

# SIMULIA Analyst Event 2017: Simulating Product, Nature, and Life

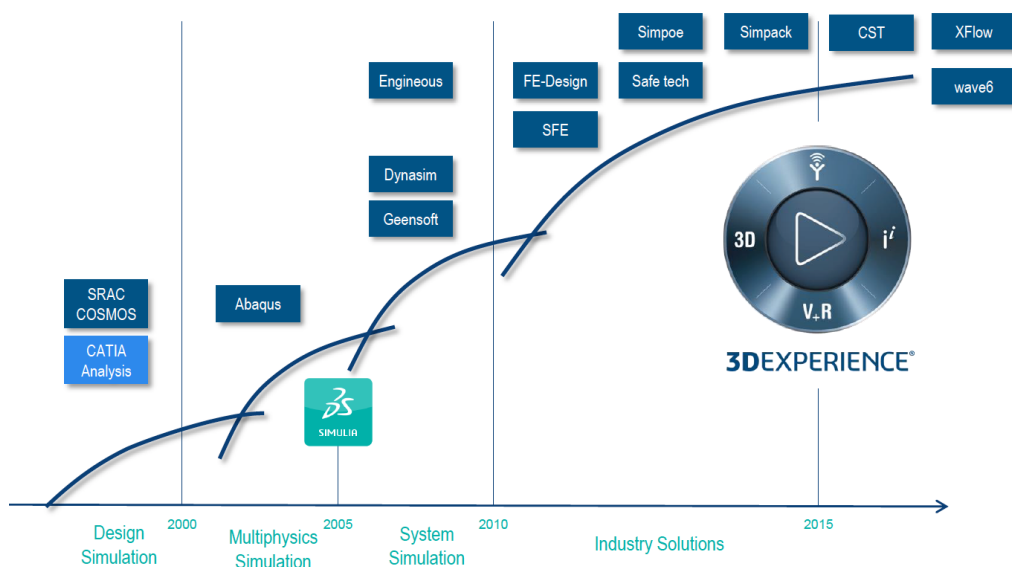
## CIMdata Commentary

### Key takeaways:

- CIMdata believes Dassault Systèmes has made strong progress in developing a platform that enables their customers to leverage simulation to achieve “sustainable innovation.” The base platform includes data management and process automation tools that enable the creation of apps that can be managed and shared to support collaborative workflows.
- The simulation technology of Dassault Systèmes’ SIMULIA brand emphasizes multiscale and multiphysics capabilities that enable an integrated approach to model-based systems engineering along with other PLM applications on the 3DEXPERIENCE® platform.

CIMdata recently attended SIMULIA’s analyst event at its headquarters in Johnston, RI. The fact that SIMULIA hosted this focused event for market analysts highlights Dassault Systèmes view on the importance that product performance simulation plays in all aspects of business, life, and the environment. There was a focus on the strategic and technical aspects of Dassault Systèmes SIMULIA’s technology portfolio and the opportunity to interact with SIMULIA technical experts.

The SIMULIA team provided a wide-ranging overview of their strategy and progress beginning with a SIMULIA brand strategy update by Mr. Scott Berkey, SIMULIA’s CEO. The SIMULIA brand plays a major role within Dassault Systèmes’ PLM portfolio. The 3DEXPERIENCE platform provides the backbone for innovation, collaboration, process, and data management, and SIMULIA provides content-generating technology, they call apps, residing on the platform, as well as additional know-how for simulation process and data management. Mr. Berkey clearly articulated SIMULIA’s purpose—developing and providing

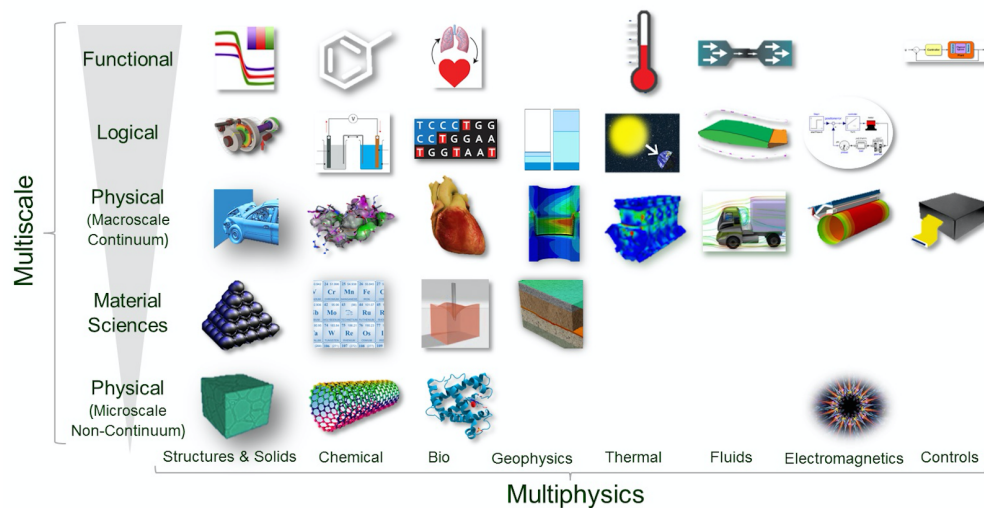


**Figure 1—Dassault Systèmes Long-Term Commitment to Simulation**  
(Courtesy of Dassault Systèmes SIMULIA)

capabilities for “Simulation for Product, Nature, and Life Powers Sustainable Innovation.” This fits with Dassault Systèmes’ commitment to technical excellence and their vision to deliver a “science-based” 3D immersive environment to their customers.

SIMULIA claims over 170,000 users from 12 industries, scientific research, and academia as proof that they offer technology that meets end-user application requirements. SIMULIA continues to grow through organic development as well as acquisitions as illustrated in Figure 1.

CIMdata believes this development and acquisition history illustrates SIMULIA’s commitment to provide multiphysics-multiscale simulation leadership. Mr. Bruce Engelmann, SIMULIA’s CTO, provided more details on their multiphysics-multiscale strategy. SIMULIA has developed and added technologies to provide its customers with the capabilities to work in a full multiphysics-multiscale realm (see Figure 2). In addition, they combined these solutions, process developments, and the **3DEXPERIENCE** platform to help users adopt a model-based systems engineering (MBSE) approach. Simple high-fidelity simulation-based approaches are not sufficient anymore. The market demands not just bridging across the domains, but also bringing upfront lower-fidelity modeling techniques into play to more quickly and more efficiently find the right solution for a requirement while at the same time making manufacturing part of the development and decision making process and providing a feedback loop of how the product performs in operation. MBSE plays an essential role to achieve this.



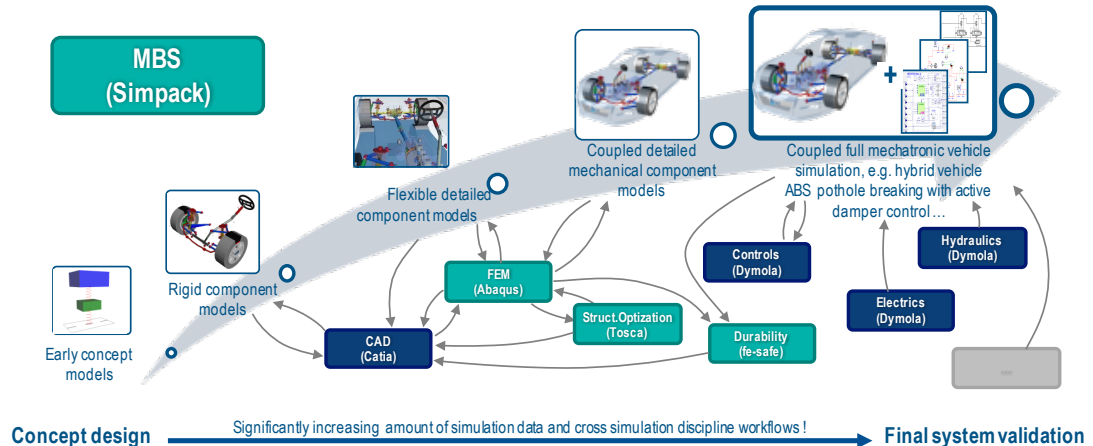
**Figure 2—Simulation Covers the Entire Multiscale and Multiphysics Space**  
(Courtesy of Dassault Systèmes SIMULIA)

The topics presented during this event included:

- Shaping the Future of Additive Manufacturing
- Systems Engineering
- Virtual Human Modeling
- Immersive “Virtuality” (Virtual Reality)
- Conceptual Engineering
- Emerging Electronics

In CIMdata’s experience, the introduction of additive manufacturing has opened new worlds for engineers and designers across all industries. SIMULIA provides those users with leading

simulation and process solutions, starting with in-silico material engineering through function-driven generative design, to process definition and production planning. Designers and engineers can take full advantage of the simulation technology in the “background” while focusing on their actual area of expertise—developing, designing, and manufacturing a product. This is a very good example of “democratizing” simulation technology—making it available beyond the highly-skilled simulation experts.



**Figure 3—MBS-Based Mechatronic Vehicle Simulation Process**  
(Courtesy of Dassault Systèmes SIMULIA)

The best simulation technologies and processes alone do not automatically allow an organization to reach the next level of innovation maturity. A modern engineering approach to enable sustainable innovation means also providing collaboration tools that can make simulation results easy to understand for the non-simulation expert. Data analytics, post-processing, and visualization capabilities greatly improve communication and collaboration. Application examples from Dassault Systèmes include:

- The Simpack Realtime Simulator—concept behavior testing through sight, sound, and touch
- Visualizing manufacturing processes before they occur, like for additive manufacturing, using 3DEXCITE (from their RTT acquisition) and zSpace technologies
- Virtual human modeling that also uses 3DEXCITE and zSpace technologies to look at different scales or layers of a product or organ

To enable these simulation “democratization” apps, Dassault Systèmes has gone beyond the traditional “desktop” visualization technology to support interactive virtual reality technology including:

- CAVE-based
- Portable, like zSpace technology
- Mobile, like tablet or phone based

From a CIMdata perspective, it was encouraging to see SIMULIA’s progress towards comprehensive technology coverage through apps and processes to enable model-based systems engineering. This theme was visible in all the presented material, from automotive to emerging electronics, to human and society behavior modeling. However, automotive still has a leading role in several simulation application areas. CIMdata believes that these techniques, as illustrated in Figure 3, can be applied to other industries as well.

In conclusion, SIMULIA has developed a leading simulation solution portfolio that, when deployed within the framework of a product innovation platform, such as the **3DEXPERIENCE** platform, enables model-based systems engineering capabilities for their customers. CIMdata believes that the company has made strong moves towards providing a process and management foundation and apps-based execution technology that can help their customers achieve sustainable innovation.

## **About CIMdata**

CIMdata, an independent worldwide firm, provides strategic management consulting to maximize an enterprise's ability to design and deliver innovative products and services through the application of Product Lifecycle Management (PLM). CIMdata provides world-class knowledge, expertise, and best-practice methods on PLM. CIMdata also offers research, subscription services, publications, and education through international conferences. To learn more about CIMdata's services, visit our website at <http://www.CIMdata.com> or contact CIMdata at: 3909 Research Park Drive, Ann Arbor, MI 48108, USA. Tel: +1 734.668.9922. Fax: +1 734.668.1957; or at Oogststraat 20, 6004 CV Weert, The Netherlands. Tel: +31 (0) 495.533.666.