



**TESTIMONY OF  
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Before the U.S. House of Representatives Committee on Small Business  
The Rise of 3D Printing: Opportunities for Entrepreneurs

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Good afternoon Mr. Chairman and members of the Committee. My name is Peter Weijmarshausen and I am the CEO and Co-Founder of Shapeways. I'm honored to be here today to discuss how 3D printing is fueling small business growth, enabling anyone to create a business with physical products at low capital costs.

As a kid in the Netherlands, I loved coding and playing with computers, resulting in a passion for open source software. Driven by this and my entrepreneurial spirit, I spent much of my early career at various software startup companies. One of these was Blender, the first company to publish free 3D modeling software.

In 2006, I learned about a technology called 3D printing, which prints physical objects based on 3D computer designs.

I immediately thought about the Blender community, a large group of 3D modeling enthusiasts. They, like other designers, were using 3D software, but never imagined it would be possible to hold their own designs in their hands. So, I asked some of them for their designs to 3D print. When I showed the 3D printed "products" to them, they were blown away. They immediately agreed that it was a good idea to build an online service where people could 3D print their own designs. I knew that there could be a business opportunity, but how big was still to be seen.

I started working on Shapeways in March 2007, within the Lifestyle Incubator of Philips Electronics, who shared the vision that 3D printing could be very disruptive. At the time, 3D printing was used mostly for prototyping by large companies and was very expensive.

By 2008, we launched Shapeways.com to enable anyone to make and get the products they want. We started 3D printing products NOT prototypes!

In 2010, we spun Shapeways off as an independent company and moved the headquarters to New York City. New York is perfect for Shapeways, providing us with high-caliber, tech-savvy talent, who are hungry for innovative solutions. It's also the creative epicenter, so we have the ability to talk to so many of our customers and learn from them firsthand. At that point, we had fewer than 20 employees. Now, Shapeways has more than 140 employees who work at offices in New York and Seattle, and in our



factories in Eindhoven and Long Island City. These factories are transforming old industrial hubs into factories of the future, with new and innovative processes and machinery.

Shapeways is now the world's leading marketplace and community to make, buy, and sell custom, 3D printed **products**, unlocking design opportunities for entrepreneurs and creative consumers. Shapeways itself is already a success story in terms of a small business growing out of the endless possibilities of 3D printing. But, the opportunities created by 3D printing for entrepreneurs are immeasurable.

When I think about what we can achieve, I relate it to how the Internet has enabled software engineers to become entrepreneurs. Before the Internet became mainstream, bringing new software to the market was difficult. You had to know what users wanted, build out the software on your own, typically with the support of a large company, and go through many, many rounds of testing. Once you had a product that you thought was viable, you had to manufacture large quantities of it on a CD or a floppy disc, get them into a retail environment, and determine how to market it so the software would sell.

Today, using the Internet, any software engineer can become an entrepreneur. The Internet has removed the barriers. Launching a website has become incredibly easy. This is the reason why companies like Google, Amazon and Facebook became so successful so quickly.

Similar to how the Internet removed barriers for software development, 3D printing is removing barriers for manufacturing products. Designers can: create their products and have them printed out with little cost; ideate and update their designs quickly so there's no need to do marketing research in advance; build products without costly upfront payments for manufacturing or molds; and distribute products directly online, with no retail investment. Plus, they can continuously evolve their products, since they don't have to keep any inventory.

And there is no question that entrepreneurs are taking notice. From 2012 to 2013, product uploads increased from 40,000 per month to 100,000 per month, and the number of new people creating products on Shapeways has doubled!

3D printing transforms how we think about launching products and enables the garage (product) entrepreneur in ways they could never conceive of in the past.

To understand it in more detail, I'll first tell you how Shapeways works:

- Anyone can upload a 3D design to Shapeways.com. There are many free and open source software programs available to use for 3D modeling so literally anyone can do it! And, they don't even need a lengthy or expensive class to learn how. In fact, Shapeways surveyed its shop owners in 2013 and found that 50 percent taught themselves how to 3D model!



- After the design is uploaded, the user selects the material in which to print or make available. Shapeways offers 40 materials and finishes, including precious metal, bronze, ceramic, plastic and full color sandstone.
- The designs are reviewed by our 3D print engineering team to ensure that they are viable for 3D printing. Once confirmed, the design is sent to a 3D printer.
- 3D printers build products one layer at a time, slowly forming the final product. This process can take anywhere from hours to days depending on the size and complexity of the design. However the industrial machines we use can build thousands of parts at the same time, enabling scale.
- Once complete, products are removed from the printer and cleaned by hand.
- Printed products may be polished or dyed depending on the material and order.
- Finally, the finished product is packaged by Shapeways and shipped directly to the creator or shopper!

On-demand 3D printing as described above is at the core of Shapeways. People have used it to create endless types of products for their hobby or business, including model trains, jewelry, funny internet memes, home décor such as lamps, dishware like cups and plates, cell phone covers, and so much more. But we allow, and encourage, designers to take it one step further by creating shops of their own. This is where the true ability to become a small business owner comes in.

GothamSmith is one example of this type of small business that came about because of 3D printing. Four friends who were working in creative industries in NYC wanted to create something more tangible and lasting than a website or app. Starting with designing cufflinks and eventually moving into other jewelry, GothamSmith uses 3D modeling applications to develop unique ideas. Shapeways gives them the ability to quickly turn these ideas into physical prototypes and then final products at scale – without relying on costly large-scale metal casting machinery. They sell their products on Shapeways.com and through other channels, and are emphatic that their business wouldn't exist without Shapeways or 3D printing.

The ability to easily create one-of-a-kind, customizable products is another phenomenon spurred by 3D printing. An otherwise extremely costly and labor intensive process, 3D printing and Shapeways make it seamless. One company that is leveraging the technology this way is Nervous System, a design studio that uses a novel process, creating computer simulations inspired on natural phenomena such as the growth of coral. Their process generates products such as jewelry and light fixtures. All of their products are one-of-a-kind and 3D printed by Shapeways, sold on our site and multiple retail channels, including the MoMA Store. They are another example of a successful business that is rapidly growing, and employing more people every day as demand grows!

These are just a couple examples among the more than 14,000 stores currently open on Shapeways, and we know our users are hungry for more. In a survey last year, we found that of our shop owners:

- 50 percent are first-time entrepreneurs (of anything!)



- 84 percent want selling on Shapeways to be their full-time job.
- 94 percent spent less than \$1,000 to open their shops!

The technology has been around for decades and has impacted dozens of industries, including automotive, engineering, construction, entertainment, and even medicine. We're just now starting to really grasp what it can achieve.

Even the President of the United States has acknowledged this great opportunity. Shapeways is currently working with the White House to partner on the first ever White House Maker Faire, dedicated to showcasing and celebrating the Maker movement. The goal is to support a culture of making, and use it as a call to action for stakeholders, and Shapeways has committed to help the White House use this moment-in-time to facilitate entrepreneurship.

And, in his State of the Union address last month, President Obama spoke about a facility in Ohio saying that: "A once-shuttered warehouse is now a state-of-the art lab where new workers are mastering the 3-D printing that has the potential to revolutionize the way we make almost everything."

It's true, 3D printing does have the potential to revolutionize the way we make everything. I'm passionate about helping others see that, and I hope that I have effectively demonstrated to you the positive impact it can have on small businesses, creating many jobs in the process.

Moving forward, it will be critical that accessibility to 3D printing remains uninhibited.

Thank you for your time today, and allowing me the honor of speaking about 3D printing. A technology that will change the world.