COMMENTARY

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Siemens Parasolid & More

Siemens PLM Components Innovation Conference 2024

Key Takeaways

The best known products from the PLM Components business of Siemens Digital Industries Software include Parasolid, the solid modeling kernel, and JT, the ISO standard visualization format, but Siemens also has components to support geometric constraints, kinematics, and rendering, as well as complete OEMable products such as Solid Edge and Femap.

PLM components' products are used extensively by Siemens, partners, industrial organizations, and even competitors to bring higher quality products to market faster.

Several serious competitors, including Dassault Systèmes SOLIDWORKS and PTC Onshape, have been customers for a decade or more, proving that the level playing field touted by Siemens is real and fully honored.

Customer presentations and discussion panels included well-known companies such as Ansys, PTC (Onshape), smaller, but well-respected companies, like Optitex and MasterCAM, and startups such as Simscale, Luminary Cloud, and nTop.

CIMdata had the pleasure of attending the Siemens PLM Components Innovation Conference in Boston, Massachusetts, on September 24 and 25, 2024.[1] According to our hosts, approximately 150 Siemens staff, customers, prospects, and analysts attended. This was Siemens's third time hosting the event, and the first since the pandemic. The sessions included over 20 presentations and demonstrations.

The opening session began with a keynote presentation from Mr. Tony Hemmelgarn, President and CEO of Siemens Digital Industries Software. Mr. Hemmelgarn noted some interesting statistics for PLM Components, including 400 ISV (independent software vendor) customers, more than 5 million Parasolid 3D model creators, and 65+ JT-enabled ISV customers. He made a critical point that customers get the software at the same time as Siemens' product developers and get the same level of support; this is defined as the level playing field. CIMdata has verified this claim, and Siemens' approach and relationship with its customers are the gold standard we recommend to anyone who wants to enter the software components business.

Parasolid is by far the most popular product within the portfolio and has been in production for nearly 40 years. Siemens licensed then acquired the technology yet chose to keep it open. Important benefits from this approach are Siemens can amortize the software over more seats, get much more real-world

[1] Research for this commentary was partially supported by Siemens Digital Industries Software.

testing and feedback, and enable interoperability without the long timeline of supporting standards. Mr. Phil Nanson, Director of Parasolid Components, reviewed the latest features released in Parasolid, including new mixed-scale models to enable modeling of very small objects in the context of very large objects, such as a microchip in the context of a city. Another interesting point made by Mr. Nanson was that automated testing, which has been used for decades, now runs four million tests per night as part of the quality assurance process. Multiple speakers, including Mr. Paul Chastell, Technical Vice President from PTC Onshape, noted the quality of Parasolid as a critical capability; Mr. Chastell stated that "Parasolid just works."

Other licensable products within PLM Components include D-Cubed, JT, Kineo, Solid Edge OEM, and Femap OEM. CIMdata published a report on PLM components available here[2] that describes the each product and measures market penetration. Some results from the report are shown in Figure 1. CIMdata presented this information and an overview of the PLM market and technology trends during the Siemens PLM Components Innovation Conference.

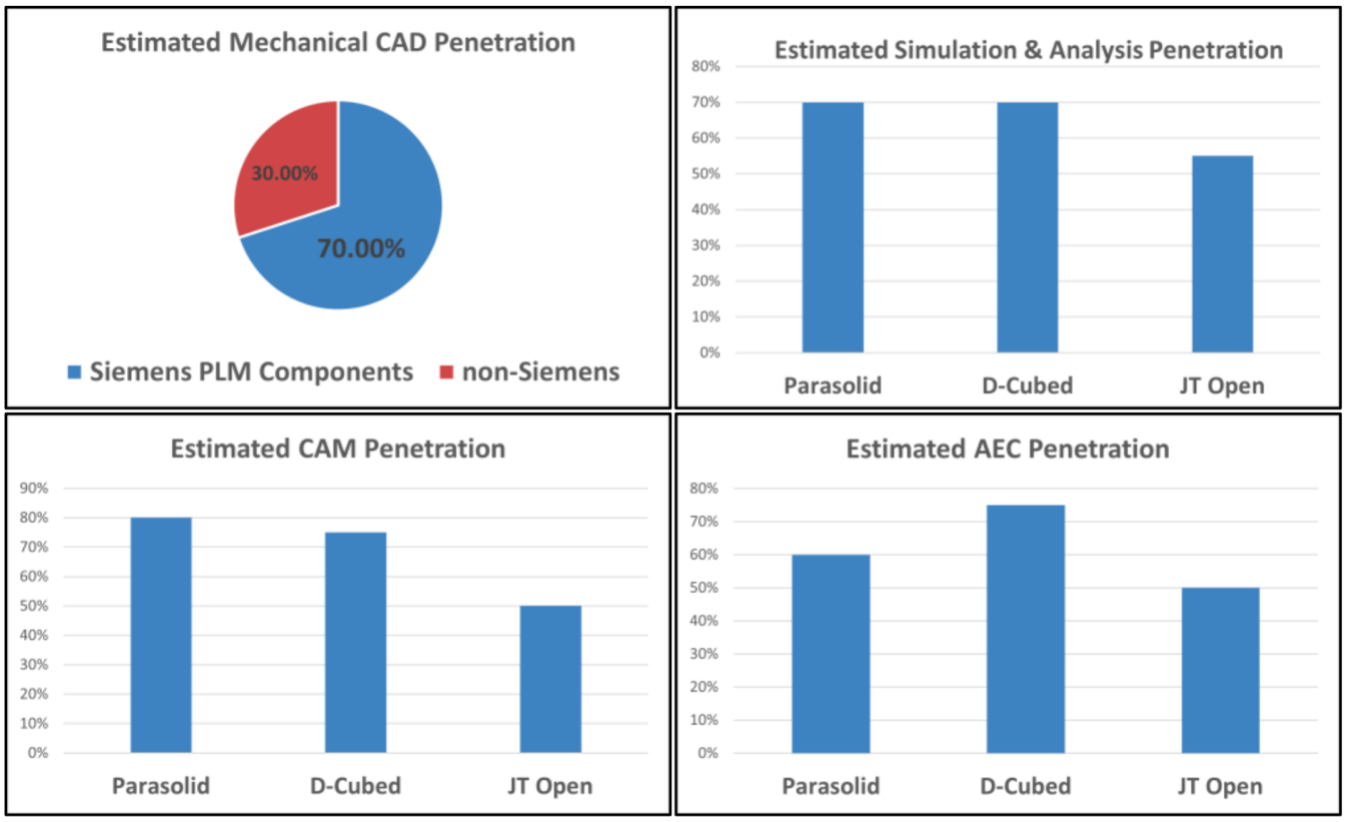

Figure 1—Siemens PLM Component Market Penetration

While Siemens chose to make Parasolid a defacto standard, they pursued and received ISO standards for the JT visualization format. Both approaches are effective ways to promote interoperability.

Various Siemens product teams delivered presentations on their offerings, describing what they do and how they are used. Kineo nearly stole the show with demonstrations of its 3D nesting component and a cabling solution. In his keynote, Mr. Hemmelgarn noted that Kineo was a relatively unknown gem within PLM Components, and CIMdata agrees. Mr. Ambroise Confetti, Software Architect, reviewed Kineo's core products, which are used for path planning and collision detection. The most common use case is to dynamically display robotic arm motion in real-time while ensuring that there aren't any collisions within the robot or with objects around it. The component can also be used to digitally verify the proof of

[2] https://www.cimdata.com/de/news/item/21309-cimdata-publishes-white-paper-plm-components

assembly (or disassembly for service applications) and digital verification of manufacturing processes. Mr. Confetti also showed new solutions that support 3D nesting of parts that can be used for additive manufacturing and a 3D Cable solution that dynamically updates cables so collision detection can be done in a moving mechanical assembly, such as a robot articulating through its range of motion.

Another exciting aspect of PLM Components is the OEMing of complete products. Solid Edge and Femap, two products for the design-focused MCAD market, are available in different configurations based on customer requirements. For example, Solid Edge has part modeling and drafting only configurations. The OEM products are interesting in that companies can get their cool ideas and capabilities to market faster and without being responsible for developing non-differentiated capabilities. An excellent example of this concept is SDC Verifier, a Femap OEM licensee. Their product encodes industry structural analysis standards such as the American Institute of Steel Construction (AISC), Norsok Standard, and Eurocodes into Femap. Doing this enables general-purpose solvers supported by Femap to run simulations that historically required specialized vertical solutions. SDC Verifier customers get the specialized analyses they need for their industry with the flexibility to support simulation use cases unsupported by the vertical solutions.

PLM Components Customer Presentations

Over the two days, nearly a dozen customers presented showing how they use PLM Components technology within their products. Table 1 lists the companies that presented, their products, and what component they used.

Customer	Product Description	Component Used
AMC Bridge	CAD/CAM/PLM	Parasolid
CAD as Code	CAD automation	Parasolid
Inpro	Collaboration and visualization	JT Open
Luminary Cloud	Simulation on the cloud	Parasolid
MasterCAM	CAM solution	Parasolid
nTop	Implicit modeling	Parasolid
Onshape	mCAD on the cloud	Parasolid, D-Cubed
Optitex	Fashion & apparel design	Iray+ (rendering)
SDC Verifier	Industry standards for simulation	Femap OEM
Shapr3D	mCAD on tablets and mobile devices, Windows & Mac	Parasolid, D-Cubed
SimScale	Simulation on the cloud	Parasolid
Synera	Low-code PLM process automation	Parasolid
TechSoft 3D	Graphics and translation components	Parasolid

In addition to the Siemens and customer presentations, Ms. Monica Schnitger, President and principal Analyst of Schnitger Corporation, led two panel discussions. The two topics were the Future of CAD and Startups. Each session had lively discussion and provided insights to the attendees that should help them grow and improve their businesses.

Conclusion

The PLM Components conference was a great place to see the impact Siemens has on the PLM market. Their products enable many companies to better meet their customers' needs. Parasolid, the crown jewel of PLM components, is used by partners and competitors and CIMdata found that overall customers were thrilled with the quality and were comfortable using these components within their products. For CIMdata it was exciting to see what else Siemens had to offer beyond their mainline PLM solutions and how customers are leveraging Siemens' component technology to improve their products and businesses.

In addition to speeding time to market, products like Parasolid and JT can provide entre into existing markets. Startups and companies looking to improve the technology within their legacy products should review PLM Components' offerings.

About CIMdata

CIMdata, an independent worldwide firm, provides strategic management consulting to maximize an enterprise's ability to design, deliver, and support innovative products and services by identifying and implementing appropriate digital initiatives. For forty years, CIMdata has provided industrial organizations and providers of technologies and services with world-class knowledge, expertise, and best-practice methods on a broad set of product lifecycle management (PLM) solutions and the digital transformation they enable. CIMdata also offers research, subscription services, publications, and education through certificate programs and international conferences. To learn more, visit www.CIMdata.com or email info@CIMdata.com.