

# Why Invest in 3D Printing?

As of June 30, 2024

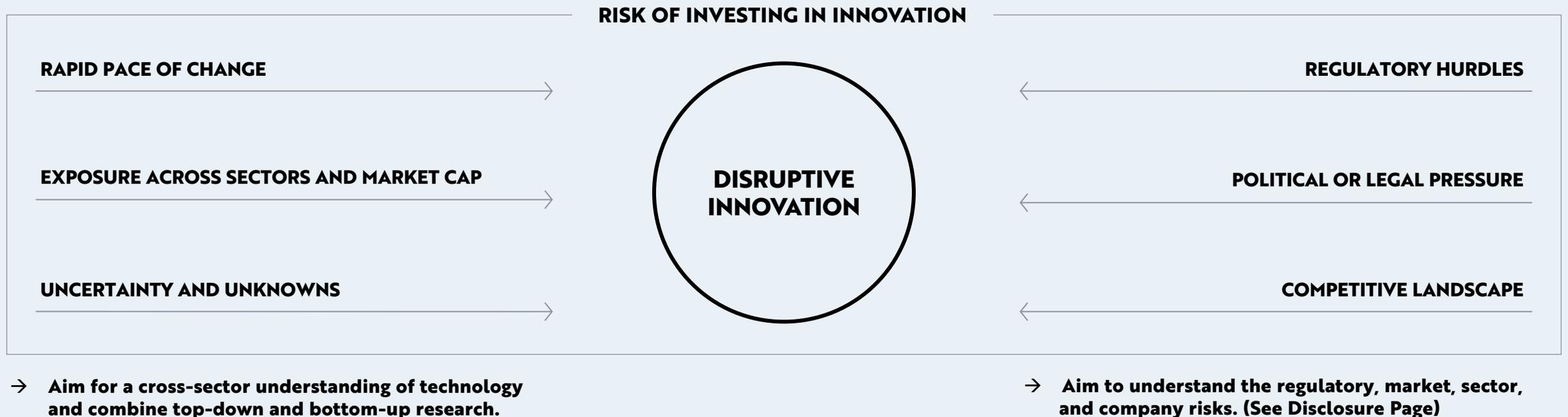




# Risks of Investing in Innovation

Please note: Companies that ARK believes are capitalizing on disruptive innovation and developing technologies to displace older technologies or create new markets may not in fact do so. ARK aims to educate investors and seeks to size the potential investment opportunity, noting that risks and uncertainties may impact our projections and research models. Investors should use the content presented for informational purposes only, and be aware of market risk, disruptive innovation risk, regulatory risk, and risks related to certain innovation areas.

Please read risk disclosure carefully.





## Risks & Disclosure Associated with 3D Printing

**Disruptive Innovation Risk.** Companies that ARK believes are capitalizing on disruptive innovation and developing technologies to displace older technologies or create new markets may not in fact do so. Companies that initially develop a novel technology may not be able to capitalize on the technology. Companies that develop disruptive technologies may face political or legal attacks from competitors, industry groups or local and national governments. These companies may also be exposed to risks applicable to sectors other than the disruptive innovation theme for which they are chosen, and the securities issued by these companies may underperform the securities of other companies that are primarily focused on a particular theme.

**Software Industry Risk.** The software industry can be significantly affected by intense competition, aggressive pricing, technological innovations, and product obsolescence. Companies in the software industry are subject to significant competitive pressures, such as aggressive pricing, new market entrants, competition for market share, short product cycles due to an accelerated rate of technological developments and the potential for limited earnings and/or falling profit margins. These companies also face the risks that new services, equipment or technologies will not be accepted by consumers and businesses or will become rapidly obsolete. These factors can affect the profitability of these companies and, as a result, the value of their securities. Also, patent protection is integral to the success of many companies in this industry, and profitability can be affected materially by, among other things, the cost of obtaining (or failing to obtain) patent approvals, the cost of litigating patent infringement and the loss of patent protection for products (which significantly increases pricing pressures and can materially reduce profitability with respect to such products). In addition, many software companies have limited operating histories. Prices of these companies' securities historically have been more volatile than other securities, especially over the short term.

**Internet Company Risk.** Many Internet-related companies have incurred large losses since their inception and may continue to incur large losses in the hope of capturing market share and generating future revenues. Accordingly, many such companies expect to incur significant operating losses for the foreseeable future and may never be profitable. The markets in which many Internet companies compete face rapidly evolving industry standards, frequent new service and product announcements, introductions and enhancements, and changing customer demands. The failure of an Internet company to adapt to such changes could have a material adverse effect on the company's business.

**Semiconductor Company Risk.** Competitive pressures may have a significant effect on the financial condition of semiconductor companies and, as product cycles shorten and manufacturing capacity increases, these companies may become increasingly subject to aggressive pricing, which hampers profitability. Reduced demand for end-user products, under-utilization of manufacturing capacity, and other factors could adversely impact the operating results of companies in the semiconductor sector. Semiconductor companies typically face high capital costs and may be heavily dependent on intellectual property rights. The semiconductor sector is highly cyclical, which may cause the operating results of many semiconductor companies to vary significantly. The stock prices of companies in the semiconductor sector have been and likely will continue to be extremely volatile.

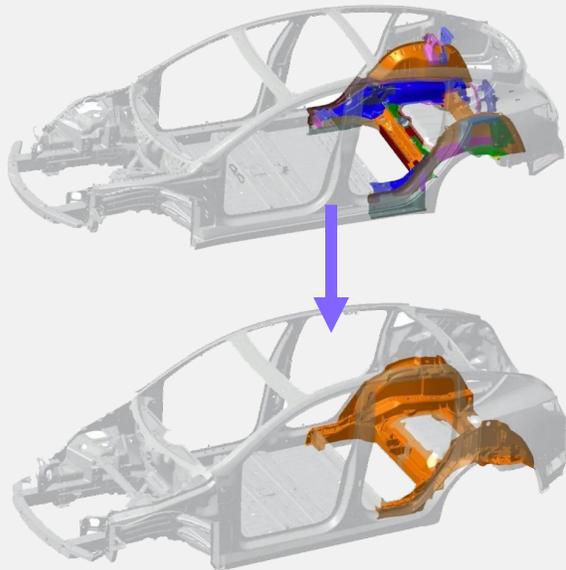
**Industrials Sector Risk.** The industrials sector includes companies engaged in the aerospace and defense industry, electrical engineering, machinery, and professional services. Companies in the industrials sector may be adversely affected by changes in government regulation, world events and economic conditions. In addition, companies in the industrials sector may be adversely affected by environmental damages, product liability claims and exchange rates. *Aerospace and Defense Company Risk.* Companies in the aerospace and defense industry rely to a large extent on U.S. (and other) Government demand for their products and services and may be significantly affected by changes in government regulations and spending, as well as economic conditions and industry consolidation. *Professional Services Company Risk.* Professional services companies may be materially impacted by economic conditions and related fluctuations in client demand for marketing, business, technology and other consulting services. Professional services companies' success depends in large part on attracting and retaining key employees and a failure to do so could adversely affect a company's business. There are relatively few barriers to entry into the professional services market, and new competitors could readily seek to compete in one or more market segments, which could adversely affect a professional services company's operating results through pricing pressure and loss of market share.

**Machinery Industry Risk.** The machinery industry can be significantly affected by general economic trends, including employment, economic growth, and interest rates; changes in consumer sentiment and spending; overall capital spending levels, which are influenced by an individual company's profitability and broader factors such as interest rates and foreign competition; commodity prices; technical obsolescence; labor relations legislation; government regulation and spending; import controls; and worldwide competition. Companies in this industry also can be adversely affected by liability for environmental damage, depletion of resources, and mandated expenditures for safety and pollution control.

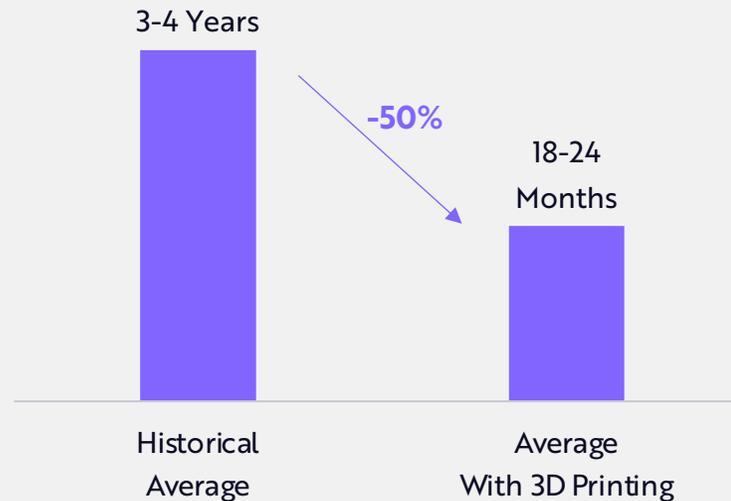
# Thanks To 3D Printing, Automotive Production Has Entered Uncharted Territory

Reportedly, Tesla is experimenting with 3D printed sand molds to cast auto underbodies that could substitute one part for 400 parts, lowering automotive development timelines and mold design validation costs by 50% and 97%, respectively. 3D printing could play a role in the production of every car.

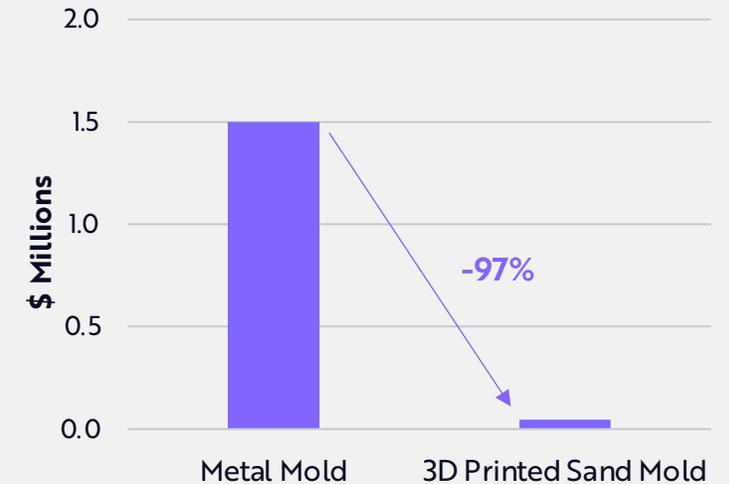
400 parts → 1 casting



## Vehicle Development Time

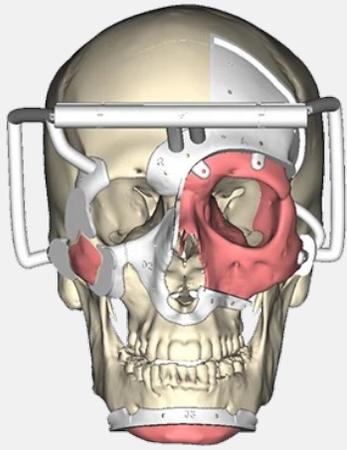


## Design Validation Cost

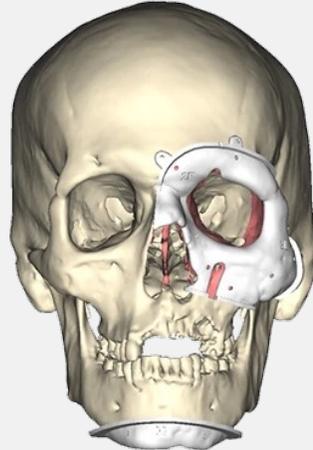


# 3D Printing Has Played A Role In Medical Breakthroughs

In fewer than 24 hours after identifying the donor, Materialise 3D printed pivotal surgical tools and guides used in the world's first eye transplant. Speed to operation is critical to preserving donor tissue deprived of blood supply.



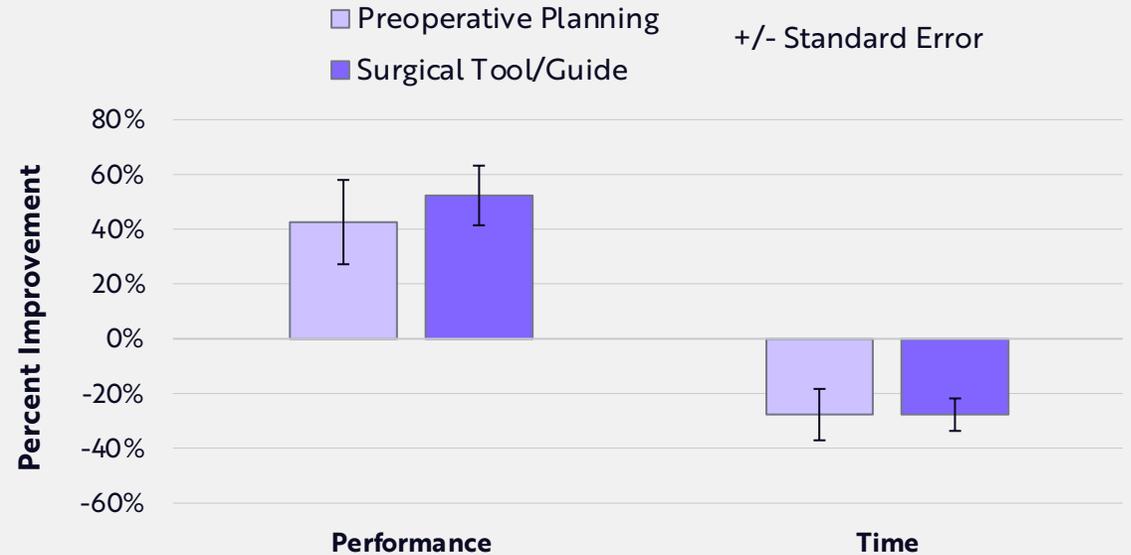
Donor



Patient

Across a range of surgeries, 3D printed tools, guides, and models increased performance, as measured by surgical accuracy and results, by ~40-50% and reduced operating time on average by ~30%.

## During Surgeries, 3D Printed Tools, Guides, and Models Shorten Time And Improve Accuracy



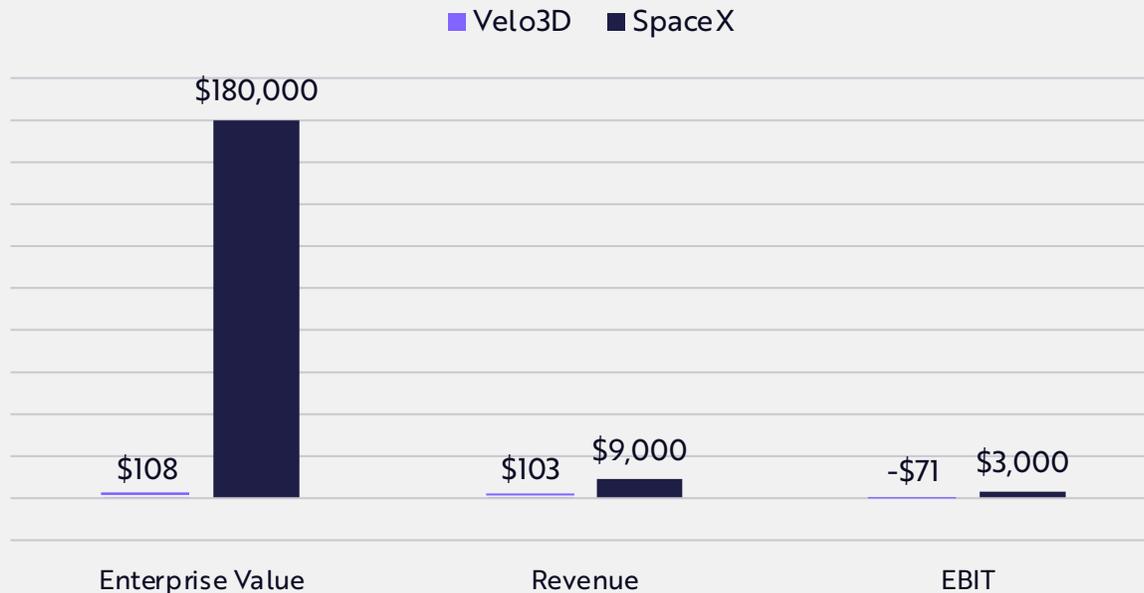
Note: Time Savings and Accuracy Improvements Provided by 3D Printed Surgical Guides and Preoperative Planning Aides: bars represent the average percent improvement in time or performance as described in Bergmann et al. 2017 and Woodard et al. 2019, N=6-9 for each sample group. Error bars represent +/- standard error. The above analysis was conducted across medical fields; however, oral maxillofacial surgery and musculoskeletal studies were the most prevalent.



# Thus Far, 3D Printing Has Benefited Users More Than Suppliers

SpaceX uses 3D printing every day to make parts for Starship's Raptor engines. Today, the operating margins of SpaceX's launch and satellite business are superior to those of any 3D printing supplier, like Velo3D (as shown below). Industrial companies benefiting from 3D printing could vertically integrate to sustain their competitive advantages.

**Velo3D And SpaceX  
2023 Estimates In Thousands**



**A SpaceX Super Heavy Booster With 33 Raptor Engines:**



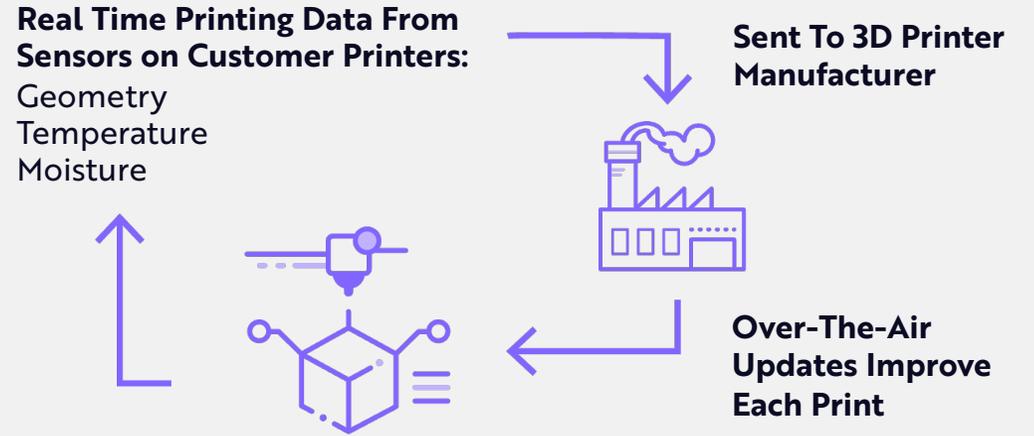
Velo3D is a 3D-printer manufacturer specializing in support-free powder bed fusion. Enterprise Value is an economic measure reflecting the market value of a business. It is a sum of claims by all claimants: creditors and shareholders. Earnings before interest and taxes (EBIT) measures a company's net income before income tax and interest expenses are deducted. Sources: ARK Investment Management LLC, 2024, based on data from S&P Capital IQ, 2024. SpaceX Heavy Booster Illustration sourced from Ali 2021. Forecasts are inherently limited and cannot be relied upon. For informational purposes only and should not be considered investment advice or a recommendation to buy, sell, or hold any particular security. Past performance is not indicative of future results.



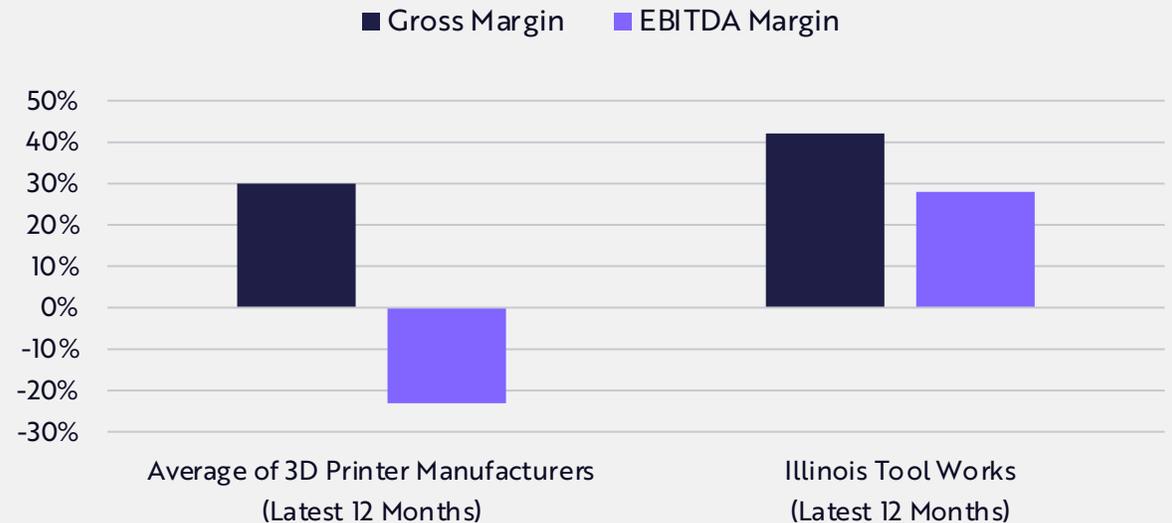
# Software-Defined 3D Printers Could Shift Some Economics Back To Printer Manufacturers

With sensor-equipped 3D printers, 3D printing equipment manufacturers can collect data from customer print jobs and improve their fleets of printers in the field with over-the-air software updates. This data feedback loop could help 3D printing companies capture more economics than they do today.

While companies may be reluctant to share data, AI-enabled manufacturing solutions should create better outcomes for 3D printing equipment companies and their customers



## Margin Structure 3D Printing Manufacturers Vs. Mature Tools Company





# Reasons Investors Should Consider The 3D Printing ETF (PRNT)

## 1. Targeted Exposure to Innovation

ARK believes 3D printing is misunderstood today, leading to historically poor market performance and stock declines for companies in this industry. However, ARK expects 3D printing to revolutionize manufacturing by collapsing the time between design and production, reducing costs, and providing greater design complexity, accuracy and customization.

## 2. Growth Potential

The Fund aims to provide investment results that closely correspond to the performance of the Total 3D-Printing Index, which is designed to track companies involved in the 3D printing industry. ARK believes 3D printing is one of the highest growth potential industries in the economy and is set to transform the manufacturing landscape.

**PRNT is the first, and only, ETF in the U.S. to focus solely on the most innovative companies within the 3D printing ecosystem.**



## The 3D Printing ETF (PRNT) Tracks The Performance Of The Total 3D Printing Index (3DPRNT)

The Total 3D-Printing Index is designed to track the price movements of exchange listed companies from the U.S., non-U.S. developed markets and Taiwan that are engaged in 3D printing related businesses within the following business lines: 3D printing hardware, computer aided design and 3D printing simulation software, 3D printing centers, scanning and measurement, and 3D printing materials.

### Index Details

- Index: Total 3D-Printing Index
- Weighting Method: Multi-Factor Weighting (Equal within each Factor)
- Rebalance: Quarterly
- Index Calculator: Solactive AG



# The 3D Printing ETF – PRNT

PRNT seeks to provide investment results that closely correspond, before fees and expenses, to the performance of the Total 3D-Printing Index, which is designed to track the price movements of stocks of companies involved in the 3D printing industry.

- Ticker: PRNT
- Fund AUM: \$104.5 Million
- Number of Holdings: 56
- Expense Ratio: 0.66%

- Benchmark: Total 3D Printing Index
- Weighting Method: Multi-Factor Weighting (Equal within each Factor)

TOP 10 HOLDINGS	Weight (%)
HP INC	5.1%
ALTAIR ENGINEERING INC	4.8%
AUTODESK INC	4.5%
NIKON CORP	4.1%
BICO GROUP AB	4.1%
SIEMENS AG	4.1%
PTC INC	4.1%
MATERIALISE NV	4.0%
PROTO LABS INC	3.9%
ANSYS INC	3.9%

42.7%

MARKET CAPITALIZATION	(%)
Mega (\$100B+)	7.5%
Large (\$10 - \$100B)	35.4%
Medium (\$2 - \$10B)	18.8%
Small (\$300M - \$2B)	25.4%
Micro (\$50 - \$300M)	12.6%

INDEX FACTORS WEIGHT AT REBALANCE	(%)
3D Printing Hardware	50%
CAD & 3D Printing Simulation Services	30%
3D Printing Centers	13%
Scanning & Measurement	5%
3D Printing Materials	2%

SECTORS	(%)
Information Technology	43.2%
Industrials	35.4%
Health Care	12.2%
Consumer Discretionary	5.9%
Materials	2.9%

Holdings are subject to change and should not be considered as investment advice, or a recommendation to buy, sell or hold any particular security. It should not be assumed that an investment in the securities identified was or will be profitable.

Source: ARK Investment Management LLC; All data as of June 30, 2024.



# Thematic Strategies Focused on Disruptive Innovation



**ARKK**  
ARK Innovation ETF



**ARKX**  
ARK Space Exploration & Innovation ETF



**ARKW**  
ARK Next Generation Internet ETF



**PRNT**  
The 3D Printing ETF



**ARKQ**  
ARK Autonomous Tech. & Robotics ETF



**IZRL**  
Israel Innovative Technology ETF



**ARKG**  
ARK Genomic Revolution ETF



**ARKF**  
ARK Fintech Innovation ETF



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Factsheet, prospectus, and latest performance reports are available for download on our website: [ark-funds.com/investor-material](https://ark-funds.com/investor-material)



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***Investors should carefully consider the investment objectives and risks as well as charges and expenses of an ARK ETF before investing. This and other information are contained in the ARK ETFs' prospectuses, which may be obtained by visiting [www.ark-funds.com](http://www.ark-funds.com). The prospectus should be read carefully before investing.***

***Investing in securities involves risk and there's no guarantee of principal.***

**Fund Risks:** The principal risks of investing in ARK's Index ETFs include equity, market, concentration and non-diversification risks, as well as fluctuations in market value and net asset value ("NAV"). The principal risks of investing in PRNT: **Equity Securities Risk.** The value of the equity securities the Fund holds may fall due to general market and economic conditions. **Foreign Securities Risk.** Investments in the securities of foreign issuers involve risks beyond those associated with investments in U.S. securities. **Index Tracking Risk.** The returns of the ETF may not match the returns of the underlying index that the ETF is designed to track. **Industrials Sector Risk.** Companies in the industrials sector may be adversely affected by changes in government regulation, world events, economic conditions, environmental damages, product liability claims, high barriers to entry and exchange rates. Companies in the aerospace and defense industry rely to a large extent on U.S. (and other) Government demand for their products and services and may be significantly affected by changes in government regulations and spending, as well as economic conditions and industry consolidation. **Information Technology Sector Risk.** Companies may face rapid product obsolescence due to technological developments and frequent new product introduction, unpredictable changes in growth rates and competition for the services of qualified personnel. **Disruptive Innovation Risk.** Companies that ARK believes are capitalizing on disruptive innovation and developing technologies to displace older technologies or create new markets may not in fact do so. Companies that initially develop a novel technology may not be able to capitalize on the technology. Companies that develop disruptive technologies may face political or legal attacks from competitors, industry groups or local and national governments. These companies may also be exposed to risks applicable to sectors other than the disruptive innovation theme for which they are chosen, and the securities issued by these companies may underperform the securities of other companies that are primarily focused on a particular theme.

PRNT has a limited number of financial institutions that may act as Authorized Participants ("APs") on an agency basis (i.e., on behalf of other market participants). To the extent that those APs exit the business or are unable to process creation and/or redemption orders, and no other AP is able to step forward to create and redeem in either of these cases, shares may possibly trade at a discount to NAV. The AP risk may be heightened in the case of ETFs investing internationally because international ETFs often require APs to post collateral, which only certain APs are able to do. ETF shares may only be redeemed directly with the ETF at NAV by Authorized Participants, in very large creation units. There can be no guarantee that an active trading market for ETF shares will develop or be maintained, or that their listing will continue or remain unchanged. Buying or selling ETF shares on an exchange may require the payment of brokerage commissions and frequent trading may incur brokerage costs that detract significantly from investment returns.

**Index Descriptions:** The Total 3D-Printing Index is composed of equity securities and depositary receipts of exchange listed companies from the U.S., non-U.S. developed markets and Taiwan that are engaged in 3D printing related businesses within the following business lines: (i) 3D printing hardware, (ii) computer aided design and 3D printing simulation software, (iii) 3D printing centers, (iv) scanning and measurement, and (v) 3D printing materials.

Portfolio holdings will change and should not be considered as investment advice or a recommendation to buy, sell or hold any particular security. Please visit [www.ark-funds.com](http://www.ark-funds.com) for the most current list of holdings for the ARK ETFs.

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