

ANSA: ENABLING INNOVATIVE MODELLING PRACTICES

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ABSTRACT –

In vehicle simulation, structural mechanics of deformational forces and energies play a crucial role. Initially the most important task is to compile a 'fit for purpose' CAE model with an acceptable approximation to the physical event. Common modelling practices provide considerable simplification to the complex set of inter-related CAE model decisions. These decisions are commonly reached through clean mathematical descriptions and empirical findings. As such they are best suited to well-known patterns of structural mechanics and behaviours.

The combined onset of new vehicle architectures, hybrid material structures, and alternative powertrains, could mean common modelling practices no longer result in satisfactory approximations. To further develop these practices an on-going research study within ANSA's pre-processing functionality proposes to establish python™ machine-learning patterns able to determine and execute best-suited modelling decisions. Five main modelling areas are being examined in detail: model assembly & interactions, element parameters, mesh patterns, geometric detailing, and material model choices. This paper describes the use of ANSA's python™ scripts to establish an adaptive approximation approach to efficiently realise a 'fit for purpose' CAE model.