

THE USE OF GENERIC ENTITIES FOR MULTIDISCIPLINARY PREPROCESSING. A SIMPLE BUT POWERFUL PATTERN IN ANSA.

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ABSTRACT – Today's multidisciplinary CAE environment demands for rapid FE Model development cycles, thus the efficient processing of repetitive and complex modeling tasks is vital. This creates a need for highly automated processing steps and effective data sharing between the different CAE disciplines.

BETA CAE Systems SA, in order to meet the above requirement, came up with a series of technologies, integrated within its preprocessor ANSA. These technologies allow the handling of the preprocessing environment in the engineering entities level rather in the solver entities level, making possible the treatment of model data as generic engineering data and not as specific FE solver entities.

For simple tasks, such as the spotweld connection modeling, to more complex ones, such as a seatbelt or that of a stamping result mapping, there are ANSA entities that hold all the engineering data needed for its realization to the respective e.g. LS-DYNA entities. All the different types of those Generic Entities are similar in their definition and realization. At realization time the generalized entities, automatically adapt to the solver-specific FE (e.g. LS-DYNA). Thus making it straightforward to master the ANSA model-build-up capabilities and share and re-use the engineering data among different disciplines.

This technology essentially creates a single, generic, pattern that is re-used throughout ANSA modeling tasks. This pattern driven technology provides a very practical and powerful solution for recurring modeling processes where the engineering data and the solver's data are kept separately, and associated as required.

This paper on ANSA's Generic Entities presents the latest advances in model build-up technologies in the specific areas of connections and connectors, mass trimming, results mapping, dummy positioning and restraining, pedestrian and FMVSS 201U model set-up. As it is demonstrated, the exploitation of this modeling approach makes the LS-DYNA model built up process more time, effort and cost efficient.