

Wild Ride

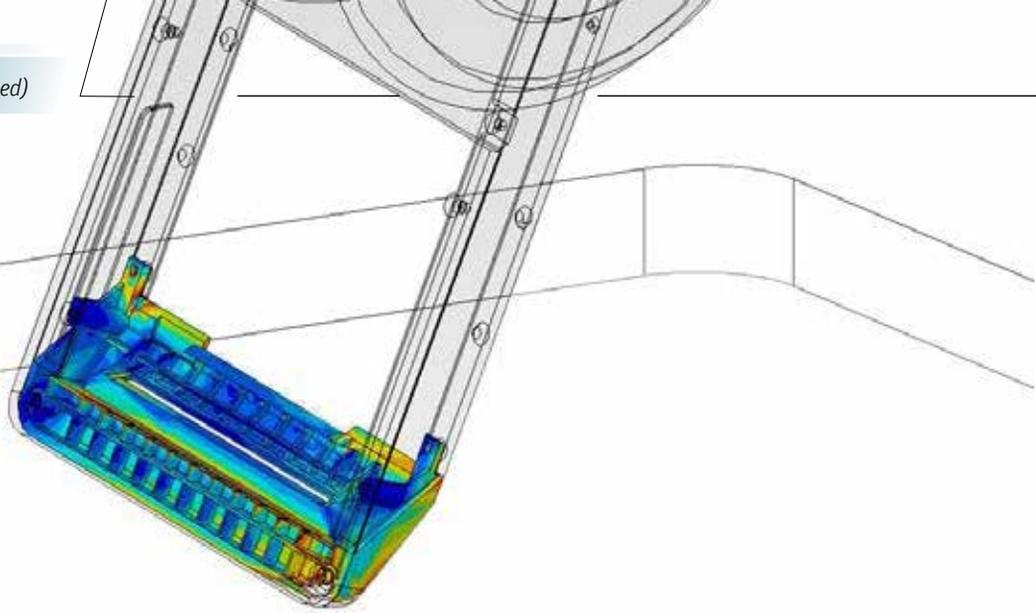
The initial development of Onewheel, a battery-powered motorized skateboard, was a slow and manually intensive process, focused on building and testing physical prototypes. Today, the Future Motion engineering team employs engineering simulation to quickly make design changes, predict how they will impact real-world performance and achieve meaningful improvements in their innovative product.

A born problem solver, Kyle Doerksen enjoyed his work as a consumer and technical products developer at IDEO, a leading Silicon Valley design firm. But he was always looking for a product idea that would be his alone, a product that would embody his passion and energy. As he walked a mile to work each day, Doerksen began to imagine ways to make his daily commute both faster and more fun.

While growing up in the Canadian Rockies, Doerksen had been an avid snowboarder, and, after years of living in California, he still missed the experience of gliding effortlessly over the ground. A question began to form in his engineer's mind: Could there be a way to combine the practical necessity of moving around an urban environment with the thrill of board sports?



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That question was the genesis of Onewheel, a motorized skateboard equipped with a single 11.5-inch tire and a battery-powered 2-horsepower motor. Doerksen’s concept was to bridge the worlds of sports and transportation by making it fun to move from one place to another. From the beginning, he designed Onewheel so it would be equally at home on pavement, grass, dirt and sand — built for both fun and practicality.

The engineering challenges were not insignificant. For example, to enable riders to control the movement of the board by shifting their weight, Doerksen had to incorporate pressure-sensitive, self-balancing sensors in the footpad. With two engineering degrees from Stanford University and years of hands-on design experience, Doerksen was up to these challenges. In 2013, he left his job and devoted all his energy to his new startup company, Future Motion, headquartered in the California beach town of Santa Cruz.

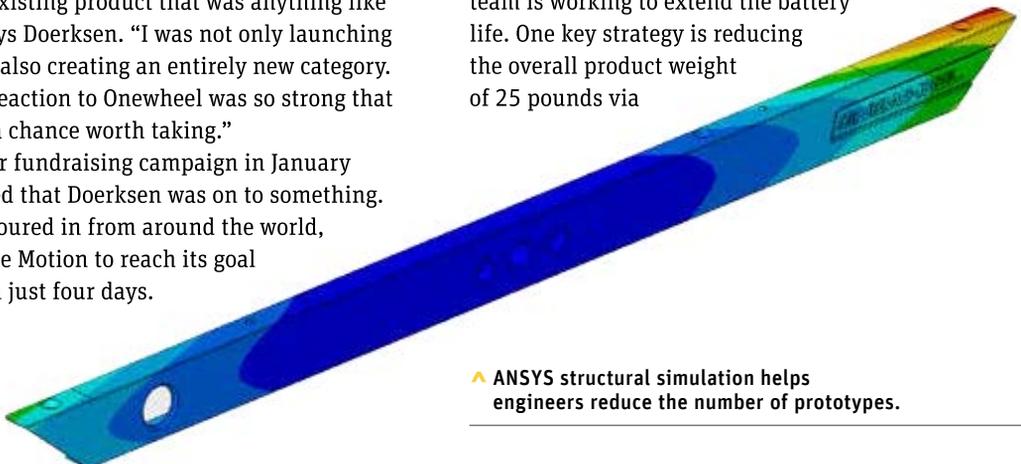
“Leaving the security of my job was a risk, because there was no existing product that was anything like Onewheel,” says Doerksen. “I was not only launching a product, but also creating an entirely new category. But the early reaction to Onewheel was so strong that I knew it was a chance worth taking.”

A Kickstarter fundraising campaign in January 2014 confirmed that Doerksen was on to something. Investments poured in from around the world, allowing Future Motion to reach its goal of \$100,000 in just four days.

By the end of the three-week Kickstarter campaign, the company had raised over \$630,000 from more than 1,000 backers.

“The success of the Kickstarter campaign marked a significant milestone because it demonstrated that there was incredible interest in our product concept,” recalls Doerksen. “But at the same time, it created enormous pressure on our engineering team. We had to go from prototype to mass production very quickly.” Since then, Future Motion has shipped more than 10,000 products and earned rave reviews in media outlets, including *The Wall Street Journal*, *Sports Illustrated*, *Popular Mechanics* and NBC.

While the initial development of Onewheel was a slow and manually intensive process, focused on building and testing physical prototypes, today the Future Motion engineering team is leveraging the power of simulation to refine and improve Onewheel. For example, Onewheel has a battery range of six or seven miles, but the Future Motion engineering team is working to extend the battery life. One key strategy is reducing the overall product weight of 25 pounds via



▲ ANSYS structural simulation helps engineers reduce the number of prototypes.

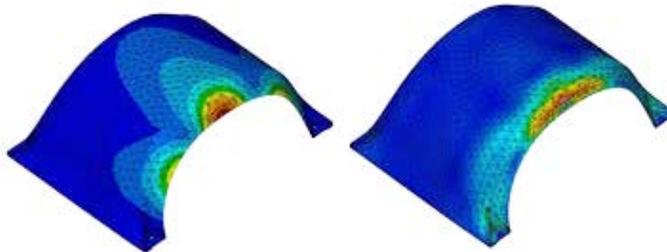


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— Kyle Doerksen,
Future Motion Inc. Founder and Onewheel Inventor

lighter materials and a new chassis geometry.

According to Doerksen, simulation via ANSYS engineering simulation software is making an enormous impact on both the time and the cost involved in design iterations. “We estimate that it costs about \$10,000 to design, build and test a physical prototype,” explains Doerksen. “Now that we have access to ANSYS software, we can better predict performance in the real world – which means we are building far fewer prototype boards. In addition, we can work a lot faster. Now that we’ve established the category, we expect lots of ‘me too’ competitors to show up – and we need to accelerate our launch of future designs to stay ahead.”



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Doerksen. “That’s a world of difference from when I was building boards in my garage on the weekend. The Future Motion design team is excited about the next-generation refinements we can make now that we have access to a world-class simulation tool. It’s been a wild ride, and it just keeps getting better.” 🚀



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