



BOA

Industry:
CONSUMER GOODS

The Challenge

[BOA](#) was founded in the Rocky Mountains in 2001 with a revolutionary performance footwear fit system for snowboarders. Using micro-adjustable dials, high-tech material laces, and low-friction lace guides, the BOA Fit System today is integrated into more than 300 brand products across winter sports, cycling, hiking/trekking, golf, running, court sports, workwear, and medical bracing. Headquartered in Denver, Colorado, the company also has offices in Austria, Japan, Hong Kong, China, and South Korea.

In 2023, the BOA product development team grew increasingly frustrated with the stability of their file-based CAD system. The team estimated it was losing 15 engineering hours per week due to CAD crashes, frequently resulting in lost work. BOA was also being slowed down by the serial workflows of file-based Product Data Management (PDM), which allows only one engineer at a time to work on a design file. The company was seeking a more reliable/stable CAD and PDM system that would speed up time-to-market with parallel workflows.

Results

- BOA's product development team credits Onshape's [built-in PDM](#) for a 25% to 50% productivity gain due to automatic version control and accelerated collaboration.
- BOA reclaimed 15 engineering hours per week previously lost to file-based CAD crashes. Based on salaries, the reduced downtime translates to \$38,000 in savings per year.
- Onshape's [Simultaneous Editing](#) capabilities enable BOA engineers to work in parallel versus one person at a time.
- Onshape's [Branching and Merging](#) feature allows the engineering team to independently explore alternative designs and merge the best ideas together – without risk of altering the main design.



“When we were considering switching to Onshape, it was pretty amazing to see how you could collaborate on a document together, even across a very close two-person CAD team. We used to have to hand things back and forth and talk about what we worked on. Just the ability to both be in a document at the same time is something we never thought would be possible.”

– **Josef Duller**, Design Engineering Manager, BOA

Reinventing Outdoor Adventure Gear for Safety and Performance

Footwear technology pioneer BOA credits Onshape's built-in PDM for boosting engineering productivity by 25% to 50%



The BOA Fit System replaces traditional shoelaces with metallic cables that can be tightened and loosened with a micro-adjustable mechanical dial.

Tying our shoelaces is one of the first skills that we're taught in kindergarten. But the task becomes much trickier when you're wearing thick gloves in subzero temperatures – and the stakes are much higher when you're on the edge of a cliff.

In 2001, entrepreneur and snowboarding enthusiast Gary Hammerslag wondered if he could apply his experience in the medical device field to improve the fit and performance of his boots out on the slopes. After many iterations, the first [BOA Fit System](#) was introduced, replacing traditional shoelaces with metallic cables that could be tightened and loosened with a micro-adjustable mechanical dial. What began as a snowboarding enhancement has today evolved into technology improving the safety, fit and performance of millions of shoes, sneakers, boots, helmets, and medical bracing worldwide.

Based in Denver, Colorado, with offices in Austria, Japan, Hong Kong, China, and South Korea, [BOA](#) is now integrated into more than 300 brand products across winter sports, cycling, hiking/trekking, golf, running, court sports, workwear, and healthcare.

The company, which was originally named for the boa constrictor's incrementally tight grip, tends to attract employees with a strong passion for outdoor sports and recreation – an intangible asset for the product engineering team which can better relate to BOA's customers.

“Just being around other outdoorsy people with a passion for our products just naturally flows into our work,” says Josef Duller, Design Engineering Manager at BOA. “I’m a mountain biker and dirtbiker, but sometimes I might be working with a runner on a running-related fit solution. It’s really nice to have all these different perspectives available and normally have an expert in the room.”

“We really encourage a very collaborative environment at BOA. We encourage people to ask questions and everyone’s door is always open,” he adds. “We built our culture around working together and doing our best to make the best gear even better.”



The original BOA logo featured a boa constrictor, an homage to the snake's ability to incrementally tighten its squeeze around its prey.

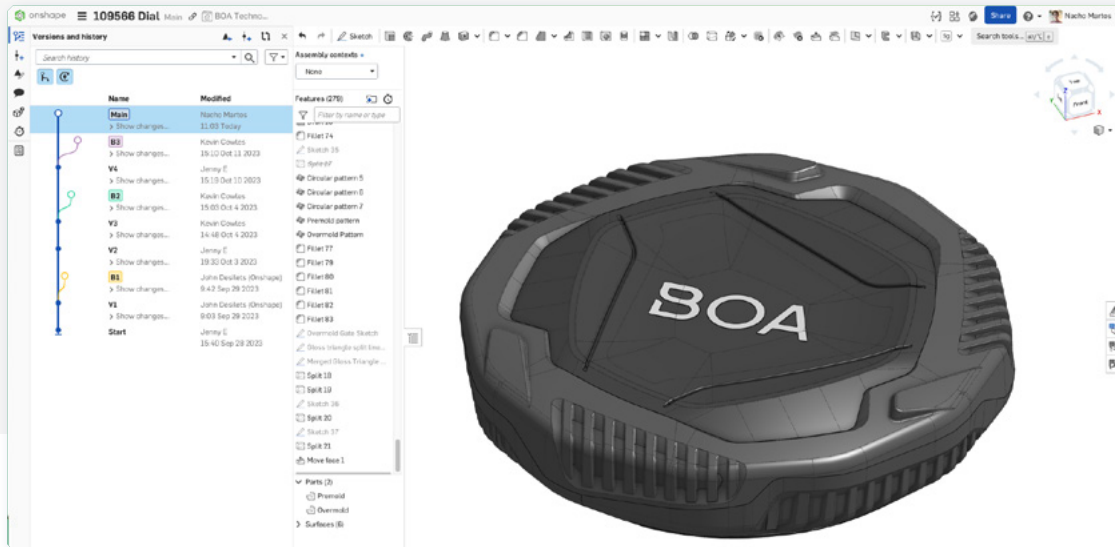
BOA's [Performance Fit Lab](#) has conducted numerous [scientific studies](#) exploring how better fitting footwear improves athletic performance and minimizes injuries. The lab has also studied how better fitting shoes and boots in the [workplace](#) can reduce fatigue, boost energy, and improve ankle stability – especially important factors in dangerous environments like warehouses and construction sites.

Reinventing the conventional shoelace, BOA currently offers five different fit platforms with laces and lace guides customized by sport and workplace for its brand partners. Running shoes, for example, feature high-tech textile laces versus the thicker stainless steel cables used for snowboarding boots.

“When people come to our office, they are stunned by how many variations there are of our products. We offer many different laces, many different guides,” Duller says. “We have teams solely focused on certain brand partners, and we offer custom-fit solutions for almost every application.”



Searching for CAD Stability and Reliability



Onshape's Edit History tracks who made a design change and when, allowing the BOA engineering team to instantly revert back to any previous stage of the project if desired.

To design its patented BOA Fit Systems, the company's product development team relies on [Onshape](#), a cloud-native CAD and PDM platform that includes real-time collaboration tools and custom features.

In 2023, the BOA team switched to Onshape after becoming increasingly frustrated with the stability and reliability of their previous file-based CAD and PDM system, SOLIDWORKS. The team estimated it was losing 15 engineering hours per week due to SOLIDWORKS crashes, frequently resulting in lost work. Based on salaries, the company estimates the increased downtime was costing \$38,000 per year – not including the time to recreate the lost work.

“When a CAD crash happens, the engineer is probably deep in this development state. They're focused and they may have finally gotten to the crux of what they're trying to figure out,” says Duller. “And there's a chance that once the work is gone that you won't figure the problem again in the same way. If you're working on something really complex, it might even lead to a slightly different result the second time. So CAD stability is pretty key and should be a given with any system you're using.”

Onshape users never experience the negative consequences of [CAD crashes](#) and never lose their work. If there is a crash, user data (up to the last keystroke or mouseclick) has been already saved on redundant servers and a new instance of the failed software component takes over in milliseconds.

“It's sort of a freaky feeling not having to press the save button. But once you get used to that, Onshape is like a whole other world of freedom to just hop in and work on things,” Duller says.



Boosting CAD Collaboration

According to Duller, another major motivation for the BOA team to switch from SOLIDWORKS to Onshape was the required serial workflows of file-based PDM, which allows only one engineer at a time to work on a design file with a laborious checkin/checkout process.

“When we were considering Onshape, it was pretty amazing to see how you could collaborate in a document together. Even across a very close two-person CAD team or a design-engineer team, we used to have to hand things back and forth and talk about what we worked on,” he says. “There were a lot of manual steps we had to take to ensure we were working on the same version of the design and a lot of hiccups in the process. It was way more inefficient.”

“Now the fact that we can both be in the same document is something we never even thought would be possible. And now that we can do it, it’s crazy to think that we would ever go back and not have that ability,” Duller adds.

Onshape’s built-in Product Data Management (PDM) features [Simultaneous Editing](#), which enables multiple engineers to work on the same part or assembly at the same time. Whenever one engineer makes a design change, everyone else on the team can instantly see it.

In addition to the BOA engineering team’s constant collaboration with colleagues across the world, there is also collaboration integrating BOA technology into more than 300 brand products across sports gear, workplace safety footwear and helmets, and medical bracing. (Photo by Katie Ewing, courtesy of BOA.)





Using cloud-native Onshape, BOA executives and managers can check the latest status of any product design anytime, even if they are not experienced CAD users.

In addition to Simultaneous Editing, Clay Corbett, Director of Engineering at BOA, says he especially values Onshape's anytime accessibility for managers and executives who don't use CAD everyday. He notes that managers can get up-to-the-minute progress updates on projects without having to wait for scheduled design reviews.

"From a communication perspective, managers don't have to set up their computers in a specific way and basically have a CAD session going to see a design update," he says.

"If I have a few minutes between meetings, I can just click my bookmark for Onshape, look at someone's model, spin it around, and get them feedback."

"I think Onshape is expanding our scope of who can be involved in the design process earlier and more often," Corbett says.

Offering a big picture perspective, Duller estimates that Onshape's built-in version control, Simultaneous Editing, and Branching and Merging capabilities is boosting the productivity of his engineering team by 25% to 50%.

Branching and Merging = More Design Freedom

Another real-time Onshape collaboration tool highly valued by the BOA team is the [Branching and Merging](#) feature, which enables multiple engineers to experiment simultaneously with design variations in independent branches without fear of disrupting each other's work or the original CAD model.

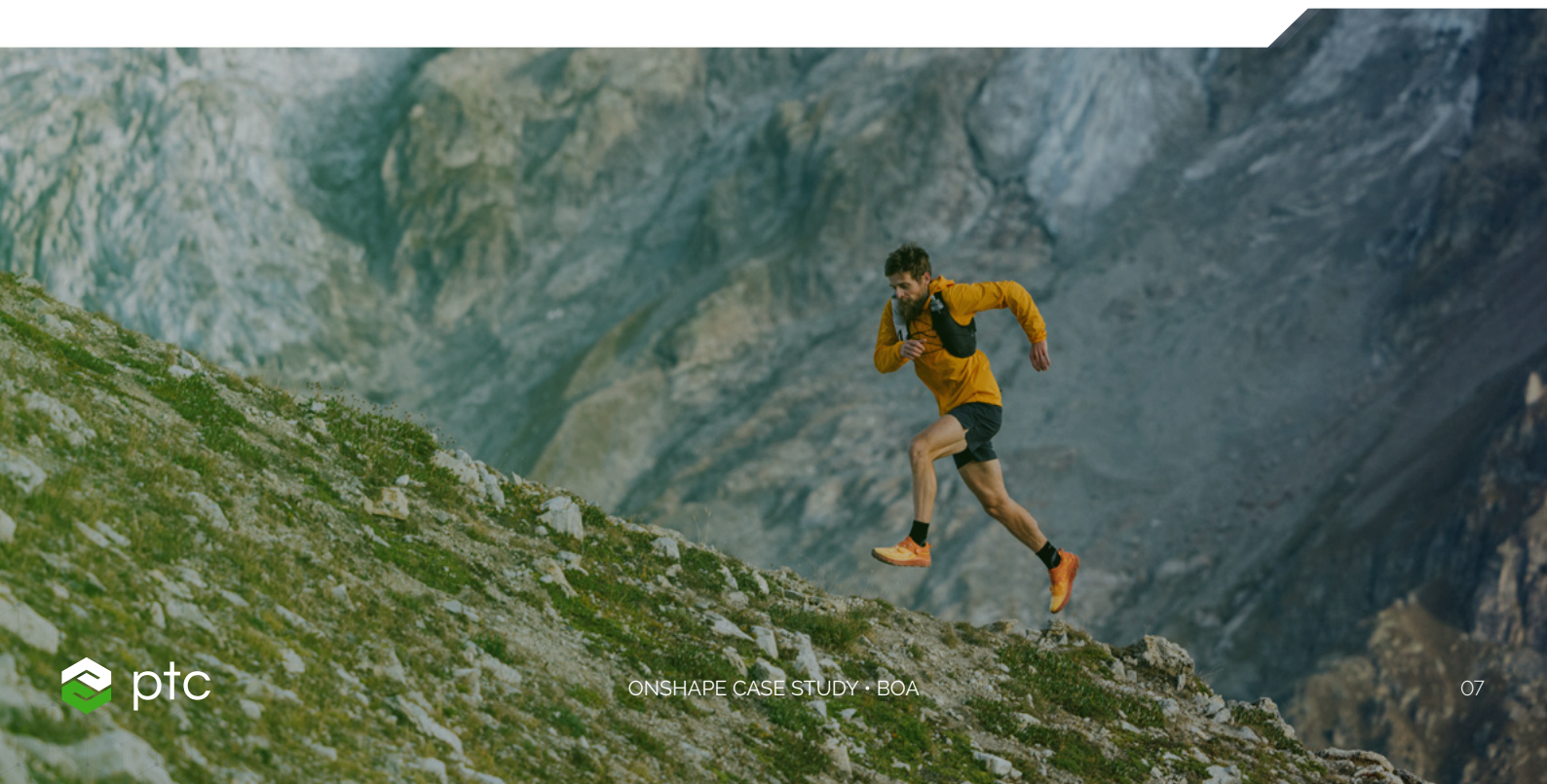
Corbett credits Branching and Merging for encouraging his team to take more creative risks, opening new avenues of "design freedom."

"One of our biggest design challenges is that our products have a lot of features packed into a really tiny space. And we usually have a few different engineers working on a new product at the same time," he explains. "So there is a real need for multiple people and multiple sort of design threads to be happening all in parallel. Tracking all that in SOLIDWORKS was not easy."

"In contrast, Onshape offers us the freedom and flexibility to make a branch, and we can merge the best ideas together later. Onshape has removed the friction out of this part of the design process. It's made our workflows more efficient, but I think also opened up some more creativity from people where they don't see the typical hurdles of file management."

In addition, Onshape's comprehensive Edit History ("[Unlimited Undo](#)") tracks who made a design change and when, allowing the team to instantly revert back to any previous stage of the project if desired.

"Onshape helps us speed up our iteration cycles," adds Corbett. "The more iterations we can explore, the lower our risk because we can test more things and have a better understanding of the product we're developing – and the faster our speed to market."



“Onshape is Our Business Partner”

BOA continues to forge ahead integrating its technology with new [brand partners](#) and “making the best gear even better.”

As the company grows and explores new sports, safety and medical markets, Duller says he envisions that Onshape will be a major contributor to his team’s success. He cites Onshape’s [automatic product updates](#) in the cloud every three weeks – instead of having to wait for yearly software releases – and the [quick responsiveness of Onshape’s Tech Support](#) team as major factors.

“With our previous CAD company, if there was a general bug report or an improvement request, we’d usually never hear what happened with it,” Duller recalls. “With Onshape, we hear back within hours and it’s either resolved quickly if it’s a straightforward thing or within a matter of weeks if it’s more complex.”

“When we have a partnership with a brand partner, we really develop a close collaborative relationship,” he says. “I never thought that kind of relationship was possible with a CAD partner. Our connection with the Onshape support team has been pretty amazing. Looking forward, that will help us when we have needs on our development tool side. The level of trust we have together makes me confident that they’ll work with us to help us get where we need to be.”

“Onshape’s got a really unique spot in the CAD market of actually being a partner,” Corbett adds. “With our previous CAD system, we were very insulated from how the product decisions were made, how the new features were added, things like that. And now knowing the handful of people who are making these decisions and being able to have a conversation with them is a huge value-add for us.”

“Onshape is going to help us move faster, be more responsive, develop more innovative products, and meet increasing sustainability demands over the next few years, and that really inspires a lot of confidence,” he says.



BOA-powered medical bracing reduces pressure points and accommodates swelling by providing micro-adjustable and uniform closure. (Photo by Mike Spencer, courtesy of BOA.)

The Onshape Discovery Program

Learn how qualified CAD professionals can get Onshape Professional for up to 6 months - at no cost!

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