

MANAGING CROSS-FUNCTIONAL AND MULTI-CODE MATERIALS DATA AT JAGUAR LANDROVER FOR ROBUST CAE ANALYSIS

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ABSTRACT

Materials data is one of the key inputs to robust CAE analysis, which is a key enabler to Jaguar Landrovers (JLR) future Product Development strategy of using Simulation Driven Design. JLR use many simulation software packages to analyse a wide range of loadcases across Body, Trim, Powertrain and Chassis attributes. The inputs to any CAE analysis can be simplified to geometry, materials data and loads/constraints. If any of these are incorrect, the analysis will be inaccurate. JLR has evolved from using CAE analysis as a development tool to a validation tool. This has required significant improvements in material characterisation and materials modelling knowledge to ensure robust, traceable materials models, which accurately represent the “in service” properties of the manufactured component. Managing this wide range of complex materials data which is used by CAE analysts around the globe was an increasing challenge. The rapid growth of the business alongside the changing global business environment, advancing CAE capability and advanced materials being analysed, meant that a more robust method of obtaining, authoring, validating and recalling materials data for virtual engineering use was required.

This presentation will discuss the development of a “Virtual Engineering Materials Data Hub” within JLR using intranet based Granta software to manage and author CAD and CAE materials data from a single central source, and distribute to JLRs Simulation Lifecycle Management (SLM) and Product Lifecycle Management (PLM) systems. It will describe the work required, and challenges involved in creating the database in the following key steps:-

- 1) Gather, cleanse and import existing materials data
- 2) Structure the database to enable data comparison and export
- 3) Develop materials data comparison tools
- 4) Develop CAE software integration tools

It will also describe the improvements made to the Virtual Engineering process, to both the end users of the data and the wider “Non CAE” business. It will also discuss both the next steps, and barriers to overcome, in developing a more integrated solution that ensures an automated, traceable system for getting materials data from physical test to CAE analyst.

SUGGESTED THEMES

Materials, Database, Characterisation, Data Management