Seekjng Singularity

SINGULARITY SMALL & MID H2 2022

REBALANCING REPORT

The Singularity group

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Executive summary

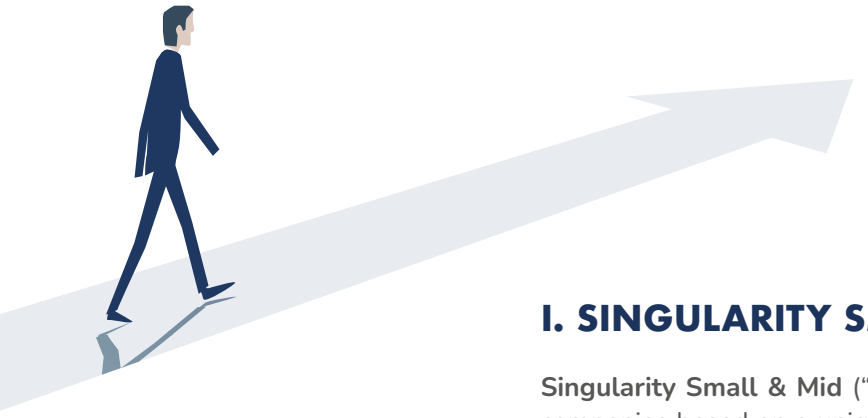
The Singularity Small & Mid ("SMID") strategy screens for value creation from applied innovation across sectors and industries in the small- and midcap space based on The Singularity Group's unique investment methodology. The portfolio reflects a real-time snapshot of innovation leaders and challengers that are generating cash flows from major technology applications. It is rebalanced semi-annually following a bottom-up, expert-led process that tracks technological developments within our Singularity Sectors.

Based on ongoing consultations with our Singularity Think Tank experts and our proprietary research, this rebalancing sees **a focus on applied innovation enabled by enzymes in our Advanced Materials sector, a concentration on advanced logic semiconductors within our Compute Power sector, a departure from the application of Discriminative AI (the former AI generation) in digital advertising in our Artificial Intelligence sector, an expansion into diagnostic devices and kits in our Bioinformatics sector, and an increased focus on the electrification of transportation networks, and smart- and sustainable cities and buildings, as well as related innovations in battery storage in our New Energy sector.** Finally, we rename our Virtual Reality sector to **Extended Reality,** reflecting a broader focus on technologies that enable the blending of physical and virtual environments and the shift toward deeper user immersion in digital environments.

Overall, approximately half of the companies in the SMID are replaced with 48% of the total weight made up of entirely new names while leavers account for 52% of the SMID weight. The portfolio carries a Singularity Score of 92, retaining a significant positive spread over the score for the MSCI World Small Cap Index of 8.

The **top Singularity Sectors** in the SMID post rebalancing are **Big Data**, **Advanced Materials,** and **Compute Power**. **Big Data** and **New Energy** see the largest weight increases in the portfolio while **Artificial Intelligence** and **Robotics** have the largest exposure declines. In **Big Data**, an increase in exposure to digital payment solutions and knowledge systems drive an increase in the sector weight. **New Energy** increases its weight to grid-scale battery storage, smart metering software, and medium voltage infrastructure providers. **Artificial Intelligence** gains weight by moving discriminative AI and business process automation out of focus in the human resource ERP system, while **Robotics** gains weight due to a decrease in exposure to motion control and computer vision technologies in conjunction with acquisition activity in the sector.

The Singularity SMID portfolio characteristics demonstrate strong growth and profitability, a healthy balance sheet with a solid liquidity profile, and low debt levels. Situated squarely at the center of applied innovation, constituent companies have been able to repeatedly surprise positively on sales and earnings while reinvesting back into the business to innovate and grow their topline.



I. SINGULARITY SMALL & MID

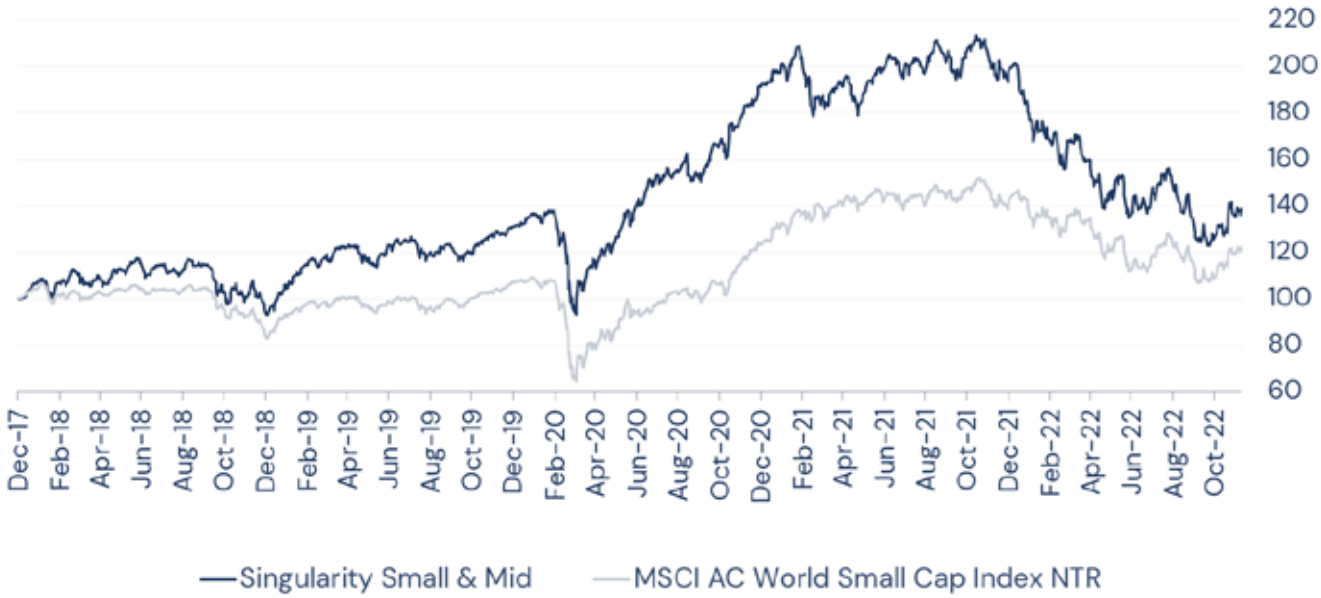
Singularity Small & Mid ("SMID") is a global equity portfolio of the top 100 companies based on a unique investment methodology that screens for value creation from innovation across sectors and industries in the small- and mid-cap space (USD 1B- USD 25B market cap). As for all Singularity Strategies, the key metric used in building this portfolio is the Singularity Score, which measures the degree of innovation of companies globally and across sectors and represents the percentage of revenue associated with viable innovation. Only companies that rank within the top two Singularity Score quintiles are eligible for selection. As such, the portfolio is composed of pure-play innovation leaders that are typically prime acquisition targets.

Singularity Score

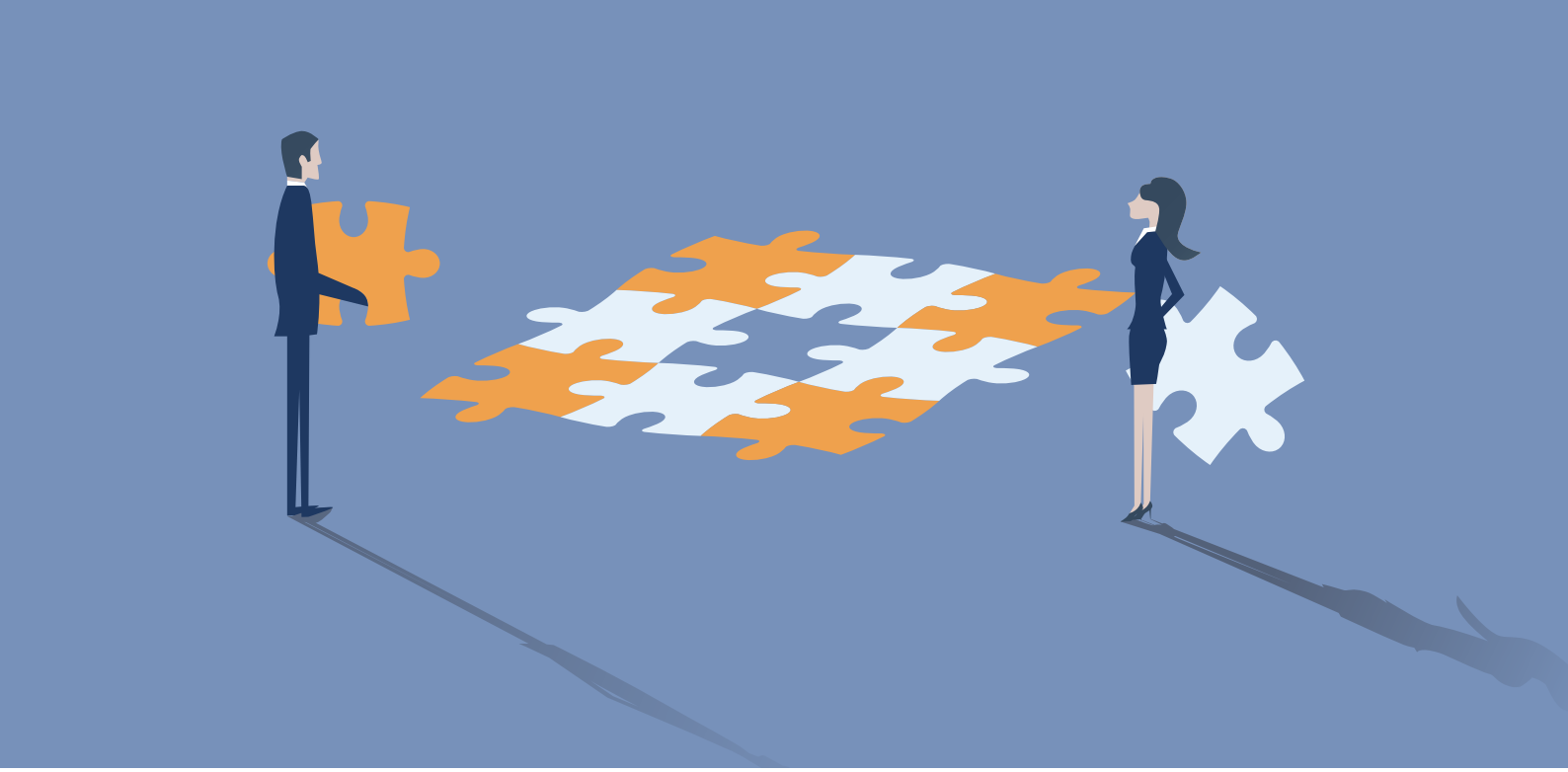
The **Singularity Score** represents the percentage of a company's revenues associated with innovation. It reflects a company's ability to create innovation revenues vs base/commoditized business and cash flows, and its ability to participate in technological evolution. Changes in the Singularity Score are just as important as the absolute value. A company's Singularity Score relative to its overall GICS sector Singularity Score can say a lot about the company's competitive standing and ability to gain and maintain market share. Regional Singularity Scores can be used to evaluate a market's innovation power, as well as gauge companies' standings in different regions.

Figure 1

Singularity Small & Mid Since Strategy Launch (December 21 2017 to November 30 2022)



Source: Bloomberg, TSG



II. PORTFOLIO CHANGES

On November 18, 2022, the Singularity Small & Mid was rebalanced according to its semi-annual cycle. The new composition of the portfolio came into effect following the market close. The rebalanced portfolio results from a bottom-up process that tracks technological developments of applied innovation within our Singularity Sectors and identifies companies that have exposure to the respective revenue streams. It excludes companies that do not pass our ESG criteria. Portfolio changes are predominantly related to changes in innovation focus areas, Singularity Score changes, or company market caps crossing the $25bn market cap limit.

51% of the names in the portfolio were replaced (51 companies). In terms of weights, the names that dropped out of the portfolio accounted for 52% of the overall portfolio weight prior to rebalancing while entirely new positions make up 48% of the new portfolio composition. The difference of 4% can be ascribed to a reweighting (increase) of current names. **The portfolio turnover (one-sided) was 56%. The weighted Singularity Score is 92 compared to 8 for the MSCI World Small Cap Index**.

Overall, **the biggest Singularity Sectors in the SMID post rebalancing on November 18 are Big Data (16%), Advanced Materials (14%), and Compute Power (13%).** In terms of traditional sectors (GICS), Information Technology remains the largest sector, followed by Health Care and Industrials, which both increase in overall weight, whereas Communication Services sees a decrease. Viewed by region, Asia Pacific increases by +4pp to 30% at the expense of North America (53%) with weights in Japan and China of 15% and 11% respectively. Western Europe remains broadly unchanged (16%) with top countries France (6%), Italy (2%), and Switzerland (2%). Market cap exposure shifts by 4pp from mid caps (67%) to small caps (27%).[1] The largest positions in the SMID are **Zimmer Biomet** (ZBH US, Singularity Score: 100), **Fortive** (FTV US, Singularity Score: 100), and **Gartner** (IT US, Singularity Score: 87).

1. Small caps: USD 1B - 10B, Mid caps: USD 10B - 25B

The Singularity SMID portfolio characteristics demonstrate strong growth and profitability, a healthy balance sheet with a solid liquidity profile, and low debt levels.

Table 1

Summary of Exposure Changes Post Rebalancing

Singularity Sector	post	pre	+/-
Big Data	15.9%	10.2%	5.7%
Advanced Materials	13.9%	12.7%	1.2%
Compute Power	13.1%	16.8%	-3.8%
Artificial Intelligence	12.5%	17.4%	-4.8%
Extended Reality	10.8%	11.7%	-0.9%
Bioinformatics	10.5%	6.9%	3.6%
Internet of Things	8.6%	8.5%	0.1%
Robotics	8.2%	13.9%	-5.7%
New Energy	6.6%	2.0%	4.6%

GICS Sector	post	pre	+/-
Information Technology	52.6%	52.5%	0.1%
Health Care	20.1%	16.9%	3.2%
Industrials	14.0%	11.7%	2.3%
Communication Services	5.7%	9.1%	-3.5%
Materials	4.5%	4.5%	0.1%
Consumer Staples	2.1%	1.3%	0.8%
Consumer Discretionary	1.1%	1.8%	-0.8%
Financials	0.0%	2.2%	-2.2%

Region	post	pre	+/-
North America	52.0%	56.1%	-4.1%
Asia Pacific	30.2%	26.6%	3.6%
Western Europe	16.3%	15.9%	0.4%
Africa / Middle East	1.2%	1.4%	-0.2%
South & Central America	0.4%	0.0%	0.4%

Market Capitalization	post	pre	+/-
Large Cap	5.8%	3.1%	2.6%
Mid Cap	67.3%	74.2%	-7.0%
Small Cap	27.0%	22.7%	4.3%

Source: Bloomberg, TSG

2.1 Sector Changes

Big Data (+6pp)

Digital payment solutions and knowledge systems – which have been in focus as a key applied innovation prior to the current rebalancing – see the largest increases in portfolio exposure. Included companies engage in the processing of electronic payment transactions (e.g., payment authorization, clearing and settlement, fraud detection and prevention), as well as related information services. Business intelligence and multi-cloud providers also gain in weight, leading to an overall increase in North American Technology sector exposure. New names in the portfolio include **Gartner** (IT US, Singularity Score: 87), **Dropbox** (DBX US, Singularity Score: 100), and **Worldline** (WLN FP, Singularity Score: 100).

Artificial Intelligence (-5pp)

Discriminative AI and business process automation in human resources ERP move out of focus while AI consulting firms' portfolio weight increases, resulting in a decrease of Tech sector exposure overall. AI's regional exposure in North America decreases whereas it increases in Asia Pacific. New names in the portfolio include **Fujitsu** (6702 JT, Singularity Score: 73) and **NTT Data** (9613 JT, Singularity Score: 72).

"Enzymes are a versatile and extremely important tool in modern industry. By the time you're done with breakfast, you've already been in touch with dozens of different types of enzymes."

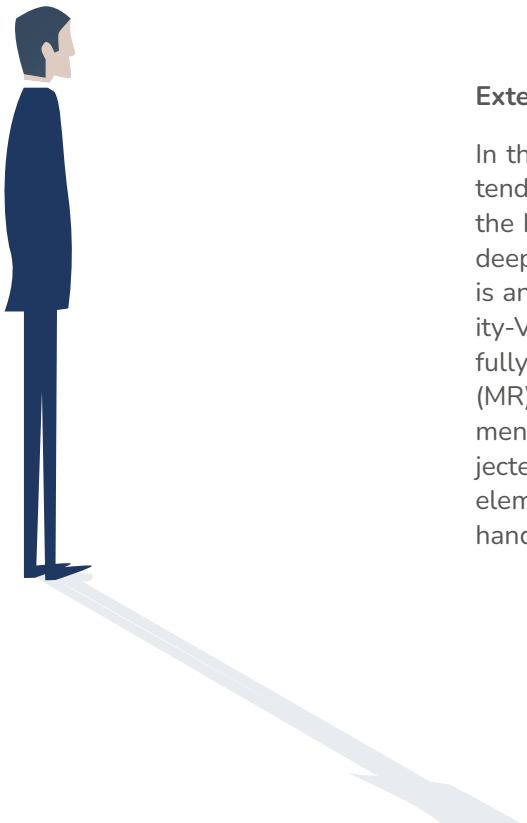
Jürgen Eck
Singularity Think Tank expert

Advanced Materials (+1pp)

While the Advanced Materials exposure increases only slightly, position changes in the portfolio reflect a decreased focus on electronics materials producers leading to dropouts of mostly Asian companies, and increased exposure to producers of biocompatible materials and medical devices such as **Zimmer Biomet** (ZBH US, Singularity Score: 100) and manufacturers of natural flavors and food additives that are critical to the Novel Food value chain, including **International Flavors & Fragrances** (IFF US, Singularity Score: 74) and **Symrise** (SY1 GR, Singularity Score: 61). Other changes reflect an increased focus on the complex and high value-added production of enzymes. ***"Enzymes are best seen as a platform technology,"*** explains STT biotechnology expert Dr. Juergen Eck. ***"Enzymes are a versatile and extremely important tool in modern industry. By the time you're done with breakfast, you've already been in touch with dozens of different types of enzymes,"*** notes Eck. New entrants in this space include **Novozymes** (NZYMB DB, Singularity Score: 41), a world leader in the production of innovative enzymes and a licenser of enzyme technologies.

Compute Power (-4pp)

The sector weight decreases on the back of memory semiconductors and application-specific integrated circuits moving out of focus, primarily in North America. Singularity Think Tank expert and CEO/Co-founder of Synthara, Manu Nair, comments, ***"the Compute space is moving faster and faster and becoming more fragmented. Different use cases and industries need different chips with specific architectures."*** Given the fragmentation in the logic landscape, this rebalancing marks a move away from commoditized and largely standard CPU manufacturing. The associated decrease in weight is mitigated by an increase in advanced and custom chip contract manufacturers (semiconductor foundries). New names in the portfolio include **Semiconductor Manufacturing International Corp** (SMIC, 981 HK, Singularity Score: 92) and **NAURA Technology Group** (002371 CH, Singularity Score: 82).



Extended Reality (-1pp)

In the current rebalancing, we rename our Virtual Reality sector to Extended Reality, reflecting a broader focus on technologies that enable the blending of physical and virtual environments and the shift toward deeper user immersion in digital environments. Extended Reality (XR) is an umbrella term for the wide spectrum of technologies on the Reality-Virtuality continuum. These range from the real environment to the fully digital environment of Virtual Reality (VR), and the "mixed reality" (MR) variations in between, including virtually augmented real environments known as Augmented Reality (AR) (think of a digital bird projected on a real sky), and virtual environments augmented with real-life elements known as Augmented Virtuality (AV) (think of a real human hand appearing in a virtual world).

Clinical diagnostic devices and kits constitute one of the major segments and growth drivers in the medical devices market, accounting for roughly 20 percent of worldwide medical device revenues.

More broadly defined, Extended Reality is rapidly materializing with new applications in CAD (Computer-Aided Design) and simulation software tools. Such tools empower designers to create 3D designs and digital twins based on LiDAR and photogrammetry point-cloud technologies to provide realistic and engaging environments for media and entertainment, product design and manufacturing, and architecture, engineering, and construction. In the construction industry, for example, companies such as **Bentley Systems** (BSY US, Singularity Score: 100) enable designers to create advanced 3D simulations for virtual prototypes of products and buildings, allowing creations to be tested in different scenarios, and ensuring safety and efficiency before being built, resulting in higher quality and efficiency.

BioInformatics (+4pp)

Clinical diagnostic devices and kits constitute one of the major segments and growth drivers in the medical devices market, accounting for roughly 20 percent of worldwide medical device revenues. *In vitro* diagnostics includes medical devices and diagnostic procedures for the detection and measurement of biomolecules, microorganisms, and cells taken from the human body. Such devices and procedures find application in hospitals and laboratories for disease diagnosis, detection, and management.

In the current rebalancing, **we expand our focus on clinical diagnostic devices and kits** in light of **growing demand and a strong impetus for innovation. Total Singularity Revenues for *in vitro* diagnostic devices and testing kits increased at a CAGR of 21 percent** between 2017 and 2021 to USD 115 billion. We see this growth continuing in the mid term driven by an upward trend in global life expectancy: The population aged over 80 years is set to triple to 426 million and the population aged over 60 years to double to 1.4 billion by 2050.[2] Companies involved in diagnostics devices and kits and providers of DNA sequencing solutions increase in the portfolio, adding to the overall Health Care exposure. New names in the portfolio include **PerkinElmer** (PKI US, Singularity Score: 81), **Hologic** (HOLX US, Singularity Score: 67), and **Sysmex** (6869 JP, Singularity Score: 100).

Internet of Things (+0pp)

IoT sees a changing composition with increased exposure to Cybersecurity companies, with **Zscaler** (ZS US, Singularity Score: 100) entering the portfolio as one of the top holdings. The exposure to connected wearable devices increases slightly while 5G infrastructure and fiber backbone providers move out of focus. New portfolio positions include **CyberArk Software** (CYBR US, Singularity Score: 100) and **SentinelOne** (S US, Singularity Score: 100).

2. The World Health Organization (WHO), Ageing and Health fact sheet 2022.

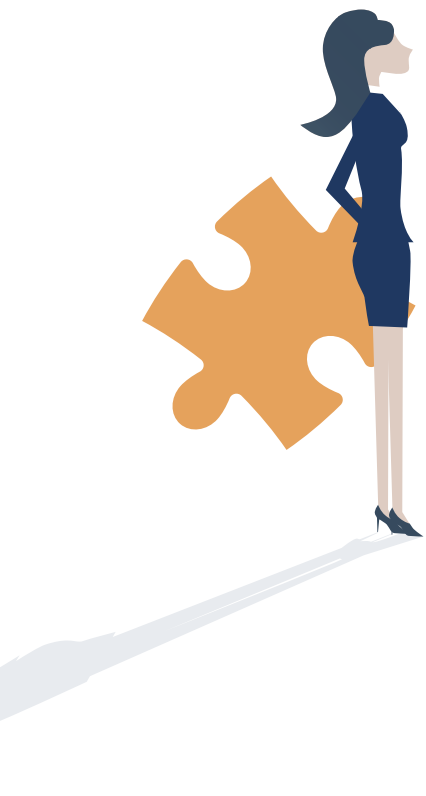
Robotics (-6pp)

The sector weight decreases on the basis of a combination of companies graduating into the large-cap segment (Olympus), acquisition activity (Abiomed in the process of being acquired by Johnson & Johnson), and a decrease in exposure to motion control and computer vision technologies.

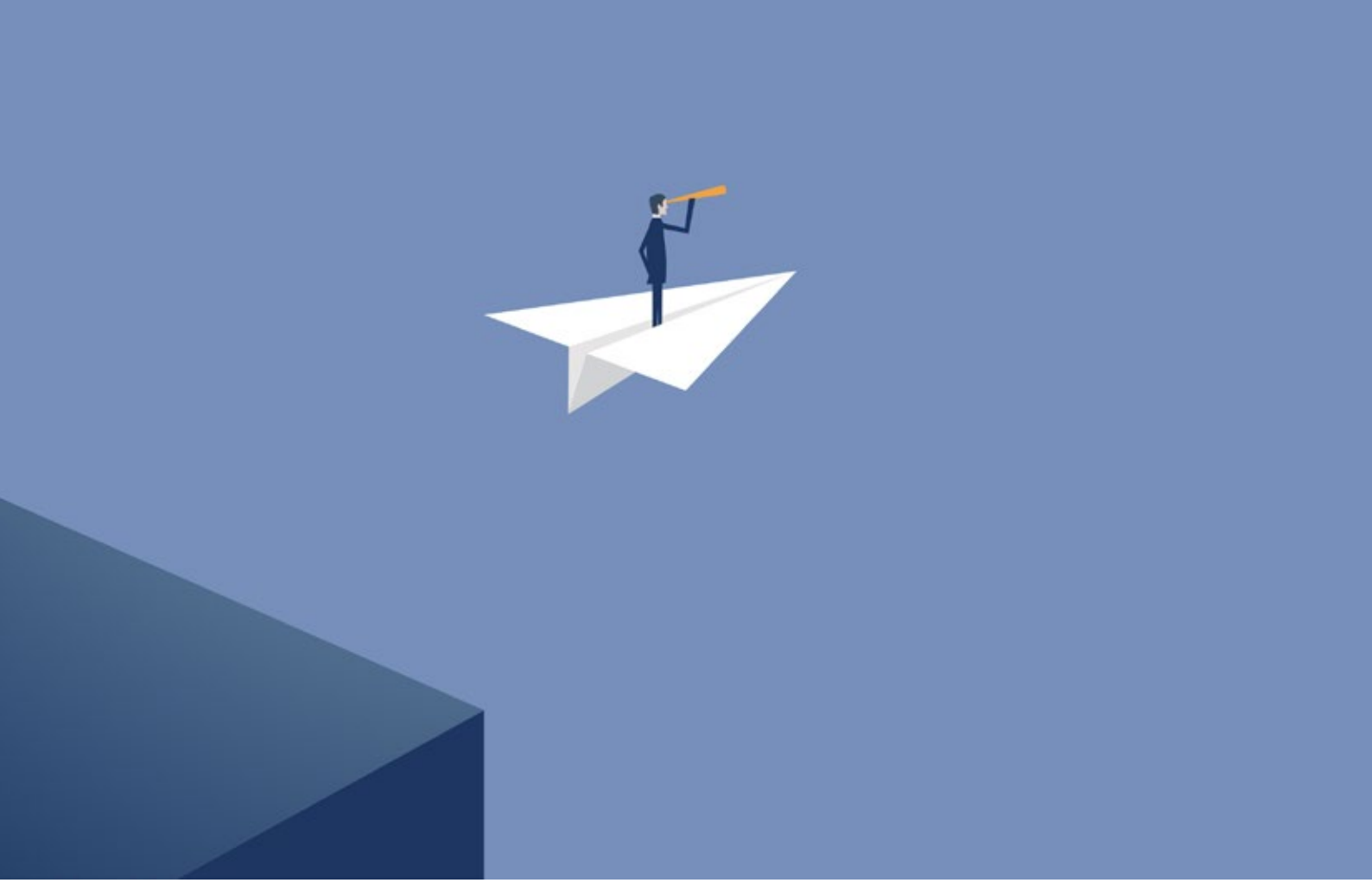
These decreases are partially offset by an increasing weight in the AgriTech space. For the medium term, our expert-led process has us foreseeing **revenue growth opportunities from innovations in agricultural technology**. Recent years have seen a rise in the adoption of robotization and other forms of agritech innovation in the farming industry, involving new machinery and smart automation methods that aim to make farming more efficient and less labor-intensive, and decrease the risk of injuries. Matthias Erb, co-founder of Boum AG and Professor of Plant Sciences at Bern University explains: ***"People in the industry are very excited about robotic machines in this space because you have a very pesticide- and labor-intensive step of weeding and a labor-intensive step of harvesting certain crops. Weeding robots, for example, need to very rapidly decide whether something is a weed or crop and to remove the weed to have a real use case. Speed of image recognition and processing is essential there and this is an area that has seen important enabling innovations in recent years."*** With our increased concentration on farming machinery and robotics, a new name in the portfolio is Japanese **Kubota** (6326 JP, Singularity Score: 67).

Another new name in the portfolio in the Robotics sector is **Insulet** (PODD US, Singularity Score: 92), a producer of connected, on-skin insulin pumps, which enters on the basis of an increased focus on medical devices in the drug delivery space.

New Energy (+5pp)



The electrification of transportation networks, smart- and sustainable cities and buildings, and ever-increasing demands on data and computing infrastructure require large-scale adjustments to the electrical infrastructure. Key technologies include grid interconnection via high-voltage direct current (HVDC) transmission lines and grid-scale energy storage solutions. Medium voltage infrastructure is also critical as a distributed electrical network emerges driven by decentralized renewables like solar and wind. More and more resources such as homes, businesses, and electric vehicles will participate in the energy production, distribution, and consumption cycle in a shift away from purely centralized power grids towards distributed microgrids. Grid-scale battery storage providers, smart metering software, and providers of medium voltage infrastructure, see an uptick in portfolio weights. As a result, the Industrials sector increases overall, mostly in Western Europe and Asia Pacific. New additions to the portfolio include **NARI Technology** (600406 CH, Singularity Score: 77) and **Generac** (GNRC US, Singularity Score: 100).



2.2 Top Positions and Single Name Changes

The portfolio is well diversified with the top 5 positions summing up to 11% of the portfolio, the top 10 summing up to 20%, and the top 20 accounting for 36%. 11 out of the top 20 positions are new to the portfolio including **Zimmer Biomet** (ZBH US, Singularity Score: 100), **Semiconductor Manufacturing International Corp** (SMIC, 981 HK, Singularity Score: 92), **Gartner** (IT US, Singularity Score: 87), **ZScaler** (ZS US, Singularity Score: 100), and **Fujitsu** (6702 JT, Singularity Score: 73).

Table 2

Top 10 Holdings per Nov 18, 2022 Rebalancing

In	Company	Singularity Score	Singularity Sector	Wgt Chg (%)
1	Zimmer Biomet	100	Advanced Materials	2.3
2	Fortive	100	Robotics	2.2
3	Gartner	87	Big Data	2.2
4	Semiconductor Manufacturing Int.	92	Compute Power	2.1
5	Legrand	100	New Energy	2.1
6	ANSYS	100	Extended Reality	2.0
7	CGI	100	Big Data	1.9
8	Zscaler	100	Internet of Things	1.9
9	NARI Technology	77	New Energy	1.8
10	Straumann	100	Advanced Materials	1.8

Source: Bloomberg, TSG

Table 3

Biggest Additions To / Removals From SMID

In	Company	Singularity Score	Singularity Sector	Wgt Chg (%)
1	Zimmer Biomet	100	Advanced Materials	2.3
2	Gartner	87	Big Data	2.2
3	Semiconductor Manufacturing Int.	92	Compute Power	2.1
4	Zscaler	100	Internet of Things	1.9
5	NARI Technology	77	New Energy	1.8
6	Insulet	92	Robotics	1.8
7	International Flavors & Fragrances	74	Advanced Materials	1.7
8	United Microelectronics	96	Compute Power	1.7
9	Fujitsu	73	Artificial Intelligence	1.5
10	NTT DATA	72	Artificial Intelligence	1.4

Out	Company	Singularity Score	Singularity Sector	Wgt Chg (%)
1	ON Semiconductor			-3.1
2	Olympus	86	Robotics	-2.3
3	Waters			-2.1
4	Ingersoll Rand			-2.1
5	VeriSign			-1.9
6	Renesas Electronics			-1.7
7	Paycom Software			-1.7
8	Aspen			-1.6
9	Beijing Kingsoft Office Software			-1.5
10	FactSet			-1.4

Source: Bloomberg, TSG

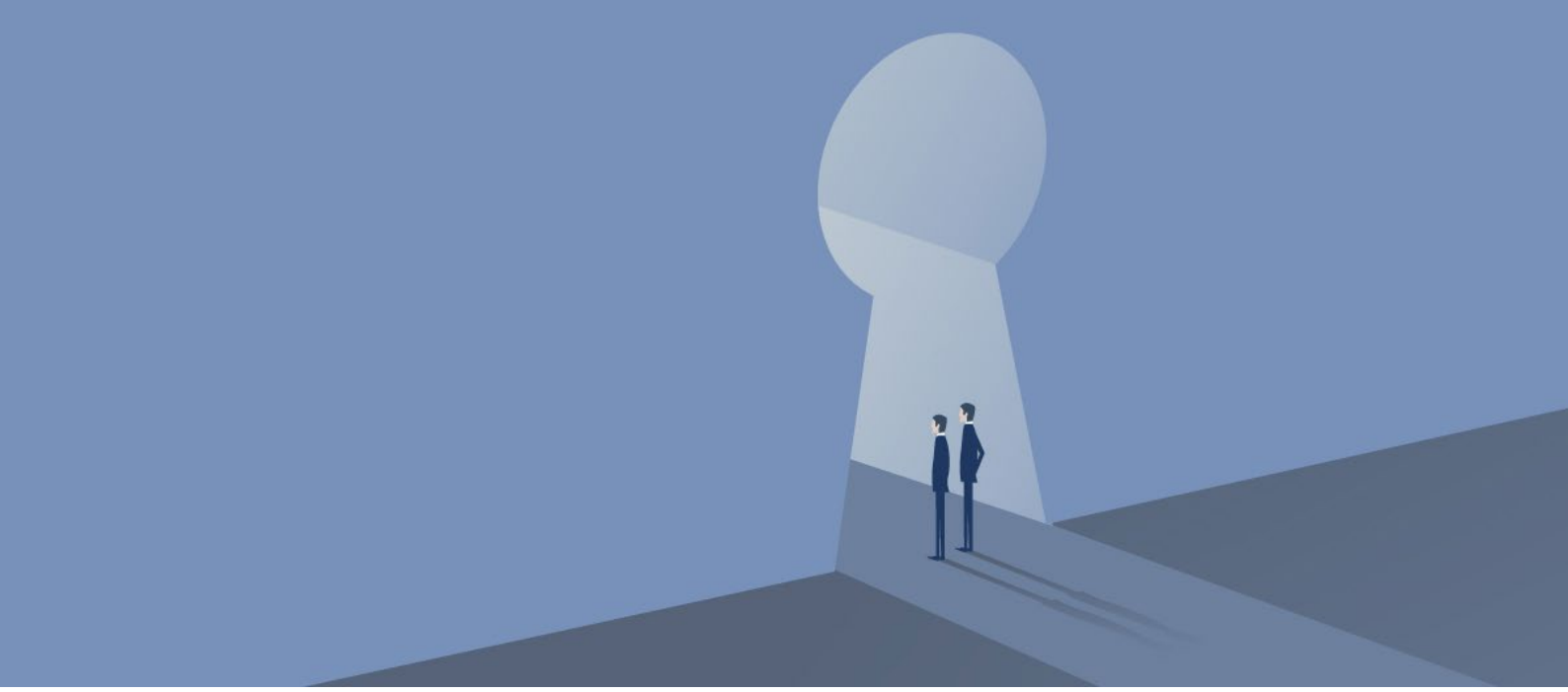
Table 4

Largest Position Changes

+	Company	Singularity Score	Singularity Sector	Wgt Chg (%)
1	Zimmer Biomet	100	Advanced Materials	2.3
2	Gartner	87	Big Data	2.2
3	Semiconductor Manufacturing Int.	92	Compute Power	2.1
4	Zscaler	100	Internet of Things	1.9
5	NARI Technology	77	New Energy	1.8
6	Insulet	92	Robotics	1.8
7	International Flavors & Fragrances	74	Advanced Materials	1.7
8	United Microelectronics	96	Compute Power	1.7
9	Fujitsu	73	Artificial Intelligence	1.5
10	NTT DATA	72	Artificial Intelligence	1.4

-	Company	Singularity Score	Singularity Sector	Wgt Chg (%)
1	ON Semiconductor			-3.1
2	Olympus	86	Robotics	-2.3
3	Waters			-2.1
4	Ingersoll Rand			-2.1
5	VeriSign			-1.9
6	Renesas Electronics			-1.7
7	Paycom Software			-1.7
8	Aspen			-1.6
9	Beijing Kingsoft Office Software			-1.5
10	FactSet			-1.4

Source: Bloomberg, TSG



2.3 Portfolio Characteristics

The portfolio characteristics of the SMID continue to demonstrate solid **growth and profitability profiles, a strong balance sheet, and healthy liquidity at a reasonable valuation:** For instance, the portfolio boasts an operating margin of 13%, total debt to EBITDA of 2.6x, and a current ratio of 2.4x.

Table 5

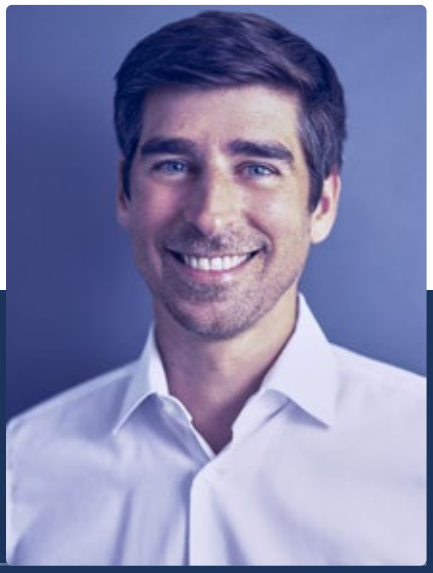
Portfolio Characteristics as of Nov 18, 2022

	Singularity Small & Mid
PROFITABILITY	
Profit Margin	9.5%
Operating Margin	13.4%
Return on Capital	13.6%
Return on Equity	9.6%
Return on Assets	6.4%
BALANCE SHEET	
Total Debt to Equity	92%
Total Debt to Total Assets	22%
Total Debt to EBITDA	2.6
LIQUIDITY	
Quick Ratio	2.1
Current Ratio	2.4
GROWTH RATES (3yr CARG)	
Revenue	18.5%
EBITDA	22.2%
EPS	25.4%
VALUATION	
EV/EBITDA	19.3
P/E Ratio (LTM)	25.0
P/FCF Ratio	32.7
Dividend Yield	0.7%

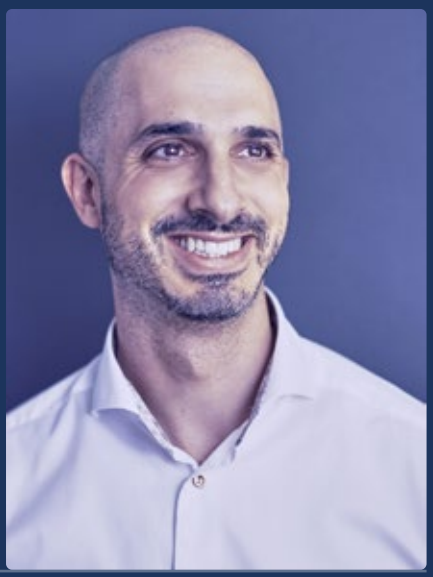
Source: Factset, TSG

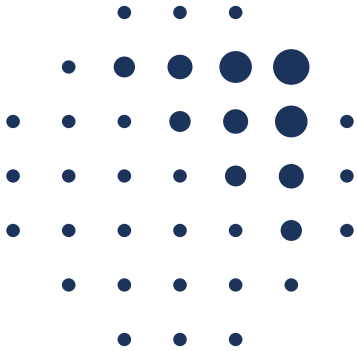
Authors

Pierre Guillier
Chief Investment Officer
pg@singularity-group.com



Shiko Ben-Menahem, PhD
Director of Research
sb@singularity-group.com





More information & Contact

The next rebalancing is scheduled for May 2023. For more information and questions please contact us at **info@singularity-group.com**

+41 43 558 71 79
www.singularity-group.com
@thesingularitygroup
@JoinSingularity
@thesingularitygroup

The Singularity group