

Connecting Separated Worlds for True Multi-Disciplinary System Simulation – by Using Altair Activate™

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Within this tutorial we will guide you through the solving of an engineering problem step-by-step in use of Altair's system simulation tool Activate™. Thereby, we will describe the advantages of combining Modelica's acausal modeling approach with specific signal-based libraries for the evaluation of mixed, i.e. continuous and discrete, systems. This includes explaining how integrated optimization methods can be used to improve either system or control performances. Furthermore, we will show the benefits of linearization of a system simulation model using the open-source scripting language OpenMatrix. Of course, we will demonstrate the interaction with other tools as well – either via standardized (FMI) or specific interfaces – with the goal to enrich the capabilities of Modelica with the strengths of other 1D or 3D tools, e.g. for Multi-Body or Electromagnetic simulation.

Throughout the tutorial we will emphasize that:

- Openness is essential – e.g., support of independent modeling languages or standardized model-exchange interfaces. This is one of the most important requirements to enhance existing processes and tool chains with new best-in-class methods.
- Altair is extending its heritage of 3D modeling to the forefront of enabling system modeling and system simulation as a central point of the development process – or in other words: multi-disciplinary system simulation is the backbone of innovation

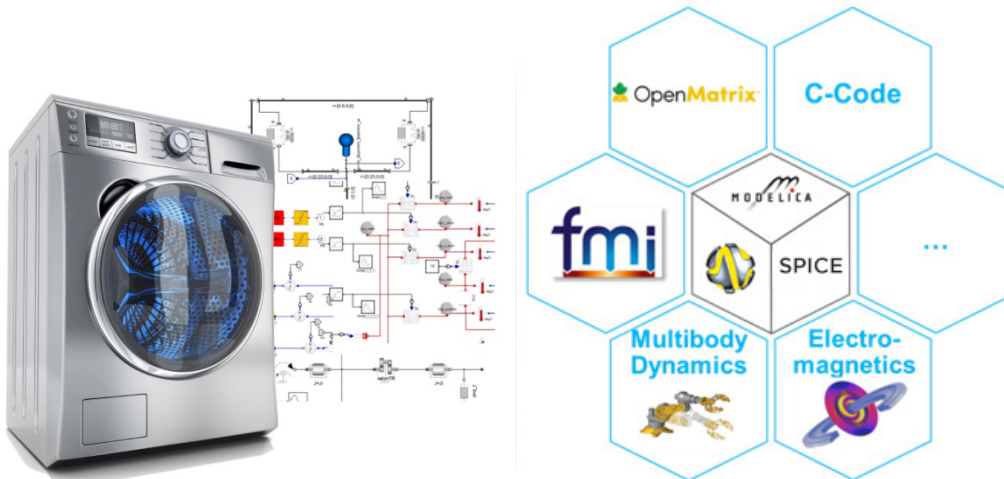


Fig. 1: System simulation as the core of combining the strengths of different best-in-class modeling approaches