SOLIDWORKS World 2018: Enhancing SOLIDWORKS and Leveraging the 3DEXPERIENCE Platform

CIMdata Commentary

Key takeaways:

- *One of SOLIDWORKS' stated "big ambitions is…to be the Amazon for your ideas and dreams to design and make."*
- *Dassault Systèmes' continued investment in SOLIDWORKS illustrated its strategic commitment to add value for SOLIDWORKS' users and ensure that SOLIDWORKS remains a design platform of choice.*
- *SOLIDWORKS and its partners continue to emphasize additive manufacturing as a major area of investment, development, and enablement.*

The 20th annual SOLIDWORKS World conference was held February 4-7, 2018 at the Los Angeles Convention Center, Los Angeles, California. A large and enthusiastic crowd of more than 5,000 SOLIDWORKS users attended the conference. Over the course of the four-day event attendees heard from more than a dozen keynote speakers, as well as had the opportunity to attend more than 200 breakout sessions where additional insight could be gained in a wide range of topics (e.g., design, manufacturing, 3D CAD, simulation, electrical design and schematics, communications, collaboration, and data management).

This year's overall theme was "Think: SOLIDWORKS." Ms. Tracy B. Wilson, actor, writer, photographer, and this year's general session host, kicked off the event by welcoming the crowd and introducing Mr. Gian Paolo Bassi, CEO, Dassault Systèmes SOLIDWORKS Corporation, who rode through the audience, along with a few special guests, including Mr. Bernard Charlès, Vice Chairman, Chief Executive Officer Dassault Systèmes, on a "Moveable Feast" designed in SOLIDWORKS by Two Bit Circus. It would be best to describe the "Moveable Feast" as a vehicle that transports diners as they sit and eat a meal.

Think: Future

As usual, Mr. Bassi engaged the crowd with great enthusiasm and energy. He stressed that SOLIDWORKS has "big ambitions," including, as he described it, "…to be the Amazon for your ideas and dreams to design and make." He spoke of how industry is in the midst of a major renaissance and how his team is focused on making knowledge available to the SOLIDWORKS' community by embedding real-time simulation, as well as extending and enhancing the community through the creation of a marketplace. He also stressed that SOLIDWORKS is committed to continuing the delivery of desktop and online best-in-class design solutions. His main product related announcements focused on the following five new things for SOLIDWORKS 2018:

- *3DEXPERIENCE Social Collaboration Services*—a set of capabilities that have been designed to support initial concept generation.
- *SOLIDWORKS 3DEXPERIENCE PLM Services*—access to 3DEXPERIENCE platform PLM capabilities that support collaboration and management of part creation and their lifecycle.
- *SOLIDWORKS Product Designer*—extended capabilities that have been designed to support the full art to part design lifecycle.

- *SOLIDWORKS xDesign*—a cloud-based 3D CAD offering that runs in a browser. SOLIDWORKS has designed this solution to give the user the ability to design anywhere, anytime, on any device.
- *3DEXPERIENCE Marketplace*—a cloud-based ecommerce site managed by Dassault Systèmes that has been designed to bring designers, engineers, and manufacturers together.

These announcements illustrate a strong commitment to extended SOLIDWORKS' capabilities, as well as provide better and more feature rich access to Dassault Systèmes' 3DEXPERIENCE platform. Dassault Systèmes' decision to enter into the marketplace business is consistent with its long-term commitment to its communities of customers across its extensive solution set. This move also illustrates how the 3DEXPERIENCE platform is the underlying foundation for its solutions, as well as other go-to-market strategies. From CIMdata's perspective, these announcements support Dassault Systèmes' overall strategy and long-term commitment to its user base across its solution suite.

Mr. Charlès appeared on stage next and focused on Dassault Systèmes' strategy around product, nature, and life. He emphasized how Dassault Systèmes continues to invest in SOLIDWORKS and its sizable and growing community. He also described the critical role that SOLIDWORKS plays in Dassault Systèmes' overall solution strategy, how the announced marketplace will change things, and how the 3DEXPERIENCE platform is making things more connected and collaborative. Mr. Charlès concluded by reemphasizing Dassault Systèmes' commitment to the SOLIDWORKS' community and to delivering the best user experiences both on the desktop and online.

Mr. Kishore Boyalakuntla, VP Product Portfolio Management, SOLIDWORKS, spoke next. He wowed the crowd by summarizing nine new enhancements for SOLIDWORKS 2018 including conceptual design, topology optimization, model-based detailing, SOLIDWORKS CAM, inspection and visualize, and production and shop support enhancements. The crowd appeared to be sitting on the edge of their seats, highly engaged by the new announcements. In general, CIMdata believes that making such advanced technologies available to SOLIDWORKS users helps democratize these features and in so doing, more product designers can take advantage of emerging manufacturing techniques, such as additive manufacturing (AM) and lifecycle digital twin support.

The keynote speaker of the day was Ms. Neri Oxman, the Sony Corporation Career Development Professor and Associate Professor of Media Arts and Sciences at the MIT Media Lab. According to the MIT website,[1] Ms. Oxman's "…goal is to augment the relationship between built, natural, and biological environments by employing design principles inspired and engineered by Nature and implementing them in the invention of novel design technologies."

Ms. Oxman delivered a thought provoking presentation about what can be designed and made by using biopolymers (i.e., polymers produced by living organisms), synthetic cells, and adaptive materials. The outcomes she forecast are dynamically adjustable products like buildings, bridges, clothes, and even human organs, which ultimately behave like living things. She highlighted an example of her work by showing a human habitat that was built using 6,500 silkworms, which were guided using heat, light, and vibration. She also compared and contrasted the differences between man-made machines and organisms. In doing so, she

[1] http://matter.media.mit.edu/people/bio/neri-oxman

introduced new verbs to the audience such as “naturing” and “growing parts,” the latter being discussed during a press session held by Desktop Metal later in the day.

Mr. Andy Roberts, Senior software engineer, Desktop Metal (a firm that focuses on how to make metal 3D printing accessible to engineering teams), presented a video to the press and analyst community that showed how, using their new software, it’s possible to “grow parts.” The video highlighted how a constraint-based model can be used to guide the creation of a structure from point A to B. Mr. Roberts reported that their algorithms use morphogenic signaling (Greek: beginning of the shape) to grow children cells and shed redundant cells as it grows in what is found to be the most optimal manner. This represents an exciting new era where engineering parts may be “grown” to conform to demands of nature, and perhaps even continue adapting after manufacture when in use.

Earlier in the day, Hewlett-Packard (HP) announced the delivery of their first multiple color AM printer, and Stratasys announced that they are teaming with Dassault Systèmes and Easton LaChappelle on a new AM initiative. As one of the events main sponsors, HP unveiled its new full color 3D printing platform. They hope to, as they stated, accelerate the democratization of 3D printing with this new platform. Their announcement also indicated a new collaboration with Dassault Systèmes. Stratasys announced that they are teaming with Dassault Systèmes and industry visionary Easton LaChappelle on a major 3D printing of prosthetics initiative called Unlimited Tomorrow. This partnership makes Stratasys “…the exclusive provider of 3D printing technology for the initiative and organization…” These two announcements are further evidence of the continued democratization of AM, both in terms of cost and availability to users of Dassault Systèmes’ solutions.

New SOLIDWORKS capabilities demonstrated included: 3D texturize body definition; partial chamfer / fillet control, Microsoft Surface Dial support, gesture sketch splines and slots, enhanced 3D Markups capabilities, and enhanced virtual reality support.

Think: Innovation

Tuesday’s general session focused on “Think: Innovation.” As with Monday’s general session, Ms. Wilson introduced the day’s first speaker, Mr. Suchit Jain, Vice President, Strategy and Community, SOLIDWORKS. Mr. Jain commented that MySOLIDWORKS now has more than 1 million users and SOLIDWORKS is making the 3DEXPERIENCE PLM Services available to all SOLIDWORKS subscribers at no additional cost. He also mentioned that they will be providing access to additional add-ons to the subscription base over the months to come. This approach should encourage a stable and perhaps growing subscription base.

Mr. Jain’s comments were followed by a number of customer main stage presentations, including one from Mr. Michael Jagemann, head of manufacturing at Boom Technology, Inc. Mr. Jagemann discussed how Boom partnered with SOLIDWORKS to develop the XB-1, the first independently developed supersonic jet. The XB-1 is a prototype of a supersonic jet that they are currently developing primarily for commercial trans-Atlantic and trans-Pacific routes. He commented that Boom is using SOLIDWORKS to design the entire XB-1 aircraft.

Dr. Kyoungchil Kong, a professor of mechanical engineering at Sogang University, and CEO and founder of SG Robotics, presented how SG Robotics is using SOLIDWORKS to develop wearable robots that help paraplegic and disabled users regain their mobility.

Finally, Mr. Brent Bushnell, CEO and Roustabout[2] of Two Bit Circus, shared Two Bit Circus' history and cultural, as well as how they are "…a band of mad scientists, roboticists, visual artists and storytellers." He also described how they utilize multiple engineering and non-engineering disciplines, and SOLIDWORKS to design and create innovative experiences.

Each of these customer presentations supported the day's theme of innovation and showed how SOLIDWORKS is being used in many different industries in creative and innovative ways—well beyond SOLIDWORKS' mechanical CAD roots. For those who were using xDesign and the 3DEXPERIENCE platform, the cost of entry was low and the speed to implement was close to immediate—powerful things in today's rapidly changing business environment where companies have to form and evolve on almost a daily basis.

As in past years, SOLIDWORKS World's agenda was packed with general sessions, demonstrations, and many press and industry analyst meetings. Fortunately, there was some time set aside to visit the Partner Pavilion. Like in past years, the 2018 edition of the pavilion included a host of interesting solution partners and product showcases, with over 120 solutions exhibited on the pavilion floor. In total, over 30 different categories of solution providers, including rapid prototyping, engineering analysis, services, data management, manufacturing, CAM, media, and visualization exhibited. This extensive and diverse set of exhibitors is another indication of the size and strength of eco-system centered around SOLIDWORKS and its user community.

Think: Next is Now

Wednesday, the fourth and final day of the event, focused on "Think: Next is Now." Like the previous two days, the day began with Ms. Wilson kicking off the general session and handing things over to Mr. Mike Puckett, Senior Manager of the Worldwide Certification Program, SOLIDWORKS. Mr. Puckett updated the audience with some facts and figures about the SOLIDWORKS certification program, including that, at the current pace, another SOLIDWORKS user becomes certified every 10 minutes. To note, SOLIDWORKS now offers two new, industry-focused exams: Certified Additive Manufacturing Associate and Mold Making Associate. His comments provided additional evidence that the SOLIDWORKS community is growing and demanding training beyond traditional mechanical CAD capabilities.

Next up was Mr. Ryan Kraft, an engineer from Arrivo, a Los Angeles-based company focused on eliminating traffic jams. Mr. Kraft described how Arrivo is using SOLIDWORKS and select 3DEXPERIENCE platform solutions to design a high-speed "super urban network" to move people and cargo around cities.

Mr. Milos Zupanski, Director of Product Portfolio Management, SOLIDWORKS took the stage next. He described SOLIDWORKS 3DEXPERIENCE PLM Services, introduced by Mr. Bassi on Monday. He commented that the SOLIDWORKS 3DEXPERIENCE PLM Services have been designed to provide an affordable data and lifecycle management solution to companies of any size that do not want to invest in or host their own compute infrastructure. According to Mr. Zupanski, the services were designed for SOLIDWORKS Desktop and xDesign users so that they could easily collaborate, as well as to provide access to data for everyone on a team on matter where they are located.

Next on stage was Mr. Stephen Endersby, Director of Product Portfolio Management, SOLIDWORKS, who introduced Mr. Tarso Marques, a former Formula One driver and owner and founder of Tarso Marques Concepts. Mr. Marques described to the audience how the use

[2] According to Two Bit Circus' website, http://twobitcircus.com/about-us/

of SOLIDWORKS changed the way he and his company innovate. While he used to sketch his ideas and model in clay at times, he has come to use some of SOLIDWORKS most suffocated modeling capabilities, including its new topology optimization features found in SOLIDWORKS Simulation, which he calls “truly transformational.”

Mr. Kurt Lundstedt, Director of Product Portfolio Management, SOLIDWORKS, introduced ENVE, another company who uses SOLIDWORKS and SOLIDWORKS Simulation. In their case, they use it to design molds and fixtures for high-strength carbon fiber component production. ENVE is an example of a small startup that chose SOLIDWORKS because of its capabilities and ability to grow into other Dassault Systèmes solutions as they needed. For example, in 2012 ENVE implemented SOLIDWORKS PDM Professional to help manage its SOLIDWORKS data. Today, the company is using SOLIDWORKS Manage, which provides access to project, process, and item management tools, as well as reporting capabilities. Additionally, they plan on connecting SOLIDWORKS Manage to their ERP system.

Mr. Gilo Cardoza, founder of Gilo Industries shared how his company is using SOLIDWORKS to design the Mako jetboard. According to Mr. Gilo, they went from concept design to a finished product within 12 months by using SOLIDWORKS.

These were all great examples of how SOLIDWORKS and the extensive set of Dassault Systèmes solutions are enabling companies of all sizes to design and deliver simple to complex products to market quickly and innovatively. Additionally, they demonstrated how SOLIDWORKS’ community has access to solutions that allow them to start quickly and expand as needed.

Finally, as with the previous 19 SOLIDWORKS World gatherings, the audience was waiting to hear the winners of the 20th annual Model Mania—a modeling contest held during the event. Mr. Mark Schneider came on stage to announce this year’s winners. It has been interesting to see how the complexity of the challenge has increased over the years and how the competitors have continued to rise to the occasion. This is another excellent example of how the SOLIDWORKS’ community and its solutions have matured and been enhanced.

The final day’s keynote address was delivered by Mr. Joseph Hiura and Mr. Robert Andrew Johnson, both art directors and set designers who work in the movie industry. They described how they use SOLIDWORKS to design movie sets for films such as Oblivion, Passengers, Tron Legacy, and Batman Versus Superman, to name a few. They described how they and their tools need to be highly flexible and collaborative so that they can meet the time and capability demands of their industry. As they said, not everything is done in CGI.

To wrap things up, a set of key SOLIDWORKS enhancements were announced to close out the general session. These announcements included:

- *Group mates by status*—this new feature lets a user isolate mates that either can’t be solved, are suppressed, or that solve normally.
- *Preview Window Enhancements*—the new preview window provides better visualization when users are placing components into an assembly, as well as syncs better.
- *Automatically Lock Toolbox Parts*—this enhancement enables an option setting that automatically locks rotation upon insertion of Toolbox parts.
- *Massively De-Feature Assemblies*—this enhancement represents a significant improvement in the way user can quickly simplify assemblies while maintaining associativity with its original data set.

As in past years, Mr. Bassi closed the event by reminding the audience that SOLIDWORKS and the entire SOLIDWORKS community share a “big dream” and that most importantly, all parties have the knowledge, talent, character, and determination to make the dream a reality.

Concluding Remarks

This year's SOLIDWORKS World demonstrated the strength of the SOLIDWORKS community and how its greater eco-system continues to evolve and expand. SOLIDWORKS’ fit within Dassault Systèmes’ solution and platform strategy continues to evolve and expand as well. These are all reassuring signs for the SOLIDWORKS community, as well as for Dassault Systèmes. Dassault Systèmes’ continued long-term commitment to the SOLIDWORKS community is clear. SOLIDWORKS hasn’t been a standalone solution for some time, but an integral part of Dassault Systèmes’ extensive solution since the introduction of the 3DEXPERIENCE platform, as CIMdata has stated in the past, Dassault Systèmes is delivering a platform not only for CATIA users, but one for all its solutions, including its recently introduced marketplace. Being “the Amazon for designers and engineers” (or perhaps better put, being the Airbnb of the engineering and manufacturing world) is an aggressive goal, and one that, if fully satisfied, will evolve Dassault Systèmes into a new solution provider category.

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