Ecosystem of a Software Owner towards Translation in Materials Engineering

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Materials are everywhere… new materials are being introduced into the market at unprecedented speed. Nearly 70% of product innovation relates to material innovation. This can be the formulation of a new chemical, the new combination of existing materials, the enhancement of an available material, or a new manufacturing method as additive manufacturing. For industrial product manufacturers, materials innovation is critical for improving performance, improving recyclability and reducing cost of products. A big challenge is the amount of physical testing required to develop and certify new materials. This underlines a clear need to design materials virtually, and to validate their performance as part of complex products virtually.

As Software Owner, Siemens Digital Industries Software (DI SW) offers Simcenter 3D, a comprehensive, fully-integrated CAE solution for complex, multidisciplinary product performance engineering. The product line Simcenter 3D Materials Engineering is developed in strong connection to an Ecosystem for Materials Innovation. Our long-term connections to industrial end user customers allow us to study the right problems: we are informed about new materials questions, and we translate them into emerging needs in modelling, simulation and validation of complex material systems. We are keen on answering these questions with product innovations, and able to do so together with the other actors in the Ecosystem. Together with our top university partners, we connect to the industrial end users to fully understand their problems. The universities then drive the research into achieving the best methods to solve the industrial problem. Siemens DI SW aims to include methodology innovations into new software solutions that address the end user problem within the industrial engineering context. Siemens DI SW actively sets up and coordinates research programs and projects across the Ecosystem, involving universities, research centers, complementary technology companies and industrial end users. The broad spectrum of actors accelerates the innovation, allowing all partners to advance in their domain, overcoming the challenges together. Industrial PhD programs are an important innovation driver, thanks to the follow-up by multiple actors, and furthermore by recruiting new knowledge and skills profiles into the Ecosystem, and by strengthening the collaboration.

This presentation will outline recent technology innovations related to Simcenter 3D Materials Engineering, driven by end user needs, enabled by in-house R&D and extensions of the product offering, and empowered by strategic academic research and specialist domain-specific business collaborations. This includes advances in multiscale computational methodology, linking manufacturing simulation into the performance engineering loop, material and chemicals informatics and the strategic extension to address also the process industry.

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