



GEORGE GILDER'S MOONSHOTS

Uncovering Explosive Stocks With the World's Top Futurist

Big Things are Shaping Up for Shapeways

The Newest Addition to the Moonshots Portfolio

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Shapeways was founded in 2007 with an ambitious vision: to completely reimagine manufacturing, and in the process, enable its customers to realize their own ambitious visions. Through a novel and truly innovative approach to Additive Manufacturing, the company streamlines the process of transforming digital designs into physical products. Shapeways quickly established itself as the go-to resource, becoming a best-in-class provider of Additive Manufacturing services.

Just two weeks ago, Shapeways reached a new milestone as it also became a publicly traded company listed on the NYSE under the ticker symbol SHPW. These are heady days, indeed, for this visionary company—and it's really just getting started.

We were excited to learn more about Shapeways, so we caught up with the company's CEO, Greg Kress, to dig deeper into how Greg and his remarkable team are leveraging the company's unique position to drive its next phase of growth.

One-on-One with Shapeways CEO Greg Kress

Greg, the 3D printing space has seen a significant “hype cycle” phenomenon, highlighted by a bubble burst in 2015, driven primarily by unrealized expectations in the consumer space. While Shapeways operates at the enterprise level, how have the greater trends in the industry affected your progress, especially in terms of growth and valuation?

GK: Over the last several years legacy Additive Manufacturing hardware OEMs have seen patents expire. This has enabled new hardware manufacturers to enter the space and drive significant innovation. For them to be as competitive as possible they have entered the market with a more “open material” model which allows material companies to leverage their hardware as a platform and create new materials that can be additively manufactured. This has created significant levels of innovation and exponential end part applications for key industries that are looking to adopt additive manufacturing. At Shapeways, we are agnostic to technologies and materials and this innovation plays to our advantage, as we are currently able to serve our customers with a wide range of capabilities.

Peter Diamandis said, “3D printing, a technology now emerging from a thirty-year period of deceptive growth, is beginning to disrupt a portion of the \$10 trillion global manufacturing industry.” What are your thoughts on that?

GK: Traditional manufacturing is known to be slow, manual, rigid, and focused on mass production. Engineers are looking to deliver products to market faster and make ongoing design changes based on market feedback. Engineers are also looking

to minimize large upfront investments in molds, tooling, fixtures, and large minimum order quantities. Additive Manufacturing is a tool that enables that level of flexibility. With increased hardware and material innovation, Additive Manufacturing can deliver those benefits to engineers. Additive Manufacturing also lends itself to design flexibility, removing historic limitations in product design and low volume production, which allows for reduced inventory costs and more supply chain flexibility.

Speaking of supply chain flexibility, how have the disruptions and constraints in supply chain and manufacturing operations helped and/or hindered your business?

GK: Disruptions and constraints in the supply chain and manufacturing operations force businesses to rethink their supply chain agility. The recent challenges have shined a light on the rigidity of current supply chains and highlights its weaknesses. We expect a continued interest and adoption of on-demand manufacturing services and further digitization and localization of manufacturing to minimize the risks of future disruptions.

Do you believe 3D printing has reached an inflexion point in its evolution to industrial applications and a stable trajectory toward maturity?

GK: Yes. The combination of increased innovation in hardware and material capabilities and the digitization of the end to end manufacturing process enables economical, high-quality, on-demand manufacturing. We also believe that the supply chain challenges we are seeing today will drive more companies to rely on digital manufacturers and additive manufacturing processes.

With that in mind, how would you characterize Shapeways's position within the Gartner Hype Cycle?

GK: We are currently on the slope of enlightenment. Our proprietary purpose-built software enables customers to access high quality on demand manufacturing services at competitive economics. This enables continued adoption across all hardware technologies, materials, verticals, and use cases. Shapeways has successfully digitized manufacturing and enabled additive manufacturing at scale. Next is to help other manufacturers do the same. We have im-

plemented our software with key enterprise customers to date and have learned a lot about the benefits it can bring to them. We see an opportunity to help digitize manufacturing at scale and enable the benefits of Industry 4.0.

A hallmark of Industry 4.0, of course, is interoperability among distributed/decentralized assets and processes. How do you see the ecosystem developing, and how will this benefit Shapeways? Do you have a general philosophy regarding Industry 4.0?

GK: Software and digitization is required to achieve effective, high quality manufacturing through interoperability among distributed/decentralized assets and processes, as you mentioned. Shapeways has spent the last 10+ years and over \$100M fully digitizing the end-to-end manufacturing process which enables us to manufacture low-volume, high-mix manufacturing at scale through both our internal manufacturing site and our 50+ strategic outsource partners. We see an opportunity to help other manufacturers accelerate their digitization by leveraging our software and manufacturing services.

With respect to revenue generation, margins, and capacity, how would you characterize your mix of rapid prototyping versus mass manufacturing of printed end-use parts?

GK: Shapeways has manufactured over 21M unique parts through its Digital Manufacturing Platform, and the majority of that volume is actually finished part production. Shapeways' largest customer uses our manufacturing services for parts that go directly into finished assemblies, replacement parts, and consumer products, many of which Shapeways dropships directly to the end customer. We have dropshipped parts to over 1M end customers in over 160 countries.

Some analysts have claimed that consumer 3D printing is dead; that the next decade belongs to the rise of industrial Additive Manufacturing. What do you think?

GK: I would disagree. It is more nuanced than that. Current Additive Manufacturing hardware and materials cover a wide range of capabilities and meet varied customer needs and expectations. Shapeways utilizes 11

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different hardware technologies and over 90 materials and finishes. This allows us to provide industrial grade additive manufacturing capabilities that most do not have access to. We have customers across all verticals using Shapeways for every step of the product development lifecycle, but primarily finished production parts that go into an assembly or are dropshipped directly to the end customer.

Do you see a role for 4D printing in your business?

GK: Shapeways is focused on embracing and offering the most innovative hardware technologies and materials in the market. As this technology matures and there is customer demand you may see this on our product roadmap.

The book Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages by Carlota Perez offers insights very much in the spirit of Kuhn and Schumpeter. 3D/AM clearly qualify as disruptive/paradigm-shifting technologies in this context. But their adoption and assimilation is not without its challenges. Specifically, she writes, “[The productivity explosions and subsequent collapses] originate in the way technologies evolve by revolutions, in the peculiar manner in which these great upsurges of wealth-creating potential are assimilated by the economic and social system and in the functional separation of financial and production capital. The main contention is that the full fruits of the technological revolutions that occur about every half century are only widely reaped with a time-lag. Two or three decades of turbulent adaptation and assimilation elapse.” I’m interested in your thoughts on this.

GK: Innovation takes time. Shapeways has been fortunate to have investors like Lux Capital, Union Square Venture, INKEF Capital, a16z, and Index Ventures that have believed in the potential of both Additive Manufacturing and the digitization of manufacturing. That has enabled Shapeways to develop and grow our business. Shapeways is now a leader in Digital Manufacturing and helping to enable additive manufacturing at scale. We are well positioned to expand and grow with the market. We are continuing to drive innovation and investment and see significant growth in front of the company.

Our portfolio is inherently long-viewed, more interested in the convergences of technologies and paradigms that, taken together in time, will yield great returns. What do you see as the major enabling technology convergences over the next few years that will help drive your growth?

GK: Shapeways growth will be accelerated by two things. First, the adoption of Additive Manufacturing as a core

technology in the general manufacturing market. As I mentioned, the innovation that is taking place in hardware and materials, continued engineering design adoption, and shift towards more flexibility in the overall supply chain will help drive that. Second is the digital transformation that is just starting in the manufacturing sector. To support low-volume, high-mix manufacturing at scale, software is required. Shapeways has the opportunity to accelerate that shift by providing our software to other manufacturers giving them an “out the box” offering that will enable them to achieve the same levels of digitalization as Shapeways.

Can you provide us with any insights into your technology/product roadmap/directions that could be significant for both the company and the served markets?

GK: Shapeways is currently focused on four core initiatives. First is expansion of our Additive Manufacturing capabilities, investing in new hardware technologies, materials, finishes, and certifications to support our customer base and their growing needs. Second is a focus on expanding our go-to-market strategy beyond our self-service platform and supporting customers in key verticals with business development and technical sales support. Third, we are further investing in our software platform to support traditional manufacturing processes which will enable our customers to leverage Shapeways for a broader part envelope. And fourth, we will enable other manufacturing to accelerate digital transformation by leveraging Shapeways’ end-to-end digital manufacturing software platform.

How are you factoring AI into your current and future offerings?

GK: With over 21 million parts produced and more files uploaded into our system, there is a lot we can do with AI to enable more designs to be turned into physical products. Shapeways has the ability to leverage our historical data set to drive optimization and improvements in design for manufacturability, supply chain and manufacturing process optimization, and further efficiencies in asset utilization, labor models, and material use. This enables us to continue to drive innovation into our process and enable broader adoption of additive manufacturing.

There are a great many 3D/AM service companies in operation. Why is there room for Shapeways? How would you describe your most significant differentiators in such a highly commoditized space? What REALLY makes Shapeways special?

GK: Shapeways biggest differentiator in the space is our software. We have spent the last 10+ years and over

\$100M in investment fully digitizing the end-to-end manufacturing process. This has enabled low-volume, high-mix production at scale, allowing Shapeways to deliver 21 million parts to our customers, with a less than 1% customer complaint rate and 99% on-time delivery. This is proven digital manufacturing, but we are just getting started.

It certainly looks like Shapeways is off to a fantastic start. We look forward to the many good things ahead.

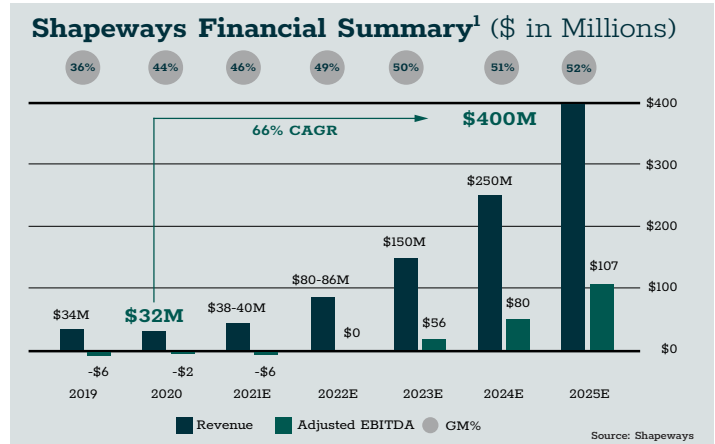
Ready to learn more? Shapeways is featured prominently in *3D Printing Media Network's* new eBook on Additive Manufacturing, which you can get here: <https://www.3dprinting-media.network/3dpbm-am-services-2021-ebook/>

Financial Analysis

Shapeways reported revenue of \$8.8 mn in Q2'21, up a respectable 26% YoY. Gross margins have risen over the past year to nearly 49% versus 44% in Q2'20. Shapeways expects further gross margin improvement going forward. The improvement in gross margin reflects the company's focus on high-value products as well as ongoing operational improvements and further software development. The combination of double-digit top-line growth and margin improvement is having a positive effect on gross profitability, which rose to \$4.3 mn in Q2'21, up 39% YoY.

Revenue guidance for the full year 2021 is in the range of \$38-\$40 mn. Shapeways sees exponential growth in its top line over the next several years. The company expects the business to be generating sales of \$400 mn by 2025 — 10x above this year's top line. Shapeways notes that \$400 mn

of revenue equates to less than 1% of its total addressable market, which it estimates at over \$60 billion.



As revenues grow, so too do cash flows. The company expects to be generating over \$100 mn in adjusted EBITDA by 2025 on a gross margin of 52%. The Pro-forma revenue projection is based solely on organic growth. That said, the company will certainly have M&A opportunities that may also add to top-line growth.

Shapeways' stock market capitalization is only \$364 million today, well below the \$3 billion-plus market cap potential we see in its future. Therein lies the opportunity for market-beating investment gains. Shapeways is an early-stage company that has only begun its journey into a space where vast fortunes are to be made and opportunities abound. A bit of patience, though, will be in order as the company accelerates toward escape velocity.



We are adding the stock to the portfolio with a **Liftoff** designation. As a reminder, Liftoff stocks should account for no more than 1% of an investor's total equity portfolio.