Dassault Systèmes 3DEXPERIENCE Forum

CIMdata Commentary

Key takeaways:

- *The **3D**EXPERIENCE platform has elements that support uses well beyond traditional PLM solution activities in product development—including life sciences and urban planning.*
- *Dassault Systèmes continues to expand the platform's breadth and depth.*
- *The POWER'BY service promises to streamline integration of older CAD solutions.*

CIMdata recently attended Dassault Systèmes' **3D**EXPERIENCE Forum—North America in Florida. One of the main themes of the Forum was the continuing evolution of Dassault Systèmes' PLM product innovation platform. In the opening keynote, Dassault Systèmes Mr. Bruno Latchague, Senior Executive Vice President, Americas, welcomed the attendees and introduced Mr. Dean Marsh, the new Managing Director, North America. They discussed their center for aerospace and digital manufacturing and how eight universities are using Dassault Systèmes' products.

Ms. Monica Menghini, Executive Vice President, Chief Strategy Officer, presented a challenging presentation entitled Shattering the Myths about Platforms. Ms. Menghini positioned Dassault Systèmes' suite of products as the Business Experience Platform. She rebuked the ideas that platforms are for business process automation, that point solutions can be transformed into platforms, and that any platform is an innovation platform. She argued that the platform consists of scientific, information, manufacturing, commerce, marketing, design, and open innovation concepts. She stated that the platform must operate as the social structure of business and that "platforms must provide marketplaces." CIMdata was quite pleased with Ms. Menghini's embracing a platform definition very similar in breadth and depth to CIMdata's.

Mr. Olivier Ribet, Vice President High Tech Industries and IoT at Dassault Systèmes, presented Creating the Connected Experience: Innovation through Software. Mr. Ribet's presentation stated that today's consumers are changing their expectations for their product experiences and that they no longer want to wait for updates, enhancements, and repairs but expect they will experience these immediately and unobtrusively. To meet these expectations companies need to put software at the center of a connected product design process. Mr. Ribet also stated that the Internet of Things (IoT) will bring change to product development and how the **3D**EXPERIENCE platform enables the systems engineering of connected experiences managing hardware, electronics, and software together. He demonstrated an interesting project management capability for the Beamy project using analytics based on EXALEAD access to company data and social data.

Next a customer team Honda North America manufacturing engineering led by Ron Emerson, Associate Chief Engineer, Virtual Maturation Team, Honda North America, presented Manufacturing Simulation Expansion for Digital Product Development. This presentation looked at how challenges facing manufacturing teams to get vehicles to market faster continue to grow as automotive designs become more complex. Honda North America described how they continue to extend the value of their **3D**EXPERIENCE platform to support those teams through several areas including new capabilities in DELMIA to support process planning and equipment simulation and creating structural building characteristics using CATIA (Architectural Engineering Construction) were added to allow factory floor validation to be

completed earlier in the development schedule. Honda's vision is to model all of their manufacturing facilities globally so that each plant can move from text based tools to 3D plant layout and simulation. CIMdata believes that this broad use of digital manufacturing points to a future of much more highly integrated and flexible manufacturing capabilities.

Dr. John Tomblin, Ph.D., Executive Director of the National Institute for Aviation Research (NIAR), Vice President for Research and Technology Transfer at Wichita State University (WSU), gave a presentation on the facility at WSU and their relationships with local aerospace firms and Dassault Systèmes. Their goal is to provide leading edge research, augmenting their education by inserting them into aerospace firms working on real use cases within the institutes environment.

3DEXPERIENCE Powering Value Creation presented by Mr. Bernard Charlès, Vice-Chairman of the Board of Directors, Chief Executive Officer, Dassault Systèmes, discussed how virtual universes are driving sustainable innovation at the world's most dynamic and pioneering companies. Mr. Charlès presented the associativity between products and processes and how the multitude of Industry 4.0 initiatives are being impacted worldwide. He went on to discuss how multi-physics and multi-scale analyses are being used, and how Dassault Systèmes is supporting this. Mr. Charlès showed how they are involved in 12 industries with 70 segments, stating, "there is no limit to imagination." He also presented examples of how Dassault Systèmes tools can be used to model, analyze, and understand cities and how they work, stating that "You may not build cities, but your products have to live in cities." This expansion of PLM into the realms of shows Dassault Systèmes' commitment to modeling many aspects of our world and expanding the use of the product innovation platform well beyond product design.

The keynote talk on the second day of the event was the most engaging presentation of the event. Mr. George Blankenship, Former Executive at Tesla Motors, Apple Computer, and GAP Inc. discussed how to transform an organization to be a forward-thinking and dynamic company. He showed how Apple's brand-building retail strategy was conceived and applied and how Tesla Motors revolutionized the auto industry by redefining the car-buying experience. Two things to remember and apply from Mr. Blankenship's presentation are "With all this change in tech happening, how do you not lose sight of the customer?" and "To change the world sometimes you have to do the impossible."

Also on the second day, was an interesting presentation about using 3D printing in life sciences by Mr. Thomas Marchand, Co-Founding CEO and Chairman, BioModex. Mr. Thomas demonstrated how BioModex is revolutionizing physician's ability to see and plan procedures using life like 3D printed organs that mimic the material properties of real organs. He also discussed how printing patient specific Exo skeletal cast structures is accomplished. BIOMODEX is first startup in the 3DEXP Lab, helped with funding and software from Dassault Systèmes.

Mr. Jim Brown, President, Tech-Clarity, moderated a round table discussion on Accelerating your Business & Reducing Complexity with the Cloud. His panel included: Mr. Kavi Parupally, Senior Director, Business Applications, Rockwell Collins; Mr. Javier Glatt, Co-founder and CEO, CadMakers, Inc.; and Mr. Jeff Walters, Vice President, Engineering, Globe Trailers. They discussed how product innovation platforms are being used in multiple industries, leveraging the power of the cloud and how the benefits of a cloud based program can reduce complexity, infrastructure needs, and accelerate implementation.

Mr. Parupally stated that the first question should be why not use the cloud to support PLM? They implemented their PLM on the cloud and that, importantly, DoD security capabilities are

already built in to GovCloud offerings, capabilities that are very expensive for companies to build on their own. Mr. Glatt believes that CADMaker doesn't have the resources to do lots of IT and that other matters are more important. They "Want to play where the world is going, not where the world is." They see the benefits of the cloud as: people want what they want, right now and they can deliver, that collaboration support is central to their business and scaling up for new employees (including short term people like interns) is easy on the cloud. Mr. Walters stated that internal IT does not add value to their customer that the cloud benefits them by saving time and expense internally, they get lots of new stuff early and can implement very easily. He concludes that "Cloud is mature enough to use today." CIMdata believes that many more companies could benefit from cloud-based PLM implementations.

Mr. Vaseem Khan, Vice President, Global Engineering, McDermott International, presented the use of **3D**EXPERIENCE to Create a Digital Twin to Unify the Virtual and Real Worlds in Upstream Oil and Gas Facilities. The oil and gas industry has widely accepted the use of 3D modeling software for the design of subsea, offshore, and onshore facilities using integrated, "silo-less" software such as CATIA, SOLIDWORKS, AVEVA E3D, and Intergraph SP3D. For McDermott, the goal is to create a "single source of truth" for their designs, and beneficially use the 3D model throughout the life of the facility by creating a true digital twin that unifies the virtual and real worlds. They plan to have digital twins of facilities they build including capabilities to provide data to owners, regulatory agencies, and others using dashboards in formats each wants to see without having to make requests for the data. He stated that "Transparency breeds collaboration" which drives ownership, accountability, and results. A digital twin allows continuous updates, analyses, adjustment, currency, and is a key to moving people currently working offshore, onshore, stating that each person working on platforms in the North Sea costs ~1 million euros per year.

Mr. Karl D'Souza, Sr. Solution Consultant, Virtual Human Modeling, Dassault Systèmes presented an update on the Living Heart Project (LHP). This initiative partners with the medical community to develop a definitive realistic simulation of the human heart. With over 100 member organizations, the LHP has grown rapidly, achieved critical mass, and is now self-sustaining with active participation and collaboration among members. As with some of the other non-traditional areas Dassault Systèmes supports, CIMdata is impressed with the imaginative breadth of Dassault Systèmes' PLM platform strategy and expansion.

In addition to these main sessions, expanding on the breadth of application of the 3DEXPERIENCE Platform, there were seven tracks of breakout sessions presented by Dassault Systèmes employees and customers. These included:

- **3D**EXPERIENCE Platform
- Aerospace & Defense
- Consumer Packaged Goods & Retail
- Energy, Process & Utilities and Natural Resources
- High Tech
- Manufacturing
- Transportation & Mobility

Since we could not attend all of these sessions, we picked two of particular interest to CIMdata—the Manufacturing track and the Platform track.

Manufacturing Sessions

The Manufacturing track sessions covered a number of interesting areas exploring how opportunities now exist to design and build exceptional products and provide new experiences by leveraging new technologies that tie the virtual world of modeling and simulation to the real world of product prototypes and shop floor production.

Digital Continuity with **3D**EXPERIENCE Manufacturing explored:

- Operational management: manage the daily “flash five” team meeting
- IIoT: monitor devices, machine performance, and decision support
- Dynamic scheduling based on real-time events
- Analytics: review root-cause analysis and execute issue resolution
- Digital Kaizan: apply corrective action and preventative action plans

Cummins described their experience building a comprehensive global platform for manufacturing operations management providing visibility, control, and synchronization over 20 Cummins plants worldwide. They used DELMIA Apriso to drive operational excellence across their engine, power systems, and components operating segments.

Lockheed Martin Missiles and Fire Control representative described how effectively managing operations across sites with an infrastructure that includes a mixture of disparate systems can be a recipe for severe consequences and how they avoided this pitfall by developing a strategy to establish a core manufacturing operations management system resulting in improved optimization and increased agility to meet business demands.

HCL Technologies gave a presentation on how they are going through a major convergence of multiple streams of science and engineering and how data will be the most important change agent for the traditional manufacturing as we know it in the next few years. CIMdata agrees with their opinion that the explosion in the amount of instrumentation and sensor data on a typical shop floor will accelerate the current trend that the manufacturing line has become a system of systems. This Connected Factory has multiple actors including tools, gauges, fixtures, and labor from the traditional world along with algorithms, data, sensors, and analytics from the virtual world. To leverage an Industry 4.0 approach, HCL has developed a roadmap covering manufacturing automation, manufacturing simulation and execution, cyber security, manufacturing analytics, robotics and AI, augmented reality, smart maintenance, etc., and supports a step-by-step roadmap to implement a digital manufacturing process.

Delivering innovation and surpassing user experience expectations is key to success at Hitachi, Ltd., Information & Telecommunication Systems Division. They described how they launched a global manufacturing operations management initiative, supported by Dassault Systèmes products, to support the need for global collaboration and standardization, with the flexibility to support demand and the uniqueness of each plant.

3DEXPERIENCE Platform Sessions

The main theme of the **3D**EXPERIENCE Platform sessions was to provide insights about how to transform business through digitalization, leveraging the platform to accelerate innovation and improve productivity. Indeed, in the first session Dassault Systèmes employees stated that the **3D**EXPERIENCE Platform creates an environment to enable connection of the digital thread from product development to the consumer.

GE Power described how their digital initiatives and platform approach are helping GE’s largest industrial business realize a digital transformation. GE is looking for the platform to protect them

from customization of their PLM solution suite because customization is causing them to not be able to upgrade easily, stating that “customization is addictive.” This further reinforces CIMdata’s experience that PLM sustainability is critical to assuring companies’ return on their PLM investments and future viability.

Dassault Systèmes presented upcoming release highlights. These include additional support for autonomous systems that anticipate conditions via sensors linked to active control systems and data analysis. The integration, test simulations, and generative design and analysis from the BIOVIA brand are being added to the platform as well, further expanding it support of integrated life sciences systems. Dassault Systèmes also recently acquired Quintiq for business simulation and evaluation and are moving this to the platform.

Draper presented: How Do Next Generation Technologies Transform Innovation and Accelerate Development of Intelligent Products and Services at Draper? Draper is not-for-profit research and development company focusing on the design, development, and deployment of advanced technological solutions. Draper is expanding into new domains such as image and data analytics, human-centered solutions, and biomedical systems. The stressed that the platform approach enables the conceptualization and creation of their solutions for these complex domains.

Tech Mahindra discussed how they accelerate time to value with the 3DEXPERIENCE Platform and their techniques to reduce implementation times and improve user adoption employing the platform in an agile methodology.

To close the session, a **3D**EXPERIENCE Platform panel consisting of Ms. Rekha Kamat, Manager Platform Ecosystem, Dassault Systèmes; Erik Fleming, COO, Romeo Power; Mark Messow, Group Vice President, Operations Transformation, ABB; hosted by Mr. Jim Brown discussed how trends like intelligent products, additive manufacturing, digital health, and the digital consumer are transforming businesses and the global economy and how the platform approach is key to achieving success in this transformation.

ENOVIA Update

A third day provided users with an update on Dassault Systèmes’ ENOVIA strategy and product portfolio as well as presentations from ENOVIA customers about how they are addressing critical business challenges and fueling transformation initiatives.

Mr. Keith Charron, SVP, Worldwide Sales and Operations, ENOVIA, Dassault Systèmes, gave some statistics on the adoption acceleration of cloud solutions and the extension of the Boeing contract. Mr. Kevin Baughey, ENOVIA Strategy & Role Portfolio Director, Dassault Systèmes, presented an ENOVIA product portfolio update. ENOVIA continues to deliver new capabilities, applications, and roles. This session covered what's new throughout the business and technical product portfolio including industry-specific capabilities to increase user productivity, improve collaboration, and ensure compliance.

Mr. Matt Rose, Eaton, presented **3D**EXPERIENCE at Eaton: Using PLM to Design and Build Products in a Global, Multi-CAD World. Mr. Rose discussed the challenges associated with the acquisition oriented growth of Eaton and the resulting diverse CAD and PLM systems.

Mr. Garth Coleman, Dassault Systèmes, gave a presentation entitled Connecting the Present to the Future with Power’By helping integrate ENOVIA V6 with CATIA V5 and SOLIDWORKS, a sneak peek into some of the exciting new capabilities of Power'By and how users can secure their CAD investments while realizing the benefits of ENOVIA.

This was followed by a presentation by Mr. Greg Brock, Engineering Manager, Configuration Management Systems, GE Power, on GE Power: First Experience with Power'By. This included the definition of a digital thread in GE's context and how it interacts with the **3D**EXPERIENCE platform.

Mr. Barry Foster, Quality Strategy Director, ENOVIA, presented Quality and Regulatory Management. He showed how to design in quality and ensure regulatory compliance across an organization. How to enforce common quality processes, document control, support global and local regulatory requirements, and manage quality events across the enterprise.

CIMdata's Conclusions

All in all, the **3D**EXPERIENCE Forum was informative about where Dassault Systèmes is and where it plans to go. The breadth of areas that can be supported by aspects of the **3D**EXPERIENCE Platform is both broad and deep. Dassault Systèmes is not slowing down their developments and claim increased adoption of their V6 product suite. CIMdata looks forward to the next new things Dassault Systèmes will bring into the PLM space. And remember, as Mr. Charlès says, "there is no limit to imagination."

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.