Automation of multidisciplinary model using Primer integrated with TeamCenter

Tayeb Zeguer (*), Richard Sturt (+), Chris Archer (+), Stephen Boot (#)

(*) Jaguar LandRover, Gaydon, United Kingdom

(+) Arup, Solihull, United Kingdom

(#) Siemens, Solihull, United Kingdom

1 Abstract

Product Lifecycle Management (PLM) systems are now becoming well-established, at least as a structured and version-controlled storage system for CAD data, and are now starting to be used to store CAE data too. The challenge is to integrate CAE software with the PLM system so that information can flow smoothly, quickly and automatically from the CAD system into CAE models; the long-term goal is instant re-assembly of CAE models of all disciplines (linear statics, NVH, durability, crash, etc) in response to new releases of CAD data. This has been partially achieved already for the simpler linear solution types; the next step is to add crash model assembly with all its complexities of selecting and setting up the correct components, dummies, barriers etc for each loadcase.

At Jaguar LandRover, TeamCenter (from Siemens) is the PLM system, while Oasys Primer is the preferred tool for LS-DYNA model assembly. This paper describes the integration of TeamCenter with Primer to create a system for assembling and updating models and managing the crash and NVH loadcases automatically. The benefits of the integrated system are: (1) Every analyst has access to a controlled, checked set of Include files with the ability to assemble any or all loadcases automatically; (2) Parts in the CAE models are traceable to the CAD part number and revision; (3) Parts in the CAE models can be updated automatically (with re-creation of connections) when new CAD revisions are released; (4) After such an update, the loadcases can be reassembled automatically: large time-savings are possible; (5) A model-checking step may be requested, giving a red/green colour-coded status of each assembled model and thus reducing errors and wasted time; (6) Process standardisation leads to greater consistency of methods used by different analysts so models may be picked up easily by others. Although aimed primarily at crash analysis with LS-DYNA, the integrated system is also able to handle and assemble NASTRAN models, to provide input models for multi-disciplinary optimisation.

This paper will set out the concepts used in the TeamCenter/Primer integration, describe the work-flows and data organisation, and give some observations from using it at Jaguar LandRover on “live” design programmes.