COMMENTARY

CIMdata®

Autodesk University 2023

Forging Ahead

Key Takeaways

Autodesk University returned to Las Vegas for the first time since 2019, with over 12,000 attendees in person and many more connecting worldwide.

Their industry-focused cloud offerings—Autodesk Fusion, Autodesk Forma, and Autodesk Flow—continue to evolve through organic development, partnership, and acquisition.

Autodesk AI, a new branding for the company, highlights their past, present, and future with artificial intelligence.

CIMdata had the pleasure of attending Autodesk University 2023 (AU) on November 12-16, 2023.[1] The city was abuzz with preparations for the first Formula 1 event run in Las Vegas just following AU and the meeting halls were too, with excited participants glad that AU was back in its long-time venue at The Venetian. Autodesk claimed in-person attendance of 12,000, with many more connecting virtually. (Since many sessions were recorded, the company is sure to get many more "eyes" on the content after the event.)

At last year's AU, Mr. Andrew Anagnost, Autodesk's President and CEO, announced the culmination of their Forge initiative, three industry-specific cloud platforms as shown in Figure 1: Autodesk Fusion for their Design & Manufacturing segment; Autodesk Forma for Architecture, Engineering, and Construction; and Autodesk Flow for Media & Entertainment.[2] Underpinning all three industry platforms is Autodesk Platform Services (APS), as shown in Figure 2.[3] From left to right, the figure shows Autodesk Fusion, Autodesk Forma, and Autodesk Flow.

[1] Research for this commentary was partially supported by Autodesk

[2] See https://www.cimdata.com/en/resources/complimentary-reports-research/commentaries/item/19822-autodesk-university-2022-forging-their-cloud-future-commentary for CIMdata's coverage of Autodesk University 2022.

[3] Graphic from Raji Arasu presentation at Autodesk Investor Day, March 22, 2023.

Figure 1—Autodesk Cloud Portfolios for Each Business Focus
(Courtesy of Autodesk)

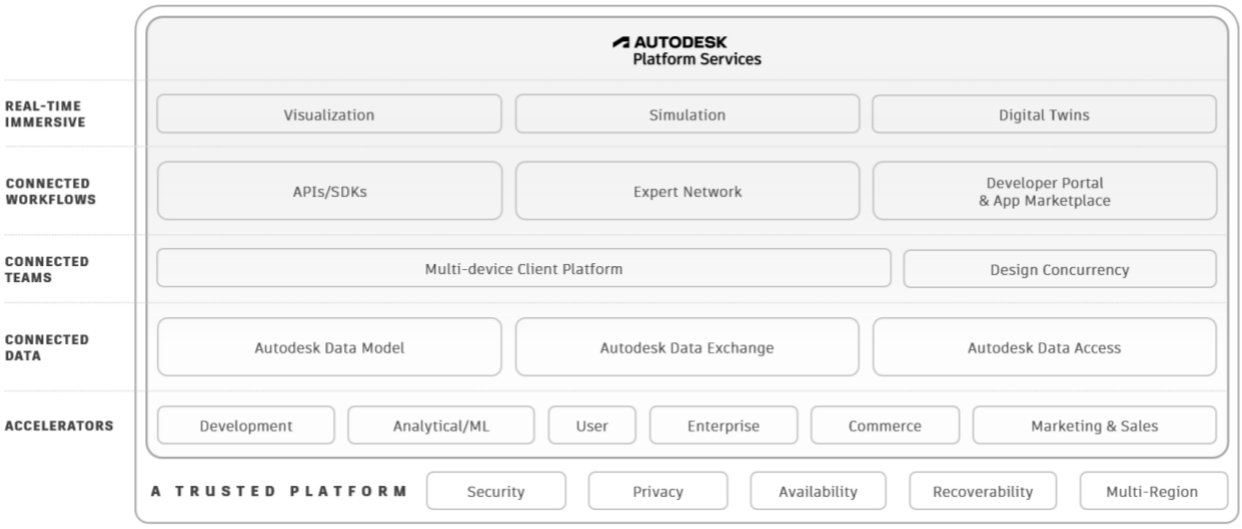

Figure 2—Autodesk Platform Services Span Cloud Instances
(Courtesy of Autodesk)

In this year's keynote, Mr. Anagnost highlighted the evolution of the platform, and their available solutions, with able assistance from his senior leaders. His remarks, entitled "The Future of Work," emphasized that workplaces changed a lot, particularly due to COVID-19, but we are far from done. Not surprisingly, Mr. Anagnost claimed artificial intelligence (AI) has arrived, a common refrain from almost every conference CIMdata attended in 2023. In Autodesk's case, they have applied AI for as long or longer than most players in the product lifecycle management (PLM) market as tracked by CIMdata. AI has long helped improve the user experience (UX) of computer-aided design (CAD) solutions at Autodesk and their leading competitors. Autodesk has also been an early advocate of generative design, which uses AI to help evaluate myriads of design alternatives to help designers choose the best solution to their design challenges. In part to acknowledge their embrace of AI, Mr. Anagnost announced Autodesk AI, which they later admitted was more branding than product (e.g., there is no stock keeping unit (SKU) for Autodesk

AI). But CIMdata thinks this is important because their AI skills are considerable and with all of the buzz in the market, it is important for customers and prospects to know that Autodesk is working the problem. Joining Mr. Anagnost on stage, Mr. Jeff Kinder, Executive Vice President (EVP) of Design & Manufacturing, announced the acquisition of BlankAI, which will augment their existing capabilities in generative AI for industrial designers.[4]

CIMdata has long spoken about the importance of smart, connected products in virtually every manufacturing segment. Ansys is a long-time Autodesk partner and last year the two companies announced a partnership around signal integrity assessment. To expand Autodesk's support for smart, connected products, Mr. Kinder announced a new partnership with Cadence, connecting their printed circuit board (PCB) design capabilities with Fusion 360. While Autodesk's sweet spot is mid-market manufacturers, all manufacturers face these same design electronics challenges and CIMdata applauds Autodesk's move here.

Last year, Prodsmart joined the Autodesk family, adding capabilities to optimize manufacturing processes.[5] Figure 3, an image from a PLM Summit presentation at AU, shows how FlexSim expanded Autodesk's Design & Make coverage in manufacturing. At AU this year, Mr. Kinder discussed their acquisition of FlexSim, which occurred just prior to AU.[6] FlexSim adds factory (discrete event) simulation and operational efficiency analysis to Autodesk's existing portfolio, which will extend this picture even further.

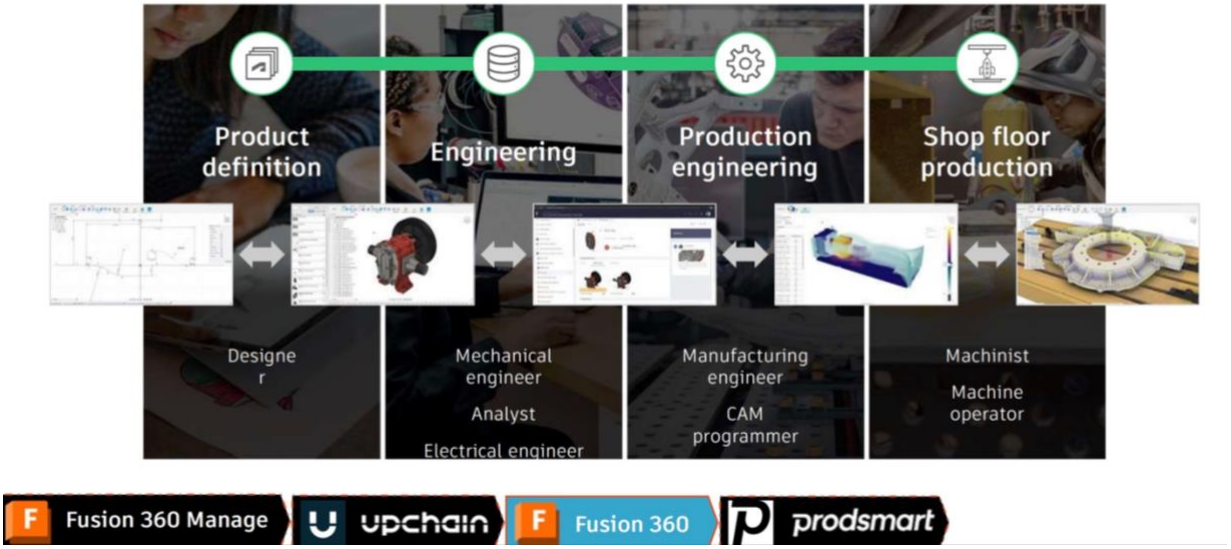

Figure 3—Solutions for the Product Development Process
(Courtesy of Team D3)

Autodesk's largest segment, AEC, has seen some controversy in recent years around their flagship Revit offering. Ms. Amy Bunszel, EVP of AEC Design Solutions, confirmed that Autodesk Forma is not "Revit in a browser." She claimed that Forma is "AI-powered" design that starts planning with your end results in mind. Spacemaker, a 2020 Autodesk acquisition, enabled this goal-based planning using a generative design approach, only this time for AEC. Their ambitious Forma roadmap will, over time, encompass the whole Building Information Modeling (BIM) process, with integral support from Revit and Autodesk Construction Cloud (ACC). During her remarks, Ms. Bunszel announced a new Rhino3D integration, which got a hearty response from the crowd. Users can bring Forma data on terrain and surrounding buildings into Rhino3D, and Rhino3D geometry can be used in Forma. According to Mr. Bunszel, Forma reimagines

[4] https://blogs.autodesk.com/design-studio/2023/11/02/welcome-to-blankai/
[5] https://adsknews.autodesk.com/en/news/connected-factory-momentum-2-22/
[6] https://www.flexsim.com/news/autodesk-signs-definitive-agreement-to-acquire-flexsim/

BIM. CIMdata agrees that these offerings are a big change for the BIM crowd but Autodesk's results to date suggest there is strong interest in their approach. Another key message in AEC is the importance of Autodesk Docs, a document management capability native to ACC, as a backbone for support of that segment. Getting control of data in large AEC projects is critical so CIMdata can understand the importance of Autodesk Docs. At the same time, document management has been readily available in manufacturing for over 20 years, just another indicator of how far the application of digital solutions in AEC trails other industries. But, of course, this is a huge business opportunity for Autodesk.

During AU each year, Autodesk schedules Q&A sessions for the media and analysts in attendance. These invitation-only sessions often amplify topics only touched upon in the Keynote sessions. Mr. Derrek Cooper, Vice President of Cloud Data & PLM for Autodesk, reiterated an important point: Autodesk Fusion is a model for Autodesk Flow and Forma. The application of digital technology in manufacturing predates its use in those other industries. Media & Entertainment has embraced digital technology, and offerings like Flow, so CIMdata expects rapid progress in that segment. AEC is coming around and Autodesk is well positioned with Forma and ACC. One question that often comes up is: will Autodesk look to migrate Autodesk Inventor users to Fusion? Mr. Stephen Hooper, VP of Design & Manufacturing Product Development stated that it is more about complementary workflows. We saw this with generative design, for example, where the cloud powered generative design, with outputs moving seamlessly from Fusion to Inventor. At the same time, Autodesk is instrumenting Fusion to rapidly identify areas where users have problems. This will help them enhance those complementary workflows. Autodesk is also building up its computer-aided manufacturing (CAM) offerings leveraging the cloud, linking the PowerMill core into Fusion, and with their partnership with CloudNC.[7]

This commentary only touches on a fraction of AU 2023 content. In fact, AU included a separate PLM Summit track, focused only on that topic. Unfortunately, many of its sessions conflicted with other AU sessions that were also important. CIMdata hopes to get access to the PLM Summit materials to better understand what transpired. But the sessions attended illustrated just how far Autodesk has come in their cloud vision, and recent acquisitions and partnerships are helping to both broaden and deepen their coverage of key workflows and capabilities in each business segment. APS provides a foundation and the company promises to extend learnings from one industry into the others. This approach has worked well in PLM more generally and with the breadth of Autodesk's customer base it could prove very powerful. They are indeed forging ahead in a very strong position across all of their business segments and, with an expanded emphasis on AI the possibilities are endless.

About CIMdata

CIMdata, a global strategic management consulting firm, provides services designed to maximize an enterprise's ability to design, deliver, and support innovative products and services. For more than forty years, CIMdata has provided industrial organizations, providers of digital technologies and services, and investment firms with world-class insight, expertise, and best-practice methods on a broad set of product lifecycle management (PLM) topics 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.

[7] https://www.cloudnc.com/blog/%20cloundnc-series-b-funding-lockheed-martin