Iterate on Ideas and Bring Products to Market Faster with MakerBot

How Canary Accelerates Iterative Design

MakerBot.

Ideas in the Making

From Crowdfunding Campaign to Industry Leader

MakerBot's connected solutions are a powerful, cost-effective advantage for startups that need to bring better products to market faster and aggressively expand. In less than three years, the home security startup, Canary has gone from raising nearly 2 million dollars as one of the most successful crowdfunding campaigns on Indiegogo to disrupting the home security industry with two innovative, all-in-one security devices.

To stay competitive, it needed a comprehensive rapid prototyping solution that could accelerate iteration and address the wider needs of its engineers and designers. As a result, it brought on two MakerBot Replicator+ Desktop 3D Printers, one MakerBot Replicator Mini+ 3D Printer, and the MakerBot Slate Gray Tough PLA Filament Bundle. By combining these products with the MakerBot Print software and MakerBot Mobile app, Canary can accelerate iteration, test ideas, quickly make design decisions, and bring better products to market faster.

The Difference of MakerBot's Connected Solutions

"At Canary, we pride ourselves on working quickly and focusing on design so we spend a lot of time prototyping" says CEO and Co-Founder of Canary, Adam Sager. In the lead-up to finalizing the Canary Flex for September 2016, the company was prototyping with the MakerBot Replicator 2X Experimental 3D Printer as well as Stratasys' Objet and Fortus Industrial 3D Printers. The Replicator 2X could print dual-color ABS prototypes while the industrial 3D printers could print closer-to-production ready prototypes, albeit at a higher cost.

Even with higher-end 3D printers, Canary needed MakerBot's more comprehensive, cost-effective solutions because they're designed for the wider needs of professionals. They streamline iterative development, enable high-quality concept modeling, and allow for functional testing all while being easy to integrate.

With these solutions, Canary's designers can quickly evolve designs with iterative prototypes while its engineers can better test designs for reliability, fit, function, and manufacturability. As James Krause, Director of Industrial Design, says, "Technology is moving very fast and it's very important for us to get our ideas out there quickly to stay competitive. MakerBot helps us get to a better solution faster."

With these new MakerBot solutions, Canary could rapidly develop the accessories for the Canary Flex as well as any other products planned in the more distant future.

Accelerating Iterative Design and Product Testing

Typically at Canary, the design process involves sketching a concept, modeling it in CAD software, prototyping, and then repeating these steps. Krause notes, "The design process is not linear. What's great about MakerBot is that you can insert it at any step of the process and it'll help you continue to evolve your idea."

MakerBot streamlines the iterative design process for Canary.

Instead of closing the printers off in a service bureau or workshop, they are dispersed on desks near engineers and designers. This close proximity allows the team to more easily make decisions and collaborate on a whole slew of processes, like developing concepts, exchanging ideas, conducting fit studies with printed parts, and having quick meetings to discuss whether an idea will work or not.

This close proximity also accelerates iteration. According to Krause, "Days matter, minutes matter, and having the Replicator+ behind my desk just saved that much more time to where I could quickly model something, send it to the printer, keep working on the next version, and as soon as the other one is done, pop it off, and send the next version to the printer. So iteration is just that quick". To note, the MakerBot Replicator+ features the bendable Flex Build Plate for removing parts.

Because the Replicator+, Replicator Mini+, Tough PLA, MakerBot Print, and MakerBot Mobile are designed to meet the wider needs of professionals, Canary's designers and engineers could more easily integrate 3D printing into their existing workflow. Both the MakerBot Print software and MakerBot Mobile app make 3D printing easy-to-integrate and streamline the preparation process. MakerBot Print saves designers and engineers time by allowing them to import Native CAD parts and assemblies for print preparation. It also simplifies iteration by automatically arranging any imported files on one or more build plates.

Plus with MakerBot Print's more expansive Cloud-management, designers and engineers at Canary can remotely print these files on the Replicator+, Replicator Mini+ or across all of these printers at once. As the Replicator+ and Replicator Mini+ are Cloud-enabled, anyone at Canary can also remotely control or monitor all printers from outside the office via MakerBot Mobile.

> **We've been using the Replicator+ for a few months now, and we've been blown away at the quality improvements and speed improvements"**

To efficiently and quickly evolve ideas, Canary's designers and engineers need 3D printers that offer greater reliability and precision for accurately representing a concept. Re-engineered and rigorously tested, the Replicator+ and the Replicator Mini+ are faster, more reliable, easier to operate, and feature a bigger build volume. "We've been using the Replicator+ for a few months now, and we've been blown away at the quality improvements and speed improvements" Krause says.

For more specific print needs, Canary relied on the Slate Gray Tough PLA Bundle. Even while ABS is a popular filament among many engineers, it doesn't always print reliably. Tough PLA Filament combines the best features of ABS—its tensile, impact, and flexural strength—with the print reliability of PLA. Designers have used Tough PLA to prototype designs that may need to flex and withstand repeated use, like assemblies with moving parts or engineering oriented parts that might need to be drilled, tapped, or scored. Because Tough PLA is more durable, it can offer a better idea as to how a real product will feel and work. The accessories for the Canary Flex were prototyped with Tough PLA.

Tough PLA has also helped Canary's engineers save time and money testing every element of a design. Testing typically requires them to create custom fixtures, which would ordinarily require a machinist's expertise or hundreds of dollars of specialized tools. With the Replicator+ and Tough PLA, creating a fixture can be done in-house. For example, engineers have created a fixture that tests the reliability of a button on the Canary Flex. To do so, the Tough PLA fixture was designed to hold the Canary Flex while an actuator mounted to the fixture pushed a button for 50,0000 cycles. Because Tough PLA isn't as brittle as PLA, an engineer can insert screws and mount the electronics on top of the fixture without it fracturing.

Redefining What's Possible in Home Security

With MakerBot's connected solutions, Canary can bring products to market faster and more cost effectively than sharing expensive and industrial 3D printers or any one desktop 3D printer. In so doing, Canary can continue to redefine what's possible in the home security industry, expand its business, and set itself apart as a leader.

About Canary

Founded in 2013, Canary is a New York City-based startup that released the first ever all-in-one security system. Named after the company and not much bigger than a soda can, the Canary records video and audio, detects motion, has a 90+ dB siren, and senses changes in temperature, humidity, and air quality. Much like the new Canary Flex, it ingeniously combines smart sensors and Wi-Fi connectivity to provide customers with real-time access to a video feed and status updates via the Canary mobile app.

By offering all-in-one, Wi-Fi connected products, Canary has made home security more transparent, easier to manage, and much more affordable than traditional solutions. Through this innovative new approach, Canary is disrupting the home security industry by redefining what customers can expect from home security devices.