Managing Large Abaqus Simulation Results for Efficient File transfer and Storage

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Agenda

- Introduction of gns mbH
- Introduction of our software
- Using FEMZIP for compressing of Abaqus data
- Using Animator with Abaqus and CRFTP
- Summary
- Outlook

Introduction of gns mbH

founded	1994
fields of business	Engineering services in fields of FEA
	Development and support for FEA software
employees	Around 120 engineers, mathematicians, software dev.
headquarters	Braunschweig
subsidiaries	Ingolstadt, Flörsheim, Sindelfingen
customers	Automotive industry, aerospace, consumer-goods industry

Introduction of gns mbH

Related companies

engineering	GNS Praha sro.
	GNS Australia Pty Ltd
	Numerical Simulation Software (Shanghai) Co., Ltd
	GNS Engineering India Pvt. Ltd
IT-services	GNS Systems GmbH
	IT-Services related to FEA and simulation workplaces, license management, HPC Cluster management

Introduction of software

Animator4	General postprocessor for finite element simulations in fields of crash, statics, dynamics, NVH, durability
Generator4	Preprocessor for the positioning of dummies, impactors for passenger and pedestrian protection
OpenForm	Software package for pre- and post processing of forming simulation with different forming solvers

Using FEMZIP for compressing of Abaqus data

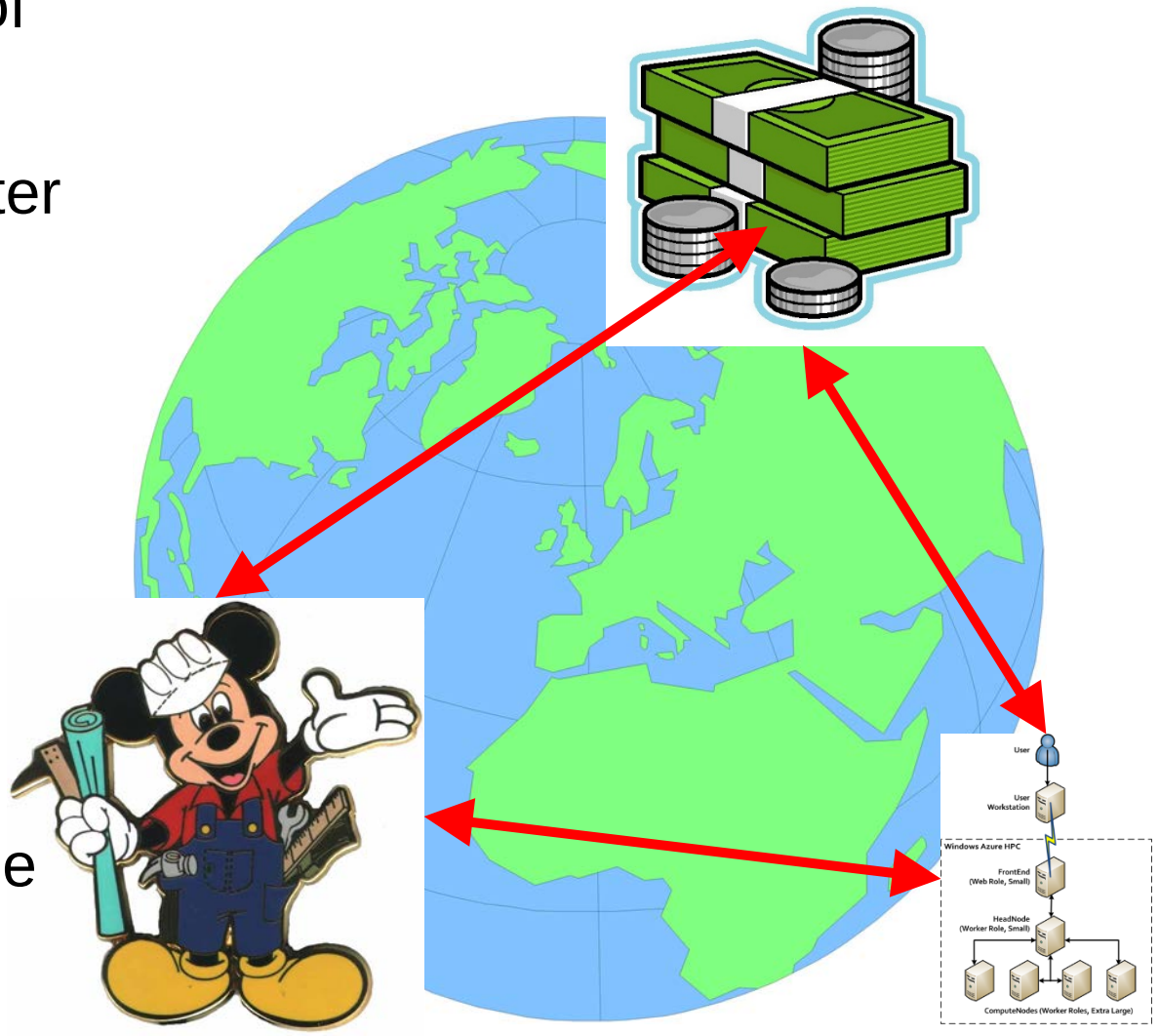
Using FEMZIP for compression

The problems we are facing in the modern world of simulation

Using FEMZIP for compression

- international division of labor
- placing computer-center in areas with green/cheap power sources
- markets all over the world, with local engineering/design changes

engineering data has to be copied all over the world



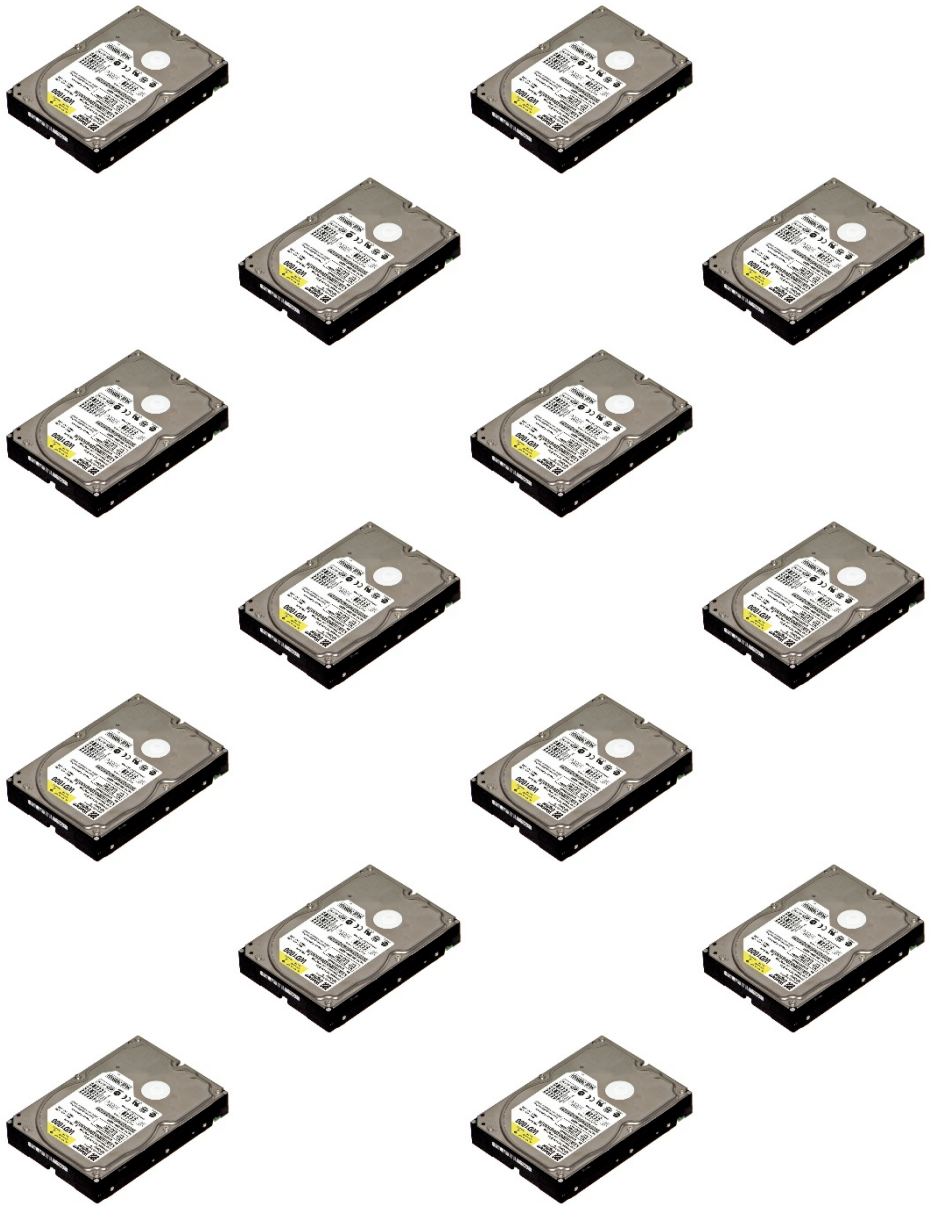
Using FEMZIP for compression

- result files of FEA become bigger
  - more detailed models
  - Newer elements, which contain more post processing data
  - FEA is more trusted now, more departments want to have answers build on FEA

Using FEMZIP for compression

- more result files
  - better processes, automatisms
  - more simulation engineers
  - faster computer
  - faster solver codes

Using FEMZIP for compression



- more data has to be copied over longer ways
- Infrastructure and storage media is expensive
- compression can solve lot of problems here

Using FEMZIP for compression

The solution we provide

Using FEMZIP for compression

Animator4 Database

Database files, which contain the complete workspace of an engineer.

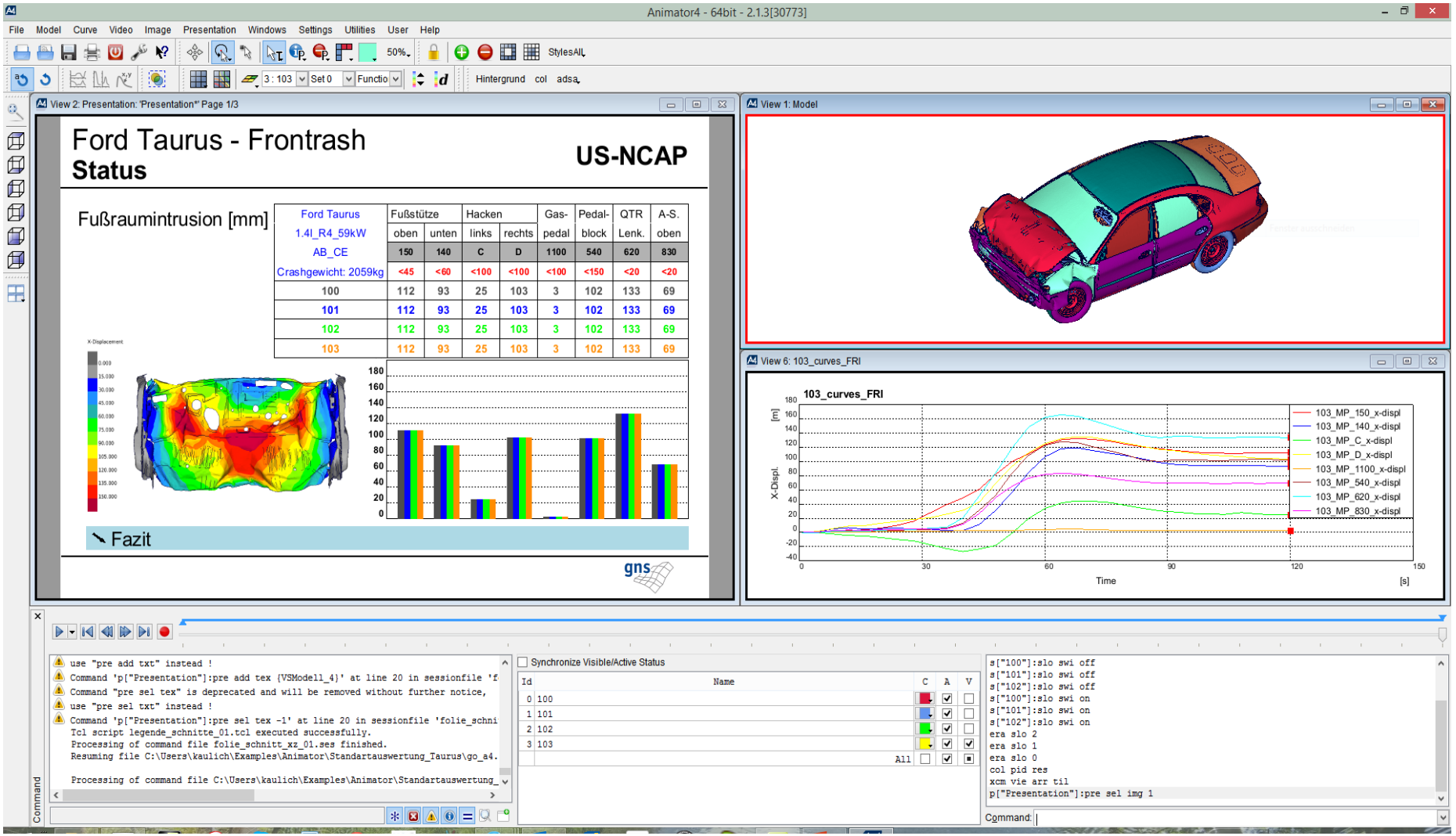
FEMZIP-A4DB

Compression software, developed specific to compress FEA results

Compresses with losses, where the parameter can be defined by the user.

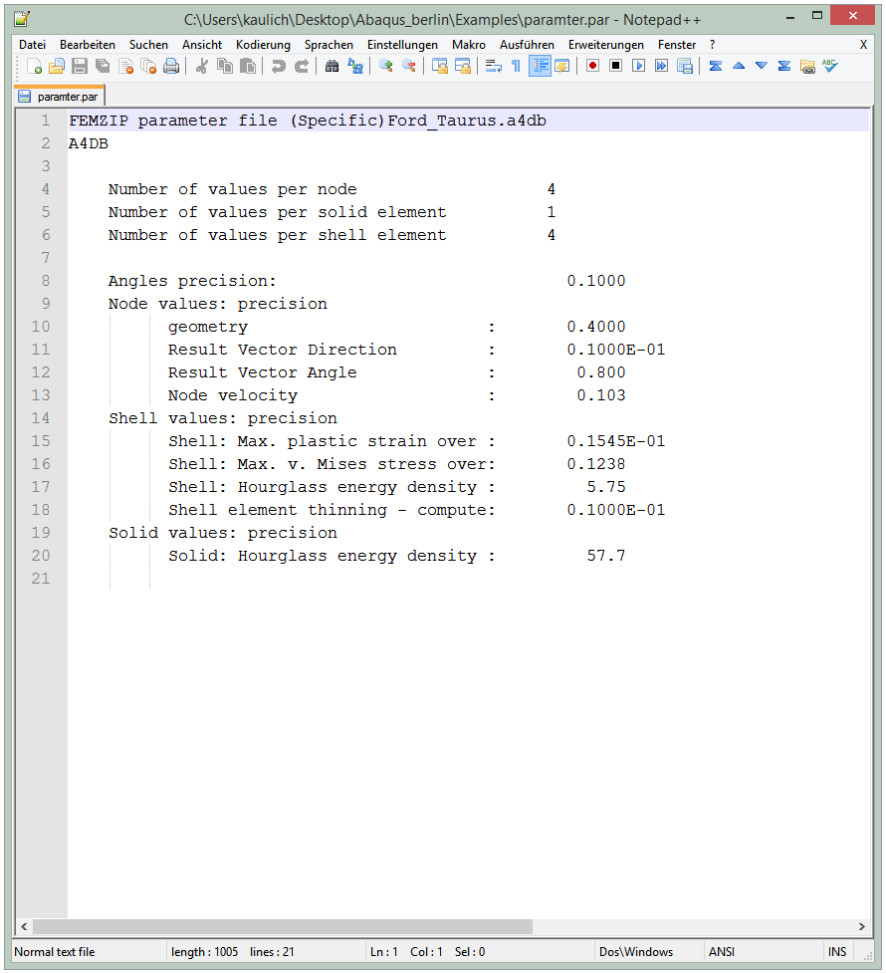
Using FEMZIP for compression

Animator4 Database



Using FEMZIP for compression

FEMZIP A4DB



Typical crash result files can be reduced with FEMZIP by about a factor of 10.

Compression factor changes with the precision defined in the parameter file.

Using Animator with CRFTP

Unique for Abaqus

Composite Material Orientation

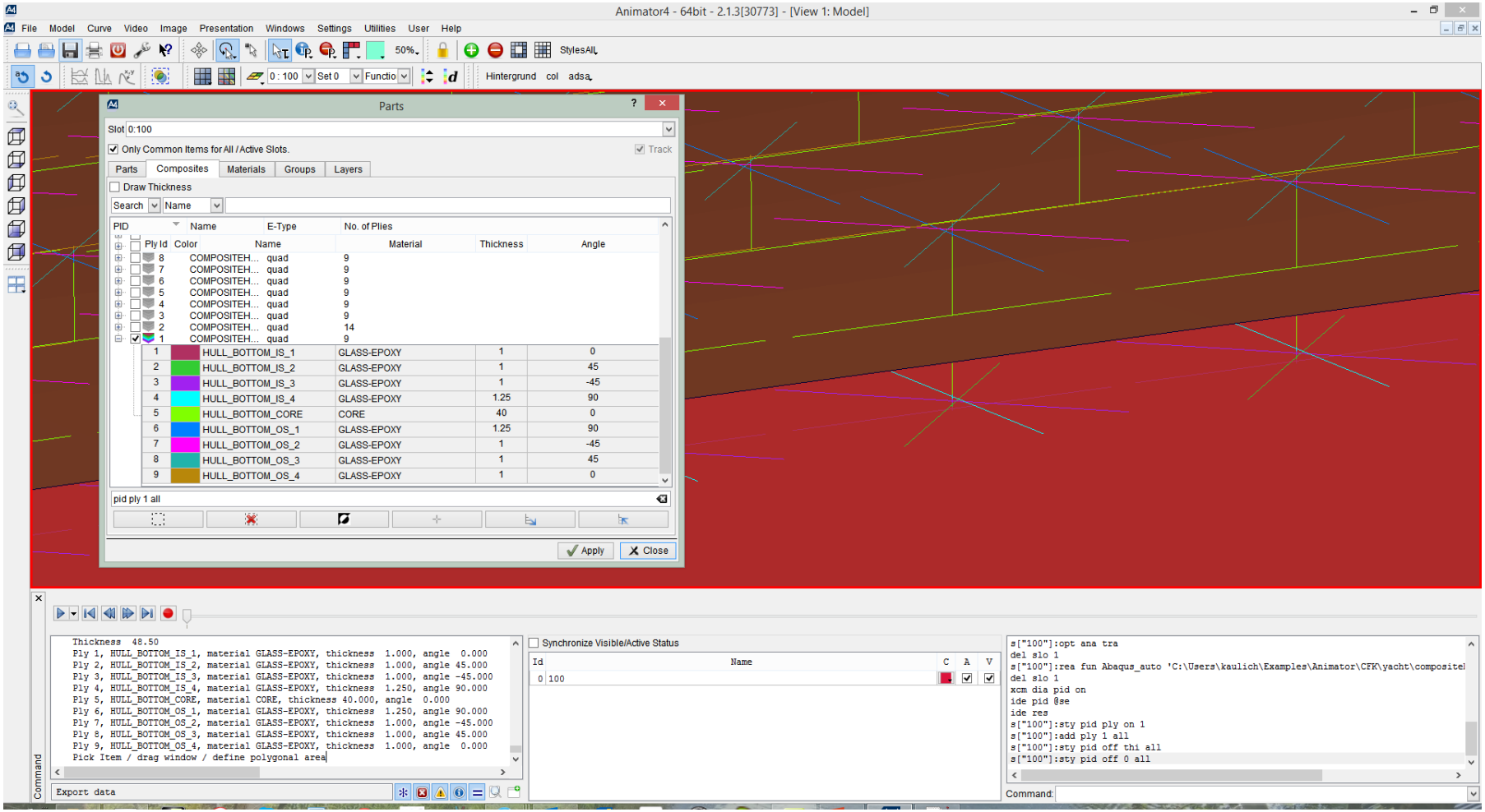
When reading an odb-File, Animator4 can extract the orientation of each layer from the .inp file. If the orientation could be extracted, Animator offers to read result functions for certain orientations.

Animator4 parses the data lines to define a composite shell of shell sections with the parameter COMPOSITE as described in the Abaqus Keywords Reference Guide. Beside the orientation values also the thickness, the material name and the name of each ply are read in.

The composite information of a property can be queried using the identify command ide pid.

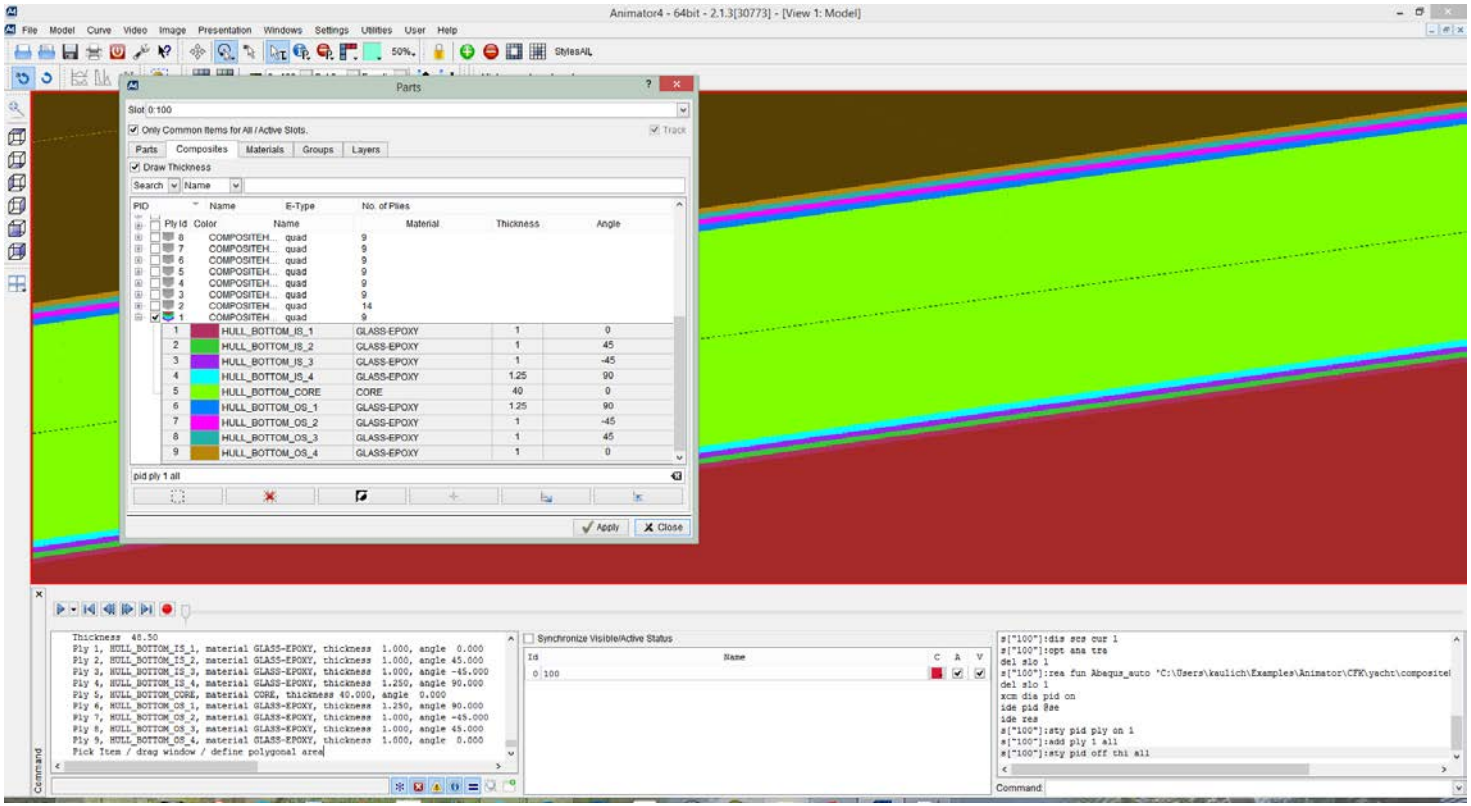
Using Animator with CRFTP

Specific GUI for layer based materials



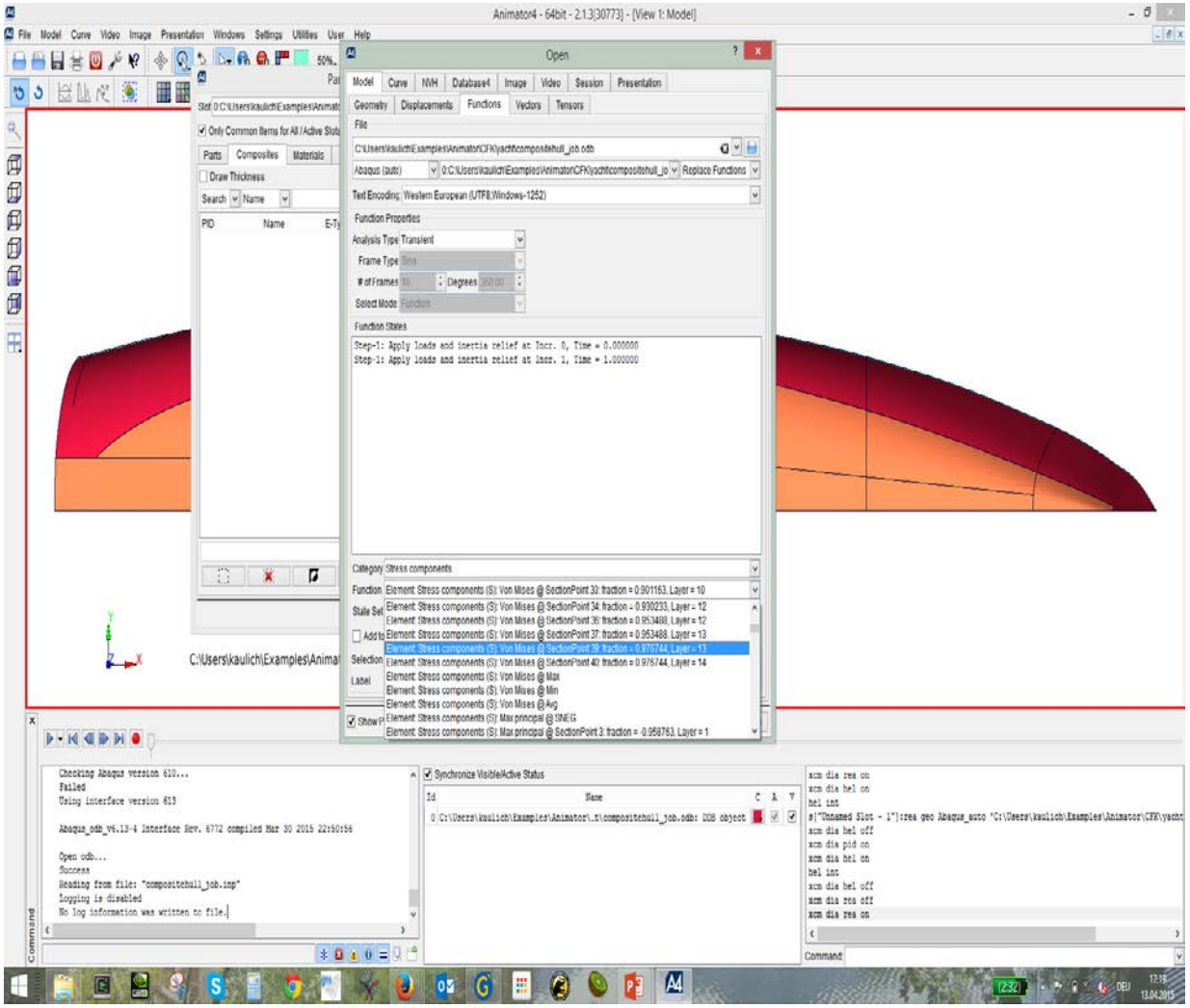
Using Animator with CRFTP

Draw thickness of different layers in the model view



Using Animator with CRFTP

Results are averaged over the layer, or can be shown for single layers.



Summary

Summary/Outlook

The combination of Animator4, its database file and FEMZIP A4DB gives the possibility of an cost effective and time saving way for the division of work between groups located far away of each other.

Better compression level will be even more effective in the near future and will compress the file more than now.

CRFTP will take more part in automotive engineering and the tool provided by Animator4 will be developed further and opened for additional solver.

Thank you for your attention,
questions can be answered here or at our booth in the exhibition