BRINGING REALITY INTO THE VIRTUAL WORLD

Eric DeHoff [1], Kishore Pydimarry [1], Santosh Patil[2]
[1]Honda R&D Americas, Inc.
[2]BETA CAE Systems USA

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ABSTRACT
Over the past twenty years and more, the automotive industry has been moving from a physical test-based development process to more of a virtual one. All aspects of the vehicle's design and performance targets are being driven by the use of CAE simulations. This includes all types of methods from traditional FEA for structures and CFD for aerodynamics to 1-D models of vehicle control systems. One of the key steps in this process is taking the data from one format like CAD and putting into various formats that physics-based solvers can use. Products like ANSA with its multidisciplinary capabilities address that need. Creating an efficient process to build and analyse models with as much detail as a physical vehicle is critical because of aggressive development cycles and ever-increasing number of load cases being analysed. The simulation software tools used in this process need to be optimized for performance, ease of use and robustness while handling large CAE models which are often more than 100 GB in size. Results visualization like realistic rendering and virtual reality is also very important when communicating with non-CAE experts and bringing their typical understanding of reality into the virtual world. In this paper we discuss current trends and state of the art in CAE simulation and discuss challenges and opportunities presented by ever increasing demands for better mobility solutions..