

## Tools4Design Gets Creative with SpaceClaim

*Dan is a product design veteran who started his career at Lockheed-Martin. His significant experience and expertise stems from working on consumer projects for some of the largest brands in the world, including designing toys for Happy Meals and rapid-prototyping new products for Nike and Adidas. He was also the first product development engineer hired at Williams-Sonoma. Such diverse work has brought Dan much-deserved attention and recognition from a broad range of clients.*

*While he is fully capable of receiving rough ideas in the form of sketches and designing them in 3D from the ground up, a good portion of his projects currently involve editing designs from existing CAD models provided by the client. Dan is experienced in many CAD programs. However, he found that he was spending way too much time doing conversion and translation between complex, history-based CAD systems, rather than focusing on his real value-add design capabilities.*

### 3D DESIGN CHALLENGE

#### *Simplify the Process and Enhance Design Results*

Dan is a self-proclaimed “project guy,” typically working on four-to-seven projects at a time. Whether he’s enhancing golf club models or working with the geometry of a carbon-fiber bike frame, Dan is faced with new design challenges every day. As a result, he must be able to quickly edit and enhance designs so that he can keep clients, such as 3M, True Fabrications, and BallLogic happy and coming back for more.

When modeling with traditional parametric systems, Dan found a disconnect between the way he wanted to create and the way that traditional CAD systems forced him to model. He couldn’t look at 3D geometry and say, “I want to move that a millimeter” without having to wade through the design’s complex feature history. If there was a single piece of a bigger model that needed work, while the rest was usable,

there was no direct way to get at it without untangling the entire assembly’s design structure. These challenges not only slowed him down, but also put a strain on the creative process Dan has spent so many years perfecting.

### A NEW TOOL FOR A TIME-CONSUMING CHALLENGE

SpaceClaim® has enabled Dan to significantly ease his design challenges and streamline the process. With SpaceClaim, Dan is able to take geometry from any source and edit it directly, enabling him to work quickly and efficiently with data from clients, regardless of origin or quality. If a file comes in with only a small usable part, Dan can use SpaceClaim to pull it out, work with it, and add, subtract, or improve whatever is needed to get the piece where it needs to be. SpaceClaim has quickly become an essential design solution at Tools4Design.

While Dan additionally uses solutions from SolidWorks, Ashlar-Vellum, and Rhino,

### ABOUT TOOLS4DESIGN

Tools4Design is a sole practitioner design firm based in Tulsa, Oklahoma. Founder and CEO Dan Falvey started the Company six years ago as a full-service product design business. Dan strives to maximize flexibility and minimize overhead, allowing him to work on a variety of cutting-edge projects. With nearly 20 years’ experience in the industry, Dan has designed a broad range of products for major companies including McDonald’s and Nike.

**tools4design**

depending on the task at hand, he has made SpaceClaim his tool-of-choice for conceptual modeling. SpaceClaim provides him with an easy way to work with any type of geometry, move back and forth among diverse programs, and return his finished designs into the client’s original CAD package for easy viewing.

*“From the conceptual side, SpaceClaim is a must-have tool. My clients’ jaws drop when I make edits in real time, online, or in person.”*  
Dan Falvey, CEO and Founder of Tools4Design

A significant amount of the material that comes to Dan is 3D solid “dumb data” and very unpolished with basic geometry that needs to be cleaned up to be of use. With SpaceClaim, Dan imports and edits the design, allowing him to focus on enhancing the design without any constraints. Whether the origin is AutoCAD, Pro/ENGINEER, or another 2D or 3D CAD product, the entire challenge of compatibility issues has been eliminated by SpaceClaim.

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A traditional lugged, steel road frame rendered in Rhino.

Even with what Dan refers to as “archival data” — files and models that can be extremely old and often difficult to get to a point where they will open correctly in the original CAD system — SpaceClaim opens and edits the models effortlessly. Recently, Dan was asked to work with a PC video gaming joystick model that was over 10 years old and nearly impossible to edit. He brought it into SpaceClaim, used SpaceClaim’s Repair tab to heal poor geometry, and quickly created a revised version of the product.

By adding SpaceClaim to his workflow, Dan estimates that he saves an average of 40 percent of his time on the front end of design projects. He has found that each time he uses SpaceClaim, he is amazed at how easily, quickly, and effortlessly he can do his job. The ability to generate designs so quickly and naturally in 3D greatly speeds up the process, sometimes even beyond the 40 percent time savings. For example, he recently completed what would have been a two-week garden tool design assignment in less than seven days.

Additionally, the time saved can exceed 40 percent when data for plastic model designs comes from a traditional history-based CAD system. With SpaceClaim, a new concept recently took less than 15 minutes to edit. Prior to using SpaceClaim, it often took him more than a day to edit comparable parts.

*“The Repair tab can find all of a model’s little sins and is absolutely amazing. SpaceClaim is worth the price of admission just for that.”*

Dan Falvey

SpaceClaim’s real-time Direct Modeling also enables Dan to customize designs in person with his clients. On-the-fly, he is able to make a variety of desired edits, allowing clients to test new ideas right before their eyes.

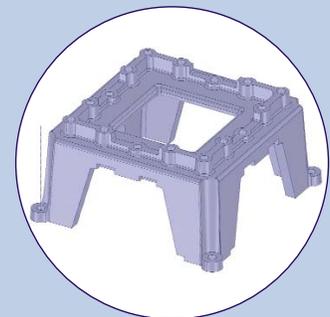
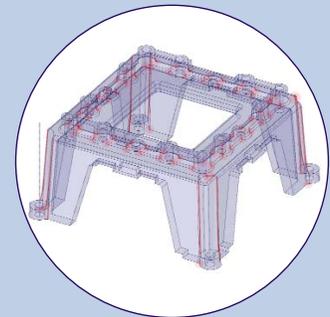
### ELIMINATING STEPS AND ENHANCING CUSTOMIZATION

In a recent project, Tools4Design was charged with helping to model custom golf club heads. The client already had a model of a conventional golf club head designed for average golfers. A customer of the golf club company asked for a club head that was tailored to fit his swing. The company turned to Dan to create a custom design that leveraged the existing data while accommodating the customer’s requests.

Using SpaceClaim, Dan was able to take the measurements provided by the fitters at the golf club company and simply evolve the 3D club head model as needed to perfectly fit the golfer. While a more complex CAD system would require a series of time-consuming steps as the model history was trekked through and redone, SpaceClaim enabled Dan to maintain the original

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SpaceClaim’s geometry repair tools find and fix dirty 3D data such as this IGES file of a joystick housing.

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features of the club head while simply moving the pieces around to meet very precise requirements, resulting in a golf club perfectly suited for the swing of any golfer.

Similarly, Dan, a former competitive cyclist himself, has worked with some of the world's leading bicycle manufacturers to design custom frames for dedicated cyclists. Tools4Design is able to take an IGES file of a bike frame with fixed geometry, and use SpaceClaim to isolate and pull out different pieces of the model in order to change the angles and positions of the frame lugs and bottom brackets, customizing the frame to fit any possible request without having to deal with a parametric history.

Dan Falvey feels he has benefited greatly with SpaceClaim and is able to leverage his strengths in creativity and adaptability. The ability to work quickly and intuitively with any form of data or model makes Tools4Design a very effective source of cutting-edge design and customization work.

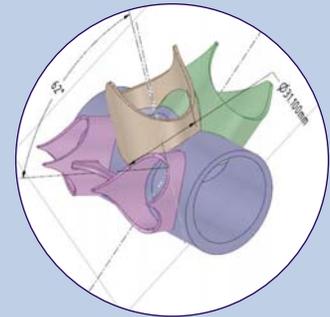
*"Bottom Line: Having SpaceClaim in your toolbox pretty much is a force multiplier."*  
Dan Falvey

### A WORTHY ENDEAVOR — DESIGNING FOR THE TROOPS

Dan additionally has ties to the military through enlisted family members. Square Deal, a non-profit organization recently founded by Dan and other CAD companies, is in the process of developing CAD-based training programs for both war-wounded and active duty servicemen and women after their return from the battle field. Through this organization, servicemen and women will be given free training on CAD systems and direct modelers with the ultimate goal of enabling them with a foundation and skill set for a career in engineering.

Many of these wounded soldiers are at a significant disadvantage in returning to the work place as they have sustained physical injuries that prevent them from operating standard mouse and keyboard computer setups. Dan is attempting to utilize multi-touch screens and voice activation software with design programs to help these veterans and eliminate injury-forced barriers to doing design work.

With SpaceClaim's multi-touch capabilities, Square Deal hopes that the ability to use fingers and a stylus will give these soldiers yet another exciting and manageable access point into an understanding of how design works, hopefully translating into a successful basis for a career in the field.



SpaceClaim's powerful, Direct Modeling tools allow for easy design changes on this bicycle frame lug.



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