

**Global**

**Corporate**

**Venturing**

# Industrials seek digital transformation

## **INSIDE**

IESE makes innovation easy

AUTM comes early

Bosch and Stanley interviews

Focus on Israel

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## Global Corporate Venturing

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## EDITORIAL

# It is a privilege to watch this bright future unfold

**James Mawson, editor-in-chief**



**T**he Financial Times last month identified the fastest-growing companies from their accounts, and it was an honour for Mawsonia, the publishing company behind Global Corporate Venturing and Global University Venturing, to be among the top 1,000 scale-ups out of the 24.5 million small and medium-sized enterprises (SMEs) in Europe.

Consistent gazelle-like growth for nearly a decade is really hard to achieve, so thank you to the team – both current and former colleagues – chairman Dominic Riley and our growth equity investors led by non-executive director Simon Leefe, co-founder of 24 Haymarket, who backed our vision five years ago and have helped shape our company.

But the main thanks are to the customers and network supporting GCV and GUV, and so the realities of the work remain the same – staying focused on the strategy of serving our customers. We are nothing without the corporations, VCs, governments, universities, angels and others in the innovation capital ecosystem.

But while having customers from more than 500 of the world's largest public and private corporations is an immense honour, it is interesting to compare the differing corporate purchase systems against their corporate venturing programs' focus on serving entrepreneurs' five primary needs – capital, customers, product development, hiring and an exit.

While there has been only a handful of bad debts, the difference in purchasing processes and time to payment remains extreme.

There are the forever-in-my-heart reach-outs by CVCs who say they have a bit of budget left to use and perhaps there are some ideas we can develop, and the heads of unit that can get the \$20bn-revenue elephant to dance within days of a decision and agree terms and payment. But there are also the nine months to a year of chasing by finance for other groups, or those that change their 400-page purchase order form every three months seemingly to weed SMEs from their roster.

Sam Altman, CEO of US-based accelerator Y Combinator, in an interview late last month with Tyler Cowen, said: "Years ago I wrote a little program to look at this, like how quickly our best founder – the founders that run billion-plus companies – answer my emails versus our bad founders. I don't remember the exact data, but it was mind-blowingly different. It was a difference of minutes versus days on average response times." A variation for CVCs is – how quickly do you pay your SME suppliers and do you work with any of your portfolio?

As we prepare for the GCV Symposium and Powerlist 2019 awards on May 22-23, at London's County Hall and the UK's Palace of Westminster respectively, we are conducting a 360-degree review of the industry.

As well as collecting C-suite nominations of their corporate venturing unit's importance, we launched our GCV Founders Survey and we need your help – we are asking you to leverage your network. Please send this survey link to all your portfolio companies and ask them to take 10 minutes to complete it – anonymity is guaranteed:

<https://www.surveymonkey.com/r/GCVFoundersSurvey>

We encourage you to send this survey link to all your investees – past and present, active and exited, promising and not so promising, so that we can get a broader and higher-quality feedback from all perspectives. Help us give you more insights by considering the startup founders' points of view.

Selected members of the GCV Leadership Society are also bringing some of their portfolio companies to the GCV Symposium to meet their corporate peers, leverage the value to portfolio companies and provide case studies on how they support the world's leading entrepreneurs. This in-real-life network complements the GCV Connect software platform to help corporate venturers to share dealflow and collaborate in a secure, private environment – only corporate venturers will be able to access the platform.

This is all part of the GCV Leadership Society's mission to help bridge the different strengths and ambitions of investors across industry sectors, geography, structure and their returns – strategic and financial.

Over the decade since quitting my previous job, it has been a humbling journey listening to and working with some of the smartest minds in the world, learning so much about the portfolio companies delivering so much value to corporate venturing parents and realising their visions. So thank you – it has been a privilege to watch the future unfold. ♦

We need your help – we are asking you to leverage your network



## NEWS

## Partech packs \$143m into African fund

US-based venture capital firm Partech Ventures has closed a €125m (\$143m) fund aimed at startups in Africa, having raised capital from a host of limited partners, including Media group Bertelsmann, diversified conglomerate Axian Group, corporate services provider Edenred, outdoor advertising firm JCDecaux, personal care product manufacturer L'Oréal, telecoms firm Orange, textile and industrial firm Texaf, development banks KfW, FMO and African Development Bank, French state-backed fund of funds Averroès Finance III, financial institution European Investment Bank and the International Finance Corporation, the private sector arm of the World Bank.

Partech Africa was launched in January 2018 with a \$123m target and initial commitments of \$70m. It will invest at series A and B stage in education, mobility, finance, delivery and energy companies.

Partech Africa has hired Ceasar Nyagah as an additional investment officer based in Nairobi, Kenya, focusing on east Africa. The remainder of the team is in Dakar, Senegal, led by general partners Cyril Collon and Tidjane Dème.

## Sojitz sorts out \$33m joint venture fund

Japan-based diversified trading group Sojitz has partnered venture capital firm Fenox Venture Capital to launch a \$33m corporate venturing fund. Fenox will manage the fund, which will invest in global startups that bolster Sojitz's existing areas of business as well as creating new ones. Sojitz is also establishing an investment framework in Tokyo to work with startups. Sojitz is listed on the Tokyo Stock Exchange and has about 400 subsidiaries and affiliates in a range of industries, including transport, energy, mineral resources, chemicals, agricultural resources, consumer goods and industrial operations.

## BBG beckons outsiders to new fund

BBG Ventures, a female entrepreneur-focused venture capital unit funded by telecoms group Verizon, plans to raise a fund of undisclosed size including external limited partners, Axios has reported.

BBG backs consumer product and services-focused companies whose founding team includes at least one

woman. The policy aims to rectify female underrepresentation in consumer-facing startups, which BBG claims has persisted despite women making or influencing a majority of consumer purchases. The firm launched in 2014 as an offshoot of the BuiltByGirls women's entrepreneurship scheme run by internet services business AOL.

## SoftBank studies 10-figure Latin America fund

Japanese telecoms and internet group SoftBank plans to form a Latin America-focused fund, Bloomberg has reported. The fund would be led by Marcelo Claure, who was appointed SoftBank's chief operating officer in May last year, and it could reach billions of dollars, according to a source.

Meanwhile, the \$98.6bn SoftBank Vision Fund has allocated more than half its capital in under two years, according to the Wall Street Journal. The fund is investing about \$7bn a quarter and the Wall Street Journal calculates it will run out of money in the next 18 months once employee compensation has been taken into account. SoftBank CEO Masayoshi Son has said he plans to raise more such funds of up to \$100bn each.

## Mandiri Capital makes for external backers

Mandiri Capital, the venture capital arm of Indonesia-based financial services firm Bank Mandiri, is looking to raise between \$50m and \$100m for its next fund, DealStreetAsia has reported. The capital will be sourced largely from external limited partners, CEO Eddi Danusaputro told DealStreetAsia, adding that the unit intends to reach a first close in the first half of 2019. It will invest at series A and B stage. Bank Mandiri set up the unit in 2015 with \$36.5m from its balance sheet.

## AirAsia invites passengers on to investment fund

Airline operator AirAsia's digital unit, Redbeat Ventures, is seeking external limited partners for a fund investing in travel and lifestyle-focused startups worldwide, according to DealStreetAsia. Aireen Omar, deputy CEO of digital, transformation and corporate services for AirAsia, told DealStreetAsia that AirAsia would anchor the fund.



## NEWS

## GE Ventures puts resources into Flux

GE Ventures, the corporate venturing arm of industrial and power technology producer General Electric, has begun beta testing a content portal called Flux that is intended to promote occupational diversity and inclusion. Flux will operate in partnership with Ideo CoLab, the collaborative impact arm of design consultancy Ideo, providing crowdsourced resources.

The initiative is the result of a 12-week collaborative research process conducted by GE Ventures in 2018 to identify obstacles to diversity in startups and venture capital teams. The study estimated about 11% of investors are women while fewer than 1% are of underrepresented ethnicity.

Flux's debut follows reports suggesting General Electric could divest GE Ventures as part of a wider corporate reorganisation, with venture capital firm Mohr Davidow Ventures rumoured to be in the frame to pick up the assets.

## Armilar accepts Semapa and KNP for fifth fund

Portugal-based venture capital firm Armilar Venture Partners has completed the first close of a €60m (\$67.8m) fund following commitments from the investment arms of industrial holding company Semapa and telecoms firm KPN.

The TechTransfer Fund, Armilar's fifth, has raised more than \$50.8m following an anchor investment by the EU's European Investment Fund and commitments from 10 other investors, including Semapa Next, KPN Ventures, academic institutions including engineering school Instituto Superior Técnico, unnamed family offices, founders of some of Armilar's portfolio companies and members of the Armilar team.

Founded in 2009, Armilar Venture Partners targets seed and early-stage companies in Portugal, Europe and the US, focusing on healthtech, cleantech and information and communications technology. The new fund will invest in companies that aim to commercialise the results of research output, focusing on Portugal and other European markets.

## 3one4 Capital seals Sojitz backing

India-based venture capital firm 3one4 Capital has collected Rs1.5bn (\$21m) for a growth-stage fund, having raised capital from limited partners including diversified trading group Sojitz, according to Hindu Business Line. Continuum I fund is looking to raise up to \$50m and has also received backing from an unnamed US-based university endowment. It will invest in some of 3one4 Capital's existing portfolio companies, targeting series B and later with cheques ranging between \$3m and \$5m. Founded in 2015, 3one4 invests in companies operating in the enterprise intelligence and automation, media and content development, education healthcare and financial technology sectors.

## Evonik catalyses \$170m second fund

Germany-based chemicals producer Evonik has launched its second corporate venture capital fund with €150m (\$170m), increasing its funds under management to €250m. Evonik formed Evonik Venture Capital in 2012, providing an initial €100m, intending to connect Evonik to

new technologies while also scouting acquisition targets in Europe, North America, Asia and Israel, from offices in Germany, the US and China. The new fund will invest at series A and B stage with a single-deal maximum of €15m.

## Corporates board space accelerator

Aerospace technology supplier Lockheed Martin, space technology developer Maxar Technologies and government services contractor SAIC are sponsoring a US-based space-focused venture run by accelerator operators Techstars and Starburst Aerospace.

The initiative, Techstars Starburst Space Accelerator, will be based in Los Angeles and is also being sponsored by the US Air Force and US government agency Nasa's Jet Propulsion Lab, along with Israeli government-owned aerospace systems producer Israel Aerospace Industries. Non-profit research and development centre operator Aerospace Corporation will support the project, which aims to uncover business models for space-related applications in fields including energy, communications, robotics and autonomy.

Concepts spawned by Techstars Starburst Space Accelerator are expected to capitalise on technological advances, including reusable rockets, 3D printing, advanced materials and miniaturise satellites. The accelerator has already begun accepting applications ahead of the launch of its first cohort in July 2019. Matt Kozlov, managing director of Techstars, is leading it, assisted by Van Espahbodi, managing director of Starburst Aerospace.



## NEWS

## JustCo works with Trive to launch incubator

Singapore-based co-working space operator JustCo has partnered venture capital firm Trive Ventures to launch an incubator aimed at early-stage startups in the country, Tech in Asia has reported.

Trive Labs will target entrepreneurs who have received more than S\$20,000 (\$14,700) in funding or an SG Founders Grant from the Singaporean government with Trive as their accredited mentor. The nine-month scheme will provide qualified startup entrepreneurs with access to hot-desking at JustCo Lab, a co-working facility.

Participating startups will gain support, resources and mentoring access to JustCo's members, ranging from small and medium-sized enterprises to Fortune 500 firms.

## Krungsri Finnovate banks on another \$30m

Thailand-based financial services firm Krungsri is considering doubling the size of its venture capital vehicle, Krungsri Finnovate, to \$60m, managing director Sam Tanksul has told DealStreetAsia.

Krungsri Finnovate was launched in May 2017 with \$30m and has since invested \$15m in three companies. The fund intends to use the remaining \$15m to invest

in four companies and a fund based in Israel or China. The extra \$30m could be used to increase the size of its investments. Tanksul said: "The additional corpus is planned for use in 2020 alone as the ticket sizes for attractive startups have become much larger. We might have had \$1m to \$2m ticket sizes previously, but it may now increase to \$4m to \$5m."

## MML seeks corporate commitments for second fund

Ireland-based private equity firm MML Growth Capital Partners is targeting at least €125m (\$141m) for its second fund and is likely to approach corporates that backed its first fund, the Irish Independent reported. Healthcare provider Cigna, financial services firm AIB and Goldpoint Partners, an investment vehicle for insurance provider New York Life, were all limited partners for the firm's inaugural vehicle, as were Enterprise Ireland and the EU's European Investment Fund. MML targets small-to-medium sized enterprises in Ireland, with initial investments ranging from about \$5.5m to \$17m.

## Lilly Asia Ventures lifts \$40m for fifth fund

Lilly Asia Ventures, a regional corporate venturing subsidiary of pharmaceutical firm Eli Lilly, has attracted \$40m from public pension fund San Francisco City & County Employees' Retirement System, according to Pensions and Investments. The financing was raised for LAV Biosciences Fund V, Lilly Asia Ventures' fifth biosciences fund launched this year with a \$750m target size. The fund already has a \$100m commitment from US retirement fund manager Los Angeles County Employees' Retirement Association. It will concentrate on the healthcare and life sciences sectors.

## Rabobank deposits another \$90m in CVC fund

Netherlands-based financial services firm Rabobank has provided an additional €80m (\$90m) for its strategic investment subsidiary, Rabo Frontier Ventures. The fund now has roughly \$170m under management and will use the new capital to expand its geographic focus, seeking opportunities internationally. Rabo Frontier Ventures was launched in January 2018 and invests in financial and agricultural technology developers, concentrating on four core themes – reducing personal debt, platform banking, emerging technologies and applying data to the food industry.

## Allianz X expands beyond \$1bn

Germany-based insurance and asset management group Allianz has increased the capital available to Allianz X, the digital investment vehicle it formed in 2013, from €430m to €1bn (\$1.13bn).

Allianz X targets growth-stage companies developing digital technologies relevant to its parent's business, covering areas such as mobility, wealth management, cybersecurity, data analytics, connected property and health products. The firm said it had allocated more capital to reflect the unit's success.

Iván de la Sota, Allianz's chief business transformation officer, said: "We are committed to further invest and develop the next generation of digital growth companies related to Allianz's core business."



## NEWS

## Credit Suisse expands Entrepreneur Capital to \$199m

Switzerland-based financial services firm Credit Suisse has added Sfr70m to its Entrepreneur Capital fund to increase its overall size to Sfr200m (\$199m).

Entrepreneur Capital, which is managed by private equity firm Helvetica Capital, has already invested almost \$130m in 52 small and medium-sized companies based in Switzerland, and still holds stakes in 29 of those. The fund has a largely sector-agnostic approach, through robotics, automation, medical and financial technology are all areas of interest. It seeks companies that need funds to grow and expand, as well as small businesses that promote local jobs, typically investing between \$250,000 and \$8m.

Entrepreneurs Capital is separate from Swiss Entrepreneurs Fund, an investment fund Credit Suisse manages in partnership with another domestic bank, UBS.

## Corporates champion \$113m NordicNinja VC

Finland-based venture capital fund NordicNinja VC has attracted carmaker Honda and electronics companies Panasonic and Omron for its €100m (\$113m) inaugural vehicle, according to VentureBeat.

Public financial institution and export credit agency Japan Bank for International Cooperation has also backed the vehicle, which is incorporated as JB Nordic Fund I and is advised by venture capital firm Nordic Ventures. NordicNinja will focus on deep tech companies in artificial intelligence, virtual reality, autonomous mobility and the internet of things. The fund will invest in startups in the Nordic and Baltic states.

Startups will receive between \$2m and \$5m, and will gain access to local corporate expertise to help with expansion into Asia. The fund is led by managing partners Tomosaku Sohora, Marek Kiisa and Shinichi Nikkuni.

## Mubadala mobilises SoftBank in \$400m fund

Telecoms and internet group SoftBank has provided \$200m of a \$400m fund raised by Abu Dhabi-owned investment vehicle Mubadala, according to the Finan-

cial Times. The fund will invest in Europe-based startups. Sources told the Financial Times the fund would invest between \$5m and \$30m in European startups.

## Mahan moves up at Stanley Ventures

US-based hardware product maker Stanley Black & Decker has promoted investment manager Michael Mahan to managing director of its corporate venturing unit Stanley Ventures. Selected as one of GCV's Rising Stars 2018, Mahan was the first to join the unit on its launch in 2016. He previously spent more than two years at consultancy White Light Consulting as director of program management and delivery. Stanley Ventures typically invests in seed to series B stage in areas such as oil and gas and hydraulics technology.



Mahan

## Whiteaker eyes IBM Ventures role

Thomas Whiteaker, has left a managing partner position at venture capital firm Propel Venture Partners to join computing technology producer IBM's corporate venturing unit, IBM Ventures, as a partner.

Whiteaker spent three years at Propel, the VC firm formed in early 2016 to invest in financial technology developers on behalf of financial services firm BBVA. He was previously an executive director at BBVA's strategic investment vehicle, BBVA Ventures, which spun out into Propel Venture Partners.

Whiteaker previously spent four years at HarfoBefore that he led investments in e-commerce, security and authentication for Visa Ventures, the corporate VC arm of payment services firm Visa.



Whiteaker

## Choi chosen to head investment at Netmarble

South Korea-based mobile game publisher Netmarble has promoted its head of corporate strategy and senior vice-president, Chanseok Choi, to head of investment and managing director. Choi originally joined Netmarble in 2004, and has overseen investor relations and mergers and acquisitions.



## NEWS

## Waite makes her way to new Millennium

Rita Waite, investment manager at Juniper Ventures, US-based networking technology producer Juniper Networks' corporate venture capital arm, has joined Portugal-based commercial bank Millennium. Waite was named a GCV Rising Star last month. Juniper Networks initially hired Waite as a corporate strategy analyst in 2011. She became a senior analyst in 2014 before being appointed to the three-member Juniper Ventures unit the following year. Waite will join Millennium's payments product team. She said: "I will be working hand-in-hand with key stakeholders in a difficult regulatory environment to integrate high-technology concepts and strategies."



Waite

## Taber takes up DataRobot offer

Igor Taber, formerly a managing director at Intel Capital, semiconductor and data technology provider Intel's corporate venturing arm, has joined one of its portfolio companies, machine learning platform developer DataRobot.

Taber has been appointed senior vice-president of corporate development and strategy position at DataRobot, having become involved in the company initially as an investor and board observer in 2015. Intel Capital

invested in \$33m series B and a \$54m series C rounds in 2016 and 2017 respectively.

At Intel Capital, Taber concentrated on sourcing and funding startups for nearly two decades, specialising in the enterprise software realm in the past five years, after initially joining the unit as a product manager in 2002. He became an investment director in 2008 before being promoted to managing director in 2014.

## Siegel seeks out board position at Illumina

Sue Siegel, chief innovation officer at industrial conglomerate General Electric and chief executive of its corporate venturing unit, GE Ventures, has joined genetic technology provider Illumina's board.

Siegel, ranked second in Global Corporate Venturing 2018 Powerlist, has been CEO of GE's health-tech scheme, Healthymagination, since 2012, ascending to CEO of GE Ventures in 2013 to help the unit evolve from predecessor GE Capital, before being promoted to chief innovation officer at its parent in 2017.

Siegel oversees capital allocation and portfolio management for GE, which funds startups through GE Ventures, focusing on healthcare, software, manufacturing and energy. The news comes at a time when GE is reported to be considering divesting GE Ventures.



Siegel

## Schenkein starts life at GV

David Schenkein, former chief executive of biopharmaceutical company Agios Pharmaceuticals, has been hired by GV, a corporate venturing subsidiary of internet technology conglomerate Alphabet, as a general partner.

Schenkein joined Agios in 2009, and helped transform the company from a preclinical startup to a business with two US-approved cancer drugs. He announced his plans to step down as CEO in September 2018, though he will remain chairman.

Before joining Agios, Schenkein was senior vice-president of clinical haematology and oncology at pharmaceutical company Genentech, after five years at Millennium Pharmaceuticals, where he oversaw the clinical development of a cancer therapy aimed at non-Hodgkins lymphoma.

Schenkein will now co-lead GV's life sciences investment team, which also features general partners Blake Byers and Krishna Yeshwant, the latter of whom was a board member at molecular data technology provider Foundation Medicine with Schenkein. In addition to focusing on life sciences investments, Schenkein will help to develop portfolio companies.

## Groner goes to Koch Disruptive Technologies

Eli Groner, previously director-general of the Israeli prime minister's office, has joined Koch Disruptive Technologies, an investment subsidiary of US-based chemicals and energy conglomerate Koch Industries. He will be an Israel-based managing director. The unit finances companies in diverse industries in the US and abroad.

In his previous role he advised then prime minister Benjamin Netanyahu and various government departments on national budget negotiations and economic policies. He also co-chaired a China-Israel joint economic task force and oversaw the National Cyber Bureau as well as the National Program for Smart Mobility launched by Israel in January 2017. Before that, he was an economic attaché at the Israeli embassy in the US.





**NEWS**

**Straub gets the rub at Bioventure**

Nico Straub, venture director at Siemens Technology Accelerator, a corporate venturing subsidiary of industrial product and appliance producer Siemens, has joined venture capital management consulting firm Bioventure as a partner.

Founded in 2001, Germany-based Bioventure provides investment management services to life sciences and bio-tech-focused entrepreneurs and investors, helping the former pitch their ideas and raise funds, and the latter to conduct due diligence and make equity investments.

As part of the deal, Straub is taking a board position at Bioventure customer Jennewein Biotechnologie, a Germany-based scarce functional sugars developer, through joint venture Bioventure Asset Management. Straub had been at Siemens Technology Accelerator since 2013, overseeing startup investments and commercialising and licensing Siemens' technologies.

**Folau joins LMI Ventures**

Ian Folau, previously chief executive of open-source vulnerability management platform provider GitLinks, has joined US-based nonprofit government management consulting firm Logistics Management Institute's new venturing fund, LMI Ventures.

LMI Ventures, which has hired Folau as a managing director, will finance early-stage startups developing technologies relevant to its parent's customers' needs,

such as analytics, supply chain and healthcare management services.

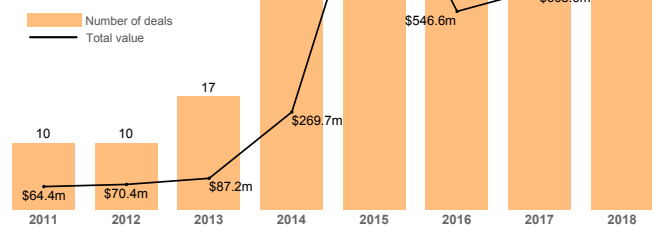
Folau co-founded GitLinks in 2015 while he was an MBA student at Cornell University's Johnson Graduate School of Management. He remained CEO until the company was acquired for an undisclosed amount by online business applications service provider Infor in October 2018.

**Analysis: Andela sources \$100m round**

**Kaloyan Andonov, GCV Analytics**

US-based recruitment company for IT professionals Andela received \$100m in a series D round, which included GV, a corporate venturing subsidiaries of internet technology conglomerate Alphabet. Investment firm Generation Investment Management led the rounds. Investors included the Chan Zuckerberg Initiative, the investment holding company owned by Facebook founder Mark Zuckerberg and his wife Priscilla Chan. A previous corporate backer of Andela is Salesforce Ventures, a subsidiary of enterprise software producer Salesforce. In addition to developing its training platform, the company plans to expand further across Africa.

**Corporate-backed deals in HR tech enterprises 2011-18**



Founded in 2014, Andela provides coaching and training to Africa-based software developers and helps them find employment in the US. Andela operates training campuses in the capital cities of Nigeria, Kenya, Uganda and Rwanda. It claims to have hired some 1,000 developers from a pool of more than 100,000 applicants.

Andela is a business in the dynamic space of human resources tech, which has been raising corporate-backed rounds in recent years, as the bar chart shows. Last year there were 50 corporate-backed deals worth an estimated total of \$974m in that space. ♦

**Analysis: Co-investment patterns of corporate venturers**

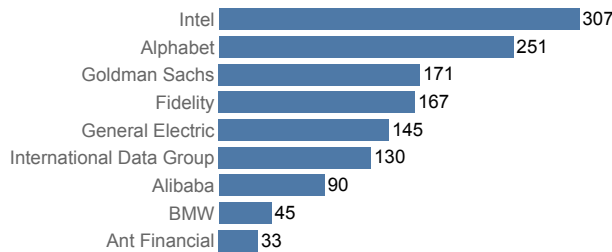
**Kaloyan Andonov, GCV Analytics**

Over the past eight years, Global Corporate Venturing has tracked more than 14,000 minority stake deals involving at least one corporate venturer in the investment syndicate, be it from a specialised venturing arm or an equity

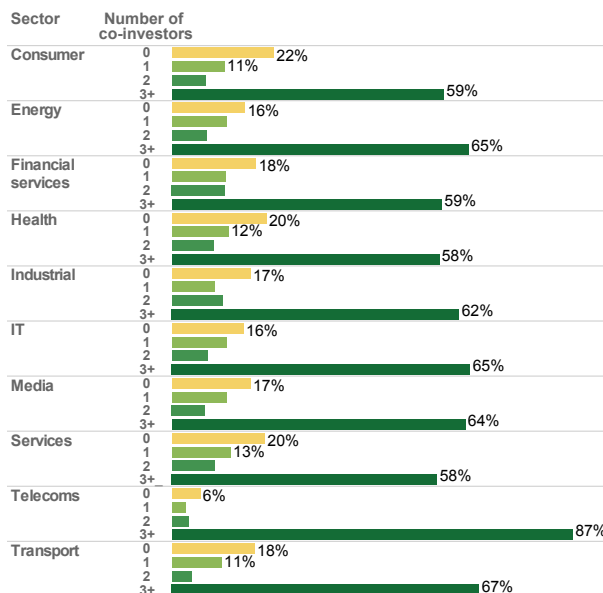


**NEWS**

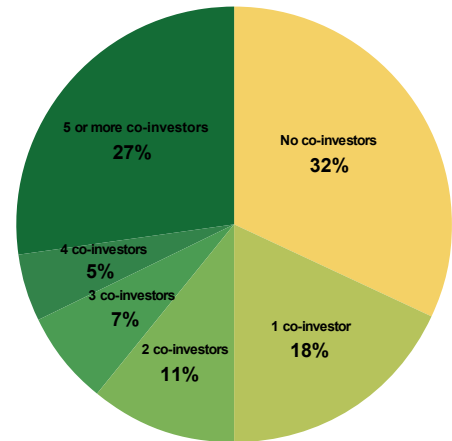
**Top corporate investors by number of other corporate co-investors 2011-18**



**Sector-specific corporate-backed deals by proportion of co-investment 2011-18**



**Corporate-backed deals by number of co-investors 2011-18**



investment through a business unit of the corporation. In those deals, we have seen more than 2,000 corporates committing capital to emerging businesses, though the bulk of investments was made by slightly more than 300.

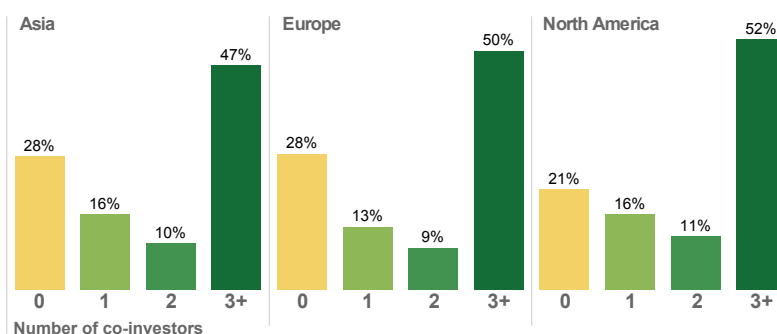
A factor revealed by the data is how often corporates co-invest with one another. The vast majority (68%) have co-invested with at least one other corporate in all their deals, while 32% appear never to have co-invested with other corporates.

For the period 2011-18, half of corporates have co-invested with two or more other corporate venturers across all their deals – with corporates not necessarily from the same sector however. Slightly more than a quarter (27%) have co-invested with five or more other corporates. Only 18% have co-invested with just one other corporate venturer.

Semiconductor manufacturer Intel and diversified internet conglomerate Alphabet have had the largest number of corporate co-investors, along with financial services firms Goldman Sachs and Fidelity.

When broken down by sector, most corporate VC investors in each sector – between 50% and 60% – have had three or more co-investors, while only about a fifth have never co-invested with other corporates, according to data from GCV Analytics.

**Co-investment in corporate deals by startup region 2011-18**



Broken down by region, in all three of the major regions for innovation – North America, Europe and East Asia, the pattern is similar. Half or nearly half of corporate VCs have co-invested with three or more of their peers. ♦



**NEWS**

**Analysis: Reddit gets \$300m**

**Kaloyan Andonov, GCV Analytics**

**S**ocial media platform Reddit secured \$300m in a series D round, which was led by an \$150m commitment from China-based internet group Tencent, reportedly valuing Reddit at \$3bn post-money. The round featured undisclosed existing backers.

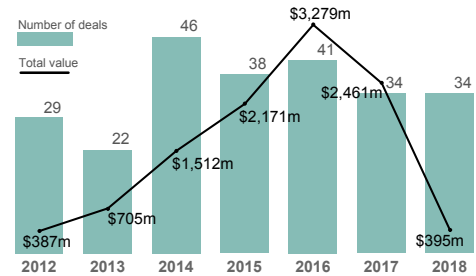
Reddit has previously received backing from other corporates. Condé Nast, part of media group Advance Publications, acquired Reddit in 2006 but the company was spun out in a \$50m series B round in 2014. Three years later, the company raised a \$200m round, which featured financial services group Fidelity. Although Tencent is not its first corporate backer, the round raised concerns about potential censorship on the platform, which is inaccessible in China and known for being a free speech space among its user base. However, the gaming content on the platform is more likely the reason behind Tencent's investment, as Tencent is the world's largest game publisher by revenue.

Founded in 2005, Reddit operates an online social platform with 330 million monthly active users who are spread across a range of self-moderated theme-based groups called "Subreddits". Already generating revenues – \$85m in 2018 – Reddit is said to be looking to capitalise on advertising opportunities on the platform.

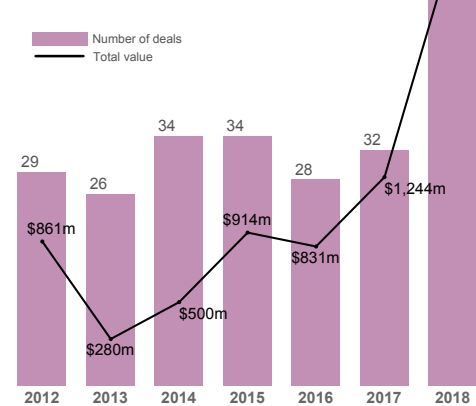
Corporate-backed investments in emerging social media and messaging businesses have remained somewhat stagnant over the past few years – 34 rounds in both 2017 and 2018, with \$2.46bn of total estimated capital in rounds in 2017 and only \$359m last year.

However, there is different picture in the gaming and eSports space, as the other bar chart shows. In 2018, the number of corporate-backed deals in that realm almost doubled in both value and volume – 57 rounds, up from 32 in 2017 – while the total estimated capital in those rounds was \$2.62bn – up 110% from \$1.24bn the previous year. ♦

**Corporate-backed deals in social media, messaging and networking 2012-18**



**Corporate-backed deals in gaming and eSports 2012-18**



**Analysis: Palo Alto welcomes Demisto**

**Kaloyan Andonov, GCV Analytics**

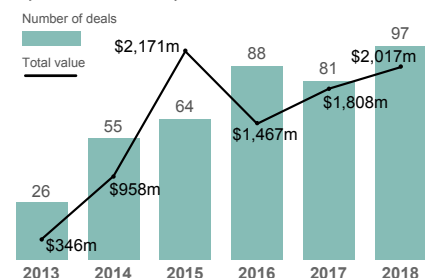
**C**ybersecurity software producer Palo Alto Networks agreed to acquire US-based cybersecurity orchestration software developer Demisto for \$560m.

The stock-and-cash deal gave exits to two corporate investors – IT services firm Wipro and enterprise communication software producer Slack. Demisto had previously raised \$69m in equity funding. The acquisition is subject to regulatory approval and is expected to complete during the third quarter of this year. Wipro and Slack participated through their respective venturing subsidiaries, Wipro Ventures and the Slack Fund, in a \$20m series B round in 2017.

Founded in 2015, Demisto has developed a software platform orchestrating the cybersecurity process, automating basic functions while feeding into input from human analysts. The platform employs machine learning to gain knowledge from historical data on previous interactions. The company currently has more than 150 customers.

The interest of corporate venture investors in the cybersecurity space has piqued in recent years, as the bar chart suggests, driven by the increasing digitisation of virtually all sectors of the economy, which also entails heightened risks of cyberattacks. In 2018, there was a record number of deals (97) featuring at least one corporate investor in syndicates, worth an estimated \$2bn. ♦

**Corporate-backed deals in cybersecurity 2013-18**



## Big deal: Welcome to the Tencent-sponsored metaverse

James Mawson, editor-in-chief

In game-industry deal-making, it appears there is Tencent, then there is everyone else. As a sign of both financial muscle and the need to expand beyond core markets given the effective closing of the Chinese market to new games in 2018, Tencent was either a major shareholder in or investor in four of the top five deals last year, a year in which a record \$5.7bn was invested in startups, according to Digi-Capital's first-quarter report by Tim Merel.

Tencent was behind investments in Epic Games (\$1.25bn raised), Douyu (\$630m raised), Shanda Games (\$474m) and Huya (\$462m raised). France's Voodoo raised \$200m from Goldman Sachs to round out the top five in 2018, Digi-Capital said.

The "games acquisitions market was also on fire in 2018", Digi-Capital added, with more than \$22bn in games mergers and acquisitions making it the second-highest year on record. Games M&A dollars are always dominated by mega-deals, which last year included Naspers selling 2% of Tencent for more than \$10bn for a 60,000% return, and Tencent and others acquiring Vivendi's \$2bn plus stake in Ubisoft.

Digi-Capital's report from the year before found the Chinese group Tencent led or participated in over \$4 of every \$10 invested in games companies worldwide in the 12 months to the end of the first quarter of 2018. It was involved either sell-side or buy-side in more than three-quarters of all games M&As by deal value in the same period.

Last month there was a complementary strategy as Reddit was in the process of raising up to \$300m in a round to be led by a \$150m investment from Tencent's corporate venturing unit. Reddit, the self-proclaimed "front page of the internet" is seen by many as the internet's enfant terrible, but Reddit had some 330 million monthly active users by October and is reportedly raising the funding at a \$2.7bn pre-money valuation. Condé Nast, the media company that acquired Reddit in 2006 before spinning it off again eight years later, retains a minority stake.

Tencent-backed Spotify also acquired two CVC-backed companies, Gimlet Media and Anchor, in hopes of creating a podcast behemoth. Gimlet focuses on producing high-quality narrative podcasts while Anchor helps with distribution and monetisation.

What potentially links these deals is an approach laid out by perhaps Tencent's largest external games success, taking a 48% stake in Epic Games, the developer behind the Fortnite gaming success. As Matthew Ball at information site Redef noted: "In 2018, there was a lot to read about Fortnite, and even more to learn from it. 'The game' is indeed the future of entertainment, as well as the greatest threat to today's media giants.

"Fortnite's most significant achievement may be the role it has come to play in the lives of millions. For these players, Fortnite has become a daily social square – a digital mall or virtual afterschool meetup that spans neighbourhoods, cities, countries and continents. This role is powered by Fortnite's free availability, robust voice chat, cross-platform functionality and collaborative gameplay.

"Accordingly, examples abound of kids, adults and families simply hanging out or catching up on Fortnite while they play. Studies find that Fortnite's players spend one to one and a half hours per day in the game, versus 30 minutes for active Snapchat or Instagram users. Fortnite was not designed to be a Second Life-style experience, or even a digital 'third place'. It became one organically. What is more, it is drastically outmonetising dedicated social squares such as Facebook, Snapchat and Instagram – even combined."

Ball said: "Fortnite's 200 million-plus accounts together with Epic's balance sheet and game engine to become a new, ecosystem-centric platform is a goal consistent with an enduring obsession of founder Tim Sweeney's – the metaverse.

"The term 'metaverse' stems from Neal Stephenson's 1992 novel Snow Crash, and describes a collective virtual shared space created by the convergence of virtually enhanced physical reality and persistent virtual space. In its fullest form, the metaverse experience would span most, if not all, virtual worlds, be foundational to real-world augmented reality experiences and interactions, and would serve as an equivalent digital reality where all physical humans would simultaneously co-exist. It is an evolution of the internet. More commonly, the metaverse is understood to resemble the world describe by Ernest Cline's Ready Player One, brought to film by Steven Spielberg in 2018.

"The proof of Fortnite's unique potential was demonstrated live on February 1, 2019. At 2pm eastern time, DJ Marshmello held a live concert exclusively inside Fortnite. The event, which was live-synced to the real Marshmello, was attended by more than 10 million in the game – with millions more watching live via Twitch and YouTube – many of whom used their characters' user-specific dance moves to join in. The event was stunning. And it showcases the potential of the metaverse – including payment for performances, music rights, etc – wherein a user can have potentially unlimited experiences inside a single medium."

The issues around augmented and virtual reality and games will be explored in more depth at the GCV Symposium in May 22-23, addressed by, among others, Tencent's managing partner, Jeffrey Li, plus demos of top companies. ♦

"Fortnite's most significant achievement may be the role it has come to play in the lives of millions"



## SECTOR FOCUS



# Industrials grind forward

**Kaloyan Andonov, reporter, GCV Analytics**



**T**he buzz-phrases in the industrial sector are “Industry 4.0” and the “fourth industrial revolution”. They aim to describe the major shift taking place across the sector, marrying the might of industrial manufacturing with the power of information technology.

It is about the promise of increased efficiency from internet-of-things (IoT) technologies, artificial intelligence, big data analytics, among other advances. The digitisation of industrial activity is imminent, opening doors to startups looking to disrupt and to collaborate.

The Global Manufacturing Outlook report by auditing and consulting firm KPMG surveyed 300 executives of industrial manufacturing companies worldwide, all of whom concurred there are expectations on part of stakeholders that they will lead digital transformation of their organisations’ operational models. However, they expressed apprehension that the lead times often seem overwhelming.

This means corporate venturers in this sector have much to find when scouting for innovation, but the risks of disruption affecting the parent is equally real. General Electric, perhaps the most storied industrial conglomerate since the earliest days of electrification, has been going through a break-up and sale and there has been a number of departures from GE Ventures as a result of a shrinking portfolio of parent needs.

It is understood GE intends to divest GE Ventures. It was launched in 2013 as a successor to the firm’s GE Capital unit – which still operates as a financial services provider – as well as a clutch of separate funds focused on areas such as healthcare and energy, with a brief to invest \$150m a year on behalf of its parent.

3D printing, also known as additive manufacturing, is one of the most promising and disruptive technologies. While it may have failed to turn every home into a factory in the past, 3D printing is today considered essential to Industry 4.0, as it blends digital technology with manufacturing. Most 3D printers are capable of working primarily with plastic, but there is a drive to employ metals, alloys and other materials.

The Wohlers Report 2018, by consultancy Wohlers Associates, revealed significant increases in metal additive manufacturing. It said an estimated 1,768 metal additive manufacturing systems were sold in 2017, compared with 983 systems the previous year, an 80% surge. The report also notes that the number of companies engaged in producing industrial 3D printers also increased significantly in the same period, reflecting the entrance of new players in the market.

The 2019 Additive Manufacturing Market Outlook and Summary of Opportunities by consultancy SmarTech Publishing, said: “Market success in 2018 has been predicated on two driving trends. The first is the effect of a rapid strategic importance placed on additive manufacturing by large multinational corporations spanning the global chemical and materials

**GCV Analytics defines the industrial sector as encompassing manufacturing equipment, artificial and advanced materials, industrial chemicals, space and satellite tech, 3D printing, robotics and unmanned aerial vehicles, agriculture and agtech, and other subsectors.**



## SECTOR FOCUS

communities to developers of traditional machine tools and industrial lasers. Second is the continued efforts of the industry to focus their strategies on applications, especially ones which provide growth that is largely complementary – not competitive – with existing manufacturing processes and machine tools.” These two driving trends suggest there are many opportunities for synergies with corporations for innovative startups in this space.

Another growing subsector of the new industrial economy revolves around unmanned aerial vehicles – drones. A recent report – Drones: Reporting for work – from 2018, by financial services firm Goldman Sachs, forecasts that the global spending on drones will surpass \$100bn by the end of 2020, with the defence sector remaining the largest area of spending, expected to dedicate over \$70bn.

The realm of commercial drones is, however, expanding, according to the report, with demands from two major industries dominating the landscape – construction, accounting for \$11bn, and agriculture, \$6bn. In construction, drone applications cover a wide range of activities including inspection, maintenance, surveying and mapping. In agriculture, drones are employed primarily for mapping, data gathering and precision farming sensor technologies.

The report also mentions the growing number of licensed drone pilots and their increasing needs for specialisation. “It will be hard going for these pilots to make a career commercially without specialising and moving above and beyond basic photography and videos.”

Drone technologies are being increasingly adopted across other industries. The 2018 Commercial Drone Industry Trends Report, by drone app market platform DroneDeploy, said while drone adoption growth was strongest in the construction sector (239% year-on-year), high adoption rates are also found in mining (198%), surveying (171%) and real estate (118%). The report also notes: “We have seen a five-times increase in enterprise customer growth since 2016. Drone adoption at large companies is currently growing at 20% every month. As a result, the average size of an enterprise drone team grew to five pilots.”

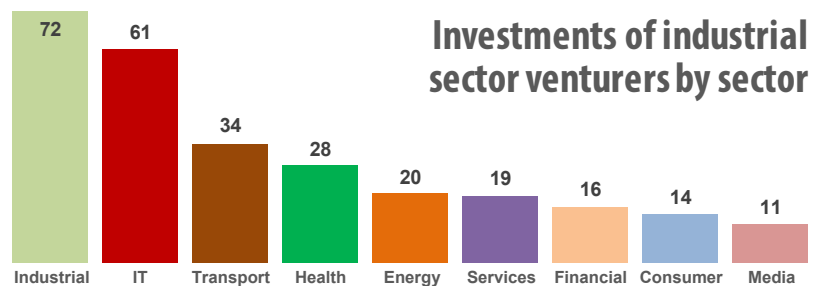
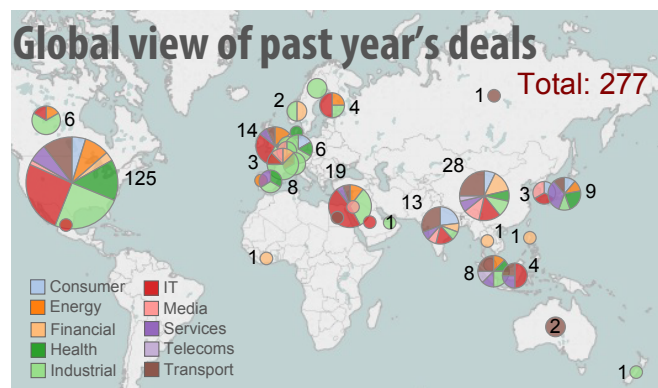
Another disruptive technology in the industrial sector is robotics. According to data from the International Federation of Robotics, by 2016 the average global robot density was at 74 per 10,000 employees in manufacturing. However, the biggest increases are expected in carmaking. Demand for robots in the automotive industry rose by 6% to 103,300 units in 2016, accounting for a 35% share of the total supply. The major drivers were investments in new production facilities in emerging economies as well as investments in major car producing countries in North America, western Europe and east Asia. The International Federation of Robotics data show that, in 2016, just five countries – the US, China, Japan, South Korea and Germany – accounted for 73% of all robot sales globally.

According to consultancy PwC’s Chemicals Trends 2018-19 report, the global chemicals industry has been facing a set of challenges by “fighting declining margins, product commoditisation, rapidly expanding competition in developing countries, and customers demanding more at lower prices”. Much of the growth has been fuelled by mergers and acquisitions. However, the report noted that this year the chemicals sector may reach a tipping point. “Prodded by accelerating technology advances, which are shaping customer purchases and needs, some chemicals companies have begun to rethink their growth strategies.”

The report also notes that the industry is not devoid of opportunities. “Significant profit opportunities await chemicals companies that are able to lead in digitising products and services, providing collaborative sales channels for customers, and generating R&D breakthroughs in nanomaterials, which can contribute to pollution reduction, disease treatment, computer sensors, wearable clothing, robotics and new forms of packaging.”

From February 2018 and January 2019, GCV reported 277 venturing rounds involving corporate investors from the industrial sector. A considerable number of them (125) took place in the US, while 28 were hosted in China, 19 in Israel, 14 in the UK and 13 in India.

Many of those commitments (72) went to emerging enterprises from the same sector, mostly robotics and unmanned aerial vehicle as well as agriculture and agtech, the



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remainder to companies developing other technologies in synergies with industrials – 61 deals in the IT sector (artificial intelligence, cybersecurity, big data and analytics), 34 in transport (primarily ride-hailing and car-sharing along with connected, autonomous and electric vehicle tech) and 28 in health (mostly medical devices, diagnostics and pharmaceuticals).

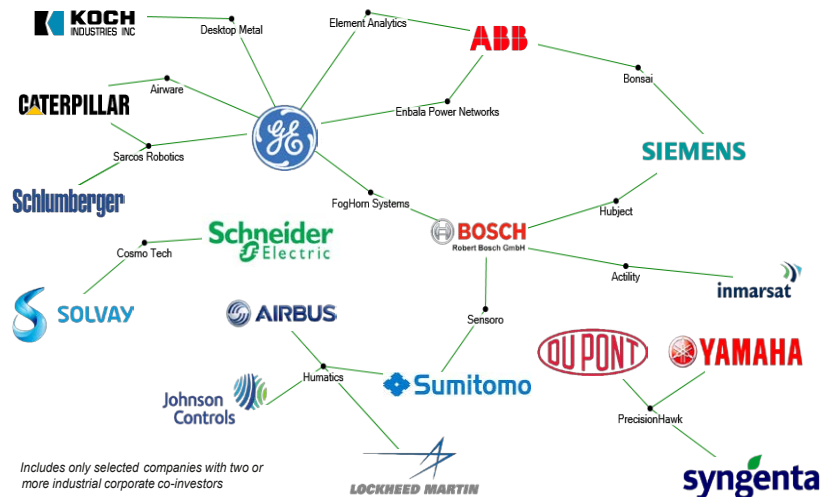
The network diagram, illustrating co-investments of industrial corporates, shows the range of investment interests of the sector's incumbents. The commitments range from drones (Airware, PrecisionHawk) and robots (Sarcos Robotics) through business management software (Cosmo Tech) and big data analytics and artificial intelligence for data (Element Analytics, Bonsai), IoT applications and networks (FogHorn, Sensoro) to transport and mobility tech (Humatics, Hubeject) and even smart grid and renewable energy tech (Actility and Enbala).

On a calendar year-on-year basis, total capital raised in rounds backed by industrial corporates went up significantly from \$8.70bn in 2017 to \$14.24bn in 2018, or 64%. The deal count also grew slightly, by 11% from 244 deals in 2017 to 270 by the end of 2018.

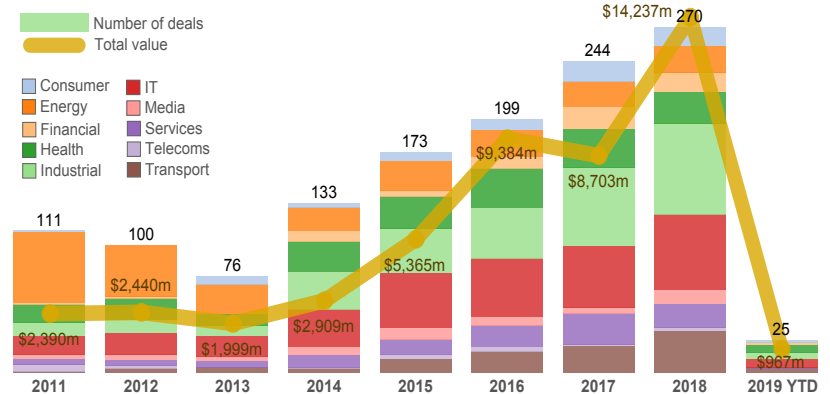
The 10 largest investments by corporate venturers from the industrial sector were not concentrated in this industry.

The corporate investors from the industrial sector involved in the largest number of deals were aircraft producer Airbus, industrial conglomerates Siemens, Sumitomo and Fosun. The list of industrial corporates commit-

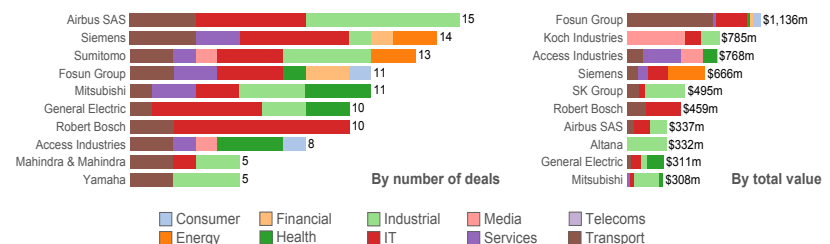
### Co-investments of industrial sector venturers 2017 to date



### Deals by industrial corporates 2011-19



### Top industrial sector investors over the past year



### Top investors in industrial enterprises over the past year



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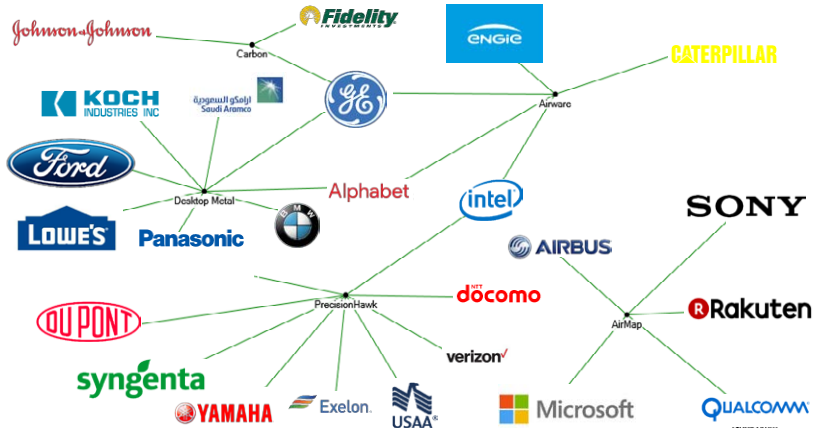
ting capital in the largest rounds was topped by industrial conglomerate Fosun, chemicals and energy producer Koch Industries and conglomerate Access Industries.

The most active corporate venture investors in emerging industrial companies were aircraft producers Boeing and Airbus along with diversified conglomerate Alphabet.

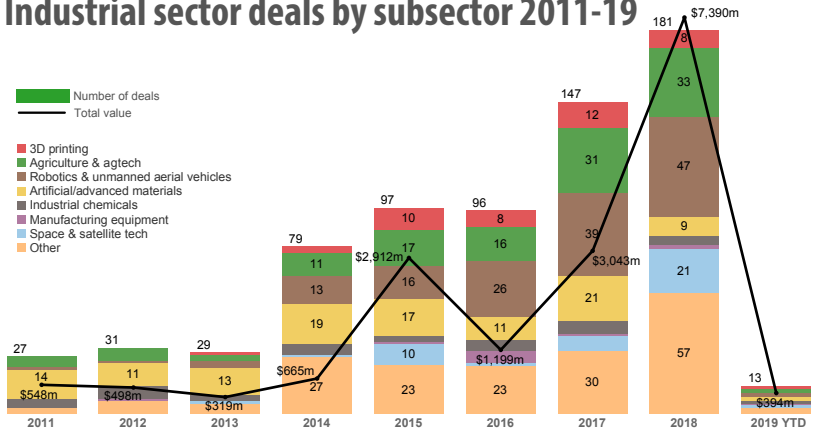
The emerging industrial businesses in the portfolios of corporate venturers were mostly from the drones and drone tech space (AirMap and Airware, Precision Hawk) as well as additive manufacturing (Desktop Metal and Carbon).

Overall, corporate investments in emerging industrial-focused enterprises rose significantly from 147 rounds in 2017 to 181 by the end of 2018, suggesting a 23% increase. Estimated total dollars more than doubled from \$3.04bn in 2017 to \$7.39bn last year.

### Corporate co-investments in industrial enterprises 2017 to date



### Industrial sector deals by subsector 2011-19



### Deals

Corporates from the industrial sector invested in large multimillion-dollar rounds, raised mostly by enterprises in the same sector as well as in transport.

China-based bicycle-rental service Hellobike secured about \$700m in series E1 funding from investors including Fosun and Ant Financial, the financial services affiliate of e-commerce group Alibaba. The corporates were joined by seven undisclosed investors. Hellobike is China's third-largest app-based bike-sharing service by monthly active users, after Mobike and Ofo.

US-based professional media content provider Getty Images signed an agreement with Koch Industries' corporate venturing arm Koch Equity Development to secure a \$500m investment. The company was majority-owned by private equity firm Carlyle Group, when the Getty family reached an agreement to repurchase control in a deal that reportedly valued Getty Images at below \$3bn, including debt. Founded in 1995, Getty Images operates an online platform for media, business and creatives to purchase photography, video and music from more than 250,000 contributors that provide content from more than 160,000 news, sports and entertainment events each year.

US-based online real estate marketplace Opendoor raised \$325m in a series E round co-led by home builder Lennar, Access Industries and venture capital firm General Atlantic. Property manager Invitation Homes also participated in the round, among other investors. Access Industries took part through its investment arm Access Technology Ventures. Founded in 2014, Opendoor has created an online real estate platform that helps with valuation, and once fees have been agreed its staff conduct an assessment of the property to ascertain whether work is required.

Landa Digital Printing, an Israel-based developer of nanotechnology that enhances print results, raised \$300m from investors including chemicals producer Altana, a family office Skion, which like Altana is majority owned by Susanne Klatten, an entrepreneur and heiress to BMW's automotive production business. Formed as a subsidiary of nanotechnology developer Landa Group, Landa Digital Printing's nanographic process converts an ink image into a polymeric film that is laminated on to the paper.

E-commerce firm Bliibli and industrial conglomerate Astra International invested up to \$290m in a round raised by Indo-





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### Top 10 deals by industrial corporate investors over the past year

Company	Location	Sector	Round	Size	Investors
Hellobike	China	Transport	E and beyond	\$700m	Ant Financial   Fosun Group   undisclosed investors
Getty Images	US	Media	Stake purchase	\$500m	Koch Industries
OpenDoor	US	Services	E and beyond	\$325m	10100 Fund   Access Industries   Andreessen Horowitz   Coatue   General Atlantic   GGV Capital   Invitation Homes   Khosla Ventures   Lakestar   Lennar   New Enterprise Associates   Wells Fargo (Norwest Venture Partners)
Landa Digital Printing	Israel	Industrial	–	\$300m	Altana   Skion
Go-Jek	Indonesia	Transport	–	\$290m	Astra International   Bibli
Leap Motor	China	Transport	A	\$288m	CRRC   Gopher Asset   Industrial Securities   Sequoia Capital   Shanghai Electric Group
Grab	Singapore	Transport	E and beyond	\$250m	Hyundai Heavy Industry   Kia Motors
Chargepoint	US	Energy	E and beyond	\$240m	American Electric Power   BMW   Chevron   Daimler   Siemens
Lingbao Wason Copper Foil	China	Industrial	Stake purchase	\$240m	SK Group
Enerkem	Canada	Energy	–	\$224m	BlackRock   Braemar   Cycle Capital   Fondation CSN   Fonds de solidarité FTQ   Investissement Québec   National Bank of Canada   Rho Canada Ventures   Sinobioway   Waste Management of Canada   Westly Group

nesia-based on-demand ride platform Go-Jek, which was reportedly targeting \$1.5bn, valuing Go-Jek at \$4bn. Founded in 2010, Go-Jek operates an on-demand ride platform with some 900,000 drivers, and has branched out into adjacent services such as removal and the delivery of restaurant food, groceries and prescription medication. The company, which has roughly 15 million weekly active users, has also developed a mobile payment platform.

Energy provider Shanghai Electric and rolling stock producer CRRC Corporation co-led a RMB2bn (\$288m) series A round for China-based electric vehicle developer Leap Motor. Asset management firm Gopher Asset, securities brokerage Industrial Securities and venture capital firm Sequoia Capital China also contributed to the round, which valued the company at about \$1.15bn. Leap Motor is working on a smart vehicle incorporating features such as an intelligent driving system, facial recognition-based security measures and a cloud-based in-car wifi network.

Automotive manufacturers Hyundai and Kia Motors invested \$250m in Singapore-based ride-hailing and online-to-offline platform Grab in connection with a partnership deal. The capital was added to a funding round, which totalled \$2.7bn at the time and reached \$5bn by the end of 2018. Founded in 2012 as GrabTaxi, Grab has grown its on-demand ride service into a more wide-ranging offering spanning food and package delivery as well as mobile payment across eight Southeast Asian countries.

US-based electric vehicle charging network operator ChargePoint received \$240m in a series H round backed by Siemens and electric utility American Electric Power. Chevron Technology Ventures and BMW i Ventures, respective corporate venturing units of oil and gas company Chevron and carmaker BMW, as well as Daimler Trucks & Buses, a subsidiary of automotive producer Daimler, also participated in the round. Founded in 2007 as Coulomb Technologies, ChargePoint operates a network of more than 57,000 chargers.

China-based copper foil manufacturer Lingbao Wason Copper Foil received ₩270bn (\$240m) from SK Holdings, the holding company of industrial conglomerate SK Group. Founded in 2001, Lingbao Wason produces copper foil, boasting an annual manufacturing capacity of 30,000 tonnes. Copper foil is an essential element of batteries, with the company's clients including consumer electronics producer Panasonic Electric and carmaker BYD Auto. Lingbao Wason will use the funding to expand its manufacturing capacity to 75,000 tonnes by 2022. The company is a subsidiary of gold mining company Lingbao Gold Group. SK Holdings will become the second-largest shareholder following the deal's completion.

Enerkem, a Canada-based developer of a process that converts waste to biofuel, secured C\$280m (\$224m) from investors including waste management services provider Waste Management of Canada and industrial conglomerate Sinobioway. Financial services firm National Bank of Canada also took part in the round, along with BlackRock, Rho Ventures, Braemar Energy Ventures, Investissement Québec, Fonds de solidarité FTQ, Cycle Capital, Fondation and Westly Group. Enerkem produces biofuels and chemicals such as methanol and ethanol from solid waste.

Emerging industrial-focused businesses received financial backing from corporate investors from other sectors.

The SoftBank Vision Fund provided \$1.1bn for US-based smart glass producer View, increasing its overall debt and equity financing to more than \$1.8bn. View has created "dynamic glass" which lightens or darkens according to the amount of direct light, helping to decrease heating and lighting costs. The cash will support an increase in View's manufacturing capabilities as well as research and development.

China-based robotics technology producer UBtech Robotics raised \$820m in a series C round led by internet company Tencent. The round also featured telecoms firm Telstra, consumer electronics maker Haier Group, furniture rental service Easyhome Furnishings, conglomerate Chia Tai Group, power producer China General Nuclear and online lending platform CreditEase. China Minsheng Bank, Industrial and Commercial Bank of China, Minsheng Securities, China Film and



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### Top 10 investments in emerging industrial enterprises over the past year

Company	Location	Round	Size	Investors
View	US	E and beyond	\$1.1bn	SoftBank
UBtech	China	C	\$820m	CDH Investments   CreditEase   Haier   Industrial and Commercial Bank of China   Minsheng Securities   Shenzhen Green Pine Capital Partners   Telstra   Tencent
SpaceX	US	–	\$500m	Alphabet   Baillie Gifford   undisclosed investors
Zymergen	US	C	\$400m	Data Collective   Draper Fisher Jurvetson   Goldman Sachs   Hanwha Asset Management   Innovation Endeavors   SoftBank   True Ventures   Two Sigma Investments
Landa Digital Printing	Israel	–	\$300m	Altana   Skion
Lingbao Wason Copper Foil	China	Stake purchase	\$240m	SK Group
Desktop Metal	US	–	\$160m	Alphabet   Kleiner Perkins   Koch Industries   Lux Capital   New Enterprise Associates   Panasonic   Techtronic Industries
Spaceflight Industries	US	–	\$150m	Mitsui   Space Alliance   undisclosed investors
Grey Orange Robotics	Singapore	C	\$140m	Blume Ventures   FlipKart   Mithril Capital Management   Mitsubishi   private investors   Project Verte   undisclosed investors
Cloud Constellation	US	B	\$100m	Haier

TV Capital, Sichuan Railway Investment Group, Green Pine Capital Partners, Whale Capital, Shenzhen JinFuZi Network Technology and CDH Investments also backed to the round, which valued UBtech at \$5bn. Founded in 2012, UBtech creates humanoid robots for entertainment and educational applications.

Space Exploration Technologies (SpaceX), a US-based space technology and services provider backed by Alphabet, raised a \$500m round that valued SpaceX at \$30.5bn. Backers include investment firm Baillie Gifford and the company's existing investors, according to sources. SpaceX develops and launches rockets and spacecraft, resupplying the International Space Station and launching satellites on behalf of its clients. The funding will be used to build a satellite-based internet network for SpaceX as well as to developing its rockets as it works toward passenger flights to the moon and eventually to Mars.

The SoftBank Vision Fund led a \$400m series C round for US-based molecular production technology developer Zymergen. Goldman Sachs, investment manager Hanwha Asset Management and venture capital firms DCVC, DFJ, Innovation Endeavors, True Ventures and Two Sigma Ventures also invested. The series C proceeds will be used to double the capacity of Zymergen's technology platform. Zymergen utilises bioengineering, machine learning and automation technology to create speciality chemicals or products for use in industries such as pharmaceuticals, agriculture or advanced chemicals and materials.

US-based metal 3D printing company Desktop Metal closed a \$160m round, which was led by Koch Disruptive Technologies, a subsidiary of Koch Industries. Other corporate backers in the round included GV, corporate venturing vehicle of Alphabet, Panasonic and hardware provider Techtronic Industries. Existing traditional VC investors including Lux Capital, New Enterprise Associates and Kleiner Perkins also participated. The funding will be used to develop the company's additive manufacturing technology and scale it. Founded in 2015, Desktop Metal has developed and 3D metal printers for both offices and large-scale industrial settings.

US-based space services provider Spaceflight Industries secured \$150m from investors including diversified conglomerate Mitsui and corporate-backed partnership Space Alliance. The round also featured undisclosed existing backers and increased the company's overall funding to more than \$200m. Space Alliance was formed by satellite system producer Thales Alenia Space and satellite operator Telespazio. Founded in 1999, Spaceflight acquires capacity on commercial space launches. The company also offers a range of additional services, such as insurance, analysis of mission feasibility and communication networks.

Singapore-based automated robotics technology producer GreyOrange completed a \$140m series C round featuring diversified conglomerate Mitsubishi and e-commerce company Flipkart. Investment firm Mithril Capital led the round, which included venture capital firm Blume Ventures, Project Verte and Binny Bansal, co-founder and chief executive of Flipkart, plus unnamed existing investors. Founded in 2011, GreyOrange develops artificial intelligence-equipped robotics systems for use in e-commerce and logistics operations.

Cloud Constellation, a US-headquartered developer of a space-based data storage system, received \$100m of series B funding from Haier, through its incubation platform, HCH Group. Founded in 2015, Cloud Constellation is developing a space-based data network and cloud data storage service using a network of eight satellites in low earth orbit to enable enterprise, government and military organisations to share and store data. The company claims the system will be insulated from the internet, so data will be protected from cyberattacks and avoid the requirements of privacy regulation.

### Exits

Corporate venturers from the industrial sector completed 21 exits between February 2018 and January 2019 – 11 acquisitions, eight IPOs, one merger and one other transaction. None of these exits was achieved by a company developing a



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strictly industrial economic activity. Emerging industrial businesses are capital intensive and take longer to mature sufficiently for an acquisition or for public markets.

Pivotal Software, a US-based software development services provider spun out of software producer EMC, closed its IPO at just over \$638m, after underwriters bought 5.5 million additional shares. The IPO initially consisted of 33.1 million shares at \$15 each on the New York Stock Exchange, in addition to almost 3.9 million shares sold by industrial technology and appliance manufacturer General Electric. Spun out of EMC, which was renamed Dell EMC when acquired by computing technology producer Dell in 2016, Pivotal supplies software development technology as well as expertise to clients looking to create customised applications. Dell EMC is the company's largest shareholder, while notable investors include EMC subsidiary VMware, automotive manufacturer Ford, GE and private equity firm Silver Lake.

Propeller Health, a US-based digital respiratory therapeutics developer backed by multiple corporate investors, agreed to a \$225m acquisition by connected medical devices provider ResMed, providing exits to a number of corporates – pharmaceutical firms McKesson, Aptar Pharma, Hikma and GlaxoSmithKline, pharmacy chain Walgreens and manufactured goods producer 3M. Founded in 2010, Propeller Health has created a system of small sensors attached to inhalers that track usage and offer feedback to patients through a mobile app. The platform is aimed at people living with chronic respiratory diseases.

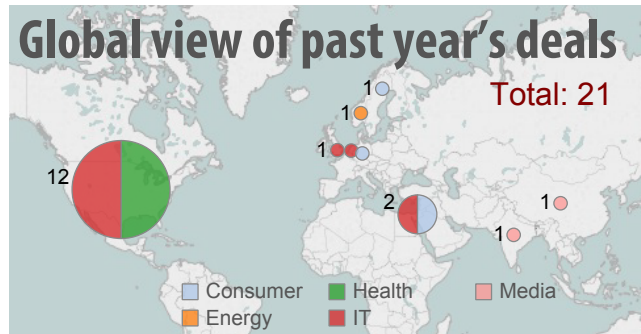
Babytree, a China-based social parenting media and e-commerce platform previously backed by Fosun, Alibaba and education services provider TAL Education, raised \$217m in its Hong Kong IPO. The company priced shares at HK\$6.80 (\$0.90), at the bottom of a range with HK\$8.80 at the top end, valuing the company at \$1.5bn. Babytree has created an online community where parents can share their experiences, seek advice and find information such as a vaccination checklist and dietary guides for mothers. It also operates an e-commerce platform and a video-sharing app.

Consumer electronics producer Samsung agreed to acquire Israel-based smartphone camera technology provider Corephotonics for \$155m, giving exits to memory card maker SanDisk, hard disk provider Western Digital, telecoms firm CK Telecom, chipmaker MediaTek and manufacturing services. Corephotonics designs dual-camera technology that helps mobile device users take professional photographs, integrating capabilities such as optical zoom, low-light performance, depth features and optical image stabilisation.

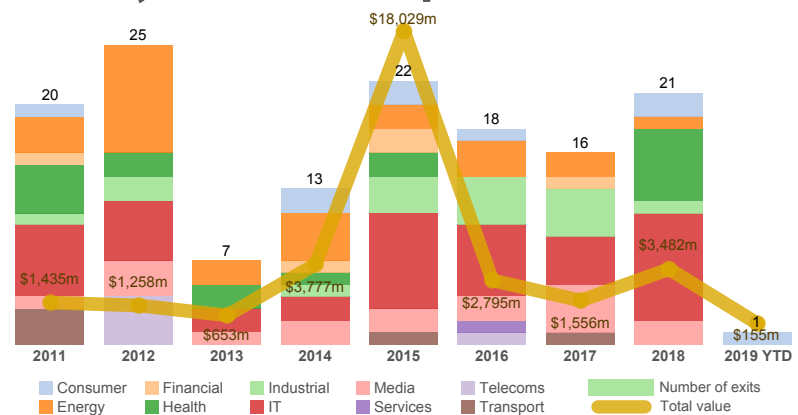
Westwing, a Germany-based online furniture store backed by e-commerce group Rocket Internet, raised €120m (\$139m) in its IPO on the Frankfurt Stock Exchange. The company will use the proceeds to enhance its technology and marketing activities and to repay debt. Tengelmann Ventures, the investment arm of retailer Tengelmann, and Access Industries had backed the company in previous venturing rounds. Founded in 2011, Westwing operates a shopping club that offers daily flash sales for furniture and home accessories. It made a profit in the fourth quarter of 2017 but posted a €4.9m loss before interest, tax, depreciation and amortisation for the year from €266m in revenue.

Industrial product and appliance maker Robert Bosch, telecoms firm KPN and industrial automation equipment producer Phoenix Contact exited Netherlands-based network security software developer SecurityMatters in a \$113m acquisition by IoT security technology provider Forescout Technologies. Founded in 2009, SecurityMatters has built a cybersecurity platform that focuses on operational technology networks. Forescout will integrate the company's passive network monitoring and assessment technology into its own offering.

Neuronetics, a US-based medical device developer backed by pharmaceutical firm Pfizer and GE closed its IPO at \$107.5m. The company priced 5.5 million shares at \$17 each on the Nasdaq Global Market, raising an initial \$93.5m. Its shares closed at \$26.96, giving it a market capitalisation of about \$451m, and underwriters took up an option to buy a



**Exits by industrial corporates 2011-19**



## SECTOR FOCUS

### Top 10 exits by industrial corporate investors over the past year

Company	Location	Sector	Exit type	Acquirer	Size	Investors
Pivotal	US	IT	IPO	–	\$638m	Dell   Ford Motor   General Electric   Silver Lake   VMware
Propeller Health	US	Health	Acquisition	ResMed	\$225m	3M   Aptar Pharma   GlaxoSmithKline (SR One)   Hikma Pharmaceuticals   Kapor Capital   McKesson Corporation   Safeguard Scientifics   Social+Capital   Walgreens   XLerateHealth
BabyTree	China	Media	IPO	–	\$217m	Alibaba   Chenshan Capital   China Merchants Wealth   Fosun Group   Matrix Partners   Tal Education Group   undisclosed investors
Corephotonics	Israel	Consumer	Acquisition	Samsung	\$155m	Amiti Ventures   Beijing Singularity Power Investment Management   BetaAngels Partners   CE Ventures   CK Telecom   Hon Hai   Horizon Ventures   iVentures   LSG Industrials   Magma Venture Partners   MediaTek   Mizmaa Ventures   OurCrowd   Radiant Venture Capital   Samsung   Sandisk   undisclosed investors   Western Digital
Westwing	Germany	Consumer	IPO	–	\$139m	Access Industries   Fidelity   Kinnevik   Odey Asset Management   Rocket Internet   Summit Partners   Tengelmann   undisclosed investors
SecurityMatters	Netherlands	IT	Acquisition	ForeScout Technologies	\$113m	Emerald Technology Ventures   KPN   Phoenix Contact   Robert Bosch
Neuronetics	US	Health	IPO	–	\$108m	General Electric   InterWest   Investor Growth Capital   New Leaf Venture Partners   Onset Ventures   Pfizer   Polaris Venture Partners   Quaker BioVentures   Three Arch Partners
Saavn	India	Media	Merger	–	\$100m	Reliance Industries
Secdo	Israel	IT	Acquisition	Palo Alto Networks	\$100m	Rafael Development Corporation   private investors
Magenta Therapeutics	US	Health	IPO	–	\$100m	Access Industries   Alphabet   Atlas Venture   Be The Match BioTherapies   Casdin Capital   EcoR1 Capital   Eventide Funds   Partners Innovation Fund   Third Rock Ventures   Watermill Asset Management

further 825,000 shares. Neuronetics' lead product is a device intended to treat psychiatric disorders by using a magnetic field to stimulate parts of the brain associated with mood.

Saavn, an India-based music-streaming service backed by media groups Bertelsmann and Liberty Media, agreed to a merger with JioMusic, a digital music subsidiary of conglomerate Reliance Industries. Reliance will invest up to \$100m in Saavn as part of the agreement, providing \$20m upfront to support international growth and expansion efforts for the merged platform, which is valued at more than \$1bn in the deal, with Saavn valued at about \$330m. The corporate will also buy \$104m of stock from existing shareholders, including Liberty and Bertelsmann. Founded in 2007, Saavn on Bollywood, regional Indian and English language music.

Network security software producer Palo Alto Networks agreed to acquire Secdo, an Israel-based cybersecurity technology provider backed by corporate joint venture Rafael Development Corporation. Palo Alto will reportedly pay about \$100m. Founded in 2014, Secdo has built a software platform that detects cyberthreats and identifies how a device was compromised, providing IT staff with tools to respond to attacks without impacting users. Secdo's engineers will join Palo Alto Networks, which will integrate the technology into its Traps cybersecurity platform.

Magenta Therapeutics, a bone marrow transplant technology developer backed by corporates Alphabet, Access Industries and healthcare provider Partners Healthcare, raised \$100m in its IPO. The company issued almost 6.7 million shares on the Nasdaq Global Market at \$15 each, in the middle of the \$14 to \$16 range it had set earlier. Magenta is working on treatments for blood cancers, and autoimmune and genetic diseases based on bone marrow transplants that use gene-modified stem cells. The company will put \$39m of the IPO proceeds into development of its lead program.

Global Corporate Venturing also reported exits from emerging industrial-related enterprises involving corporate investors.

NLight Photonics, a US-based laser technology producer backed by consumer electronics manufacturer Samsung, filed for an \$86.3m IPO on the Nasdaq Global Market, which eventually reached \$96m. The company issued 6 million shares at \$16 each, above the \$10.95 offering price initially set. The company expects to use the proceeds for working capital and may also acquire or invest in other businesses. Founded in 2000, NLight produces high-power semiconductor and fibre lasers. The company has a core focus on the industrial, microfabrication, aerospace and defence sectors.

Israel-based defence electronics contractor Elbit Systems sold a minority share of its cybersecurity subsidiary Cyberbit to Claridge Israel for \$30m. Claridge Israel is a partnership between Canada state-backed pension fund Caisse de dépôt



## SECTOR FOCUS

### Top 10 exits from industrial enterprises over the past year

Company	Location	Exit type	Acquirer	Size	Investors
NLight Photonics	Canada	IPO		\$96m	Greenover Group   Menlo Ventures   Mohr Davidow Ventures   Oak Investment Partners   Samsung   Wellington Management
Elbit Systems	Israel	Stake sale		\$30m	Claridge Israel
Strider	Brazil	Acquisition	Syngenta		Barn Investimentos   Monashees Capital   Qualcomm
AproPlan	Belgium	Merger			GenieBelt

et placement du Québec (CDPQ) and Claridge, the family office of Stephen Bronfman, whose fortune came from the Seagram drinks business. Cyberbit has a platform that offers endpoint attack detection, system-on-a-chip automation, industrial control network protection and cybersecurity training and simulation.

Agribusiness Syngenta agreed to acquire Brazil-based agriculture management software provider Strider for an undisclosed amount, allowing mobile semiconductor technology producer Qualcomm to exit. Founded in 2013, Strider has built a software platform for farmers to manage multiple aspects of the agricultural process, including farm machinery and pest control, as well as providing satellite imagery.

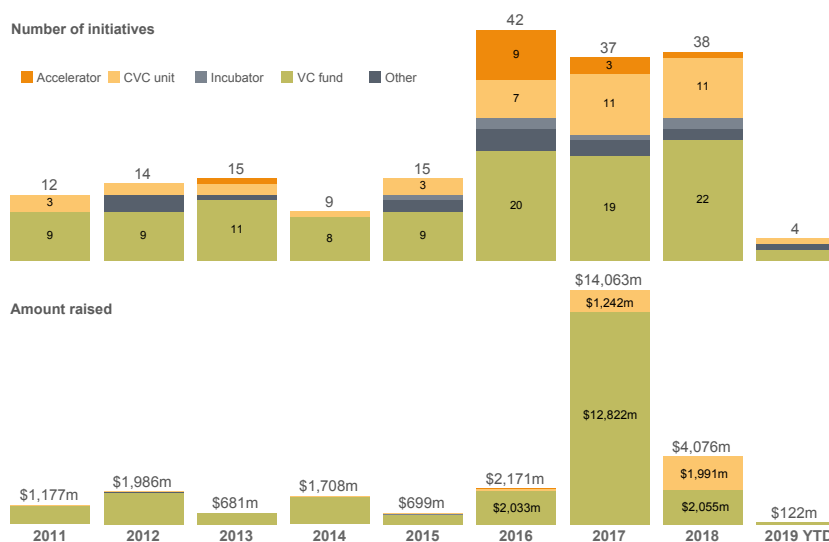
Aproplan, a Belgium-based construction management app developer backed by property developer Matexi, merged with GenieBelt, a Denmark-based construction data storage and sharing platform backed by energy system provider Danish Solar. The unified company, LetsBuild, is being buoyed by an undisclosed level of funding from investors including industrial equipment supplier Solar and Inventures, a subsidiary of association management and services firm Smith-Bucklin. Venture capital firm Enern, growth equity firm Fortino and seed-stage investor Nordic Makers also took part in the round. The combined LetsBuild will operate a digital platform intended to improve communication and organisation on construction sites.

### Funds

From February 2018 to January 2019, corporate venturers and corporate-backed VC firms investing in the industrial sector secured over \$4bn in capital via 47 funding initiatives, which included 27 VC funds, 13 new or refunded venturing units, two accelerators, two incubators and three other initiatives.

On a calendar year-to-year basis, the number of funding initiatives in the industrial sector remained stable at 38 in 2018 against 37 in 2017 and 42 in 2016. Total estimated capital, however, was much lower – \$4.07bn by the end of last year, down 72% from the \$14.06bn in 2017.

### Fund initiatives in the industrial sector 2011 to date



China-based oil, gas and chemicals supplier Sinopec formed investment firm Sinopec Capital with RMB10bn. It will invest in emerging areas such as new energy, advanced materials, artificial intelligence, smart manufacturing and supply chain technologies. Sinopec did not say the vehicle would invest in startups but its activities will cover equity investments and management as well as project investments and asset management. The fund will get 49% of its capital from oil and gas refiner Sinopec Corp and the remaining 51% from parent company Sinopec Group, which also produces a range of petroleum-related products.

China-based venture capital firm Fortune Venture Capital secured RMB4.63bn for its latest fund from limited partners including property developer Century Golden Resources Group, financial services firm Industrial and Commercial Bank, Shenzhen Yunneng Fund, Kpeng Capital and the city of Shenzhen's guidance fund. Founded in 2000, Fortune VC focuses on agricultural technology, cleantech, media, telecoms and consumer goods and services. The firm began raising money for the Shenzhen Fortune Chuangtong Equity Investment fund in 2017 and has so far invested about \$190m in 30 companies.



## SECTOR FOCUS

Industrial sector funding initiatives over the past year					
Funding initiative	Type	Funds raised	Location	Focus	Investors
Sinopec Capital	CVC unit	\$1.48bn	China	Energy, IT, industrial, services	Sinopec Engineering Group
Unnamed Fortune VC fund	VC fund	\$667m	China	IT, media, consumer, telecoms, services, industrial	Century Golden Resources   Fortune Venture Capital
B Capital Fund	VC fund	\$360m	US	IT, transport, industrial, health, financial, services	Boston Consulting Group
Lockheed Martin Ventures	CVC unit	\$200m	US	IT, industrial, transport	Lockheed Martin Corporation
Latitude Venture Partners I	CVC unit	\$200m	Indonesia	Industrial, financial, it, health	Sinar Mas
Evonik Venture Capital II	VC fund	\$170m	Germany	Industrial	Evonik Industries
Csiro Innovation Fund 1	VC fund	\$167m	Australia	IT, industrial, health	Hostplus   Lockheed Martin Corporation   Main Sequence Ventures   Temasek   University of Melbourne
Unnamed SSC fund	VC fund	\$150m	Singapore	Energy, industrial, health	Armstrong Industrial   Heritas Capital   IMC Group   K2 Global   Spring Seeds Capital
Raystone AI Fund	VC fund	\$148m	China	IT, industrial, health	National Venture Capital Fund for Emerging Industries   Raystone
Nabtesco Technology Ventures	CVC unit	\$85m	Switzerland	Industrial, IT	Nabtesco
Propel Asia	Accelerator		Singapore	Services	District6   Jones Lang LaSalle   Lend Lease   MeshMinds

B Capital Group, a US-based investment firm sponsored by management consultancy Boston Consulting Group (BCG), closed an oversubscribed venture capital fund at \$360m. Founded in 2015 in partnership with BCG, B Capital targets global investments in transportation and industrial logistics, healthcare, financial and insurance technology and what it refers to as consumer enablement. The firm intends to back between 20 and 25 portfolio companies with the fund, and the extra capital will allow it to make follow-on investments. It operates out of three US offices and an office in Singapore.

Aerospace and defence company Lockheed Martin doubled the funding of its corporate venturing arm Lockheed Martin Ventures to \$200m. The additional \$100m followed new tax legislation in the US and will go primarily to early-stage startups in sensor technologies, autonomy, artificial intelligence and cyber technology. The increased funding forms part of a \$460m commitment that Lockheed Martin is making across its business operations.

Latitude Venture Partners, an Indonesia-based venture capital and business development vehicle affiliated with conglomerate Sinar Mas, secured \$200m in capital. Latitude targets investments in growth-stage companies that can bring value to Indonesia, where Sinar Mas is also based. Sectors of interest to the firm include industrial, healthcare, financial and artificial intelligence technology. Sinar Mas already operates corporate venturing unit Sinar Mas Digital Ventures and is a partner in EV Growth along with internet company Yahoo Japan and VC firm East Ventures. Latitude is headed by Linda Wijaya, formerly CEO of paper producer Asia Pulp and Paper and a shareholder in Sinar Mas, as managing partner.

Germany-based chemicals producer Evonik launched its second corporate venture capital fund with a €150m commitment, increasing its funds under management to €250m. Evonik formed Evonik Venture Capital in 2012, providing an initial €100m, and the corporate has since built a 25-strong portfolio of direct and fund-of-funds investments. The vehicle's overall strategy looks to connect Evonik to new technologies while also scouting for potential acquisition targets in Europe, North America, Asia and Israel, from offices in Germany, the US and China. The new fund will invest at series A and B stage, increasing maximum investment in a single deal from the first fund's €5m to €15m per company.

Australia-based fund manager Main Sequence Ventures added A\$132m (\$94.8m) to its Csiro Innovation Fund 1 from investors including Lockheed Martin. University of Melbourne, superannuation fund Hostplus and Singaporean government-owned investment firm Temasek also contributed to the fund, which increased its size to \$167m, \$23m above its original target. Main Sequence Ventures was set up to manage the Csiro Innovation Fund, established in 2016 by research institute Commonwealth Scientific Research Organisation (Csiro) and Australia's federal government. The fund invests in domestic spinouts and small and medium-sized enterprises, with a focus on agricultural technology, quantum computing, health and space technology.

Industrial equipment maker Armstrong Industrial Corporation is one of nine partners to have joined Spring Seeds Capital, the venture capital branch of government agency Spring Singapore, for a S\$200m (\$150m) co-investment scheme. Spring Singapore put up S\$100m of capital for the initiative, which will provide funding for startups over an eight-year period. The co-investors will jointly match that figure. The partnership will look to invest in advanced manufacturing and engineering, health and biomedical sciences, and urban and sustainability technology developers. The partners include infrastructure support services provider Silicon Solution Partners, Heritas Capital Management, a private equity arm of diversified holding group IMC, and Trendlines Medical-K2 Global, a partnership between innovation commercialisation firm Trendlines and venture capital firm K2 Global.



## SECTOR FOCUS

Raystone Capital, the investment arm of China-based mobile games developer Raystone, closed its latest growth fund at RMB1bn. State-backed venture capital fund National Venture Capital Fund for Emerging Industries is a limited partner in the entity, as are funds backed by the city of Shenzhen's municipal government, with the government-owned vehicles contributing 25% of the total. Shenzhen Longgang District Venture Capital Guiding Fund and Shenzhen government-backed fund of funds Kunpeng Fund also participated. Founded in 2009, Raystone Capital focuses on sectors such as cleantech, new materials and consumer-focused technologies. The latest fund will target China-based growth-stage companies working on artificial intelligence technologies.

Japan-headquartered industrial equipment manufacturer Nabtesco launched Switzerland-based corporate venturing fund Nabtesco Technology Ventures with €75m. The unit, operated in partnership with Switzerland-based investment firm Emerald Technology Ventures, will invest in areas of strategic importance to Nabtesco, such as robotics, motors, artificial intelligence and IoT technology. Nabtesco Technology Ventures will focus on motion control technology and is looking chiefly at investments in Europe and North America. Hiroshi Nerima, a business development manager at Nabtesco who joined the company in 2012, will be Nabtesco Technology Ventures' president, chief executive and managing partner. He had been involved in laying the groundwork for the vehicle since March 2017.

### People

GCV has reported a number of people moves in the industrial sector over the past year, and a significant number of them involved GE Ventures and Next47, the corporate venturing unit of Germany-based industrial conglomerate Siemens. In the past year GE Ventures has lost managing director Lisa Suennen, who joined US-based legal and consulting firm Manatt Phelps & Phillips to lead its corporate venture capital fund, managing director of healthcare investments Noah Lewis, who has founded private equity firm Ardan Equity Partners, and director of healthcare investments Jessica Zeaske, who left to be a partner at corporate-backed investment vehicle Echo Health Ventures.



Suennen



Lewis



Zeaske

Ralf Schnell, former head of Siemens' corporate venturing unit for a dozen years, became head of private equity at Siemens Financial Services. He was CEO of Siemens Venture Capital until the creation of its €1bn Next47 evergreen venturing unit. As a partner at Next47, Schnell helped new recruit Lak Ananth integrate its Siemens Venture Capital portfolio.



Schnell

Susana Quintana-Plaza also left Next47, where she ran its London office as a partner. She joined Next47 in late 2016, having previously been senior vice-president of technology and innovation for energy utility Eon since 2014. She was Eon's vice-president of innovation scouting and co-investments for three years from 2011.



Quintana-Plaza

Gerd Goette left Siemens after nearly 20 years as a corporate venturer. He said: "I plan to stay in the energy and sustainability ecosystem, working with startups and VCs in an adviser and board capacity." He joined what was then Siemens Venture Capital after 13 years in the corporate's engineering team.

Swati Dasgupta left Next47 to be a director at National Grid Ventures, the strategic investment arm of UK-based grid operator National Grid Group. The unit oversees investments in technology startups, energy projects and partnerships on behalf of its parent. Before joining Next47 as a director in 2017, Dasgupta was a director of external innovation at Siemens' technology-to-business unit, TTB, from 2013. Dasgupta had previously spent nearly a decade as a partner at IBM Venture Capital Group, a corporate venture capital subsidiary of computing technology producer IBM.

However, new people joined the Siemens venture team. Matthew Cowan, veteran venture capitalist and the co-founder and managing partner of growth equity firm Bridgescale Partners, joined Next47 in California. Cowan co-founded Bridgescale with business partner Rob Chaplinsky in the mid-2000s.

Along with Matthew Cowan, Ching-Yu Hu joined as a principal based in the Palo Alto, California, office. At the same time, TJ Rylander, who had spent a decade as managing partner at US intelligence community venture unit In-Q-Tel, joined as a partner, and Jack Eadie joined Siemens as a UK-based principal for Next47. Eadie was formerly a venture capital investor at Eight Roads Ventures, the \$4bn VC arm of fund manager Fidelity.

Robert Bosch Venture Capital, the corporate venturing subsidiary of Robert Bosch, appointed Xiaoguang Sun head of venture capital in China. Sun moved from private equity firm Yellow River Capital, where he was a partner and managing director from 2016. He previously spent eight years as a director at chipmaker Intel's investment arm, Intel Capital.

Frédéric Rombaut, formerly managing director of corporate venturing funds for network equipment supplier Cisco and semiconductor maker Qualcomm, joined UK-based venture capital firm Seraphim Capital as general partner. Seraphim has raised a \$95m fund focused on the \$350bn space technology market. It is backed by limited partners including corporates SES, Airbus and Telespazio. Rombaut was managing director of Cisco Investment International unit. He left in early 2016 to focus more on personal investments through his FR Development vehicle, with Jon Koplin replacing him as UK-based managing director of Cisco Investments. Before joining Cisco in January 2012, Rombaut was managing director of Qualcomm Ventures Europe for six years.



Rombaut



## SECTOR FOCUS

Tomoko Inoue left venture capital firm MedVenture Partners to join Omron Ventures, the corporate venturing arm of Japan-based automation equipment manufacturer Omron, as chief executive. Inoue was a senior manager at Med-Venture Partners, a subsidiary of public-private investment partnership Innovation Network Corporation of Japan, from 2013, having helped set up the unit. She was previously a vice-president at private equity firm Tokio Marine Capital from 2006 to 2009. Omron Ventures focuses on developers of factory automation, healthcare, mobility and energy management technology.

Mike Adams became a US-based director of corporate ventures at Germany-based air and water filter provider Mann & Hummel. He was previously a principal for just over four years at 8 Rivers Capital, an energy, sustainability, transportation and communications technology developer. Before that he was managing director of technology ventures at energy provider Constellation Energy.

Miles Kirby and George Ugras have founded UK and US-based venture capital firm AV8 with a \$180m committed by insurer Allianz. AV8 will invest mainly in seed and series A rounds in digital health, big data, artificial intelligence, machine learning, mobility and robotics. Ugras was previously head of IBM Ventures but he started his VC career investing in early-stage technology companies, first at Apax Partners as a principal then at Adams Capital Management as a partner.



Kirby



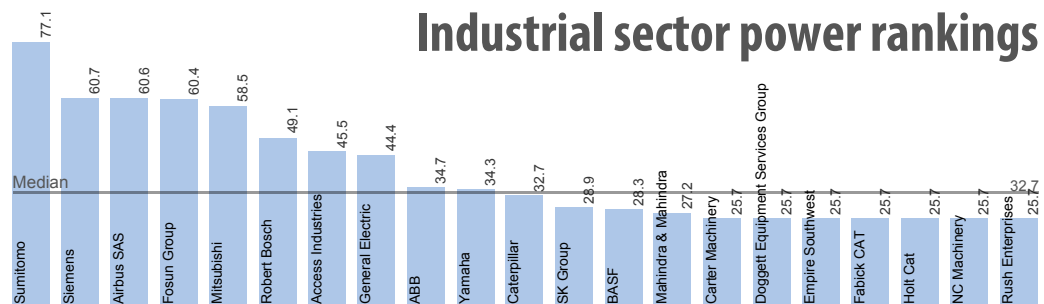
Ugras



Paul

Japan-headquartered manufacturing conglomerate Yamaha hired Nolan Paul from US-based fruit supplier Driscoll's to develop its agricultural technology corporate venturing practice at its Silicon Valley innovation hub. As head of research and development strategy and emerging technology, Paul led Driscoll's agtech investment portfolio for four years, looking at genetics, phenotyping, automation, robotics, biologicals, plant sensing, controlled environment, post-harvest practices and data analytics. He is now general manager for agricultural robotics and data at Yamaha Motor Ventures and Laboratory Silicon Valley.

Paul Campbell joined US-based advanced materials manufacturer WL Gore & Associates as co-leader of its co-innovation lab, Gore Innovation Centre, an 11,000 square-foot hub for product development and prototyping that connects Gore with Silicon Valley's entrepreneurial ecosystem. Campbell will continue to work at Startup Genie, the entrepreneurial consultancy of which he has been CEO since 2009, with responsibility for incubation and corporate entrepreneur programs as well as partnerships with companies. A co-founder of Silicon Valley Innovation Group, which advises innovation executives at corporates, Campbell also helped launch a global product development course at Hult International Business School, where he remains involved as a professor. ♦



## University and government backing

GCV has reported many commitments to university spinouts in the industrial sector through sister publication Global University Venturing. Last year 112 rounds were raised by university spinouts, nearly double the 66 in the previous year. The level of estimated total capital deployed in 2018 was \$2.37bn, considerably higher than the \$155m in 2017.

Mazor Robotics, an Israel-based robotic surgical device maker based on research at Technion-Israel Institute of Technology, was acquired by medical device developer Medtronic for \$1.6bn. The price set a record for acquisitions in the Israeli medical sector, surpassing the \$1.1bn paid by drug developer Mitsubishi Tanabe Pharma for Ben-Gurion University of the Negev-founded Parkinson's therapy developer Neuroderm in 2017. Founded in 2001, Mazor Robotics has created a robotic arm that helps surgeons guide spinal procedures, with support from features such as advanced imaging scans and a camera. Mazor's underlying technology resulted from research led by Moshe Shoham, a professor in the faculty of mechanical engineering.

Apeel Sciences, a US-based food technology developer that emerged out of University of California Santa Barbara, raised \$70m in a series C round led by hedge fund Viking Global Investors. Andreesen Horowitz, Upfront Ventures, S2G Ventures and a range of unnamed backers reportedly also contributed to the round. Apeel is developing plant-based coatings that delay the ageing of fruit and vegetables. The company hopes its technology will reduce food waste. ➔



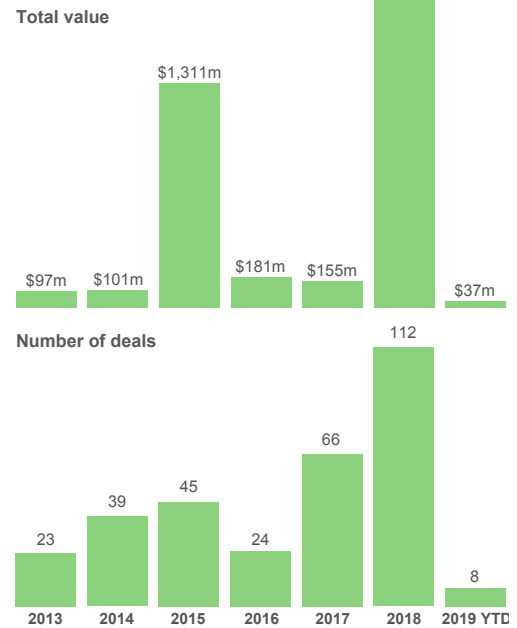


**SECTOR FOCUS**

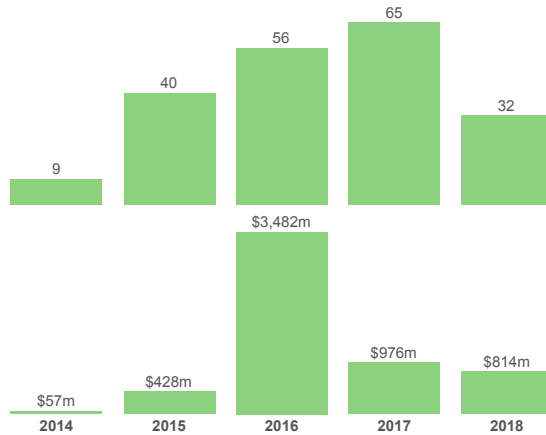
Spiber, a Japan-based synthetic silk products developer spun out of Keio University, received about ¥5bn (\$44m) in a round led by public-private partnership Cool Japan Fund, which invested \$17.6m in the round. Other investors were not disclosed. Founded in 2007 from Keio's Institute for Advanced Biosciences, Spiber is developing a manufacturing process for products made of synthetic silk proteins rather than the natural form generally collected from creatures such as silkworms and spiders. The company is initially targeting applications for the apparel and automobile industries.

Iceye, a Finland-based Earth observation satellite spinout of Aalto University, obtained \$34m in a series B round backed by government-owned investment firm Finnish Industry Investment. The round was led by venture capital firm True Ventures and featured Seraphim Capital, which manages the government and corporate-backed Seraphim Space Fund. Three VC funds allied to the Draper Venture Network – Draper Nexus, Draper Associates and Draper Esprit – also supplied funding, as did syndicate Space Angels Network and venture capital firm Promus Ventures. Founded in 2015, Iceye manufactures low earth orbit satellites that pick up

**Deals in industrial sector university spinouts 2013-19**



**Government-backed investments 2014-18**



detailed imaging data by using a high-detail radar technology – synthetic-aperture radar.

Innovations in the industrial sector catch the attention of governments and government-related investors, as new technologies and business models in it have the potential to boost productivity and economic growth. However, GCV recorded a considerable drop in such investments in 2018 – 32 rounds worth an estimated total of \$814m compared with the 65 rounds in 2017, estimated at \$976bn. ♦

**Interview: Michael Mahan, Stanley Ventures**

The new boss at Stanley Black & Decker's corporate venturing unit, Michael Mahan, spoke to GCV's Robin Brinkworth about running Stanley Ventures, its portfolio, and looking forward.

Since the beginning of February, Michael Mahan has been managing director at Stanley Ventures, the corporate venturing unit of Stanley Black & Decker (SBD). Previously an investment manager, he has been at the unit since its launch in 2016 under vice-president Larry Harper.

Stanley Ventures is a purely strategic unit, investing in the order of \$15m to \$20m a year from SBD's balance sheet. It makes eight to 10 deals a year – 19 in its first two years.

As a strategic operation, Mahan said the unit "stays extremely close to Stanley business units". He added: "We interact with multiple SBD core and innovation teams almost daily, and we try to impact SBD with every deal by aligning them with one or more business unit strategies."

That said, Mahan cannot make plays across the venture ecosystem. Instead, the focus is on the early stage. He said: "Our methodology is focused on driving top-line growth at Stanley and top-line growth at the startup. Primarily, we are targeting \$100m-plus opportunities, meaning a Stanley commercial program coupled with startup innovation delivering



## SECTOR FOCUS

\$100m in annual revenues within three years. We invest early-stage in order to find the most forward-looking technologies before our competition is aware of them. We want to help innovative startups introduce breakthrough technologies, and, partnering early, help them leverage more Stanley resources than later-stage companies.”

Early-stage entails risk, but part of that risk is mitigated by how the unit’s dealflow works. While some of the deals come through networks, others come from existing SBD customers – startups they like working with – meaning startups come to Stanley Ventures with “customer validation of their technology – a major plus”, in Mahan’s words.

Customer validation notwithstanding, risk remains, from both business and technological perspectives. Yet Mahan is excited by the technology out there, particularly additive manufacturing – 3D printing.



“It is making some interesting strides. Printing things like concrete, ceramics and batteries has enormous potential and could be very disruptive to several industries. Blockchain on the other hand seems to get a lot of headlines, but I have yet to see many convincing applications thus far.”

Perhaps that is the nature of Stanley’s business, but Stanley Ventures’ portfolio is diverse, perhaps surprisingly so for a unit with such a strategic bent. In part that is because SBD is much more diverse than initially meets the eye, as Mahan says, “more than just a tool company”, citing its security and fastening businesses as key sectors.

“We have fasteners in every iPhone, and electronic doors at retail locations and restaurants all over the world. Every deal we have done is tied to some breakthrough strategy and has a path to bring commercial success to both Stanley and the startup. We define a commercial plan together up front, before the deal is even negotiated, so that everyone is clear on how we will go to market together once the deal is done.”

That offering made Stanley unique for potential partners, with a level of coordination that only direct core business competitors could match, let alone venture competitors. Mahan goes further: “It is actually Stanley and our enterprise-wide focus on breakthrough innovation that sets us apart from others. Our startups work with Stanley innovation teams that have a mandate to roll out new products and technologies the world has never seen. Our Flex-Volt battery technology was the first product rolled out by Stanley innovation teams, which has been a massive success.”

Mahan is particularly enthused by Arix Technologies, for which Stanley Ventures led the seed round last year. The US robotics company, out of Yale, works in the oil and gas space, and Mahan is not shy about its potential.

“Everything about this company excites me – from the CEO who previously worked at Exxon, to its extremely innovative robotics technology, and especially the business case for why its products will be successful in the market and add value to customers. It is making strong progress with several key players in the industry and having lots of success with early field trials and partnerships. I see this company taking off in a big way over the next 12 to 18 months.”

This year will bring other commercial roll-outs with startup partners, with Mahan anticipating strong results. It is after all, his team

now, and he is excited to lead it. The portfolio is beginning to mature after two years, with products launching and exit opportunities arriving. This leads to a fresh challenge – portfolio management. As Mahan said: “Portfolio management will be extremely important as our portfolio ages and grows, and I am looking forward to playing a role in shaping our strategy moving forward”.

Mahan’s intention is stay “small and agile” with his team, even as it covers more ground and works in greater depth with SBD’s business units. While it is possible it may add an individual or two, it is clear Mahan is comfortable, and confident, with what he calls a “small but mighty team”.

Part of that new ground Mahan hopes to cover might include new geographies. The CVC space is dominated by three or four regions – North America, Europe, China and Israel, supplemented by Japan. Yet Mahan, in part led by SBD’s emerging markets team, is also looking at India and Latin America. They may not be mature markets yet, but Mahan is keeping an eye on the opportunities there.

As a former startup staffer himself, Mahan knows what it is like to work on the ground floor of the innovation ecosystem. Running Stanley Ventures places him on a different tier, working with startups. While he may not have the capital or the team of a larger CVC unit, Mahan is looking forward, and Stanley Ventures is looking up. ♦



## SECTOR FOCUS

**Interview: Ingo Ramesohl, Robert Bosch Venture Capital**

**Ingo Ramesohl, co-managing director of Robert Bosch Venture Capital (RBVC) spoke to GCV's Robin Brinkworth about investing in artificial intelligence and RBVC's model for success.**

Ingo Ramesohl is co-managing director with Philipp Rose, and has been there since 2015. RBVC is a direct subsidiary of Germany-based industrial group Robert Bosch, with an advisory board staffed entirely by Bosch executives. The unit's aim is to provide Bosch with a "strategic open innovation matchmaking" service alongside "excellent financial return-oriented investment funds".

RBVC is currently deploying its third fund, originally announced in 2016, of €150m (\$171m), but in late February announced a fourth fund worth €200m. The third is focused on deep-tech startups in artificial intelligence (AI), internet of things (IoT) and enabled RBVC to push into China, where it currently focuses on strengthening and extending its activities before it looks to new regions.

Ramesohl is clear on how RBVC goes about its business. "Our methodology is very similar to most of the institutional venture funds. We invest in Bosch-relevant fields, such as AI, IoT or automated driving. Therefore our investments focus on series A, B and C. In some exceptional cases we also do seed deals."

RBVC, like most other corporate venturing units, source its deals through its network. That dealflow is then relayed to the parent, where RBVC serves as the intermediary, matching startups with Bosch's business units. In turn, Bosch provide its expertise to RBVC for deal assessments and to startups for temporary product and engineering support.

Yet Ramesohl believes RBVC provides something unique, simply by virtue of the relationship it has with Bosch. The parent provides the weight of capital, expertise and business acumen, while the structure of RBVC's relationship with Bosch provides RBVC with the independence to make decisions quickly.

He said: "RBVC has a perfect combination of a corporate venture firm with processes like an institutional fund. We feel the power of the Bosch expertise on the one hand in all kind of technical and market areas. On the other hand, the partner structure of RBVC makes our decisions extremely fast. We enjoy a form of independence that enables us to act so."

Bosch is a giant company, with a large number of business lines. RBVC as a strategic partner needs to operate across all those. It is a hard task, and of which Ramesohl is patently aware.

"All portfolio companies have or have had a Bosch relevance at the time of our initial investment. In very few cases, the strategy of the company or that of the relevant Bosch unit is changing so the strategic fit is lowered. In these cases we always stick to our companies and support them until we have an exit."

Ramesohl remains enthusiastic about AI, saying: "In my opinion AI is still an exciting wave, which has lasted now for more than four years – 2019 will be the year of AI hardware startups."

Part of that excitement is justified by the RBVC successes. The unit was an early backer of AI chipmaker Graphcore, leading its series A in 2016.

Graphcore closed its series D late in 2018 with \$200m, with RBVC reinvesting alongside Samsung, Microsoft, and BMW. The round valued Graphcore at \$1.7bn.

"In AI, we have done some investments in world-changing companies such as Graphcore. It became a unicorn in December 2018. Back in 2016, RBVC was the lead investor in the foundation of Graphcore. We are very proud to be on board."

RBVC has a stake in three AI companies – Graphcore, DeepMap and Syntiant, and is looking to expand that interest.

"In the field of artificial intelligence, it is important for us to be strongly represented. IoT is another future-oriented field. Sensoro, one of the most important IoT companies in China, belongs in our portfolio. We can also be proud of successful exits. For example, Intel acquired Movidius, a manufacturer of image processing processors."

Yet investing in technologies always involves risk, something Ramesohl points to in the automotive sector.

"The automotive market is a bit more complicated because this is a relatively new field for venture companies. Some of these companies realise that the long development cycles in a rather closed automotive ecosystem is difficult to crack. Some companies in our portfolio will have a great future, but investors need to be patient in that industry."

Ramesohl is positive about the future for RBVC, and AI as a technology sector. Given RBVC's success already, he has every reason to be. ♦





Global Corporate Venturing

# Leadership Society

## GCV Leadership Society mission:

The GCV Leadership Society is for corporate venturing leaders and aims to be the pre-eminent provider of data, information, events and other services for the global corporate venturing community. The Society helps develop the corporate venturing leaders of the future.

	Premium* (Company) \$13,000 per year	Luminary (Company) \$50,000 for 2 years
Executive Advisory Role - act as GCV Leadership Society Ambassador for a two-year period	–	✓
Branding on Leadership Society materials as Luminary members	–	✓
Invitations to exclusive leadership society networking events worldwide	✓	✓
Showcase portfolio companies during GCV events	–	✓
Right to join and use the 'GCV Leadership Society' Name	✓	✓
Get the Weekly Community Newsletter	✓	✓
Entry in the Member App	✓	✓
Pro Bono - Bridging communications to third parties	✓	✓
Enhanced Company Profile in the Directory app	✓	✓
Free Ticket to either the annual Summit or Symposium	TWO	THREE
Assistance in arranging one-to-one meetings and/or private meeting space during GCV events	✓	✓
GCV Subscription** - access the monthly magazine (pdf), news website and special reports	UNLIMITED USERS	UNLIMITED USERS
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\*\* Includes access to Global Government Venturing and Global University Venturing.



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## Why Join?

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Jeffrey Li  
Tencent



Michael Redding  
Accenture Ventures



Jaidev Shergill  
Capital One



Bonny Simi  
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GCV Industry Partner (Firm or other industry professional (e.g. Academic, Government))

\$10,000 per year\*

\* Non-corporate venturers will have more limited access to the GCV Leadership Society unless authorised by its board.

For more information or to apply today contact Janice Mawson:  
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Global Corporate Venturing

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## COMMENT

# How much autonomy will maximise impact?

**Maria Julia Prats and Josemaria Siota, Entrepreneurship and Innovation Centre, IESE, and Isabel Martinez-Monche and Yair Martínez, BeRepublic**

**A** new study draws from the experiences of companies such as BMW, Orange, Samsung and Disney to shed light on getting that balance right. The goal is not only to maximise the innovation produced but also the value for the parent company. The study – based on more than 120 interviews with chief innovation officers and those in related roles in the US, Europe and Asia – is part of work on corporate venturing by the authors.

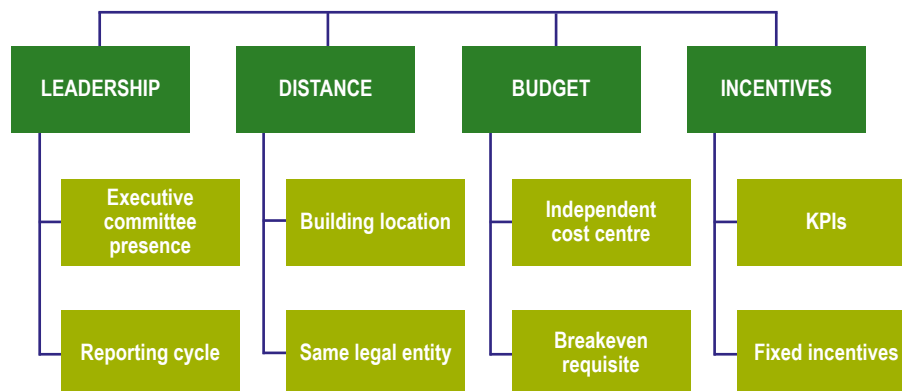
Chief innovation officers know that corporate venturing – the collaboration between established firms and innovative startups – can yield strong results. Its implementation, however, especially finding the right balance between autonomy and control, can prove challenging. This report serves as a reminder that collaborations with startups go beyond corporate venture capital, that autonomy is not merely a matter of location, and that financial figures are not the only way to measure progress.

## Autonomy is not always out of headquarters

Often with corporate venturing units, the idea of the unit's autonomy from the larger firm is simplified to mean they are located outside the main building. Yet the interviews revealed a more nuanced understanding along four main pillars:

- **Leadership:** To what degree does the executive committee participate in the unit's decision-making, and how much time elapses between reporting cycles?
- **Distance:** How far is the unit from headquarters? This considers both physical and legal distance.
- **Budget:** How dependent is the cost centre on headquarters? How much is required for them to break even?
- **Incentives:** How is the unit director evaluated and compensated?

## Structural autonomy of a corporate venturing unit



Indeed, when all these factors are taken into account, it may be neither necessary nor desirable for the corporate venturing unit to be located away from the main office. Many of the mechanisms necessary to ensure the unit's autonomy can be employed within headquarters.

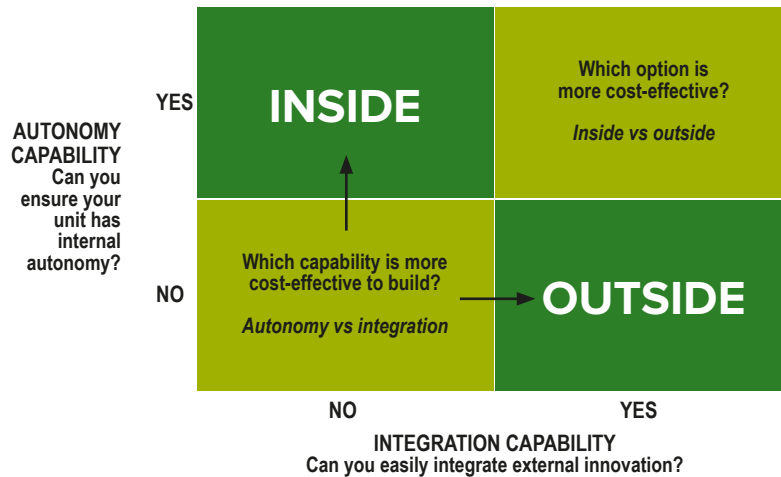
In the real world, both internal and external systems can be successful. For example, French telecom Orange has an internal unit, while Korea's Samsung has its located outside headquarters. Both systems have potential pros and cons, illustrating again the fine balance that needs to be struck. On the one hand, granting real freedom to operate and, on the other hand, maintaining corporate involvement and a degree of control.

What is essential, the authors insist, is the established company's cultural readiness to host a corporate venturing unit. This means ensuring the unit's internal autonomy, as well as being realistic about the parent company's ability to integrate innovation. Is your company set up to integrate innovation effectively? The cost-effectiveness of ensuring either autonomy or integration, or of housing the unit inside or outside HQ, will also impact each company's decision.



**COMMENT**

## Where should I locate my corporate venturing unit?



**It is not about more freedom per se**

A well-designed corporate venturing strategy needs to be adapted to each individual case, but all should be concerned with maximising both innovation and its integration into the company to generate real value. The extensive interviews behind the report revealed some good practices to help parent companies incorporate more value:

- **Design metrics and incentives oriented to value integration:** This will help you focus on the value generated, not just innovating for the sake of innovation.
- **Don't use only financial metrics to measure value:** New knowledge, products and services, an innovative mindset, processes, and business models – the list of potential non-financial returns goes on. Don't be simplistic. It is not just about the money.
- **Ensure there is an independent cost centre:** To avoid the need for bureaucratic approvals at every step, make sure you have a budget to approve internal innovation processes speedily.
- **Involve a sponsor from the parent company's executive committee in decision-making:** This person will help integrate value into the parent company and speed up the venturing process. Find someone who understands how the corporate venturing process works.
- **Consider increasing the timespan of the reporting cycles:** This can provide greater autonomy. Reporting to a member of parent company's executive committee should be a process not of auditing but of catalysing.

In short, freedom is not the same as a free-for-all. It is about providing an adequate structure to allow innovative partnerships to flourish. ♦

### Invitation-only networking event – March 27 2019

**Global Corporate Venturing Power Roundtable in Madrid followed by a networking cocktail reception**

GCV would like to invite you to this exclusive invitation-only Power Roundtable and Networking event in Madrid this month. The occasion is specifically for the local CVC community, and will be hosted by the #1 ranked IESE Business School. The session will be moderated by Paul Morris, former head of Dow Chemical Ventures and a veteran of corporate venturing, having set up and run the CVC operations of Dow Chemical in Europe for many years.

Topics covered in the roundtable will include:

- Drivers for CVC adoption
- Governance aspects
- Investment procedure
- Value-adding contributions
- Implications for the corporate parent

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**INNOVATIVE REGION**



**GCV Israel 2019: Corporate Venturing and the Scale-up Nation, held in Tel Aviv this month**

# Israel goes from startup to scale-up nation

**Robin Brinkworth, reporter**

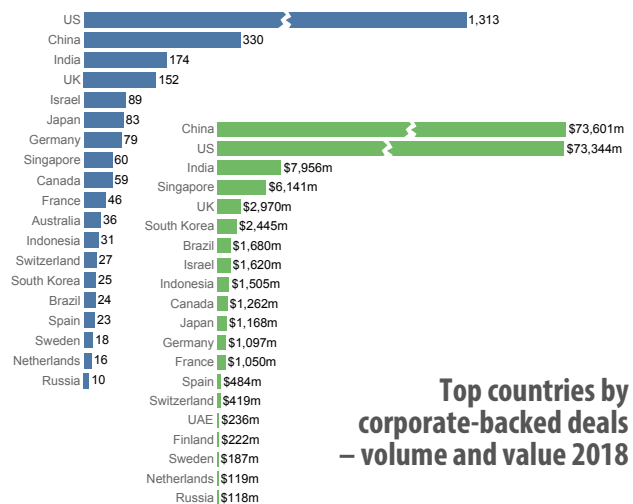
Israel is known as the startup nation for its high density of entrepreneurs and venture capital in proportion to the population but with corporate help and notable exits, such as Mobileye’s acquisition by Intel for \$15bn, it is increasingly becoming the scale-up nation too.

In 2018, Israel had the fifth-largest deal volume in the world backed by corporates, and eighth when measured by deal value – the actual capital invested – at \$1.6bn. The Israel Venture Capital (IVC) Research Centre said Israeli startups raised a total of \$6.47bn in venture capital last year, the sixth year of consecutive growth, with the number of corporate venturers making their first deal in the country going from 32 in 2013 to more than 130 over the past two years as more money flows into the country from Asia.

This is impressive for a country of 8.7 million people that turns out between 1,100 to 1,380 startups every year, according to Start-Up Nation Central data.

Now known as the startup nation – since the publication of Saul Singer’s and Dan Senor’s book of the same name a decade ago – at what point does Israel begin to scale? When does Israel become the scale-up nation, as attendees to the GCV Israel event in Tel Aviv this month discussed, and turn innovative startups set up for sale or flotation in other countries into one “focused on building large successful multinational companies that are headquartered in Israel and operate on a truly global scale, with thousands of employees and significant revenues”, as the Jerusalem Post argued in an editorial two years ago?

Corporate venture is growing in Israel, with the total deal value rising by \$643m from 2017. The deal count is rising too, with 37 alone in the IT sector. The IVC Research Centre noted that in 2013-14 small deals of less than \$5m made



**Top countries by corporate-backed deals – volume and value 2018**



## INNOVATIVE REGION

up the majority of corporate investments but since 2017 the majority have been in larger deals of more than \$20m in size.

Those data are not as simple as they sound. Aharon Aharon, CEO of the Israel Innovation Authority (IIA), ahead of the GCV Israel event pointed to the lower number of first rounds for startups, even as the total amount of invested capital increases. Aharon pointed to this as evidence of venture capital units preferring “to gamble on a smaller number of promising startups and to fuel them over a longer stretch of time with generous funding in the hope of eventually profiting from a huge exit, even if the wait is long”.

According to Aharon, there are now 15 Israeli unicorns – companies worth at least \$1bn – in part helped by this phenomenon. Landa Digital Printing received \$300m from Germany-based Altana in 2018, the largest corporate-backed round in Israel yet. Of the top 10 corporate-backed rounds in Israeli history, seven are from 2017 or 2018, including Daimler, Mercedes Benz, SAIC and Hearst backing a \$250m round for Via, and GE Ventures supporting the \$150m round for InSightec.

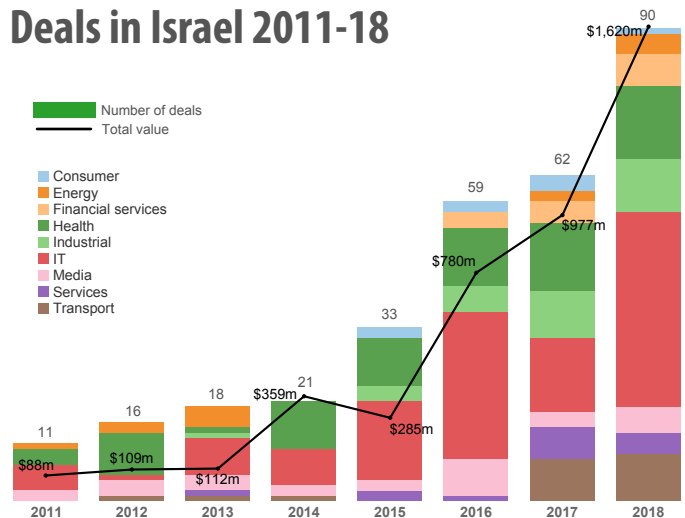
Ornit Shinar, director and venture investing lead at Citi Ventures in Israel, said these larger rounds were evidence that the shift from startup nation to scale-up nation was really happening, in part because later rounds are becoming larger as IPOs are delayed.

She added: “Israel is experiencing a market transformation that matches the global trend of delayed public offerings. This can be explained by a number of factors. First, the IPO market has moved upstream with more large-scale private money available. Second, Israel has seen a surge of late-stage funds, facilitating the fundraising potential of companies once they reach growth. And, third, there has been a change in the way the market is behaving, with less startups raising seed or A rounds and greater opportunity to join later-stage rounds of funding. All of this would justify the scale-up name.”

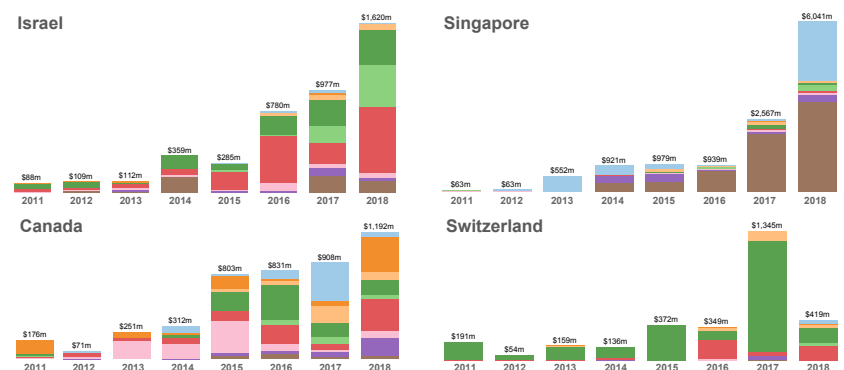
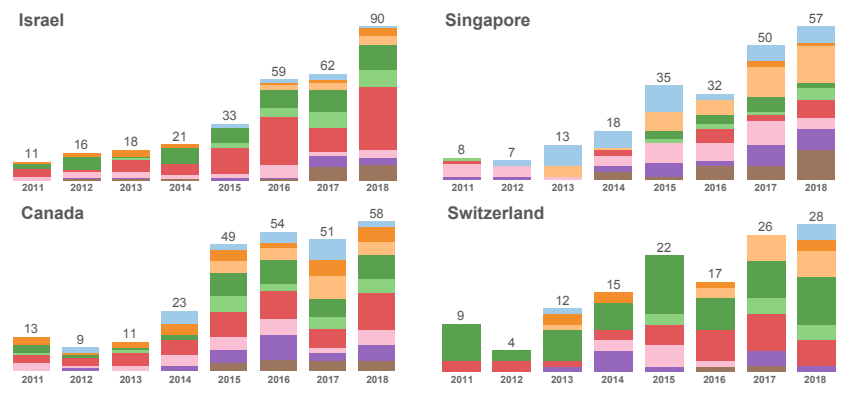
While Singapore had a significantly lower deal count, at 57, those deals were backed by \$6.1bn of capital, roughly four times that which Israel received, suggesting a more mature outlook. That said, Singapore is something of an outlier, with an estimated \$108m in capital per deal – Israel is at \$18m, and Canada and Switzerland are at \$20m and \$14m respectively.

For Aharon, Israel is “a global hub of innovation that excels in tech development and produces groundbreaking companies”, but it is also “falling behind developed countries in the consumption of innovation – meaning technology assimila-

### Deals in Israel 2011-18



### Regional comparison of deals by sector – volume and value 2011-18





**INNOVATIVE REGION**

tion". Creation does not always engender consumption, and Israeli business units are not as quick on the uptake as innovators would like.

Aharon's job is to support innovation across the Israeli economy, and that means ensuring that innovation is used. For Aharon that is not about becoming a scale-up nation but becoming a "smart-up nation", where the economy is just as adept at implementation as it is at innovation.

The authority is coordinating across government to facilitate implementation and assimilation of technology within Israel, but Israel's business is, in some ways, profoundly international, as Aharon said: "The Israeli high-tech sector is particularly global by nature. Most of its industry competitors and clients are scattered across the globe, it is highly involved with multinational companies and foreign investors, and it performs most of its transactions in foreign currency."

While being internationally-focused is an advantage in some ways, it does not mean Israeli startups can avoid every domestic problem. Some are more fundamental. Coming into the job at the IIA in 2016, Aharon identified a high-tech labour shortfall. Currently, the IIA is pushing, alongside the government, to fill an estimated 15,000 jobs in the sector. Pulling on institutional levers such as boosting maths and science education in schools, there is also a "heavy emphasis on integrating women and underrepresented populations in high-tech – Arabs and ultra-orthodox in particular – with a recognition of the notable unfulfilled potential in these group".

Shinar, who has been involved with Yazamiyot, a group that supports women entrepreneurs in Israel, has seen this trend firsthand. "While this is subjective, I feel that in 2018, there has been a shift with investors – men and women alike – being vocal about wanting to invest in diverse management teams, and Citi has put diversity front and centre. In the final quarter of 2018, we organised a Pitch in the Dark event in which startups pitched their companies in front of some of the country's leading VCs in a pitch dark room – pun intended. The point was to showcase the importance of not letting our preconceptions and unconscious biases influence our decisions and miss out on great entrepreneurs."

Those entrepreneurs are coming into an ecosystem that is excited about many things, and perhaps one above any other – artificial intelligence (AI). Aharon has identified, like many others in the innovation economy, that AI is an area with huge potential for growth, and is proud of the work Israeli companies have done in that space.

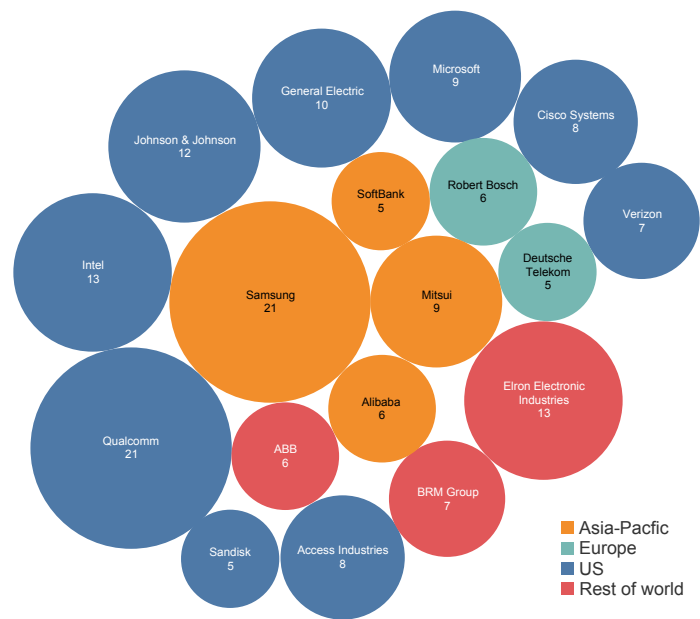
He said: "The rapid growth of AI as the groundbreaking information technology of our generation points to the enormous potential of the Israeli industry in innovative applications of advanced information technologies. Israel's high-tech sector has excelled at leading implementation technologies. As such, its ability to produce innovative companies that are prominent in the field of transportation such as Mobileye and Innoviz is not surprising."

Shinar at Citi has seen the same trend, with one example being Contguard, in which Citi invested last year. The Israeli firm use internet of things and AI to provide real-time monitoring for goods in transit, applying modern technologies to old problems. Other Citi investments focus on cybersecurity, supporting small and medium-sized businesses, and trade-related startups, all areas Shinar points to as unsurprising, because Israel is "renowned as being a hub of innovation and excellence with an active startup community in each of these areas".

A further promising sign for Israel is the amount of external capital being invested. Qualcomm, Microsoft, Samsung, Intel, Alibaba and ABB all did multiple deals in Israel last year, with Qualcomm and Samsung doing 21 each. While IT is the dominant, the number of deals in industry, transportation, health and financial services have all grown year on year.

Earlier this year, consumer electronics producer Samsung was in discussions over a \$150m to \$160m acquisition of Corephotonics, an Israel-based smartphone camera technology provider based on Tel Aviv University research. And universities have been instrumental in the startup nation's success and in using venture increasingly to support the next generation of spin-outs and startups to go global. Tel Aviv University made history last year when it launched TAU Ventures with about \$20m in initial commitments to become the first such vehicle to be created in Israel. And within a month of its launch, it partnered intelligence agency Israel Security Authority to create the Xcelerator accelerator.

**Top corporate investors in Israel by deal volume 2011-18**



## INNOVATIVE REGION

Yissum, the tech transfer company of Hebrew University of Jerusalem, in January announced its participation in three international collaboration hubs to help drive the commercialisation of its technologies in the US, South America and China. Yissum has spun out 110 companies and currently generates \$2bn in revenue annually from commercialised Hebrew University technologies but has only recently set up venture funding. Diversified conglomerate Reliance Industries in 2017 agreed to invest \$25m in the Jerusalem Innovation Incubator, an early-stage program also backed by Yissum and run by venture capital firm Jerusalem Global Ventures.

Technion–Israel Institute of Technology is also setting up the \$200m Technion Venture Fund. Late last year, Technion secured \$10m (\$2.7m) in government grant funding to establish the Technion Entrepreneurship and Innovation Centre assembling the institute's various entrepreneurial services and partner Israel-based corporates, including drug developer Teva Pharmaceutical Industries, defence technology supplier Rafael Advanced Defense Systems and neuroscience product maker Alpha Omega.

These companies are already scaled up but the overall breadth of Israeli innovation is remarkable, and is a strong sign for the Israeli economy as a whole. Aharon is positive about Israel's place in the global economy and the innovation ecosystem within Israel. What is now key for Israel is the shift into a fully digitised economy, something Aharon said was lacking.

He added: "We often cite the extraordinary accomplishments of yet another Israeli company that has developed a new, revolutionary product. Nevertheless there seems to be a significant discrepancy between the advanced high-tech industry and day-to-day life in Israel. We believe that increasing the penetration of advanced technologies into day-to-day life in Israel is critical for economic prosperity and for improved quality of life."

Part of that penetration involves scaling. Scale means more customers, and more customers means more people. Scaling and maturation go hand in hand, and while Shinar says the Israeli innovation ecosystem may look like a "disorganised scramble", it is showing signs of maturity, as "serial entrepreneurs and experienced executives bring a new depth to the quality and variety of startups we are seeing", in turn leading to a greater number of unicorns.

While maturity may be upon the Israeli innovation ecosystem, there is a word of warning from Aharon – implementation needs to come sooner rather than later. As Aharon said: "The duality that has existed thus far between the innovative high-tech sector and the rest of the economy, which has been slow to adopt new technologies, is not sustainable". ♦

## Comment: Investing in Israeli companies



**Jonathan Tudor, director of Centrica Innovations, was in Israel for the GCV Israel conference, Israel's first corporate venturing conference, and to launch a £100m Centrica Innovations fund**

The late Israeli president Shimon Peres once said: "In Israel, a land lacking in natural resources, we learned to appreciate our greatest national advantage – our minds. Through creativity and innovation, we transformed barren deserts into flourishing fields and pioneered new frontiers in science and technology." Even at an advanced age, President Peres was one of the great global supporters of finding new solutions to the way we live, work and move.

Every day, new innovations are sought and discovered which can drastically and dramatically alter the way we live, shape our lives and meet the changing needs of people around the world. As an international energy and services company, and the UK's largest supplier of electricity and gas, Centrica already brings power and gas to millions of homes and businesses. But our offer is changing and we are continually working to develop new products, offers and solutions that are firmly underpinned by investment in technology.

At Centrica Innovations we are looking to invest £100m (\$140m) in the very best ideas and businesses, and believe Israel offers access to both great tech and some of the world's greatest entrepreneurs and innovators. We are particularly interested in the distribution of energy, electrification of transport and increasing connectivity through data, blockchain and the internet of things.

Creativity and energy are the key building blocks of any high-tech hub and it is on an almost daily basis that we hear from our local Israel-based scouts about the new technologies emerging from the "start-up nation" at a dizzying speed.

But I believe it has become clear to investors around the world that Israel is not just at the cutting edge of invention and innovation but is a hub of activity in seeking to make the world a better place, especially for the most vulnerable. At Centrica, we similarly look for solutions for those in need, so it should come as little surprise that we are already collaborating to this end.

Recently we held our Active Ageing Challenge in London, inviting startups from all over the world to pitch for £100,000 in funding, and we were delighted to award £25,000 to brilliant Israeli business EchoCare Technologies, based in Beersheva.



## INNOVATIVE REGION



The company develops non-wearable self-learning elder-care home monitoring devices, which is a great solution to how we look after our elderly, and we are looking forward to exploring opportunities to test the project out with some customers.

In Israel, the impossible frequently becomes the improbable and then the achievable, and we believe in harnessing this great and positive energy, not just for our customers but to ease and convenience people around the world. It is already strikingly true that almost every person with some type of daily interaction with technology frequently meets Israeli innovation as they go about their day.

Having acquired Panoramic Power, the leader in circuit level energy management solutions in 2015, we see Israel as an excellent candidate for investment and are looking for new partners to work with us.

Our offer to potential Israeli partners is an opportunity to test their solutions and innovations with our global customer base. In turn, we welcome the opportunity for our partners to bring new ways of thinking to Centrica as we continue to serve millions of homes and businesses.

Centrica is committed to providing support to people and technology that can change the world, and we know that Israel, a nation whose innovators are always living on the edge of tomorrow, can help us assist, develop and reshape the way the global community lives, works and moves. ♦

*This is an edited version of an article first published in the Times of Israel*

## UNIVERSITY CORNER

# Holding hands with the entrepreneurs of tomorrow

Editor Thierry Heles reports from Autm's annual meeting in Austin, Texas

**A**utm, the non-profit association that represents technology transfer leaders globally, this year held its annual meeting from February 10 to 13, welcoming more than 2,000 delegates to this year's chosen location of Austin, Texas.

The event, the largest of its kind in the world and the biggest for Autm in a decade, brought together everyone from locals at University of Texas Austin to attendees from as far afield as South Africa and New Zealand.

Alison Campbell, who had been the chairwoman of Autm for the 2018 to 2019 period but would hand the gavel to Richard Chylla to take over for the next 12 months following the conference, opened the annual meeting by telling the audience about one of her friends who had been diagnosed with cancer but who had benefited from a treatment Campbell had helped bring to market.

"Nothing beats the outcome of the long-term work you have been involved in, but you do not always get to see that," Campbell noted. With Autm now counting more than 3,000 members in 61 countries – and 400 international delegates at the event – there would, however, be more of these stories among the audience.

Stephen Susalka, chief executive of Autm, took the stage to invite the audience to share their success stories for the Better World project, a database of more than 500 university technologies that have had a profound impact on humanity and that was being used to demonstrate to politicians that what tech transfer offices were doing was worthwhile.

"We are a war and peace profession in a bumpersticker world," Susalka noted, adding that technology transfer was facing a raft of challenges, such as weakening patent rights, but that Autm was doing everything in its power to fight these.

Campbell awarded the Bayh-Dole Award to Carl Gulbrandsen, who had been managing director of Wisconsin Alumni Research Foundation, the commercialisation arm of University of Wisconsin Madison until 2016, and over the course of two decades had helped lead the office to internationally renowned successes.

In his acceptance speech, Gulbrandsen celebrated how the Bayh-Dole Act, which mandates US universities commercialise federally funded research, had in large part been responsible for turning Autm into the organisation it was today. He called on everyone in the audience to defend the act in the US and encouraged international delegates to keep supporting Autm.

Campbell and Susalka also presented the Autm Chair's Award to David Gulley, a member for nearly 20 years and founding director of the technology transfer office for the Puerto Rico Science, Technology and Research Trust. They also presented the Volunteer Services Awards before handing over the microphone to Leah Busque, general partner at venture capital firm Fuel Capital, for her opening keynote address.

## Ideas are not enough

Before joining Fuel Capital, Busque had founded TaskRabbit, an online marketplace for customers to book other users for odd jobs such as picking up laundry or putting together Ikea furniture.

Busque had worked at technology firm IBM for eight years, helping to develop business collaboration tool Lotus Notes



## UNIVERSITY CORNER

before making the leap to entrepreneurship. She said: “I used to think all the good ideas were gone, but then I realised there were so many problems that needed solving,” adding that she saw “ideas not as an invention but as a discovery”.

The idea for TaskRabbit came to her in early 2008 when she was about to go out for dinner but realised she had forgotten to buy dog food. She looked at her iPhone – which was only released four months previously and did not yet have an app store – and asked herself whether there was a way to use the device to pay someone else to do it for her.

Busque challenged the concept that an idea was enough, noting: “I have so many people come up to me and say ‘I had the same idea for TaskRabbit 10 years ago’, and I say: ‘That is amazing. What did you do with it?’ and they reply: ‘Nothing.’” She emphasised: “It is about the execution of an idea.”

She also contested the notion that entrepreneurs should keep their idea a closely-guarded secret, as sharing an idea created value, from initial feedback on its validity to being connected to people who might help. She explained that after telling a friend about her idea, she was connected to Scott Griffith, then chief executive of car-sharing company Zipcar, who became a mentor.

It was not all smooth sailing, however, and Busque admitted that a particularly tough moment came in 2014 when TaskRabbit had to throw out its entire codebase and start from scratch after realising that an auction-type approach rather than a real-time transaction was preventing the platform from scaling. But she added: “Having something done is better than having something perfect. Sometimes we can get paralysed in the concept that something has to be perfect.”

And the story had a happy end – it turned out putting Ikea furniture together was the number-one task posted on the platform, and that piqued the retailer’s interest, which first formed a partnership in 2016 before acquiring TaskRabbit the following year.

### “Who are we?”

After the opening keynote, delegates split into a variety of smaller sessions, such as one on the evolving profession of technology transfer, which asked: “Who are we?” Trying to answer that question were moderator Richard Chylla, executive director of Michigan State University’s tech transfer arm MSU Technologies; Henric Rhedin, president of Autm’s European counterpart ASTP-Proton; Martin Raditsch, chief executive of Goethe University of Frankfurt’s commercialisation unit Innovectis; and James Zanewicz, chief business officer of Tulane University School of Medicine’s office of research business development.

Rhedin argued that there was a profession but that it was not very well defined. This mattered because definition meant recognition, not least of all by the taxpayer, who tended to see a university solely as an education and research institute, and by politicians.

The funding for knowledge transfer, or utilisation as Rhedin dubbed it, should be a third of a university’s budget, but for the top six universities in Sweden it was officially zero, meaning it was not recognised as a core business. The recognition would also make it easier to include people in the profession who were not seen as part of it, such as PhD students.

Raditsch said that whenever he was asked what he did, he would reply “technology transfer”, which showed to him that there was some understanding that it was a profession. You could even find people doing the same job not only within universities but also in industry and government. One challenge was internationalising the profession – each country, and even each university, had different cultures and understandings of what technology transfer entailed.

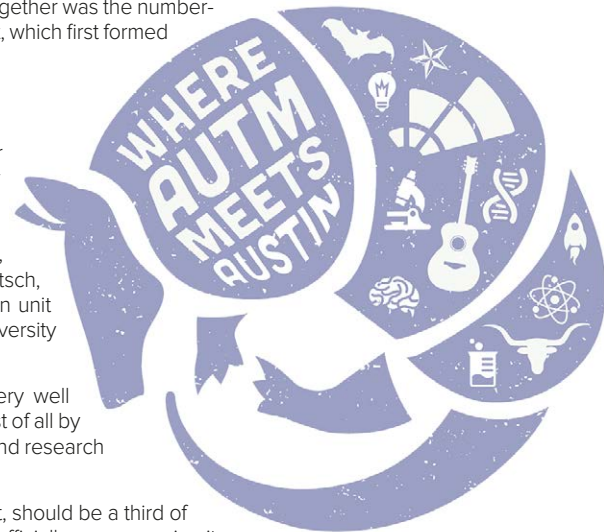
Zanewicz pointed to internationally recognised qualifications, such as registered technology transfer professional (RTTP), as proof that the profession existed and that the sector was moving towards uniformity. But the fact that offices had become more complex over time and added countless new job titles made it more difficult. He added: “We are almost like a profession of researchers in our own right. We are expected to make perfect decisions from imperfect and often incomplete data.”

Zanewicz also agreed with a comment from audience member Chris Noble, director of corporate engagement at Massachusetts Institute of Technology, who said it would be great if students graduated with a solid understanding of intellectual property. Zanewicz added that liberal arts students, too, should be taught these skills as science, technology, engineering and mathematics made up only a fraction of the student body.

### “Not a bunch of failed scientists”

Elsewhere, a breakout session on assessing and improving an office’s performance was led by Tony Raven, chief executive of University of Cambridge’s tech transfer office Cambridge Enterprise. He welcomed Alison Campbell, Erin Raymond, a director in University of Southern Queensland’s office of research development, and Christian Stein, general manager of Ascension, the technology transfer partner of several institutes within the Helmholtz Association and Leibniz Association, on stage.

“Having something done is better than having something perfect”



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Rayment presented a career pathway framework developed by Autm's Australian sister organisation Knowledge Commercialisation Australasia. The framework provides a guide to recruiting staff, identifying individual, team and department resource requirements, and understanding external expectations.

The document, which shows the capabilities an early, middle and senior professional should demonstrate, would be helpful for human resources and for the federal government, illustrating what the profession achieved for the country.

Rayment said education was Australia's third-biggest export and tech transfer was a way to engage with corporates and tell a story that made prospective students want to come to Australia, which in turn would contribute to a university's key performance indicators even if actual technology transfer was a fraction of that equation.

Campbell acknowledged that recognition mattered personally, professionally and nationally, and that there might be some crossover – professional recognition could equate to personal recognition. But it would also mean that if there was a standard to judge staff against, that would create a standard to judge the whole office, and that in turn would be an argument for the manager to secure training funds.

"It is not necessarily about the licensing figures and the bottom line," Campbell noted, because there were many impacts that remained unmeasured. The bottom line also meant ignoring staff not working on licences and spinouts, such as communications and legal teams.

RTTP, she concluded, had really helped her case because it served as justification to the universities that tech transfer offices were not simply "a bunch of failed scientists" but people with a particular skillset. It also helped on a political level, as the qualification demonstrated staff at the oft-cited Stanford University and Massachusetts Institute of Technology were doing the same thing.

Stein, meanwhile, described the Critical Friends initiative, which enabled tech transfer offices to be evaluated by experts to find potential weaknesses and opportunities for improvement. The report cost between \$9,000 and \$13,500 and included a week of preparatory work by thought leaders such as Tom Hockaday, former chief executive of University of Oxford's tech transfer office Oxford University Innovation. The experts would interview all staff over the course of two days and offer their recommendations.

Stein acknowledged that the process was intimidating and required being open about an office – including details about staff and figures that would not be shared with a run-of-the-mill evaluator. But the fact that the report was commissioned by the head of a unit rather than an external person made the process highly valuable, Stein added.

Raven picked up on a comment by Rayment that Australia's press was constantly reporting how bad universities were at commercialisation, noting that even he, as a Cambridge employee, thought one article published by a UK newspaper arguing that "Oxford is the worst university in the world for commercialisation" was particularly harsh.

Raven said that following criticism that commercialisation activities were too slow, Cambridge Enterprise undertook a study that showed documents spend 10% of time on an academic's desk, 15% in the tech transfer office and 75% with external parties. Speeding up the process internally would do little to optimise it, Raven concluded.

Cambridge Enterprise had also begun analysing its performance and realised that despite creating many spinouts each year, it had yet to reach its highest maturity level for those processes. But there was good news, too. Raven said that, thanks to consultancy agreements handled by his office, \$30m had been shown to have flowed back into the university through partnerships and connections established by faculty with corporates.

### Written in the stars: licensing, joint ventures and spinouts

Another breakout session featured Jonathan Jensen, director of licensing at Salk Institute for Biological Studies; Wesley Chen, manager of external innovation at pharmaceuticals group Johnson & Johnson; Han Lim, vice-president, global head of partnering at biotech developer Atomwise; and Vaibhav Saini, technology development and licensing manager at MilliporeSigma, the life sciences subsidiary of pharmaceuticals group Merck.

Chen said his unit was particularly interested in getting involved in the very early stages, to the point where a university would occasionally tell him he should wait for a while. He added that his innovation centre could offer not only infrastructure to researchers but could also help derisk a target indication even if faculty was looking into a disease with a smaller market potential, such as amyotrophic lateral sclerosis (ALS) with a view to considering it for a larger patient population such as Parkinson's and Alzheimer's diseases. "We do try to be flexible," Chen declared.

His unit could be very conservative, Chen admitted, noting that he liked to see an appetite from other investors, but could also move very quickly if an interesting opportunity arose. He cited one particular deal that was closed within three weeks. On the flipside, Chen said, it could sometimes be a frustrating experience to find the right office within a univer-

"It is not necessarily about the licensing figures and the bottom line"



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sity to approach, and if a spinout was primarily interested in money, then corporate venturing arm Johnson & Johnson Development Corporation would be a much better fit.

Lim explained that Atomwise was keen on collaborating in the biology space and it, too, was focused on the very early stage. Atomwise was interested in helping advance early targets to clinical candidates, as the company had identified a gap there. "We are really passionate about the fact that if projects fail," Lim said, "it is because of the science and not because of a lack of resources."

Atomwise had no geographic boundaries, but dealing with companies further afield inevitably meant slower progress as the firm familiarised itself with different jurisdictions. Atomwise, too, would want an investment partner, such as a venture capital firm comfortable with the high-risk profile, Lim added.

Saini picked up on Lim's comment that it was all about advancing leads but noted that MilliporeSigma was very much research tool-focused, meaning that even a molecule that might fail for a certain indication could remain commercially viable if it was able to influence experiments in significant ways. Saini was conducting licensing deals and connected both with researchers who were already well known or had potential.

Being part of the Merck ecosystem meant university researchers could benefit from countless resources beyond MilliporeSigma's own, Saini added. It also meant that such a researcher would be among the first in line for potential partnerships.

### "Smart money is still rare"

The second day began with a plenary that invited all delegates back to the ballroom for a discussion involving Orin Herskowitz, executive director of Columbia University's commercialisation office Columbia Technology Ventures, and four venture capitalists – Jim Flynn, managing partner of Deerfield Partners; Jenna Foger, senior vice-president, science and technology, at Alexandria Real Estate Equities; Yoav Tzruya, general partner at Jerusalem Venture Partners (JVP); and Carmichael Roberts, member of Breakthrough Energy Ventures and founder and managing partner of Material Impact.

The panel discussed a variety of topics. Herskowitz noted that there seemed to be a lot of money available and he had heard from some VCs that they were not able to join funding rounds that five years ago only they would have been able to back.

Flynn challenged that notion, saying: "We do not see competition at the early stage." He acknowledged that venture capital was cyclical and that the success rate for biotechnology spinouts was only 4%, which was why his firm invested in a lot of them – with a diversified portfolio of 50 companies the odds of each failing dropped to less than 1%.

Roberts noted that a fund size should be tailored to what the investment team was trying to achieve. As a rule of thumb, he said, larger funds struggled to conclude early-stage deals and that had thrown many investors off when they moved from a small successful fund to a larger vehicle.

Tzruya agreed, adding that a larger fund often meant a change of strategy and a larger team, which could lead to more risk aversion. JVP kept its funds small for precisely that reason, he said, and refused to follow its VC peers into large seed rounds, opting instead for more reasonable sums of around \$2m. He concluded that "in most categories today, the smart money is still rare".

Tzruya also cautioned entrepreneurs that many VC firms brought out their star investor to lure a startup but then assigned a junior investor once the deal was done. The person a startup was dealing with, Tzruya asserted, was much more important than giving up an additional 5% equity.

Foger, who noted that Alexandria invested off the balance sheet, said there was no doubt that great science came from all over the world, but that it remained difficult to find the right talent to bring a drug to market.

Flynn also picked up on that idea when asked by Herskowitz why none of them was based in Silicon Valley and whether they had any interest in building ecosystems. It all depended on the sector, Flynn claimed, as creating a renewable and expandable talent pool proved more challenging in some cities than in others.

Tzruya also revealed that JVP's play was focused on establishing ecosystems, before Herskowitz disclosed that Alexandria would be building a new incubator on Columbia's campus, joking that "the construction schedule says nine months, but it is New York so sometime before the turn of the century".



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### AI changes everything

A breakout session then discussed how to navigate artificial intelligence (AI). Moderated by Cindy Chepanoske, manager, business development and licensing in the Centre for Technology Transfer and Enterprise Creation at Carnegie Mellon University, it also featured Christina McDonough, principal at law firm Fish & Richardson; Bruce Porter, professor in the department of computer science at University of Texas at Austin; and Manny Stockman, principal at spinout-focused investment firm Osage University Partners.

Porter provided an overview of AI technologies, introducing the audience to the three types of the technology – supervised, which provides an algorithm with known data to support future judgements, unsupervised, which is best known for its application in data mining, and reinforcement learning, which allows a machine to determine the ideal behaviour within a specific context and requires little manual input.

Stockman stressed that while the hype around AI had driven up valuations, Osage was primarily interested in how quickly a company could move to market. Intellectual property, he revealed, was relevant but of secondary interest to his firm. He welcomed the fact that most startups in the space were now verticals rather than platforms, as most of the latter had struggled to achieve scale and several had collapsed.

One important factor considered by Osage was the source for a company's data – if it was proprietary it could be a significantly more valuable proposition than if it tapped into data that was publicly available. Stockman also emphasised that his firm was keenly aware of privacy regulations, such as the EU's General Data Protection Regulation, and needed to know how portfolio companies dealt with these requirements.

McDonough, meanwhile, gave an overview of the legal implications of AI, noting, among other things, that guidance from the European and US patent offices largely indicated that abstract ideas of what machine learning algorithms did was not enough to secure patents. Instead, she informed the audience, the algorithm needed to be specified in detail and researchers needed to explain carefully what the AI did and how it achieved its goals – if an algorithm merely collected and analysed data, that would not be a patentable invention.

### “We all have hammers looking for nails”

Another panel considered health innovation from invention to commercialisation and featured Verena Kallhoff, manager of WorkSpaces at the Texas Health CoLab in the Dell Medical School at University of Texas at Austin; Les Nichols, interim director of the office of technology commercialisation at University of Texas at Austin; Doug Stoakley, chief operating officer of medical device company ClearCam; John Uecker, chief executive of ClearCam and an associate professor in the department of surgery and perioperative care in the Dell Medical School; and Nishi Viswanathan, director of the translational research program Texas Health Catalyst in the Dell Medical School.

Viswanathan claimed that “we all have hammers looking for nails” but that nobody knew much about the clinical validity of early-stage devices and that was a challenge. The Texas Health Catalyst was launched asking what the primary gaps were faced by researchers, but Viswanathan was keen to stress that it was not an accelerator as it conducted a lot of pre-work and accompanied portfolio companies even after they had left the program.

The program's aim was also not simply picking the best technologies, but it had a specific remit to develop the next generation of innovators, which was why it gave vast amounts of feedback even to projects it declined to take on. The catalyst also worked closely with the office of technology commercialisation, with feedback shared both ways.

Stoakley explained that ClearCam, a spinout of University of Texas at Austin, had developed the equivalent of a windshield wiper for laparoscopic surgery, meaning the camera did not need to be removed every five to 10 minutes during surgery to be wiped down manually. The problem was well-vetted, Stoakley declared, as the team had interviewed 31 surgeons in the field without revealing the technology and asked them what their biggest challenge was – 29 cited wiping down the camera as their top concern.

ClearCam completed countless programs, such as the Rice Business Plan Competition, Stoakley continued, but Texas Health Catalyst was the only program where facilitators asked what the team needed, making it an extremely valuable proposition.

Uecker revealed that the spinout had raised an \$800,000 seed round from an angel syndicate in Houston and family and friends in November 2018. He added that while there was nothing that specifically had not worked for him in the catalyst program, he would have appreciated more cross-pollination.

Nichols insisted that not every successful company needed intellectual property, but acknowledged that it was valuable in the case of ClearCam. Picking up on a comment by Stoakley that the office of technology commercialisation





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had always negotiated in good faith, Nichols argued that “5% of a good company is worth more than 50% of a dead company”.

### “Scientists are people too”

The closing keynote was held by Ayanna Howard, chairwoman of the School of Interactive Computing at Georgia Institute of Technology, who told the audience about her journey from a space robotics developer for Nasa to developing intelligent robots that help disabled children.

When Howard joined Georgia Institute of Technology and came to grips with the reality that academic budgets were “basically zero compared with what we had” at Nasa, she applied her knowledge about space robotics to applications on earth. She built robots that could explore Antarctica and others that could conduct exploration beneath the ice.

Here she had learned a crucial lesson after her first iteration of a robot to walk across Antarctica was deemed unworkable by a faculty member because they moved too slowly – leading Howard to conclude that “when you design for an individual, you have to bring them in early”.

She also learned that “I actually like people”, before joking: “Don’t get me wrong, scientists are people too, but I was essentially their knowledge.” That led her to exploring healthcare robotics – a field that would become increasingly important as life expectancies increased. Howard pointed out that in countries with a life expectancy of more than 70 years, people spent an average of eight years with a disability.

But 150 million children already had a disability, according to conservative estimates, and in the US alone the paediatric rehabilitation industry was worth \$1.6bn. Howard’s work in that field first led her to develop intelligent robots able to keep children engaged throughout therapy by playing with them.

Howard revealed that this work led to the creation of Zyrobotics in 2013, which commercialised an accessible robot programming platform for children with special needs. To date, Howard said, the company had attracted more than 450,000 customers.

### “Science is not business”

Not every faculty member is a born entrepreneur, and taking on that challenge was one of the final breakout panels featuring Eric Ginsburg, interim director of technology commercialisation at University of Chicago’s Polsky Centre for Entrepreneurship and Innovation; Andrew Ellington, the Fraser professor of biochemistry at University of Texas at Austin; Don Rose, director of Kickstart Venture Services at University of North Carolina Chapel Hill; and Matthew Cohen, partner, life sciences, at Osage University Partners.

Rose warned delegates that if a researcher wanted a spinout to fund the lab, this could be a red flag. He also suggested faculty should put around \$5,000 into the company as a way for the researcher to have some skin in the game and to pay for some initial costs, such as legal fees.

The financial commitment also forced a conversation with a spouse, Rose added, about going ahead with the spinout and asking other questions, such as the additional time spent in work. Faculty should not, Rose cautioned, call themselves chief executive or president of the spinout – legally they were likely to be incorrect terms – but instead refer to themselves as founder, consultant or member of the scientific advisory board. Even if the faculty member chose not to pursue an active role long-term in the company, he or she was instrumental in the early stages and could exert some level of influence through scientific contributions.

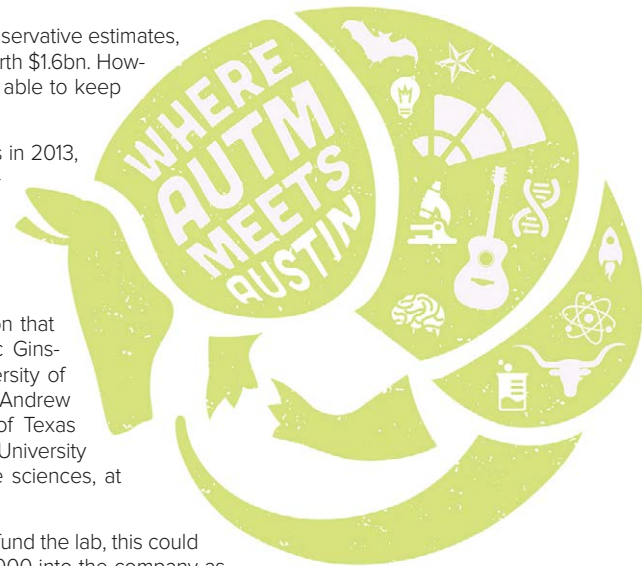
Ellington echoed many of Rose’s points and quipped: “I remember putting my skin in the game for one of my companies and I will never see that skin again.” The money also served as an initial comparatively small hurdle for faculty to jump over and showed a willingness to face increasingly bigger obstacles.

Faculty had to be willing to be all in but at the same time recede when the tech transfer office said no to a decision. “Science is not business,” Ellington declared.

Cohen offered some insights into the thinking of venture capitalists, asserting that “VCs do not want control”, before adding that he did not have the will or the time to run someone else’s business. Investors, he said, stepped in only when things had gone wrong.

Faculty also needed to understand that they should show their best data within the first couple of slides of their pitch and grab an investor’s attention within the first three minutes. Founders, Cohen finished, wanted someone to say yes, but investors were looking for reasons to say no – a position that researchers needed to understand when pitching their spinout.

“I remember putting my skin in the game for one of my companies and I will never see that skin again”



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### “Riding a bike through feet-deep mud”

Concluding the Autm annual meeting was a panel on best practices in women’s entrepreneurship programs. Moderated by Rachel Lin, counsel at law firm Tarter Krinsky & Drogin, the panel included Mary Juhas, associate vice-president at Ohio State University; Kristen Otto, marketing and communications manager in the office of technology management at Washington University in St Louis; and Jeanette Hill, founder of medical device manufacturer Spot On Sciences.

Juhas provided an overview of her offering, Ohio State Advance, that aims to retain and help to progress women faculty in science, technology, engineering and mathematics. The program came out of the US National Science Foundation’s Advance scheme, which allocates five years of non-renewable funding to institutions that commit to sharing their findings with other awardees and develop a distinctive initiative. In the case of Ohio State University, the distinctive feature was a reach for commercialisation.

Juhas acknowledged how hard it had been, saying: “Sometimes this work is like riding a bike through feet-deep mud.” She noted that one key challenge faced by female faculty was their lack of a network and the fact that many were uncomfortable with self-promotion, keeping them away from opportunities afforded to male colleagues.

Otto said her program was funded by a diversity grant from the vice-provost’s office, but that also meant it was a shoestring budget. Washington’s initiative was slightly different to Ohio State University’s in that it also accepted post-doctoral candidates and occasionally students.

Otto revealed that the program had driven invention disclosures by women from 25% to 50% and that the university had finally launched two women-founded spinouts, after previously having no such companies.

Hill, whose Spot On Sciences developed a device that enabled patients to take a blood sample at home that would remain stable at room temperature for years, revealed herself to be a true entrepreneur when she said she had sold Spot On to a private equity firm last year and had already launched her next venture, a startup called NanAby that for now remained in stealth mode.

Hill recommended to the largely female audience that women faculty join a dedicated entrepreneur program – not an MBA – but that they already had one key advantage over fellow female founders – as academics, they knew how to write grant applications and that was a great way of securing funding without dilution or an obligation to pay back the money.

She also echoed thoughts from a previous panel, noting that inventors had to be absolutely sure they had the passion to put their technology into people’s hands.

### Breaking new ground

As delegates gathered for one last reception in the grand ballroom, one message rang the halls and showed that, despite the challenges and the perhaps unusual question of whether the technology transfer profession even existed, this was a group of people serious about impacting the world.

That message came from Richard Chylla, freshly-minted chairman of Autm, who had said earlier in the day: “All of us at this conference are fortunate to be working in a profession that catalyses, encourages, facilitates, promotes, advances and sometimes drags technology from research laboratories to companies, where it is transformed into products and services that make a better world.

“It is an exciting journey. Autm wants to be with you every step of the way.”

After three days of delegates filling dozens of rooms across three floors, there can be no doubt Autm is serious about that mission. ♦

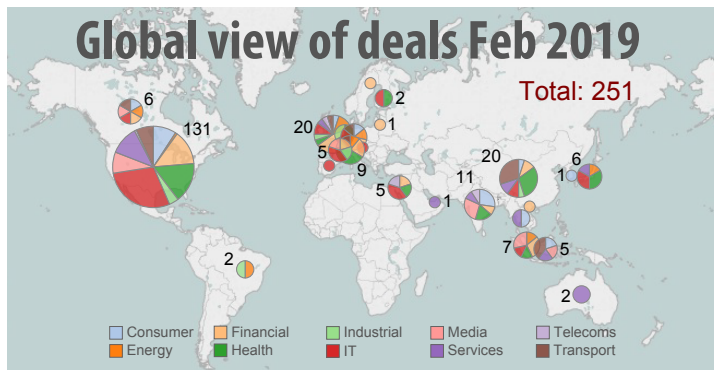


## MONTHLY ANALYSIS

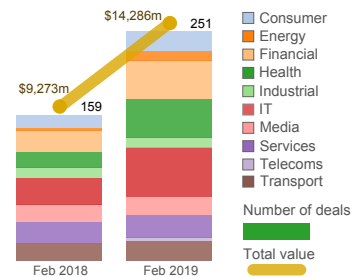
This is our data snapshot based on last month's investment activity. The charts and tables have been generated by our data platform GCV Analytics.

# Deals continue to grow

Kaloyan Andonov, reporter, GCV Analytics

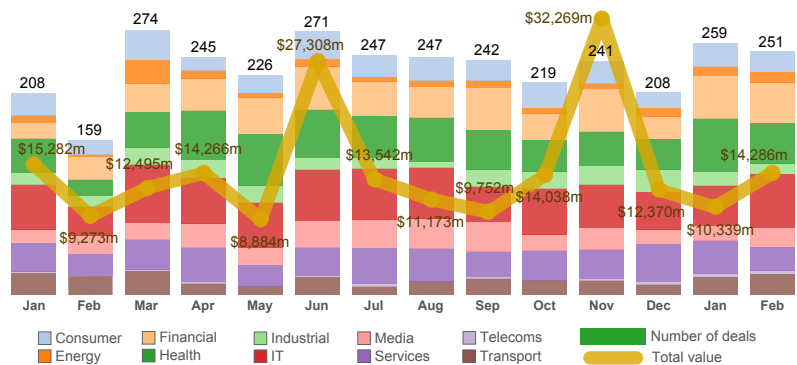


### Deals Feb 2018 vs Feb 2019



The number of corporate-backed rounds in February was 251, up 58% from the 159 in the same month last year. Investment value also increased significantly to \$14.28bn, up 54% from \$9.27bn in February last year. Compared with preceding months, there were fewer rounds than the 259 in January but more than the 208 in December.

### Deals Jan 2018-Feb2019

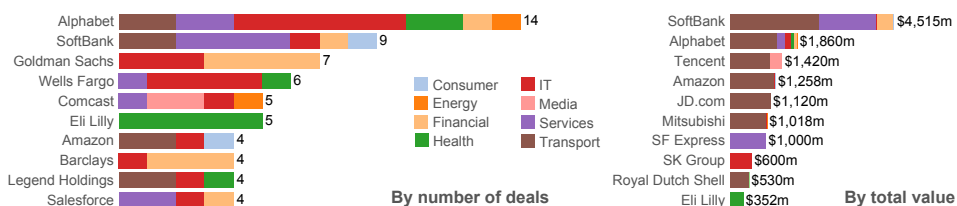


The US came first by number of corporate-backed deals, hosting 131 rounds, China and the UK were second with 20, and India third with 11.

The leading corporate investors by number of deals were diversified conglomerate Alphabet, telecoms group SoftBank and financial services firm Goldman Sachs. In terms of involvement in the largest deals, SoftBank and Alphabet topped the ranking, along with internet company Tencent.

GCV Analytics reported 18 corporate-backed funding initiatives in February, including VC funds, new venturing units, incubators, accelerators and other. This figure suggested a slight decrease compared with January, which registered 26 such initiatives. The estimated capital raised in those initiatives amounted to \$2.08bn, down from the \$3.26bn tracked in the first month of 2019.

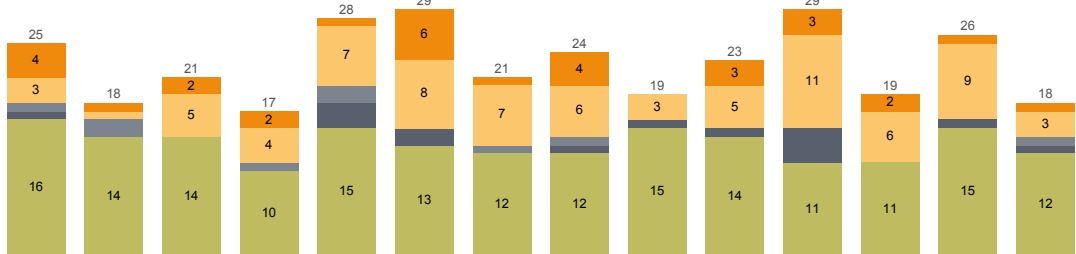
### Top investors Feb 2019



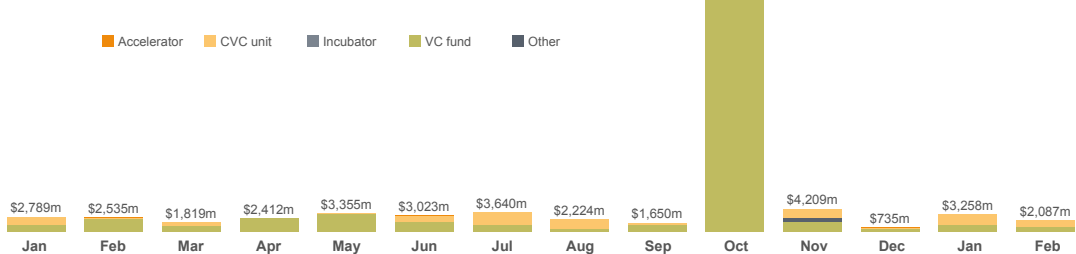
**MONTHLY ANALYSIS**

## Funding initiatives Jan 2018-Feb 2019

Number of initiatives



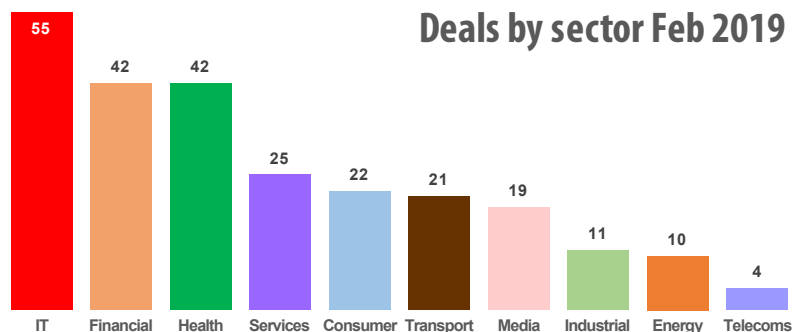
Amount raised



### Deals

Emerging businesses from the IT, financial, health, services, consumer and transport sectors raised the largest number of deals during the second month of 2019. The most active corporate venturers came from the financial services, IT, media and health sectors. Two of the top 10 deals were above \$1bn and the most frequent investor in the largest deals was SoftBank.

### Deals by sector Feb 2019



### Deals heatmap Feb 2019

	Financial services	IT	Media	Health	Services	Consumer	Telecoms	Industrial	Energy	Transport
North America	47	36	19	15	19	13	13	7	4	4
Asia	20	5	10	9	6	9	3	6		3
Europe	27	4	3	7	1	3	3	3	3	1
Middle East	2	2	1	1	1		1			
Australia / NZ	1	1								
South America	1							1	1	

China-based automotive e-commerce platform Chehaoduo secured \$1.5bn from the SoftBank Vision Fund. Chehaoduo, a spinout of classified marketplace Ganji, operates a used vehicle auction and trading platform and an after-sales services subsidiary. The funding will drive technology, product and services development.

The SoftBank Vision Fund led a \$1bn round for US-based online shipping platform Flexport, reportedly valuing the company at \$3.2bn. Logistics service provider SF Express also participated in the round along with investment firm DST Global and venture capital firms Founders Fund, Cherubic Ventures and Susa Ventures. Flexport operates a cloud-based platform for shipping by air, sea, land or rail, which incorporates real-time tracking and analytics. The funding will be used to increase headcount, with a particular focus on engineers and experts in local markets.

Indonesia-based on-demand ride provider Go-Jek secured about \$1bn from investors including Tencent, e-commerce platform JD.com and Alphabet at a \$10bn post-money valuation. Tencent, JD.com and Google co-led the funding, which represented the first close of Go-Jek's series F round. They were also joined by conglomerate Mitsubishi Corp and investment manager Provident Capital. Go-Jek owns a mobile ride-hailing and on-demand services app that reportedly



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### Top 10 investments Feb 2019

Company	Location	Sector	Round	Size	Investors
Chehaoduo	China	Transport	–	\$1.5bn	SoftBank
Flexport	US	Services	–	\$1bn	Cherubic Ventures   DST Global   Founders Fund   SF Express   SoftBank   Susa Ventures
Go-Jek	Indonesia	Transport	E and beyond	\$1000m	Alphabet   JD.com   Mitsubishi   Provident Capital Partners   Tencent
Nuro	US	Transport	–	\$940m	SoftBank
Rivian	US	Transport	–	\$700m	Amazon   undisclosed investors
Horizon Robotics	China	IT	B	\$600m	China Oceanwide USA Holdings   Citic   Hillhouse Capital Management   Morningside   SK Group   undisclosed investors
Aurora Innovation	US	Transport	–	\$530m	Amazon   Geodesic Capital   Greylock Partners   Index Ventures   Lightspeed Venture Partners   ReInvent VC   Royal Dutch Shell   Sequoia Capital   T Rowe Price
OakNorth	UK	Financial services	–	\$440m	Clermont   SoftBank
DoorDash	US	Services	E and beyond	\$400m	Coatue   Dragoneer Investment Group   DST Global   GIC   Sequoia Capital   SoftBank   Temasek   Y Combinator
Lime	US	Transport	D	\$310m	Alphabet   Andreessen Horowitz   Bain Capital   Bling Capital   Coatue   DCM   Fidelity   Fifth Wall   FJ Labs   GGV Capital   GIC   GR Capital   GSV Capital   Institutional Venture Partners   St Augustine Partners

had up to 25 million users by June 2018. It has moved into Singapore and is in discussions with Philippine regulators.

The SoftBank Vision Fund provided more than \$940m for Nuro, a US-based developer of an autonomous delivery vehicle. Founded in 2016, Nuro is working on a small four-wheeled driverless electric vehicle designed to collect and transport consumer goods. Nuro has signed a delivery partnership agreement with grocery chain Kroger and licensed its technology to autonomous truck developer Ike.

US-based sustainable truck developer Rivian Automotive secured \$700m in a round led by e-commerce and cloud computing group Amazon and backed by undisclosed existing shareholders. Rivian has previously received financing from car distributor Abdul Latif Jameel and diversified conglomerate Sumitomo. Rivian is working on an all-electric pick-up truck and sports utility vehicle, both of which are expected to be released commercially in the US next year, preceding a European launch the following year.

China-based artificial intelligence (AI) chip developer Horizon Robotics raised \$600m in a series B round backed by two subsidiaries of conglomerate SK Group. SK China and SK Hynix, the conglomerate's Chinese and semiconductor subsidiaries respectively, backed the round with a number of corporate venturing funds of unnamed China-based car manufacturers. Horizon Robotics' valuation was said to be "at least" \$3bn. Founded in 2015, Horizon Robotics is developing embedded AI chips for applications such as autonomous vehicles, surveillance equipment and other smart devices. The company's clients include SK Telecom.

US-based autonomous driving technology developer Aurora Innovation secured \$530m from investors including petroleum supplier Shell and Amazon. The round was led by venture capital firm Sequoia Capital and also featured Shell Ventures, Shell's investment arm, as well as Lightspeed Venture Partners, Geodesic, ReInvent Capital, Greylock, T Rowe Price Group and Index Ventures. The round reportedly valued the company at more than \$2.5bn. Aurora is working on software, hardware and data technology for driverless vehicles. It has partnerships with automotive manufacturers including Hyundai, Volkswagen and Byton.

The SoftBank Vision Fund led a \$440m round for UK-based digital bank OakNorth. The corporate put up \$390m while the rest was supplied by conglomerate Clermont Group. The round reportedly valued OakNorth at about \$2.8bn. It has now raised more than \$1bn in total. OakNorth offers fixed-term savings accounts to consumers and businesses. It also provides business financing, and has lent more than £2bn (\$2.6bn) to UK-based companies.

SoftBank led a \$535m series D round for US-based delivery services provider DoorDash, increasing the company's overall funding to \$722m. Venture capital firm Sequoia Capital, charitable foundation Wellcome Trust and Singaporean sovereign wealth fund GIC also participated in the round, which reportedly valued DoorDash at \$1.4bn post-money. DoorDash runs a last-mile delivery service for restaurants and operates in more than 600 US and Canadian cities.

GV, a corporate venturing vehicle of Alphabet, led a \$310m series D round for US-based scooter-sharing service Lime that included Alphabet itself. The round was co-led by venture capital firms Andreessen Horowitz and Institutional Venture Partners, Bain Capital Ventures, the VC arm of private equity firm Bain Capital, and Fidelity Investments, a subsidiary of financial services and investment group Fidelity. Lime's electric scooter and bicycle rental platform operates in 15 countries on five continents, and it has signed up some 10 million users to its app, which also covers university and corporate campuses.



## MONTHLY ANALYSIS

### Exits

In February, GCV Analytics tracked 16 exits with corporate venturers participating as either acquirers or exiting investors. The transactions included four IPOs, one merger and 11 acquisitions. The number of exits went down slightly compared with January, when there were 19. Total estimated exited capital amounted to \$952m, down from the \$3.12bn estimated for the previous month.

Gimlet Media, a US-based podcast publisher backed by marketing group WPP, was acquired by music-streaming platform Spotify for \$337m. Spotify's interest in Gimlet would feed into a drive by the corporate to diversify its core offering with the addition of non-music content, and is the first time it has bought a content producer. Founded in 2014 as American Podcasting Corporation, Gimlet produces and hosts narrative and scripted podcasts, the latter often boasting high-profile actors. Gimlet also operates a branded division that creates sponsored content, and has moved into television production.

CStone Pharmaceuticals, a China-based biopharmaceutical company backed by insurance provider Taikang and pharmaceutical research firm WuXi PharmaTech, raised HK\$2.2bn (\$285m) in a Hong Kong IPO. CStone achieved a valuation of \$1.5bn after selling 18.6 million shares to Hong Kong-based investors and more than 167 million shares to international backers at \$1.50, in the middle of its range of \$1.40 to \$1.60. Founded in 2016, CStone is developing treatments for diseases including cancer, cardiovascular diseases, rheumatoid arthritis, haematology and autoimmune conditions, with a particular focus on immuno-oncology combination therapies.

Alector, a US-based immuno-neurology therapy developer backed by Alphabet as well as pharmaceutical companies AbbVie, Eli Lilly, Amgen and Merck & Co, raised \$176m when it floated on the Nasdaq Global Select Market. The company priced 9.25 million shares at \$19 each, in the middle of the \$18 to \$20 range it had set, valuing it at almost \$1.3bn. Founded in 2013, Alector is developing drugs that will combat neurodegeneration using methods pioneered in immunology and genetics medicine development, targeting dysfunction in the body's immune system that triggers disorders leading to neurological deterioration.

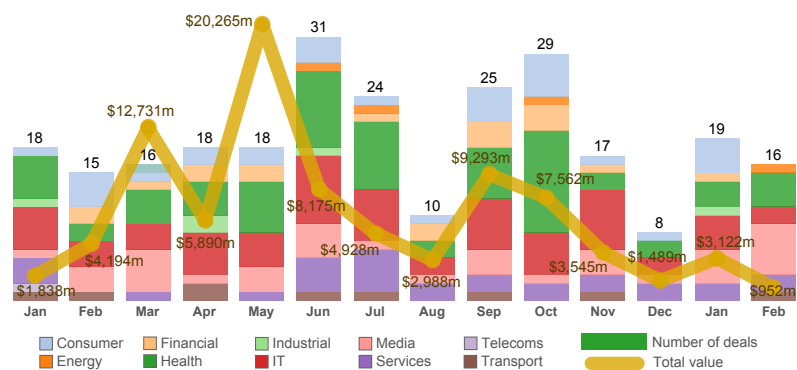
Stealth BioTherapeutics, a US-based mitochondrial dysfunction drug developer that counts an affiliate of property development conglomerate Nan Fung as an investor, floated in a \$78m IPO. The offering consisted of 6.5 million American depositary shares, each representing 12 ordinary shares, at \$12 each, at the bottom of its \$12 to \$14 range. The company listed on the Nasdaq Global Market. Stealth Bio is developing therapies for rare genetic and age-related diseases caused by dysfunction in the body's mitochondria, the parts of a cell that generate energy. The company plans to use \$25m of the proceeds to advance its lead candidate through phase 3 clinical trials.

Harpoon Therapeutics, a US-based immuno-oncology drug developer with pharmaceutical firms Eli Lilly and Taiho as investors, floated in a \$75.6m IPO. The offering consisted of 5.4 million shares issued on the Nasdaq Global Select Market at \$14 each, in the middle of its \$13 to \$15 range, valuing the company at about \$334m. Founded in 2015, Harpoon is developing T-cell engagers meant to leverage the body's immune system to treat diseases including cancer. Harpoon will put \$67m of the IPO proceeds into taking its lead products – for prostate and ovarian cancer – through clinical trials.

Game engine maker Unity Technologies purchased corporate-backed US-based gaming communications technology developer Vivox for an undisclosed amount. Founded in 2005, Vivox has created a platform that enables users to communicate by voice or text while playing mobile, PC and console games. Vivox had received a \$2m investment from Peacock Equity, a now defunct corporate venturing vehicle formed by power and industrial technology conglomerate General Electric and broadcaster NBC Universal, in 2010. The company's platform has been integrated into more than 125 games through partnerships with gaming studios such as Ubisoft, Bluehole, Wargaming.net and Epic Games, and has more than 100 million monthly users.

Euclid Analytics, a US-based spatial analytics platform backed by media group Cox Enterprises and telecoms firm Novel Group, was acquired by co-working spaces provider WeWork. Financial terms of the acquisition were not disclosed. Euclid's 24 employees will remain with the company. Founded in 2010, Euclid has developed analytics software that tracks the behaviour of customers in locations such as shopping centres and airports. WeWork said it would use the technology to gain clustered information about its spaces rather than tracking individuals.

### Exits Jan 2018-Feb2019



## MONTHLY ANALYSIS

Top 10 exits Feb 2019						
Company	Location	Sector	Type	Acquirer	Size	Exiting investors
Gimlet Media	US	Media	Acquisition	Spotify	\$337m	Betaworks   Cross Culture Ventures   Emerson Collective   Graham Holdings   private investor   Stripes Group   WPP
CStone Pharmaceuticals	US	Health	IPO		\$285m	3W Partners   Arch Venture Partners   Avict Global Holdings   Boyu Capital   Citic PE   Frontline BioVentures   GIC   Hillhouse Capital Management   King Star Capital   Oriza Holdings   Sequoia Capital   Taikang Life Insurance Company   Terra Magnum Capital Partners   WuXi AppTec   Wuxi PharmaTech   Yunfeng Capital
Alector	US	Health	IPO		\$176m	AbbVie   Alphabet   Amgen   Casdin Capital   Deerfield Management   Dementia Discovery Fund   Eli Lilly   Euclidean Capital   Federated Kaufmann Fund   Foresite Capital   Janssen Pharmaceutica   Merck & Co   Mission Bay Capital   New Leaf Venture Partners   OrbiMed   Perceptive Advisors   Polaris Venture Partners   Section 32   Topspin Partners
Stealth BioTherapeutics	US	Health	IPO		\$78m	Atlantis Investment Management   BVCF   CMBC Capital Holdings   Kingdon Capital   Morningside   Nan Fung Group   Ocean Equity Partners   Sagamore Investments
Harpoon Therapeutics	US	Health	IPO		\$75.6m	Arix Bioscience   Cormorant Asset Management   Eli Lilly   MPM Capital   New Leaf Venture Partners   NS Investment   OrbiMed   Ridgeback Capital Investments   Taiho Pharmaceutical   UBS
Vivox	US	Media	Acquisition	Unity Technologies	–	Benchmark   Canaan Partners   General Electric   GrandBanks Capital   International Data Group   NBC Universal   Peacock Equity
Euclid Analytics	US	IT	Acquisition	WeWork	–	Benchmark   Cox Enterprises   Gold Sky Capital   Groupe Arnault   Harrison Metal Capital   New Enterprise Associates   Novel Group   TriplePoint Capital   ULU Ventures   undisclosed investors   XG Ventures
Anchor FM	US	Media	Acquisition	Spotify	–	Accel Partners   Acequia Capital   Alphabet   Betaworks   Chernin Group   Crunchfund   Eniac Ventures   Homebrew   Omidyar Network   private investor   Quire   SV Angel   undisclosed investors
Gudog	Spain	Services	Merger	HouseMyDog	–	European Union   HouseMyDog   undisclosed investors   Wayra Academy
Hinge	US	Media	Acquisition	Match Group	–	Match Group

Spotify paid an undisclosed sum to acquire Anchor, a US-based podcasting app developer backed by Alphabet. The deal came days after Spotify acquired Gimlet Media. Founded in 2015, Anchor has developed a platform that enables users to create and monetise podcasts and other audio content directly from smartphones.

UK-based dog-walking and sitting service HouseMyDog has merged with Gudog, a Spain-based rival backed by telcoms company Telefónica's Wayra accelerator. Founded in 2012, Gudog has developed an online marketplace that operates in Spain, France and Germany, and which enables pet owners to find, book and pay for a sitter or walker. HouseMyDog provides a similar online-based service that connects dog owners with service providers. The merged company will cover the UK, Ireland, Spain, France, Germany, Switzerland, Austria and Belgium, with 25,000 walkers and sitters.

Online dating platform Match Group paid an undisclosed sum to complete its acquisition of US-based dating app developer Hinge, having previously bought a 51% stake. Match had secured a 12-month option to acquire Hinge wholly when it bought the majority stake in 2018. The financial terms of the initial deal remained undisclosed. Founded in 2012, Hinge has developed an online service for users seeking long-term relationships, billing itself as an app "designed to be deleted". Hinge initially relied on a user's social graph on Facebook to match people with friends of friends, but began adding other platforms shortly before the 2018 deal. ♦

*Note: Monthly data can fluctuate as additional data are reported after GCV goes to press*



# Turning Raw Data into Meaningful Insights



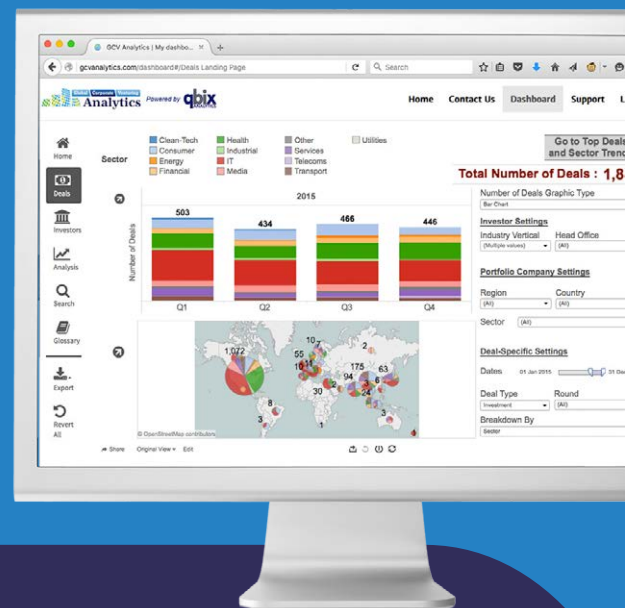
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