SHAPEWAYS

HOW TO USE 3D PRINTING FOR FAST, LOW-COST PRODUCT DEVELOPMENT AND ITERATION

Sometimes, the most cutting-edge products require equally innovative manufacturing processes – not only to get off the ground, but also to keep growing at the speed of innovation. Kespry, an industrial drone maker, and Preceyes, a surgical robotics pioneer, found an indispensable development and growth partner in the Shapeways 3D printing service. From product development and iteration to production and shipping to customers, 3D printing has enabled these companies to overcome traditional manufacturing limitations like costly iterations, order minimums, complexity restrictions, and long turnaround times. Find out how these businesses have used Shapeways to take advantage of the competitive advantages that 3D printing has to offer.

MAPPING NEW TERRITORIES IN MANUFACTURING

Kespry, AKA "The Best Drone Company You've Never Heard Of" makes the kind of lightweight autonomous drones that can create a hyper-detailed 3D survey of hundreds of acres in just a couple of hours, for end users with no drone experience. The Kespry Aerial Intelligence Platform unifies a set of technologies that, together, represent an industry-leading surveying and mapping solution — but it's also exceptional for another reason: From day one, each of Kespry's drones has been built with Shapeways 3D printed parts.

When you're pioneering a new technology, affordable iteration and scalability are key. Kespry needed a partner and a process that would help them do something that's still extraordinary: develop parts using 3D printing, and then integrate those parts into end-use manufacturing. Reliability, repeatability, and proactive support would underpin the success of the collaboration. "We were a very small company trying to scale up our product and get it out to market as quickly as possible. We were looking for a supplier who had reasonable scale and the right combination of lead time and cost," remembers Jordan Croom, Kespry's lead mechanical engineer.

Croom came to Kespry, appropriately, from the aerospace industry, where he did additive manufacturing research and development with both metals and plastics. This background prepared him to apply 3D printing in a relatively novel way. "I had a good understanding of what was possible. We were in a unique place to be able to incorporate additive manufacturing into full-scale production, which I think is somewhat rare, even though it's becoming more common these days. So that was new for me — to be making multiple hundreds of something per order and incorporate them into our production line."

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Shapeways offered the kind of scalability and reliability that Kespry needed. "When we started with Shapeways, it was before we even had our first customer, and now we have hundreds of drones going out every quarter. And it's been a smooth transition to get to that point. That's definitely not true of all of our vendors. Shapeways is one of the few that's held out throughout that scaling process."

Affordability and speed play equally important roles in the 3D printing-for-manufacturing calculus. "Leveraging 3D printing and Shapeways allowed us to get things out there faster without paying an exorbitant premium to do it. And it also allows us to make modifications and improvements to our product without interrupting shipping them out to customers. So we can make a change and incorporate it in production in a few weeks, whereas if we were doing injection molding, it would take maybe a couple of months to make that sort of change. Especially now at production scale, Shapeways can handle the quantities that we're dealing with really well, without long lead times."

This became particularly important when it came to the aesthetic covers that enclose the drone's delicate inner workings. "I know for sure that if we'd tried to make an injection mold for that, it would have been exorbitantly expensive for us. We've been able to modify it relatively frequently without much cost impact at all because we're not investing in fixed tooling," making it possible for Kespry to bring the best possible product to market, faster. "Getting the right partner is definitely important to us. Somebody with repeatable quality, where we know we can prove a design once. We don't have to worry about it changing or breaking in future orders."

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In the end, the Kespry drone wouldn't exist without rapid prototyping and additive manufacturing. As Jordan put it, "We've been ordering Shapeways parts basically since the beginning. It's been helpful to work with Shapeways because you've been able to scale with us, going from just a few parts a week to hundreds per month. Shapeways has been able to absorb the increase in demand. I think it's reflective of both Shapeways and the state of the industry and technology that we're able to do that in a reliable and repeatable way – without having any negative effect on usability and reliability as a product."