

Siemens Innovation Day 2018

CIMdata Commentary

Key takeaways:

- *With more than \$10B in acquisitions, Siemens has expanded its software portfolio significantly including heavy investments in Siemens PLM Software.*
- *Siemens is now in the top-10 software providers worldwide.*
- *MindSphere is playing an increasing role in PLM with the theme of turning Data into value.*
- *Siemens PLM Software in conjunction with Siemens AG delivers a comprehensive and cohesive end-to-end message.*
- *Siemens is diligently working to define all aspects of digital twins and connect them with a digital thread.*

CIMdata recently attended Siemens Innovation Day 2018 held in Chicago, Illinois on March 27th at the DMDII facility; a state of the art venue, of which Siemens is an inaugural sponsor, to showcase and teach the latest digital manufacturing technology. This event was an update of Siemens software offerings as they continue to expand their PLM solution portfolio and provide offerings throughout the lifecycle of products and services. There were about 200 industry analysts, journalists, and industrial companies in attendance. The theme for this year's event was "Unlocking the Potential of Digital Transformation." Siemens described and illustrated how they define a holistic, actionable digital twin that encompasses all aspects of the product lifecycle. This includes presentations in analytics, data collection, and building and energy management. They explained how the product twin, performance twin, and production twin provide digital representations that can be used to make faster, more informed decisions and help close the loop between R&D, simulation and test, and manufacturing. CIMdata agrees with this idea of multiple digital twin representations using the digital thread concept to relate them to one another; "sewing them together."

In the opening introduction, Ms. Lisa Davis, Siemens USA CEO and member of the managing board of Siemens AG, welcomed the attendees from industry, academia, press, and consultants then introduced the agenda. She then introduced Dr. Roland Busch, Chief Technology Officer and member of the managing board of Siemens AG.

Dr. Busch's opening keynote entitled "Unlocking the Potential of Digital Transformation" focused on Siemens increase in investment into R&D from \$6.3 billion in fiscal year 2017 to an estimated \$6.9 billion in 2018. Of this investment \$1.5 billion was spent in 2017 on the digital business. Siemens currently has 24,500 software engineers globally. Some of the areas that are core technologies for Siemens are additive manufacturing, cybersecurity, materials, blockchain applications, simulation, and digital twin. Dr. Busch stated that "Digitalization is a key driver of innovation and growth" as he showed some of Siemens revenue for 2017 where the software revenue was approximately \$4.9B with \$1.5B in digital services. Included were revenues from enhanced automation and enhanced electrification with \$2B and \$53B respectively accompanied with \$21B in classic services in these two sectors.

Dr. Busch then covered some of the recent acquisitions, \$10B since 2007, including Mentor Graphics, MRX Technologies, and TASS International to name a few, placing Siemens among the top-10 largest software companies worldwide.

Changing topics, Dr. Busch described how the MindSphere product is architected and how it is analogous to an operating system for IoT providing connections to devices, advanced analytics, machine learning, and a host of industrial applications all running on the Amazon Web Services cloud. MindSphere's main theme is turning data into value. Siemens has connected more than a million devices with 2,900 customers with 250 industrial offerings. CIMdata believes MindSphere will play an increasing role in the extension of PLM.

Ms. Davis and Mr. Tim Holt, President of Siemens Power Generation Services, gave an interesting presentation entitled "Digital Innovations for the Changing Energy Landscape." They showed use cases where microgrids managed by Siemens software were supplementing the existing power infrastructure and, in some cases, replacing or becoming the infrastructure.

"First and Last Miles, And Everything in Between—The Future of Driving" presented by Mr. Wally Rhines, CEO of Mentor, a Siemens business, and Mr. Marcus Welz, President, Siemens Intelligent Traffic Systems, North America, was next. Mr. Rhines explained how simulations help support artificial intelligence and synthesize that intelligence into chips. Mr. Welz emphasized the number of sensors and data points needed to be collected to support self-driving vehicles and how Siemens is able to provide the systems to support these projects.

Mr. Dave Hopping, President of Siemens Building Technologies and Mr. Simon Davidoff, head of Siemens Digital Rail Service, talked about digital services for rail and buildings. Like the self-driving car, there are millions of data points collected that need to be analyzed and acted upon. They talked about some of the analytic capabilities they are currently using to support these endeavors and how the data helps form actionable tasks.

Mr. Tony Hemmelgarn, President & CEO, Siemens PLM Software, in conjunction with Mr. Mark Becnel, President RadioBro, and Mr. Eric Becnel, Vice President/Chief Engineer, RadioBro, presented "Digital Twins for Real Twins: Putting IoT to Work at Startup RadioBro" an amusing takeoff that real twin brothers (Mark and Eric) are presenting the digital twin. This presentation concentrated on two areas. First an update on last year's presentation by RadioBro on how they are successfully implementing Siemens PLM software and driving the cost of development and time to market down. Second, how the cost of ownership of the PLM software has made it accessible to small to midsize companies like RadioBro. CIMdata observes that reducing the total cost of ownership is key to expanding the PLM market and that new cloud technologies should enhance this opportunity.

Mr. Hemmelgarn continued with the technology forces changing the digital enterprise and how data analytics and the IoT combine to add to the definition of the holistic digital twin. He stated that digitalization is only fully realized when the product, production, and performance digital twins are connected with the digital thread.

The session ended with Dr. Kurt Bettenhausen, Senior vice President of Siemens Corporate Technology, US, speaking on leveraging robotics and AI in the real world. He spoke of where AI, MindSphere, and condition monitoring are being driven down to the smartphone platform to provide you with an "expert in your pocket."

Summary

CIMdata is impressed with the broad portfolio of solutions Siemens has assembled. They have developed and acquired technology and solutions that can provide value across the entire product lifecycle and solutions that have the potential to connect the silos of

mechanical, software, electrical, and electronics. This spans ideation, realization, and utilization of products. They are using their definition of an actionable, holistic digital twin to enable closed-loop environments that allow enterprises to not just monitor a product but to take informed corrective actions to improve design, development, production, and service. As with any major suite of products and technology, CIMdata will be watching to see when and how Siemens leverages the full scope of their suite.

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.