

# Autodesk Forges Ahead

*Forge Central to their Future*

## *CIMdata Commentary*

*Key takeaways:*

- *Autodesk University 2021 was an excellent virtual event highlighting the company, its strategy, and its solutions.*
- *While the sessions collectively spanned Autodesk's many products and business segments, the highlight was the strategic importance of the Forge platform to the company's future.*
- *Autodesk moved to the cloud earlier than many PLM solution providers and the cloud-native Forge platform is central to both its technical and business future.*
- *The company emphasized that its journey to reimagining its extensive technical capabilities as APIs and microservices built on Forge will take time but the early returns are exciting.*
- *Key will be engendering a broad ecosystem of Forge partners delivering their capabilities on Forge.*

CIMdata had the pleasure of attending Autodesk University (AU) 2021, conducted virtually between October 5<sup>th</sup> and 7<sup>th</sup>, 2021, with additional regional learning and networking sessions scheduled for October 8<sup>th</sup> through the 14<sup>th</sup>. Historically Autodesk has great turnouts for its in-person events, and with free registration to AU's virtual live content and streaming sessions they expected over 100,000 global participants. According to Autodesk, the first three days attendees watched more than 51,000 hours of content.

Mr. Andrew Anagnost, Autodesk's President and CEO, kicked off each day with a General Session. Filmed in an industrial space, Mr. Anagnost focused on key industry trends and Autodesk's messaging and actions related to them. He was supported across the three sessions by a number of Autodesk senior executives and customers. The company used AU to kick off its new global logo and visual identity, using Autodesk as a verb—"Autodesk it"—that will be expanded upon in the next year.

While Mr. Anagnost did not get into product specifics in his remarks, all of the general sessions highlighted Autodesk's progress and strategy around Autodesk Forge. In 2015 at its Autodesk Accelerate event, the company painted a vision for its product innovation platform,<sup>1</sup> adopting the terminology developed by CIMdata in collaboration with Gartner and IDC.<sup>2</sup> Its imagery showed Autodesk Fusion 360 at the center of its vision, underpinned, as it turned out, by the Forge vision articulated at AU 2015, which had three key elements<sup>3</sup>:

- Forge as a Platform-as-a-Service (PaaS), whose set of cloud services, application programming interfaces (APIs), and software development kits (SDKs), focused on helping software developers (and customers) build cloud applications.

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<sup>1</sup> For our initial take on this positioning, please see <https://www.cimdata.com/en/resources/complimentary-reports-research/commentaries/item/4829-autodesk-accelerate-2015-getting-down-to-business-commentary>. Other CIMdata commentaries on Autodesk expanded on this topic.

<sup>2</sup> <https://www.cimdata.com/en/resources/about-plm/a-cimdata-dossier-plm-platformization>

<sup>3</sup> <https://investors.autodesk.com/news-releases/news-release-details/autodesk-unveils-cloud-based-forge-initiative-transform-how>

- The Forge Developer program to provide on-going training, resources, and support for a (hopefully) burgeoning developer community, including a new Forge Developer Conference, first held in June 2016.
- A \$100 million investment fund to help small, innovative companies build solutions based on the Forge Platform.

Based on conversations with the company, the \$100 million investment fund was to “prime the pump” and it has been successful in that regard. In their collective remarks, Autodesk speakers emphasized Forge as an open, standards-based platform that puts data at the center and, when realized, will support a heterogeneous data and application environment that spans the product lifecycle. From its inception, the Forge platform was designed to underpin all three of Autodesk’s business segments: Architecture, Engineering & Construction (AEC); Product Design & Manufacturing (D&M); and Media & Entertainment (M&E). The three general sessions hosted by Mr. Anagnost roughly spanned these segments, with his remarks amplified by other Autodesk executives and customer speakers in other AU sessions.

In session one, Mr. Anagnost provided his take on the events of the last 18 months, reinforcing what CIMdata and others have witnessed: in the face of the global pandemic, many trends like enhanced collaboration, cloud, and the move toward digital transformation have accelerated. According to Mr. Anagnost, meeting these needs makes Autodesk’s mantra of the last several years even more important: Autodesk needs to unlock the data that resides in the myriad files produced by the wide range of software tools that support the product lifecycle across Autodesk’s three business segments. Reusing a phrase common in the PLM Economy over the last 10 years, what if Forge could more seamlessly connect the “top floor to the shop floor”? Several customer videos drove home the importance of leveraging data to the fullest to empower increasingly global value chains and ecosystems. Autodesk defines Forge as more than just data. Mr. Anagnost spoke of the company’s multi-year journey to not only unlock data but to unlock the capabilities of Autodesk’s many solutions in a more granular way using APIs and microservices, all delivered on the Forge platform. CIMdata thinks this is an excellent vision that will require innovation across all aspects of its business, not just the technology. During all three sessions he rightfully emphasized that this is a long-term program with some of its efforts starting to bear fruit.

In session two, several Autodesk executives focused on how the Forge platform can help customers leverage varied data, supported by associative links between data produced by different applications. Mr. Scott Reese, Autodesk Executive Vice President (EVP), Product Development and Manufacturing Solutions, provided an example of the parametric relationship between Revit and Inventor. The example showed a building design in Revit that included a design of a walkway created in Inventor. The video showed how changes in the building context in Revit were reflected in the walkway design in Inventor. This is commonplace within design tools using their own data but making that connection between applications from different providers is essential to ensure that design intent and changes on one part of a design can be accurately and immediately reflected in the impacted design elements that may have originated in another solution. Mr. Reese emphasized that Autodesk is working to integrate Upchain (a cloud-native product data management solution recently acquired by Autodesk) with Forge and that the same associativity can be supported between SOLIDWORKS and Inventor. Mr. Reese stated that much more is to come. Ms. Amy Bunzell, Autodesk EVP AEC Design Solutions, echoed this message but claimed that the AEC industry is even more fragmented than manufacturing, a sentiment with which CIMdata heartedly agrees. Her primary example highlighted Autodesk’s partnership with Esri, a global leader in geographical information

system (GIS) mapping, announced at AU 2017.<sup>4</sup> A new offering, Esri ArcGIS GeoBIM connects with Autodesk BIM Collaborate Pro to combine BIM and GIS information, a co-branded offering that both will sell. The built world exists in the real world and the combination of BIM and GIS is increasingly essential in our smart, connected future, as assets and other products will need to interact in real time. The Autodesk Construction Cloud (ACC) team also announced that it has passed 200 ecosystem partners leveraging Partner Cards<sup>5</sup> and API's (including Forge API's) to deliver strong and meaningful integrations.

Ms. Diana Colella, Autodesk Senior Vice President, Entertainment and Media Solutions, continued the theme, speaking about how Forge will help enable a cloud-based production ecosystem for M&E. Today's films and streaming programs are collaborations between far-flung specialists, ideal use cases to support with an open, cloud-native platform. Ms. Colella emphasized that Autodesk is embarking on a long journey to this future and patience is necessary.

The third general session saw Mr. Anagnost quickly cede the floor to Ms. Raji Arasu, Autodesk's Chief Technology Officer. She claimed that the Inventor-Revit integration shown in an earlier session was just one of 10 integrations that Autodesk offers, which include connections with non-Autodesk solutions. She noted that the important thing is that users will have the same user experience (UX) when accessing Inventor data. Ms. Arasu stated that over 3 million customers have used the Autodesk app store which is about to get a makeover, focused on making it easier for developers to post new offerings and for customers to purchase them. Ms. Arasu said that, over time, Autodesk will evolve from a company with a multitude of products to offering a platform that makes it easier to leverage capabilities from a wide range of providers to meet their critical needs.

During an AU pre-brief, Ms. Susanna Holt, Autodesk VP of Strategic Technologies, claimed that over 2,000 firms use Forge today, ranging from small start-ups to large ISVs and SIs and even some industrial customers. During the Forge keynote, Mr. Stephen Pester, Senior Principal in Accenture's Industry X practice, hinted at Accenture's plans to embed Forge in customers' processes. Autodesk stated that Forge offers a low-code approach to development, a phrase more common in the PLM space since Siemens acquired Mendix, a global leader in low-code/no-code development. While low-code can be a buzzword, it is actually very important to democratizing technology. Early applications using low-code capabilities include custom sales configurators and digital twins. Mr. Stephen Hooper, Autodesk Vice President and General Manager of Fusion 360, highlighted two new Fusion 360 extensions. The Simulation Extension allows users to access simulation capabilities with the same UX. These extensions will be "instant on" and can be purchased within the product. Autodesk is also working on its Product Design Extension, which will bring manufacturing process expertise to the point of work for designers, enabling them to make their designs more manufacturable as part of the design process. This form of democratization is intended to help designers of all skill levels but will be particularly important for less skilled designers who do not have the wealth of practical experience on which to draw.

This is an exciting development because to CIMdata a true platform must readily support a broad ecosystem beyond just solutions from the platform provider. Mr. Hooper described how Autodesk is democratizing the use of its Moldflow capabilities within its platform in Fusion 360. Customers who need it can turn it on without impacting any other functionality. During AU,

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<sup>4</sup> <https://www.esri.com/about/newsroom/announcements/autodesk-and-esri-partnering-to-advance-infrastructure-planning-and-design/>

<sup>5</sup> Partner cards support data exchange in Autodesk BIM 360.

Autodesk also announced how Ansys will leverage this extension capability to bring its PCB simulation capabilities into Fusion 360. The screen shots presented were clearly delineated as “mockups” but this is exciting news. Autodesk has been working with Ansys over the last few years and bringing its market-leading capabilities into Fusion 360 is an excellent development for the two companies and their many joint customers. Autodesk emphasized that it’s “early days” in this effort and that it is maturing its extension framework, working with partners to ensure Autodesk’s approach works for them and their solutions. CIMdata believes this level of technical and business model integration is an essential step toward a true, democratized platform.

## Conclusion

Of course, this commentary presents only a small window into the many sessions and announcements made during AU 2021. While atomizing their application capabilities is the future, Autodesk will remain a product company for a number of years and AU was packed with product enhancements. But Forge is Autodesk’s future—and an exciting one it should be. Starting its journey natively on the cloud is a contrast with many other PLM ISVs who are using APIs, microservices, and other technological approaches to wring productive life from on-premises offerings. As emphasized by the Autodesk team, this is a long-term prospect but starting that journey natively on the cloud is a big plus. The Ansys partnership, and the PCB analysis extension, highlights how Autodesk plans to support heterogeneous tool environments. Over time it will be interesting to contrast the level of UX integration for Forge-enabled extensions with other approaches like Ansys integrating Ansys Discover Live into Creo from PTC. The evolution of Autodesk’s App store is a welcome development, and very necessary to smooth the transition to this new democratized business model. Autodesk also spoke about using Forge as a marketplace platform, which again is an interesting counterpoint to the Marketplace efforts of Dassault Systèmes. Autodesk is truly “forging” ahead with Forge and CIMdata anxiously awaits future installments in this important platform story.

## 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 through the identification and implementation of appropriate digital initiatives. Since its founding nearly forty years ago, CIMdata has delivered 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 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.