COMMON CAD MODELING FOR MULTIPLE AUTOMOTIVE FEA DISCIPLINES

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ABSTRACT – The downturn in the automotive sector has forced large automotive companies to develop new engineering strategies that will deliver world class automotive products faster using minimal development cost. Ford Motor Company has recently instituted a "One Ford" vision that integrates the various engineering disciplines. So that, products are designed by disciplines that are in-sync with each other, have a common engineering strategy and using common engineering practices.
The "One Ford" strategy has promoted CAE at Ford to commonize among the company's differing CAE attributes (Durability, NVH, Safety, Aero, Paint, etc). Typical of large size automotive companies, CAE model build at Ford has been made by various engineering attributes independently, thus causing labor redundancy, and inconsistency in design levels, these issues are being analyzed.
Although, each CAE attribute has differing FEA modeling requirements (Mesh and Welding methods between Safety and Durability attributes, for example), the source for each FEA model is ideally derived from the same Body-In-Prime top hat sheet metal CAD.

The opportunity is to have one source develop a single top hat Common CAD model based Task. Which is checked, applied and corrected/validated for proper connections, connectors, Cad Design issues (Design Mismatch /Designs flaws) and Materials using ANSA Task Manager, Data Management and other ANSA functionality. The Common CAD based task could be given to the various CAE attributes to build their discipline specific models using their discipline specific model building guidelines and requirements. The communization of top hat CAD model will ensure design level consistency, high CAD quality, eliminates labor redundancy, and shortens model build cycle time.

The following paper will detail the advantages of ANSA based Common CAD modeling concept by exploring various available ANSA functionality and their benefits, and currently implementation at Ford Motor Company.