

## **MODULAR BUILD-UP OF VEHICLE CRASH MODELS USING ANSA DATA MANAGEMENT**

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ABSTRACT – In recent years two of the biggest challenges that faced the automotive industry were the reduction of real prototypes' number and the time to market cut off. In order to help overcome these challenges, the CAE engineers increased the degree of detail and complexity of their digital models, especially for crash simulations. Models of three, four or even more millions of elements are built in an attempt to predict accurately their global behaviour and simultaneously many local effects (such as : deformation, damage and fracture of material and welds, contact forces, etc.), in a rather big variety of crash load cases.

In addition:

- the ever increasing number of model-variants due to customers' requirement for individualization (different types of roof, engines and gearboxes, roadsters/CCs, etc.),
- the trend of OEMs to assign the development of car-modules to contractors and subcontractors,
- the reality of common "platform" vehicles, and
- the dominance of "multi-material" design of BiWs

had as a result the strong modularisation of vehicle models.

The tasks of creation, organisation, handling, assembly and maintenance of both the modules and the resulting complex digital model variants, are very demanding and time-consuming.

This presentation will demonstrate a strategy for achieving the aforementioned goals in a flexible and fast way.

The mesh-generation, update and management of the modules (especially the BiW) was performed using ANSA Data Management and ANSA Batch Meshing Tool, the assembly using the LS-DYNA \*INCLUDE\_ capability and the final check of model's quality and integrity again with ANSA.

As an alternative the same assembly procedure was performed with ANSA Task Manager.