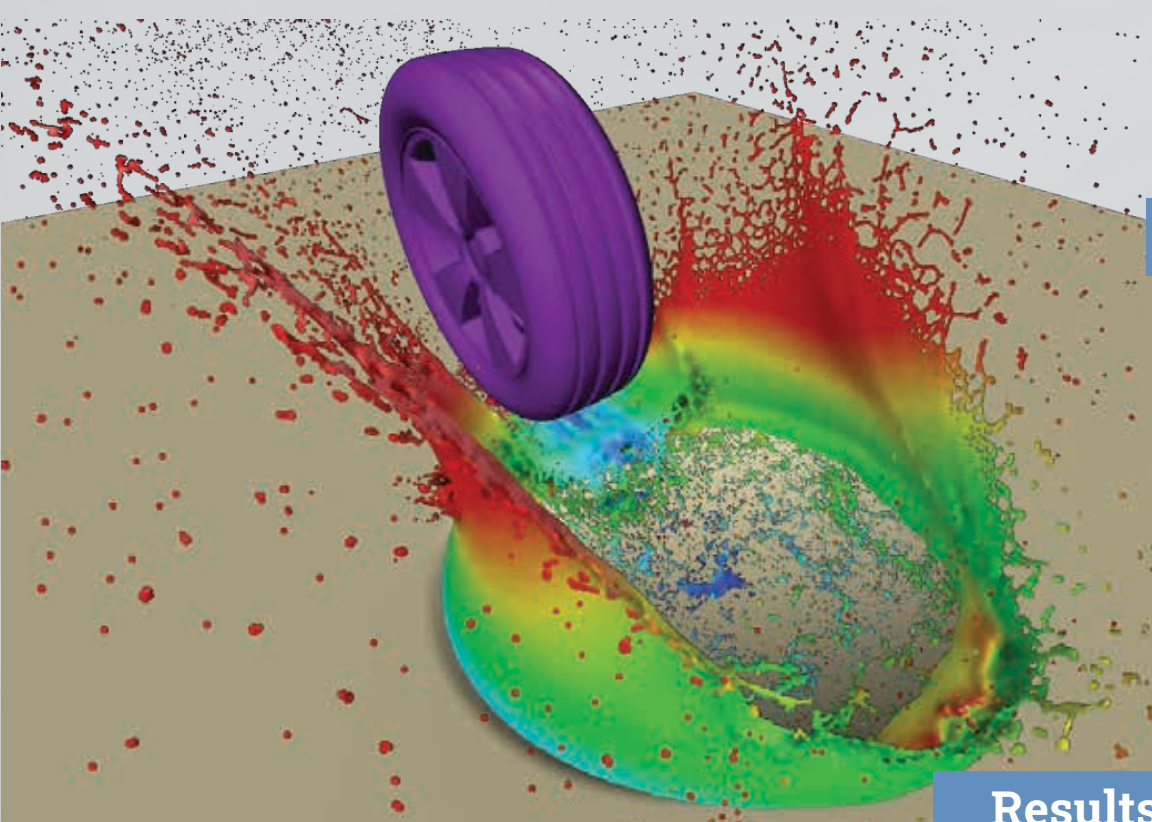
+Smoothed Particle
Hydrodynamics (SPH)
solver

Make effortless
hydrodynamic
simulations

Effortless hydrodynamic simulations with SPH solver



Easy and fast simulation of complex problems with large displacements and free surface fluid flows



Integrated in ANSA

Straightforward & Simple

Coupled with kinematics

GPU implementation

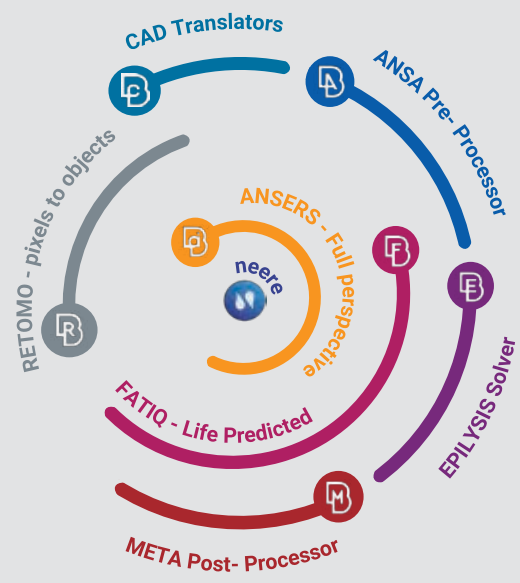
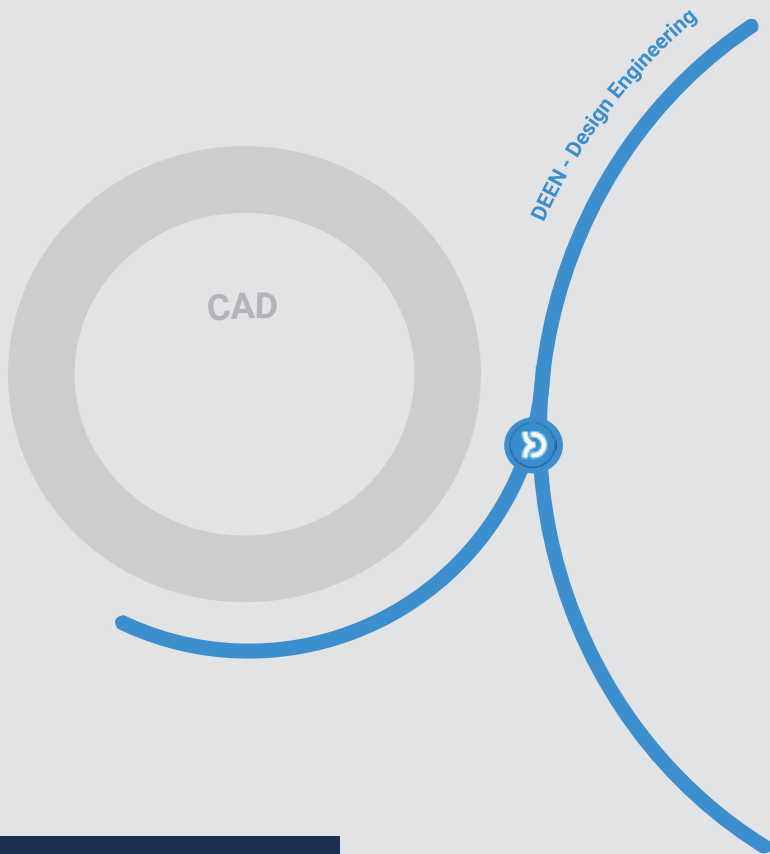
Results fully compatible with META

Effortless hydrodynamic simulations with SPH solver

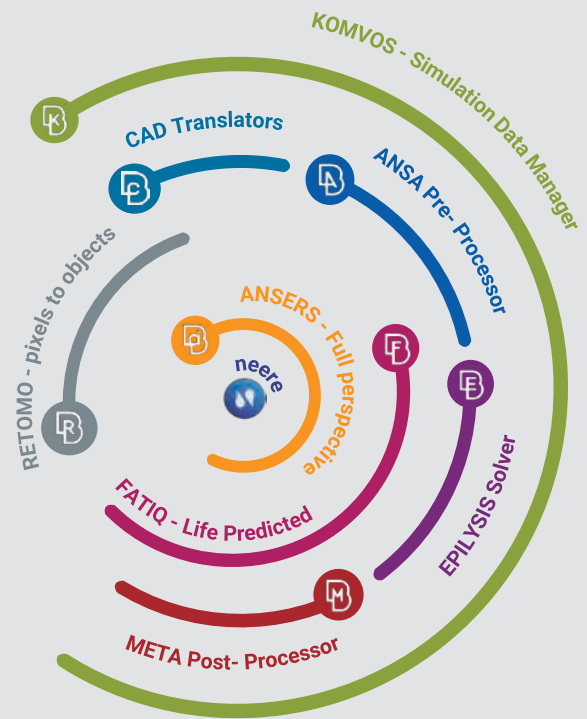


Effortless hydrodynamic simulations with ANSA SPH solver

Thursday, June 15, 17:30 – 18:00, Demo Session 7G | Mars I



Products map



KOMVOS 
SDM CONSOLE

Products map



DEEN - Design Engineering



RETOMO - pixels to objects



CAD Translators



ANSERS - Full perspective



neere



FATIQ - Life Predicted

ANSA Pre- Processor



EPILYSIS Solver



META Post- Processor



KOMVOS - Simulation Data Manager

SPDRM - Simulation Process Data and Resources Manager

SPDRM
WORKFLOW MANAGER

Products map

SPDRM
WORKFLOW MANAGER

KOMVOS
SDM CONSOLE



ANSA
PRE PROCESSOR



META
POST PROCESSOR

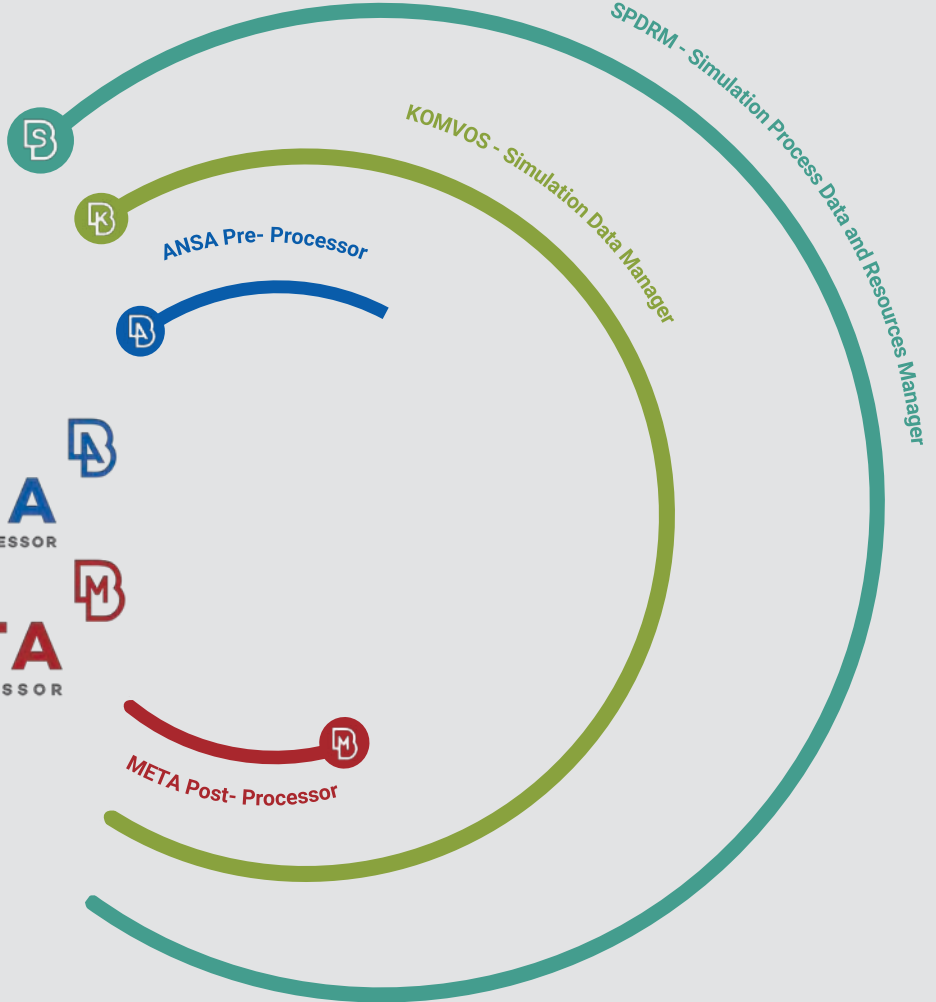


ANSA Pre-Processor

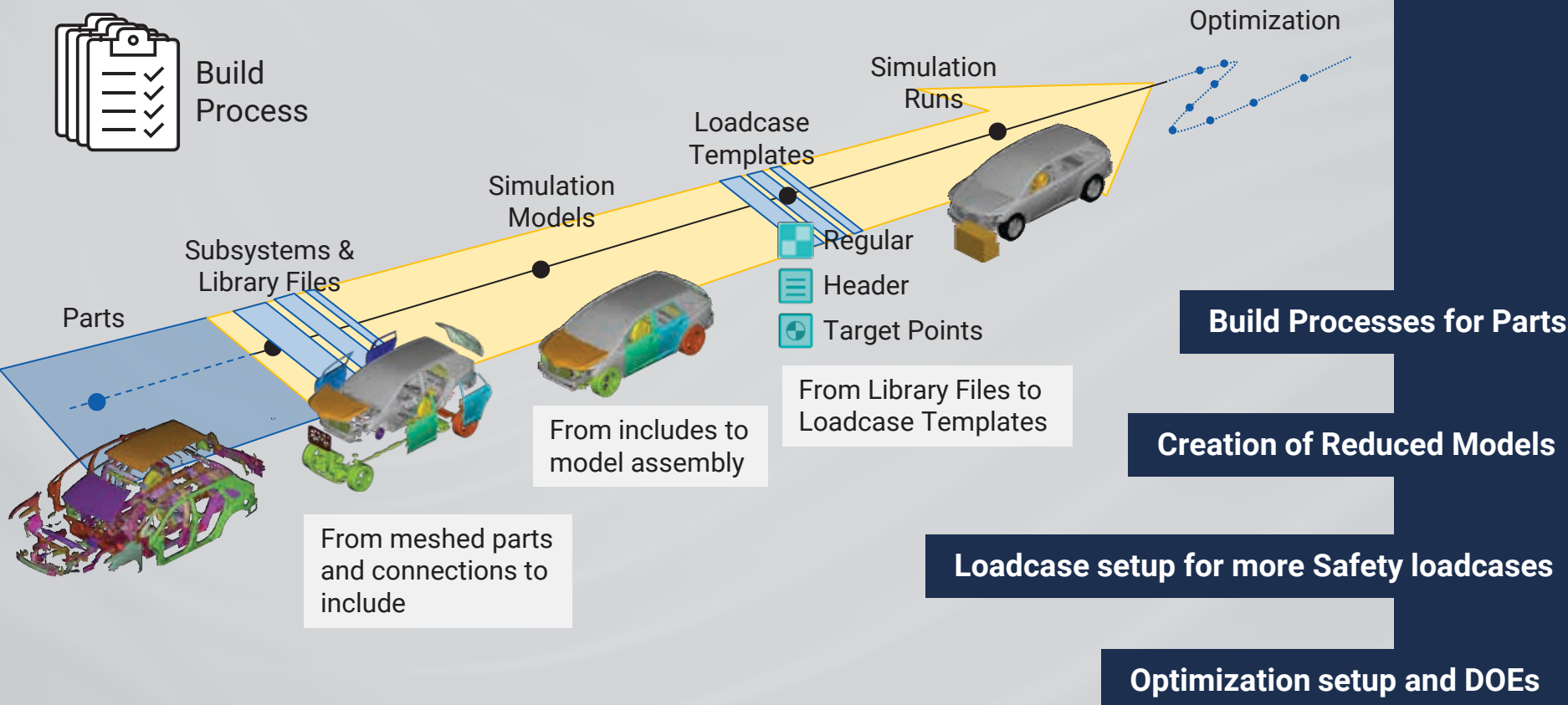
KOMVOS - Simulation Data Manager

SPDRM - Simulation Process Data and Resources Manager

META Post-Processor



Modular Environment – Streamlining Simulation Run preparation end-to-end



Unleash the potential of your simulation activity



Streamlining simulation run preparation with an end-to-end modular methodology

BETA CAE Systems

Thursday, June 15, 11:00 – 11:30, Session 5A | Audimax

Unleash the potential of your simulation activity



DEMO

Design Optimization in the Modular Environment: from setup to HPC submission and post-processing

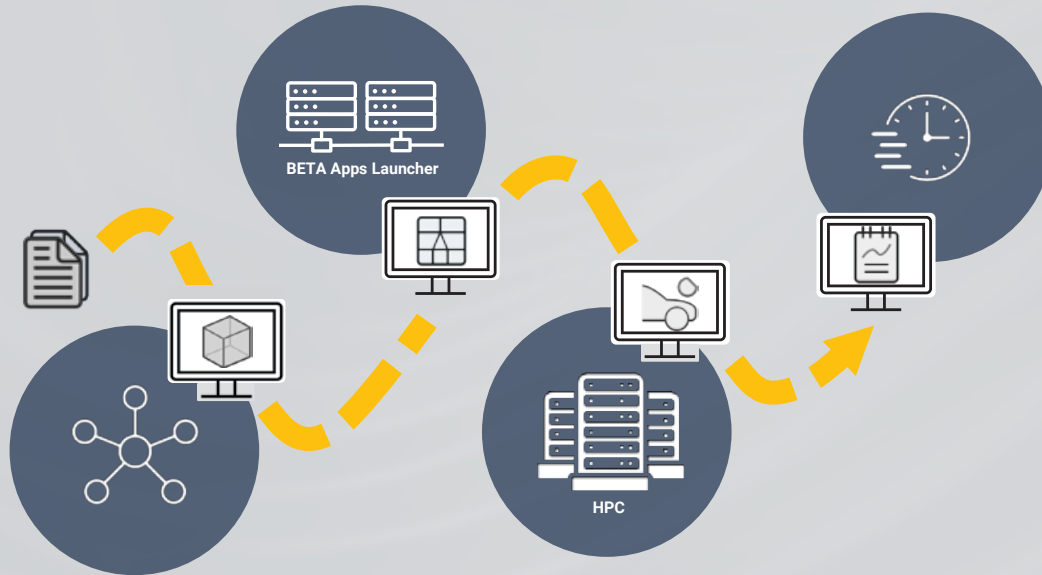
Thursday, June 15, 17:00 – 17:30, Demo Session 7E | Venus I



DEMO


Data insights: Keeping track, discovering, process reviewing, and accelerating decision making

Thursday, June 15, 17:30 – 18:00, Demo Session 7E | Venus I



 **Cross-platform activities**

 **Run on remote resources**

 **HPC submission and monitoring**

 **Task scheduling**

Simulations across borders: Multi-site collaboration with SPDRM



Effective and efficient collaboration among geographically dispersed teams



 **Multiple remote sites**

 **Cloud-based topology**

 **File transfer optimization**

 **Site-to-site connection**

 **Local storage of sensitive data**

Unleash the potential of your simulation activity



Unlocking the power of process management with SPDRM

BETA CAE Systems

Wednesday, June 14, 16:30 – 17:00, Session 3C | Jupiter



Simulations across borders: using SPDRM's multi-site collaboration to unite global teams

BETA CAE Systems

Wednesday, June 14, 17:00 – 17:30, Session 3C | Jupiter

KOMVOS
SDM CONSOLE



for

SPDRM
WORKFLOW MANAGER



Model Build coordinator

Data search and navigation

Process Management

HPC Submission & Monitoring

Results review & comparison

Optimization Studies & ML

Test Results review

Unleash the potential of your simulation activity



Reintroducing KOMVOS as a simulation data and process management desktop client

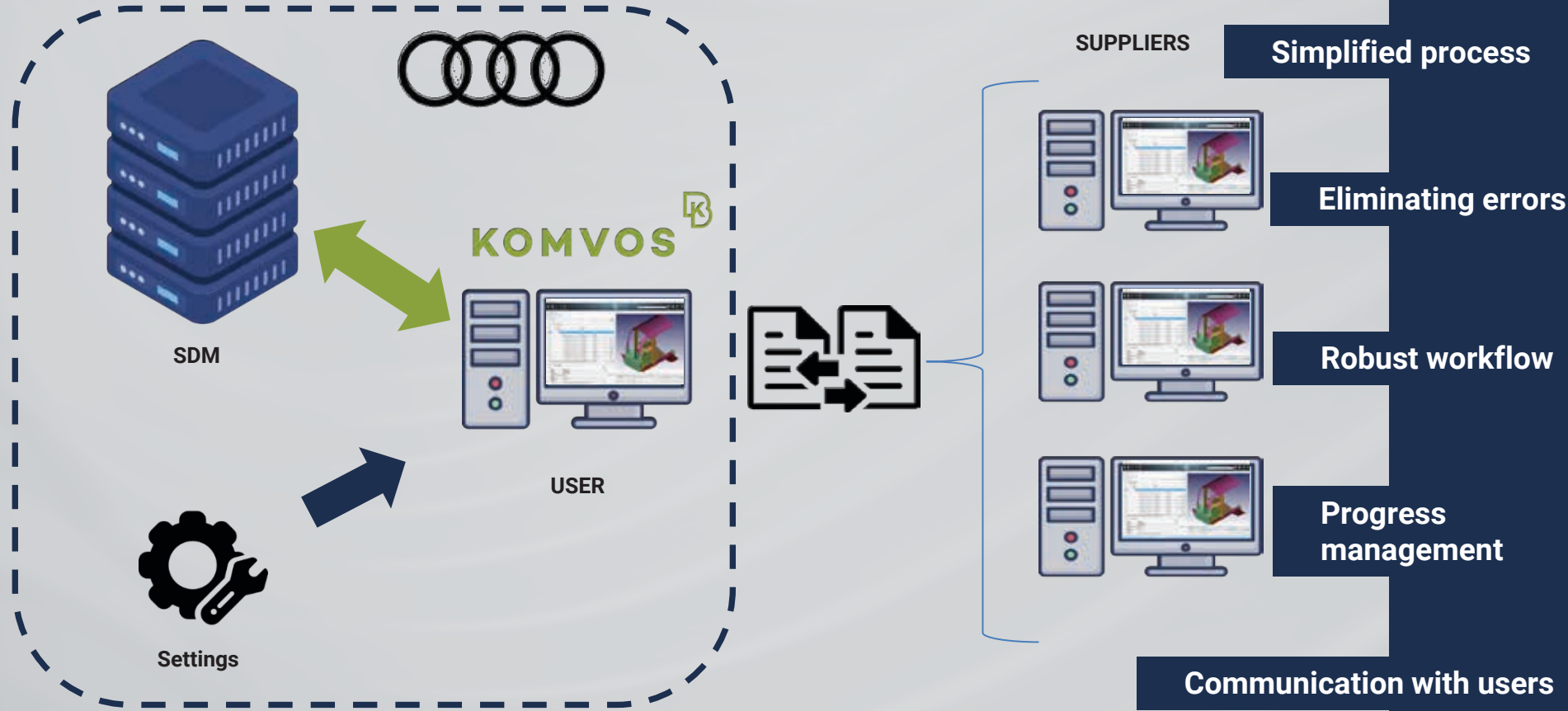
BETA CAE Systems

Wednesday, June 14, 16:00 – 16:30, Session 3C | Jupiter

Addressing challenges in the BiW model build-up process in AUDI AG



A robust –yet simplified– BiW build-up process, enabling process management and continuous communication between the users





Addressing challenges in the BiW model build-up process in AUDI AG

BETA CAE Systems

Thursday, June 15, 12:00 – 12:30, Session 5A | Audimax

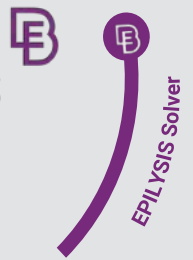


Products map

ANSA
PRE PROCESSOR



EPILYSIS
SOLVER



META
POST PROCESSOR



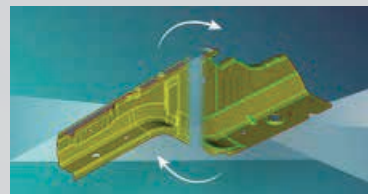
Solutions for ...



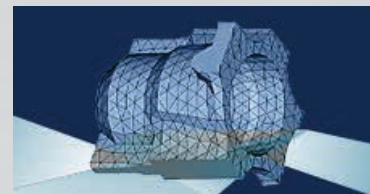
PDM to SDM



Assembly & Model Build



Unified Geometry & Mesh



Meshing



NVH



Durability & Composites



Results Mapping



Crash & Safety



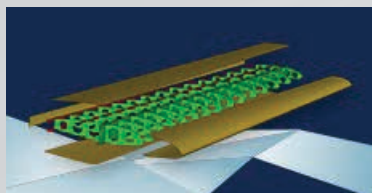
Stamping



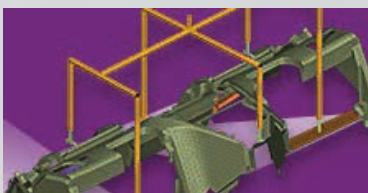
Multibody Dynamics



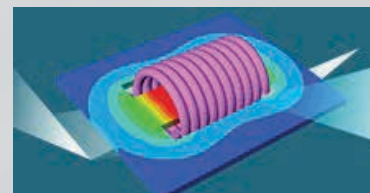
CFD



Aeroelasticity



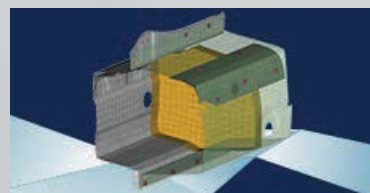
Molding



Electromagnetics



Electronic CAD



Model Improvements
& Parameterization



Optimization



Process Automation



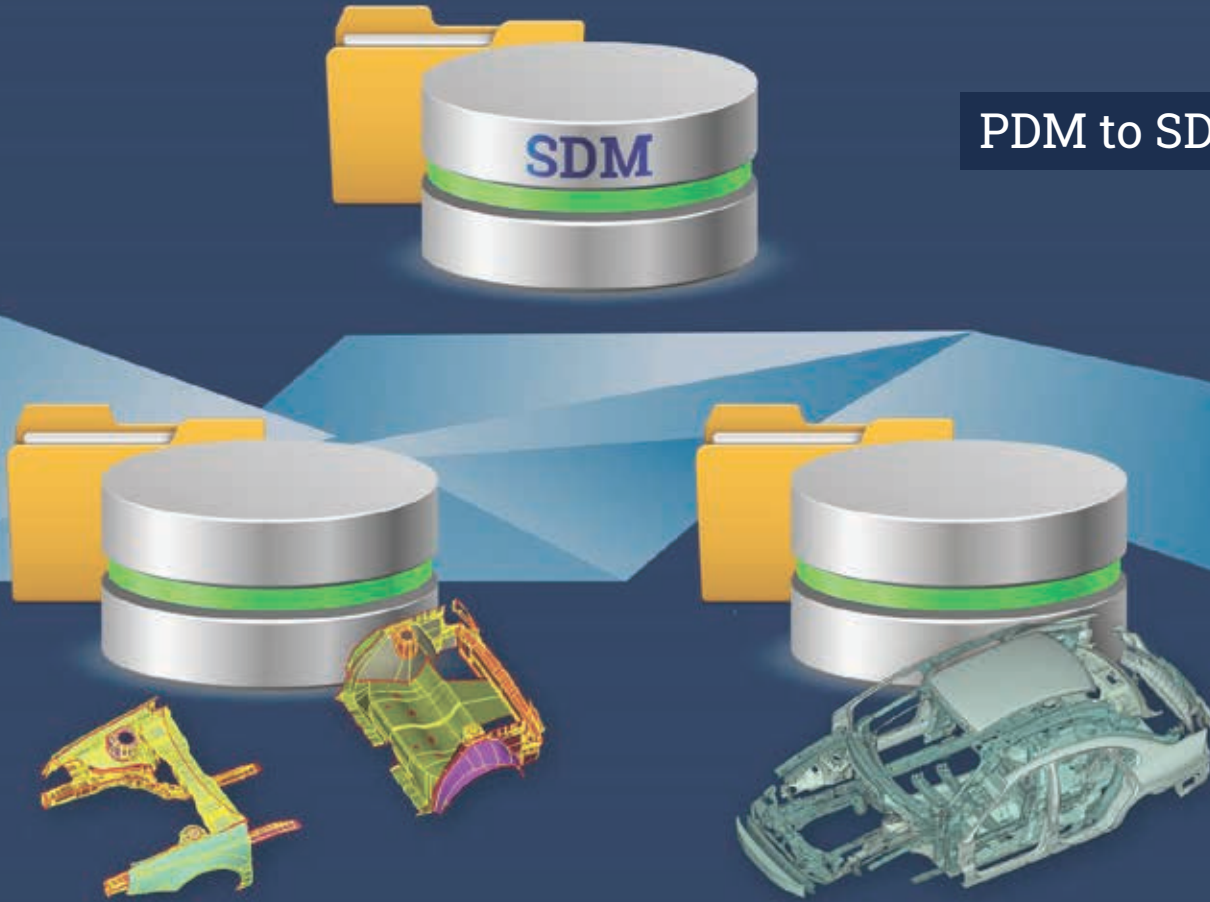
User Productivity



BETA Development
infrastructure

Solutions for...

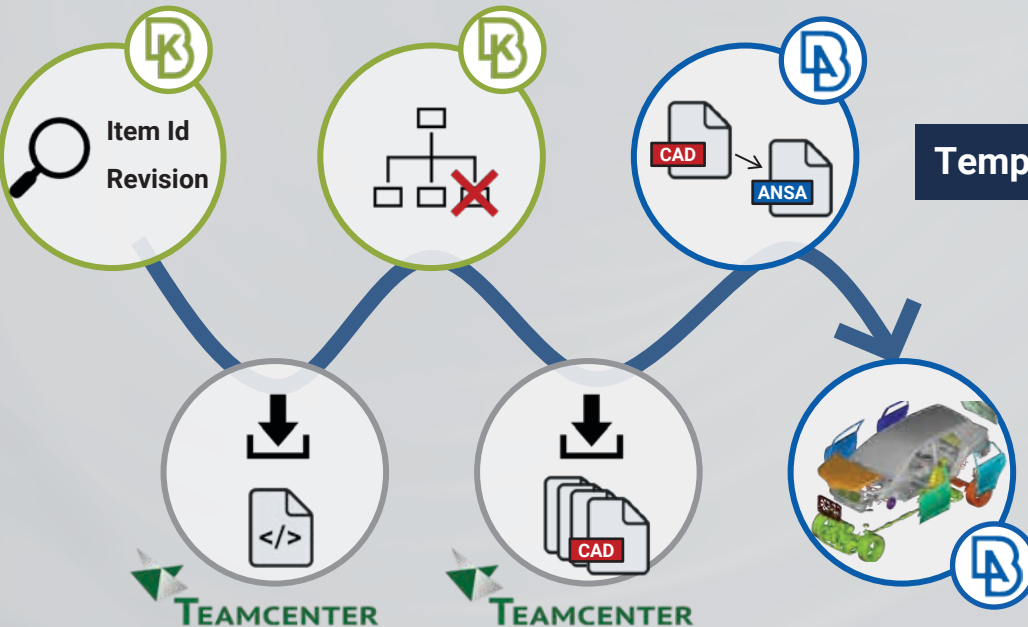
PDM to SDM



Streamlining data extraction from Teamcenter



Creating a robust and effective bridge between design (PDM/PLM systems) and simulation (SDM systems/CAE tools)



 TC plugin in KOMVOS and ANSA

Template-driven CAD BOM to CAE Structure mapping

Only download from TC new CAD data

CAD2ANSA on local or remote resources

Subsystem update in ANSA

Bridging the gap between Design and Analysis



Streamlining data extraction from Teamcenter: Latest approaches to CAE Structure creation and maintenance

BETA CAE Systems

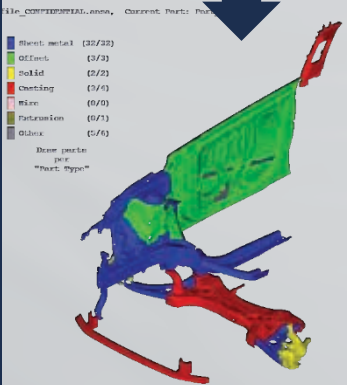
Wednesday, June 14, 17:30 – 18:00, Session 3C | Jupiter

Revamping Model Build: AI and Part Build at the service of CAE modeling teams

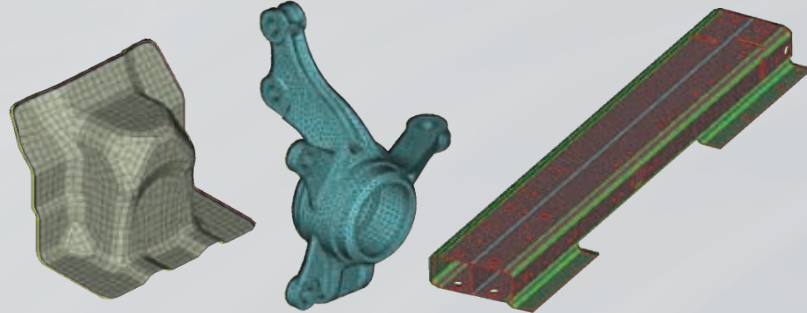


Easily identify and prepare the parts for CAE analysis, in case of midsized vehicles (> 30000 parts)

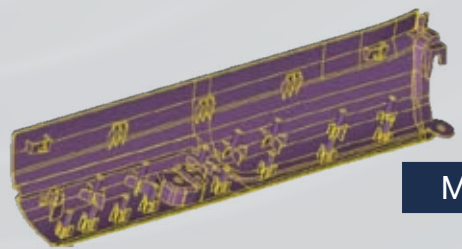
Automatic identification of part type



Automatic build of parts according to part type



Machine Learning used in treatment of casting parts



Revamping assembly validation & Model Build



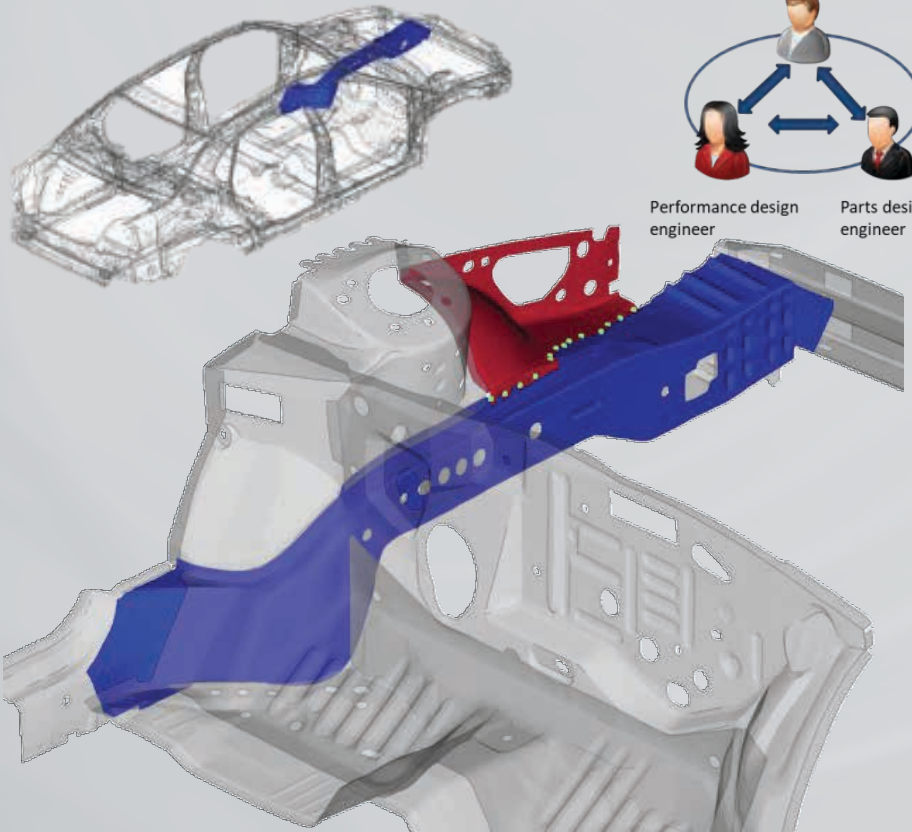
Revamping Model Build: AI and Part Build at the service of CAE modeling teams

Thursday, June 15, 16:00 – 16:30, Demo Session 7E | Venus I

Connections Navigator: A new approach to assembly validation



Reduce effort in communications related to welds' design among CAE Modeling, Engineering & CAD Designer teams



Navigate per Study part / Connectivity group

Mark & modify model's connections

Special draw modes

Reporting features

SPW: 94
Total Welds: 94
C.Groups: 102009 - 121003

Module Id	Name
BIW_100...	BIW
	01_FRONT_MODULE
112000	01_RAIL_FRONT L
112001	F-MC-SUBFRAI
112009	RAIL-L-I
112007	RAIL-L-O
112002	RAIL_MIDDLE_
112003	RAIL_MIDDLE_
112005	RAIL_MIDDLE_
112008	RAIL_PLATE_2-
112006	RAIL_REINFOR
112004	RAIL_REINFOR

Revamping assembly validation & Model Build



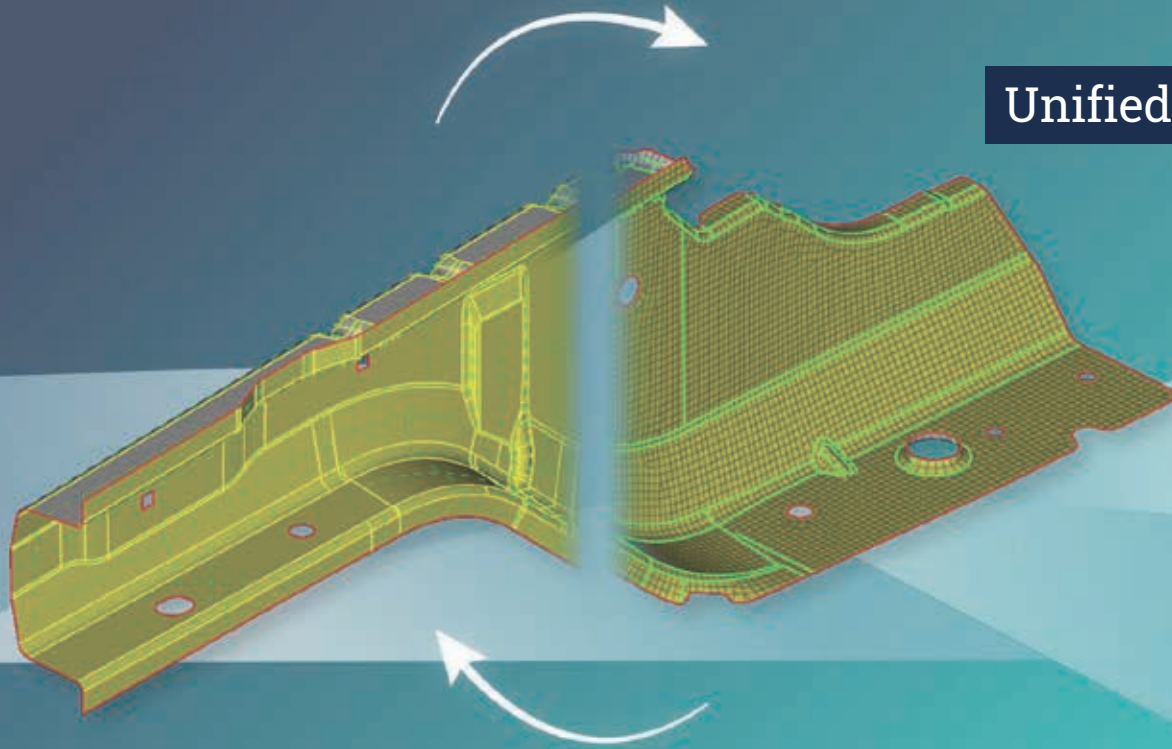
DEMO

Connections navigator: A new approach to assembly validation

Thursday, June 15, 17:00 – 17:30, Demo Session 7G | Mars I

Solutions for...

Unified Geometry & Mesh

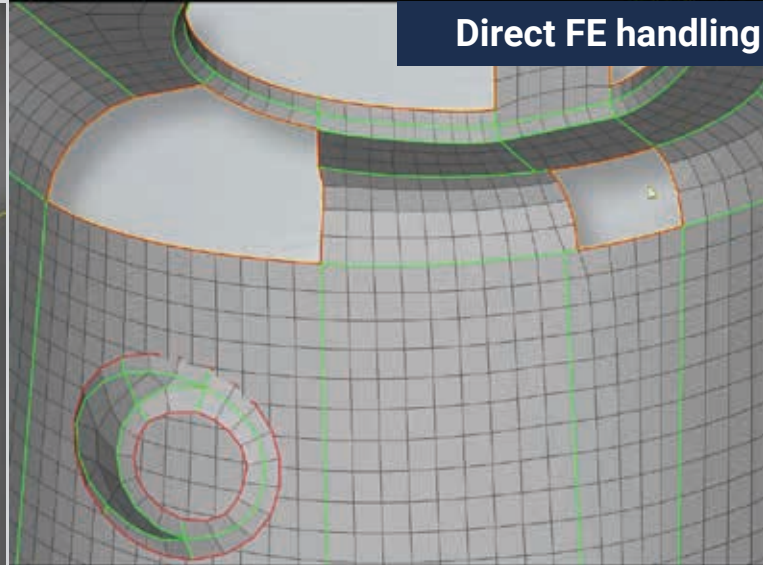
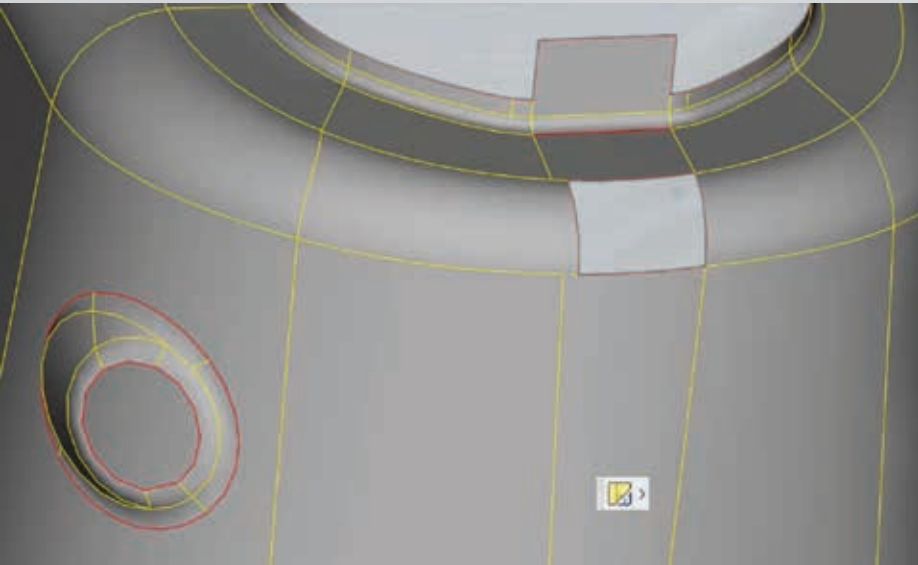


Unified Geometry & Mesh handling: A Game Changer



Directly work on the Geometry/ Mesh, without the need to constantly activating functions from the module menus

Geometry & Mesh manipulation in one function



Direct FE handling

Workflow-oriented functionality

Significant boost in productivity

Unified Geometry & Mesh handling: A Game Changer



A new user experience in ANSA

BETA CAE Systems

Wednesday, June 14, 14:30 – 15:00, Session 2 | Audimax

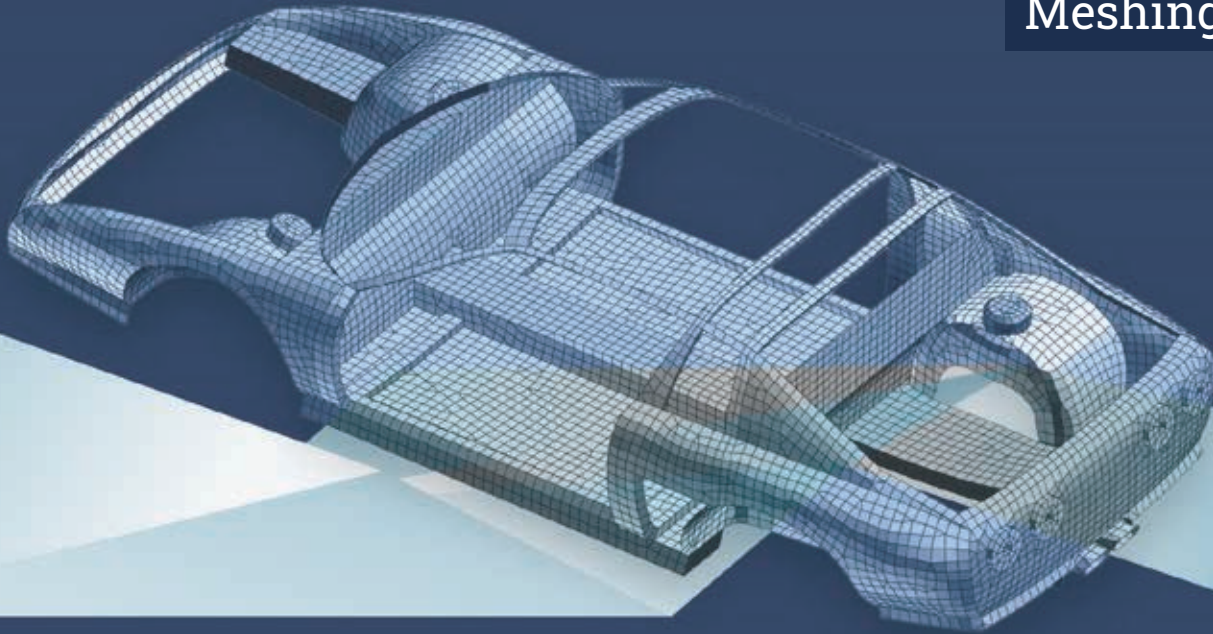


A new approach for Geometry & Mesh handling

Thursday, June 15, 11:00 – 11:30, Demo Session 5E | Venus I

Solutions for...

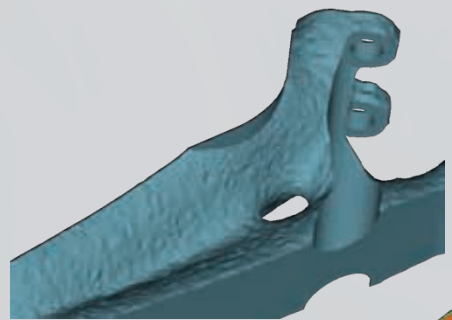
Meshing



From mesh to SubDivision surfaces

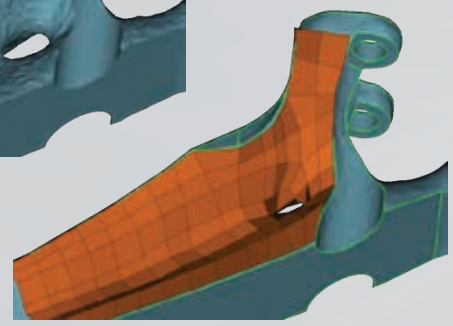


Create smooth surfaces from complex meshes (e.g. coming from topology optimization results or 3D scanners)



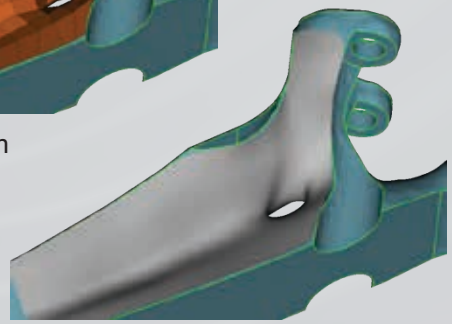
Optimization result

Modeling technique for creating smooth and high-resolution surfaces



SubD control mesh

A new way in ANSA to create CAD geometry from mesh

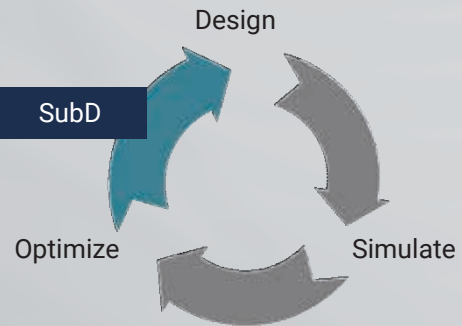


SubD surface

Applicable for handling:

Optimization results

Scanned data



Bridges the CAE-to-CAD gap

Generating the perfect mesh



DEMO

From complex meshes to smooth surfaces: the new SubD approach

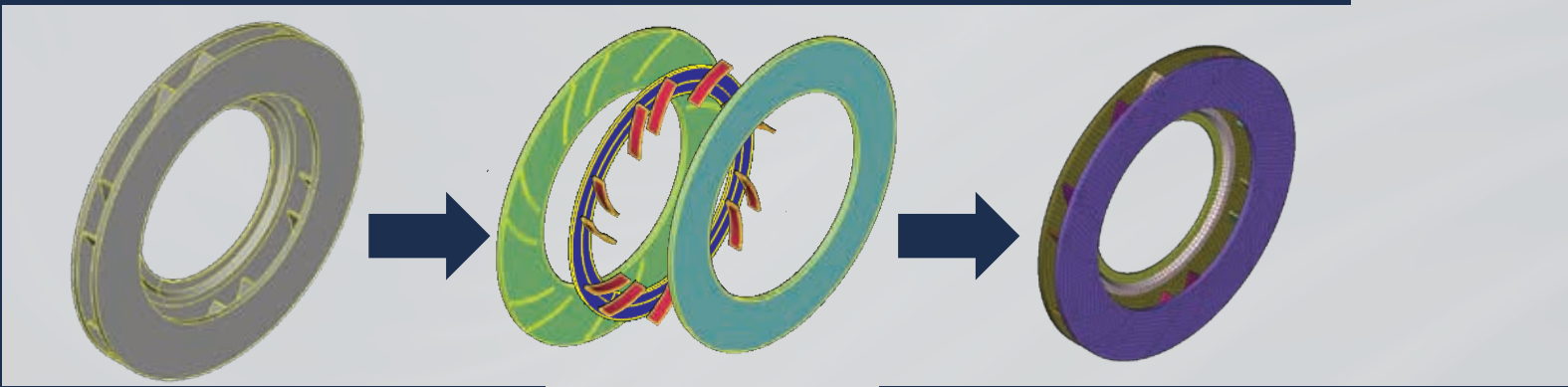
Thursday, June 15, 17:30 – 18:00, Demo Session 7F | Venus II

Structured meshing: Challenges and solutions



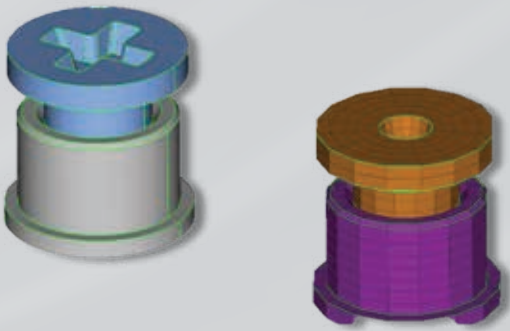
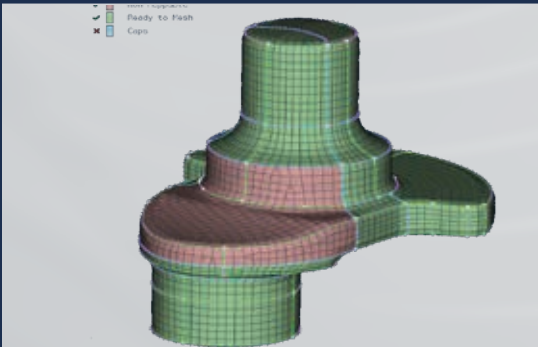
Fast & easy Hexa and Penta mesh, including more parts and keeping as much detail as possible

MapBlock: Automatic identification and meshing of mappable areas



Volumes decomposition

Easy treatment and modification of revolute meshes



Generating the perfect mesh



DEMO

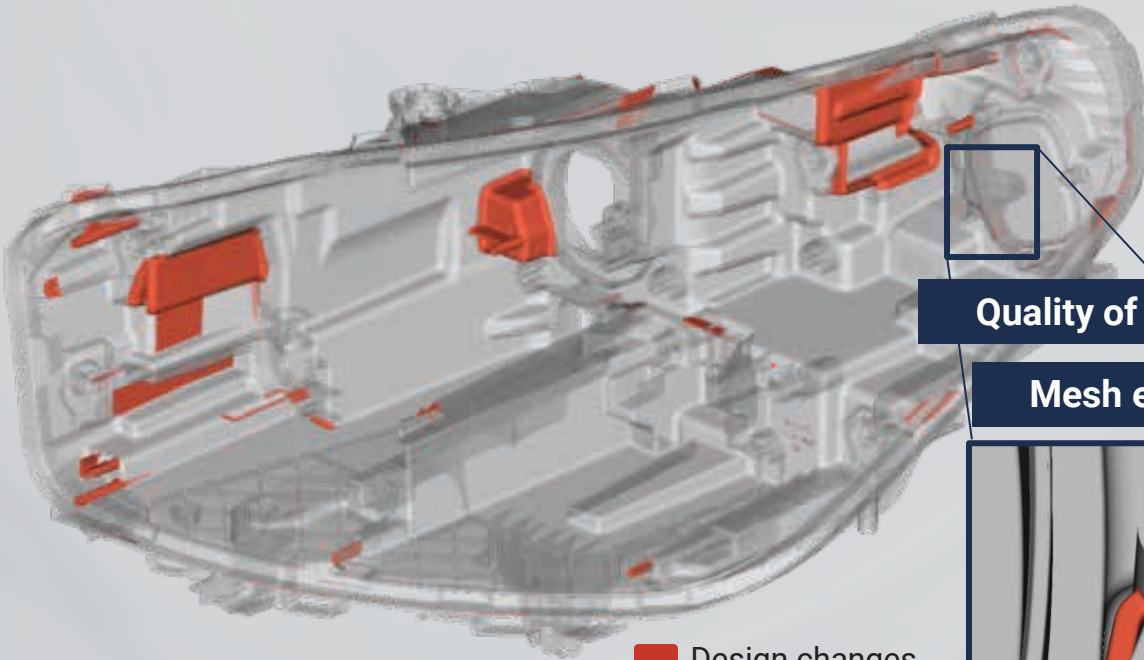
Structured meshing: Challenges and solutions

Thursday, June 15, 12:30 – 13:00, Demo Session 5E | Venus I

Efficient Middle Meshing: BMW injection molding part



Reduce the cost and efficiently handle the design changes for the meshing of molded part designs

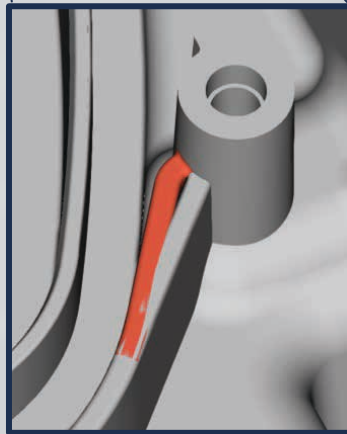


■ Design changes

XX% reduction of meshing time

Quality of Middle Mesh assured with objective criteria

Mesh efficiently inherited between design versions



Generating the perfect mesh



Efficient middle meshing - A benchmark on a BMW headlight housing part

BETA CAE Systems

Wednesday, June 14, 17:00 – 17:30, Session 3D | Saturn



Efficient middle meshing

Thursday, June 15, 12:00 – 12:30, Demo Session 5E | Venus I

Generating the perfect mesh



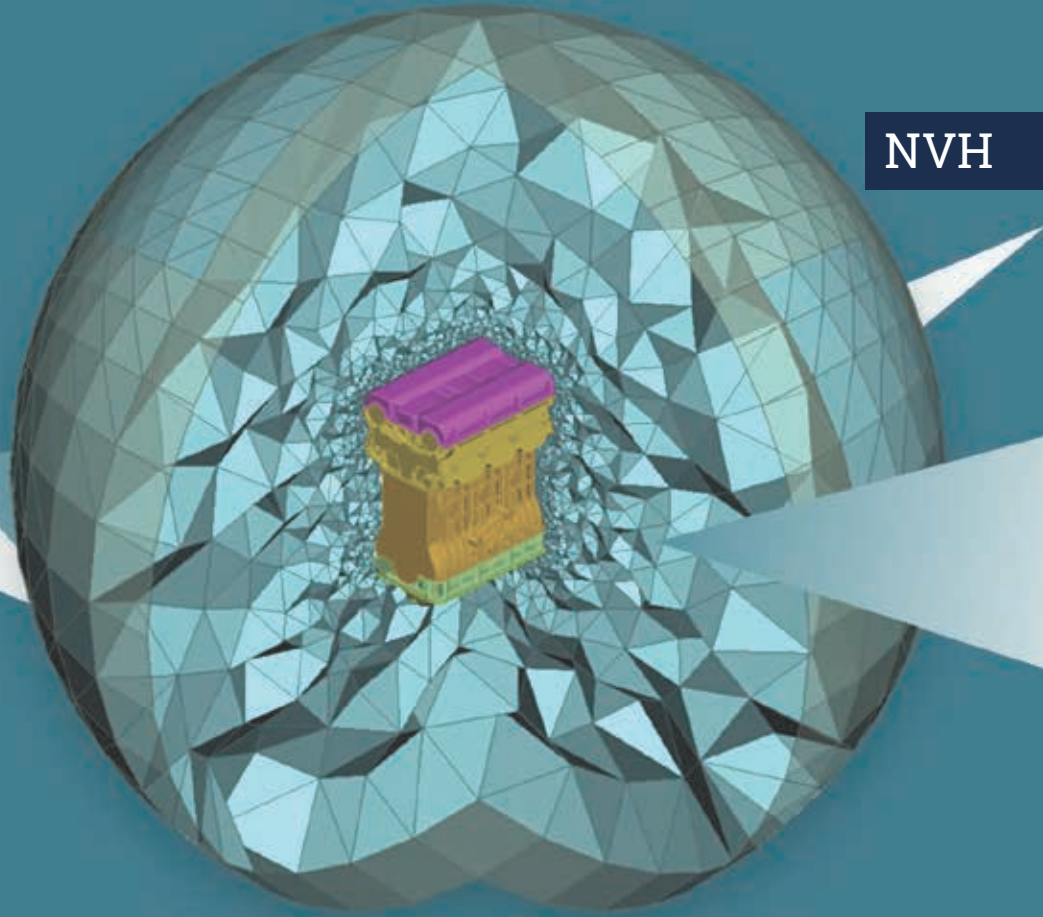
DEMO

Understand and exploit the capabilities of Batch Meshing

Thursday, June 15, 11:30 – 12:00, Demo Session 5E | Venus I

Solutions for...

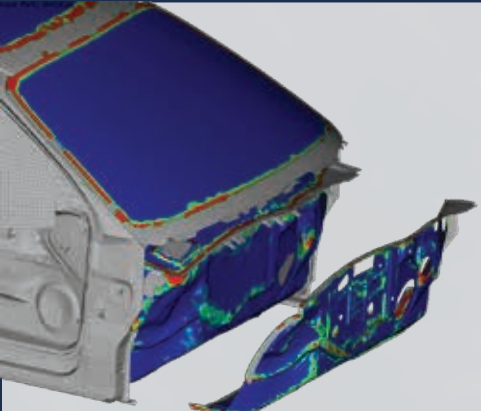
NVH



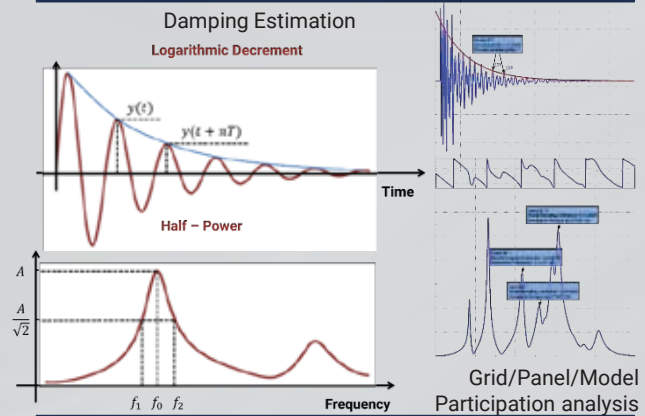
Reduce noise – Increase comfort



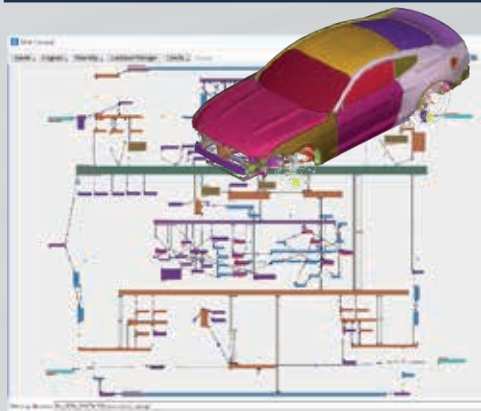
Vibroacoustic coupling



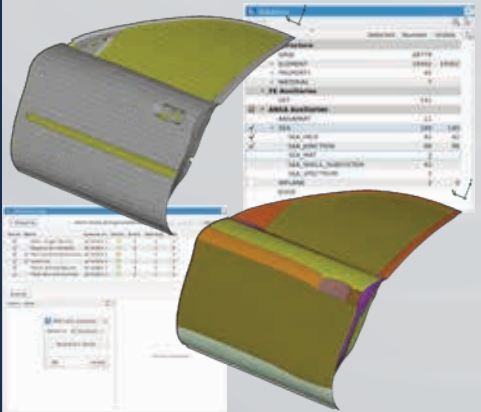
New tools in META



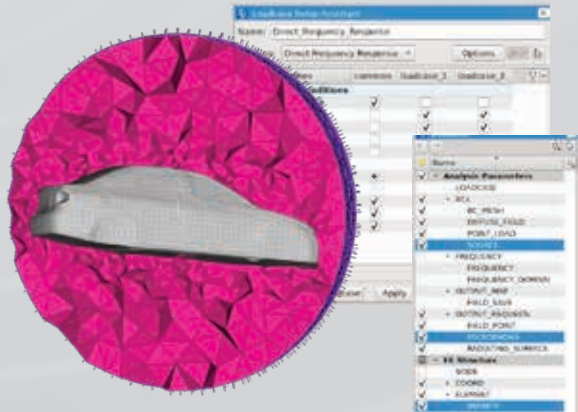
NVH-Console Developments



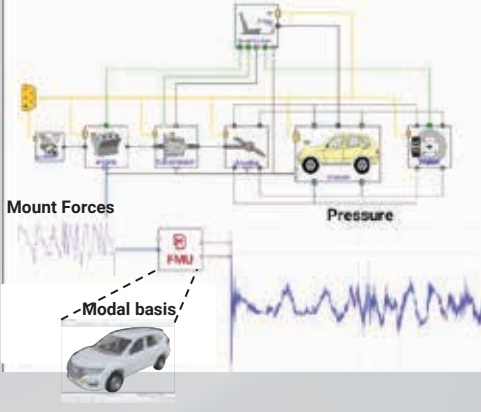
Statistical Energy Analysis tools



ANSA for ACTRAN



Calculations based on reduced models in META



Reduce noise – Increase comfort



Latest and future developments in NVH

BETA CAE Systems

Thursday, June 15, 16:00 – 16:30, Session 7C | Jupiter



Comparison of the numerical accuracy of Superelements and FRF Assembly

BETA CAE Systems

Thursday, June 15, 17:00 – 17:30, Session 7C | Jupiter



Vibroacoustic Coupling: a new approach

BETA CAE Systems

Thursday, June 15, 17:30 – 18:00, Session 7C | Jupiter



DEMO

FMI/FMU: Making detailed CAE simulation models accessible to all Engineers

Thursday, June 15, 11:30 – 12:00, Demo Session 5G | Mars I



DEMO

New optimization capabilities in NVH-Console

Thursday, June 15, 14:00 – 14:30, Demo Session 6F | Venus II



DEMO

Introducing Statistical Energy Analysis support in ANSA

Thursday, June 15, 14:30 – 15:00, Demo Session 6F | Venus II



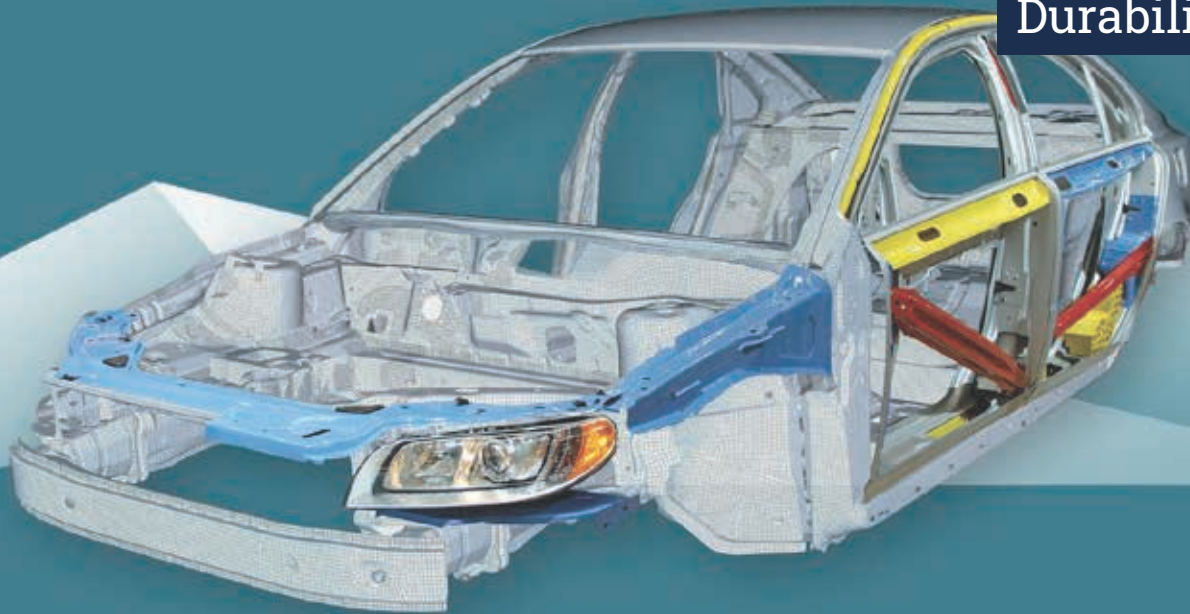
DEMO

ANSA for ACTRAN

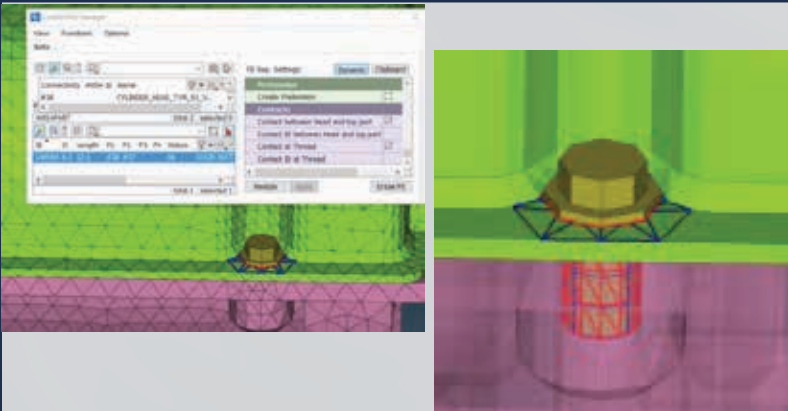
Friday, June 16, 11:00 – 11:30, Demo Session 9G | Mars I

Solutions for...

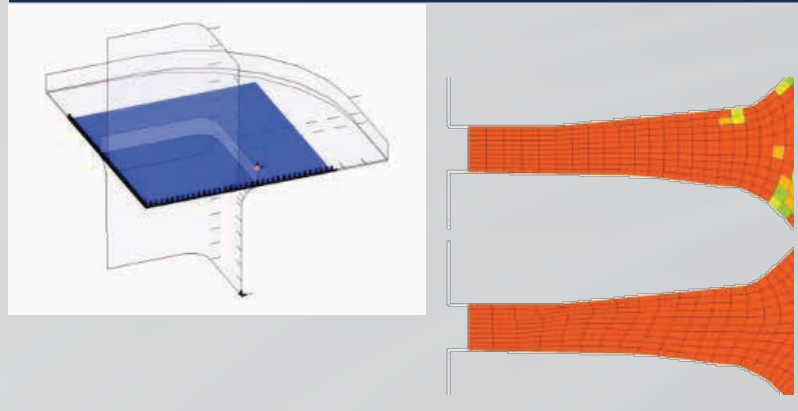
Durability & Composites



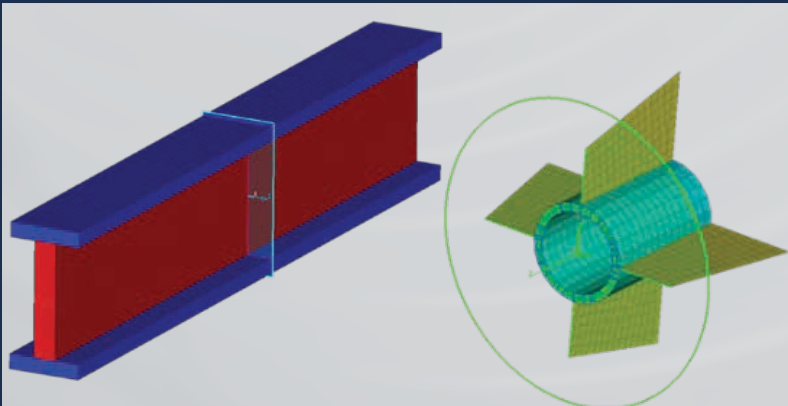
Complete modeling of bolts



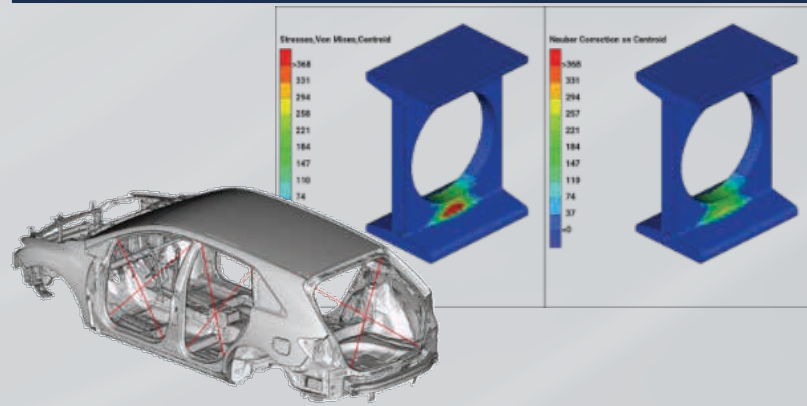
Continuous support of solvers techniques



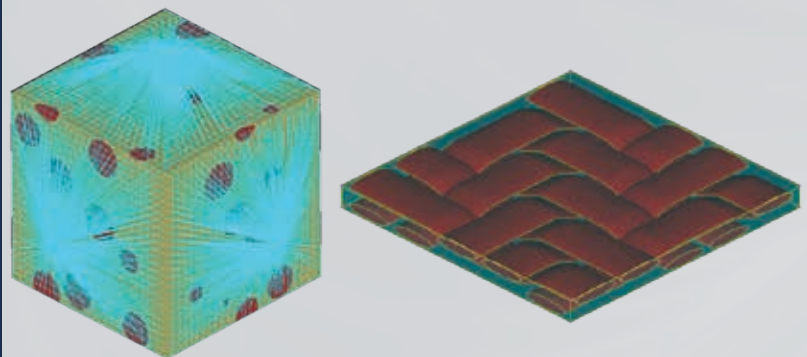
Calculation of complex cross-sections



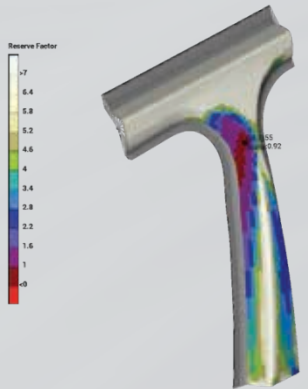
Incorporation of new durability methods in META



Reinforced RVE treatment



Full support of Ansys Laminates



RVE Generator

File | Short | UD | Woven | Layered | External | Mesh | Apply BC | Homogen. | Periodic | Tr. Botr. | Delete

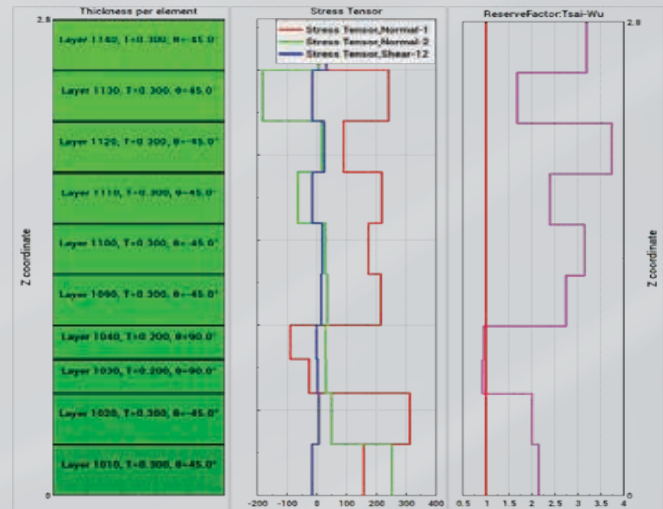
Type: Mesh | Mesh: 50 | Periodic BCs: | Homogenization: |

Name	Type	Status
Microstructure Short Fiber	Homogenized	
Microstructure Woven	With BCs	
Microstructure Unidirectional	Meshed	
Microstructure Multilayer	Generated	

Advanced

Option	Value
dx	250
dy	250

Set Weave



Employ the right tools for Durability & Composites modeling



Latest and future developments in simulations for durability and composites materials-made structures

BETA CAE Systems

Thursday, June 15, 12:00 – 12:30, Session 5C | Jupiter

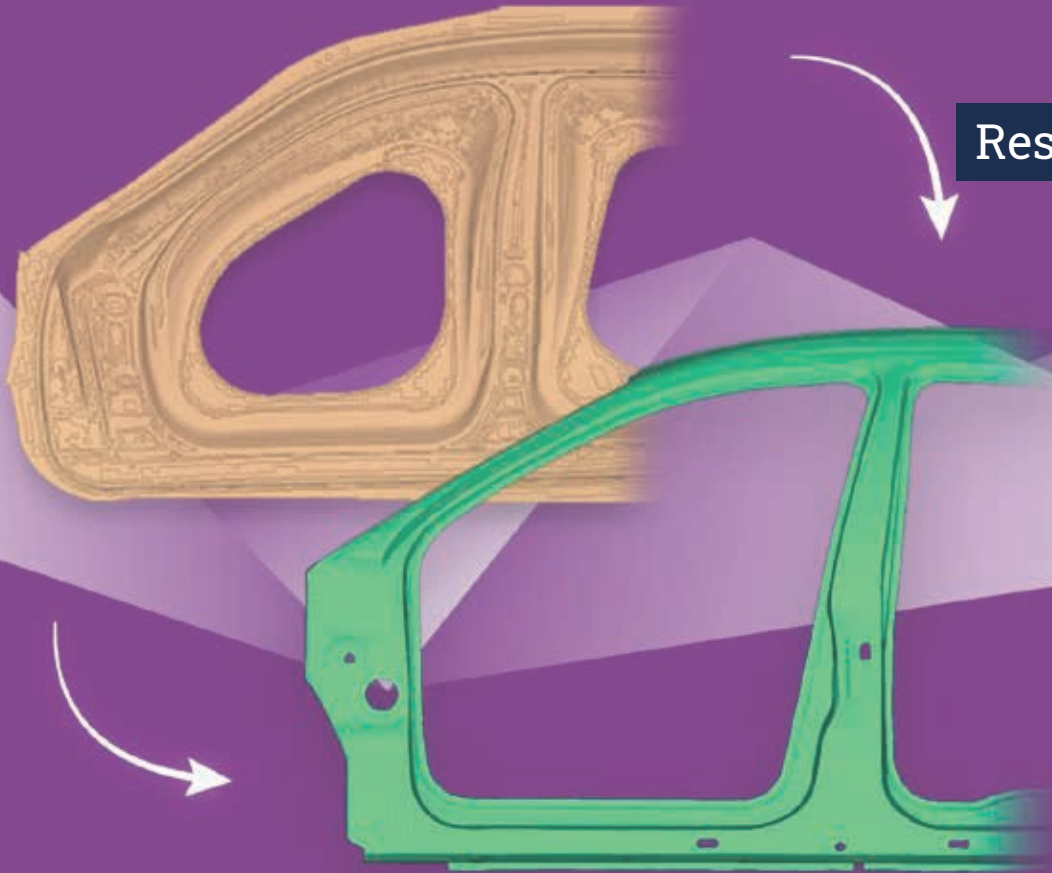


Introducing the redesigned Representative Volume Element (RVE) Generator Tool

Thursday, June 15, 15:00 – 15:30, Demo Session 6E | Venus I

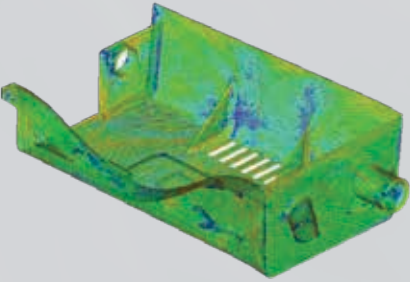
Solutions for...

Results Mapping



Unleashing the full potential of Mapping applications

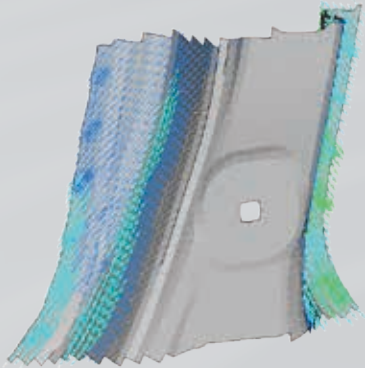
Transfer data related to...



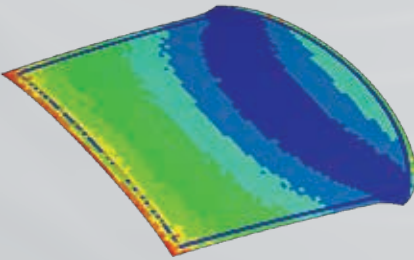
Thinning



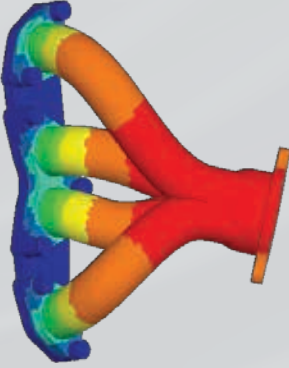
Stresses & Plastic Strains



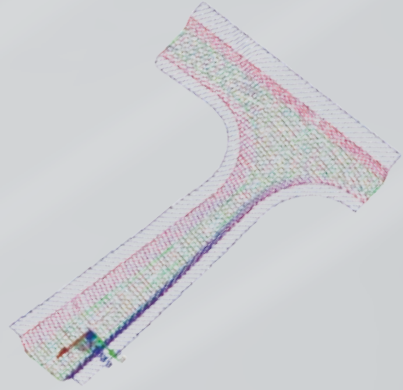
Pressure Distributions



Nodal Temperatures



Material Orientations



Unleashing the full potential of Mapping applications



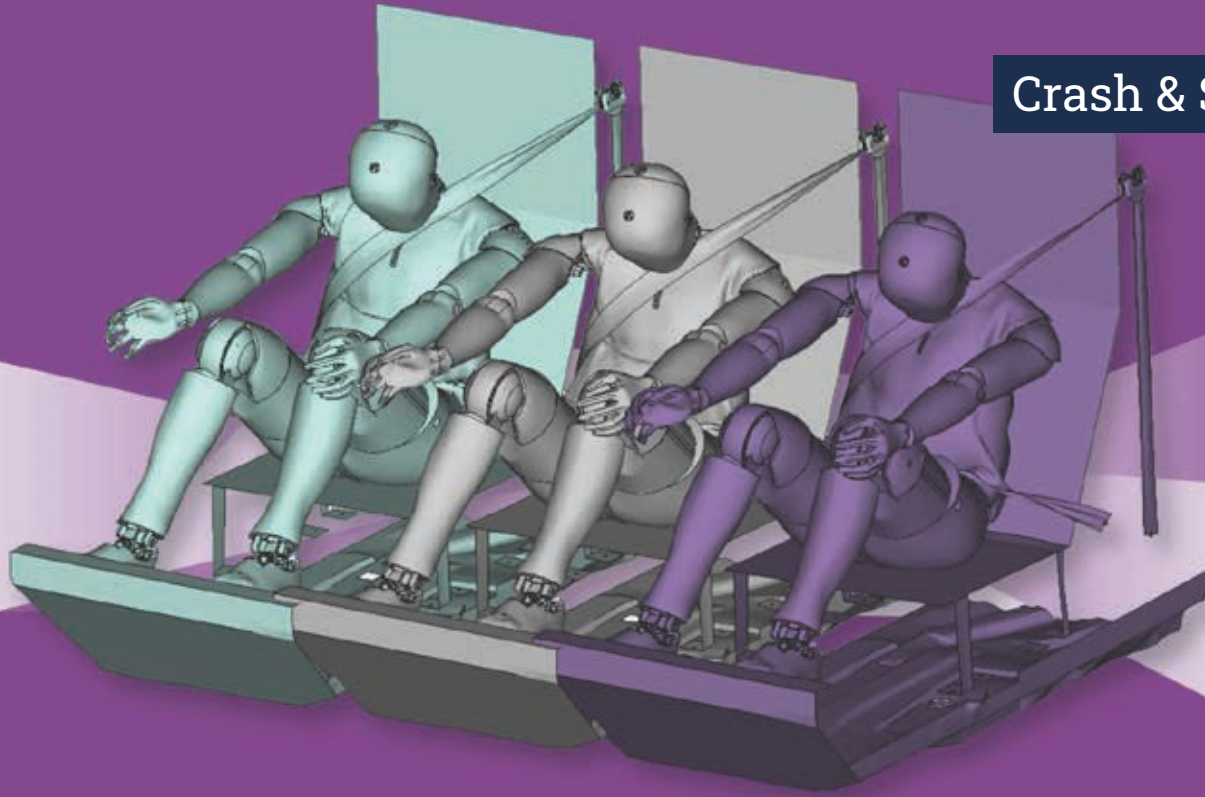
DEMO

Simulation coupling and transferring of results across calculations

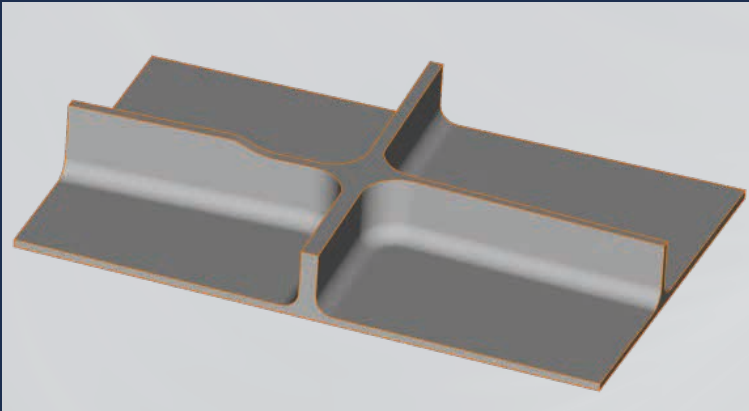
Wednesday, June 14, 17:00 – 17:30, Demo Session 3F | Venus II

Solutions for...

Crash & Safety



*IGA keyword family



IGA shell quality metrics

```
IGA_SHELL:1
B-Spline surface [ 162 x 54 ], order ( 4 , 4 )
Minimum Average Maximum
S-span : 0.5133 2.1342
T-span : 1.1931 2.1743

Negative Jacobian areas :
2569.910510, 887.439579, 974.2
2569.170565, 887.482502, 973
2571.159950, 887.356148, 973
```

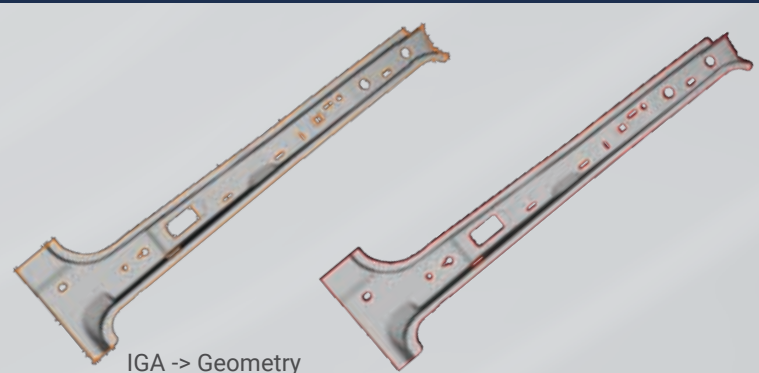


Trimmed patch IGA creation, with optional feature manager support



Geometry -> IGA -> IGA DENSE PATCH

Conversion from IGA to Geometry



IGA -> Geometry

Unique features & Cutting-Edge technology for Crash solvers

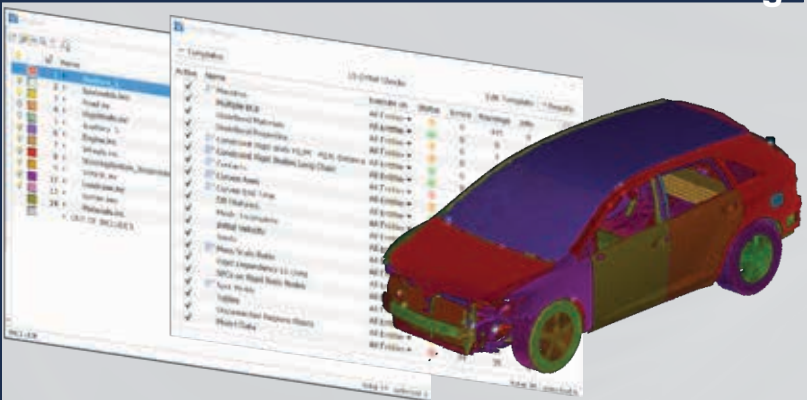


Methods and Tools for IGA models for LS-DYNA

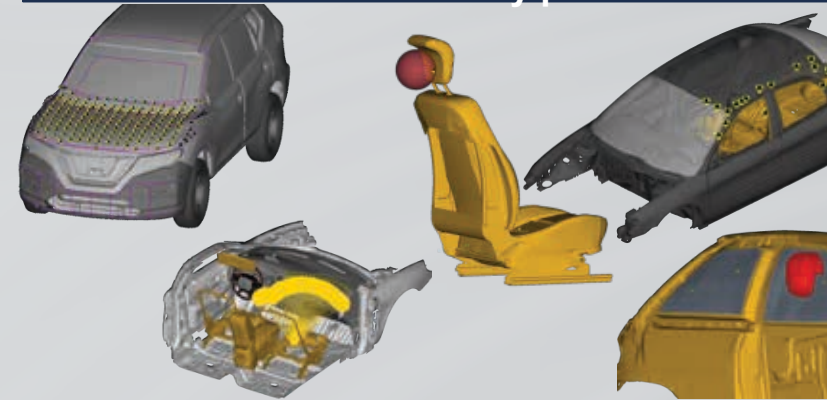
BETA CAE Systems

Thursday, June 15, 12:30 – 13:00, Session 5D | Saturn

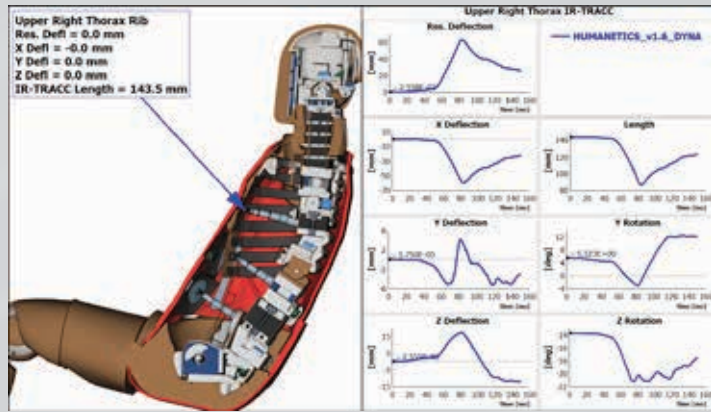
Advancements in Crash Model Editing & Handling



Continuous updates of Pedestrian & Interior Safety protocols



Updates in ATDs, seat positioning and restraining



Complete simulation environment for all Safety protocols



Latest and future developments in Crash & Safety

BETA CAE Systems

Friday, June 16, 11:00 – 11:30, Session 9A | Audimax



Automation of ANSA and META to evaluate occupant performance and seat structure for robustness

BETA CAE Systems

Wednesday, June 14, 16:00 – 16:30, Session 3A | Audimax



DEMO

ANSA & META for Occupant Safety

Thursday, June 15, 12:00 – 12:30, Demo Session 5F | Venus II



DEMO

Modular Run Management for Pedestrian / FMVSS201 analysis

Thursday, June 15, 12:30 – 13:00, Demo Session 5F | Venus II

Out-of-position, vulnerable road users

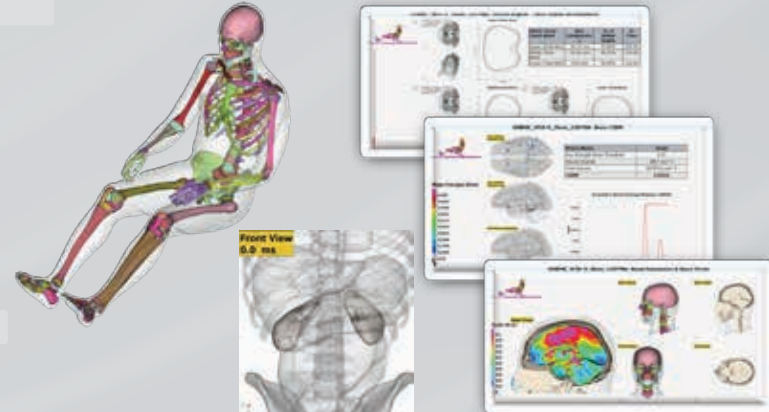
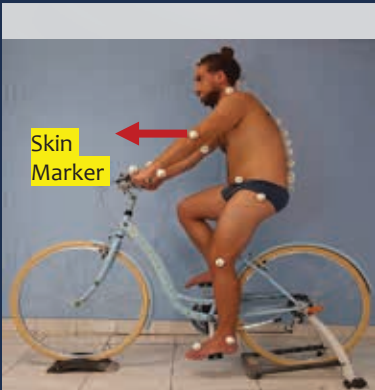


Validated kinematics

Model variants creation based on BMI changes



HBM advanced post-processing



State-of-the-art Human Body modeling for CAE



Bringing Human Body Models to life. The future in Safety simulations

BETA CAE Systems

Thursday, June 15, 14:00 – 14:30, Session 6A | Audimax



Assessment of abdominal and skeletal loadings and kinematics during frontal impacts: employing a novel tool for HBM variants generation based on the occupant's BMI

BETA CAE Systems

Thursday, June 15, 14:30 – 15:00, Session 6A | Audimax



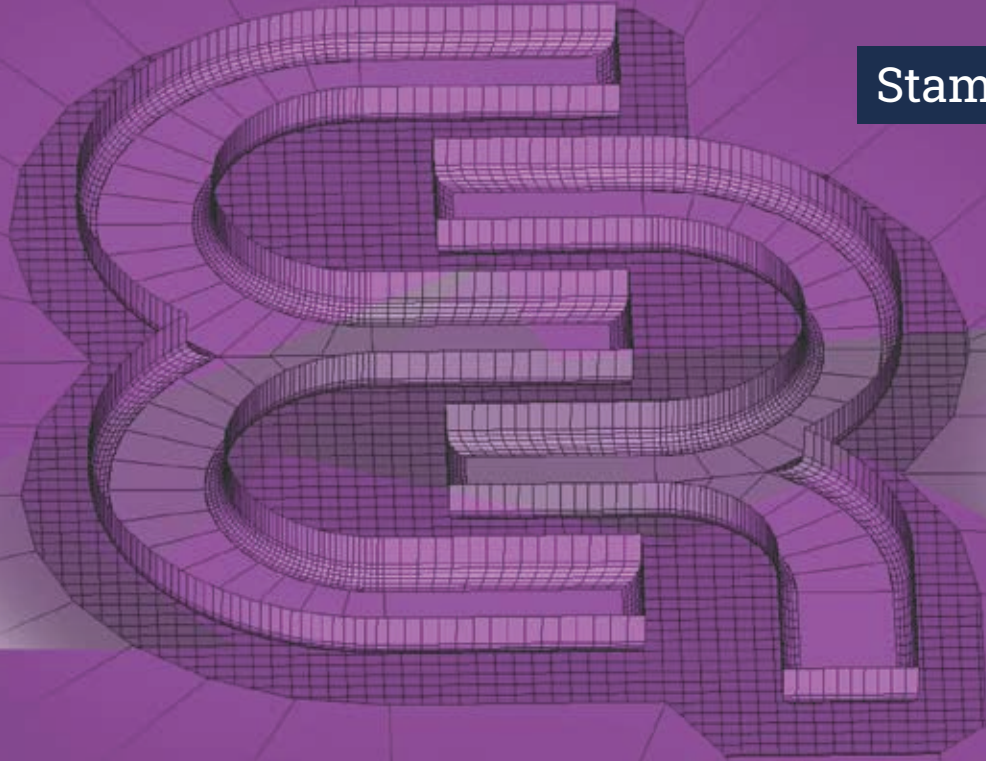
Addressing positioning challenges for ATDs and HBMs: embracing the ANSA approach in industrial safety applications

BETA CAE Systems

Thursday, June 15, 17:00 – 17:30, Session 7A | Audimax

Solutions for...

Stamping



Meet the benefits of Stamping Simulation



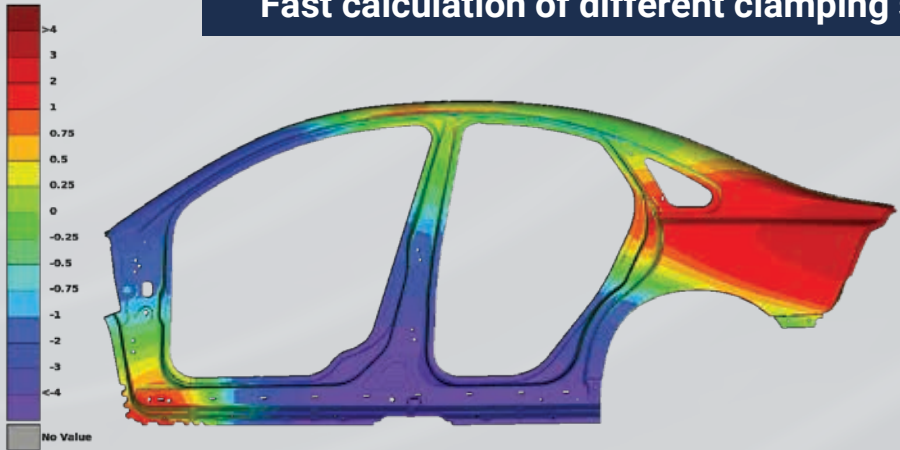
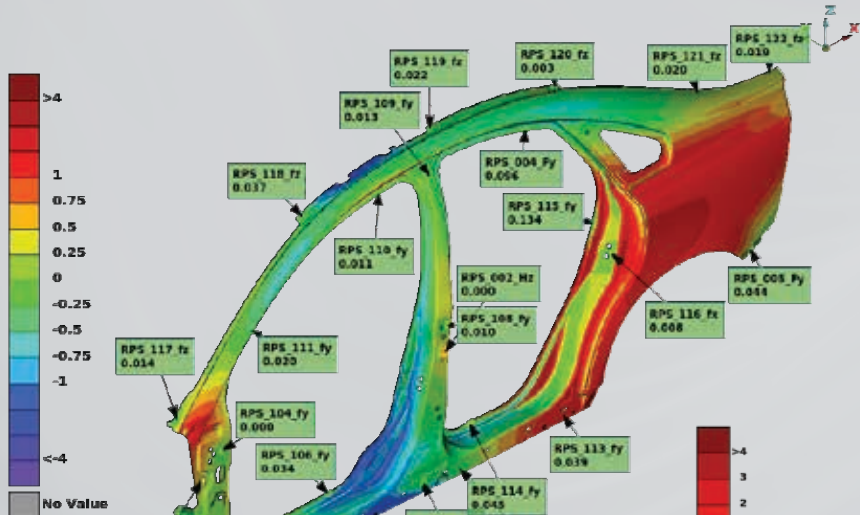
Eliminate requirements and complexity of physical testing for Clamping processes

Free-state scans of stamping parts

Gravity effect removal of the initial scan

Different simulation methods

Fast calculation of different clamping scenarios



Meet the benefits of Stamping Simulation



Eliminating physical Clamping processes with the aid of Engineering Simulation

BETA CAE Systems, Thales

Friday, June 16, 11:30 – 12:00, Session 9C | Jupiter

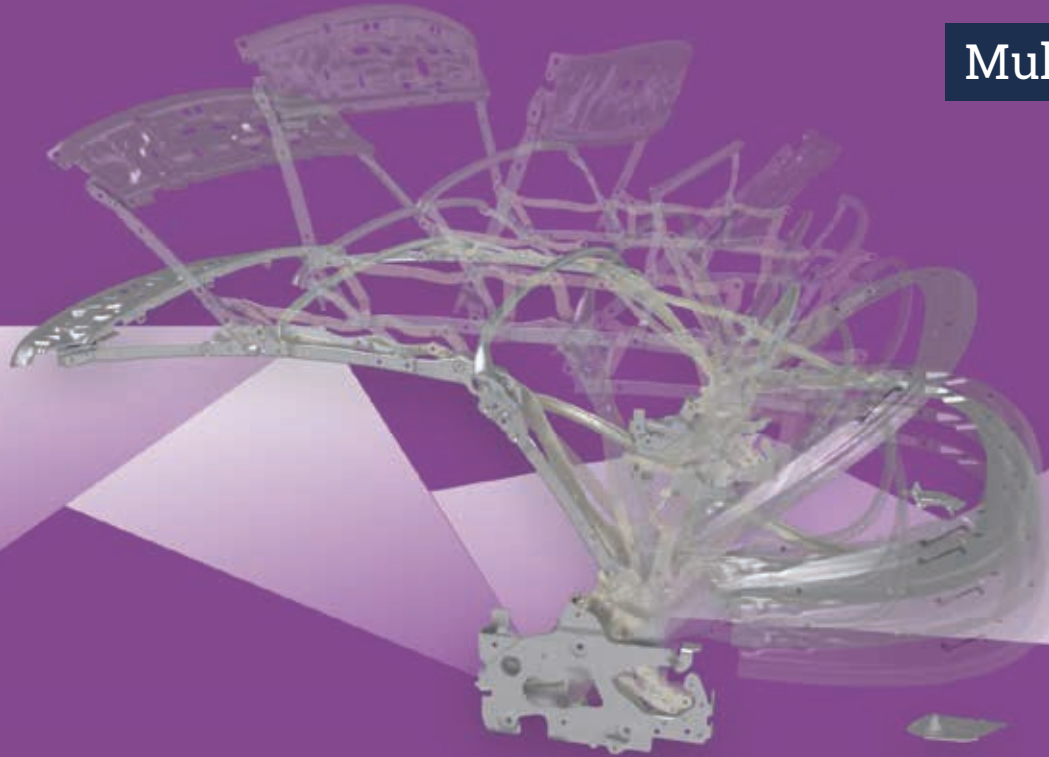


The pillar-functionality of the "stamp-crash" process

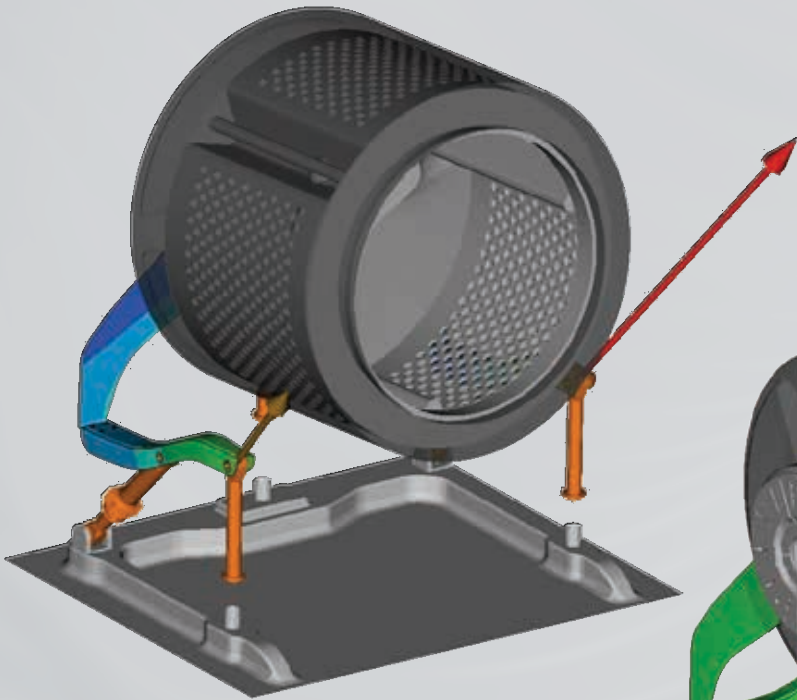
Thursday, June 15, 16:00 – 16:30, Demo Session 7G | Mars I

Solutions for...

Multibody Dynamics



Grasping the dynamic behavior of your system



**Linearize dynamic models
to evaluate the eigenmodes of a system**

**Improve your designs by performing optimization studies,
using gradient based or global optimizers**

**Collaborate with FATIC software
to provide an integrated Durability solution**



Grasping the dynamic behavior of your system



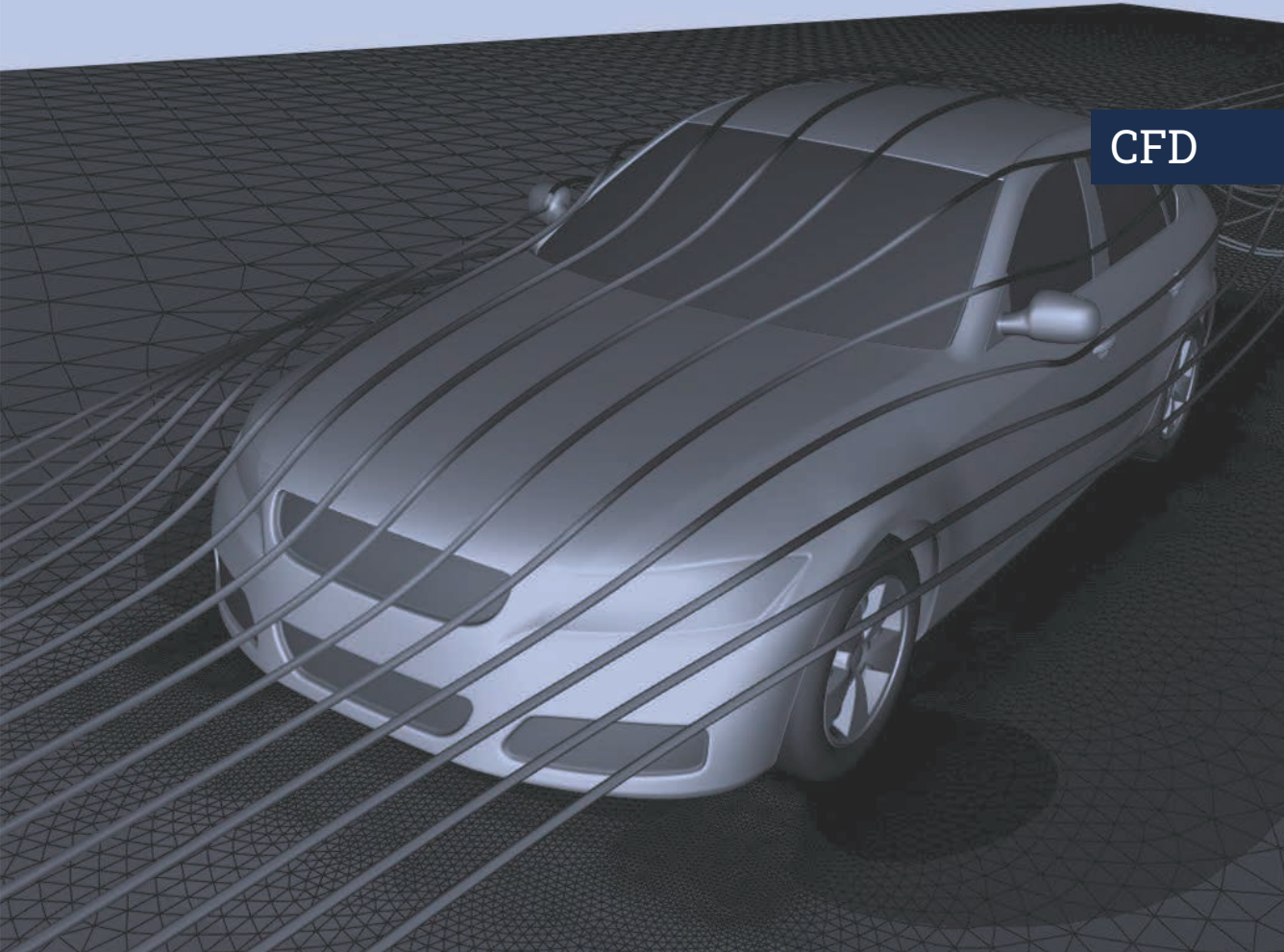
DEMO

Latest Developments in Kinetics

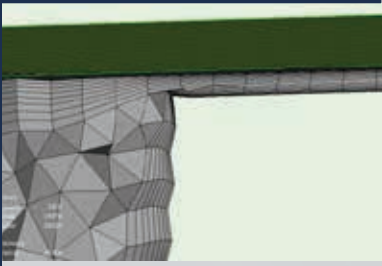
Wednesday, June 14, 16:00 – 16:30, Demo Session 3F | Venus II

Solutions for...

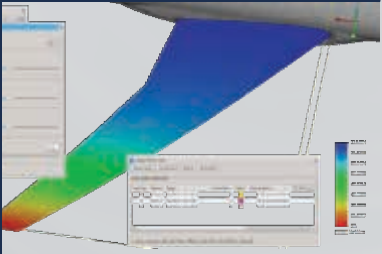
CFD



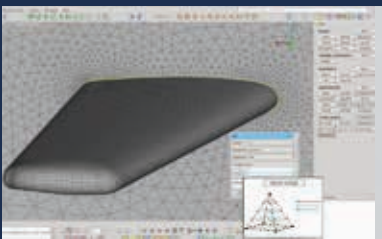
Thin wall meshing



Advanced size field rules



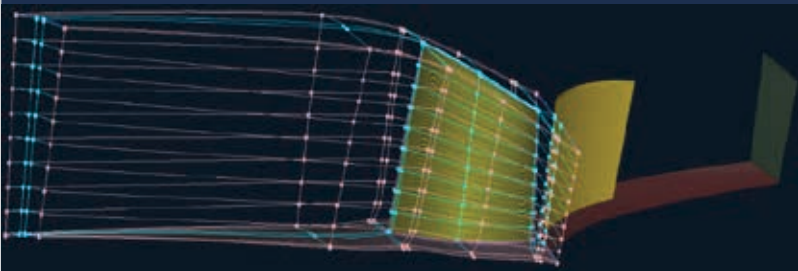
High Order meshing



Speed up structured meshing of applications

Hexablock meshing

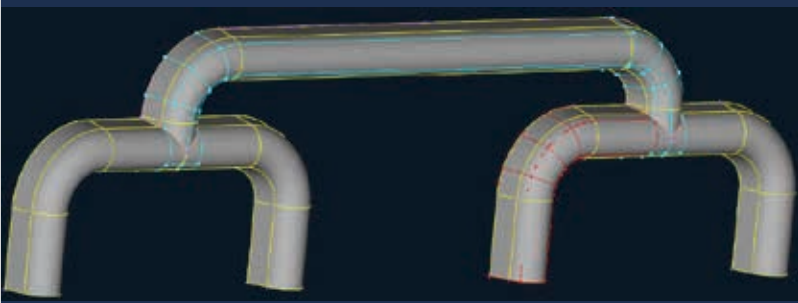
Turbomachinery



Automatic template meshing for rotating machines

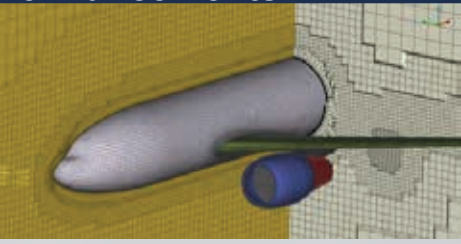
Hexablock meshing

Tubular modeling



Semi-automatic tool to create boxes for tubular models

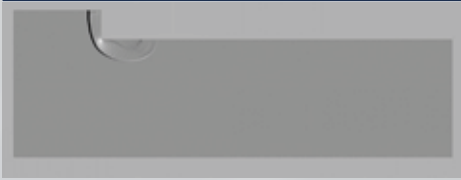
Hexa Interior enhancements



Advanced Layer generation



Schlieren Field visualization



Improve your aerodynamics performance



Latest and future developments in ANSA & META for CFD

BETA CAE Systems

Thursday, June 15, 16:00 – 16:30, Session 7B | Terra



Best-in-class CFD meshing for the aerospace sector

BETA CAE Systems

Thursday, June 15, 14:30 – 15:00, Session 6B | Terra



Suitability assessment of various meshing strategies for CFD applications

BETA CAE Systems

Thursday, June 15, 16:30 – 17:00, Session 7B | Terra



DEMO

Hexablock meshing for CFD

Friday, June 16, 11:00 – 11:30, Demo Session 9E | Venus I



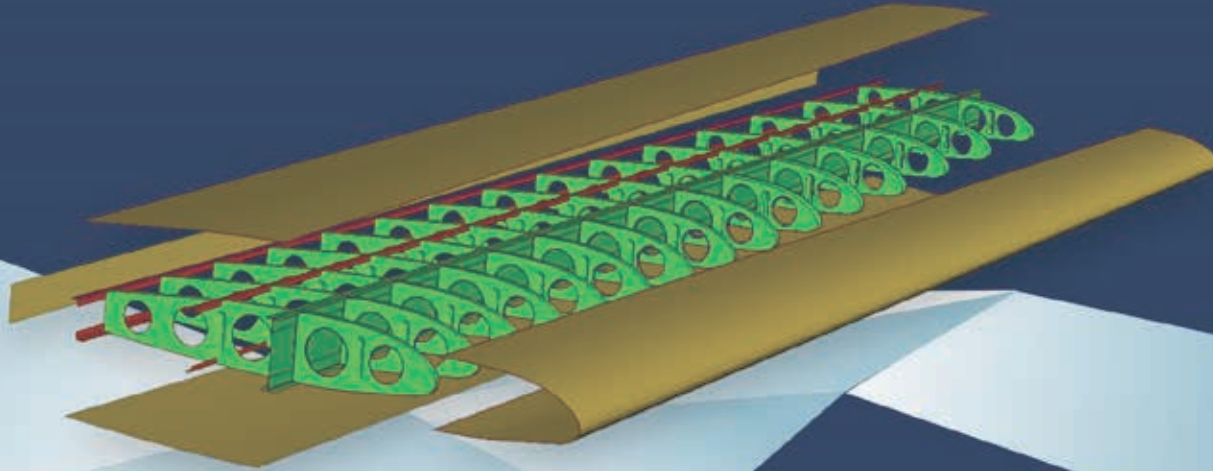
DEMO

Volume modularity in CFD models: a complete workflow

Friday, June 16, 11:30 – 12:00, Demo Session 9E | Venus I

Solutions for...

Aeroelasticity



Extending our application solutions to Aerospace Industry



Aero Mesh

Main Misc

General

Name: left_wing

Eid: 1

Type: Panel

Theory: Doublet-Lattice

Selection

Point 1: X 0, Y 0, Z 0

Length 1-2: 2

Point 4: X 0, Y 10, Z 0

Length 4-3: 1.6

Mesh

Span divisions: Linear

End/Start:

Steps: 10

Chord divisions: User defined

Table:

Options

Property:

Coordinate system:

Interference group ID:

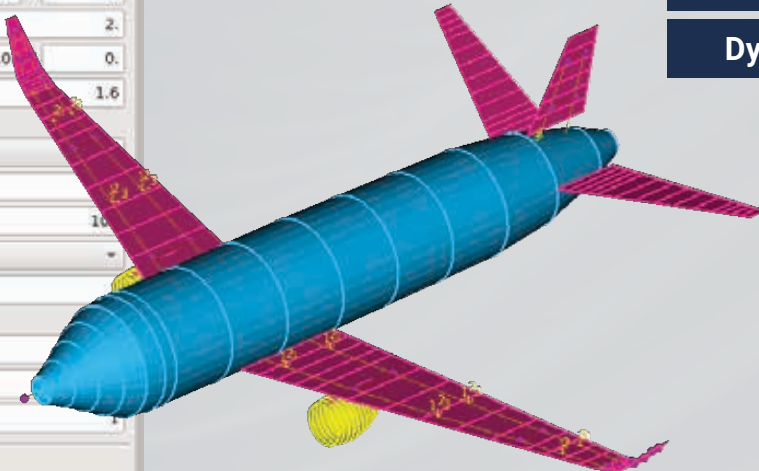
OK Preview Cancel

Loadcase Setup Assistant

Static aeroelasticity (SOL 144)

Flutter (SOL 145)

Dynamic Aeroelasticity (SOL 146)



“Aero Mesh” tool for the creation of aerodynamic panels and bodies

Extending our application solutions to Aerospace Industry



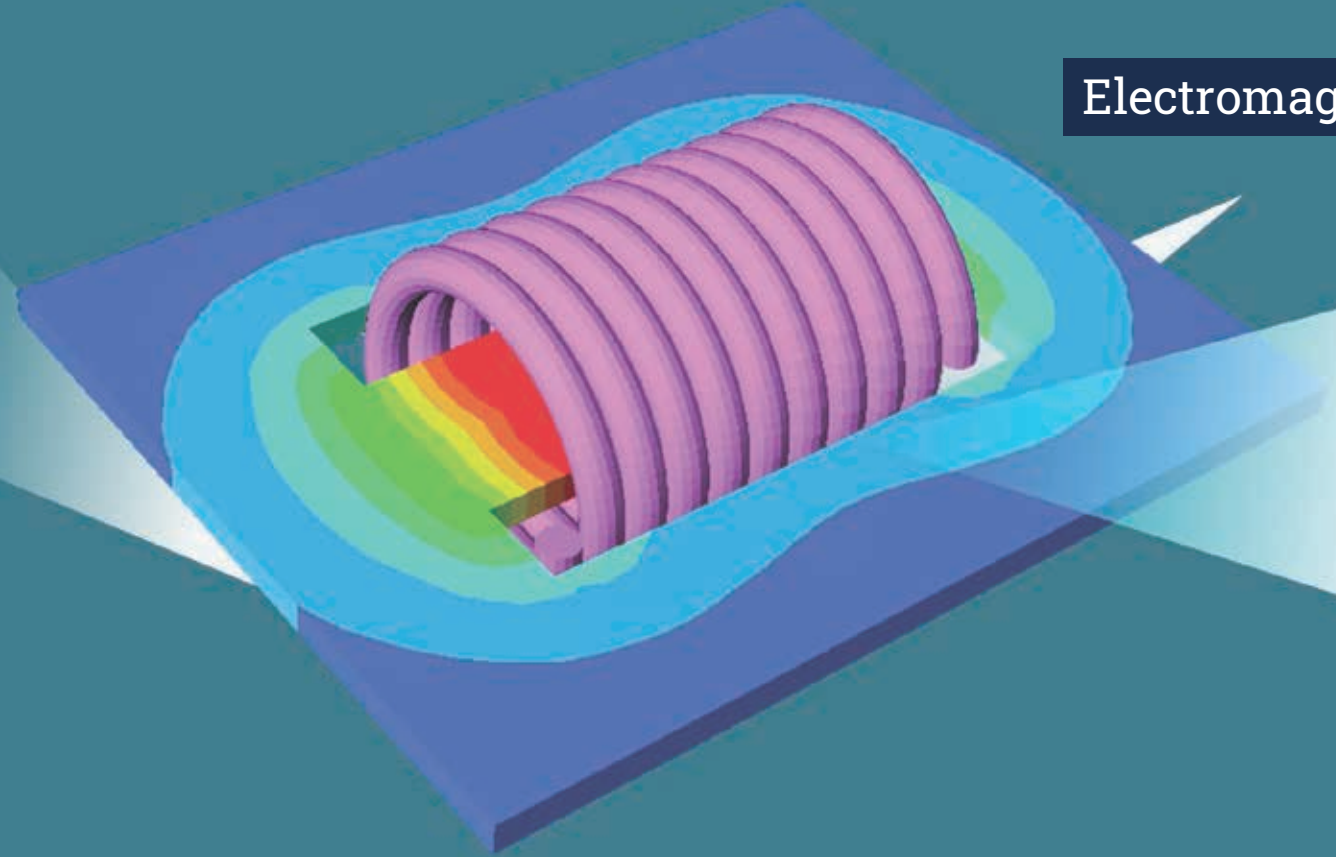
DEMO

ANSA for Nastran Aeroelasticity

Friday, June 16, 11:30 – 12:00, Demo Session 9G | Mars I

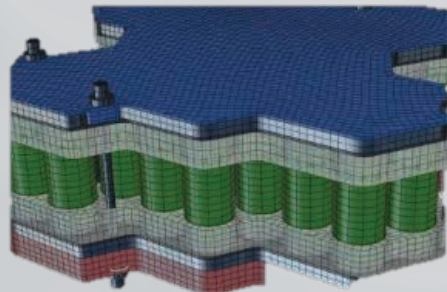
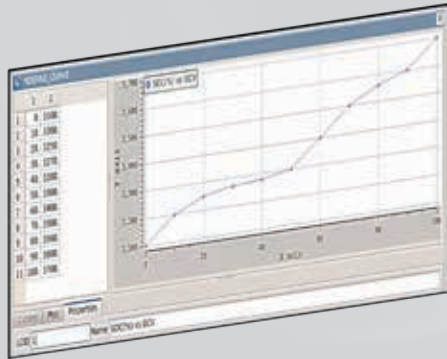
Solutions for...

Electromagnetics



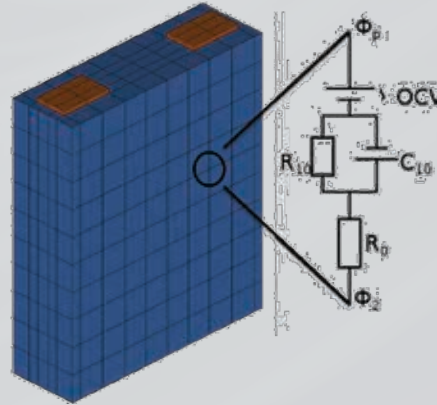
Meshing and EM model setup

ANSA
PRE PROCESSOR



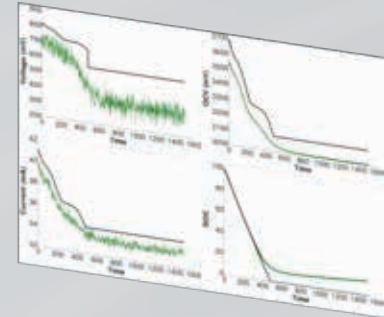
Coupled Thermal, EM & Structural analysis

Electromagnetic Solver

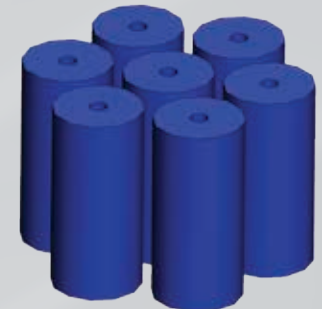


Electromagnetic 2D & 3D Results

META
POST PROCESSOR



Randles Circuit Resistance



Unlock the complexities of electromagnetic analysis



ANSA and META for battery electromagnetic simulations

BETA CAE Systems

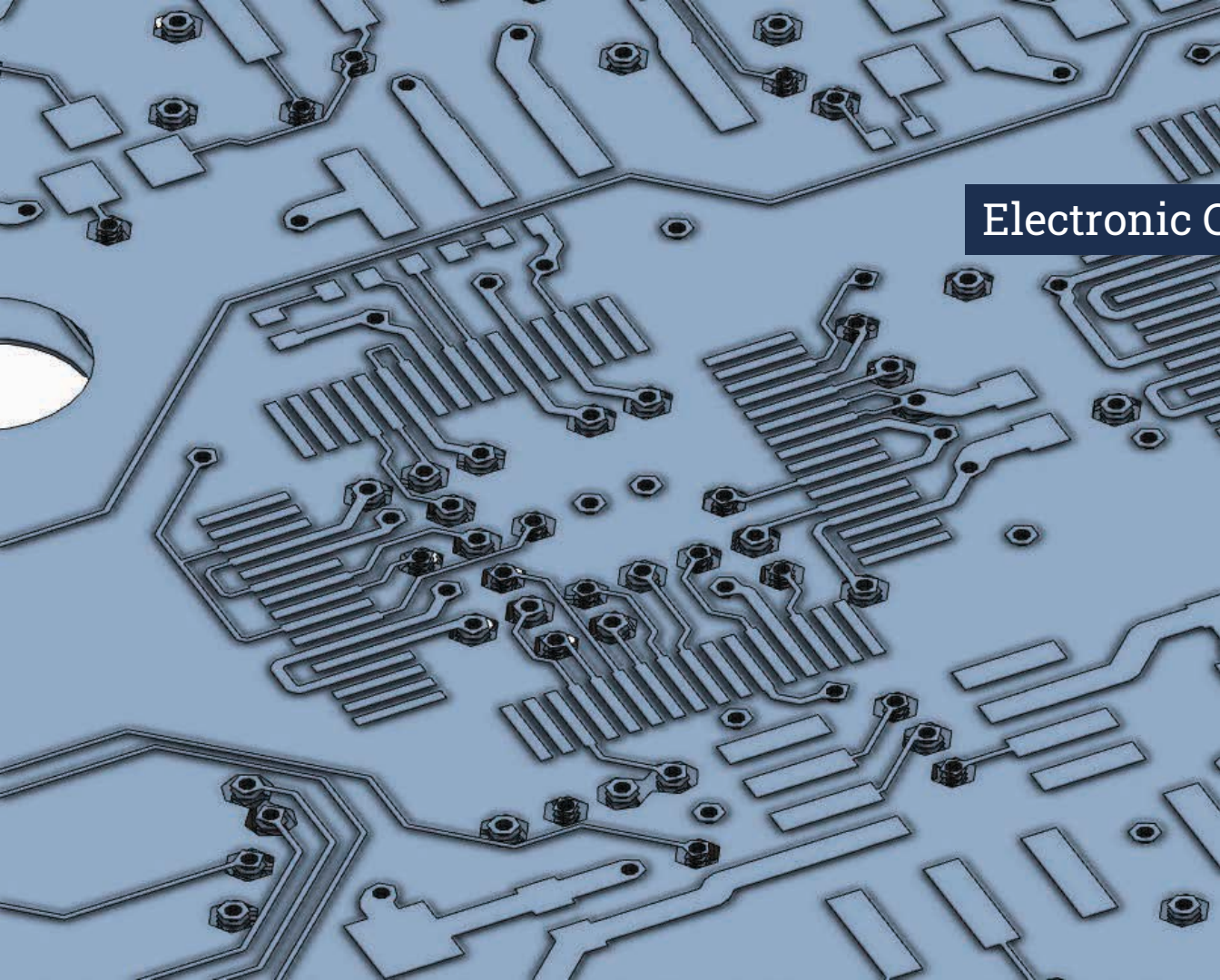
Thursday, June 15, 16:00 – 16:30, Session 7D | Saturn



Computational electromagnetics with ASERIS-BE™

IMACS, BETA CAE Systems

Thursday, June 15, 16:30 – 17:00, Session 7D | Saturn



Solutions for...

Electronic CAD

Translate your ECAD designs into simulation models



Automatic generation of multiple models from ECAD files of IPC-2581 format



Multiple models from the same ECAD file

User-friendly wizard

Board profile, either imported or custom

Stack-up and component editing

Metal fraction calculation of board and layers

Ready-to-mesh result



Homogeneous
Volume



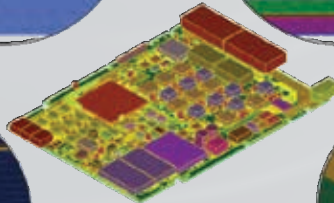
Homogeneous
Layers



Full 3D
Metallization



Full 2D
Metallization



Trace
Mapping

Translate your ECAD designs into simulation models



Thermal simulation of PCBs using ANSA ECAD Importer, ANSYS Fluent and META

BETA CAE Systems, Thales

Thursday, June 15, 17:00 – 17:30, Session 7D | Saturn

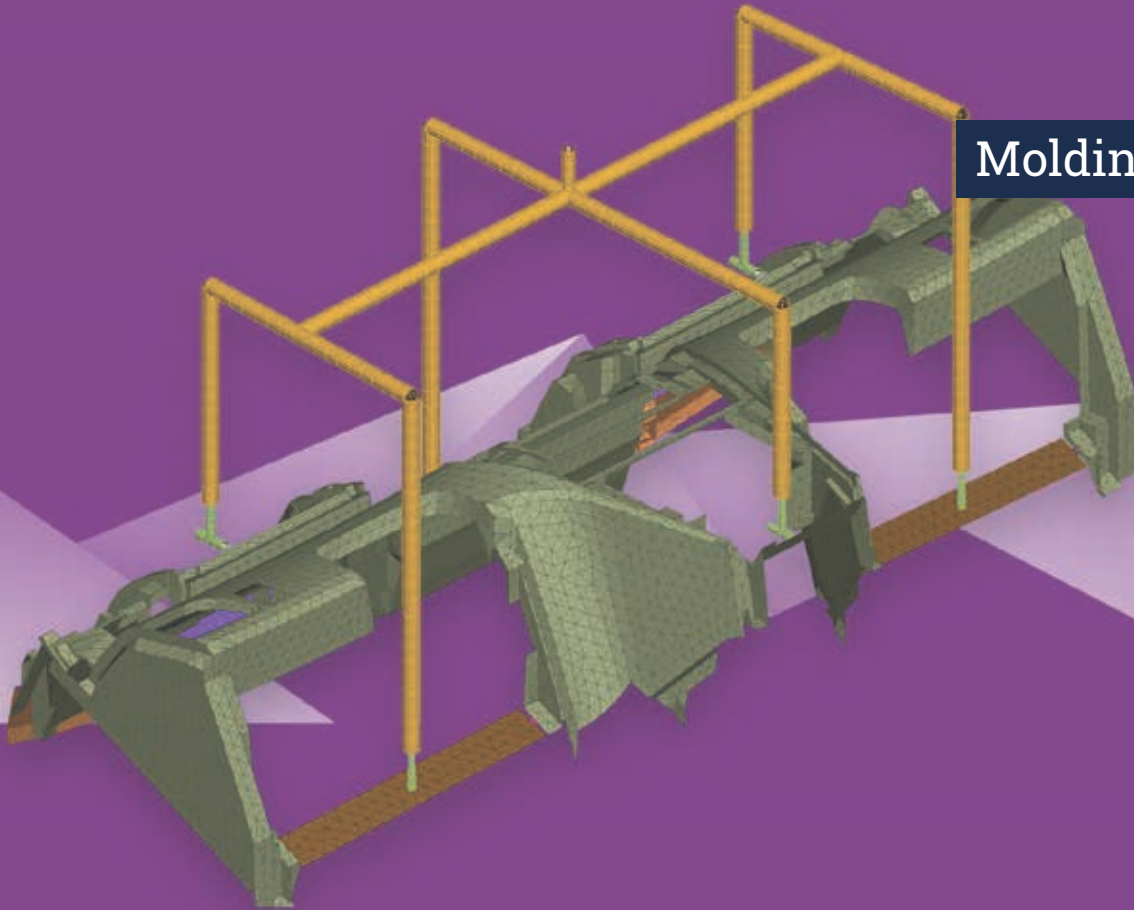


ECAD Importer: A gateway to FEA simulations for PCBs

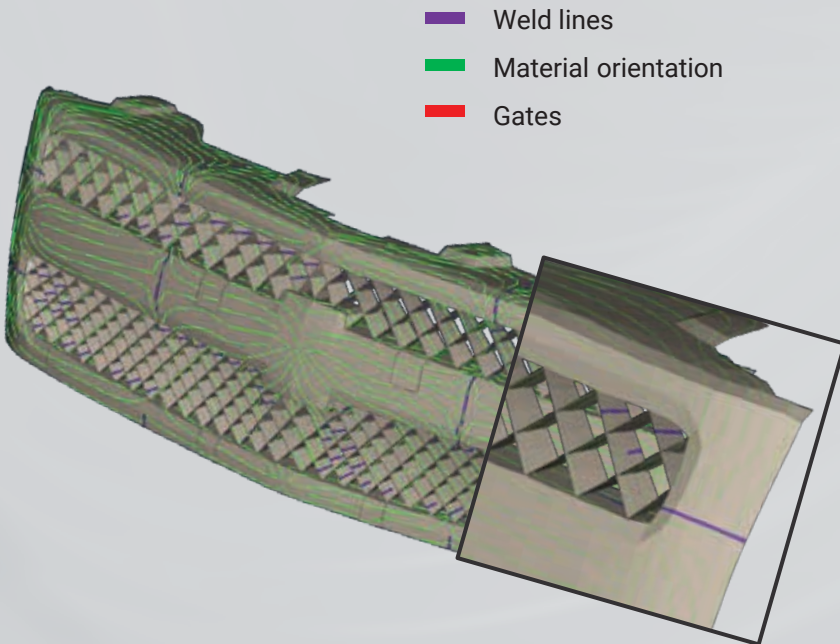
Friday, June 16, 11:00 – 11:30, Demo Session 9F | Venus II

Solutions for...

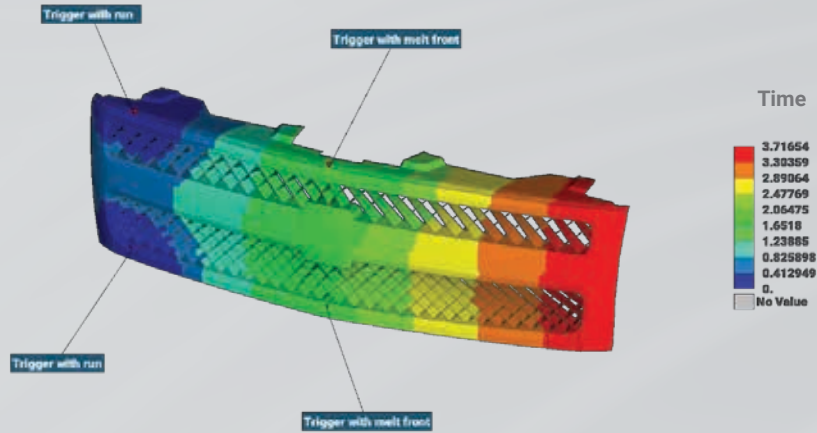
Molding



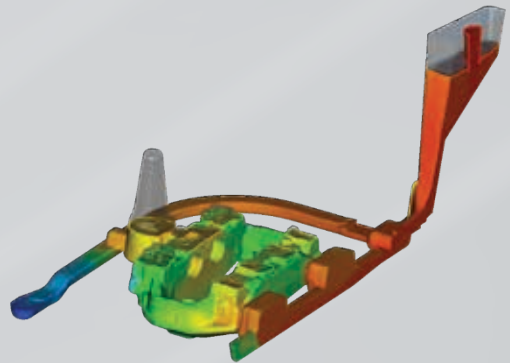
Increased accuracy in representation of Injection Molding material characteristics



Variable triggering of gates



Metal Casting: Generate 3D Mesh with ANSA



Making the most of Injection Molding



Adopt injection molding manufacturing effects to improve parts' crash worthiness

BETA CAE Systems, MATFEM Ingenieuresellschaft mbH

Wednesday, June 14, 16:30 – 17:00, Session 3D | Saturn



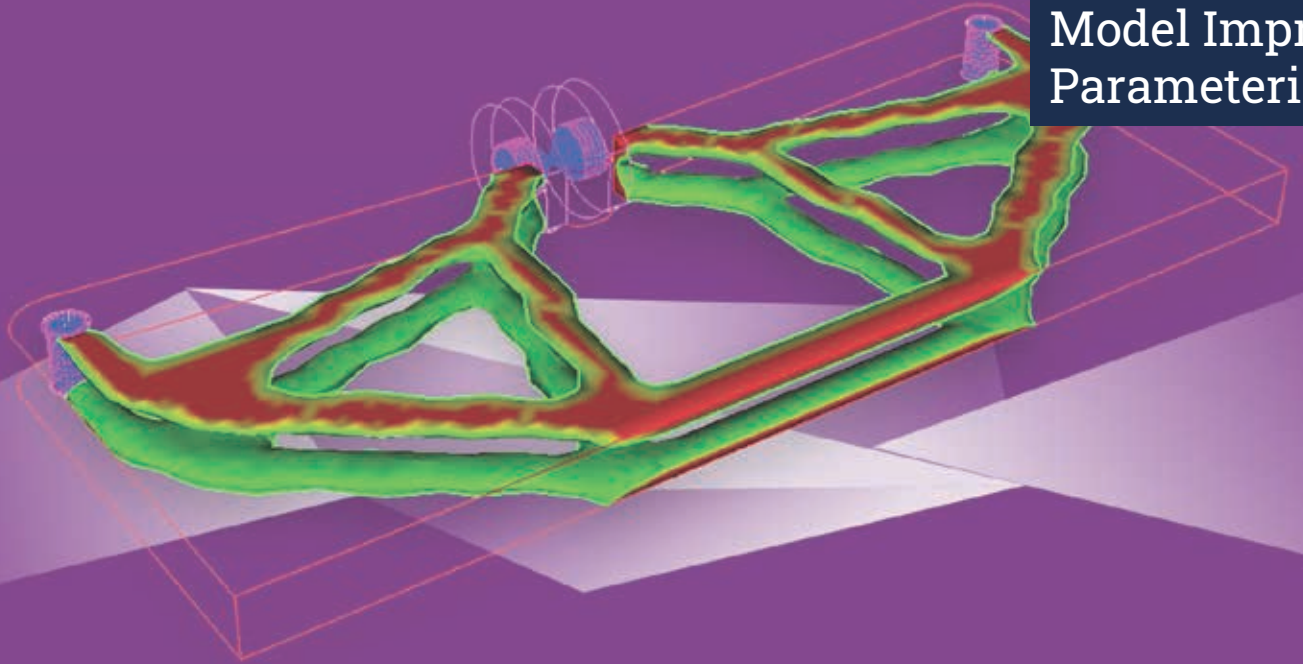
3D Mesh generation in ANSA for metal casting simulation with PROCAST – The Brembo automated process

BETA CAE Systems, Brembo S.p.A.

Wednesday, June 14, 17:30 – 18:00, Session 3D | Saturn

Solutions for...

Model Improvements,
Parameterization & Optimization



Discovering the Optimum Design



Facilitate the investigation and methods for identifying the optimum design parameters to the efficiency

Morphing & Design Toolbar

Parametric Modeling for numerous Member types

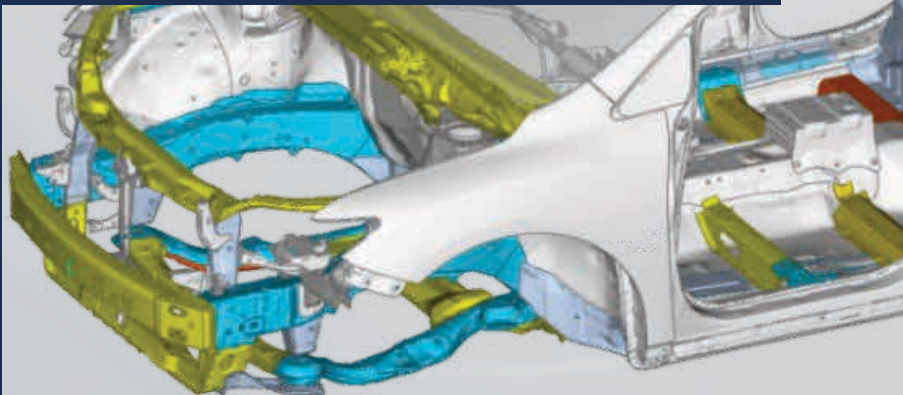
Reinforcements generation

Automatic Flanges Adaptation

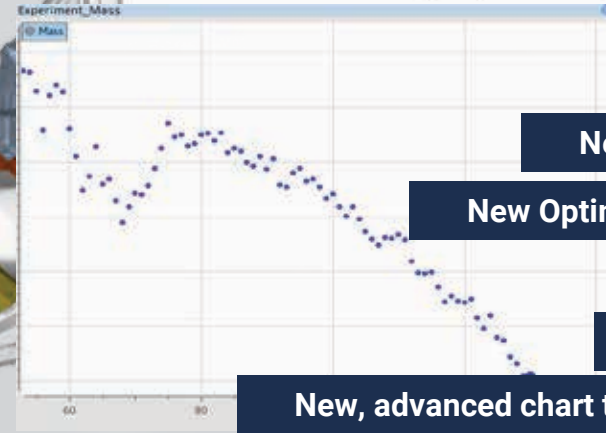
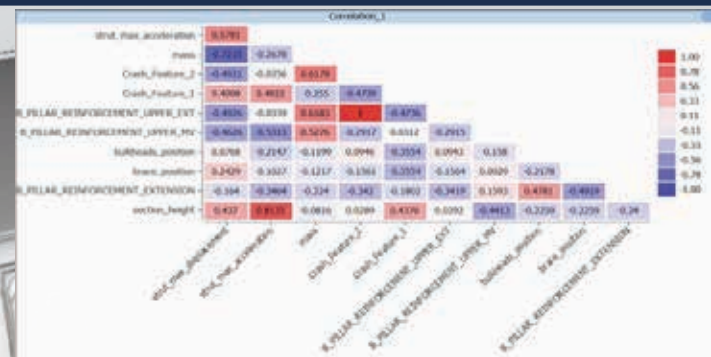
Steady Sections Morphing

Contact Definitions in Morphing

Handling Spotweld Density in Morphing & Optimization



Optimization Tool



New DoE algorithms

New Optimization algorithms

Parallel jobs

Optimization log

New, advanced chart types

Discovering the Optimum Design



Latest and future Developments in Morphing and Design Toolbar

BETA CAE Systems

Wednesday, June 14, 17:30 – 18:00, Session 3B | Terra



Latest and future Developments in the Optimization Tool

BETA CAE Systems

Wednesday, June 14, 17:30 – 18:00, Session 3B | Terra



Design tools for the Analysts

Wednesday, June 14, 12:30 – 13:00, Demo Session 5G | Mars I



Find optimal designs of your parametric ANSA model using the embedded Optimizers in the Optimization tool

Thursday, June 15, 14:30 – 15:00, Demo Session 6G | Mars I

Solutions for...

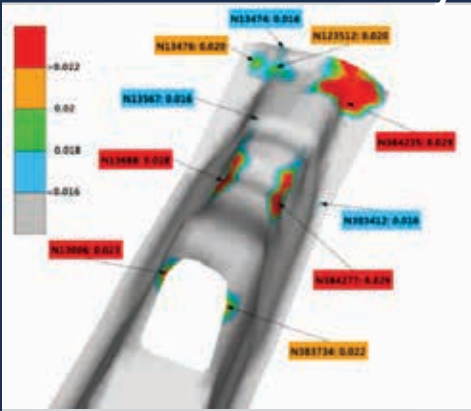
Process Automation



Minimizing turnaround time with Process Automation



Optimized visualization & clarity



Advanced data calculations

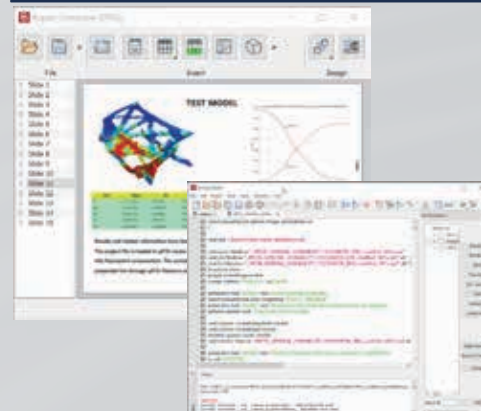


Seamless integration into high-performance environments

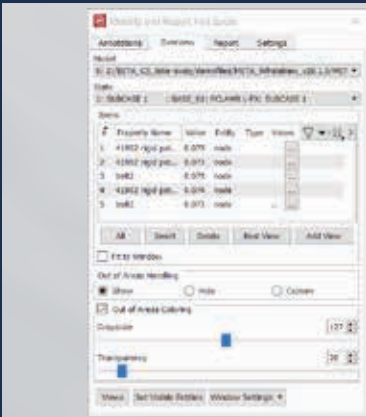
HPC



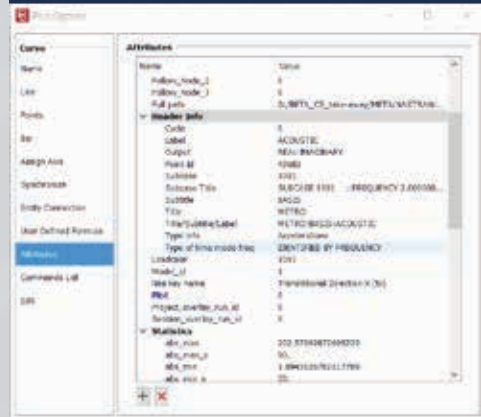
Streamlined workflows



Intuitive custom interfaces



Efficient info storage/ retrieval



Minimizing turnaround time with Process Automation



META Automation: Best practices and proven techniques

Wednesday, June 16, 16:30 – 17:00, Demo Session 3G | Mars I

Solutions for...

User Productivity



Breaking down the interoperability barrier among different FEA software



Working on multidisciplinary simulation workflows, where several solvers are involved

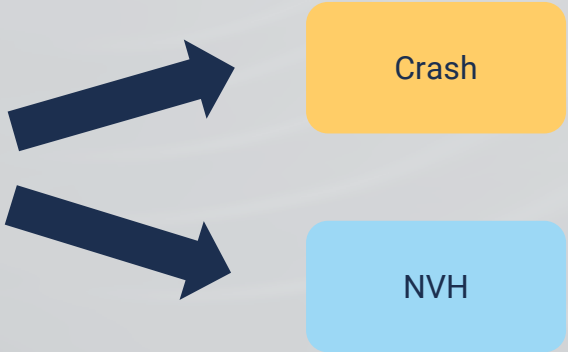


Common model definition

Different analysis types

Different entity definitions

Different material models



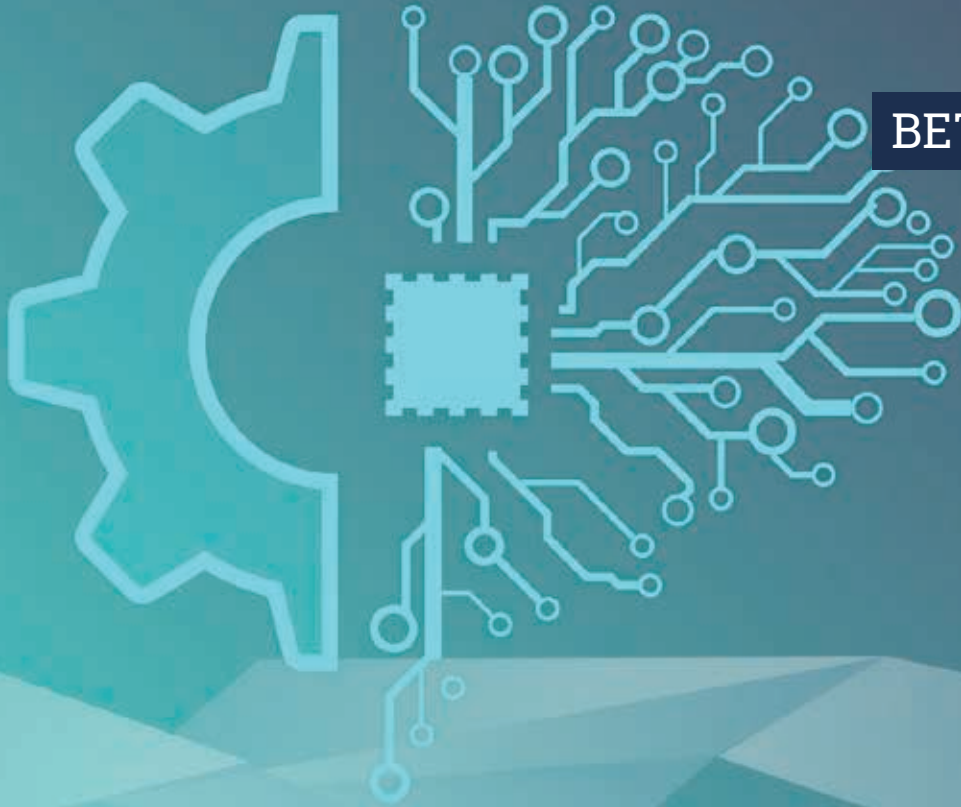
Increase the effectiveness of your modeling processes



Breaking down the interoperability barrier among different FEA software

Friday, June 16, 12:00 – 12:30, Session 9C | Jupiter

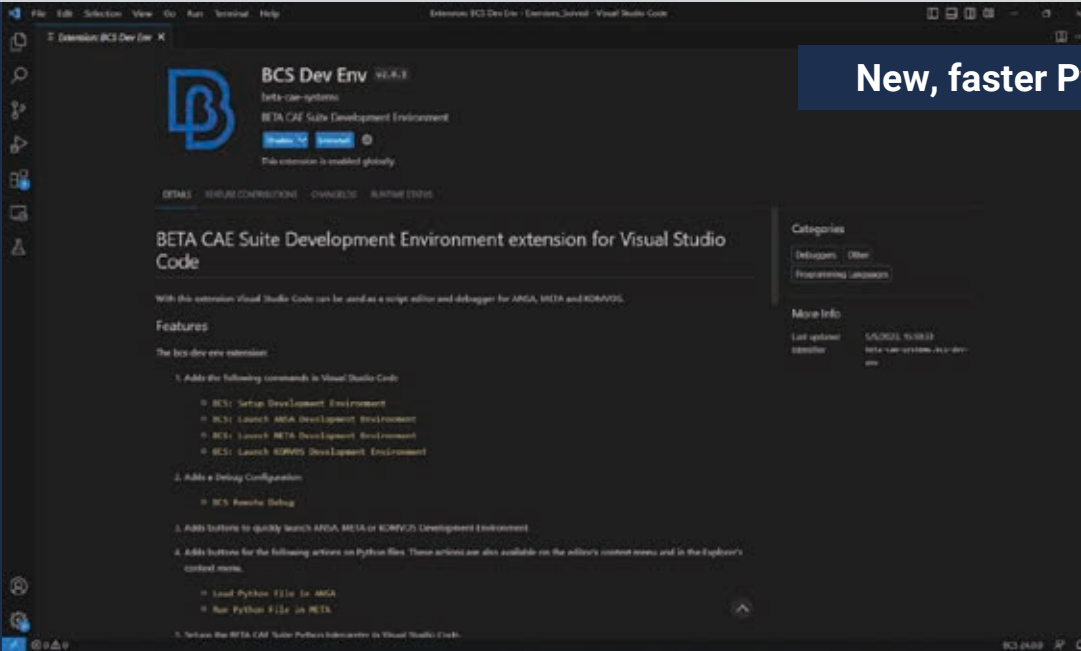
BETA Development Platform



Script Development and Package Management using Virtual Environments & VSCode



Provide the developer with all the necessary tools to develop error free, high quality Python code



New, faster Python 3.11 integrated in the BETA Suite

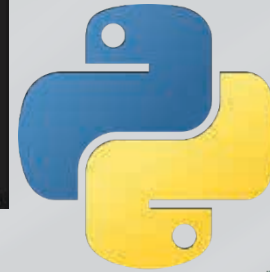
APIs returning numpy Arrays

Support of type annotations

```
python -m venv my_virtual_environment
```

VSCode integration with BETA Suite

Working with multiple Python environments – packages



BETA Development Platform



Latest developments and future roadmap of the BETA Development Platform

BETA CAE Systems

Friday, June 16, 11:30 – 12:00, Session 9D | Saturn

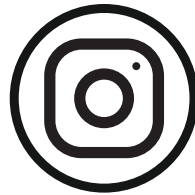
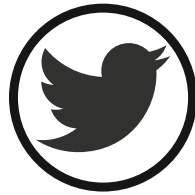


Script development and package management using Virtual Environments and VSCode

Wednesday, June 14, 17:30 – 18:00, Demo Session 3G | Mars I



Let's go!



Stay connected