Generating the Next Step: Autodesk Accelerate 2018

CIMdata Commentary

Key takeaways:

- *Autodesk continues to build out their product innovation platform vision to enable an integrated "Design-Make-Use" lifecycle view.*
- *Their Autodesk Fusion Lifecycle solution is empowering a range of industrial companies to improve their products and processes, including more support for engineering work-in-process.*
- *Autodesk is expanding the use of generative design technology to other manufacturing processes and other domains, like AEC.*

CIMdata had the pleasure to attend the 5th annual Autodesk Accelerate event in Toronto, Canada in September. As in past events, the crowd of approximately 275 was a good mix of Autodesk Fusion Lifecycle customers, prospects, partners, and Autodesk staff. The event was held at the MaRS Innovation, the center of an innovation hub originally focused on "Medical and Related Sciences" that is adjacent to the University of Toronto and its affiliated research hospitals at the University Health Network.

Mr. Stephen Hooper, Vice President and General Manager for all Autodesk Fusion products, opened the event with his remarks on "The Future of Making." Autodesk has had consistent messaging in this area for some time. Their goal is to fuse their offerings, pun intended, to democratize product creation. They want to blur the lines between the traditional PLM tool segments that CIMdata and others measure, like mechanical computer-aided design (MCAD), computer-aided manufacturing (CAM), simulation and analysis (S&A), and electrical computer-aided design (ECAD). The vision is for users to work in one environment using the tools they need at the moment (e.g., MCAD) while supported in their efforts by other functionality (e.g., S&A) that is part of Autodesk's product innovation platform as shown in Figure 1. They are intentionally blurring the lines between their applications, sometimes to the detriment of those that have brand recognition in the market. In discussions with Autodesk it seemed that brand equity was a small price to pay to achieve their "design-make-use" vision. Autodesk has long advocated for democratization of product development tools and capabilities, a goal CIMdata has also supported, and this is the price one pays for making advanced capabilities part of lifecycle workflows.

A key element of Mr. Hooper's talk and Autodesk's strategy is to put data at the center of the process. There are a lot of steps to take an idea to market profitably. Each step generates more information enriching the data set. While having the data at the center induces a mental image, really Autodesk is just talking about the digital thread, the associative knowledge store that spans product ideation through life. This enrichment process includes Delcam, a leading independent CAM solution provider Autodesk acquired in 2014. Any moves to better use Delcam would be welcome since they were known for their superior technology and know-how.

CIMdata's 2018 PLM Market & Industry Forum series focused on Industry 4.0, a German initiative that has spawned advanced manufacturing strategies and investments around the world. Central to the Industry 4.0 vision is for manufacturing companies to be able to profitably serve markets of one. Mr. Hooper introduced Ms. Denise Schindler, a Paralympic cycling Gold Medalist, who gave a very personal story of her "market" for new, more adaptable prosthetics to help her reach new heights in cycling. Ms. Schindler lost her leg in a train accident at age two. She emphasized that she cannot just buy a new pair of shoes. Each new prosthetic must

be custom made for her. Her every-day prosthetics were covered by insurance but what about swimming or cycling or other things that an active child wants to do? Ms. Schindler has worked with the same artisan for 25 years, who personally crafted her prosthetics using traditional physical prototyping methods. In 2014, Ms. Schindler met with Autodesk to discuss their vision of how to meet her needs using their product innovation platform. First, they scanned her limb making her 3D information available to all collaborators on the cloud. This is crucial because Ms. Schindler and her team are constantly on the road. Fusion 360 offered support for both design and engineering workflows. An institute in Berlin was part of the extended team, applying their mathematical optimization skills to optimize for aerodynamics and power transmission in the prostheses. Ms. Schindler emphasized that without the cloud this collaboration would not be possible. Their process also lets them virtually test drafts, a big shift from her old process where you had to physically make each new version to test it. Using the old process, a new prosthesis could cost as much as a small car. Today, Ms. Schindler can get a final product for $350.

Figure 1—Autodesk's Product Innovation Platform
(Courtesy of Autodesk)

After the opening plenary session, most presentations were customer stories roughly placed in three tracks aligned to the design-make-use lifecycle. Another feature of this event was significant networking time planned into the agenda, with most breaks in a common space with some Autodesk exhibits and sponsor tables. People seemed to be taking advantage of the learning opportunities this structure provided.

One particularly interesting presentation came from Aclara, whose presentation “The Voyage to a New PLM Home” only used a few Star Trek references riffing off the title. Mr. Doug Frey, Senior Manager of Quality Assurance and Mr. Madhav Pasumarti, Senior PLM Systems Administrator talked about their winding PLM journey. Unfortunately, their story is all too common, with organizational twists and turns part of many PLM journeys. Aclara provides smart infrastructure solutions, using different communications technologies (like RF, cellular, and powerline) in their automated water, gas, and electric meters. Aclara had a legacy PLM solution they wanted to replace. They needed something newer that was easier to tailor and expand using their limited resources. Once deciding on Autodesk Fusion Lifecycle, they were

able to readily leverage the many process templates that are standard issue with the solution. They could adapt these processes in a sandbox environment, testing them until they were ready for prime time. Their Octopart integration puts up to date electronic part information at their fingertips vs. Googling and uploading often old information. Their plan focused on getting all their legacy-managed IP on Fusion Lifecycle, while also integrating Cadence, Creo, and SOLIDWORKS. To move some of the data, Aclara used Jitterbit, an integration solution from a long-time Autodesk Fusion Lifecycle partner. Just when their PLM journey seemed ready to smooth out came the re-plan. Aclara was purchased by Sun Capital Partners who wanted to grow the company substantially. The team also had to now consider the needs of another business unit, this one currently relying on ENOVIA from Dassault Systèmes. They needed to support a move while not affecting ENOVIA0-based business processes. This meant more Fusion Lifecycle workspaces and data import. This change delayed their project by 9 months. Then add another move, this time spinning out from Sun Capital Partners to a subsidiary of Hubbell in early 2018. Despite all this turmoil the team has made a huge amount of progress and it was good to see a customer interested in managing engineering work in progress as part of product development. Many Fusion Lifecycle customers are using the solution for other business processes, often leveraging product data or metadata.

As stated earlier, the event was held at MaRS Innovation, a new space designed, in part, using Autodesk generative design technology. Dubbed Project Discover, the team started with high-level goals and constraints and generated thousands of design alternatives. What did they optimize on? Some were fixed, like the size of the physical space available. Others were more esoteric, like demands for conference room space, access to daylight and outside views, and even the need to be around "buzz" were considered. Each design alternative was scored based on how well they met the criteria and 10 were taken back to Autodesk for review with stakeholders.[1] This is an interesting application of this computationally intensive solution, one that resonates with others in the market also pushing the bounds of this approach. A few weeks before, Altair Engineering announced Altair Inspire, generative design solutions focusing on other manufacturing processes other than additive manufacturing. Around the same time, Siemen PLM Software discussed their intent to support generative engineering, they claimed a step up from generative design of parts, to focus on assemblies and subsystems. This trend makes sense. It harkens back to semiconductor design where the designs got so complex that humans could not efficiently create them, necessitating silicon compilers where designers could use larger building blocks to make complex designs. In the case of generative, it is not that we can't do it, it is just that computing gives us new tools to evaluate more alternatives than we could come up with given a lifetime. Advancing this capability is another important tool in getting to those markets of one while still making a profit. We applaud all of these firms and look forward to seeing how this approach evolves over the next few years.

In conclusion, the Autodesk Accelerate event provided a good window into the on-going evolution of Autodesk's strategy and product offerings, and some great stories on how their customers are leveraging these solutions to meet their pressing business requirements. Autodesk still has a long way to go in achieving their democratization vision but they have many of the pieces already in-house. What they showed and discussed in Toronto demonstrated real progress, something that should be in more evidence at their big annual event, Autodesk University in November, where there are more sessions led by Autodesk focusing on these topics. As for the Accelerate roadshow, next stop Grand Rapids, MI due, in part, to their on-going work with Steelcase.

[1] https://www.architectmagazine.com/project-gallery/autodesk-mars-office_o

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.