

Autodesk University 2015: Future of Making Things

CIMdata Commentary

Key takeaways:

- Autodesk stayed on message about the future of making things, positioning Fusion 360 and Autodesk 360 at the center of their product innovation platform
- Autodesk announced Forge, an initiative to accelerate cloud solution development for their platform, consisting of a platform-as-a-service offering, a developer program, and a \$100 million investment fund
- Inventor 2016 introduced AnyCAD, an approach for importing foreign CAD models into Inventor without data conversion unless the user needs to edit the models

Autodesk University 2015 opened to the fanfare of the Star Wars theme and a phalanx of Imperial storm troopers escorting Ms. Lynn Allen, Autodesk Technical Evangelist, to the stage to welcome the approximately 10,000 attendees. Staged at the Venetian Hotel in Las Vegas the event brought together Autodesk users from the architecture, engineering, manufacturing, film, and games industries, Autodesk staff, resellers, and third-party solution providers over three days of presentations and more than 700 educational classes. Ms. Allen introduced the theme of the event, *The Future of Making Things*, and spoke of innovative companies reframing their approaches to solve problems in novel ways. The term reframing was echoed in numerous sessions and CIMdata recognized Autodesk's attempt to differentiate from the overused innovation terminology used by many of their competitors.

Ms. Allen introduced Mr. Carl Bass, Autodesk President and CEO, who spoke briefly on how the Internet of Things (IoT) can help realize a vision of closed-loop product development with machines analyzing themselves and taking corrective action. Mr. Jeff Kowalski, Autodesk Chief Technology Officer, joined Mr. Bass on stage and launched a series of short vignettes from industrial clients, such as Airbus and MIT Media Lab, who are taking advantage of technology shifts to solve problems. CIMdata found the presentations both insightful and informative. One presentation described the efforts that use a generative modeling and 3D printing approach for the design of an airplane bulkhead, illustrated in Figure 1. Mr. Andy McAfee, a principle research scientist at MIT and the co-founder of its Initiative on the Digital Economy, made note of changes in manufacturing, highlighted by the fact that the United

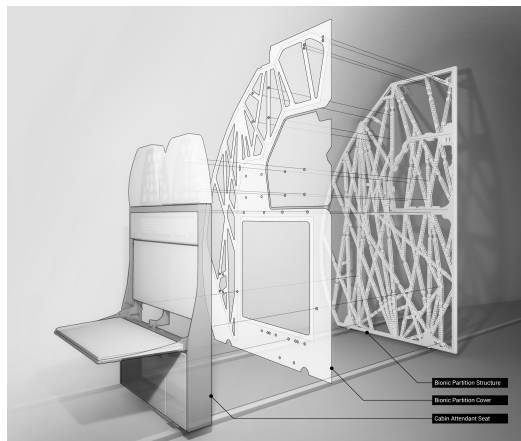


Figure 1—Airplane Bulkhead Designed Using Generative Modeling with Ties to NASTRAN Topology Optimization

States is in a phase of dematerialization, with the annual use of raw resources dropping for the first time in history after peaking in the 2000-2004 timeframe.

On day two, Autodesk staged a breakfast presentation for industry analysts and media on Autodesk's Inventor product and strategy. Inventor is Autodesk's flagship product for core 3D mechanical design. Mr. Derrek Cooper, Director of Product Management, Product and Factory Design Group and Mr. Lance Grow, Director, Product Design, Product Line Group, spoke of Inventor's recent R3 release, the third major release in the last six months. Their strategy is to provide continuous access to new capabilities based on the voice of the customer. In addition, they will leverage the cloud in the "right place, right time." They highlighted the Inventor IdeaStation online¹ where users can submit and vote on requests for enhancements. CIMdata particularly appreciates the ability to vote on suggestions so that users can see how their peers feel about product improvements.

The Autodesk representatives then announced Inventor 2016 AnyCAD, an open approach to foreign CAD data with LiveLink, a technology that manages a data link between the Inventor model and the foreign model from which it was derived. Available with Inventor and Inventor Professional at no cost, AnyCAD allows importing of foreign (non-Inventor) CAD models without data conversion. These foreign models can be placed and visualized in an Inventor assembly. If the user wishes to modify the foreign models viewed in Inventor, they can select and convert them into Inventor format. Links are supported to allow the Inventor model in which a foreign model resides to be updated when that foreign model changes. CIMdata welcomes this move forward by Autodesk in synch with other CAD solution providers resulting in a more productive multi-CAD environment across industry supply chains.

The Autodesk team also highlighted Autodesk ForceEffect², a free Apple iPad app available from the iTunes App Store that allows engineers to draw, constrain, and simulate design concepts using free body diagrams. Users simply tap objects to select, move, rotate, and scale. Real-time solving capabilities provide feedback on the viability of a design. CIMdata applauds Autodesk's moves to bring engineering concepts into the world of design modeling with a mobile app that can be used in the office or in the field.

Later that day, the Fusion 360 team presented information on the product's new functionality, community growth, and new partnerships. Mr. Stephen Hooper, Autodesk Senior Director, Manufacturing Industry Strategy and Business Development, discussed the industry trends of changing user demand, product complexity, and production changes they see in the industry. Over the last several years, Autodesk has invested heavily in building out their product innovation platform, as shown in Figure 2, to support their vision of the future of making things. As described in the session, users can design in Fusion 360, connect to making it in Computer-Aided Machining (CAM) or additive manufacturing (AM), and use products supported, in part, by the Internet of Things (IoT). Their recent acquisition of SeeControl, a cloud-based IoT platform solution provider, was a focus of the discussion.

¹ <http://inventorhub.autodesk.com/ideastation>

² <http://autodeskmfg.typepad.com/blog/2011/11/autodesk-forceeffect-now-available.html>

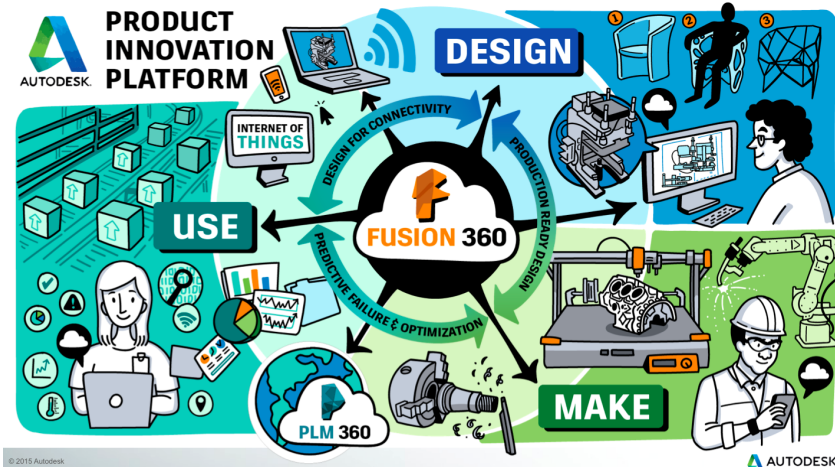


Figure 2—Autodesk's Vision of a Product Innovation Platform for Product Design, Make, and Use

In CIMdata's definition, PLM solutions will not truly be platforms until there are third-parties using the platform as the basis for developing new solutions, or building apps that plug into the platform. During this session, Mr. Hooper offered more detail on Autodesk's announcement of the Forge Initiative. Autodesk is positioning Forge as a means to foster new cloud-based application development in line with Fusion's focus on the cloud. The initiative unites three aspects needed for development: a solution platform-as-a-service (PaaS) offering, a developer program for product and business guidance, and an investment fund of up to \$100 million to support new developments. CIMdata believes this is a ground-breaking move by Autodesk that is unprecedented in the PLM market. The discussion focused on small, innovative start-ups, but CIMdata hopes that other established solution providers see the value of building apps. This, of course, depends on there being a strong demand for Autodesk's platform.

Another Fusion 360 enhancement, almost lost in the enthusiasm of the Forge announcement, was a design collaboration enhancement. Users are able to post their design model to the cloud and send a link to whomever they wish to collaborate. The recipient merely uses a free login to PLM 360, Autodesk's cloud-based PLM solution, to access the model. CIMdata welcomes the ease of the solution, but is mildly disappointed that the visualization uses a proprietary data format.

In summary, CIMdata views Autodesk University 2015 as a major success for the company. The strong attendance attests to Autodesk's major influence in the PLM industry. As Mr. Bass commented—prospective clients who find Autodesk through the impact of such innovative solutions as generative modeling are surprised these capabilities come from the company that has been best known for 2D drafting. Autodesk continues to focus on their product innovation platform with Fusion 360 with Autodesk PLM 360 at its core. The new aggressive Forge initiative is set to encourage third-party app development on the platform. The future of making things is here and Autodesk can be found at the center of the action.

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

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