DEVELOPING BETTER PRODUCTS IN THE CLOUD

3DEXPERIENCE WORKS Accelerates Collaboration, Innovation, and Time to Market

ADVANCING PRODUCT DEVELOPMENT IN THE CLOUD

BOOST INNOVATION, PRODUCTIVITY VIA CLOUD-BASED COLLABORATION

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CONCLUSION
ADVANCING PRODUCT DEVELOPMENT IN THE CLOUD

Although there are many examples of an individual discovering, creating, or stumbling upon an innovation, the process of innovation does not take place in a vacuum. No designer is an island. Even in cases where one person is credited with an invention or innovation, behind the scenes those innovators successfully collaborated with others, synthesizing the knowledge, ideas, views, suggestions, and recommendations of friends, colleagues, and stakeholders to refine their inspiration, guide their creativity, and focus their vision toward a practical application and successful outcome. Creating innovative products today is no different, except that the time allotted for completing this synthesis is undoubtedly much shorter. Great ideas can come from many places, and manufacturers face the challenge of how to bring their best people together so they can effectively collaborate as part of a product development team without incurring the cost of bringing them all to a single location, installing more software, or purchasing additional hardware.

As the economy becomes increasingly global and technology continues to rapidly advance, product development organizations recognize the need to compress product development cycles. By using a cloud-based system such as 3DEXPERIENCE WORKS, manufacturers can connect team members from any location, providing the collaboration and communication platform that designers and engineers need to engage in outside-the-box thinking, bounce ideas around, and participate in the give-and-take interaction that can result in innovation. The ability to easily collaborate in this way in real time—with data transparently managed in the background—can help organizations fast-track product development and increase productivity.

While the trend toward cloud-based applications of all kinds continues to accelerate, the first step toward making that transition is for product development teams to leverage existing, integrated desktop solutions, like SOLIDWORKS design software, by using them with compatible cloud-based design and engineering tools, like 3DEXPERIENCE WORKS. Regardless of the function, design teams can connect SOLIDWORKS models and tools with the cloud-based platform to conduct industrial design, mechanical design, data management, and a range of downstream functions and deliverables, including simulation and validation, documentation, product imagery creation, and tooling preparation.

An important ancillary benefit of a cloud-based environment such as the 3DEXPERIENCE platform is the substantial reduction in IT costs. Because the tools and data reside in the cloud, you won’t need to install them, upgrade hardware, or conduct updates and fixes. With the data residing in the cloud instead of on an individual user’s computer, all updates are conducted automatically and users need only a current web browser to view and review data, and, depending on the solution set, access and use these tools, and collaborate with colleagues, partners, suppliers, consultants, and anyone else in the product development network.
While innovation in product development has become the lifeblood of many of today's leading manufacturers, it must be balanced with other objectives, such as faster times to market and holding the line on product development costs. For a product innovation to make a splash in the market, it must be brought to market first without bankrupting the company in the process. In other words, manufacturers need a cloud-based platform to collaborate efficiently, fast-track product development, and control product development costs while introducing innovative products and features to market at the same time. With a cloud-based platform, manufacturers can more easily balance these sometimes conflicting objectives.

Innovation Demands Collaboration

In order to innovate consistently, efficiently, and effectively, product design teams must collaborate. It’s the only way that the team can distill all of the pertinent information—such as the voice of the customer, input from suppliers and partners, design ideas and concepts, etc.—into an innovative design. In addition to synthesizing information on the front end of development, designers and engineers need to collaborate so they can incorporate valuable input, feedback, and insights into design iterations in real time. Using SOLIDWORKS tools in concert with 3D EXPERIENCE WORKS browser-based solutions, product design teams can more tightly focus the development path, leverage the knowledge that is widely distributed across the organization, and even uncover hidden, unknown talent. In order for collaboration to generate innovation efficiently, it must be seamless and operate in real time, while eliminating geographic, device access, and time barriers from the collaborative process.
... A CASE IN POINT

CREATING INNOVATIVE BREAKTHROUGHS IN GUITAR DESIGN IN THE CLOUD

Combining elements of industrial design, art, sound, and the natural world, Lava Drops is an innovative Lithuanian product design and musical instrument company that creates artistic electric guitars from exclusive, natural, and unconventional materials. The brainchild of visionary designer Rapolas Gražys, the company initially used the SOLIDWORKS 3D CAD system.

“Lava Drops instruments consist of several complex surfaces and are made from materials with widely varying properties, both of which create challenges that require a serious, capable CAD system,” Gražys explains. “We looked at some other CAD systems, but we determined that the value of SOLIDWORKS—the ratio of capabilities to price—is the best, and there was no doubt that we would continue using SOLIDWORKS.”

Efficient, real-time collaboration among members of the Lava Drops design, engineering, and manufacturing teams remained a key challenge, however. When Gražys heard about a new browser-based 3D modeling application on the 3D EXPERIENCE platform, he decided to try it. Gražys was intrigued by the growing number of product development tools on the platform, which work with each other seamlessly and are accessible from any place and on any device. Lava Drops augmented its SOLIDWORKS 3D CAD solution by acquiring the browser-based 3D Creator solution, which includes the xDesign app. Since adding 3D Creator and adopting the 3D EXPERIENCE platform, Lava Drops has realized a range of productivity gains related to working in a collaborative design environment in real time. “It’s easier and faster to develop design concepts with the 3D Creator xDesign app, which is specifically designed for industrial designers and digital artists,” Gražys explains.

“Because SOLIDWORKS software and the 3D EXPERIENCE platform work seamlessly together, we can utilize the best solution for the job at hand, enabling engineering, the manufacturing side, and customers to collaborate from anywhere, at any time, and from any device with a web browser,” Gražys adds. “Our engineer located in another office can access a design file, run a simulation, and make changes for mathematical and physics purposes. Our manufacturing specialist, sitting in a third office, can then work on the model to make manufacturability adjustments.

“During this process, we’re all communicating with each other regarding modifications while working from different locations,” Gražys notes. “For us, the 3D EXPERIENCE platform is the best solution because it allows us to collaborate from different locations without needing expensive hardware. Because we can easily log in through a laptop, tablet, or smartphone, the 3D EXPERIENCE platform is great for facilitating visualization, collaboration, and communication.”

Using 3D Creator, Lava Drops has cut its design cycles by 30 to 40 percent, reduced development costs by 25 percent, and shortened time to market by 20 percent. The company has also delivered an innovative new feature in the guitar industry: the world’s first laser MIDI controller, which allows the musician to control the electronic tone of the instrument with a laser light.

“For us, [3D Creator] is a multifunctional tool,” Gražys points out. “From idea generation to model simulation, and from the design model to the final product, I can say that organic design inspired by aesthetics of nature meet modern technology and the future.”

READ THE WHOLE STORY
To read the full Lava Drops story, click here.
COLLABORATION SPARKS PRODUCTIVITY, FAST-TRACKS DEVELOPMENT

With a collaborative browser-based set of product development solutions such as 3DEXPERIENCE WORKS, design and engineering teams can collaborate more efficiently in parallel in a unified development environment, helping to increase productivity and fast-track product development. Productivity gains emanate not only from the improved communication, transparent data management, and enhanced data security of a cloud-based collaborative platform but also from all of the downstream functions that can now take place concurrently instead of sequentially. Because the cloud-based platform enables product developers to access the design from anywhere at any time, colleagues can conduct simulations and share results, produce documentation, create renderings, and develop tooling as the design advances. Instead of waiting until the design is released, team members can complete and update these deliverables so they are ready to go at the same time that a design is released for production. By implementing additional 3DEXPERIENCE WORKS project management and collaboration tools, manufacturers can extend the productivity gains of the collaborative platform further, fast-tracking product development at an even more rapid pace.
FAST-TRACKING FUEL TANK INSPECTION ROBOT DEVELOPMENT IN THE CLOUD

Square Robot, Inc. is a leading robotics manufacturer that successfully submerges battery-powered robots inside in-service fuel storage tanks and inspects the tank floor for corrosion and integrity flaws through its Veritank Inc. subsidiary. The robotics manufacturer has initially focused its product development on hazardous location vehicles used to inspect petroleum tanks, due to the high cost of inspecting these tanks manually.

“Before we developed our hovering technology, most tank inspections required taking a tank out of service, so it can be drained, opened, cleaned, and inspected through manual nondestructive testing, with waste processed and repairs made as necessary,” Senior Mechanical Engineer Charles O’Connell explains. “In addition to being highly disruptive to operations, this manual inspection process is time-consuming and costly, with many refineries budgeting $2 million [US] to inspect a 150-foot-diameter tank.”

Square Robot conducted its early product development with SOLIDWORKS CAD software, because its engineers were all experienced users. However, since the company’s five SOLIDWORKS users work from multiple locations, the company needed cloud-based solutions for design collaboration, revision control, and product lifecycle management.

“We initially began working by developing parts, assemblies, and drawings in SOLIDWORKS, and storing them in the cloud via Google Drive, using the SOLIDWORKS Pack and Go feature for large datasets,” O’Connell recalls. “Google Drive is capable of storing CAD data but not in an intelligent way that maintains revision history and relationships between assemblies and their child items. Working this way, a main organizer—me—had to diligently manage all of the data and revisions locally by deciding what local files to override. This was not only time-consuming and burdensome for the main organizer, but also prone to human error and counter to collaboration. What we needed was a cloud-based solution that enabled us to collaborate, maintain revision controls, and lock down approved CAD data.”

Square Robot found its cloud-based collaboration solution in Collaborative Designer for SOLIDWORKS and Collaborative Industry Innovator, two of the data and lifecycle management solutions on the 3D EXPERIENCE platform, which work seamlessly with SOLIDWORKS desktop software. “If you are not designing your systems and not setting up your business such that you can get the best people working together wherever they are, you’re going to have problems,” says Square Robot Co-Founder Will O’Halloran. “Technology like the cloud-based 3D EXPERIENCE platform can help you get there. It made it drastically faster to share design changes and gave us instant visibility into who is doing what. And, we’ve just scratched the surface. There is so much more to explore, especially when it comes to connecting design with the other steps in product development.”

Using Collaborative Designer for SOLIDWORKS, the company can collaborate more effectively on a cloud-based platform without costly IT overhead and without replacing its SOLIDWORKS design tools, resulting in an accelerated development cycle and faster times to market. “The 3D EXPERIENCE platform allowed us to fast-track collaboration by providing instant access to data uploaded by multiple users without the need for a top-level assembly organizer or archiving data using SOLIDWORKS Pack and Go,” O’Connell stresses.

“The solutions enabled us to improve communication within and efficiency across the development team, eliminated the delays that we previously encountered, and helped us accelerate development,” O’Connell adds.

READ THE WHOLE STORY
To read the full Square Robot story, click here.
REDDUCING PRODUCT DEVELOPMENT COSTS

Just as using 3D CAD tools has helped manufacturers develop products more quickly than implementing product development cycles that used 2D design or manual approaches, linking a 3D CAD system like SOLIDWORKS to a browser-based set of collaborative development tools in the cloud, like the 3DEXPERIENCE WORKS solutions, can enable manufacturers to shorten time to market even further. In addition to its product marketing and sales benefits, its ability to shorten time to market lowers product development costs. Time is money, and the faster that an organization can develop an innovative product, the better the product’s profit margins and the company’s financial health will be. Yet, shortening time to market is not the only way that a browser-based collaborative development platform in the cloud can help manufacturers reduce product development costs. Manufacturers can also slash IT overhead—by eliminating software administration via automatic updates to cloud-based applications and forgoing hardware purchases to meet increasing computing requirements for conventional software—with a collaborative browser-based solution in the cloud.

CONNECT SOLIDWORKS TO CLOUD-BASED COLLABORATIVE PLATFORM WITH 3DEXPERIENCE WORKS

3DEXPERIENCE WORKS cloud-based tools connect the family of SOLIDWORKS product development solutions—ranging from 3D design, simulation, and validation tools to product documentation, photorealistic rendering, and tooling packages—to additional cloud-based design, simulation, manufacturing, and data and lifecycle management applications. With 3DEXPERIENCE WORKS, SOLIDWORKS users can launch or connect their locally installed CAD software solutions with the 3DEXPERIENCE platform and its growing range of applications. Design team members can access the platform seamlessly, share data easily, and work collaboratively with all data stored in a single, secure location in the cloud.

Enterprisewide Collaboration

The cornerstone of the cloud-based 3DEXPERIENCE platform, the Collaborative Business Innovator provides manufacturers with the applications and services required to digitally connect contributors across the enterprise. With Collaborative Business Innovator, a manufacturer can bring together all aspects of its business on a cloud-based platform to increase collaboration, improve execution, and accelerate innovation. Collaborative Business Innovator provides the applications and services that digitally connect employees, suppliers, customers, and consumers. It enables product development teams to create dashboards and communities, aggregate and share data, and connect people and data in a single location, fostering collaboration, enhancing agility, and fueling faster time to market.
Industrial Design

SOLIDWORKS users can accelerate their industrial design activities by accessing the 3D Sculptor role and its xShape app. A browser-based 3D subdivision (sub-D) modeling application, xShape enables industrial designers, engineers, and artists to create stylized or organically shaped models more quickly and more easily than they can with traditional parametric modeling tools. Available via the 3DEXPERIENCE platform, 3D Sculptor complements the parametric workflows of SOLIDWORKS 3D CAD with intuitive sub-D modeling, which seamlessly interacts with the SOLIDWORKS CAD system. With this tool, designers can create complex surfaces using intuitive push-pull interaction and then use the result directly in SOLIDWORKS.

Mechanical Design

The 3D Creator role and its xDesign app bring easy-to-use 3D parametric modeling capabilities to a web browser, allowing designers and engineers to create, review, and evaluate 3D models in the cloud without a SOLIDWORKS desktop license. Available through the 3DEXPERIENCE platform, 3D Creator offers more flexible design workflows than conventional CAD systems while still being able to seamlessly exchange design data back and forth with SOLIDWORKS CAD. Using this tool, designers and engineers can more easily change design intent without reworking an entire model, work locally or in the cloud, and move seamlessly between SOLIDWORKS and the 3D Creator xDesign app.

Project Management

The Project Planner role provides project management solutions on the 3DEXPERIENCE platform. Accessible through 3DEXPERIENCE WORKS, this browser-based project management solution enables team leaders to seamlessly manage all stages of product development. With this solution, team leaders can manage projects and tasks, and automatically optimize activities and resources to meet key milestones and delivery dates. Project Planner accelerates idea to completion through simple and assisted iterative planning, and execution and monitoring of projects. It connects team members through a flexible, collaborative approach.
Data and Lifecycle Management

The Collaborative Industry Innovator solution provides design engineering teams with essential capabilities for real-time, secure, and structured collaboration, as well as lifecycle management of product content, using the Change Action, Issue Management, Markup, and Lifecycle apps. The browser-based solution helps design teams manage product development functions ranging from design and multiphysics simulation to manufacturing planning and documentation with maximum traceability and flexibility. SOLIDWORKS users can manage data on 3DEXPERIENCE by using Collaborative Designer for SOLIDWORKS. This tool enables SOLIDWORKS users to manage, annotate, and visualize designs anywhere, at any time, and on any device.

SOLIDWORKS CONNECTED TO THE CLOUD

The combination of the SOLIDWORKS portfolio of product development solutions and 3DEXPERIENCE browser-based solutions brings the power of 3D parametric design to the cloud. This dynamic pairing of technologies enables designers, engineers, and other members of product development teams to work more collaboratively—with greater agility and flexibility—because they can access design data and work on it either on their desktop or in the cloud. For example, a designer on the team can save a design developed in SOLIDWORKS on the 3DEXPERIENCE platform in the cloud. Another member of the team can access the model from anywhere, on any device, and suggest improvements, which the original designer implements. Other team members can then access the revised design to perform other functions, such as simulation and validation, documentation preparation, imagery creation, and manufacturing planning. With all data changes synchronized in real time, team members can be confident that they are working on the most current, up-to-date version. And because SOLIDWORKS is parametric, revised models can then be used to automatically update other functions in the cloud, saving time while maintaining accuracy with little user intervention.
TAKING COLLABORATIVE INNOVATION TO NEXT LEVEL

Today’s product development organizations face increasing pressure to develop innovative products and product features more consistently, efficiently, and cost-effectively. Achieving those goals and boosting innovation in product development demands greater levels of collaboration among design and engineering teams, as well as downstream stakeholders. To make collaboration more effective in generating innovation, product developers need to be able to connect and collaborate in a way that doesn’t delay product development cycles or make the team’s workload more onerous. In short, product developers need to work smarter, not harder, and collaborate more, not less.

With the cloud-based 3DEXPERIENCE platform, product developers can improve their collaborative capabilities by leveraging existing SOLIDWORKS integrated desktop applications with this compatible cloud-based platform of design and engineering tools. Using this potent combination of solutions, design teams can connect SOLIDWORKS models and tools on the cloud-based platform at any time, from anywhere, and on any device that supports a browser. This will allow them to conduct industrial design, mechanical design, data management, and a range of downstream functions and deliverables, including simulation and validation, documentation, product imagery creation, and tooling preparation—all while slashing IT overhead. With SOLIDWORKS and the 3DEXPERIENCE platform, product developers can collaborate more easily and effectively, generate innovation more quickly and consistently, and accelerate product time to market.

To learn more about how 3DEXPERIENCE WORKS enables you to take SOLIDWORKS collaboration into the cloud, visit www.solidworks.com or call 1 800 693 9000 or +1 781 810 5011

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