Speeding Up Processes Everywhere with the Mark One

Comparing the Numbers

	Cost	Time
Markforged Part	**$15.10**	**10.75 hours**
Aluminum part	**$150.63**	**96 hours + shipping time**

Lead time sped up from weeks per design to days and was 10% the cost per part.

Never at Rest

For first time parents, whether or not their baby is sleeping well is almost always an area of concern. Rest Devices has the goal of creating a nursery in the age of the smart devices, as co-founder and Chief Technical Officer, Thomas Lipoma, who works on early stage R&D and supply chain logistics, explains: "At Rest Devices, we're really trying to build the connected nursery. And what that is is a bunch of different connected intelligent products that a parent can use when they have their first child." One of their big products, Mimo, is a wearable device for infants that monitor a baby's sleep patterns, breathing, and movement, and update the parent on their child's health through a smartphone app with live data.

Sleepless

Rest Devices, a company rethinking the nursery in the age of smart devices, iterates through designs for their products and manufacturing equipment at light speed

Fabrication Nightmares

With quotes for new prototypes reaching thousands of dollars for a lead time of a month, Thomas Lipoma, CTO, picked out the Mark One to solve the company's manufacturing problems

Full Recovery

The Mark One allowed Rest Devices to push their capabilities further, bringing prototype costs down by orders of magnitude, and producing working models in a matter of days

With such a quick product development stream, Lipoma and the R&D team require in house manufacturing: "Everything about the Mimo monitor is actually built and manufactured in the US, in New England, which is really cool... we haven't outsourced any of the development or the research or any of the engineering. So a 3D printer is really critical for basically everything we do here." Always pushing products forward, quickly prototyping, and developing novel concepts to improve the lives of parents tending to their children, the company's entire design to product stream is kept in house. They design, they prototype, and they even make their own manufacturing equipment for their products. They keep everything in house to easily make changes to improve their customers' experiences, and as a result the company is always on the lookout for new products to increase their product development efficiency.
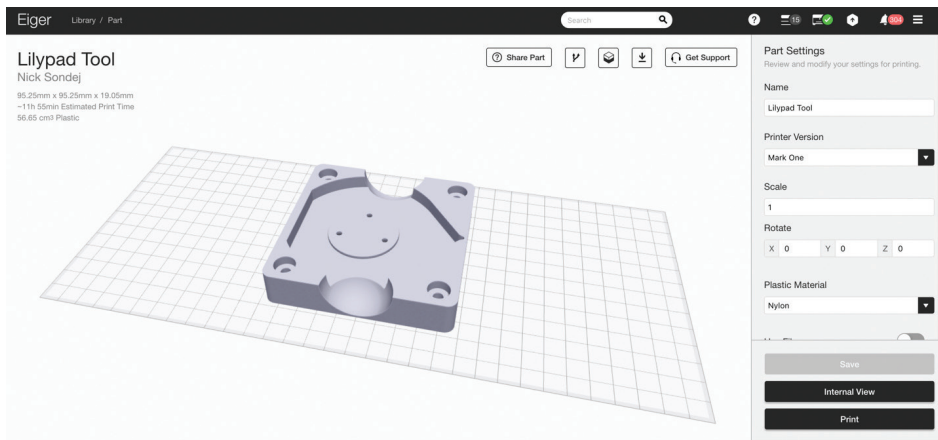

Tired of the Wait

One of their new products Lipoma has been working on has been making a bottle warmer. Because it was such a new design challenge for the team, they went through thousands of design iterations and prototypes. "Once we started making things like that bottle warmer that were actually really unique engineering challenges, we didn't even really know how we were going to make it," Lipoma recounted. "We were going through a lot of different iterations on fan design, component design, and how things were going to fit into a very tight package, and we were printing non stop." The problem was that even the prototype parts had to withstand a variety of temperatures and spin at high speeds, and no traditional fabrication method or even 3D printer could do that. "At the time our only real option was to mill some of these really intricate parts, and they would fail a lot. If we were outsourcing them they were costing thousands and thousands of dollars each to make. We didn't really have any good option to iterate really quickly in house as we were doing that design."

"With one of our pieces of manufacturing equipment, we needed to make a new tool holder. ...With the Mark One, we were able to make a new part that was even better, that really fit all of the requirements and had that machine running again in no time."

-Thomas Lipoma
Chief Technical Officer
Rest Devices

turtle

INTERNET

lilypad

iOS or Android
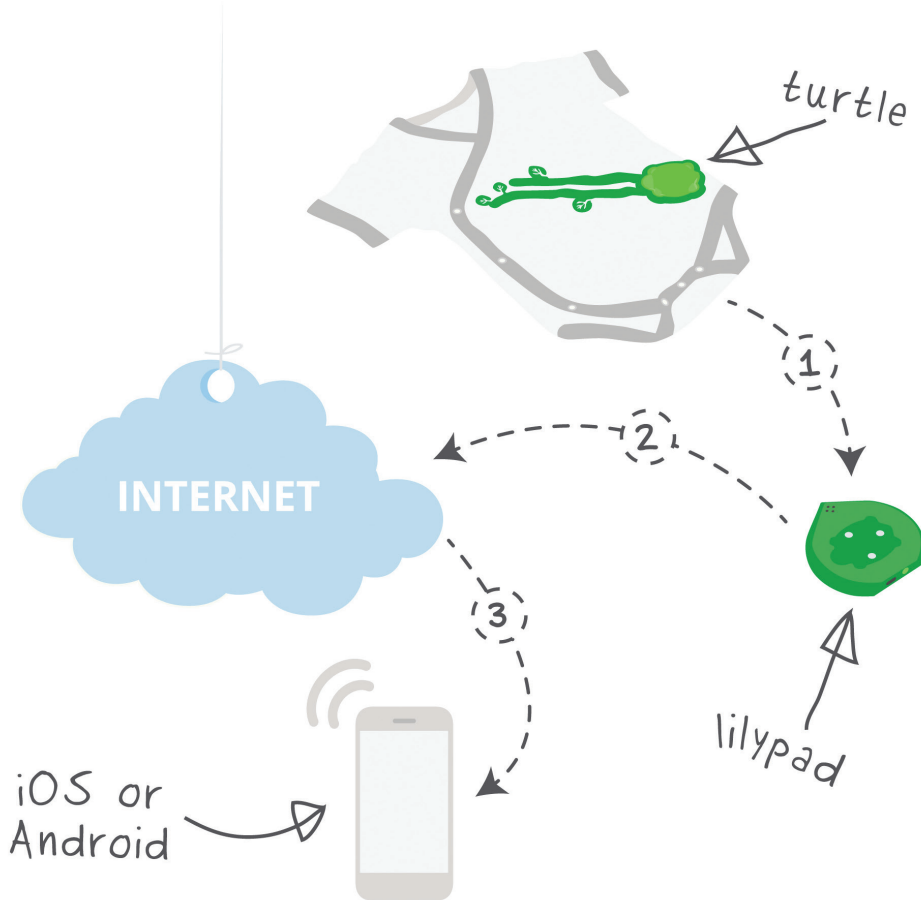
At other points in Mimo's process, major prototyping roadblocks piled up for similar reasons. "With one of our pieces of manufacturing equipment, we needed to make a new tool holder. We tried printing with a couple of different types of 3D printers, and they were either too brittle or they couldn't handle the heat and they just kept failing," Lipoma described. "We had to go back to the original equipment manufacturer, and our only real option was basically to spend about eight or nine thousand dollars to have them make a new part, and even if we did want to spend the money, the time would have been a huge hinderance. "With product deadlines to meet and a broken machine, they needed a much faster and much cheaper solution. "So they were looking at about a month to make the part, and we needed to have the machine up really quickly," Lipoma explained. "We needed to find a way to 3D print some of those high strength parts that we would actually be able to use in manufacturing."

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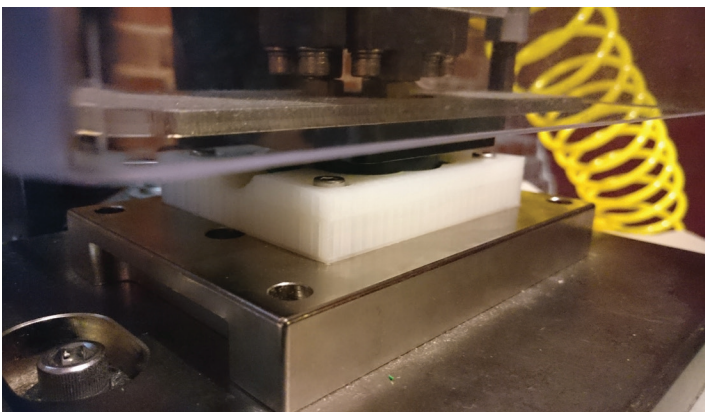
Rise and Shine

Fortunately, Rest Devices had their eye on the Mark One since the beginning: "We were actually looking at the Mark One when it was first introduced, before anyone was really able to get one...it was able to hit a lot of the pain points that we were having. So as soon as we were able to get one we grabbed it just because it was able to solve so many of our problems," said Lipoma. Very quickly, Rest Devices could make up for lost money and time from their broken machine. "With the Mark One, we were able to prototype and iterate on some of our designs much faster than we would have been able to otherwise. We were able to go from one new part design change a month down to multiple iterations every day, which was really really great." The printer's strength, capabilities, and quality were able to help Rest Devices pull through and fulfill the promises they made to their customers, as Lipoma went on to explain: "We were also able to reduce some of the costs of some of those parts down from 2 or 3000 dollars to have something sent out and milled down to just the cost of the material."

After they used the Mark One to solve their critical fabrication challenges, the company had room to experiment: "When we originally got the Mark One to help solve some of the problems we were having around the bottle warmer, we were really excited about how it was going to help us iterate faster and cheaper," said Lipoma. "Once the machine had some down time and we started to play around with what we could really do with it, we found so many more uses." The Mark One was an instant hit at Rest Devices, allowing the company to prototype strong parts without the fear of operation complexity on a milling machine or the price and lead time of a third party manufacturer. "Immediately we started to change out some of the parts in our manufacturing equipment, as new problems came up on our manufacturing line, we were able to immediately solve them, it basically started replacing a lot of it with prints." The Mark One has exponentially decreased prototyping time and costs at Rest Devices, improving company processes in almost every aspect of their design and manufacturing stream.

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⬡ Markforged

Markforged's mission is to bring high strength 3D printing to everyday engineering. Offering the world's only 3D printing systems capable of automatically reinforcing engineering plastics to aluminum levels of performance and beyond, Markforged enables every business to easily manufacture parts with structural strength right on the desktop. The Mark Two Industrial Strength 3D Printer empowers professional users to affordably create workhorse 3D parts that solve real problems, as well as realize reinforced structures never before possible. Markforged technologies are delivered with thoughtful, powerful software designed for collaboration, sharing, and scaling.

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