

IonVR: Seeing the World through a New Lens



Dan Thurber's first experience in building a prototype virtual reality headset involved pink Styrofoam from Home Depot and his own stick-figure stereoscopic image. Fast forward two years and Dan's headset is a *CES 2016 Innovation Award Honoree*, shown off at the electronics super-show with 3D printed prototypes that look like finished products. "It's been quite a journey from that first model," laughs Dan, "but it was clear to me from the beginning that virtual reality was the future, and I needed to be there."

The Origin

Dan and his wife, Brooke Linville, started the web development firm Digivise in 2011, leveraging their respective engineering and marketing talents. But when Dan first saw Facebook's Oculus Rift virtual reality headset, he was hooked. "Most people put the Oculus on their heads when they first see it. Dan took it apart," recalls Brooke. One of the first issues Dan recognized is that because the Oculus is tethered to a computer, you can only move so far. For a technology that promises to give you an alternative experience of reality, sitting still didn't make sense. Dan's first model was a wireless, battery-operated version to address that issue. The bigger problem, though, was that VR sets give people motion-sickness. "My first model was no different, especially since people could move around with it anywhere" admits Dan. "I quickly realized that optics had a lot to do with it."

Finding the Right Partners

Bringing on board a talented optics engineer was the first step in creating what is IonVR's signature invention, the patent-pending MotionSync Technology. The system uses a hardware-based solution to nearly erase motion blur, which in turn eliminates VR sickness—the innovation cited by CES in 2016.

IonVR's headset works with virtually any phone, something that Dan designed in from the beginning. "In order for the product to remain relevant as this new industry morphs and changes, we have to leverage the greatest technologies," Dan explains. "By making our VR headset device-independent and modular, we guarantee that it keeps up with the latest advancements in cell phone technologies."

Dan spent two years working on the technology, designing the form factor, and ensuring he could deliver a product. But when it came time to put it all together, he needed a realistic- looking



prototype. He had printed some prototypes with his home 3D printer, but knew that he needed a more sophisticated model, especially for the kinds of investors he was hoping to attract.

3D Prototyping

Dan found Intermountain 3D just a few days before he had to fly out to New York for a meeting with the president of Intel. "When we met Dan," said Jesse Helms, service bureau lead for Intermountain 3D, "he was in a bit of a panic. He needed a completed headset in a couple of days, fully assembled, and painted Intel colors." Intermountain 3D was able to print the headset in a few days and, even before it was painted, Dan was in awe of the professional appearance of the device. "I own a laminating filament printer and could never have achieved the kind of precision Intermountain 3D did with their ProJet 6000 stereolithography printer." Boise State University's TechHelp *New Product Development Lab*, a partner of Intermountain 3D's, then did a masterful finishing and painting job on the headset. Dan got his prototype in record time, which was instrumental in securing the significant partnership agreement he signed later that week with Intel.



Finished and painted 3D printed prototype

That partnership led to an invitation to show IonVR's headset in the Intel booth at CES, the world's largest consumer electronics show held annually in Las Vegas. With just a few short weeks and several design features to modify in advance, Dan again approached Intermountain 3D and asked for as many sets as possible to print between December 21 and January 5. With each set requiring 48 hours to build and another 4-5 hours to paint, it was a scheduling puzzle to fit it all in. "I knew Intermountain 3D was planning to shut down their machines between Christmas and New Year's in order to move into new space," Dan said. "But they and TechHelp worked weekends and evenings to make the show possible for us. They were superstars--the prototypes they built looked just like the real thing."

With his success at CES, Dan is being courted by the big names in cell phones and virtual reality. He hopes that whatever happens with IonVR, he and Brooke will be able to stay and build the company in Idaho. "I am lucky to be working with some of the best players in the tech industry all around the country," Dan comments. "But having a prototyping service bureau in my backyard has been hugely beneficial. Intermountain 3D gets what we're trying to do and goes the extra mile to make it happen."

Dan's vision for the company and his patented technology would have impressed the CES judges and investors even if it were still housed in pink Styrofoam. But being able to demonstrate what the product actually looks and feels like gives Dan the extra credibility that his virtual-reality headset is an actually-real business.