

RENAULT MODEL FACTORY: MANAGEMENT OF MODEL BUILDING

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ABSTRACT

Renault has created a specific central organization to build and manage 3D simulation models that are used for the analysis of the performance of vehicles. Main purpose of this organization is to optimize the cost and the lead-time of CAE model building and ensure a well-established level of quality in reference to the methods that have been verified and validated by specialists in each domain of analysis.

Lead-time is constrained by the engineering process that requires simulation analysis based on a frozen vehicle definition at each digital development loop. Models should be provided quickly to let sufficient time for simulation analysts to evaluate the behavior of vehicle and propose some design modifications to solve performance issues or optimize the design cost / weight.

Analysts should be confident in the quality of models. If not, they will spend time for reviewing the quality of models instead of searching design proposals to increase the performance of vehicle. More critically in case of errors spread in models, they could propose some modifications of design based on simulation analysis that could be wrong and let take bad decision in projects. These errors could in worst cases be discovered during physical tests, leading to huge additional cost of validation. For these reasons, quality should be built without compromise: it should be carefully processed; evidence should be brought to demonstrate the quality that is achieved on the different parts of a model. Also, uncertainties that are embedded in models due to quality issues that could not be reduced (usually the case when inputs from design are not mature enough or when the methods are not robust enough) should be summarized and shared with simulation analysts for them to estimate the confidence in results that are produced.

In this presentation, Renault will focus on the specific contribution of SPDM tools to deal both with lead-time reduction and quality of models in the context of a central organization of CAE model building (model factory).