SOLIDWORKS

CAD

CENTER FOR ADVANCED DESIGN (CAD) CREATING INNOVATIVE LOWER-LEG PROSTHETIC PRODUCTS WITH 3DEXPERIENCE WORKS SOLUTIONS

Case Study

CAD leveraged **3D**EXPERIENCE WORKS solutions to develop an LED cover, a shock cover, and an optional shoelike walking sole for BioDapt Inc.'s knee and foot prosthetics, which founder and owner Mike Schultz, shown here, used to win multiple ESPN X Games medals in the adaptive motocross and snocross events.

DASSAULT SYSTEMES

Challenge:

Accelerate product development—including industrial design—by eliminating repetitive tasks, improving flexibility for making design changes, and streamlining communication of design concepts.

Solution:

Implement **3D**EXPERIENCE WORKS browser-based solutions, which operate on the cloud-based **3D**EXPERIENCE platform and are integrated for use with SOLIDWORKS CAD software.

Results:

- Cut industrial design time by 60 percent
- Reduced product development time by 20 percent
- Improved communication with customers and partners
- Created innovative lower-leg prosthetic products

When Marc McCauley and Jesse Hahne founded the Center for Advanced Design (CAD), the co-owners brought their combined experience in bringing more than 1,700 products to market to this leading product development consulting firm. Based outside Minneapolis, CAD strives to quickly create innovative design concepts and efficiently help clients marshal industrial designs through mechanical design, engineering, prototyping, and production.

In its efforts to "get the job done fast and right," CAD had utilized a variety of design tools, including the Alias® and Rhino® surfacing packages for product industrial design, and SOLIDWORKS® 3D CAD software for internals and production drawings. Although these industrial design and product development solutions allowed the firm to complete its work, CAD viewed the lack of integration between its surfacing and design solutions as an inefficient bottleneck in its development process. The firm was also interested in accessing design, engineering, and production tools in the cloud to hold the line on hardware requirements and associated costs while still accessing the latest and greatest product development tools.

"Bringing surface geometry into SOLIDWORKS design software required a lot of time and effort," Hahne recalls. "We constantly had to find patches and workarounds to create fully dimensioned solid models whenever we dealt with complex surface geometry. We also wanted the agility and flexibility to utilize a wide range of integrated tools whenever and from wherever inspiration strikes."

Design changes late in the development process also created extra work. "With Alias and Rhino, changing the surfacing geometry to resolve performance or manufacturability issues meant we had to redo a lot of work," adds McCauley. "We'd have to start over, create new surfacing geometry that reflected the design change, and then bring the new surface geometry into SOLIDWORKS. We kept looking for a better solution for bridging the gap between industrial and mechanical design, as well as a cloud-based solution for collaboration."

"Our experience using the **3D**EXPERIENCE WORKS tools to create and refine accessories for BioDapt products demonstrated that working in an integrated design environment in the cloud represents the future of product development, because it provides the flexibility and freedom to work anywhere and at any time, which is a lot more efficient."

— Marc McCauley, Co-owner

Because CAD works closely with SOLIDWORKS reseller Hawk Ridge Systems, the product development consultancy discovered that new browser-based product development solutions that operate on the **3D**EXPERIENCE® platform are part of a growing set of integrated solutions in the cloud for use with SOLIDWORKS 3D CAD software. CAD signed up for prerelease testing of these solutions, which are part of the **3D**EXPERIENCE WORKS portfolio. CAD's involvement in early usage and testing of the **3D**EXPERIENCE WORKS portfolio exposed the firm to a better, cleaner approach for integrating industrial and mechanical design, as well as the advantages of utilizing integrated solutions in the cloud.

"Ever since we began using SOLIDWORKS software when we founded CAD, our company has depended on all things Dassault," McCauley stresses. "The **3D**EXPERIENCE WORKS portfolio gives us access to the industrial design, mechanical design, simulation, motion visualization, rendering, data management, production, and communication tools that we need to continue to develop innovative products that help our clients succeed."

DESIGNING MORE EFFICIENTLY IN SOLIDWORKS VIA THE CLOUD

After using the **3D**EXPERIENCE WORKS solutions to develop lower-leg prosthetic products for client BioDapt Inc., CAD realized just how much more efficient using the cloud-based environment with SOLIDWORKS is for accelerating development. CAD used the 3D Sculptor subdivision industrial design modeler to create complex surface designs, and then used 3D Creator to make the

surface a parametric solid model for use in SOLIDWORKS. "With the **3D**EXPERIENCE WORKS solutions, we have everything we need for industrial design—from sketching and SubD push-pull modeling to surfacing and solid modeling—without having to jump back and forth between applications," McCauley says.

"The **3D**EXPERIENCE WORKS solutions have enabled us to cut industrial design time by 60 percent, which gives us time to create more concepts, and shorten the entire product development cycle by 20 percent," Hahne adds.

ACCESSING SIMULATION, RENDERING, AND DATA MANAGEMENT TOOLS

In developing two covers and a sole for BioDapt's Versa Foot 2 (VF2) foot prosthetic, which connects with the company's Moto Knee movable knee prosthetic, CAD utilized several **3D**EXPERIENCE WORKS solutions, tapping the portfolio's industrial design, mechanical design, simulation, motion visualization, rendering, data management, production, and communication tools. "The ability to take a product from concept through industrial design, mechanical design, engineering validation, and production, all from within the same cloud-based environment, is naturally more efficient," McCauley notes.

"With the flexibility to use the **3D**EXPERIENCE WORKS tools from inside a web browser, we've become a lot more agile, which benefits both CAD and our clients," McCauley says.

HELPING BIODAPT REFINE ITS INNOVATIVE DESIGNS

CAD client BioDapt was founded by Mike Schultz, a professional snowmobile racer who lost his leg above the knee in 2008 due to a racing injury. The setback inspired Schultz to create knee and foot prosthetics for use in action sports and establish BioDapt. Both products have helped Schultz win multiple ESPN X Games medals in the adaptive motocross and snocross events. CAD first utilized **3D**EXPERIENCE WORKS solutions to develop an LED cover, a shock cover, and an optional shoelike walking sole for the VF2.

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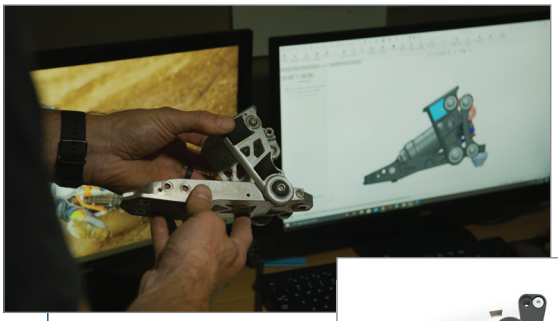

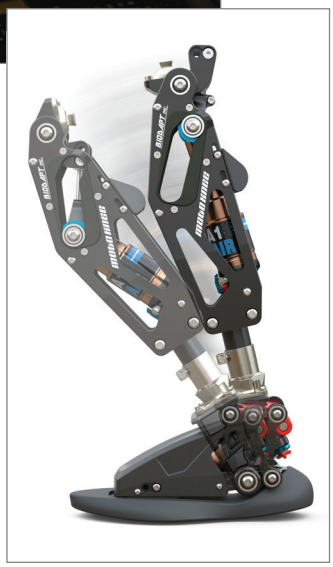

The **3D**EXPERIENCE WORKS portfolio of cloud-based solutions enabled CAD to access industrial design, mechanical design, simulation, motion visualization, rendering, data management, production, and communication tools from within a browser to develop accessories for BioDapt's Versa Foot 2 (VF2) foot and Moto Knee movable knee prosthetics.

Our **3D**EXPERIENCE® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE** Company, is a catalyst for human progress. We provide business and people with collaborative virtual environments to imagine sustainable innovations. By creating 'virtual experience twins' of the real world with our **3DEXPERIENCE** platform and applications, our customers push the boundaries of innovation, learning and production.

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