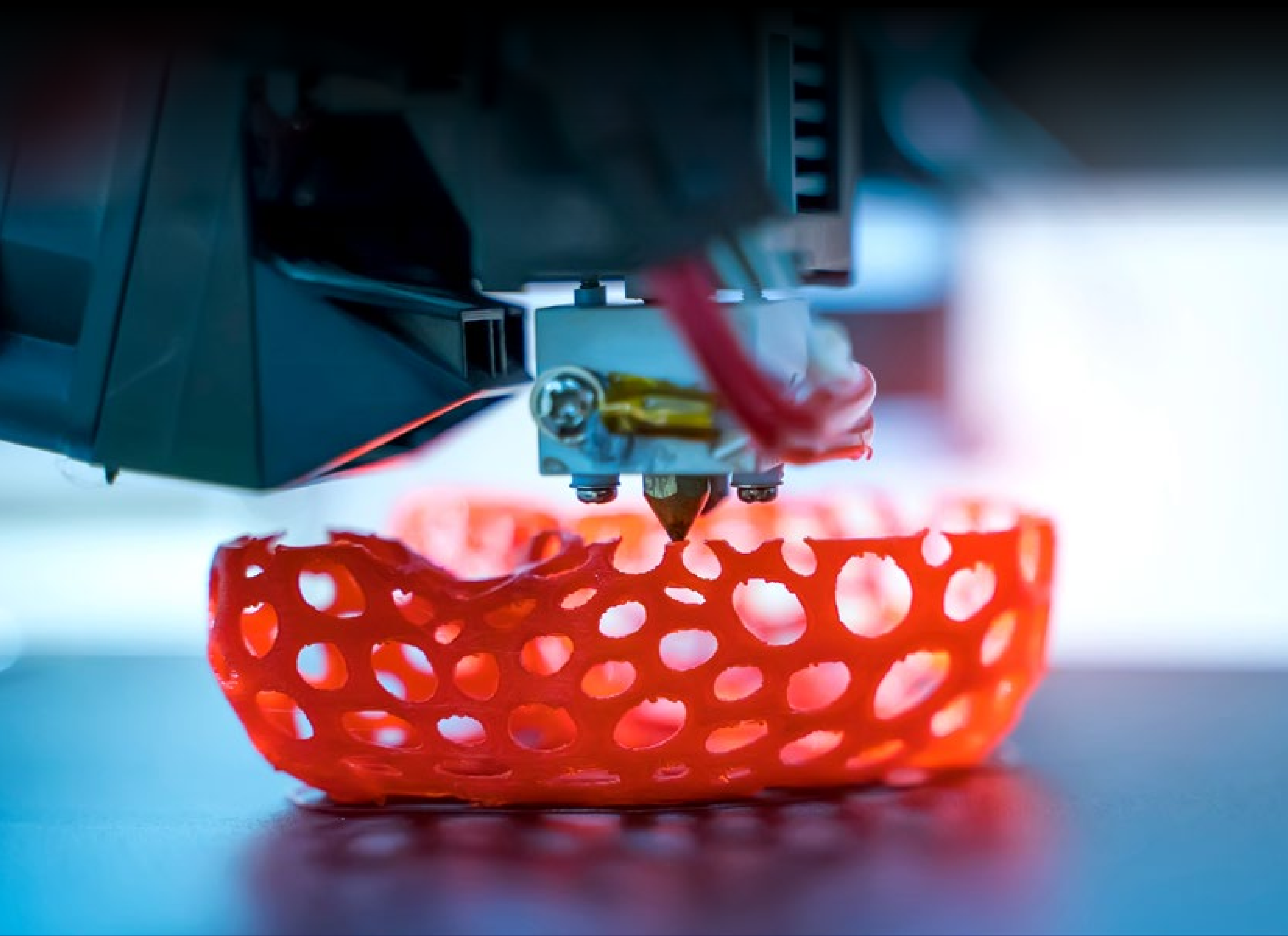
Global Corporate Venturing

March 2021

Industry 4.0

How digitisation is changing everything for the sector



Spac frenzy means deep pool of liquidity for right startups

JetBlue's milestone

University tech transfer offices deserve praise for pandemic response

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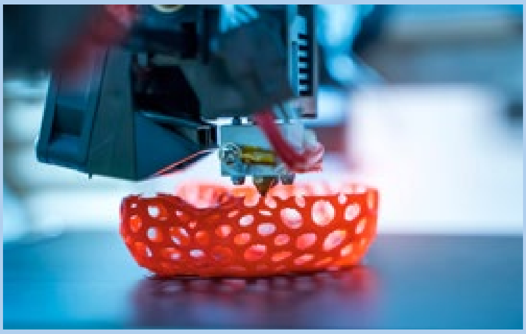
Digitisation is revolutionising industrials in every sub-sector. From the rise of 3D printing to the use of drones in agriculture, 'Industry 4.0' or 'the industrial internet of things' is prompting new ways of analysing, linking and controlling machinery.

As Kaloyan Andonov's sector report shows, a major shift is underway. The growth is predicted to be huge and those that do not innovate will be left behind.



Amy Burr

[Business leaders] should anticipate competition post-pandemic and invest in innovation now to prepare

Vanessa Colella and David Kidder

Global Impact Venturing

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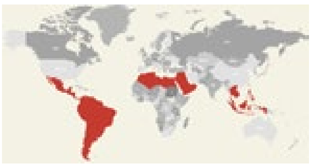
"Without the local know-how and relationships, CVCs without local presences often struggle to get the best deals"

Carol Strobel



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Global Corporate Venturing
Address: PO Box 77202, London, SW17 1HJ

Editor-in-chief: **James Mawson**
Email: **jmawson@mawsoniacom**

News editor: **Robert Lavine**
Email: **rlavine@globalcorporateventuring.com**

Analytics: **Kaloyan Andonov**
Email: **kandonov@mawsonia.com**

Supplements: **Liwen-Edison Fu**
Email: **efu@globalcorporateventuring.com**

Global University Venturing: **Thierry Heles**
Email: **theles@globaluniversityventuring.com**

Reporter: **Jordan Williams**
Email: jwilliams@globalcorporateventuring.com

Managing director: **James Gunnell**
Email: **jgunnell@mawsonia.com**

President for Asia: **Tim Lafferty**
Email: **tlafferty@mawsonia.com**

Production editor: **Julia Lee**

www.globalcorporateventuring.com

Editorial

Spac attack shows innovation frenzy

> **The vehicles could become twice the size of VC market**
> **Quality will be key**
> **Deep pools of liquidity available for the right startups**

By James Mawson
Editor-in-chief

Things are bubbling away for many startups but even more so for the big, listed tech companies.

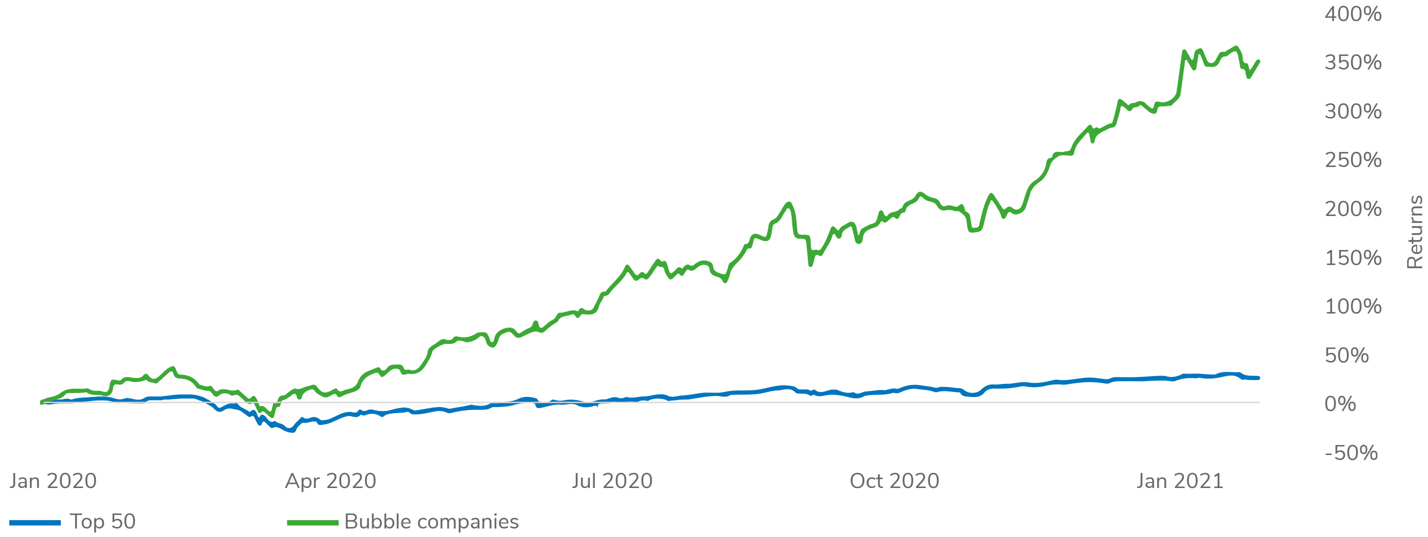
The K-shaped covid economy, where some companies do well even if the majority struggle, is shown in a number of ways.

In his latest blog post, Ray Dalio, co-chief investment officer and co-chairman of hedge fund Bridgewater Associates, states about 5% of the top 1,000 companies in the US are in a bubble, according to his analysis and classification. This works out at about 3% of the S&P 500 index, and these relative handful of companies have seen stellar share price increases of about 350% on average over the past year or so. The majority, however, have barely budged in their share prices.

Naturally, this sort of bifurcated market attracts investors to find the next big thing, and speed is of the essence. This creates the demand for faster flotations, particularly if they can include egregious remuneration for insiders bringing these deals to market – otherwise known as special purpose acquisition companies (Spacs).

Recently, Matt Taibbi and Eric Salzman added Spacs to the Financial Devil's Dictionary in their podcast.

Returns of the top 1,000 companies in the US



Source: Ray Dalio

As they note: "America still leads the world in one thing: inflating speculative bubbles using gibberish finance acronyms. Meet the latest 'Get-Super-Rich-Quick' scheme, the special purpose acquisition company."

The temptation to leap on these Spacs is certainly high. As The Economist notes: "Last year in America, underpricing led to $30bn of unrealised gains for newly public companies (and their employees). With Spacs and direct listings, another route to going public, there is no pressure for a price to pop."

But who benefits from Spacs? The promoters listing them, given they receive founders' shares of up to 20% of the proceeds. The entrepreneurs that reverse acquire the Spacs can do if the valuation is a large enough premium to the previous valuations if they raise enough money to fund their development and certainty on price. It is, however, less clear for the public market buying in to the deals unless they are receiving warrants.

In an earlier article, The Economist quoted academics Michael Klausner and Emily Ruan of Stanford University and Michael Ohlrogge of New York University, who looked at blank-cheque firms that made acquisitions between January 2019 and June 2020. They found that while companies that went public through the Spac route fell in value by an average of 3% after three months, 12% after six months and by a third after 12 months, about half the sample were "high-quality" – defined as those run by former Fortune 500 bosses or set up by large private equity firms – and these performed much better.

> "In 2021 already, 160 Spacs have raised over $50bn, nearly matching last year's record of $83.4bn"
>
> **Matt Taibbi and Eric Salzman**

Whether quality will remain high is unclear. As Taibbi and Salzman said: "In 2021 already, 160 Spacs have raised over $50bn, nearly matching last year's record of $83.4bn."

Given Spacs tend to raise more cash once they find an acquisition target (about five times that in the initially listed pot, the Economist reckons) this could bring $600bn of deals in the next one to two years, about double the entire global VC market, based on Pitchbook's data for 2020 deal values.

Looking at one deal can, therefore, be illustrative of the issues.

Bonny Simi, pilot and founder of US airline JetBlue's corporate venturing unit, read the runes correctly in December when she left to join portfolio company Joby Aviation as head of air operations and people.

In late February, Joby Aviation, which is in the prototype phase of developing an all-electric, vertical take-off and landing (eVTOL) passenger aircraft, agreed a $6.6bn reverse acquisition with New York-listed special purpose acquisition vehicle Reinvent Technology Partners.

Simi, who remains an adviser to JetBlue Technology Ventures (JTV), said: "The regional transportation ecosystem is ripe for disruption, and startups like Joby Aviation will revolutionise how people move across urban areas. Joby's vehicle platform will be the standard to beat. Nearly four years ago, we saw that Joby already was the emerging leader in the eVTOL space, and [the developments with Reinvent] validate our early investment."

Simi through her network in Silicon Valley (she studied under legendary finance professor Ilya Strebulaev at Stanford) uncovered Joby soon after setting up JTV in 2016.

Amy Burr, managing director at JTV, in a guest comment in this issue, highlights the CVC's insights after it was made GCV's new entrant of the year in 2016.

But while Joby has already raised a reported $820m in venture backing in the past decade, it is still many years from operation.

The company is expected to operate for commercial use in the US beginning in 2024 after becoming the first company to receive an eVTOL certification basis plan with the Federal Aviation Administration and receiving the US Air Force's first ever airworthiness approval for an eVTOL aircraft. The piloted, four-passenger aircraft is faster than existing rotorcraft, flies 150 miles on a single charge, and will be 100 times quieter than existing rotorcraft or small planes during takeoff and landing, JetBlue said.

That private and public capital markets have been prepared to fund Joby – and its peers – reflects the potential market size for success but also the deep pools of liquidity available for potential growth stocks. With $1.78 trillion invested in the VC over the past decade, according to PitchBook, there is every sign this will continue. And corporate venturing units have helped scale up and professionalise the market.

Raj Singh, managing director of investments at JTV and co-winner of the GCV Powerlist award with Simi in September, said: "As with all of our investments, JetBlue Technology Ventures' goal is to better position JetBlue with startup-led innovation that could radically change the travel industry. Travelers today are more conscious of their carbon footprint than ever

Joby is working on electric vertical take-off and landing aircraft

before, so the reduction of pollution that comes with electrification is highly appealing."

The Joby deal is also noteworthy for bringing together the digital with physical ways of connecting people.

Long- and short-haul travel is being disrupted through covid-19, accelerating shifts to cheaper or more sustainable modes and reflecting changing communication and work patterns caused by technology more broadly.

These network effects, as well as undermining the need to travel so frequently given online ties, also are starting to disrupt finance.

Pincus and Thompson began investing together in 2017 after the latter reportedly returned investors' money from BHR Capital, a successor to hedge fund Bay Harbour Management, according to Hedge Fund Alert at the time.

Alongside Hoffman, they set up Reinvent Capital in 2018 with an eye to tapping into the late-stage venture deals being agreed.

> *"We believe this disconnect between the quantity of scaled technology companies and the number of those companies that actually go public each year has created an attractive backlog of potential targets for our blank-cheque company"*
>
> **Reinvent Spac filing**

Reid Hoffman and Mark Pincus, the two directors of Reinvent alongside Michael Thompson as chief executive, were among the first three investors in social network Facebook and early investors in Twitter and Airbnb. When Pincus was in the early phases of founding gaming group Zynga in 2007, Hoffman was one of his earliest investors, having set up business network LinkedIn.

Pincus and Hoffman acquired the six degrees patent that enabled the social media and network effects model to flourish based on Metcalfe's law, which states that the value of a telecommunications network is proportional to the square of the number of connected users of the system.

In its regulatory filing for the Reinvent Spac, they said: "A substantial market opportunity exists for a potential business combination in the private technology sector. As of August 2020, per PitchBook Data, there were 417 private technology companies valued over $1bn globally, accounting for over $1.65 trillion of cumulative valuation, up from 18 private technology companies valued over $1bn in 2010.

"More than half of these companies are headquartered within the US, and most are focused on our key investment sectors, including consumer internet, games, marketplaces, ecommerce, and other technology subsectors.

"While the quantity and scale of private technology companies have grown, the number of technology initial public offerings (IPOs) has remained constant at approximately 40 technology companies per year. Per studies from Jay Ritter, the average age of a technology company going public has increased from four years in the first dotcom boom to 11 years in the last decade.

"Based on Dealogic data, the average market capitalisation of technology company IPOs has increased from approximately $400m to approximately $2.8bn in this time. We believe this disconnect between the quantity of scaled technology companies and the number of those companies that actually go public each year has created an attractive backlog of potential targets for our blank-cheque company."

It is an opportunity set to make the three even richer as the initial shareholders in Reinvent collectively own 20% of the Spac. In the S-1 filing: "In August 2020, our sponsor paid an aggregate of $25,000 to cover for certain expenses on behalf of us in exchange for issuance of 14,375,000 Class B ordinary shares, par value $0.0001 per share, or approximately $0.002 per share."

The deal with Joby now prices each share at $10 each, according to the 8-K filing in February.

Whether in business, finance or life, the power of relationships and networks holds true.

News

Chevron rides to $300m Future Energy Fund II

- > NREP's 2150 closes first fund
- > Weimob and V-Capital launch data intelligence vehicle
- > Google provides $75m across three continents

By James Mawson, Robert Lavine, Thierry Heles, Liwen-Edison Fu and Jordan Williams

Chevron Technology Ventures, the strategic investment arm of US-headquartered oil and gas provider Chevron, has launched a $300m vehicle called Future Energy Fund II to fund developers of clean energy.

Future Energy Fund II provides funding for developers of technology that can help reduce carbon emissions, covering areas such as industrial decarbonisation, mobility technology, the decentralisation of the energy structure and circular carbon technology.

The fund is the eighth from the unit since it was launched in 1999 and it is the successor to the first Future Energy Fund, which was formed in 2018 with $100m.

Jio Platforms commits $200m to Kalaari fund

Conglomerate Reliance Industries' mobile network subsidiary, Jio Platforms, has agreed to provide up to $200m for the fourth fund raised by India-based venture capital firm Kalaari Capital, the Economic Times has reported.

Jio has supplied half of the capital as a cornerstone investor for the fund's first close, while the remainder has been earmarked for a second portion set to close in the next 12 to 18 months, a person familiar with the matter told ET.

Founded in 2006 as NEA IndoUS Venture Partners, Kalaari Capital has $650m under management and focuses on early-stage internet technology developers based in India.

2150 hits $158m first close for fund

2150, a VC firm incubated by Denmark-headquartered real estate company NREP, has raised €130m ($158m) for the first close of a flagship fund anchored by the developer.

Pharmaceutical company Novo, the Denmark state-backed Green Future Fund and investment firm Chr Augustinus Fabrikker have also committed to the fund with family offices and investors from the real estate sector.

2150 is targeting developers of technology that can impact the efficiency and sustainability of urban environments, for example, those developing new materials for the construction sector or producing software to improve the safety of buildings.

Weimob and V-Capital launch data intelligence fund

China-based marketing software provider Weimob and V-Capital, a subsidiary of local textiles manufacturer Jiangsu Huaxicun, has raised RMB500m ($77.3m) for a data intelligence technology-focused investment fund, DealStreetAsia reported last month.

The fund, Beijing Weizhi Shuke Investment Centre, will invest in companies using artificial intelligence, cloud computing, big data or internet-of-things technology.

Limited partners (LPs) that have committed capital to the fund include state-affiliated funds Beijing Industrial Development and Investment Fund and Beijing Sijiqing Agriculture Industry Commerce General Company.

Google spreads the wealth

Google, the internet technology provider owned by holding company Alphabet, is partnering organisations in three continents to provide $75m for small and medium-sized companies.

The funding will make up part of an $800m initiative announced in March 2020 and will include a $25m commitment to two vehicles for European Investment Fund (EIF) – part of the European Union-owned European Investment Bank – and $15m in loan capital split across a thousand European small businesses.

Another $10m will go to a VC fund backing 200 life sciences companies. In Latin America, Google will work with the Inter-American Development Bank to allocate $8m to small companies, and it has also set up a $26m loan fund with non-profit organisation Kiva for emerging markets.

Harrington Discovery Institute starts impact fund

US-based hospital and accelerator operator Harrington Discovery Institute has set up an impact investment fund that will be managed by VC firm Advent Life Sciences.

The impact fund is structured alongside Advent Life Sciences' third fund and brings a total of $215m of commitments to the firm.

Advent-Harrington Impact Fund is set up as a market rate investment fund with profits shared with HDI. It also has a partnership in place with Morgan Stanley Wealth Management to funnel philanthropic money to the fund through the MS GIFT Cures powered by HDI structure.

Adjuvant stimulates $300m fund

US-based life sciences investment firm Adjuvant Capital raised $300m for an oversubscribed fund last month from investors including pharmaceutical firms Merck and Novartis.

Danish real estate company NREP's VC firm, 2150, has raised a vehicle to fund developers of urban environment tech

LPs also include Bill and Melinda Gates Foundation, Anthos Fund and Asset Management, Beacon Pointe Advisors, CDC Group, Children's Investment Fund Foundation, Dalio Philanthropies, Doris Duke Charitable Foundation and Elma Investments. Ford Foundation, International Finance Corporation, John D and Catherine T MacArthur Foundation, Global Health Investment Corporation – with funding from KfW – Laerdal Million Lives Fund, RockCreek, Sonanz and Sorenson Impact Foundation have also invested.

Masco puts finishing touch to $50m fund

US-based home improvement products manufacturer Masco has set up a $50m corporate VC fund that will be managed by Touchdown Ventures.

Masco Ventures said it would invest $500,000 to $5m in early and growth-stage companies targeting products and services that improve water management, create a connected home, enhance customer service and find ways to improve customer relationships.

Touchdown manages other corporations' venture programmes, including most recently Colorcon, T-Mobile and Scotts Miracle-Gro.

Masco makes home improvement products and has set up a $50m fund

Eurazeo raises $97m for smart city fund

France-based private equity firm Eurazeo has raised €80m ($97m) for the first close of its Smart City II Venture fund with commitments from several corporates.

LPs include car manufacturer Stellantis, electric utilities EDF and Mainova, public transport operator RATP, energy producer Total, logistics company Duisport and real estate developer Sansiri.

The fund also received capital commitments from family offices and PRO BTP, a non-profit organisation providing insurance and pension services for the French construction industry

BIG goes local with Hyogo Kobe Fund

Bonds Investment Group (BIG), the CVCsubsidiary of Japan-based marketing firm Opt, has partnered Japan's Hyogo prefecture and Kobe city governments to form a ¥1bn ($9.5m) vehicle.

Hyogo Kobe Startup Fund (also known as Hyogo Kobe Fund) will launch this month and is set to operate for a decade, extendable by three years. BIG is the general partner of the fund while LPs include Hyogo prefecture and Kobe city-affiliated organisations.

The Reach Capital team

The vehicle will target seed to early-stage startups already based in Hyogo or willing to move there. It will focus on developers of environment, energy, medical and healthcare technologies, as well as companies that intend to solve social and regional issues in a post-pandemic context

Reach Capital grabs $165m

US-based edtech-focused VC firm Reach Capital has raised $165m for its third fund from investors including children's entertainment producer Sesame Workshop and scientific organisation National Geographic Society.

Kaiser Foundation Hospitals, the medical care centre of health system Kaiser Permanente, is also among the LPs, as are philanthropic organisation Ford Foundation, wealth management firm Caprock and investment company Hall Capital.

Unnamed employee retirement funds have also invested.

Pension fund commits to Lilly Asia Ventures

US pension fund San Francisco Employees' Retirement System (SFERS) has approved a capital commitment of up to $48m to two fund from China-based VC firm Lilly Asia Ventures (LAV).

LAV spun out from US-based drugs maker Eli Lilly in 2019 and SFERS said its retirement board had approved the investment of $32m to LAV Fund VI and another $16m to LAV Fund VI Opportunities.

LAV Fund VI is raising $900m while and LAV Fund VI Opportunities is targeting $450m, the firm revealed in two filings with the US Securities and Exchange Commission on January 21, according to DealStreetAsia.

SCB 10X sets up $50m crypto fund

SCB 10X, the corporate venturing unit of Thailand-based Siam Commercial Bank (SCB), has set up a $50m fund for early and growth-stage startups targeting blockchain, decentralised finance and digital assets.

SCB 10X's recent deals include MyCloudFulfilment, insurance startup Sunday and Digital Asset.

The unit has also invested in international payments group Ripple and cryptocurrency lending platforms BlockFi and Alpha Finance.

Haldiram's commits to 9Unicorns

9Unicorns, an India-based incubator and startup fund set up by Venture Catalysts, has raised Rs 1bn ($14m) from local food provider Haldiram's and other investors.

Haldiram's had announced a partnership with Venture Catalysts in April 2019.

9Unicorns is also backed by OPG Group, MBG Group, Parakh Foods, Qualcon International, UB Cotton and executives as angel investors. It is targeting another Rs 3bn.

Delta Dental of Colorado adds venture fund

Ensemble Innovation Ventures the holding company of US-based healthcare provider Delta Dental of Colorado, has set up a corporate venturing fund.

Ensemble Innovation Ventures will target the health and wellness space and invest in early-stage venture companies primarily in its local region.

Helen Drexler, president and chief executive of Delta Dental of

Colorado as well as president of EIV, is co-managing director of the fund alongside Brian Armstrong.

LightShed Partners reads up on new fund

LightShed Partners, a US-based boutique research firm founded by media analyst Rich Greenfield in 2019, has established a corporate venturing fund.

LightShed Ventures is raising $75m to invest in seed and series A rounds across technology, media and telecom sectors, according to news provider Barron's.

Alongside Greenfield in the fund are Walter Piecyk, Brandon Ross and Jamie Seltzer, who previously worked at VC firm Waverly Capital.

DexCom monitors new ventures unit

DexCom, a Nasdaq-listed supplier of continuous glucose monitoring for people with diabetes, has set up its corporate venturing unit under Steve Pacelli.

Dexcom Ventures will invest in glucose sensing technology and adjacent areas, such as data analytics, remote patient monitoring and population health.

Pacelli said the investment division will provide access to DexCom's industry expertise and technology leadership as well as funding.

Kraken Ventures awakes for crypto

Kraken Digital Asset Exchange, a US-based cryptocurrency service provider, has set up a corporate venturing unit.

Kraken Ventures will target early-stage companies and protocols across the crypto and financial technology ecosystem, including decentralised finance, as well as enabling technologies, such as artificial intelligence, regulation tech and cybersecurity.

Brandon Gath, previously head of corporate development at Kraken, has been made general partner of Kraken Ventures.

Fearless Fund shops for Costco

Costco Wholesale, a Nasdaq-listed retailer, has committed $1m to Fearless Fund, a US-based VC firm set up to invest in women of colour.

Costco's is the latest in a string of corporate interest in the fund, after recent investments from PayPal and Bank of America. Fearless Fund expects to continuously expand its investor base.

Launched in 2019, Fearless Fund invests in businesses seeking pre-seed, seed level or series

Image courtesy of Costco Wholesale

Wholesale retailer Costco has committed to Fearless Fund

IST Cube closed its seed-stage investment fund

A financing in the technology, consumer products, beauty and fashion industries.

Nationwide expands VC allocation to $350m

US-headquartered financial services and insurance group Nationwide has increased the amount of capital it reserves for corporate venturing from $100m to $350m.

Nationwide launched corporate venturing subsidiary Nationwide Ventures in 2016 and committed more than $100m to the vehicle the following year.

The company has since built a 25-strong portfolio including business insurance provider Next Insurance, which secured $250m in September 2020, and BlueVine, the business finance provider that raised more than $102m in 2019.

IST Cube squares $48m fund

Austria-based IST Cube closed its seed-stage investment fund at €40m ($48m) last month with backing from LPs including insurance group Vienna Insurance.

The fund's LPs also include the European Union-owned European Investment Fund, federal development agency Austria Wirtschaftsservice, investment firm Mitterbauer-Beteiligungs-AG, the state of Lower Austria and about 20 private investors. The capital was raised in late 2020.

IST Cube was launched by Institute of Science and Technology Austria and investment management firm Lansdowne Partners with an initial $6.5m in 2017 to help commercialise and invest in spinouts from Austrian universities.

HashKey helps LongHash Ventures unlock $15m

Singapore-based, blockchain-focused accelerator LongHash Ventures has raised $15m for a fund with LPs including HashKey Capital, a crypto investment subsidiary of automotive component producer Wanxiang, Tech in Asia has reported.

Blockchain-focused VC firm Fenbushi Capital and government agency Enterprise Singapore are also among the fund's LPs.

LongHash runs an accelerator which has graduated some 30 blockchain technology startups that have raised about $25m in funding. The new fund will back companies and token offerings.

Asahi Kasei kicks off China investment fund

Japan-headquartered chemicals and advanced materials producer Asahi Kasei has formed a corporate venture capital (CVC) unit in China, The Chemical Daily has reported.

Founded in 1922 as Asahi Fabric, Asahi Kasei initially concentrated on viscose rayon and synthetic ammonia production before adding areas including environment, home construction and healthcare to its business lines.

The corporate already runs an investment vehicle, Asahi Kasei Ventures, which was formed in its home country in 2008 before pivoting its focus to US and Europe-based deals three years later.

Astia marshals Mastercard for $100m fund

Payment services firm Mastercard has led the fundraising for Astia, a US-based investment and advisory firm that launched its $100m early-stage VC fund last month.

Mastercard was joined by LPs including Farvatn Venture, Portola Creek Capital, Tides Foundation and individual investors such as Priya Mathur, Jim O'Neill and unnamed members of impact investment network Toniic.

Founded in 2013, Astia backs companies with women leaders and has so far deployed $27m through its Astia Fund, Astia Angels network and Astia Edge, a fund that makes investments in seed-stage companies led by black and Latina women.

Advantech activates $50m industrial technology fund

Taiwan-headquartered industrial technology producer Advantech and Switzerland-based VC firm Momenta Ventures are raising up to $50m for an investment fund focusing on digital industry technology.

AIoT Ecosystem Fund will target emerging companies based in North America and Europe developing products that combine artificial intelligence and industrial internet-of-things technology.

The fund will invest at series A, series B and growth stage, in companies developing technology products and services for the energy, manufacturing, smart spaces and supply chain sectors.

SoftBank helps Igah Ventures to $130m

Brazil-based VC firm Igah Ventures has secured $130m from LPs including telecommunications and internet group SoftBank, Bloomberg reported..

Formed through the merger of VC firms E.bricks Ventures and Joa Investimentos, Igah Ventures provides equity financing for local companies through early-stage rounds. It has made six investments out of the fund and lined up two more to be announced shortly.

Xerox is forming a corporate venturing arm

Xerox eyes launch of innovation arm

US-based printing technology producer Xerox has announced details of its plans to launch innovation and corporate development divisions through a reorganisation involving the formation of a $250m corporate venturing arm.

Xerox's Corporate Development group will engage in investments and merger and acquisition deals as well as deploying the recently announced $250m fund.

The unit is yet to be launched but will invest in mid-sized, growth-stage companies aligned with Xerox's strategic interests. It will be led by executive vice-president Louie Pastor, who has also been appointed chief corporate development officer and chief legal officer.

MS-Japan recruits Hayate for fund

Japan-based management recruitment firm Matching Service Japan (MS-Japan) and investment adviser Hayate Investment will form a ¥2bn ($19.3m) CVC vehicle, MS Hayate Fund I.

The fund will have a seven-year investment period, extendable by two years. It will operate on a sector-agnostic basis, according to The Bridge, unlike peers HRTech Fund, Persol Innovation Fund and Temp Innovation Fund, which represent human resources firms Will Group, Persol Holdings and Temp Holdings respectively and which mainly target HR technology developers.

Founded in 1990, MS-Japan's core business is MS Agent, a specialised recruitment platform that hires accounting, finance, staffing, legal and business planning professionals on behalf of its corporate clients.

Digital Garage dips into Hamagin DG Innovation Fund

Japan-headquartered internet company Digital Garage's CVC subsidiary, DG Incubation, has teamed up with financial services firm Bank of Yokohama to form a ¥3bn ($28.8m) investment vehicle.

Hamagin DG Innovation Fund is set to operate for eight years and will be overseen by DG Incubation. It will target developers of digital technologies in areas including electronic payment and online marketing that will facilitate open innovation in the finance sector.

The joint venture is intended to revitalise the local economy in the Japanese prefecture of Kanagawa where Bank of Yokohama is headquartered, as well as the adjacent Tokyo region.

Corporates help Phoenix fly to third fund

US-based VC firm Phoenix Venture Partners (PVP) has closed a fund of undisclosed size backed by corporates Pfizer, LG, Corning, W L Gore, Showa Denko, Nissan Chemical and Nagase.

Pharmaceutical firm Pfizer, ceramics maker Corning, materials manufacturer W L Gore and chemical producers Showa Denko, Nissan Chemical and Nagase invested directly while electronics producer LG supplied capital through LG Technology Ventures.

PVP III's other LPs included unnamed new and existing investors from financial institutions, family offices and multinational corporations. Although its size was not disclosed, a securities filing last month indicates the firm had raised approximately $109m for the vehicle at that point.

FinTLV finds $120m for insurance technology fund

Israel-based venture capital firm FinTLV has closed its second fund at $120m, with commitments from insurance companies including Clal Insurance, Ayalon Insurance, MS&AD, FWD, Reale Mutua and LB Group.

SoftBank will invest around Miami

Accounting firm BDO Israel and investment firms Psagot and Poalim Capital Markets also committed capital to the fund, alongside undisclosed institutional and private investors.

Founded in 2016, FinTLV is focused on investing in growth-stage insurance and financial technology developers. It is active globally and said it invested about $200m over the course of 2020.

Sequoia China secures corporate partnerships

US-headquartered venture capital firm Sequoia Capital China has formed separate partnerships with genomics technology producer Illumina and insurance firm China Pacific to invest in healthcare startups.

Sequoia Capital China Intelligent Healthcare Genomics Incubator, Powered by Illumina is a healthcare incubator focused on China-based startups with applications in genomics. It will be accepting applications until the start of June.

Illumina already has two accelerators in Cambridge, UK and the San Francisco Bay Area in California. Sequoia China had previously set up the US-based corporate's Digital Intelligent Incubator.

SoftBank jets into Miami with $100m

Japan-headquartered telecommunications and internet group SoftBank is launching a $100m fund to invest in companies based around Miami, TheRealDeal has reported.

The news was revealed by Marcelo Claure, chief operating officer of SoftBank Group, in an episode of the Cafecito Talks podcast hosted by Miami mayor Francis Suarez.

The $100m put aside for the latest vehicle represents a re-allocation from other funds, a source familiar with the matter told TheRealDeal.

People

Lin promoted to Intel managing partner

- Stevens joins Energize Ventures
- Zaveri leaves Gradient for Audacious Ventures
- SR One expands venture team

By James Mawson, Robert Lavine, Thierry Heles, Liwen-Edison Fu and Jordan Williams

Anthony Lin has been confirmed as the new head of Intel Capital, the corporate venturing unit of chip and data company Intel.

Saf Yeboah-Amankwah, chief strategy officer at Intel, confirmed that Lin had been promoted to managing partner. Lin, a GCV Powerlist award winner, joined Intel's merger and acquisitions team in 2008 and stepped up to run Intel Capital on an interim basis after the departure of Wendell Brooks in August 2020.

Anders leaves iRobot for Alexa Fund

Hanns Anders, investment manager at iRobot Ventures, the corporate venturing unit of iRobot, has joined retailer Amazon's Alexa Fund.

He had been one of the most active robotics and artificial intelligence (AI) investors while at iRobot, which he joined in 2015 after venture roles at Claremont Creek Ventures and Huron River Ventures.

His deals included Synthesis AI, Hasty.ai, Jargon, Labrador Systems, Matterport, Osaro, Sense, Intuition Robotics, 6 River Systems and Escher Reality.

Zou promoted at Lilly Asia Ventures

Zou Jieyu has been promoted to managing director at Lilly Asia Ventures (LAV), the venture capital firm spun out of US-listed drugs company Eli Lilly.

Based in Shanghai, China, Zou has worked her way up from investment manager since joining LAV in May 2015. She is on the boards of Gracell, Transcenta and Virtue DX.

Her deals have included Geneception, CARsgen, Edigene, Tmunity and Passage Bio in new modality therapeutics, Sansure in molecular diagnostics/genomics and Avedro, which was acquired in November 2019 for about $500m by Glaukos after an earlier flotation.

Stevens joins Energize Ventures

Kevin Stevens has joined Energize Ventures, a Chicago, US-based VC firm set up and backed by Invenergy, to lead its growth equity platform.

Previously a partner at VC firm Intellis Capital for just more than three years, Stevens's deals had included Wndyr and Ensemble Energy.

Energize had previously been investing in pre-growth stage technology companies that are "changing the game in energy" and, as well as Invenergy, its limited partners include Schneider Electric, GE, Hannon Armstrong, WEC Energy Group and Caterpillar.

Zaveri leaves Gradient for Audacious Ventures

Muzzammil Zaveri, a partner at Gradient Ventures, the AI-focused corporate venturing unit of US-listed conglomerate Alphabet, has joined venture capital firm Audacious Ventures.

As a partner at Gradient for the past three years Zaveri had completed about 16 deals, according to his LinkedIn profile.

Zaveri had joined Gradient after three years at VC firm Kleiner Perkins and two years on strategy for Tencent.

Kashyap to leave M12 for SoftBank

SoftBank Investment Advisers, which manages Japan-headquartered telecoms and internet group SoftBank's Vision Funds, has hired Nagraj Kashyap as managing partner.

Kashyap was head of US-based software producer Microsoft's corporate venturing unit, M12. A serial GCV Powerlist award winner, he joined Microsoft in 2016 having headed Qualcomm Ventures, the coprorate venturing arm of mobile chipmaker Qualcomm.

Kashyap is also serving a four-year term as board member of the US trade body National Venture Capital Association.

SR One expands venture team

SR One, the VC firm spun off by pharmaceutical firm GlaxoSmithKline (GSK), has recruited Chris Chai and Peter Van Vlasselaer as venture partners.

GSK spun off the unit into an independent firm in November 2020 with $500m in funding and operates out of offices in London, San Francisco and Philadelphia.

Chai had been chief financial officer of Principia Biopharma, the biopharmaceutical company that floated in 2018 having raised $127m in funding from investors including SR One, since 2013.

Luckett promoted at Aviva

Ben Luckett, head of Aviva Ventures, the corporate venture capital arm of UK-listed insurance firm, Aviva, has been promoted to chief innovation officer of the company.

Luckett set up Aviva Ventures in 2015 and its deals have included home security system developer Cocoon and DIY services marketplace Opun, which were later acquired by Ecobee and John Lewis respectively.

Ant Barker has been promoted from senior manager at Aviva Ventures to head the unit. It has also formed an external collaboration agreement with VC firm Anthemis Group, which will deploy capital on behalf of Aviva through funds focused on early and growth-stage financial and insurance technology deals.

Samsung shakes up US innovation subsidiaries

South Korea-listed conglomerate Samsung has shaken up its two US-based corporate venturing units.

Sohn Young has retired. Sean Kae comes in as acting head of Samsung Strategy and Innovation Center (SSIC) and David Lee joins as head of Samsung Next.

Sohn stepped down president and chief strategy officer) of Samsung Electronics but will continue as chairman of Harman, the autonomous driving subsidiary acquired by the company for $8bn, as well as strategic adviser to its largest division, Samsung Electronics, and chairman of the GCV Leadership Society's advisory board.

Kae, now executive vice-president of strategy and corporate development, joined SSIC in 2019 to help Sohn as CSO "define and expand the organisation's mission and focus areas for new innovation and investment".

Bhanot joins Prosus Ventures

Prosus Ventures, the corporate venturing arm of Euronext-listed internet and e-commerce group Prosus, has hired Sachin Bhanot to lead its investment activities in Southeast Asia.

Spun off by South Africa-headquartered media and e-commerce group Naspers, Prosus has also taken on the portfolio of its largest investment vehicle, Naspers Ventures.

Based in Singapore according to his LinkedIn profile, Bhanot was previously a principal at B Capital Group, the VC firm backed by consulting firm Boston Consulting Group that was set up by Facebook co-founder Eduardo Saverin, for roughly two years.

Analyses

- > Huge surge in valuations for battery tech
- > Fintech continues to attract attention
- > Mismatch between number of deals and valuations in social media tech
- > Spacetech shoots up after sporadic interest before 2018

By Robert Lavine, Thierry Heles and Kaloyan Andonov

Sila Nano raises $590m in Series F

US-based battery materials producer Sila Nanotechnologies – which counts corporates carmaker Daimler, industrial conglomerate Siemens, electronics manufacturer Samsung and battery producer Amperex among its backers – raised $590m in a series F round, at a valuation of $3.3bn post-money, tripling the one from its previous round.

Investment manager Coatue and and accounts advised by T Rowe Price co-led the round, which was filled also by 8VC, Bessemer Venture Partners, Canada Pension Plan Investment Board and Sutter Hill Ventures.

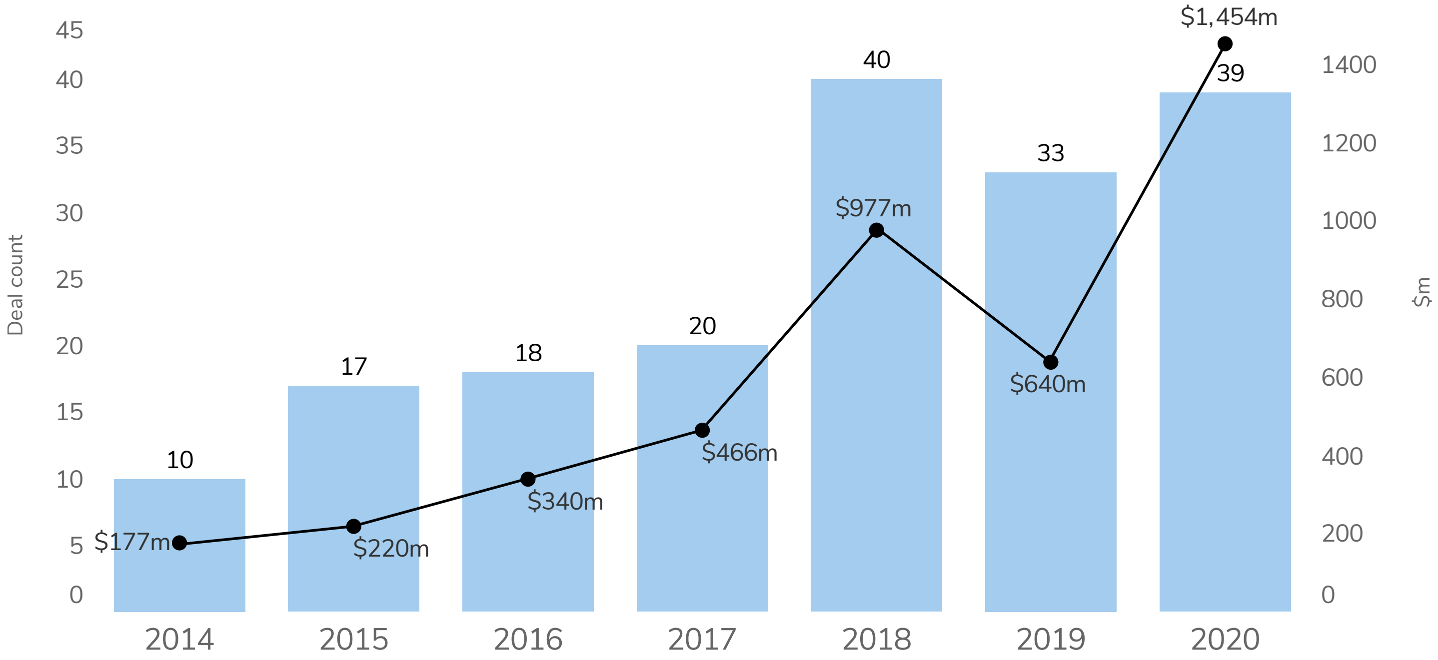
Launched in 2011, Sila Nano has developed a silicon-based anode. The company claims the anode is 20% more efficient than conventional lithium-ion chemistry used in most batteries. The capital will be used to build a second manufacturing plant and recruit 100 staff members.

Sila is part of the battery and energy storage technology space, which has been given a lot of attention from corporate venturers.

The number of corporate-backed deals in this space has risen from 10 rounds in 2014 to 39 rounds in 2020. The total estimated capital in rounds of such emerging enterprises has also increased from an estimated $177m to $1.45bn last year, suggesting a huge surge in valuations.

The latter can be clearly attributed to the enabling potential of battery technologies, which could unleash the widespread adoption of other highly disruptive technologies such as renewable energy sources and electric vehicles.

Corporate-backed deals in battery tech and energy storage



Source: GCV Analytics

Data as of December 31

Robinhood raises $3.4bn

The online trading platform Robinhood shot to fame in late January, after it was used to trade "meme" stocks such as GameStop, AMC and Nokia. It needed $3bn to meet minimum levels of capital required to statisfy regulatory demands.

The US-based developer announced that it had raised a total $3.4bn in new funding, including $1bn of funding on January 29 and an additional $2.4bn agreed subsequently. The company counts internet technology group Alphabet and entertainment agency Roc Nation as previous backers.

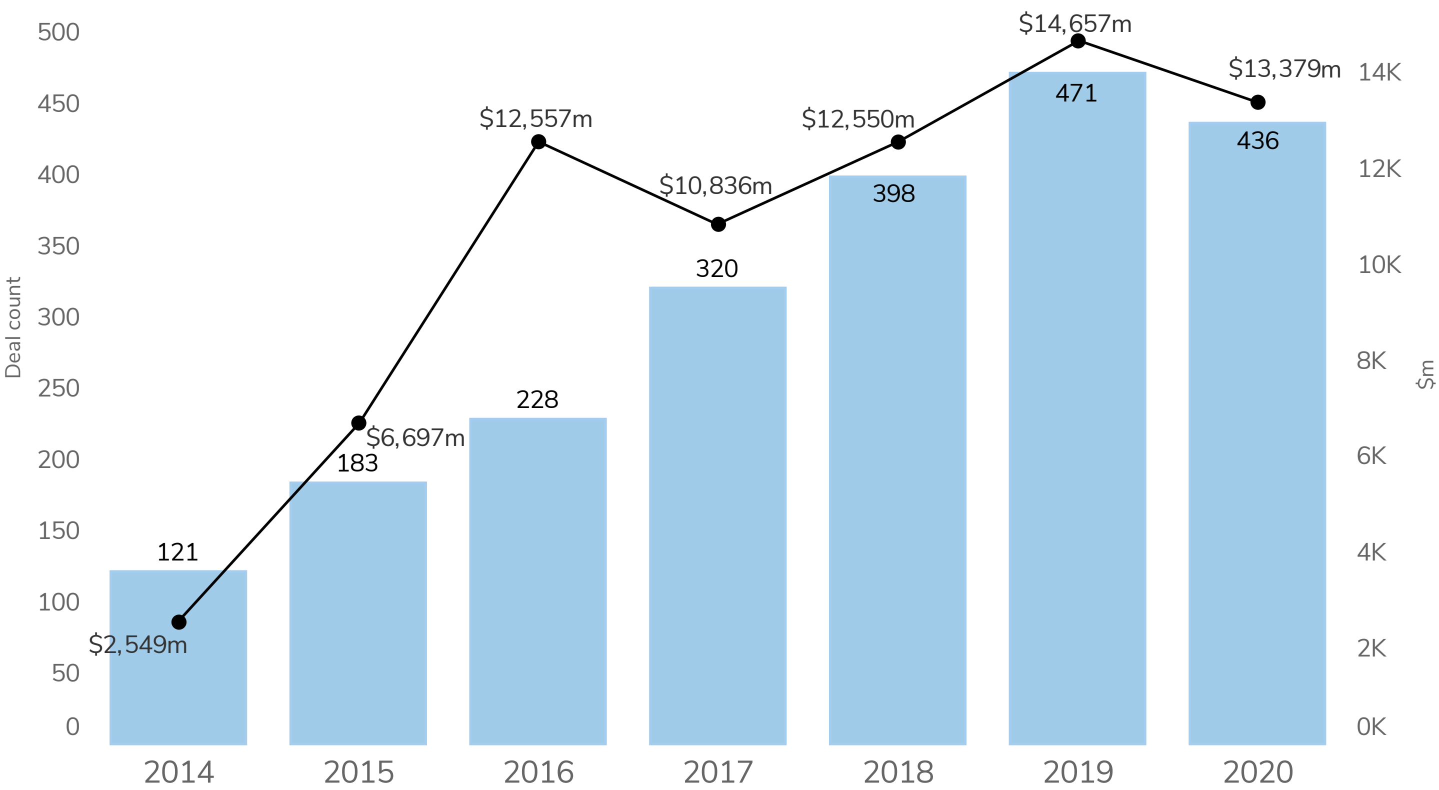
Venture capital firm Ribbit Capital led this round, which also featured existing investors including Iconiq Capital, Andreessen Horowitz, Sequoia, Index Ventures and New Enterprise Associates.

The company had reportedly secured $1bn in equity financing from existing investors including Sequoia Capital and Ribbit Capital, along with $500m to $600m in a credit line from six banks.

Founded in 2013, Robinhood has built a commission-free trading app called Robinhood Financial to buy and sell exchange-traded funds, options and stocks, including fractional shares. It also runs a cryptocurrency trading platform called Robinhood Crypto. The company recently reported a high of 2.6 million daily users.

Robinhood is part of the broader fintech space which has received much attention from corporate venture investors. The number of corporate-backed rounds in this space has grown from 121 in 2014 to 436 last year, along with total estimated dollars in those rounds – from an estimated $2.55bn in 2014 up to $14.66bn in 2019 and then sliding down to $13.38bn by the end of last year.

Corporate-backed deals in fintech



Source: GCV Analytics

Data as of February 4

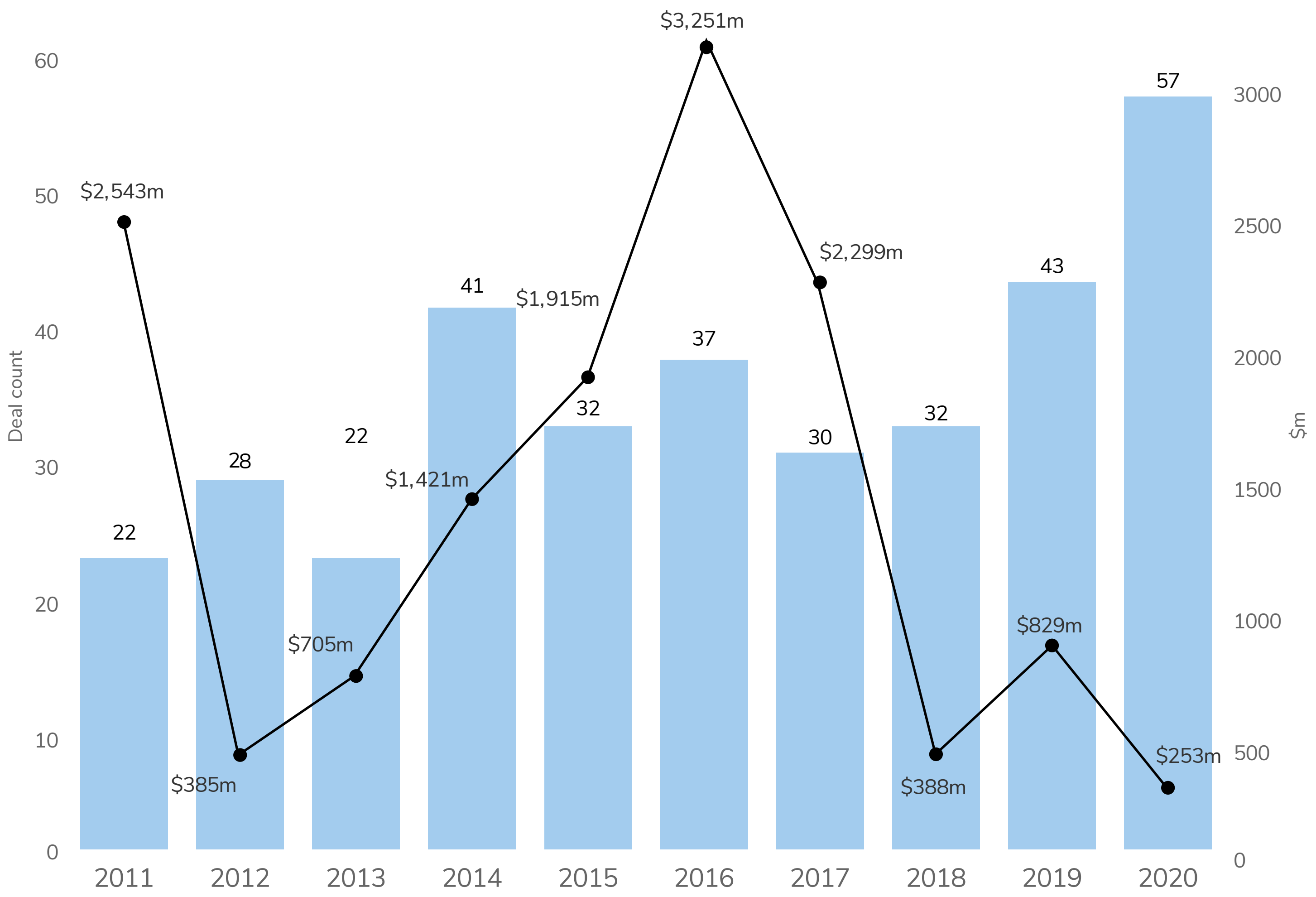
Hyperconnect gets a Match in a $1.73bn acquisition

Online dating platform Match Group agreed to acquire South Korea-based online communication technology provider Hyperconnect for roughly $1.73bn. The transaction, which involves cash and stock, would give telecommunications and internet conglomerate SoftBank an exit. The latter had committed capital to the company in its $8.6m series A round almost six years ago.

Launched in 2014, Hyperconnect runs a one-on-one video and audio chatting app called Azar, which has been downloaded more than 540 million times, and Hakuna Live, a group livestreaming app featuring augmented reality avatars. The latter has been downloaded more than 23 million times. The company claims to have reached profitability, after generating more than $200m in revenue during 2020.

Hyperconnect is part of the broader social media and instant messaging space, which has seen much attention from corporate venture investors. Interestingly, the number of corporate-backed deals reached a record high at 57 rounds in 2020, while the total estimated dollars in those rounds stood at a surprising minimum of $253m. This does not necessarily suggest a drop in valuations, as many of the tracked deals in recent years have been in very early stage companies and are often of undisclosed size.

Corporate-backed deals in social media and messaging tech



Source: GCV Analytics

Data as of December 31

SpaceX takes $850m round

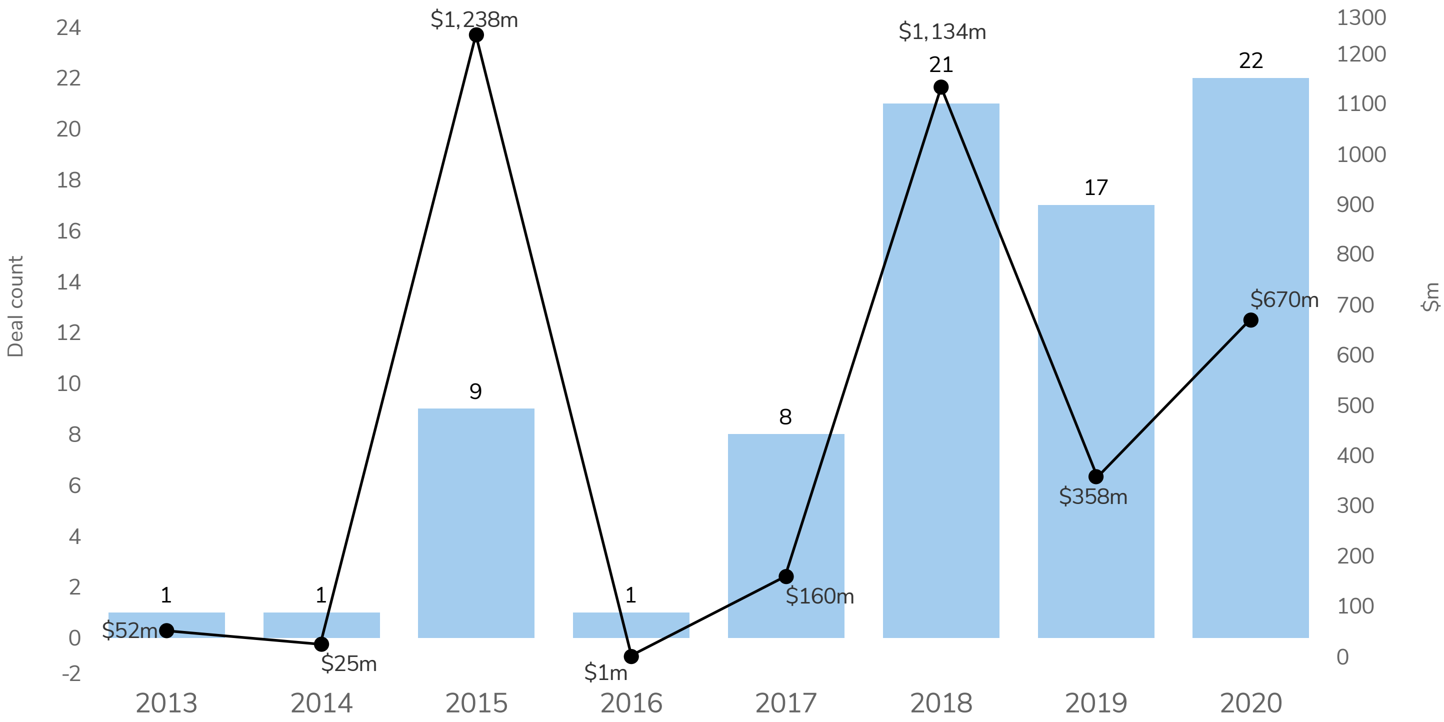
Spacecraft producer and launch services provider SpaceX, which counts internet technology group Alphabet as a backer, raised $850m in fresh funding. The round reportedly valued the US-based company at $74bn and its shares sold for $419.99. Concurrently, unnamed existing backers sold $750m worth of shares in a secondary transaction. None of the investors or selling shareholders were identified.

The $74bn valuation represents a more than sixfold increase on the $12bn it fetched when Google led a $1bn round in 2015.

Founded in 2002 and formally incorporated as Space Exploration Technologies, SpaceX designs, manufactures and launches spacecraft, providing services for US space agency Nasa as well as private customers. The company also operates Starlink, a planned constellation of thousands of satellites to deliver high-speed internet access globally. Starlink is expected to cost approximately $10bn to deploy and SpaceX plans to eventually spin off the business.

The company, founded by entrepreneur Elon Musk, is part of the space and satellite tech area, which has attracted the interest of corporate venture investors in particular over the past three years. Corporate interest in this space was sporadic before 2018. In 2020 we reported 22 corporate-backed deals, worth an estimated total of $670m of capital deployed, despite the bankruptcy and asset sale of one of the big hopefuls, OneWeb.

Corporate-backed deals space and satellite tech



Source: GCV Analytics

Data as of December 31

GCV Analytics

Sector report

Industrials survive the pandemic

> Deal count increased y-o-y but dollar value dropped
> Exit count and dollar value went up
> Rise in dollars for funding initiatives

By Kaloyan Andonov
Analyst

Terms like "industry 4.0", the "fourth industrial revolution" or the "industrial internet of things" are virtually a must when innovation in the industrial sector is the topic of conversation. These buzzwords are used describe a major shift in the sector, which aims to marry the agility of digital information technology with the power of manufacturing. This blend purports to create more efficiencies, leveraging emerging technologies like artificial intelligence (AI), big data analytics, blockchain and 3D printing.

A major shift in industrial activities, driven by digitisation, is imminent, which has opened up opportunities for tech startups and scaleups to disrupt it and collaborate with it. Consulting firm KPMG's Global Manufacturing Outlook report from 2020 reported that executives from industrial manufacturing companies reiterated not only the need to manage supply chains better and make them more flexible but also stressed how the pandemic has fast-tracked the speed of digitisation: "The crisis is accelerating the digitisation of business and operating

The GCV Analytics definition of the industrial sector encompasses 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.

models and businesses need the infrastructure to serve customers, enable employee productivity on-line and protect against new cybersecurity risks," the report said. From the standpoint of corporate venturers from the industrial sector, this implies there is still a lot of work to be done in terms of looking for innovation.

Additive manufacturing (AM), more commonly known as 3D printing, is among the most promising disruptive technologies for industrials. While not every home has been turned into a factory, as it was often suggested when the technology emerged, 3D printing is an indelible part of industry 4.0. The most widely used process for production in higher volumes is the powder-bed fusion, which creates a 3D part one layer at a time. Most 3D printers are capable of working primarily with polymers but there is a clear drive to employ metals, alloys and other materials.

Consulting firm Wohlers Associates publishes a report on the state of 3D manufacturing every year and, according to the latest, from February 2021, there are more than 250 use cases of AM in production or development. The report also notes 77 early-stage investments valued at $1.1bn and documented a record-high annual expenditure on AM. The challenges for additive manufacturing, however, remain in the costs associated with machines and materials. The disruption of supply chains during the pandemic is likely to have affected the ecosystem which is, according to many experts, somewhat underdeveloped. However, these disruptions may speed up the adoption of the technology in the future. Much like other industrial technologies, 3D printing remains a longer-term proposition. There may be many opportunities for synergies of innovative small companies with corporations in this space.

Another growing sub-sector of the new industrial economy is unmanned aerial vehicles (UAV) or, more popularly, as drones. According to "Drone Service Market - Global Forecast to 2025" by ResearchAndMarkets.com, the drone services market was set to grow from $4.4bn in 2018 to $63.6bn by 2025, at a compound annual growth rate (CAGR) of 55.9%. This forecast was due to increasing industrial use of the technology: "The market for drone services is driven by numerous factors, such as the increasing use of drone services for industry-specific solutions, improvised regulatory framework and increased requirement for qualitative data in various industries. Safety concerns and lack of skilled and trained operators are limiting the overall growth of the market."

There are even more optimistic forecasts. Insider Intelligence, cited by Business Insider, expects total global shipments of drones to increase at 66.8% CAGR by 2023. The main driving segments of growth would be industries like agriculture, construction, mining, insurance, media and telecoms as well as law enforcement. In the meantime, the consumer side of the drone market in the US has risen. According to data from Statista, sales of US consumer drones to dealers exceeded $1.25bn throughout 2020.

Robotics is another equally disruptive technology for the industrial sector. According to

Dina Routhier, president, Stanley Ventures

Dina Routhier is the president of Stanley Ventures, the corporate venturing unit of US-based hardware product maker Stanley Black & Decker (SBD).

She said: "I am thrilled to have the opportunity to build and extend upon the rock-solid foundation built by Larry Harper since the founding of Stanley Ventures four years ago. Our team [works] closely with SBD's business units to uncover, invest and partner the most innovative early stage companies in our markets."

Stanley Ventures concentrates on SBD's different businesses: tools and storage, hospital and healthcare, commercial security, pipeline services, fastening solutions, and construction and demolition. The areas of focus include the internet of things (IoT), cybersecurity, artificial intelligence and computer vision, 3D printing, automation, robotics and industrial IoT.

In 2020, Stanley Ventures conducted three deals: MSuite, the creator of a collaboration software platform for the construction industry; Evolv Technology, a contactless security technology developer; and Triditive, a 3D printing platform operator which graduated from Stanley + Techstars Accelerator.

a paper by Fior Markets, the world's robotics market was forecast to grow from $37.81bn in 2017 to $158.21bn by 2025, a CAGR of 19.11%. The paper points out: "Adoption of robots across a wide range of industries including defence and security, manufacturing, automotive, healthcare and electronics, requirement of skilled workforce, introduction of industry 4.0 driving automation, increasing safety concerns across industries, higher demand from the oil and gas industries and provides better quality products and services are the factors driving the robotics market." All of these drivers, undoubtedly, have been given a boost by the pandemic in 2020.

Despite somewhat high initial adoption costs and human safety concerns, robots are here to stay and are especially common in the industrial sector. According to the data of the International Federation of Robotics (IFR), a record of 2.7 million industrial robots were operating in factories around the world in 2020 – an increase of 12% compared to 2019. The IFR's World Robotics Report 2020 also highlights the rise of human-robot collaboration (cobot): "We saw cobot installations grow by 11%. This dynamic sales performance was in contrast to the overall trend with traditional industrial robots in 2019. As more and more suppliers offer collaborative robots and the range of applications becomes bigger, the market share reached 4.8% of the total of 373,000 industrial robots installed in 2019. Although this market is growing rapidly, it is still in its infancy."

The report also commented on the affect of the pandemic on the market: "Globally, covid-19 has a strong impact on 2020 but it also offers a chance for modernisation and digitisation of production on the way to recovery. In the long run, the benefits of increasing robot installations remain the same: rapid production and delivery of customised products at competitive prices are the main incentives. Automation enables manufacturers to keep production in developed economies – or reshore it – without sacrificing cost efficiency."

Mark Johnson, vice-president of corporate venture capital, Husqvarna Ventures

Mark Johnson serves as vice-president of corporate venture capital at Husqvarna Ventures, Sweden-based outdoor robotics supplier Husqvarna Group's investment arm.

The unit targets developers of robotics technologies focusing on outdoor platforms, sharing economy and sustainability, artificial intelligence (AI) and data analytics, and urban gardening.

Husqvarna Ventures' portfolio companies include Franklin Robotics, creator of gardening robot Tertill; Soil Scout, developer of soil-moisture sensor technology; and MowBot, a supplier of robotic lawnmowers.

Johnson joined the unit in November 2018, after nearly three years as managing director at boutique investment bank Stella, overseeing tech investment and mergers and acquisitions (M&A) transactions.

"My professional experience is as an M&A adviser, CEO of an IT company Activio, venture capitalist at Nordic Venture Partners, IT management consultant at MicroMenders and naval officer at the US Army.

"The red thread throughout my career has been IT, its commercialisation and its applications towards improving business effectiveness."

Agriculture is the most fundamental economic activity for human existence. According to the "Agricultural Implement Global Market Report 2021", the global agricultural implement market is expected to reach $320.39bn by 2025 at a CAGR of 8%. The report explains that this growth "is mainly due to the companies rearranging their operations and recovering from the covid-19 impact, which had earlier led to restrictive containment measures involving social distancing, remote working, and the closure of commercial activities that resulted in operational challenges".

According to the "General Crop Farming Global Market Report 2021", the crop farming market is to reach $323.44bn in 2021 at a compound annual CAGR of 5.5% versus 2020. The report similarly attributes the growth to recovery from the covid-19 impact. It expects this market to grow $401.09bn by the end of 2025 at a CAGR of 6%.

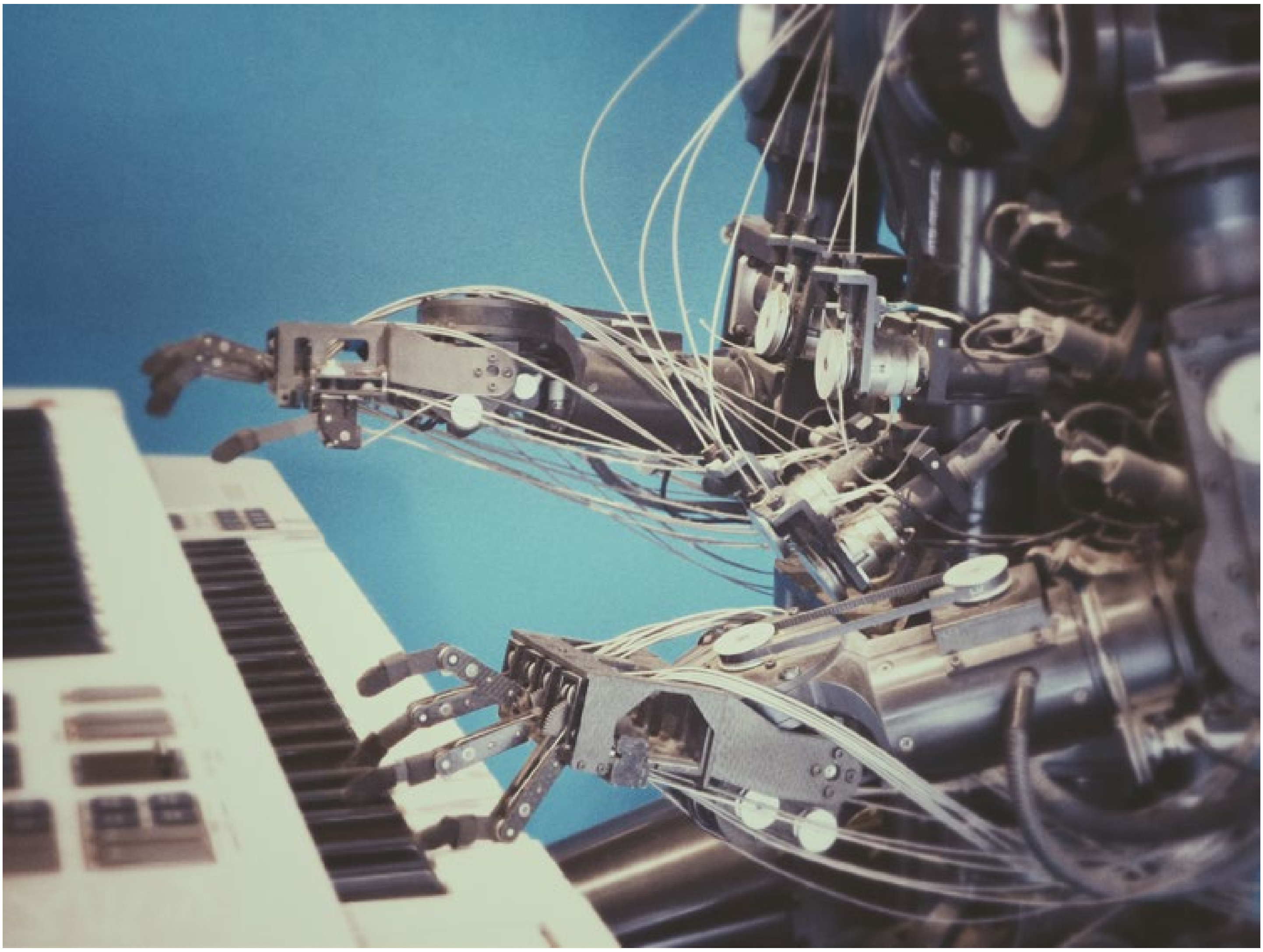
Industrial technology disrupts not only the business of cultivating land on Earth but also taming outer space. The cost of satellites, some of which are no bigger than a shoebox, has made them commercially available to many private entities and universities.

According to the 2020 State of the Satellite Industry report, the number of operational satellites in orbit nearly doubled in the latter half of the past decade. The tech is likely to continue to welcome innovations by startups in the coming years, as telecoms around the globe roll out their 5G networks and nearly all industrial activity becomes digitised via the internet of things.

The chemical industry was facing challenges before the pandemic exacerbated them. The 2021 Chemical Industry Outlook by consulting firm Deloitte, describes as follows: “While the industry was already facing cyclical challenges such as overcapacity, pricing pressures, and trade uncertainty before 2020, many post-pandemic changes have shown a structural or disruptive character. Chemical companies in the United States have responded to the crisis by focusing on operational efficiency, asset optimisation and cost management.” The report also gives a warning that short-term concerns in the chemical industry may have a long-term impact: “Too much focus on the short term, however, could mean that companies end up neglecting long-term opportunities, including investing in innovation, emerging applications, and adopting new business models that generate sustained growth.”

A closely-related field to chemicals is the advanced materials, which, unlike the former, has experienced growth. According to a recent report of consulting firm DataM Intelligence, the global advanced materials market is expected to grow at a CAGR of 5.5 % by the end of 2027.

The report explains: “Improved performance and superior properties like exceptional strength and high endurance to tolerate fatigue are encouraging consumers to choose advanced materials over conventional materials. Reduced costs and increased profitability, increased customer satisfaction and loyalty, regulatory compliance and sustainability are some of the advantages of advanced materials that are driving its global market.”



Key sub-sectors

Robotics

When Jeff Bezos, founder of online retailer Amazon, announced his transition to executive chairman he clearly identified his future focus areas: "I will stay engaged in important Amazon initiatives but also have the time and energy I need to focus on the Day 1 Fund, the Bezos Earth Fund, Blue Origin, The Washington Post, and my other passions."

Blue Origin is an interesting one. In January ,the company launched and landed its New Shepard vehicle on its latest test and hopes human flights into space can begin soon.

Bezos has long made clear that, similar to founders Elon Musk with SpaceX and Richard Branson with Virgin Galactic, he wants to go beyond Earth and found future societies.

Who will go there beyond some human tourists, however, is less clear. The Autonomous Robot Evolution (ARE) project wants to develop robots that can evolve on their own in software and hardware. The ultimate goal is to send robots to explore other planets and allow them to evolve on their own to survive in different unpredictable environments, according to Emma Hart in The Conversation (a hat-tip to Neeraj Kamdar's blog, Humans + Tech for that lead).

As Hart said: "We use a new kind of hybrid hardware-software evolutionary architecture for design. That means that every physical robot has a digital clone.

"Physical robots are performance-tested in real-world environments, while their digital clones enter a software programme, where they undergo rapid simulated evolution. This hybrid system introduces a novel type of evolution: new generations can be produced from a union of the most successful traits from a virtual 'mother' and a physical 'father'.

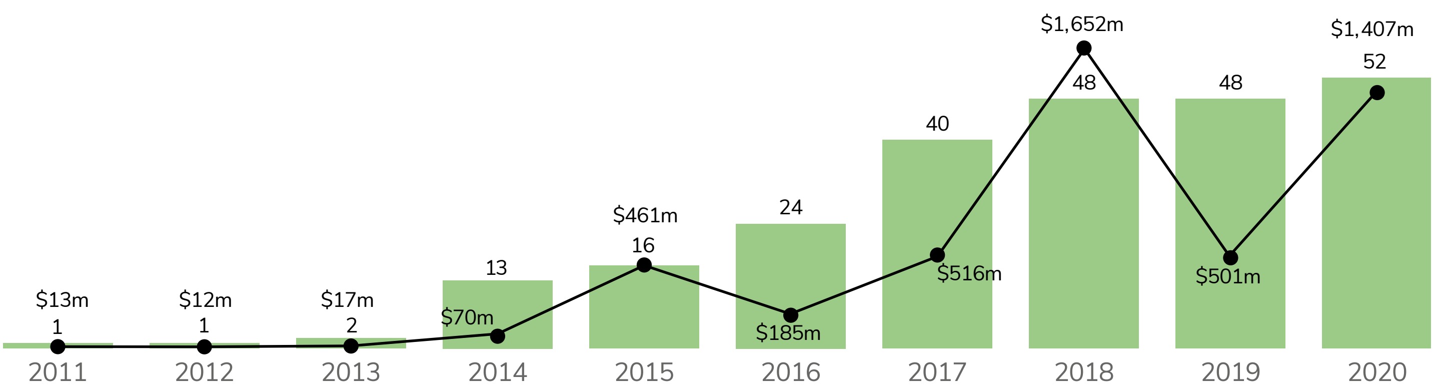
"As well as being rendered in our simulator, 'child' robots produced via our hybrid evolution are also 3D-printed and introduced into a real-world, creche-like environment. "The most successful individuals within this physical training centre make their 'genetic code' available for reproduction and for the improvement of future generations, while less 'fit' robots can simply be hoisted away and recycled into new ones as part of an ongoing evolutionary cycle."

Horizon Robotics, a China-based developer of artificial intelligence chips for robots and autonomous driving, raised $400m in the second tranche of its series C round from a consortium including battery maker Contemporary Amperex Technology (CATL), in January, a month after its $150m first close.

Robots, however, can go beyond the physical. Software robotics or robotic process automation effectively uses digital workers to automate business processes, such as standards emails or administration. UiPath recently raised $750m in its F round at a post-money valuation of $35bn.

And the opportunities go beyond the profane. As Pope Francis said in November: "Robotics can make a better world possible if it is joined to the common good."

Corporate deals in robotics and unmanned aerial vehicles



Source: GCV Analytics

Data as of December 31

Sandia National Laboratories in Albuquerque

Artificial and advanced materials

Innovation is speeding up. Ideas are copied quickly and general purpose technologies or insights in one field can be applied in others.

A research team at Sandia National Laboratories used machine learning to complete materials science calculations 42,000 times faster than normal. This means designing materials for new, advanced technologies in optics, aerospace, energy storage and medicine could accelerate, Lab Manager noted.

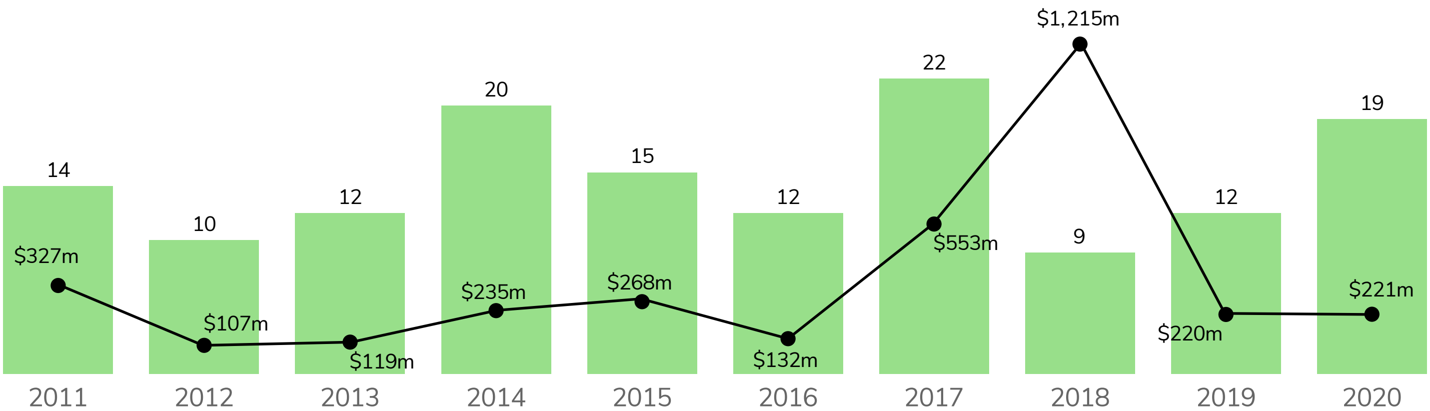
Overlay societal concerns with reducing, reusing and recycling materials and the outcome could be dramatic.

Natural biomaterials show potential for the next generation of green electronics due to their biocompatibility and biodegradability, according to the first issue of Science and Technology of Advanced Materials.

Going from design to production then becomes an issue but with additive manufacturing technologies advancing and speeding up, the ability to take the physical realm into new territories becomes scalable.

It has been too long since the GCV Materials Society has met in person but it will be gathering again for a roundtable at the end of April to discuss changes. Contact jmawson@mawsonia.com for more details.

Corporate-backed deals in artificial/advanced materials



Source: GCV Analytics

Data as of December 31

Nanotechnology

Actor and producer Robert Downey, best known these days for his role as Tony "Iron Man" Stark, spoke at Amazon's Re:MARS conference in 2019, where he said "between robotics and nanotechnology, we could clean up the planet significantly, if not totally, in 10 years".

Two years on and Downey's FootPrint Coalition organisation has set up two rolling VC capital funds which will target the environmental and sustainability sector.

But nanotech as a whole has struggled to gain specific interest in deals, instead becoming part of wider applications in healthcare to industrial sectors.

As Tony Chao, then a senior investment director at Applied Materials' corporate venturing unit and now a partner at Tyche Partners, said at the GCVI Summit 2018: "Nanotech is everything and nothing at the same time. It is everywhere – in clothes, phones, manufacturing and you do not even know it is there. It is everywhere and nowhere at the same time."

It is incorporated within most industries, including commercial construction, chemical plants, oil and gas, aviation and utilities.

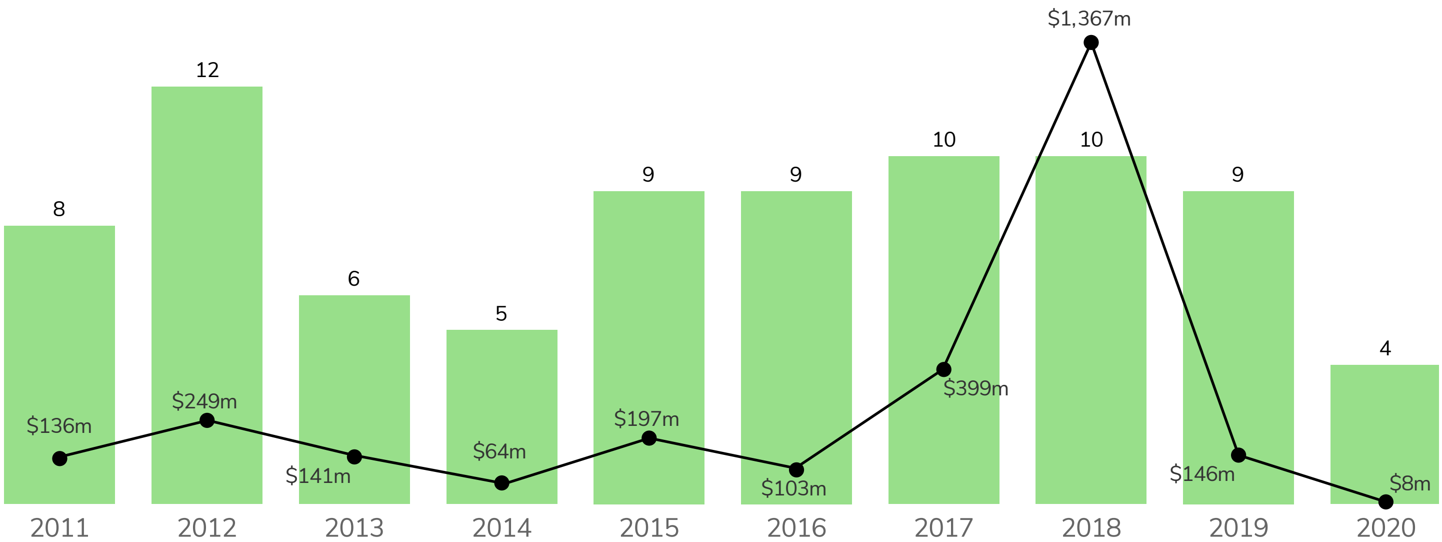
At the other end of the scale, Sila Nanotechnologies in January raised $590m in its series F round to scale up manufacturing of its silicon-based battery materials to be used in lithium-ion electric cars. Its backers include conglomerate Siemens and carmaker Daimler.

> "Nanotech is everything and nothing at the same time. It is everywhere – in clothes, phones, manufacturing and you do not even know it is there. It is everywhere and nowhere at the same time."
>
> **Tony Chao**

In December, Halliburton Labs, the open innovation centre and accelerator for US-based oil services company Halliburton, saw one of its cohort, NanoTech, a material science company focused on fire-proofing and insulation technologies, complete its $5m seed round.

As Ginger Rothrock, partner at HG Ventures, the corporate venturing unit of materials manufacturer Heritage Group, said: "New and improved materials can have an outsized impact on the energy, climate, health and other challenges we are facing today and in the near future."

Corporate-backed investments in nanotechnology



Source: GCV Analytics

Data as of December 31

Industrial chemicals

"Before we have reached singularity developing materials faster does not provide much of an upside, as with the current regulation systems introducing them still takes a decade," according to George Gogolev, head of Severstal Ventures, the corporate venturing unit of Russia-based industrials conglomerate Severstal.

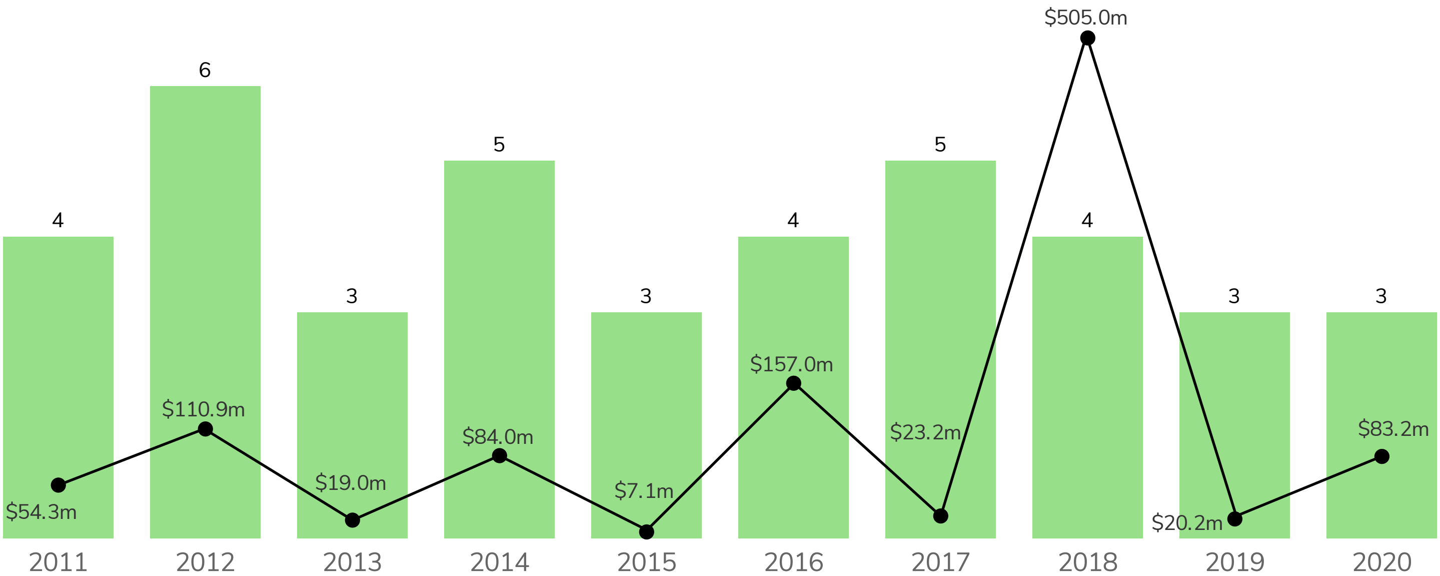
Regulators are increasingly trying to balance hazards or toxicity with other factors, such as environmental costs of water, disposal and recycling. But with hundreds of chemicals already identified in many newborn babies and concerns around so-called "forever" chemicals as well as microplastics accumulating virtually everywhere, the nascent explosion of chemicals potentially to be uncovered using more advanced simulations from super or quantum computers could create challenges.

As a result, chemicals companies, such as BASF, have been both investing in semiconductor-related startups as well as application to track potential demands.

CREDIT: BASF SE

Vijay Swaminathan (right), Organic Synthetic Lab, BASF India, discusses research with chemists Manoojkumar Poonoth (centre) and Nitin Gupte (left)

Corporate-backed deals in industrial chemicals



Source: GCV Analytics

Data as of December 31

Agriculture technology

Phuthi Mahanyele-Dabengwa, South Africa chief executive of local media group Naspers, in May said: "Food security is of paramount importance in South Africa."

The same is true around the world, as our special feature on agriculture technology (agtech) identified at the end of last year.

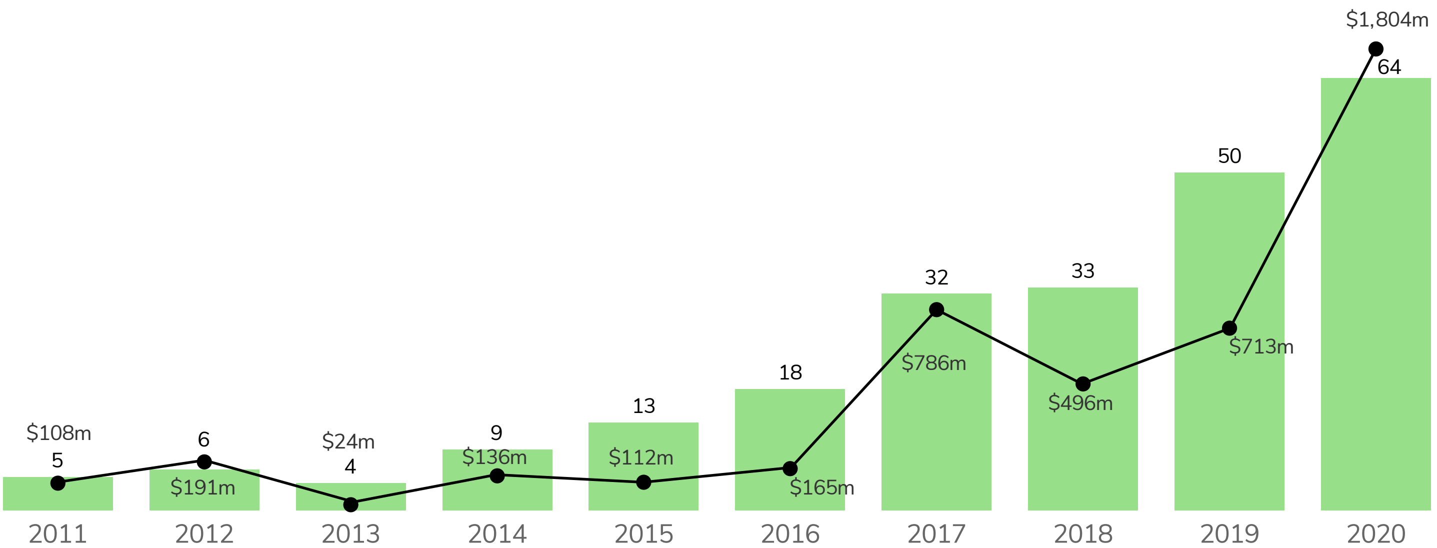
Naspers led a South Africa-based agriculture tools supplier Aerobotics' B round in May as deal values more than doubled last year. Aerobotics' technology helps track and assess the health of crop trees by using drones, artificial intelligence (AI) and software.

And technology advancements in robotics, computer vision and AI are reducing the cost to build and operate vertical or indoor farming facilities – also known as controlled environment agriculture (CEA) – to improve productivity.

Data provider Pitchbook noted "investor interest in CEA surged in 2020, reaching $929m invested across 41 deals in the US".

Sustainability issues around the use of land and water, allied to animal health and wellness trends, and innovations in manipulating molecular structures to create proteins and cells and physical plants has created a burning platform for incumbents and driven personnel changes, such as Erin VanLanduit's hire by crop company Cargill this year.

Corporate-backed deals in agriculture technology



Source: GCV Analytics

Data as of December 31

Additive manufacturing

If you can outsource manufacturing a part from a factory to the customer and reduce logistics and inventory costs it sounds appealing. So it is little surprise a host of industrial groups have explored additive manufacturing – also known as 3D printing.

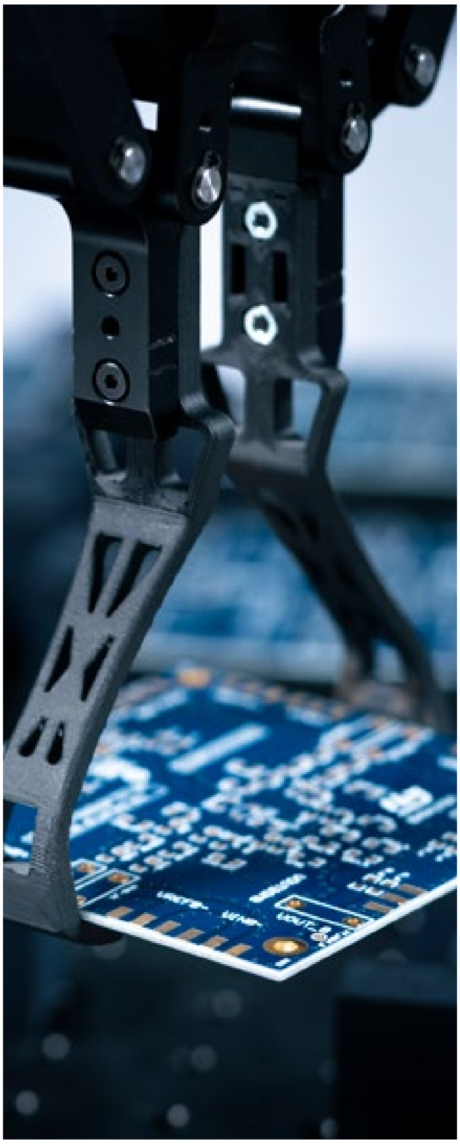
The latest are Musashi Seimitsu Industry, a Japan-based auto parts supplier, which led the A round for KeraCel, a US-based additive manufacturing company, and Sweden-based engineering group Sandvik, which co-led the $40m A round for US and Belgium-based manufacturing software developer Option.

But the range of interested groups continues to expand. GCV Rising Stars Jennifer Diedrichs, Ginger Rothrock and Dina Routhier have all made investments in the sector.

Diedrichs closed EnBW New Ventures' lead investment into 3Yourmind as Germany-based energy utility Energie Baden-Württemberg's first additive manufacturing deal, while Rothrock is on the board of additive manufacturing portfolio company Equispheres and Routhier's Stanley Black & Decker CVC unit has backed AstroPrint, MetalMaker 3D and Calt Dynamics in the sub-sector.

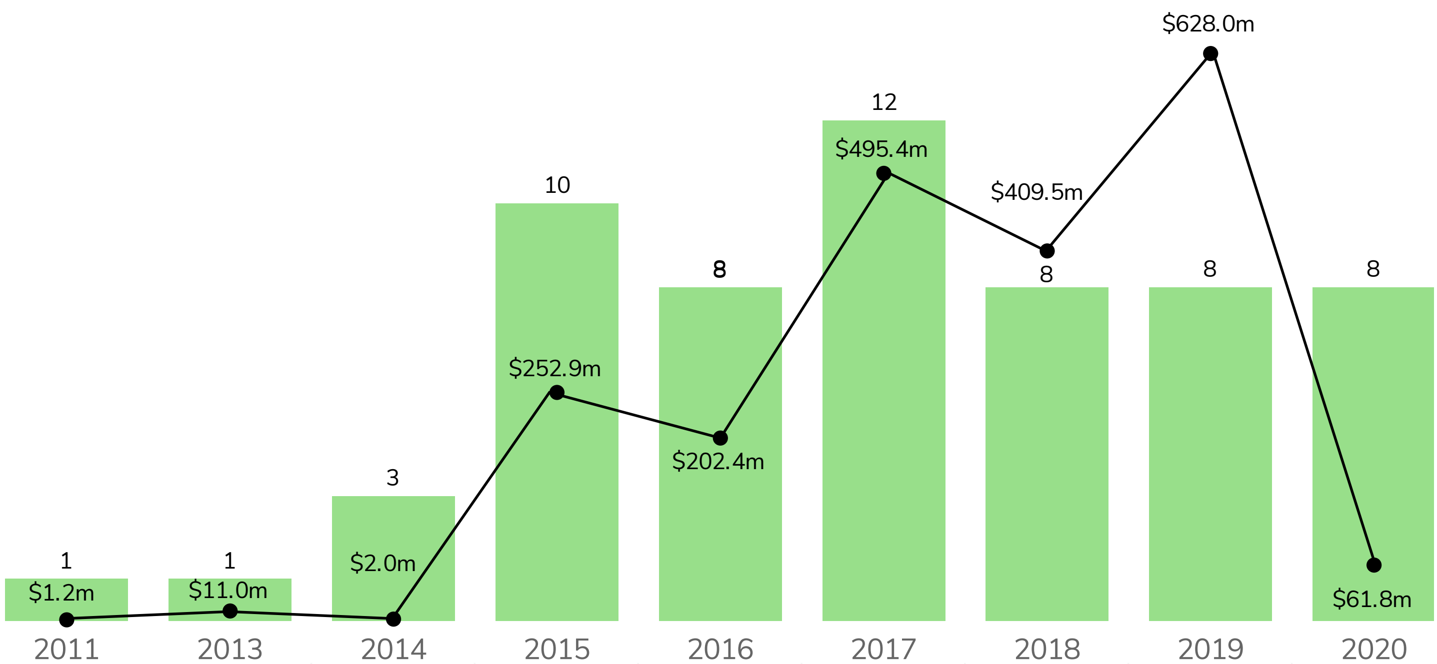
And the sector received a significant boost at the end of last year after additive manufacturing technology provider Desktop Metal succeeded in its $2.5bn reverse merger with Trine Acquisition as a special purpose acquisition company albeit still far behind the market capitalisation of HP but ahead of more than a dozen others.

Others, such as Carbon 3D, could follow the public market route as the industry is estimated to grow from $12bn to about $146bn this decade as it shifts from prototyping to mass production, according to Wohlers Report 2020. Given manufacturers make about $12 trillion in goods per year, this is not only scratching the proverbial tip of the iceberg but probably able to recreate it as well.



Desktop Metal's fibre end effectors at work

Corporate-backed deals in additive manufacturing

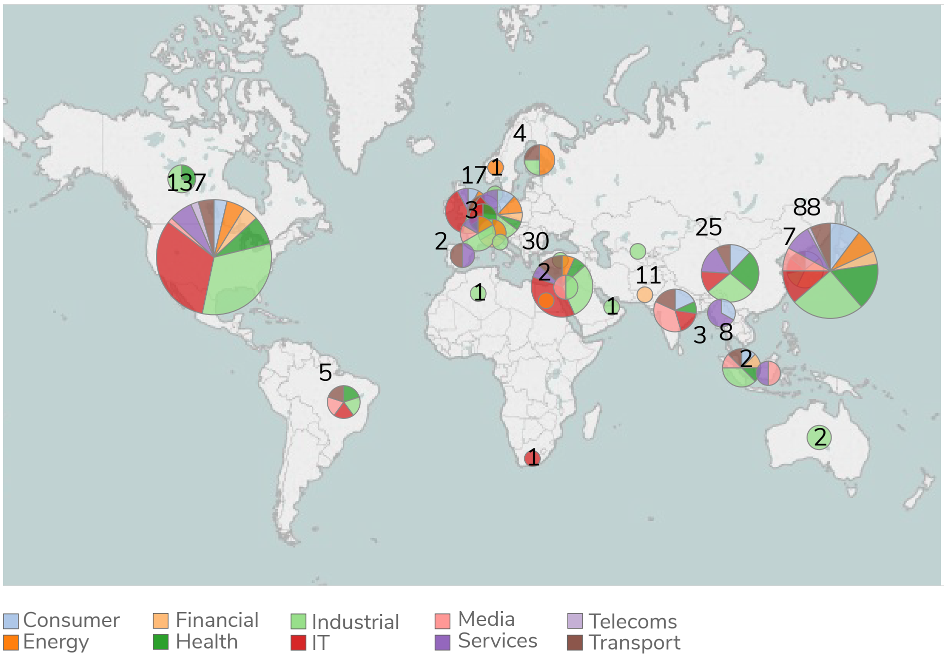


Source: GCV Analytics

Data as of December 31

The sector in charts

Global view of past year's deals



For the period between February 2020 and January 2021, we reported 386 venturing rounds involving corporate investors from the industrial sector. A considerable number of them (137) took place in the US, while 88 were hosted in Japan, 25 in China and 17 in the UK.

Investments of industrial sector corporates over the past year

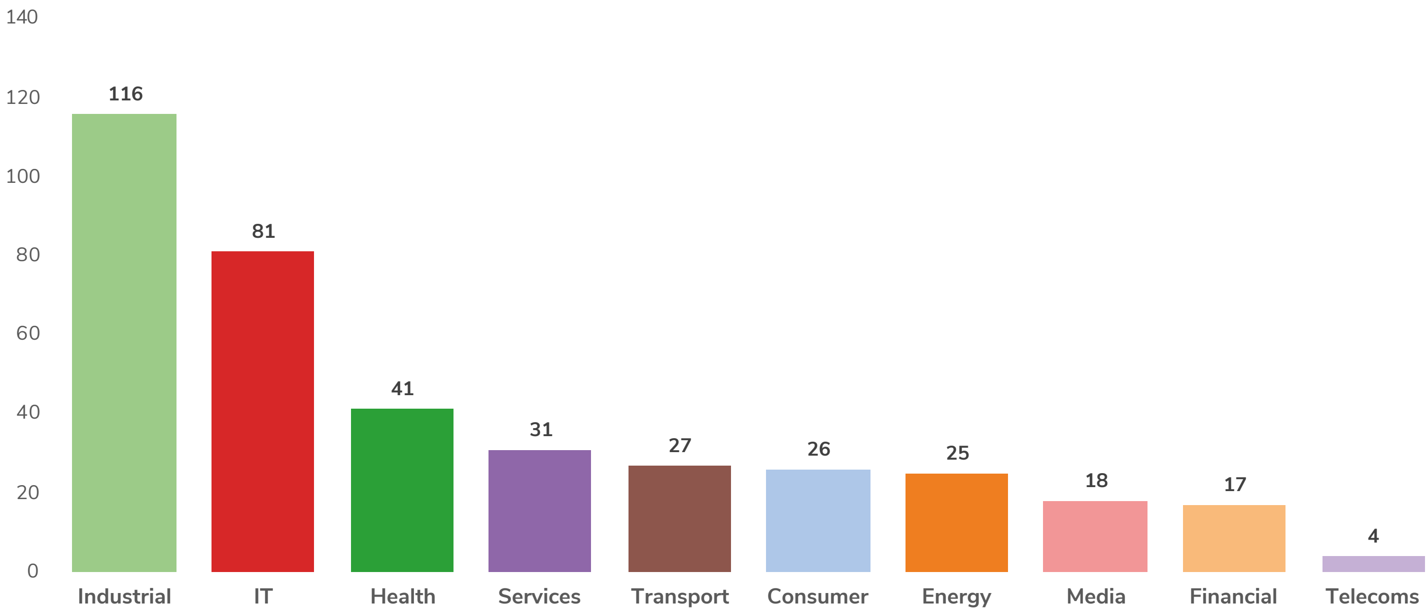
Industrial 116 (Agriculture and agtech, robotics and unmanned aerial vehicles, space and satellite tech)

IT 81 (AI, big data and analytics, cybersecurity, enterprise software)

Life sciences 41 (Medical devices, pharmaceuticals, healthcare IT)

Services 31 (Logistics, real estate tech and edtech)

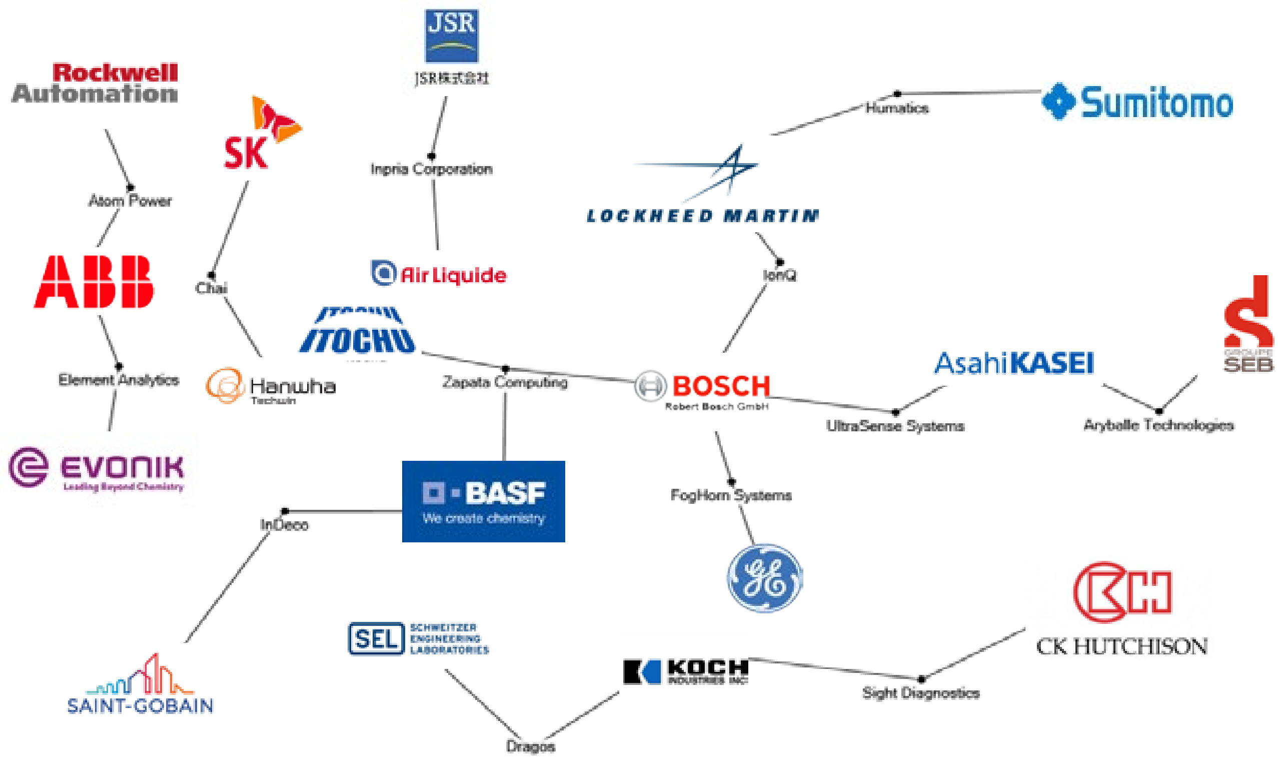
Transport 27 (Connected, autonomous and electric vehicle tech, vehicle hardware)



Source: GCV Analytics

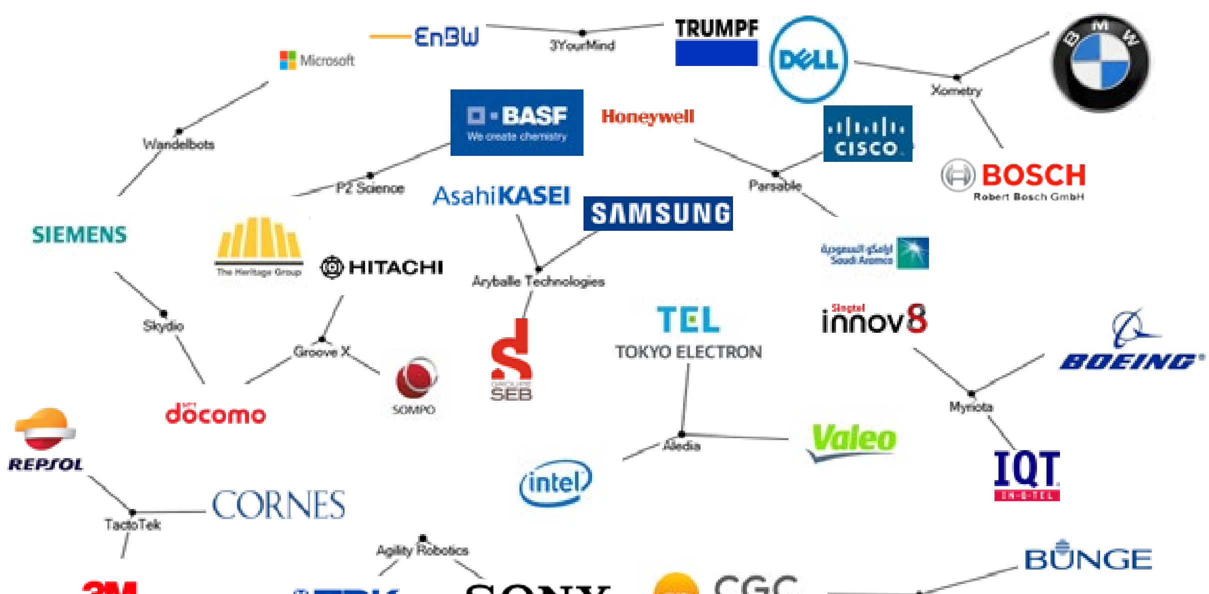
Co-investments of industrial sector corporate venturers

> IoT software and cybersecurity (FogHorn, Dragos)
> Quantum and other computing (IonQ, Zapata Computing)
> Sensors (UltraSense, Arybelle)
> Interior design and construction tech (InDeco, Atom Power)
> Blood testing (Sight Diagnostics)
> AM for chips and semiconductors (Inpria).



Corporate co-investments in industrial sector enterprises

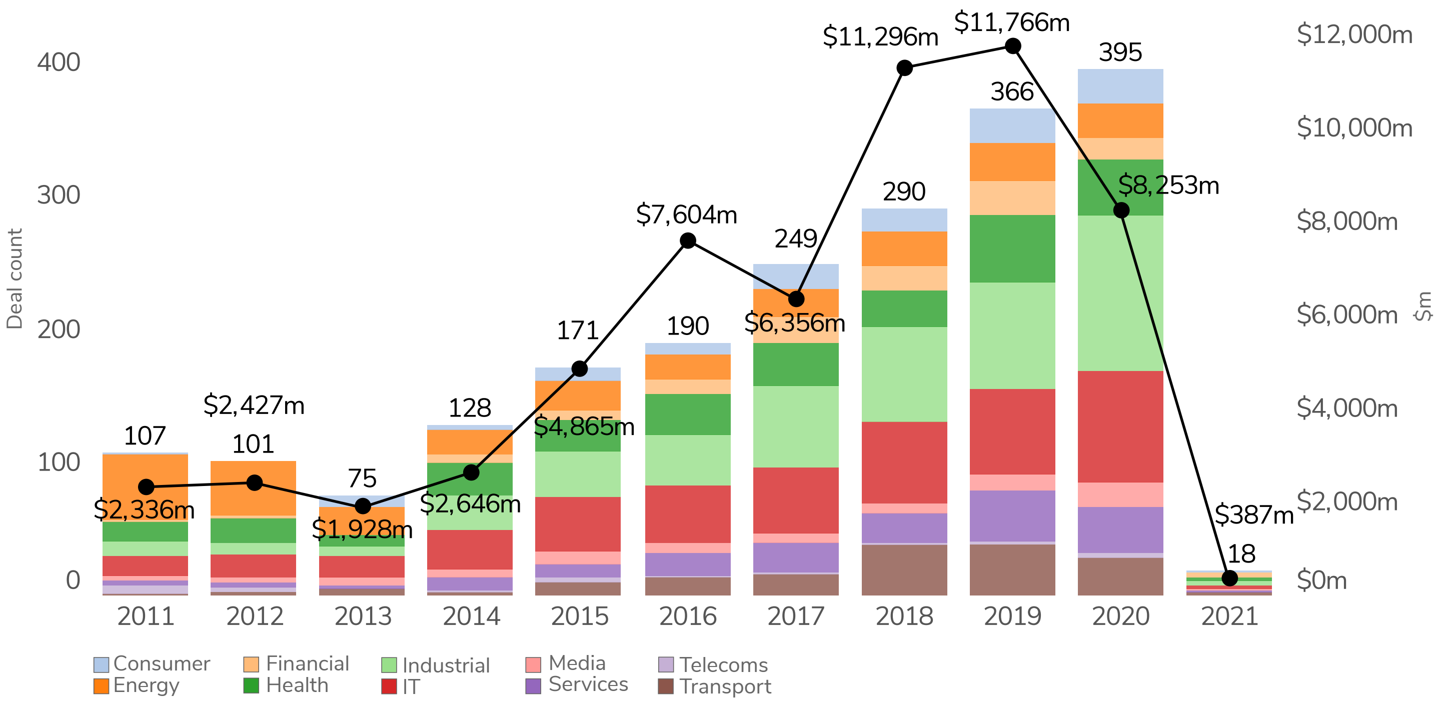
> Robots and robotics (Wandelbots, Agility Robotics, GrooveX)
> Drones (Skydio)
> Advanced materials and renewable chemistry (Aledia, P2 Science)
> Nanosatellites (Myriota)
> Machine learning for 3D printing (3YourMind)
> Agtech (PivotBio)
> Industrial collaboration platforms (Parsable)
> On-demand manufacturing services (Xometry).



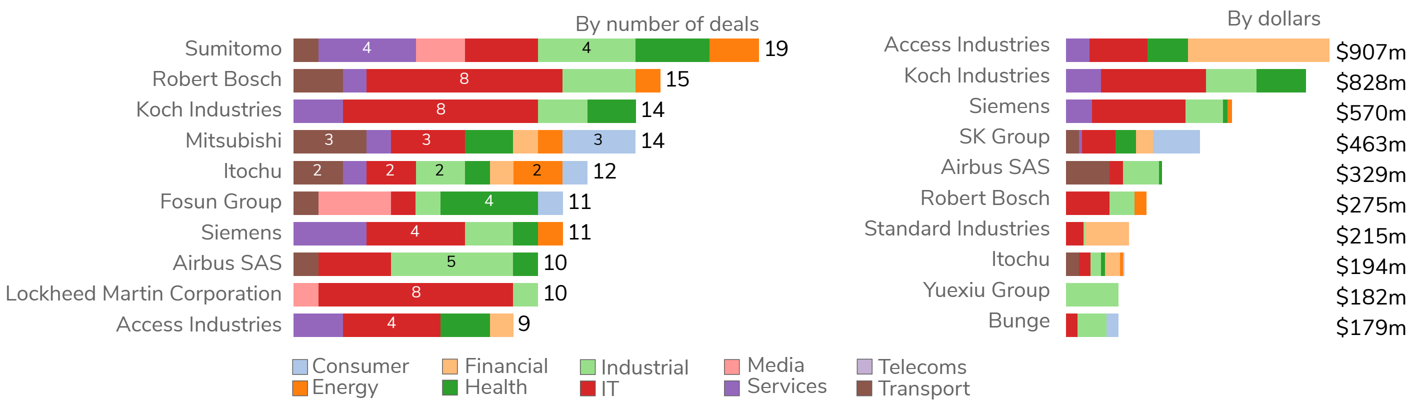
Source: GCV Analytics

Deals by industrial corporates

On a calendar year-on-year basis, total capital raised in corporate-backed rounds went down from $11.77bn in 2019 to $8.25bn in 2020, suggesting a 30% drop. The deal count, however, increased by 8% from 366 deals in 2019 up to 395 tracked by the end of last year. The 10 largest investments by corporate venturers from the industrial sector were not concentrated all in the same industry.



Top industrial investors over the past year

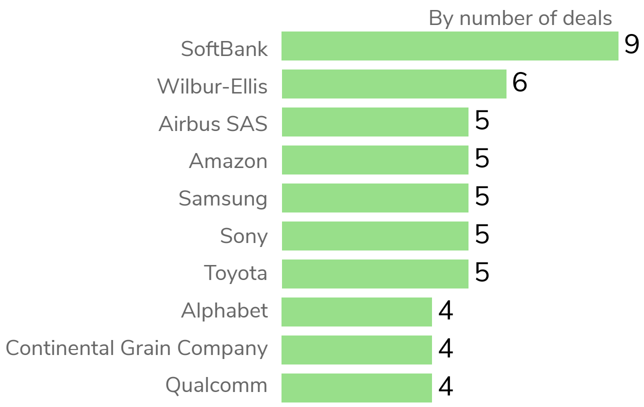


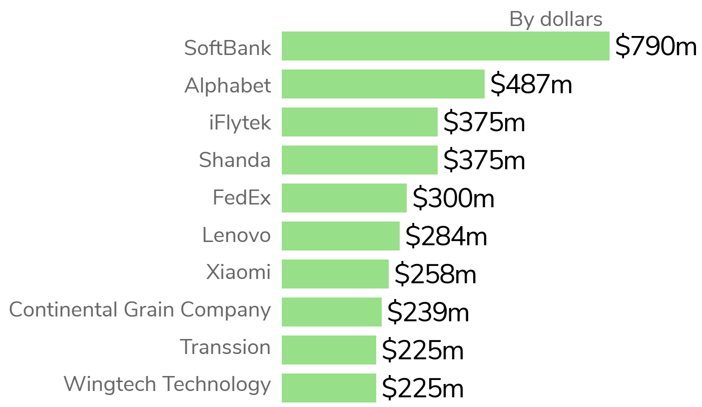
Source: GCV Analytics

The leading corporate investors from the industrial sector in terms of largest number of deals were industrial conglomerates Sumitomo, industrial technology and appliance manufacturer Robert Bosch and conglomerate Koch Industries. The list of industrial corporates committing capital in the largest rounds was topped by conglomerates Access Industries, Koch and Siemens.

Top investors in the industrial sector over the past year

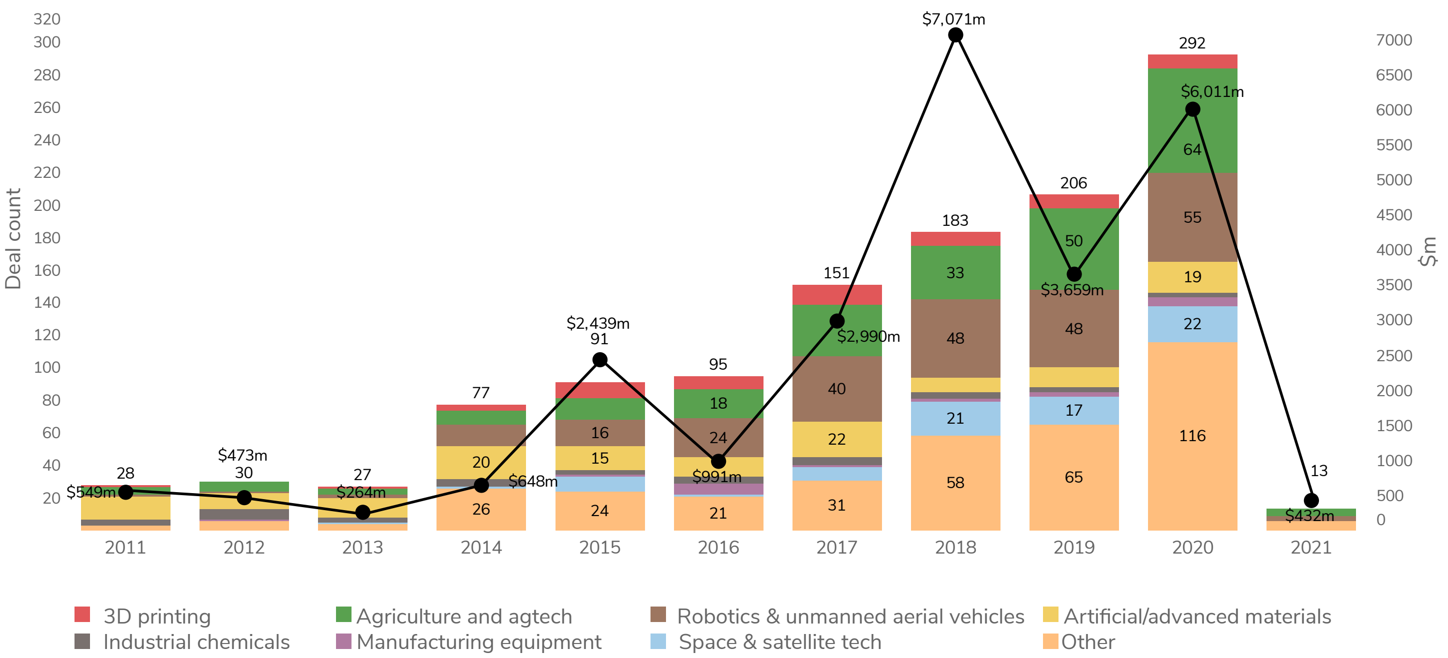
The most active corporate venture investors in the emerging industrial companies were financial telecoms and internet conglomerate SoftBank, chemical producer Wilbur-Ellis and aircraft marker Airbus.





Corporate-backed deals in industrial enterprises

Overall, corporate investments in emerging industrial-focused enterprises went up from 206 rounds in 2019 to 292 by the end of 2019, suggesting a 42% increase. Estimated total dollars in those rounds also surged from $3.66bn in 2019 up to $6.01bn by the end of last year.



Source: GCV Analytics

Deals

Top 10 deals by industrial sector corporates (February 2020-January 2021)

Portfolio Company	Location	Sector	Round	Round size	Investors List
Chime	USA	Financial Services	E and beyond	$485m	Access Industries | Coatue | Dragoneer Investment Group | DST Global | General Atlantic | Iconiq Capital | Tiger Global Management | Whale Rock Capital
Meishubao	China	Services	D	$210m	Bojiang Capital Management Group | Chuangzhi Capital | Fortune Capital | Rise Fund | SAIF
XAG	China	Industrial	Undisclosed	$182m	Baidu | Chengwei Capital | Guangzhou Xinxin Capital | Sinovation Ventures | SoftBank | Yuexiu Group
Market Kurly	South Korea	Consumer	E and beyond	$160m	Aspex Management | DST Global | Fuse Venture Partners | Hillhouse Capital Management | Sequoia Capital | SK Group | Translink Capital
Bizzabo	USA	IT	E and beyond	$138m	Insight Partners | OurCrowd | Siemens | Viola Growth
RWDC Industries	Singapore	Industrial	B	$133m	CPV/CAP Pensionskasse Coop | Eversource Capital | Koch Industries | Vickers Venture Partners | WI Harper Group
BYD Semiconductor	China	IT	Undisclosed	$113m	Anpeng Venture Capital | Bohan Vision Core Semiconductor | China Merchants Bank | Country Garden Holdings | Gongtongjiayuan Management | Hengqin Anchuang Lingxin Equity Investment | Huaqiang Industry and Yuanhao Investment | Huateng Investment Management | Huaye Growth Investment | Huiyou Haochuang Technology Investment | Huojingshi Network Technology | IER VC | Jiacheng IX VC | Jianxin Yuanzhi Intelligent Manufacturing Equity Investment | Juyuan Zhuxin Venture Capital | Lenovo | Meishan Bonded Port Bohua Guangcheng VC | Rongyu Investment | Shangqi Huajin Auto Industry Equity Investment | Shenzhen Capital Group | Shenzhen Galaxy Supply Chain | SK Group | Small and Medium-Sized Enterprises Development Fund | Starlight Link Investment | Xiaomi | Yingchuangying Investment | Yuanzhi Huaxin Emerging Industry Equity Investment | Zhaoyin Win-Win | Zhenghai Juyi Investment
Dragos	USA	IT	C	$110m	DataTribe | Energy Impact Partners | Hewlett Packard Enterprises | Koch Industries | National Grid | Saudi Aramco | Schweitzer Engineering Labs
Insightec	USA	Health	E and beyond	$100m	Koch Industries
Vast Data	USA	IT	C	$100m	83North | Commonfund | Dell | Goldman Sachs | Greenfield Partners | Mellanox | Siemens | Wells Fargo

Source: GCV Analytics

Corporates from the industrial sector invested in large multimillion-dollar rounds, raised mostly by enterprises from other sectors.

1 US-based mobile bank operator Chime has completed a $485m series F round backed by Access Technology Ventures, an investment vehicle for Access Industries. Chime was valued at $14.5bn at the time of the deal, more than doubling its $5.8bn valuation from December 2019.

Founded in 2013, Chime is a bank that offers financial services through a mobile app and does not operate any physical branches. Customers have access to a current account, debit card, overdrafts and features such as receiving their salary early. The company has trebled its transaction volume and revenue, as people rely increasingly on digital products and shy away from physical branches in the pandemic.

2 China-based online arts tuition service Meishubao Education collected $210m in a series D round featuring Bojia Capital, the corporate venturing arm of chemical producer Do-Fluoride. The round was led by The Rise Fund, an impact-focused investment vehicle for private equity group TPG, and included Fortune Capital, Winsdom Capital, SAIF Partners and Chuangzhi Capital.

Meishubao provides online arts tuition for children and teenagers, and has expanded into offering courses for adult learners. The series D proceeds will help strengthen its product, distribution and branding.

3 China-based unmanned aerial vehicle manufacturer XAG closed a RMB1.2bn ($182m) funding round co-led by internet group Baidu and SoftBank's Vision Fund 2, also featuring the Yuexiu Industrial Fund and other investors. Baidu invested through growth capital unit Baidu Capital. China Renaissance advised XAG on the round.

Also known as Jifei Technology, XAG was founded in 2007 and began focusing on the agricultural industry in 2013. It produces drones that monitor crop conditions and has created a smart farm management platform that analyses aerial images to optimise farming. The funding has been earmarked for research and development in addition to strengthening XAG's manufacturing and supply chain capabilities and bolstering a smart agriculture technology sector in China that is progressing toward unmanned farms.

4 South Korea-based online grocery delivery service Market Kurly secured 200bn won ($160m) in a series E round featuring SK Networks, an energy, steel and automotive subsidiary of industrial conglomerate SK Group. DST Global led the round, which also included Hillhouse Capital, Sequoia Capital China, Fuse Venture Partners, Translink Capital and Aspex Management. The company did not confirm its valuation but reports suggested it may have achieved unicorn status.

Market Kurly operates an online supermarket that offers products ranging from fresh produce, to small household appliances. The series E funding will enable the company to establish a fulfilment centre in Seoul that is two-and-a-half times larger than the company's current facilities. Market Kurly will also increase its headcount and look to acquire more customers.

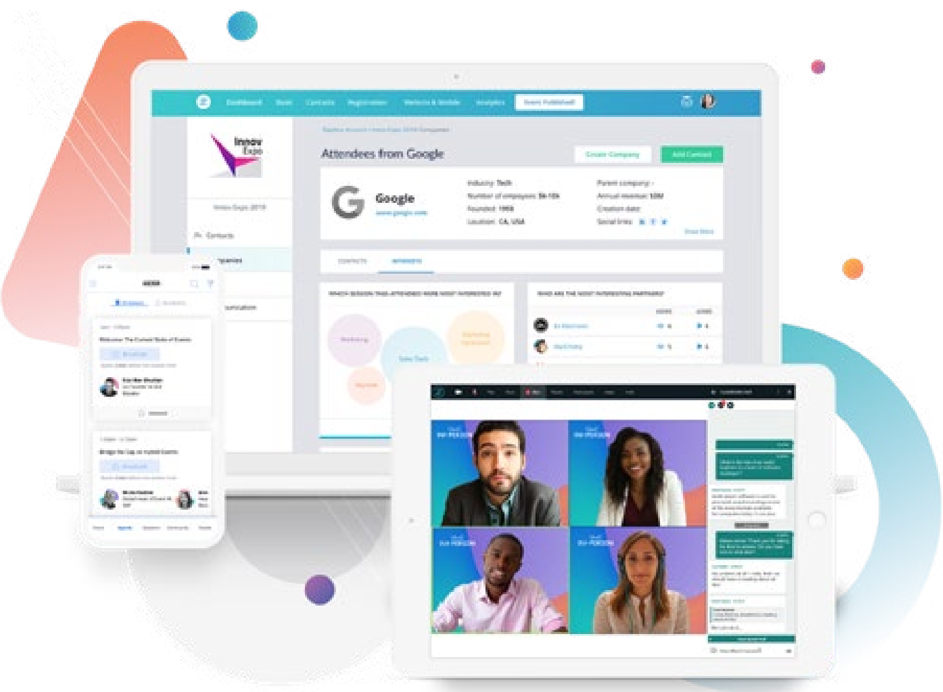
5 US-based virtual event platform developer Bizzabo secured $138m in a series E round featuring Siemens' Next47 unit. Growth equity firm Insight Partners led the round, which included equity investment platform OurCrowd and Viola Growth, the growth capital fund owned by technology investment firm Viola Group.

Bizzabo provides software that facilitates virtual, on-person and hybrid events, and has experienced considerable growth in 2020 as more events have gone virtual-only due to social distancing. The series E will support the company's development of a product intended to integrate live and virtual conference experiences. It plans to triple the size of its engineering, product and experience teams by hiring 100 new employees.

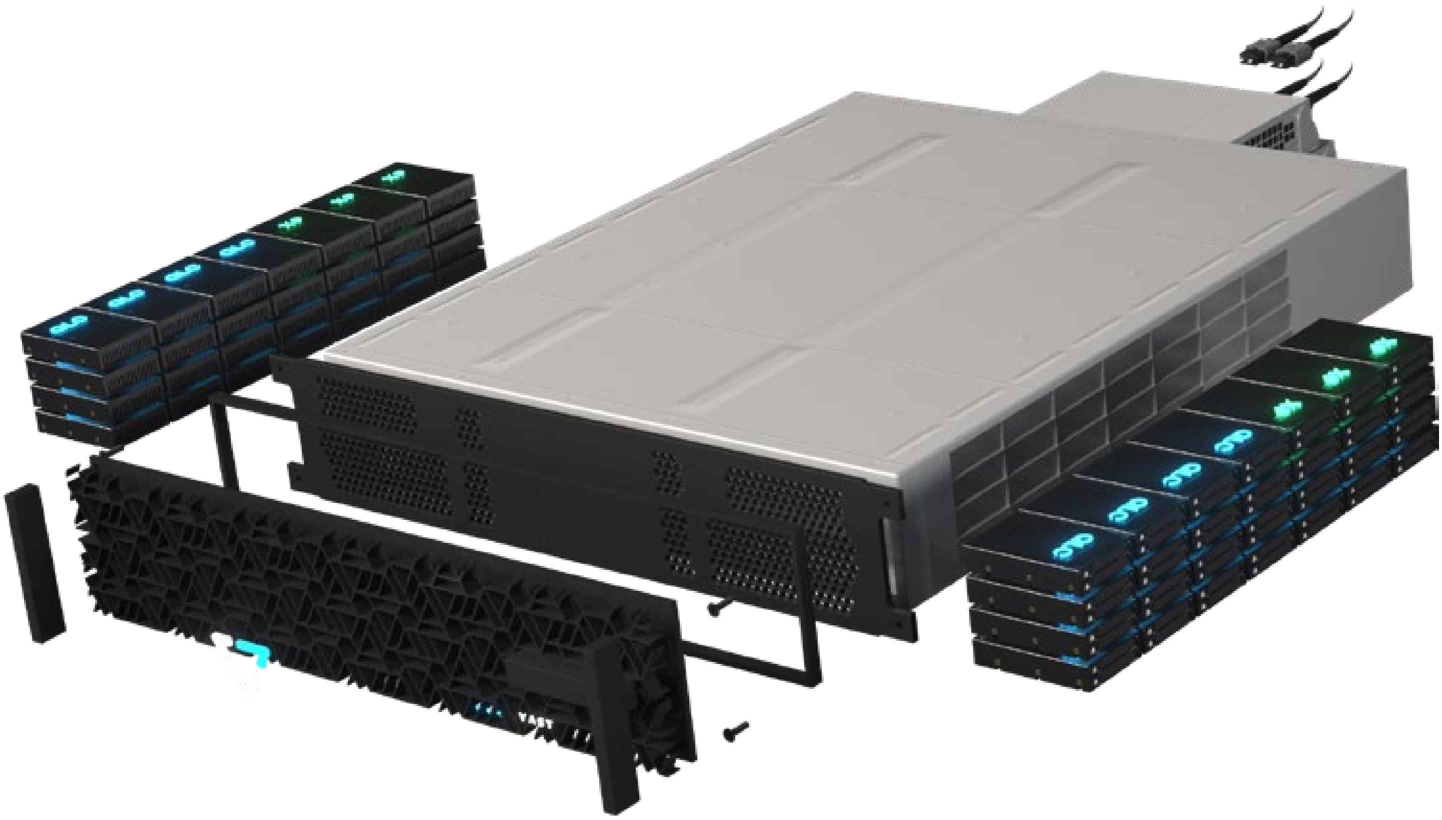
6 Singapore-based biodegradable plastic developer RWDC Industries completed a $133m series B round backed by Flint Hills Resources, the chemicals and biofuel subsidiary of Koch Industries. Venture capital firm Vickers Venture Partners led the round, which also featured International, an alternative investment fund operated by Interogo Holding, itself a subsidiary of furniture retailer Ikea's owner Interogo Foundation.

Founded in 2015, RWDC is working on cost-effective biopolymer materials, including a commercially viable, biodegradable plastic that is created through microbial fermentation. The company will use the cash to meet demand by repurposing an idle factory in the US state of Georgia. The money will also go towards research and development.

7 BYD Semiconductor, a semiconductor-focused spinoff of China-based electric vehicle (EV) maker BYD, raised RMB800m ($113m) in series A-plus funding from 30 investors including several corporates. The round included SK China, a local investment vehicle for South Korean conglomerate SK Group, as well as logistics services provider Shenzhen Galaxy Supply Chain, and electronics producers Xiaomi and Lenovo, through Changjiang Industry Fund and Changjiang Science and Technology Industry Fund respectively. The company said it planned to add additional backers to the round, including carmakers BAIC and SAIC through their BAIC Capital and SAIC Capital units, chipmaker Arm's Houan Fund, electric motor technology producers V&T Technologies (VTdrive) and Shenzhen INVT Electric, and asset manager CITIC Private Equity. BYD Semiconductor



Bizzabo's events platform



Vast Data enclosure

was formed in 2004 and was spun out with $265m of funding. It produces commercial EV components including a power management chip known as an insulated-gate bipolar transistor.

8 US-headquartered industrial cybersecurity technology provider Dragos secured $110m in a series C round co-led by investment vehicles for energy supplier National Grid and Koch Industries. National Grid Partners (NGP) and Koch Disruptive Technologies (KDT) were joined by industrial system manufacturer Schweitzer Engineering Labs, IT services firm Hewlett Packard Enterprise and Saudi Aramco Energy Ventures, a corporate venturing arm of oil and gas producer Saudi Aramco. The round was filled out by existing investors and it increased the company's overall funding to $158m.

Dragos has built an integrated software platform that enables users to get detailed information on the security status of operational technology and industrial control systems to prevent them being hacked, and infrastructure or industrial facilities being disrupted.

9 Koch Industries invested $100m in InSightec, an Israel-based developer of an ultrasound surgery system for Parkinson's disease, as part of a $150m series F round. It committed the capital through its Koch Disruptive Technologies (KDT) subsidiary pending shareholder approval. The round valued InSightec at $1.3bn post-money.

InSightec has created an incisionless brain surgery device called Exablate Neuro that relies on magnetic resonance-guided ultrasound waves to treat essential tremor resistant to medication, and tremor-dominant Parkinson's disease. The system targets high-intensity ultrasound waves through the skull at the area of the brain thought to be responsible for tremors. It has received regulatory approval in the US for the treatment of the two conditions.

10 Siemens' Next47 unit led a $100m series C round for flash storage technology provider Vast Data at a $1.2bn valuation. The round included Dell Technologies Capital and Mellanox Capital, which invested on behalf of computing technology provider Dell and networking technology supplier Mellanox Technologies, as well as Goldman Sachs, 83North, Commonfund Capital, Greenfield Partners and Norwest Venture Partners.

Founded in 2016, Vast Data has created a scalable all-flash data storage system that is intended to eliminate the traditionally high costs of the technology compared with hard drive storage. The proceeds will fuel international growth.

Top investments in industrial sector enterprises (February 2020-January 2021

Portfolio Company	Location	Sector	Round	Round size	Investors List
Chang Guang Satellite Technology (CGSTL)	China	Industrial	Undisclosed	$375m	Chinese Academy of Sciences | CICC Capital | Estar Capital | Government of China | Haitong Securities | iFlytek | Matrix Partners | Shanda | Shenzhen Capital Group
Indigo Agriculture	USA	Industrial	E and beyond	$300m	FedEx
Farmer's Business Network	USA	Industrial	E and beyond	$250m	Alphabet | Balyasny Asset Management | Baron | BlackRock | DBL Partners | Expanding Capital | Fidelity | Kleiner Perkins | Lupa Systems | Mandi Ventures | Private Investor | T Rowe Price | Temasek
SmartSens	Hong Kong	Industrial	Undisclosed	$225m	China Fortune-Tech Capital | China Integrated Circuit Industry Investment Fund | China Internet Investment Fund | China Merchants Bank | Forebright Capital | Haitong Kaiyuan Capital | Lenovo | Sequoia Capital | Transsion | undisclosed investors | Wingtech Technology | Xiaomi
Katerra	USA	Industrial	Undisclosed	$200m	SoftBank
Katerra	USA	Industrial	Undisclosed	$200m	SoftBank
XAG	China	Industrial	Undisclosed	$182m	Baidu | Chengwei Capital | Guangzhou Xinxin Capital | Sinovation Ventures | SoftBank | Yuexiu Group
Benson Hill Biosystems	USA	Industrial	D	$150m	Alphabet | Argonautic Ventures | Caisse de dépôt et placement du Québec | Emart | Fall Line Capital | GS Group | iSelect | Louis Dreyfus | Mercury Fund | Prelude Ventures | Prolog Ventures | S2G Ventures | undisclosed investors | Wheatsheaf Group
Plenty	USA	Industrial	D	$140m	SoftBank
RWDC Industries	Singapore	Industrial	B	$133m	CPV/CAP Pensionskasse Coop | Eversource Capital | Koch Industries | Vickers Venture Partners | WI Harper Group

Source: GCV Analytics

There were other interesting deals in emerging industrial-focused businesses that received financial backing from corporate investors in the same and other sectors.

1 China-based satellite developer Chang Guang Satellite Technology completed a RMB2.46bn ($375m) round featuring AI technology producer iFlytek. Haitong Securities affiliate Haitong Innovation Capital Management, Shenzhen Capital Group, Estar Capital, CICC Capital, Matrix Partners China, Shanda Capital, CAS Star and a government-guided fund from Jilin Province also took part.

Chang Guang is building a 60-strong satellite constellation called Jilin-1 that will use sensors to capture high-definition videos and optical and hyperspectral images for use in areas such as agriculture and forest management, city planning and maps.

2 US-based crop sustainability product supplier Indigo received about $300m in series F funding from investors including logistics services firm FedEx, at a $3.5bn post-money valuation. FedEx took part in the round's $200m first close, contributing to the $175m equity portion with Flagship Pioneering and Alaska Permanent Fund. The latter two joined Riverstone Holdings in the second tranche of the round, which reportedly had a $500m target.

Formerly known as Symbiota, Indigo offers agronomic tools and services for farmers including aerial imagery, crop health data and microbial products that improve crop yields. It also maintains an online marketplace for grain trading.

3 US-based farming data analytics platform provider Farmer's Business Network (FBN) closed a $250m series F round that included GV, a corporate venture capital (CVC) subsidiary of internet conglomerate Alphabet. Investment manager BlackRock led the round through unnamed funds and accounts, which included funds managed by Fidelity Investments Canada and its affiliates, and funds and accounts advised by T Rowe Price. The round valued FBN at $1.75bn.

FBN has built a farmer-to-farmer networking platform that enables independent growers to pool information on topics including the prices and performances of seeds and herbicides. The company also runs an e-commerce service selling seeds, crop protection and biologicals, and will use part of the series F funding to expand that part of its offering.

4 Consumer electronics manufacturer Xiaomi's Changing Industrial Fund co-led a RMB1.5bn ($225m) funding round for China-headquartered image sensor chip producer SmartSens. The other co-leaders were China Merchants Bank's CMB International subsidiary, an undisclosed telecoms-focused fund and the state-owned China Integrated Circuit Industry Investment Fund.

Lenovo Capital, the investment arm of electronics manufacturer Lenovo, also took part, as did chipmaker Wingtech Technology and smartphone producer Transsion Holdings, among other investors. SmartSens' technology uses machine learning and AI to capture images and video. It is used in consumer electronics such as drones and smart home or car products, and in security and surveillance systems.

5 US-based construction services provider Katerra secured $200m in funding from SoftBank Vision Fund in May 2020. Founded in 2015, Katerra has created an end-to-end construction offering, offering manufactured components that can be configured into thousands of building designs and structural systems, in addition to supply chain, renovation and assembly services. The company has more than 6,000 multi-family units under construction and employs 8,000 staff globally. The additional capital is intended to position it for long-term growth.

6 In early 2021, the Vision Fund agreed to provide additional $200m to Katerra. The investment reportedly gave the fund a majority stake in the company, with the stakes of its other shareholders "severely" diluted. The company said in a statement announcing the funding that it recorded almost $2bn in revenue during 2020, adding that the cash will support the release of its first building platform: a fully-realised building model designed for repeatable manufacturing.

7 US-based crop design software provider Benson Hill Biosystems completed a $150m series D round led by GV, the corporate venturing subsidiary of internet technology group Alphabet formerly known as Google Ventures, and UK-based agrifood investor Wheatsheaf. Founded in 2012, Benson Hill has developed a platform, CropOS, which helps customers across the food and agriculture chain combine data with breeding and genome editing tools to create new crops and food products tailored to their needs. It will use the funding to enhance CropOS and boost product development.

CREDIT: Spencer Lowell

An employee at a Plenty farm

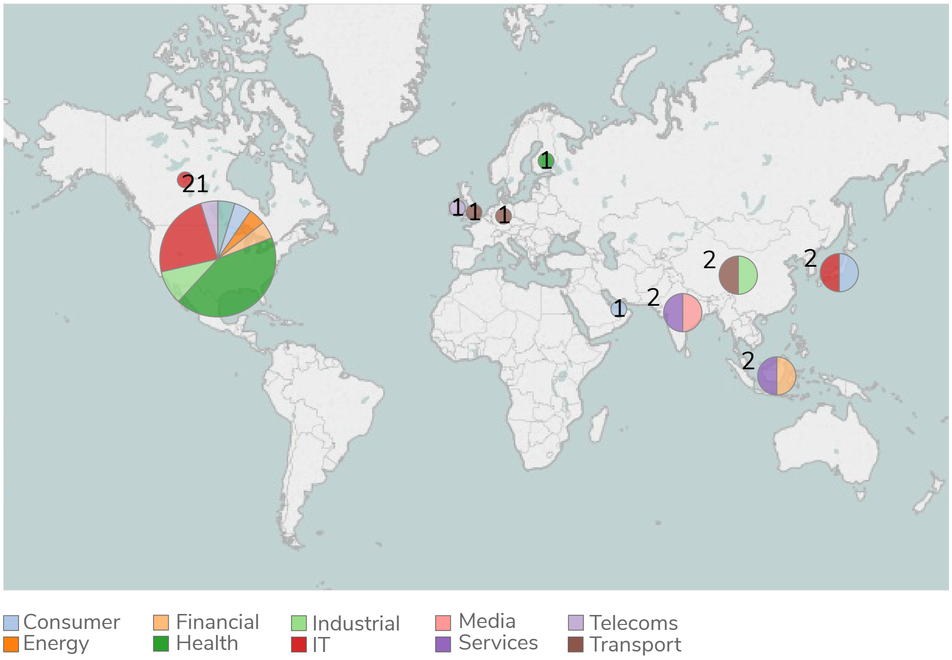
8 Softbank's Vision Fund 1 led a $140m series D round for US-based urban farm operator Plenty that included fresh berry provider Driscoll's. The company had already formed a commercial partnership with Driscoll's earlier that will involve it growing strawberries, in addition to a supply agreement with grocery retailer Albertsons. Plenty is establishing a network of vertical farms with data analytics and advanced lighting technologies to grow food more efficiently without pesticides.

9 China-based unmanned aerial vehicle manufacturer XAG closed a RMB1.2bn ($182m) funding round co-led by internet group Baidu and SoftBank's second Vision Fund. Founded in 2007 and also known as Jifei Technology, XAG has developed unmanned aerial vehicles for the agricultural industry. Its drones monitor crop conditions and the company has also created a smart farm management platform that analyses aerial images to optimise farming.

10 Singapore-based biodegradable plastic developer RWDC Industries completed a $133m series B round backed by Flint Hills Resources, the chemicals and biofuel subsidiary of Koch Industries. VC firm Vickers Venture Partners led the round, which also featured International, an alternative investment fund operated by Interogo Holding, a subsidiary of Ikea's owner Interogo Foundation. Founded in 2015, RWDC is working on cost-effective biopolymer materials.

Exits

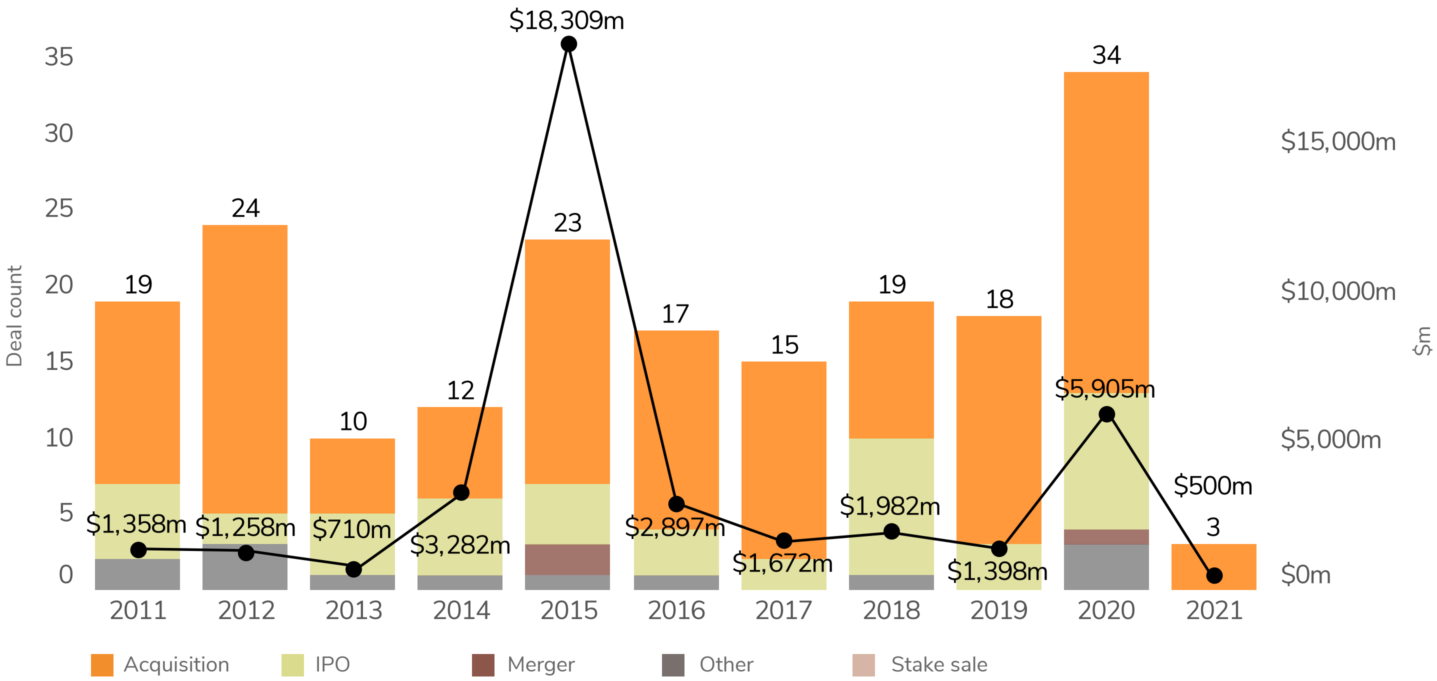
Global view of past year's exits



Corporate venturers from the industrial sector completed 35 exits between February 2020 and January 2021 – 23 acquisitions and eight initial public offerings (IPOs), one merger and three other transactions. Most of the portfolio companies were not developing strictly industrial activities. This is unsurprising, as emerging industrial businesses are capital intensive and take longer to mature.

Exits by industrial corporates

As for year-on-year, both the deal volume and the estimated dollar value spiked significantly compared to 2019 levels – the number of exits nearly doubled from 18 to 34 and the total dollars surged four times over from $1.4bn to $5.9bn.



Source: GCV Analytics

Top exits by industrial corporate investors (February 2020-January 2021)

Portfolio Company	Location	Sector	Exit type	Acquirer	Exit size	Exiting investors
Li Auto (Chehejia)	China	Transport	IPO		$1.1bn	BlueRun Ventures | Bytedance | China Merchants Wealth | China Taiping Insurance | Fancheng Capital | InTime Retail | Leo Group | Matrix Partners | Minshi Hexun Capital | Ping An Insurance | Private Investor | Shougang Group | Source Code Capital | Wang Xing
OneWeb	USA	Telecoms	Acquisition	Bharti Enterprises	$1bn	Airbus SAS | Bharti Enterprises | British Government | Coca-Cola | Government of Rwanda | Grupo Salinas | Hughes Network Systems | Intelsat | Qualcomm | SoftBank | Virgin
View	USA	Industrial	Merger		$800m	Corning | Madrone Capital Partners | NZ Super Fund | SoftBank
Element AI	Canada	IT	Acquisition	ServiceNow	$500m	Hanwha | Intel | McKinsey | Microsoft | Nvidia | Tencent
Volterra	USA	IT	Acquisition	F5 Networks	$500m	Itochu | Khosla Ventures | Mayfield Fund | Microsoft | Samsung
Portworx	USA	IT	Acquisition	Pure Storage	$370m	Cisco Systems | General Electric | Hewlett Packard Enterprises | Mayfield Fund | Mubadala | NetApp | private investors | Sapphire Ventures
Packet	USA	IT	Acquisition	Equinix	$335m	Battery Ventures | Dell | JA Mitsui Leasing | Samsung | SoftBank | Third Point Ventures | undisclosed investors
Schrödinger	USA	Health	IPO		$232m	Alphabet | Baron | Bill & Melinda Gates Foundation | Deerfield Management | Invus | Laurion Capital Management | Pavilion Capital | Qiming Venture Partners | Tubus Management | WuXi AppTec
Passage Bio	USA	Health	IPO		$216m	Access Industries | Boxer Capital | Eli Lilly | Frazier Healthcare Ventures | Highline Capital Management | Logos Capital | New Leaf Venture Partners | OrbiMed Advisors | Sphera Funds Management | Versant Ventures | Vivo Capital
Hefei Jianghang Aircraft Equipment	China	Industrial	IPO		$148m	Aviation Industry Corporation of China | Beijing Haolan Xingyuan Investment | China Reform Holding | China Zhongji Investment | North Industries Group Investment Management

Source: GCV Analytics

1 Li Auto, a China-based EV producer backed by mobile services portal Meituan Dianping, steel producer Shougang, digital media company Bytedance, InTime, insurance firms Taiping and Ping An as well as pump and gardening equipment maker Leo Group, priced its shares at $11.50 to raise $1.1bn in its IPO. The company issued 95 million American Depositary Shares (ADSs), representing 190 million ordinary shares. Shares opened at $15.50 on the first day of trading and reached a high of $17.50, before closing at $16.46. The company listed on the Nasdaq Global Select Market using the symbol LI. Mobile services portal Meituan Dianping and digital media company Bytedance committed to purchasing $330m and $30m in a concurrent private placement. Founded as Chehejia in 2015 and also known as CHJ Automotive and Lixiang, Li Auto produces smart sports utility EVs.

2 UK-based satellite internet services provider OneWeb was purchased by one of its existing shareholders, conglomerate Bharti Enterprises, and the UK government with a winning bid of more than $1bn after the company declared bankruptcy.

Bharti Enterprises' UK subsidiary, Bharti Global, and the British government, represented by the Secretary of State for Business, Energy and Industrial Strategy – a position then held by Alok Sharma – each put in $500m. Founded in 2012 as WorldVu, OneWeb is building a 650-satellite constellation intended to deliver internet access to customers in rural and remote areas. It is registered in the UK but its manufacturing facilities are in the US and it has launched 74 satellites.

3 View, the US-based dynamic glass producer backed by corporate investors SoftBank and Corning, agreed to a reverse merger with special purpose acquisition company CF Finance Acquisition Corp II. The transaction will be boosted by $500m held by CF Finance Acquisition Corp II from its August 2020 IPO, and $300m through a private investment in public equity investment from unnamed investors. The merged business will have an enterprise valuation of $1.6bn and take CF Finance Acquisition Corp II's place on the Nasdaq Capital Market.

Founded in 2007 as Echromics before rebranding to Soladigm, View produces smart windows using dynamic glass that tints darker in sunlight and lighter in more overcast weather, to help buildings save energy.

4 Enterprise software producer ServiceNow agreed to acquire Element AI, a Canada-based AI technology provider backed by corporates internet company Tencent, chipmakers Intel and Nvidia, software company Microsoft, consulting firm McKinsey & Company and industrial conglomerate Hanwha.

The companies did not disclose the size of the deal but it stood reportedly at about $500m, a slight reduction on the $600m to $700m valuation at which Element had raised money.

Founded in 2016, Element has developed AI software products that make in-depth research and text processing more efficient. ServiceNow intends to use the technology to make its workflow software platform more intelligent.

5 Cybersecurity technology producer F5 Networks agreed to acquire US-based cloud services platform developer Volterra in a $500m deal allowing conglomerate Itochu, Microsoft and electronics manufacturer Samsung to exit. The transaction will consist of approximately $440m in cash and $60m in deferred consideration and assumed unvested incentive compensation for Volterra's employees.

Volterra has built a distributed cloud services platform that allows businesses to connect, secure and operate applications across multiple clouds and in edge computing. It will help F5 in developing an app-driven edge platform for enterprises and cloud service providers.

6 Pure Storage agreed to buy US-based data management software provider Portworx in a $370m deal that will give an exit to cloud services provider NetApp, IT services firm HPE, networking technology producer Cisco and power and industrial equipment maker GE.

Founded in 2014, Portworx has developed a data services software platform built on open-source containerised application management software Kubernetes. Its technology will be integrated with Pure Storage's existing data platforms.

7 Data centre interconnection technology provider Equinix has completed the $335m purchase of US-based bare-metal automation system developer Packet that

Dell exited bare-metal automation system developer Packet

enabled SoftBank, Samsung, electronics producer Dell and JA Mitsui Leasing to exit. Packet has built an automation software platform for use with bare-metal servers – those in a physical space rather than in the cloud. The company's technology will be integrated into Equinix's enterprise offering while chief executive Zachary Smith has been appointed managing director of Equinix's bare metal division.

8 Schrödinger, the US-based life sciences platform developer backed by Alphabet and pharmaceutical firm Wuxi AppTec, closed its initial public offering at more than $232m. The company floated, issuing nearly 11.9 million shares on the Nasdaq Global Market priced at $17. Its shares closed at $28.64 on their first day of trading.

Underwriters Morgan Stanley, BofA Securities, Jefferies and BMO Capital Markets Corp later took up the full over-allotment option, buying more than 1.78 million additional shares. Schrödinger's software platform is used by pharmaceutical and industrial product developers to discover molecules for use in the creation of medicines and material designs.

9 Passage Bio, a US-based genetic medicine developer that counts pharmaceutical firm Eli Lilly and Access Industries as investors, closed its IPO at more than $248m. The company raised an initial $216m from 12 million shares issued on the Nasdaq Select Global Market and priced at $18 each. The underwriters subsequently purchased 1.8 million additional shares to add $32.4m.

Founded in 2017, Passage Bio is working on genetic therapies for rare, life-threatening disorders affecting the central nervous system. It has a research, collaboration and licensing agreement with University of Pennsylvania's Orphan Disease Center and Gene Therapy Program. The proceeds will fund planned phase 1/2 trials for three assets which are aimed at frontotemporal dementia, lysosomal storage condition Krabbe disease and genetically inherited brain and spinal cord disorder GM1 gangliosidosis respectively.

10 Hefei Jianghang Aircraft Equipment, a China-based aircraft equipment manufacturer backed by aerospace conglomerate Aviation Industry Corporation, raised $148m in an IPO on the Star Market. The company priced shares at $1.48 each and will trade under the ticker symbol 688586. Founded in 2007, Jianghang sells aircraft equipment such as oxygen systems, auxiliary fuel tanks and airborne tank inertia protection systems. Proceeds from the offering have been allocated to research and development, expanded manufacturing capacity and working capital.

Passage Bio has an agreement with University of Pennsylvania's Orphan Disease and Gene Therapy Program

Top exits from industrial enterprises

Portfolio company	Location	Sector	Exit type	Acquirer	Exit size	Exiting investors
View	USA	Industrial	Merger		$800m	Corning | Madrone Capital Partners | NZ Super Fund | SoftBank
Zhejiang Supcon Technology	China	Industrial	IPO		$268m	China Wanxiang Holdings | Chint | Hangzhou Puyang Investment Management | Intel | Lenovo | Loyal Valley Innovation Capital | Sinopec Engineering Group
Kindred	USA	Industrial	Acquisition	Ocado	$262m	Alphabet | AME Cloud Ventures | Data Collective | Eclipse Ventures | First Round Capital | Tencent
Hefei Jianghang Aircraft Equipment	China	Industrial	IPO		$148m	Aviation Industry Corporation of China | Beijing Haolan Xingyuan Investment | China Reform Holding | China Zhongji Investment | North Industries Group Investment Management
Shenzhen Hymson Laser Intelligent Equipments	China	Industrial	IPO		$107m	Legend Holdings
Shanghai SK Automation Technology	China	Industrial	IPO		$105m	Junsan Capital | Kinzon Capital | SAIC Motor Limited
Origin	UK	Industrial	Acquisition	Stratasys	$100m	DCM | Floodgate | Haystack Capital | Mandra Capital | private investors | Stanford University | TDK Ventures | undisclosed investors
Tianjin Ruixin Technology	China	Industrial	IPO		$47.8m	BAIC Motor | GS Capital | Industrial Securities
Concrete Sensors	USA	Industrial	Acquisition	Hilti		Arab Angel | Cemex | Requus Ventures
3D Hubs	USA	Industrial	Acquisition	Proto Labs		Balderton Capital | DOEN Participaties | Endeit Capital | EQT Partners | Future Shape | Hearst | private investors | Rockstart

Source: GCV Analytics

Global Corporate Venturing also reported several exits of emerging industrial-related enterprises that involved corporate investors from the same as well as other sectors.

1 Zhejiang Supcon Technology, a China-based industrial automation technology provider backed by corporates Chint, Sinopec, Intel, Wanxiang and Lenovo, raised RMB1.76bn ($268m) in its IPO. It offered about 49.1 million shares issued on the Shanghai Stock Exchange's Star Market and priced at RMB35.73 each. Shenwan Hongyuan Financing Services was principal underwriter and Citic Securities joint underwriter.

Supcon produces process automation technologies for the manufacturing, petrochemical production and the power, nuclear, oil and gas industries. The company posted a net profit of approximately $37m for the first nine months of 2020, from about $314m in revenue. IPO proceeds will support development in areas like smart industrial software and control valves.

2 Grocery delivery service Ocado agreed a $262m acquisition of US-based robotics technology provider Kindred Systems through a deal enabling Tencent and Alphabet to exit. Kindred produces piece-picking robots equipped with AI to fulfill e-commerce orders in warehouses. It made a $16.2m net loss from $1.7m in revenue in 2019, and the all-cash transaction includes $4m that will go to employee shareholders.

3 Shenzhen Hymson Laser Intelligent Equipments, a China-based laser and automation technology manufacturer backed by conglomerate Legend Holdings' Legend Capital spinoff, raised RMB728m ($107m) in its IPO. The offering consisted of 50 million shares issued on the Star Market priced at RMB14.56 each. Citic Securities was lead underwriter for the offering.

Founded in 2008, Hymson produces equipment that automates parts of the manufacturing process for products such as lithium-ion batteries. The company provides labelling and marking systems, production line automation technology and laser cutters for materials such as glass or ceramics. It plans to put the IPO proceeds toward beefing up its research centre along with funding laser and automation projects.


Hilti bought Concrete Sensors

4 China-based manufacturing technology producer Shanghai SK Automation Technology went public in a RMB733m ($105m) IPO, an exit for automotive manufacturer SAIC Motor. The company floated on the Star Market, issuing approximately 18.9 million shares at RMB38.77 each. Dongxing Securities was lead underwriter.

SK Automation provides intelligent manufacturing technology for use in the production of cars and other vehicles in addition to automotive components. SAIC is among its customers, as are peers FAW and Geely.

5 Origin, a US-based printing technology provider backed by consumer electronics producer TDK, will be acquired for up to $100m by 3D printer manufacturer Stratasys. The company's shareholders will receive $60m in cash and Stratasys shares when the deal closes, and up to $40m in performance-based milestones over the next three years. The total figure will be made up of $45m in stock and $55m in cash, and Stratasys will pay at least $32m in cash once the deal closes.

Founded in 2015, Origin provides 3D printing hardware, software and liquid photosensitive polymer resins, enabling users to design and manufacture parts for mass-produced goods. Origin's Programmable PhotoPolymerization technology moulds resins into the user's intended dimensions.

6 Tianjin Ruixin Technology, a China-based aluminium product maker backed by automotive manufacturer BAIC, has floated in a RMB338m ($47.8m) IPO. The company issued almost 25.6 million shares on the Shenzhen Stock Exchange's ChiNext board priced at RMB12.26 each. They opened at RMB14.71 on their first day of trading and closed at RMB19.42.

Founded in 2014, Ruixin produces, sells and exports precision aluminium alloy-based products for apparatus such as medical equipment or automotive safety systems. The IPO proceeds have been earmarked for the bolstering of activities at a subsidiary Ruixin operates in the city of Changshu, Jiangsu. Guosen Securities was lead underwriter for the offering.

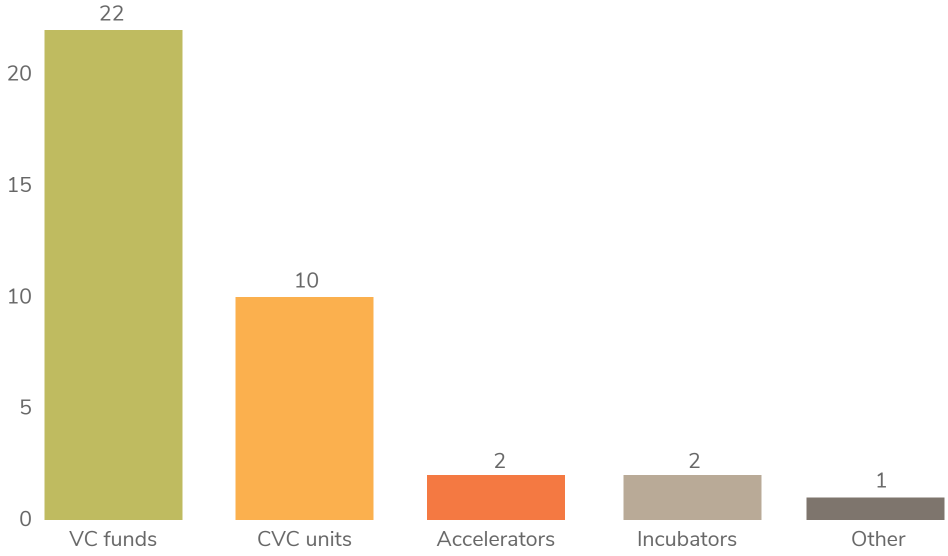
7 Construction services firm Hilti paid an undisclosed sum for the assets of Concrete Sensors, a US-based quality control sensor producer that has building materials supplier Cemex as an investor. The technology is expected to strengthen Hilti's digital construction product offering. Hilti will retain the existing pricing structure and keep Concrete Sensors' staff. Founded in 2015 as Structural Health Systems, the company supplies wireless sensors that can be submerged in liquid concrete to provide real-time data on its strength, temperature and relative humidity as it dries.

8 3D Hubs, a US-based 3D printing contract marketplace backed by media company Hearst, agreed to an up to $330m cash and shares acquisition by digital manufacturing services provider Proto Labs. The deal consisted of $130m in cash and $150m in Proto Labs common stock, with a further $50m contingent on performance-based milestones, split 50-50 between cash and common shares. Founded in 2013, 3D Hubs runs an online 3D printing marketplace where product suppliers can order custom-made parts fabricated to their specific manufacturing requirements.

The orders are fulfilled through 3D Hubs' vetted manufacturing partners in 20 countries. Proto Labs expects the acquisition to accelerate its revenue growth but has warned to expect marginal detriment to this year's earnings. The company will add 3D Hubs' partnerships to its existing collaborations to enable a broader range of manufacturing capabilities.

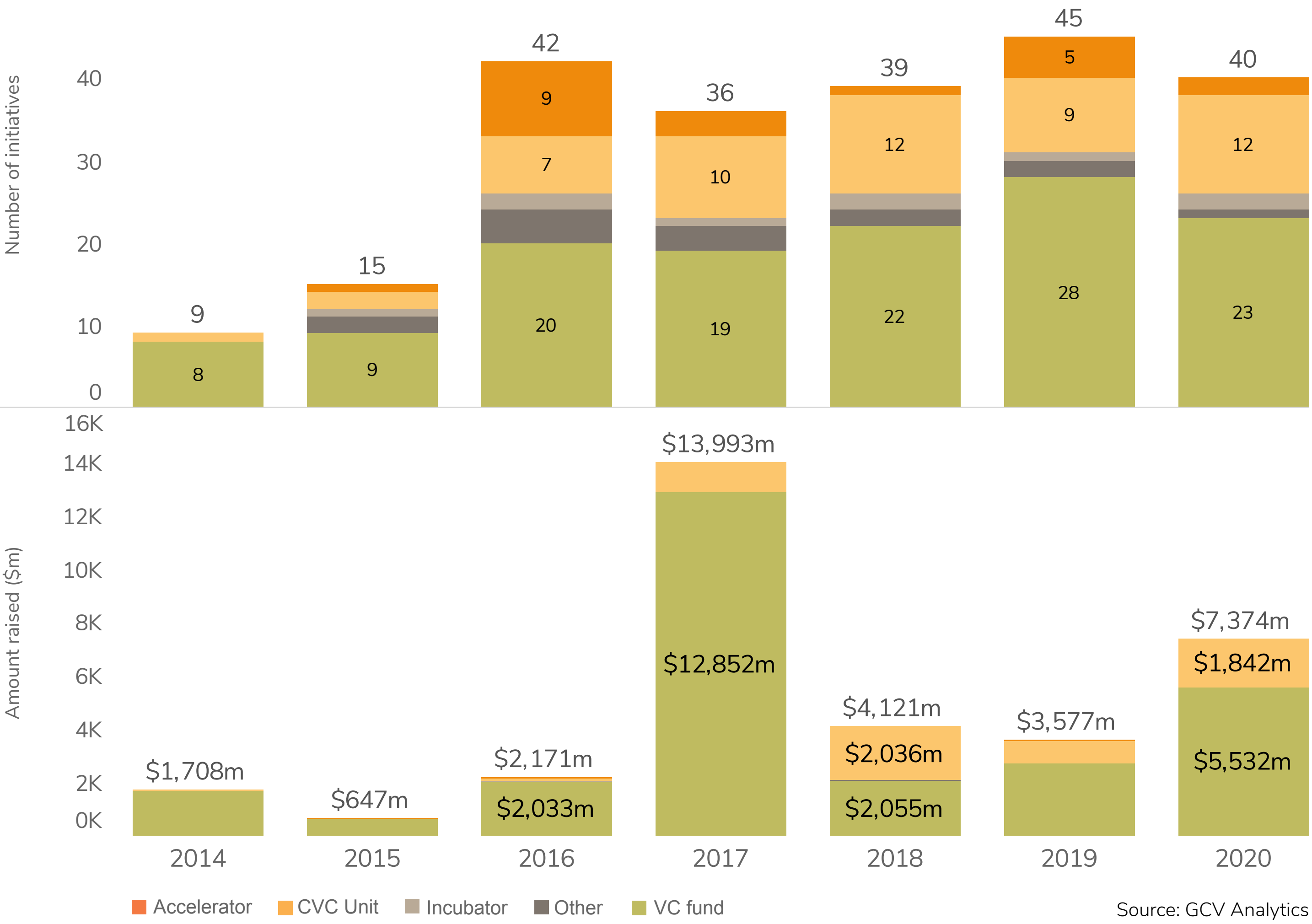
Funds

New funding initiatives



For the period between February 2020 and January 2021, corporate venturers and corporate-backed VC firms investing in the industrial sector secured $7.25bn in capital via 37 funding initiatives, which included 22 VC funds, 10 new or re-funded venturing units, two accelerators, two incubators and one other initiative.

Industrial sector funding initiatives



Source: GCV Analytics

On a calendar year-to-year basis, the number of funding initiatives in the industrial sector went down from 45 in 2019 to 40 by the end of last year. Total estimated capital more than doubled from the $3.58bn in 2019.

Top industrial funding initiatives (February 2020-January 2021)

Fund Name	Type	Funds Raised	Location	Focus	Backers
Climate Pledge Fund	VC Fund	$2bn	USA	IT, Industrial, Energy	Amazon
Unnamed Konka Fund	VC Fund	$1.45bn	China	IT, Industrial	Konka Group | Yancheng Government
Prosperity 7 Ventures	CVC Unit	$1bn	Saudi Arabia	IT, Industrial, Financial	Saudi Aramco
4+5 Fund	VC Fund	$920m	Japan	Industrial	SBI Group
LC Fund VIII	CVC Unit	$500m	China	Consumer, IT, Industrial, Health	Legend Holdings | undisclosed investors
Latin America Fund I	VC Fund	$200m	USA	Industrial, Services, Health	Axa | Blue Like an Orange Sustainable Capital | BNP Paribas | CNP Assurances | HSBC | MACSF | SG Insurance
UVC Partners III	VC Fund	$178m	Germany	IT, Industrial, Transport	FlixBus | Lanxess | Technical University of Munich
1868 Ventures	CVC Unit	$150m	USA	Industrial	Scotts Miracle-Gro | Touchdown Ventures
Conductive Ventures II	VC Fund	$150m	Japan	IT, Industrial, Health Financial, Transport	Panasonic
Bentley iTwin Ventures	CVC Unit	$100m	USA	Industrial	Bentley Systems

Source: GCV Analytics

1 US-based e-commerce, cloud computing and consumer device group Amazon launched a $2bn investment fund that looks to back developers of products that can support carbon reductions. The Climate Pledge Fund is targeting manufacturing, materials, transportation, logistics, food and agriculture technology developers as well as those engaged with clean power production and storage and those involved with the circular economy.

Amazon's business now encompasses its Amazon Web Services cloud offering and consumer devices Echo, Fire and Kindle as well as its e-commerce marketplace. The company has been a relatively active investor and its activities include contributions to a $600m round for autonomous driving technology developer Aurora Innovation in June 2019 and the $1.3bn round raised by electric truck developer Rivian six months later.

2 China-based consumer electronics manufacturer Konka Group has formed a RMB10bn ($1.45bn) industry fund in partnership with the municipal government of the city of Yancheng. Konka provided 40% of the capital for the fund, preliminarily named Konka Yancheng Electronic Information Industry Investment Fund, while Yancheng put up 59.9%. The other 0.1% came from an unspecified limited partner.

The fund is planned to debut with an allocation of RMB3bn and will target investments in developers of advanced machinery and materials semiconductor, artificial intelligence and internet-of-things technology. Founded in 1980, Konka produces televisions, audio equipment, tablets, power banks and large and small home appliances in addition to LCD-based screens, signs and video walls.

3 Saudi Arabia-based oil and gas supplier Saudi Aramco formed a $1bn corporate venturing fund, Prosperity 7 Ventures. Named after the first well that discovered oil in the Saudi Arabian desert, Prosperity 7 Ventures has a large focus on China (split about half and half with the US) under the overall direction of unit head Aysar Tayeb. The fund is designed to help Aramco diversify over the longer term from oil and gas into technologies such as industrial automation, robotics, artificial intelligence, 5G, the cloud, data and analytics, the internet of things and blockchain services, complementing Saudi Aramco Energy Ventures, the corporate venturing unit led by Mahdi Aladel.

4 Japan-headquartered financial services firm SBI launched a ¥100bn ($920m) VC fund. The vehicle was dubbed the 4+5 Fund due to its expected focus on technologies in the industry 4.0 space, where sensors and the IoT inform traditional hard industries, and Society 5.0, Japan's vision for a society that uses technology to solve new problems.

SBI has emerged as one of Japan's most notable corporate venturers. Although many of the country's largest financial services firms actively participate in the local startup space, it has made a concerted effort to make strategic investments in fintech developers such as Ripple and CurrencyCloud. The 4+5 Fund will invest in developers of technologies and products across the 5G, IoT, robotics and digital healthcare sectors.

5 Legend Capital, the VC firm spun off by China-based conglomerate Legend Holdings, closed its latest fund, LC Fund VIII, at $500m. The limited partners for the vehicle included undisclosed existing LPs as well as corporate investment funds, sovereign wealth funds, family offices and private pension funds. Atlantic-Pacific Capital was the placement agent.

Founded in 2001, Legend Capital now oversees about $8bn of assets under management from offices in Beijing, Shanghai, Shenzhen and Hong Kong in addition to Seoul. The firm focuses on growth-stage deals in areas such as advanced manufacturing, consumer internet, enterprise software, healthcare and deep technology.

6 Luxembourg-based investment firm Blue Like an Orange Sustainable Capital closed a Latin America-focused fund with limited partners including insurers Axa, BNP Paribas Cardif, CNP Assurances and SG Insurance at $200m. Financial services firm HSBC, pension fund MACSF and family offices for Ronald Cohen and Ray Chambers also made commitments to the Latin America Fund I along with undisclosed additional investors.

Founded in 2017, Blue Like an Orange concentrates on mezzanine financing deals supporting the United Nations' Sustainable Development Goals mandate. The firm has already invested more than $80m out of Latin America Fund I and concentrates on areas including access to finance for the unbanked as well as infrastructure-as-a-

BNP Paribas (Valmy offices pictured) invested in Blue Like An Orange

service, agricultural, healthcare and education technology.

7 UVC Partners, the Germany-based VC firm affiliated with Technical University of Munich (TUM), unveiled its €150m ($178m) third fund backed by limited partners including specialty chemicals producer Lanxess. The co-founders of mobility services provider Flixbus also invested in the fund, as did undisclosed institutional investors, family offices, corporates and family businesses. UVC Partners maintains a close relationship with UnternehmerTUM, the centre for innovation and business creation of TUM. They share leadership in Helmut Schönenberger, who is the chief executive of UnternehmerTUM and a managing partner of UVC Partners.

The third fund will continue focusing on European seed and series A-stage startups in the industrial technology, business-to-business software and mobility sectors. It will initially invest roughly between $590,000 and $4.7m, up to $17.8m in total per portfolio company.

8 US-based garden and lawn product maker Scotts Miracle-Gro formed a $50m CVC vehicle called 1868 Ventures in partnership with corporate VC services provider Touchdown Ventures. Scotts Miracle-Gro has a range of brands that offer lawncare and gardening products such as fertiliser, soil and nutrients, pest and weed control, and equipment for indoor or hydroponic gardening.

1868 Ventures will target technologies such as plant genetics, natural fertiliser and plant control products, sustainable packaging and systems that can support plant growth in controlled environments.

Portfolio companies will be able to access Scotts Miracle-Gro's expertise in areas like product development, marketing, retail and distribution. Partnership opportunities will also be available. The fund will be stage-agnostic but will generally make investments sized between $250,000 and $2.5m for a first deal, with capital reserved for follow-on investments. It is prioritising portfolio companies located in North America.

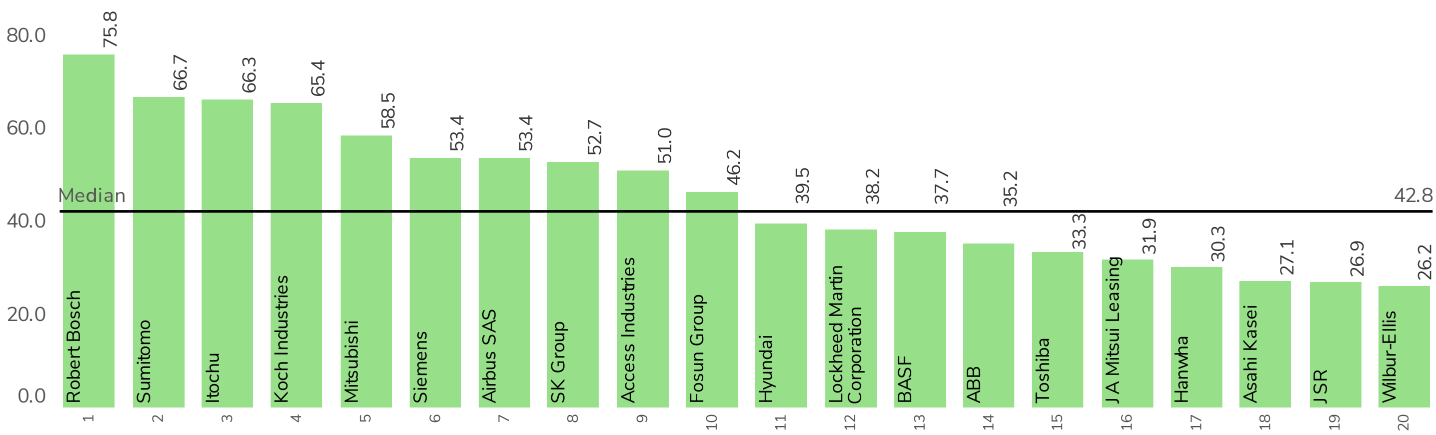
9 Japan-headquartered electronics producer Panasonic launched the $150m second fund for Conductive Ventures, the US-based growth equity firm it sponsors.

Conductive Ventures launched its first fund vehicle in April 2018 with $100m in capital provided by Panasonic as is its sole limited partner. The fund will invest in expansion-stage technology developers in areas such as artificial intelligence, digital health, advanced manufacturing, commerce, autonomous vehicles and financial technology as well as the future of work.

10 US-based infrastructure engineering software producer Bentley Systems launched a $100m CVC vehicle, Bentley iTwin Ventures. Bentley iTwin Ventures will fund developers that can complement its parent company's aim of digitising infrastructure management. It will make initial investments of between $1m and $5m.

The fund will be managed by Touchdown Ventures, which manages vehicles on behalf of companies such as packaged food producer Kellogg, garden and lawn product provider Scotts Miracle-Gro and mobile network operator T-Mobile.

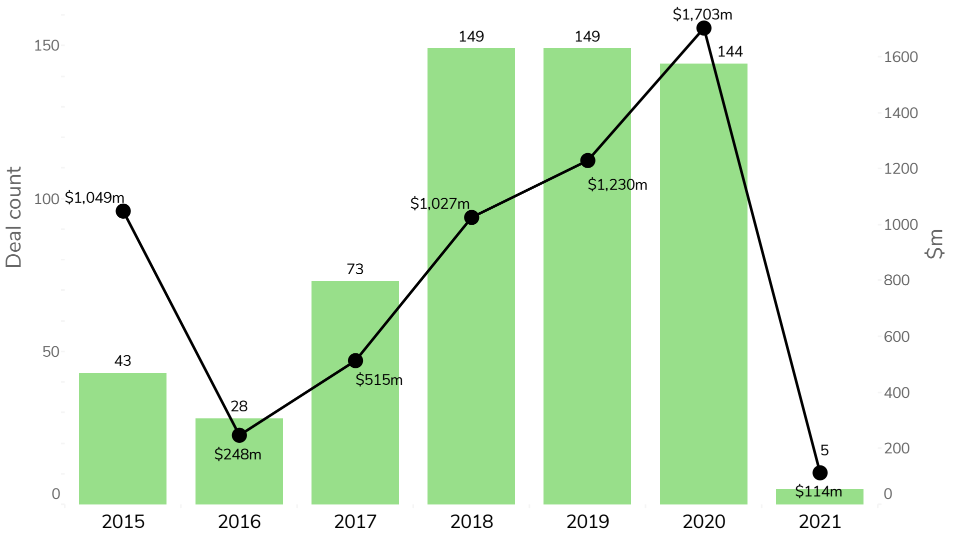
Power ranking



Source: GCV Analytics

Universities

Deals in university spinouts



Source: GCV Analytics

Over the past few years, we reported various commitments to university spinouts in the industrial sector through our sister publication, Global University Venturing. By the end of 2020, there were 144 rounds raised by university spinouts, only slightly down from the 149 registered in the previous two years. The level of estimated total capital deployed last year stood at $1.7bn, 38% higher than the estimated $1.23bn in 2019.

1 Jilin Oled Material Tech, a China-based electroluminescent materials producer affiliated to Jilin University, has floated on Shanghai Stock Exchange's Star Market in an RMB1.14bn ($168m) IPO. The offering included 18.3 million common stocks each priced at around RMB62.60. Around 6.2 million shares were auctioned to investors online, with 2.6 million reserved for strategic placement and 9.5 million subscribed to over offline investment channels. Founded in 2005, Jilin Oled Material Tech has more than 100 electroluminescent material products used by manufacturers of OLED optical devices such as digital displays.

2 Climeworks, a Switzerland-based carbon capture technology spinout of ETH Zurich, has closed a CHF100m ($110m) round following a $35m extension backed by undisclosed investors. The second tranche was followed an initial $75m investment from private investors in April 2020.

Founded in 2009, Climeworks markets modular, scalable carbon capture systems used by enterprises and organisations to remove CO_2 from the air surrounding their industrial plants to offset harmful emissions.

3 Flexiv, a US-based production-line robot manufacturer spun out of Stanford University, secured more than $100m in a series B round featuring local services portal operator Meituan Dianping and conglomerate New Hope Group. VCfirms Meta Capital, Plug and Play Ventures, Gaorong Capital and GSR Ventures also took part i, as did private equity firms Longwood Fund and YF Capital.

Founded in 2016, Flexiv has developed a manufacturing robot called Rizon, designed to perform intricate production tasks in multiple industries. It incorporates AI that helps it rapidly learn new functions and performance materials to stop it wobbling.

Flexiv's robot is designed to perform intricate tasks

People

Malin Carlstrom, a Global Corporate Venturing Rising Stars 2019 award winner, was promoted at ABB Technology Ventures (ATV), Switzerland-headquartered power and automation technology producer ABB's strategic investment arm. Carlstrom had been senior vice-president and head of investments for northern Europe and is now head of ventures, ABB Electrification The move came as part of a restructuring and decentralisation drive, and Carlstrom said in her LinkedIn profile she would now be "investing in startups and scaleups that align with the ABB Electrification vision of 'writing the future of safe, smart and sustainable electrification'". ABB's other business units cover industrial automation, motion and robotics and discrete automation. Those divisions will cover corporate venturing from their own resources rather than the centralised ATV, which will continue to support portfolio companies under Kurt Kaltenegger, Rene Cotting and Andreas Wenzel.

Erin VanLanduit, former managing director of food provider Tyson's $150m corporate venturing unit, joined US-headquartered agribusiness Cargill as head of corporate ventures. Cargill had made a series of strategic investments in companies such as pea protein maker Puris in the 2010s under Peter Hawthorne, having previously spun off its Black River investment unit. VanLanduit, a GCV Powerlist 2020 award winner, had spent a year at Tyson Ventures and was an observer on six of its portfolio companies. She had previously been director of business development for consumer product manufacturer SC Johnson's New Ventures unit.

Rita Waite, a former GCV Rising Stars award winner, has joined Semapa Next, the CVC arm of Portugal-based industrial conglomerate Semapa. Waite joined local bank Millennium BCP's payments team in early 2019 having previously been a VC investor for US-based electronics manufacturer Juniper Networks. Semapa Next invests from series A through to late-stage rounds. Its deals include taking part in a $50.5m series B round for machine learning technology developer DefinedCrowd in May 2020.

Dave Smith, former head of corporate venture capital and director of mergers and acquisitions (M&A) at US-based industrial glass maker Corning, joined cosmetics producer Estée Lauder (ELC). He has taken the role of senior vice-president for new business development and reports to Andrew Ross, executive vice-president for strategy, new business development and integration. His hire follows the promotion of Shana Randhava to run new incubation ventures. At Corning, where he was a GCV Powerlist award winner, Smith's deals had included View, Menlo Micro, SigmaSense, Luminar, and he has taken board seats at portfolio companies X Display and Versalume. Before joining Corning, Smith had been a senior director of mergers and acquisitions at e-commerce company eBay's global corporate development group for a year.

Norilsk Nickel, the world's largest miner of palladium and high-grade nickel, established a corporate venturing unit, Perspective Ventures, under Ivan Kuzmenkov. A former expert in innovation and energy saving at the Ministry of Energy of the Russian Federation, Kuzmenkov joined Norilsk Nickel in late 2017, just after the company said it would invest $17bn over seven years to reduce its pollution and modernise. Kuzmenkov became head of the company's innovation development office before launching Perspective Ventures to support startups, disruptive ideas and the technology sector.

John Wei, senior investment manager at Sabic Ventures, the corporate venturing arm of Saudi Arabia-based chemicals producer Saudi Basic Industries Corporation, left the unit to join tech company Applied Materials' corporate venturing unit, Applied Ventures. Wei, a GCV Emerging Leaders award winner, was responsible for Sabic Ventures' North America and Greater China investments over the past six years.

Sabic has also set up a separate vehicle called Nusaned Fund to invest in sustainability. Under chief investment officer Fahad Alnaeem, it has struck a joint venture with Germany-based Schmid Group to develop advanced rechargeable batteries, and with Suhul Alkhaleej to manufacture wood plastic composites.

Colin Steen left Switzerland-based agribusiness Syngenta's corporate venturing unit, Syngenta Ventures, to become CEO of US-headquartered seed producer Legacy Seed Companies. Steen had been managing director at the unit for more than two and a half years. He held a board seat at portfolio company Premier Crop Systems and a board observer role at Greenlight Bio. China government-owned ChemChina bought Syngenta for $43bn in a 2017 deal that represented the largest ever overseas acquisition by a Chinese company.

Albena Todorova, head of agriculture and food technology ventures at Sumitomo's European subsidiary, left for a summer sabbatical. In a blog post, Todorova said: "Just wanted to say a very big thank you to everyone who supported our small but brave team in the last [few] years — colleagues, partners, co-investors, entrepreneurs, everyone — your passionate and heartfelt support is amazing, and even the little we have done would have not been possible without you." Todorova had spent nearly three years as a director on the project after initially working as a business development executive for Sumitomo.

Netherlands-headquartered agriculture, food and transport conglomerate Louis Dreyfus Company (LDC) named Max Clegg as head of its newly formed corporate venturing vehicle, LDC Innovation. Clegg joined Louis Dreyfus in 2012 after five years at power and industrial equipment producer General Electric's financial services arm, GE Capital. He held two North America-focused roles from its New York office, initially as head of corporate development and mergers and acquisitions, before shifting to head of food innovation in 2019. LDC Innovations will concentrate on food and farming technology developers. The unit will operate under the corporate's innovations and downstream group, which will be overseen by Thomas Couteaudier, its Singapore-based chief executive for South and Southeast Asia.

US-based plumbing and pipe valves and fittings distributor Ferguson Enterprises named Blake Luse managing director of its investment arm, Ferguson Ventures. Luse had joined Ferguson in 2005 and held multiple sales and business development positions before helping form and run Ferguson Ventures in 2018 as a director at the unit. Global Corporate Venturing had selected him as an Emerging Leader a month before his promotion. Ferguson Ventures invests in companies at late seed-to-series C stage. Luse's promotion entails a senior director role at Ferguson which will involve Luse leading its overall corporate venture capital and innovation initiatives in addition to his duties at Ferguson Ventures.

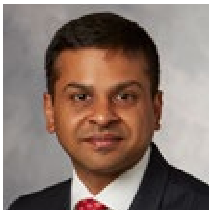
Diane Roujou de Boubée, formerly a CVC manager at France-based facilities outsourcing services provider Sodexo Ventures, joined local impact investing fund Citizen Capital as an investment director. Citizen Capital invests in seed and later rounds sized between €1m to €10m ($1.2m-$12m) for startups tackling social or environmental issues. Its portfolio includes OpenClassrooms, Ulule, RPur and Supermood. At Sodexo Ventures, Roujou de Boubée's deals included France-based carpooling service Klaxit and digital task outsourcer Isahit; self-checkout system developer A-Eye Go and corporate catering service platform Meican in China; and healthcare patient app developer Wellist in the US.

Stéphane Roussel, former managing director at Belgium-based chemicals producer Solvay's corporate venturing unit, Solvay Ventures, became a venture partner at European Circular Bioeconomy Fund (ECBF). Operating since 2005, Solvay Ventures manages a $100m global evergreen fund with a focus on sustainable resources, energy transition, health and well-being, and industry 4.0 technology under

Matt Jones in the US. Jones said Thomas Canova had stepped into Roussel's role to cover Europe with investment manager Peter Vanlaeke. Michael Brandkamp, former co-head of German state and corporate-backed early-stage investor High-Tech Gründerfonds set up ECBF in January 2020 and recruited Michael Nettersheim from Germany-based chemicals producer BASF's corporate venturing unit in April as the other managing partner.

Evonik Venture Capital, the corporate venturing subsidiary of Germany-listed speciality chemicals provider Evonik Industries, named Joseph Kowen as an Israel-based venture partner. Kowen is a business development consultant at professional services firm Wohlers Associates, where he offers advice on additive manufacturing and 3D printing technologies. Lars Böhnisch, an investment manager at EVC, said the unit is seeking to accelerate its deal flow in the Israeli innovation ecosystem, form strategic partnerships and explore investment opportunities covering coatings and additives, personal care, animal nutrition and additive manufacturing. EVC closed its second fund sized at approximately $170m in February 2019, and its portfolio includes Israel-based printing technology developers Castor Technologies and Velox.

Daniel Broger, head of corporate development, strategy and mergers and acquisitions at Switzerland-listed industrial group Orell Füssli, left to be replaced by Désirée Heutschi, former chief executive of consultancy Swiss Startup Factory. Founded 1519 as a book printer, Orell Füssli is now a diversified industrial and trading group with activities including bank note and security printing, book retail and industrial systems that are used in the individualisation of security documents and branded products. The company made its first corporate venturing investment under Broger in Switzerland-based Procivis, a developer of a digital identity verification product dubbed eID+. Heutschi took over from Broger as Orell's new head of corporate development, and a member of its executive board, at the end of 2020. She had been CEO of Swiss Startup Factory since 2019 and had previously worked for Microsoft Switzerland for 14 years.



Amit Sridharan, director of CVC in the US for diversified India-based conglomerate Mahindra Group, left to set up seed-stage VC firm First Rays Venture Partners. First Rays will invest in business-to-business enterprise technology developers in areas such as artificial intelligence, cloud-edge-data orchestration and automation. Its initial portfolio consists of Kleeen Software, Blitzz.io and Enya.ai. Sridharan said: "I do not have CVC backers yet, but it is something I will look into for fund II. I plan to work with CVCs in deals. Mahindra will be doing the management of the existing portfolio through the team in India as of now."

The Engine, the tough tech venture capital fund and incubator formed by Massachusetts Institute of Technology (MIT), appointed Sue Siegel as chairwoman of its board of directors. Siegel was chief innovation officer of industrial conglomerate General Electric and CEO of its corporate venturing subsidiary, GE Ventures, but stood down from both roles in July 2019.

A five-time GCV Powerlist award-winner and lifetime achievement awardee, Siegel has sat on the board of directors at The Engine since its inception in 2016. Siegel is also a lecturer at the Martin Trust Center for MIT Entrepreneurship, a co-chairwoman of the board of fellows at Stanford University's School of Medicine, and a board adviser for University of California's Regents Working Group on Innovation and Entrepreneurship. Her other duties include board appointments at University of California, Berkeley's Bakar BioEnginuity Hub and University of Southern California's Marshall School of Business in addition to genomics technology provider Illumina.

During her time at GE Ventures, Siegel supervised deals in areas including healthcare, IT, manufacturing and energy. She became CEO of the unit in 2013, the year after General Electric had appointed her to head up a health tech-focused innovation scheme called Healthymagination.

Annual survey results

Every year, Global Corporate Venturing asks the industry questions about investment priorities, strategies and fit with the corporate. We have broken out the Industrial sector answers and compared them with the Overall answers.

		Overall (n=141)	Industrial (n=21)
What is your priority, financial and/or strategic returns?	A mix of both strategic and financial	67%	71%
	Strategic returns mostly	23%	29%
	Financial returns mostly	9%	
How do you invest?	From corporate balance sheet with a dedicated unit	57%	52%
	Off corporate balance sheet with a dedicated unit	26%	24%
	From corporate balance sheet without a dedicated unit	11%	14%
	Off corporate balance sheet without a dedicated unit	3%	
If you have a fund structure, what type of fund structure is it?	Not applicable	55%	57%
	Separate legal entity and fully committed capitalB but fund rem..	23%	29%
	Separate legal entity and fully committed capital with significant ..	20%	14%
What would you define as an important strategic return?	Synergies and/or revenue and P&L impact for parent corporation	18%	33%
	Entering new markets and/or creating new business lines/units	11%	19%
	Innovation in product/service of corporate parent or help with stra..	9%	10%
	Market intelligence, insights and expertise	9%	5%
	Commercial partnerships/ contracts/collaborations	9%	5%
	Deploying/implementing new technology internally	7%	
	Optionality and access to potentially disruptive new technol..	6%	14%
	Combination of the above	6%	
	Acquistion of assets/companies	4%	
	Testing new business models	4%	10%

	Other	3%	
	Unclear comments	3%	5%
	Sustainable/environmentally-related goals	2%	
What is your overall CVC fund size?	Under $50m	23%	19%
	$51m - $100m	18%	29%
	$101m - $200m	15%	10%
	Other	9%	10%
	$301m - $500m	11%	14%
	$501m - $1bn	8%	5%
	$201m - $300m	5%	10%
	Over $1bn	4%	
In light of the pandemic and the economic challenges it entails, what levels of capital do you expect to have at your unit's disposal going forward?	Same as before pandemic	52%	48%
	More than before the pandemic	26%	38%
	Less than before pandemic	14%	14%
	Not sure yet	7%	
Of the deals your unit has backed, what percentage of those deals did your unit act as the lead investor (i.e. leading or co-leading setting valuation, key investment terms and leading negotiation process)?	Less than 25%	49%	43%
	Greater than 50%	25%	29%
	Between 25% and 50%	23%	24%
Do you help your corporation's M&A team identify and buy yours or other venture-backed portfolio companies?	No	26%	24%
	Yes	63%	67%
	Not applicable/Corporate parent does not have M&A division	8%	5%
Do you negotiate in your investments for specific rights related to a sale of the portfolio company?	No	62%	71%
	Yes, a right of first negotiation	11%	10%
	Yes, a right of first refusal	11%	10%

	Yes, a right of first offer	7%	
	Yes, a block right on a sale transaction	2%	5%
How many of your portfolio companies has your parent corporation bought?	None	56%	52%
	1 to 5 companies	32%	33%
	None yet but expected to acquire at least one when portfolio matur..	6%	10%
	11 or more companies	2%	
	6 to 10 companies	1%	
What percentage of the founders/co-founders of your portfolio companies come from a diverse ethnic background (i.e. different from the predominant in the country where you are based)?	25% or fewer	48%	38%
	26% to 50%	27%	19%
	76% or more	11%	24%
	51% to 75%	11%	19%
Do you actively take LP stakes in other VC funds?	No	51%	48%
	Yes	47%	52%
How many LP stakes in funds do you hold?	None	35%	43%
	3 to 5	25%	24%
	2	12%	10%
	1	11%	
	6 to 10	8%	24%
	More than 10	6%	
What is your portfolio worth compared to original invested amount by multiple?	101% to 150%	30%	38%
	151% to 200%	21%	24%
	201% to 300%	13%	5%
	51% to 100%	8%	14%
	0 to 50% of invested capital	6%	5%

	301% to 500%	4%	5%
	501% to 1000%	1%	
	More than 1000%	1%	
What is yourB net internal rate of return (IRR) on the portfolio?	11% to 20%	21%	24%
	21% to 30%	14%	19%
	31% to 40%	11%	5%
	6% to 10%	9%	10%
	0 to 2%	5%	10%
	3% to 5%	5%	5%
	A negative IRR	4%	10%
	41% to 50%	3%	5%
	More than 50%	3%	
What is the loss rate of your fund (i.e. the percentage of investments that fail to return the capital invested)?	30% or lower	62%	67%
	31% - 50%	11%	29%
	51% B - 75%	1%	
	76% or higher	1%	
Which C-level executive does the head of your unit report to?	CEO	30%	24%
	CFO	17%	19%
	Chief Innovation Officer	14%	24%
	Head of R&D	1%	10%
	Head of corporate development	10%	10%
	Head of strategy	18%	24%
	Chief Technology officer	9%	14%
	COO	3%	5%

	Chief Information Officer	1%	
	Chief Marketing Officer	1%	5%
In terms of the compensation of all employees, in addition to base salary and cash bonuses, what other incentives are there in your CVC unit/investment department?	Only corporate stock	33%	29%
	None of the above	31%	43%
	Other	5%	5%
	Shadow/phantom carry only	6%	10%
	Only carried interest ("Carry"") shared with the team	6%	5%
	A combination of corporate parent's stock and carried interest	1%	
What is the male-to-female ratio in your team?	Majority male	49%	52%
	Relatively even	28%	24%
	All male	11%	24%
	Majority female	4%	
What percentage of your investment unit's employees are from a diverse ethnic background (i.e. different from the predominant in the country where you are based?	25% or fewer	49%	62%
	26% to 50%	26%	10%
	76% or more	10%	19%
	51% to 75%	7%	10%

For more from this year's edition of the definitive guide to the CVC industry, click here.

New Course Launched

Global Corporate Venturing **Institute**

ESSENTIALS FOR ENTERPRISE

Institute research shows that successful CV programs wield the power of broad, multi-level internal stakeholder networks to deliver value for both parent and portfolio. But CV teams cannot assume that the shifting landscape of Business Units, Innovation, R&D and other parent partners appreciate how a CV program will address their objectives or understand what it takes to engage startups effectively. Establishing and maintaining common CV language and industry context is critical for effective parent relationships that drive CV program impact and staying power.

About the Course

Essentials for Enterprise is an interactive introduction to corporate venturing and innovation partnering, using self-paced and live online delivery, expert stories/ resources, and peer interaction to maximize learning. The course illustrates high value parent/BU and CV program partnerships by interweaving key industry terms and concepts in expert stories that address both the benefits and requirements of these partnerships. The goal is to tell the end-to-end corporate venturing story from different perspectives, integrating CV teams, parent partners and startups to pull the thread all the way through.

Who Should Attend

- **CV teams planning to start Corporate Venture BD (CVBD)/Portfolio Development** for parent engagement, new CVBD professionals
- **Parent BU and functional managers** who need to understand CV basics to build effective CV team and startup partnerships that deliver on business priorities
- **Shared services professionals** who provide specialist support to CV investment and innovation partnering activities and need to understand why venturing is different

QUICK FACTS

Format:

- Two live online sessions, self-paced content, and quizzes
- Core content illustrated by industry models, Expert videos, Q&As
- Interactive peer breakouts, group networking sessions

Resources:

- Learning Management System to guide self-paced elements and access to resources
- Robust library of videos, articles, case studies, actionable tools and templates

Time Commitment: 6-8 hours

Community:

- Alumni network of peers and experts
- Invitation-only alumni networking at GCV global events (online and face-to-face)

Customization: Option to integrate CV program-specific content for in-house delivery

Pricing: $900 per participant or $750 per participant for groups of 3 or more (additional group discounts available)

To Register: Class size is limited. Contact info@gcvinstitute.com to register and reserve space for your team

Global Corporate Venturing **Institute**

Outcomes: Enabling CV Program Innovation Impact

- **Streamlined Communications:** Shared knowledge of CV value, process and language
- **Parent Partner Commitment:** Shared responsibilities for CV program business impact
- **Startup Savvy:** The why, when, and how for parent engagement with startups
- **Partner Ready:** Wiring the parent for maximum CV program and startup leverage

WHAT ARE THEY SAYING ABOUT THE COURSE?

"The course made us see that even our core CV team (not to mention the parent) was not communicating effectively—we all had different understandings of terms we use everyday."

"It was really eye-opening for me as a parent partner to understand the bigger CV picture and to see opportunities for me to both influence CV investment strategy and engage with the portfolio."

Essentials for Enterprise: Core Content

About Corporate Venturing
- What is corporate venturing?
- Value of parent and CV program partnership

About Startups
- Why work with startups?
- Startup mindset & characteristics
- When to engage with startups

Startup Partner-Readiness
- Key success factors and watchouts
- Wiring the corporation for change
- Startup/VC partner-readiness checklist

End-to-End CV Investing
- Venture investment cycle overview
- Aligning investment and partnering activities

Visit **gcvinstitute.com** or email us at **info@gcvinstitute.com** to learn more.

Feature

Innovation and digitisation mean healthcare is at a tipping point

> Artificial intelligence driving disease prevention
> Digital health enables personalised medicine
> Investment takes off

Liwen-Edison Fu
Supplements editor

The novel coronavirus first discovered in the Chinese city of Wuhan in December 2019 has shaken the world like no other pathogen this century. The spread of the virus, now called SARS-CoV-2, and the associated covid-19 illness affected the healthcare systems around the world and other aspects of daily life including education, entertainment, work and socialising.

Vaccine development, which typically involves a lengthy and intricate process, has accelerated in the past year, with different healthtech and biotech ecosystem builders attempting to produce an effective candidate to help deliver a world free from the disease. Two RNA vaccines in particular have been widely authorised by health regulators: the Pfizer-BioNTech and the Moderna vaccines, with over 90% and 94% efficacy, respectively.

RNA vaccines introduce a messenger RNA (mRNA) sequence into the body for the cells to produce the antigens to spark an immune response – mRNA is a family of molecules that deliver genetic code from the DNA to the ribosome, telling it how to link amino acids. This is different from some traditional inoculations that would use a weakened or inactive version of the viruses. The RNA technology enables vaccines to be made more quickly from the pathogen's genetic information.

Pfizer-BioNTech's vaccine, named tozinameran, was developed by Germany-based immuno-oncology therapy developer BioNTech in association with US-headquartered pharmaceutical firm Pfizer.

Spun out of Johannes Gutenberg University Mainz in 2008, BioNTech initially focused on personalised cancer treatments before it began working on novel mRNA technology in early 2020, in the wake of the disclosure of the SARS-CoV-2 genetic sequence. The company was backed by Pfizer and fellow pharma groups Eli Lilly and Sanofi before it went public on the Nasdaq Global Select Market in 2019.

Moderna, on the other hand, had been concentrating on mRNA therapeutics since it was incubated by venture capital firm Flagship Ventures in 2010. Its jab against covid-19 is formally called mRNA-1273 and was developed with the United States National Institute of Allergy and Infectious Diseases and the Biomedical Advanced Research and Development Authority.

It counted pharmaceutical conglomerates AstraZeneca, Merck & Co and Alexion among its shareholders before it raised roughly $604m in an initial public offering on the Nasdaq Global Select Market in late 2018, which was – and remains – the largest for a biotech company.

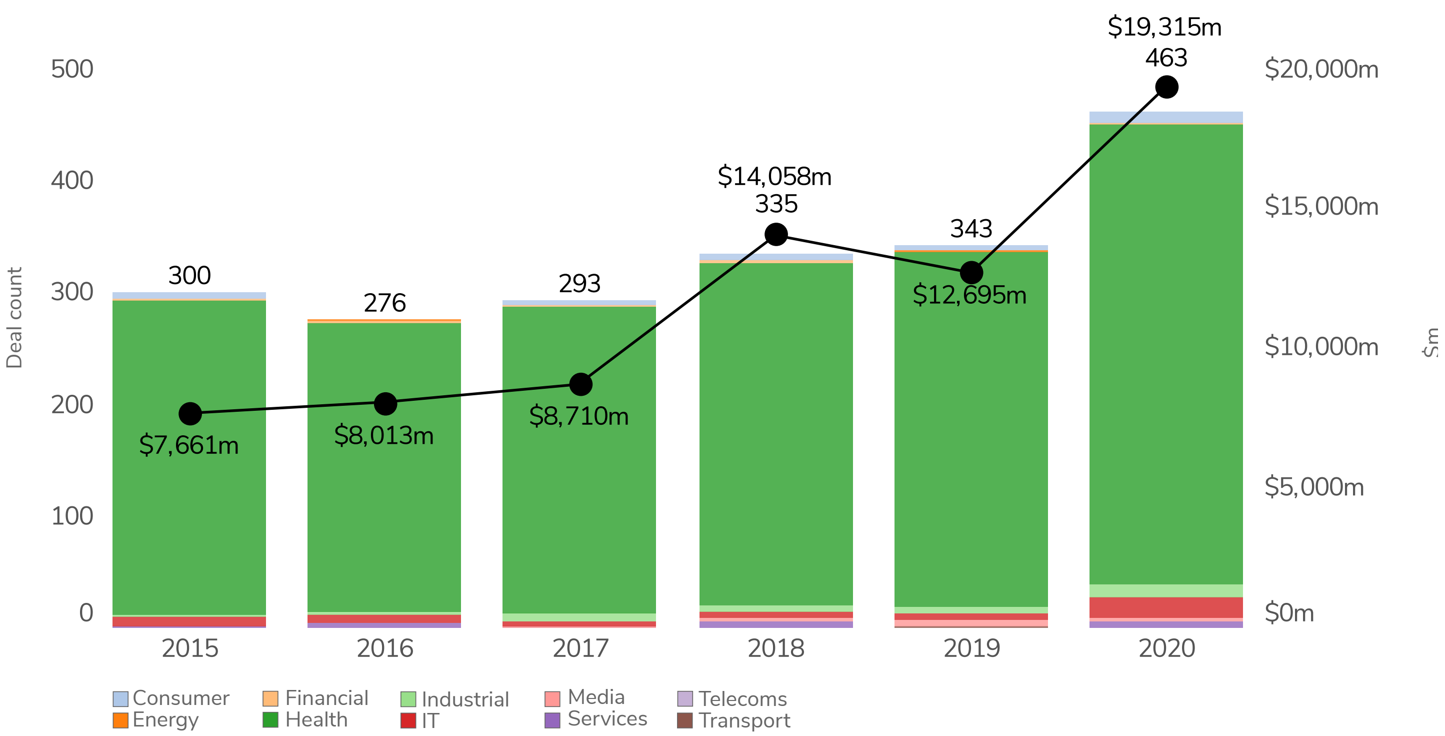
But while the big drugs companies are excited by mRNA to tackle viral diseases, they are also looking at how digital technologies and artificial intelligence (AI) can help them uncover ways to treat other common diseases, such as cancer, Alzheimer's and diabetes, which have historically often been bigger killers than viruses, such as flu, measles and chicken pox.

UK-based Exscientia recently raised $100m in its series C round to develop its AI drug discovery platform, CentaurAI, used by Bristol Myers Squibb, Sanofi, Bayer and Dainippon Sumitomo, among others, to tackle diseases. Mutual fund manager BlackRock joined the C round alongside corporate venturing units from Novo, Evotec and Bristol Myers Squibb.

Andrew Hopkins, CEO of Exscientia, said: "BlackRock's investment is an important step in our vision that all drugs will be designed by AI".

As trade paper Fierce Biotech said: "Exscientia differentiated itself from other AI-enabled drug discovery shops in its early days through algorithms that actually design novel molecules – rather than just screening for hits or assisting in the design process – and with its commitment to hiring experienced drug hunters to use its platform. Andy Bell, co-inventor of

Deals backed by health sector corporates



Source: GCV Analytics

Top exits of health corporates 2015-20

Location	Sector	Round	Exit size ($m)	Backers' list
USA	Health	Acquisition	9,800	Artis Ventures | Fidelity | Founders Fund | Silicon Valley Bank
USA	Health	Acquisition	8,000	Ally Bridge Group | Alphabet | Amazon | Arch Venture Partners | Bezos Expeditions | Blue Pool Capital | Bristol-Myers Squibb | Canada Pension Plan | Celgene | China Merchant Securities International | CRF Investment | Decheng Capital | Hillhouse Capital Management | HuangPu River Capital | ICBC International | Illumina | Johnson & Johnson | McKesson Corporation | Memorial Sloan Kettering | Merck & Co | Milky Way Ventures | private investors | Public Sector Pension Investment Board | Sequoia Capital | Sutter Hill Ventures | Tencent | Varian Medical Systems | WuXi AppTec
USA	Health	Acquisition	2,750	Adage Capital Management | Arix Bioscience | Chiesi | Cormorant Asset Management | Decheng Capital | Farallon Capital Management | Foresite Capital | Janus Henderson Investors | Johnson & Johnson | Logos Capital | Matrix Capital | OrbiMed Advisors | Pappas Capital | Sofinnova Partners | Surveyor Capital | T Rowe Price | Takeda | VenRock | Viking Global Investors | Wellington Management
USA	Health	Acquisition	1,900	Allen & Company | Alphabet | Baillie Gifford | Casdin Capital | First Round Capital | Great Oaks Venture Capital | IA Ventures | Laboratory Corporation of America (LabCorp) | Social Capital | SV Angel
USA	Health	Acquisition	1,400	ArrowMark Partners | Boulder Ventures | Driehaus Capital Management | Longwood fund | PBM Capital Group | Peierls Foundation | Perceptive Advisors | Qiagen | Redmile Group | Sands Capital | Soleus Capital
USA	Health	Acquisition	1,250	Celgene | Kleiner Perkins | The Column Group
USA	Health	Acquisition	1,200	Apple Tree Partners | Baxalta | Partners Innovation Fund
Switzerland	Health	Acquisition	1,110	Forbion Capital Partners | Merck KGaA (M Ventures) | Seroba Kernel Life Sciences | Sunstone Capital | Ysios Capital Partners
USA	Health	Acquisition	1,100	Johnson & Johnson | New Enterprise Associates | Quilvest

Source: GCV Analytics

Pfizer's Viagra, was an early big-name hire."

It was the latest in a series of large rounds for AI drug discovery platforms in the past year.

In the same week, Genomics, another UK-based precision healthcare technology developer backed by drug manufacturer Vertex Pharmaceuticals, closed a $30m funding round. Founded in 2014 out of University of Oxford, Genomics has developed a machine learning-powered genomic analytics platform that determines the risk of individuals for common diseases before they manifest.

Apart from delivering its population health management services and clinical decision support tools, the company also uses its insights to support the discovery and development of treatments.

US-based medical diagnostics technology developer Paige in January secured $100m in a series C round co-led by medical products group Johnson & Johnson's investment arm, Johnson & Johnson Innovation – JJDC.

Leo Grady, Paige's CEO, said: "Paige is building a transformational portfolio of computational pathology products to serve clinical needs and drive precision medicine. This investment reaffirms the vast potential of the Paige platform for clinical and biopharmaceutical drug development applications.

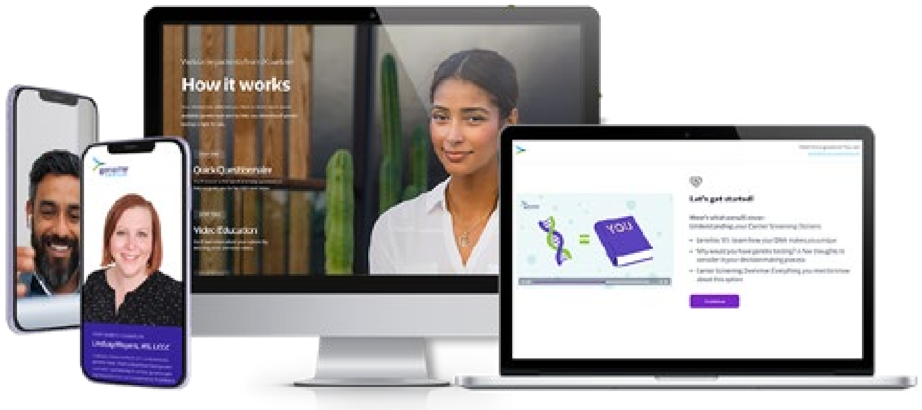
"These funds will enable us to build additional AI-based products within and outside of oncology, deliver these products to laboratories and clinicians globally and invest in our talent across engineering and commercial functions."

In September, Germany-based pharmaceutical and agricultural product manufacturer Bayer invested $50m to lead a $239m series D round for US-based drug discovery technology provider Recursion.

Recursion is combining automation and machine-learning technology with what it claims is the largest biological image dataset in the world to discover drug treatments for a range of conditions, including cancer and genetic disorders such as neurofibromatosis or GM2 gangliosidosis.

Bayer's investment was made in connection with a strategic partnership deal that will involve it using Recursion's platform to discover treatments for fibrotic diseases affecting the lungs, kidney and heart.

Juergen Eckhardt, head of Leaps by Bayer, said: "With a pipeline of over 30 programmes ranging from early discovery to clinical stage, including four clinical stage assets, Recursion is defining and leading technology-enabled drug discovery and has the potential to help enable new curative treatments in a large spectrum of disease areas and discover therapeutic candidates for intractable diseases."



Samsung bought Genome Medical, a telemedicine platform

In August, US-based drug discovery technology provider Atomwise completed a $123m series B round that included internet group Tencent and two undisclosed insurance firms joining co-lead investors, B Capital Group and the Saudi state-owned Sanabil Investments.

Abraham Heifets, Atomwise's co-founder and chief executive, said: "Over the past three years, our platform AtomNet has tackled – and succeeded – in finding small molecule hits for more undruggable targets than any other AI drug discovery platform.

"With support from our new and existing investment partners, we will be able to leverage this to develop our own pipeline of small molecule drug programmes, further grow our portfolio of joint-venture investments and realise our vision to create better medicines that can improve the lives of billions of people."

In May, US-based drug discovery technology developer Insitro received $143m in series B funding from investors including subsidiaries of internet and technology group Alphabet, pharmaceutical firm WuXi AppTec and life sciences real estate investment trust Alexandria Real Estate Equities.

Insitro, which has a strategic collaboration with biopharmaceutical company Gilead Sciences dating back to the previous year, has created a drug discovery platform that utilises uses learning and bioengineering technology to compile huge datasets that are used to locate promising drug targets for liver and central nervous system diseases.

Chen Zhou, a senior associate for Samsung Catalyst Fund (SCF), South Korea-headquartered consumer electronics producer Samsung's strategic investment vehicle, said two areas are of significant interest in 2021: "As the sequencing cost continues to decline, we believe healthcare will become increasingly data-driven which represents a massive opportunity for genomic care and precision medicine services.

"In the next few years, early cancer detection based on liquid biopsy will be cheap enough that everyone over the age of 50 will get sequenced as part of their annual check-up. We are very excited for our portfolio company Genome Medical, which is trying to democratise access to genomic care through its telemedicine platform.

"Another trend we are seeing is that automation and computational biology have become an increasingly important part of biopharma's research and development workflow. In particular, massive parallelisation of lab experiments is being enabled by semiconductor technologies, which generates orders of magnitude more data to be analysed by AI than before. The large datasets not only unveil novel insights on the drug targets but also enable rapid screening and rapid iterations of experiments.

"This accelerated feedback loop is dramatically reducing the development timeline and increasing the likelihood of success. For example, Berkeley Lights is enabling biopharmas to study and manipulate thousands of cells in parallel at a single cell level through its highly automated system and its opto-nanofluidic chips. We believe we will continue to see more companies emerging in this space."

For more on corporate venturing in healthcare, see our Global Healthcare Council supplement

Comment

Best practices in corporate venture capital

- Secure buy-in from the top
- Build your team with innovation and investment staff
- Choose which stage to focus on

By Amy Burr
Managing director, JetBlue Technology Ventures

Since 2011, the number of corporate venture capital firms has grown five times globally. Yet with the average lifespan of a CVC falling just under four years, we share the unique challenge of continually demonstrating long-term value to our parent companies.

This statistic was not lost on me as JetBlue Technology Ventures (JTV) passed its five-year anniversary last month. The main lesson learned from our half-decade of operation is to know your purpose. Everything must start with "why", and from there, the rest will begin to fall into place. We wanted to share what we have learned – our best practices – with the community.

1 Engage with the right stakeholders

Relationships are the key driver to a corporate venture firm's longevity. Most importantly, the relationship between a CVC and its parent company is foundational to success.

One of the most reliable ways to kickstart successful relationship building is to secure buy-in from the top. An executive champion not only emphasises the importance of your firm, but also contributes momentum that filters throughout the rest of the company. JTV has support from not only the executive team at JetBlue, but also the board of directors. With that level of endorsement, we are able to build trust internally, further increasing value for both our startups and JetBlue.

2 Structure your team well

To further strengthen the relationship between your CVC firm and parent company, it helps to structure your team with equal parts investments and innovation programming. At JTV, we have an operations team that provides the in-depth industry knowledge needed to give context on many of our startups, while our investments team has the financial expertise to negotiate deals. This configuration allows both parties to work in tandem for the betterment of JetBlue. Both teams combined their efforts last year to run a startup demo day exploring contactless technologies that could help JetBlue.

3 Invest at the right stage

Once your team is established, you will need to choose the right stage to invest. Our model, and what we suggest to other CVCs, is to evaluate startups using three time horizons:

> Near-term (zero to two years): This stage is ideal for trials.
> Mid-term (two to five years): CVCs can rely on domain expertise to determine that a startup will soon be impactful.
> Long-term (five-plus years): These are industry disruptors.

Choose an ideal mix of deals in each horizon according to what your parent company needs. In JTV's earlier days we focused on pre-seed companies, but through years of experimentation, we discovered that seed, Series A and Series B are better areas of focus for us – not too early, and rarely too late! The rationale being that when a startup is just getting off the ground, it is difficult to provide strategic returns to our parent company, which is an important factor in deciding whether or not to fund it! JTV invested in i6 early last year during its Series A funding round, and the startup's refuelling technology is already being deployed at several JetBlue cities.

4 Add value beyond money

CVCs are most successful when acting as a strategic investor. This includes connecting their portfolio companies with knowledge and resources that increase their odds of success.

At JTV we formalised our support processes for our value-add activities with two core initiatives. Our platform offers support beyond our initial investment, while our international partnership programme increases the speed of adopting innovations in the industry. We recently held our annual Partnership Summit to introduce Air New Zealand, Vantage Airport Group, CAE and JetBlue to emerging startups focusing on data use cases in the travel space.

5 Pilot everything

The best way to ingest emerging technologies in our business is through trials. These initial pilots offer a first-hand look at the real-world impacts of new products and services on a travel company. Trials are free or low cost and an easy way to test a product's feasibility at any corporation. If it fails, no sweat; it is better to learn now than later. If it is a success, we move forward with implementation, providing further value to both our parent company and our startups. In 2018 JTV worked with JetBlue to pilot ClimaCell, a weather technology company that generates minute-by-minute weather predictions. Now, the startup is implemented across our network to help improve our ground crew's ability to make weather-related decisions!

Corporate venture provides a front-row seat to the future of your specific industry. When applied intelligently, this type of knowledge can make the parent company more competitive and nimble in the face of Industry disruption.

Eventually, with enough time, commitment, and follow-through, your stakeholders will view you as an invaluable asset. Invest your time, along with your money, and your impact will move from linear to exponential.

How to make the right long-term bets on innovation at a time of rapid change

- > Seek new metrics and signals
- > Manage for multiple future
- > Experiment and validate

By Vanessa Colella
Chief innovation officer, Citi

David Kidder
Co-founder and CEO at Bionic

Until recently, technology, behaviour and society changed relatively slowly. Though immediate circumstances shifted constantly, the underlying evolutions that have transformed human life at scale largely unfolded at a steady pace. In the age of covid-19, however, that evolution is accelerating and companies seeking to grow through this time need to accelerate their pace of innovation to stay ahead.

From a dramatic increase in remote work to new consumer behaviours, market volatility and small business closures, the pandemic has upended the business community and made it hard to predict what the world may look like in the next six to 12 months. Even as vaccinations begin around the world, the rapid pace of disruption seems likely to continue well into 2021. In this environment, businesses must make innovation a key and immediate priority. With years-long transformation efforts accelerating to weeks and the low-touch economy emerging as a potential new normal, business leaders across all industries and regions must lay the groundwork now for an unpredictable future.

The question is, how? Amid such rapid and powerful shifts, how can leaders identify and act on the trends that will last in a world that may look quite different from today's? Here are a few ways that business leaders can prepare their organisations to operate on the edge of change.

Seek new metrics and signals

As the pandemic stretches on, it is harder to trust the traditional metrics of business success. With investors fleeing to safety and consumers at least temporarily adopting covid-safe behaviours, such as online shopping and digital banking at scale, generally reliable indicators including sales revenue and user adoption may mask a company's longer-term vulnerabilities.

With so many rapidly shifting externalities at play, business leaders should not take current returns as indications of future success. On the contrary, they should anticipate renewed competition post-pandemic and invest in innovation now to prepare. Companies experiencing covid-related growth in particular should capitalise on their strong market positions to start exploring new "jet streams" for future growth and should look beyond 2020 earnings for signals that they are on firm and sustainable footing.

Until those signals become clear, we advise business leaders to consider multiple possibilities at once.

Manage for multiple futures

As long as the pandemic and its side effects persist, business leaders need to prepare for as many potential outcomes as possible. This goes beyond scenario analyses and financial planning to adapting their business models and exploring new opportunities.

For a small business, that may mean seeking to expand your client base or range of products and services. By tapping into new markets and offering variants of traditional products and services, small businesses can position themselves to embrace whichever future arises. For example, Bionic has broken our top-to-bottom enterprise Growth Operating System into smaller components that we can offer to clients in ways that fit their pandemic-restricted budgets and timelines. Even if these efforts do not make short-term economic sense, they present viable long-term growth strategies through customer engagement and retention.

Meanwhile, large brands may be able to go a step further by expanding their portfolio of bets and standing up new businesses within their enterprise. These businesses can be tailored to one potential future or another, with a mandate to develop new products and services for that future as if it were guaranteed to manifest. If it does, the company can divert more resources to that business and capture the market in its early stages – if it does not, they can unwind the business and shift focus to those that show greater potential.

In certain cases, managing for multiple futures may require companies to change or even abandon their core business if it no longer serves their customers. The tradition in business has long been to "stick to the core in a storm", shedding innovation programmes and consolidating around central functions. However, that plan will backfire if the core no longer fits the world around it, so businesses at the edge of change may need to be ready to jettison their core well before they are comfortable doing so.


Vanessa Colella


David Kidder

> *"[Business leaders] should anticipate competition post-pandemic and invest in innovation now to prepare"*

Experiment and validate

With the stakes so high and so many conflicting signals flying around, how then can businesses find and capitalise on the signals of lasting change as they emerge?

The answer lies in the twin pillars of innovation: experimentation and validation.

As we have noted, now is a good time for businesses to experiment with as many new initiatives, teams, and solutions as they can. Honing in on one or two ideas is a risky proposition – only by "blanketing the forest" with experiments can leaders see the full range of potential signals start to emerge. These experiments do not need to be to be revolutionary – in fact, it is best to start small and build on those that show promise – but they need to be distinct enough that they can help identify signals leaders may otherwise miss.

Once the experiments have begun to distinguish the range of signals, companies can begin validating each signal for substance and sustainability. Through interviews, market research, and other methods, companies should strive to understand both what their customers need now and what they will want in the future — then work in parallel to simultaneously meet current needs and prepare for next steps.

In addition, it is unwise nowadays to validate a signal once and assume it will persist. Instead, companies should continuously validate (or invalidate) each signal to determine if its strength is increasing or diminishing and should remain flexible enough to pivot if one signal disappears and another emerges. The signals that burn brightest will light your company's path forward, if you have put the pieces in place to follow them.

At the edge of change, whoever spots the North Star and finds their way out of the forest first wins.

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How to bypass the usual operational pitfalls of CVC

> Corporate venture activity has risen in the pandemic
> CVCs struggle without local knowledge
> Encouraging collaborations will pay dividends

By Carol Strobel
Operating partner at Redpoint eVentures, Brazil

The fifth Corporate Venture in Brasil conference, organised by Global Corporate Venturing and Apex-Brasil, is expected on October 17-20, subject to covid-19 restrictions.

In 2015, former Cisco chief executive John Chambers famously predicted that about 40% of the leading global companies would not survive through 2025. Corporate venture capital (CVC) has emerged as a strategic way for large organisations to stay ahead of the curve and beat the innovation paradox that could lead to their extinction.

A growing number of global investors – both VC firms and corporate venture arms – have been betting on the innovation ecosystem in Latin America recently. Corporate venture activity has continued to rise in the region during the pandemic with more than a quarter of deals having a CVC investor by the third quarter of 2020, according to data from GCV.

Active CVC funds in the region include brands such as Google, Cisco, Microsoft and Qualcomm. In Brazil, corporate venturing projects are multiplying, although there is still plenty of room to grow. Among the companies that invest in this strategy, two-thirds are multinationals with headquarters in the country. They see this form of investment as an opportunity to expand into new markets.

Financial-sector giants such as Banco do Brasil, Bradesco, BTG, Itaú and XP are among the businesses that most frequently bet on corporate venture in Brazil, in addition to large retailers, such as Magazine Luiza, and health-related companies such as Dasa (DNA Capital) and Fleury's new venture partnership with Sabin (Kortex Ventures). Not coincidentally, these organisations are leaders in some of the most mature sectors in Brazil's burgeoning innovation ecosystem.

This rise in CVC makes a lot of sense. It lets large public companies invest in more research and development and riskier, moonshot projects led by startups, usually off the balance sheet.

However, despite the many benefits larger companies can gain through more nimble, ingenious approaches and methodologies that are synonymous with startups, corporate venture funds often suffer some common challenges that stymie innovation's progress.

"Without the local know-how and relationships, CVCs without local presences often struggle to get the best deals"

The pitfalls

The usual pitfalls include a lack of flexibility or unwillingness to consider doing things differently, too much due diligence and bureaucratic processes that simply take far too long, in addition to deal negotiations that are too difficult because they are not always focused on long-term relationships like VCs.

Due to these challenges, more CVC funds have been partnering with VC firms on the ground in Latin America because the setup of a strong investment team requires a lot of skill and time that large corporations would prefer to bypass. Without the local know-how and relationships, CVCs without local presences often struggle to get the best deals.

Private and public entities are coming together to catalyse rapid innovation that benefits society through new investment partnerships between the government, corporations and VC firms. For example, Qualcomm's recent efforts to boost Brazil's internet-of-things technology prowess is a winning strategy because Qualcomm stands to benefit tremendously from the joint venture's output. Brazil is one of the leading global markets for internet and social media as we move rapidly forward to a world powered by 5G.

Encouraging more connections and collaboration between corporate giants, startups and government agencies is a sure-fire way to continue building the tech innovation ecosystems in Brazil and other leading markets in Latin America such as Colombia and Mexico. It will help transform the corporate mindset for a digital world that is accelerating in the region, while bringing it closer to the more agile model of startups and relationship-focused VC firms.

First published on Crunchbase.

What 500 Startups sees in emerging ecosystems

> Brazil propelled Latin American growth last year
> Saudi Arabia is becoming MENA's hub
> Japan's CVCs will increase interest in Southeast Asia

By Bedy Yang
Managing partner and head of ecosystems at 500vc

Ee-Ling Lim
Regional director for Asia-Pacific

500 Startups was the most active global venture capital firm of 2019 and the second most active global VC firm in 2020. With more than 2,400 portfolio companies in over 75 countries, the company works with 5,000-plus founders. The following three pages identify the hot regions and deals it is seeing in emerging markets:

Latin America

Although still fairly nascent, CVC is evolving in Latin America, led by Brazil, where signs point to continued momentum. 500 saw a significant increase in regional venture activity over the past year, propelled by Brazil.

E-commerce is accelerating, another positive indicator for the ecosystem, while exits have picked up in Brazil too, with a crowded IPO pipeline recently. That is all driving interest, with large corporates not wanting to miss the boat.

- Brazil is producing sizeable deals with CVCs firmly in the mix. São Paulo neobank Nubank kicked off 2021 by raising a $400m series G round, bringing its total funding to $1.5bn and making it one of Latin America's most valuable financial institutions. Chinese tech giant Tencent returned to participate in the round after having previously invested sizeable tickets. In September 2020 Brazilian digital bank Neon Pagamentos raised a $300m series C with participation from Paypal Ventures and Spain's BBVA through Propel Venture Partners.
- A significant amount of CVC interest in Brazil has come from global companies in recent years through the Corporate Venture in Brasil event series arranged by Global Corporate Venturing and Apex-Brasil. Brands such as Intel, Cisco, Microsoft, Qualcomm, Monsanto and BASF have all been active in the local ecosystem. One notable player is Spanish telecom Telefónica, which has long been active in Brazil through its Wayra accelerator programme and in 2020 invested in São Paulo's Redpoint eVentures to access local startups.
- Overall, it has taken time for Brazilian brands to embrace CVC, with exceptions such as Embraer. But key players are getting into the game. That includes oil giant Petrobras, the bank Itaú, brewing company Ambev and cosmetics company Natura, among others.
- Outside Brazil, the CVC landscape is still fragmented in Latin America, but there are promising signs. In Mexico, bakery goods maker Bimbo created a venture arm in 2017 and cement maker Cemex launched a CVC arm in Spain, while in Argentina there is CVC activity coming from energy firm YPF and online marketplace Mercado Libre.

Spain's Telefónica is making a wider impact too. Last year, its accelerator Wayra announced it would shift to become a CVC fund in Spanish-speaking Latin America that targets medium-sized tech companies.

- Mexico produced a significant startup deal linked to CVC in early 2021, with online supermarket Jüsto, and 500 portfolio company, raising a $65m series A round. That is the largest series A raised in Latin America in the past decade, according to Techcrunch. It followed multiple seed rounds in 2020 with participation from corporates including Bimbo Ventures and the CVC for Mexican beverages producer Femsa.
- ProntMed (500 Startups portfolio company in Brazil), an electronic health record company, received an investment from Fleury and Sabin.
- Conekta (500 portfolio company in Mexico), an online payment platform for banks and financial institutions, raised capital from Femsa Comercio, among others.
- Monsanto Growth Ventures made an investment in Grao Direto, a mobile-based grain marketplace.

Middle East and North Africa (MENA)

MENA's CVC landscape is nascent compared with Southeast Asia or Latin America, but Saudi Arabia serves increasingly as a regional activity hub. Major corporations embraced CVC over the last decade, headlined by oil giant Saudi Aramco. It has since amassed a global portfolio of more than 40 companies. Other key players pursuing CVC include Saudi Telecom and industrial giant Sabic.

> Media conglomerate Middle East Broadcasting Center has a strategic partnership with leading regional streaming service Anghami.

> MENA's tech ecosystem saw a major milestone in 2019, when Uber acquired local ride-hailing platform Careem for $3.1bn. That also proved a notable development for regional CVC, as Saudi Telecom's venture arm was one of Careem's early investors.

> Signs point to further potential for CVC in Saudi Arabia, which has a fast emerging startup and technology ecosystem featuring several notably active corporate investors. Those include Riyadh's Raed Ventures, a CVC established by conglomerate Almajdouie Holding, and Dammam's Vision Ventures, which is attached to ICT company Sahara Net. Both have been busy recently, with Raed, for example, funding rising tech local companies Swvl, Bayzat, Trukker and Foodics (the latter two are 500 portfolio companies).

> Dubai is a global business hub, and we expect the United Arab Emirates to gradually generate CVC activity. One example is CE-Ventures, a CVC created by conglomerate Crescent Enterprises. Its portfolio today lists holdings in Didi Chuxing, Nerdwallet and Cohesity.

> Outside the Gulf, Jordan-headquartered Arab Bank—one of the region's largest financial institutions—has a fintech-focused CVC arm. Called AB Ventures, it has invested in seven companies.

> Zain, a major Kuwaiti telecom, runs an accelerator for domestic early-stage tech startups. It is on its sixth programme.

Southeast Asia

China, Japan and Korea dominate APAC's corporate venture capital (CVC) landscape, but Southeast Asia offers plenty of appeal with a large and diverse population, a growing talent pool, solid underlying economies and advancing infrastructure. Looking ahead, 500 Startups expects Japanese CVCs should increase activity in Southeast Asia, joining local corporate players in a region where new CVCs are concentrated around telecommunications, financial services and real estate.

> Southeast Asian markets have each produced local CVC leaders. In Singapore there is Singtel Innov8, while Malaysia has Sunway Ventures, Indonesia has Sinar Mas Digital Ventures and in Thailand there is Siam Commercial Bank's Digital Ventures, among others. The Philippines recently saw a key development: in late 2020 the conglomerate Ayala Corporation closed a $180m technology innovation fund, creating a CVC vehicle rivaled regionally only by Singtel Innov8. The fund's first investment went to Transcelestial, a Singapore space tech startup and 500 Startups portfolio company.

> As demonstrated by Singapore's recently unveiled Corporate Venture Launchpad announced through its 2021 budget – 500 Startups is seeing a rise in corporates trying to cultivate internal innovation and entrepreneurial talent through intrapreneurship training while also bridging the skill and talent gap by tapping outside sources.

> Regionally, there is continuing demand for corporate-sponsored accelerator programs and startup sourcing initiatives to help build a pipeline and access the latest technologies. One way 500 Startups has heped is by powering an accelerator for Malaysian energy company Petronas.

> For local accelerators, 500 Startups is now going beyond a standard curriculum-centric program by designing and helping partners focus more on well-scoped, time-boxed, proof-of-concept projects. With an eye on CVC due diligence, this programme design facilitates the assessment and validation of a startup's technology and use case for CVCs.

Innovative region

Korea corrals corporate venturers

- Strong tech scene and user base
- Government support for innovation
- The country has among the most unicorns

By Liwen-Edison Fu
Supplements editor

"South Korea's ecosystem is quite unique because of the unusually high level of interest in promoting and working with startups in all parts of the society," said Kim Dong-Su, chief executive of LG Technology Ventures, the corporate venturing unit of South Korea-listed electronics company LG.

Global Innovation Index ranked South Korea second in innovation performance in Southeast Asia, East Asia and Oceania in 2020, behind Singapore and ahead of Hong Kong. Globally, it came 10th, entering the top 10 for the first time.

Coupang, an e-commerce company backed by Japan-based internet and telecommunications group SoftBank and its Vision Fund, is the South Korean company with the most corporate funding. It recently filed for a $1bn initial public offering on the New York Stock Exchange (NYSE), reportedly aiming for a $50bn market valuation.

The deal was followed by China-based internet company Tencent's acquisition of a 28% stake in entertainment and mass media group CJ E&M's CJ Games for $500m in 2014.

Other notable corporate venturing deals in the country include rounds raised by internet company Kakao's

Top corporate-backed deals in South Korea-based businesses 2014-2020

Portfolio Company	Sector	Round	Round size ($)	Co-participant ;ist
Coupang	Consumer	Stake purchase	2,000	SoftBank
Coupang	Consumer	Stake purchase	1,000	SoftBank
CJ E&M	Media	Stake purchase	500	Tencent
Kakao Mobility	IT	Seed	437	Kakao | TPG
Kakao Pay Corp	Financial Services	Undisclosed	200	Ant Financial
Market Kurly	Consumer	E and beyond	160	Aspex Management | DST Global | Fuse Venture Partners | Hillhouse Capital Management | Sequoia Capital | SK Group | Translink Capital
Kakao Games	Media	Undisclosed	130	Actozsoft | Bluehole | Netmarble Games | Premier Growth | Tencent
Tmon	Consumer	Undisclosed	115	Simone Investment Managers | undisclosed
4:33 Creative Lab	Media	Stake purchase	110	Line | Tencent
YG Entertainment	Media	Undisclosed	85	Beijing Weiying Technology | Tencent
Viva Republica	Financial Services	Undisclosed	80	Altos Ventures | Bessemer Venture Partners | Goodwater Capital | Kleiner Perkins | KTB Network | Novel Group | PayPal | Qualcomm | Ribbit Capital
Bespin Global	IT	C	75	Hakuhodo DY Holdings | SK Telecom | undisclosed investors
Bucketplace	Consumer	C	70	Bond VC | IMM Investments | Mirae Asset Ventures | Naver
Chai	Financial Services	B	60	Aarden Partners | Hanwha | Hashed | SK Group | SoftBank | undisclosed investors
SoCar	Transport	B	56	Bain Capital | SK Group

Source: GCV Analytics

spinouts: ride hailing service Kakao Mobility, mobile finance company Kakao Pay Corp and games developer Kakao Games.

Online grocery delivery service Market Kurly, mobile commerce platform Tmon and mobile game publisher 4:33 Creative Lab also have significant corporate venture capital (CVC) backing.

"The government support is strong," Kim said. "Most companies have a strong appetite to collaborate, invest and incubate companies both in Korea and abroad.

"The Korean market is extremely dynamic. There are many early adopters who are not only willing to try new technology but also provide candid and thorough feedback. General understanding and level of comfort are high, too, and new trends spread very rapidly. It is almost the ideal testbed for new products and business ideas.

"Because of government support and a high level of general interest, Korea's ecosystem has been developing quite rapidly. Korea is now considered one of the centres of innovation."

Jay Eum, managing partner of newly formed GFT Ventures, which is based in the US, and a co-founder of VC firm Translink Capital, also based in the country, added: "South Korea's venture ecosystem is relatively new compared with those in Silicon Valley or [neighbouring] Japan but has been rapidly developing due to strong entrepreneurial roots and timely government support.

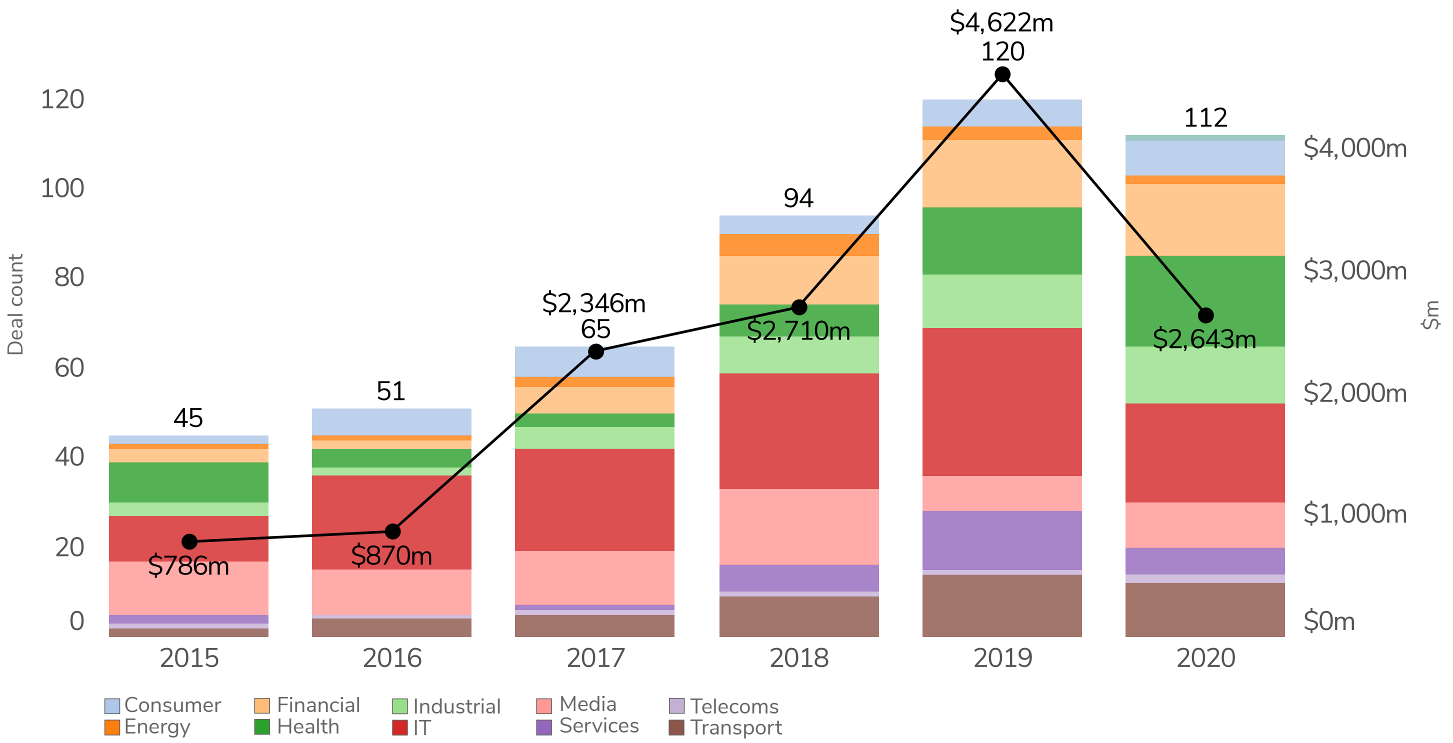
Kim Dong-Su

"While there were a number of venture lending firms dating back to the 1980s, it was only in the late 1990s when the industry was established with government policy support.

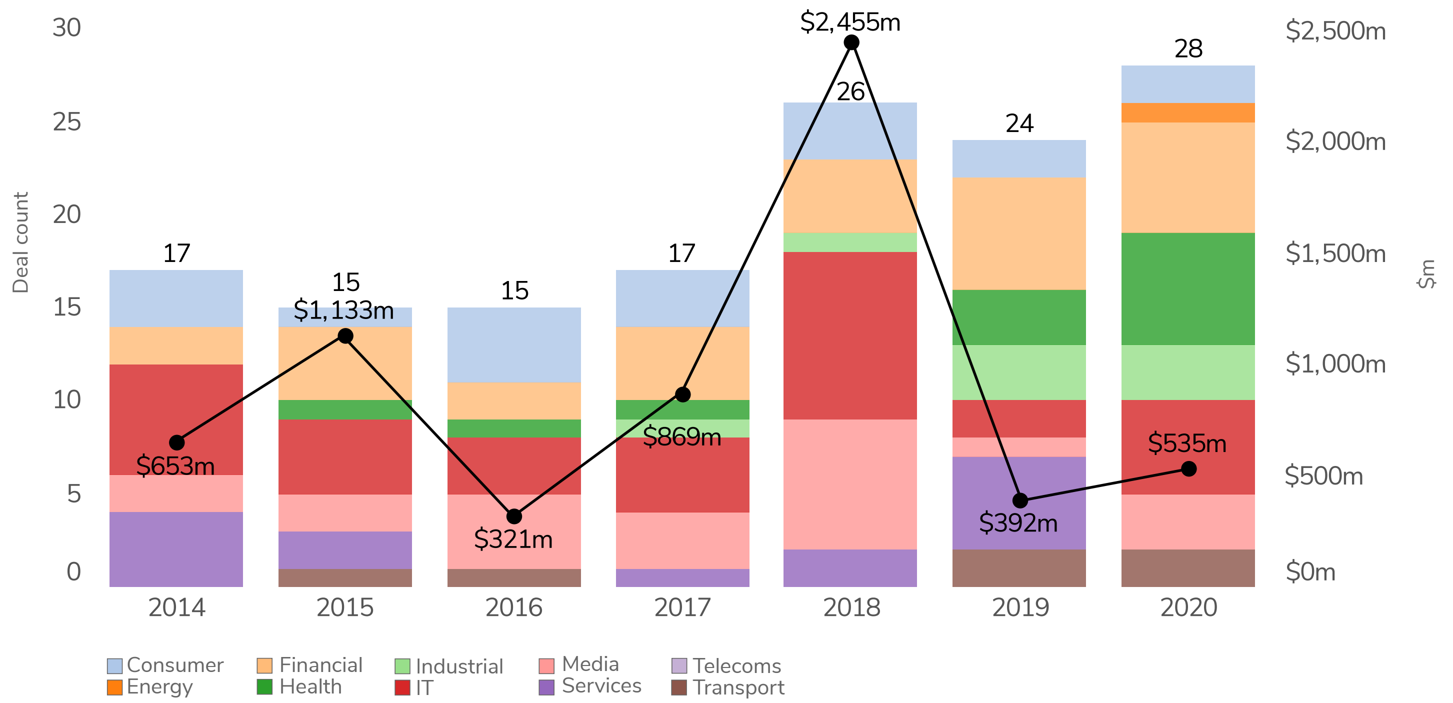
"In fact, one of the key drivers of the venture ecosystem in South Korea is the active role of the government which included various policies for promoting venture businesses, establishing Kosdaq as the equivalent to Nasdaq for small enterprises and launching a government-financed fund of funds. As a result, South Korea has become one of the most successful startup nations in the world, ranking fifth in number of unicorns after the US, China, the UK and India.

"On the heels of the announcements of the $4bn

Deals by South Korea-based corporates by sector

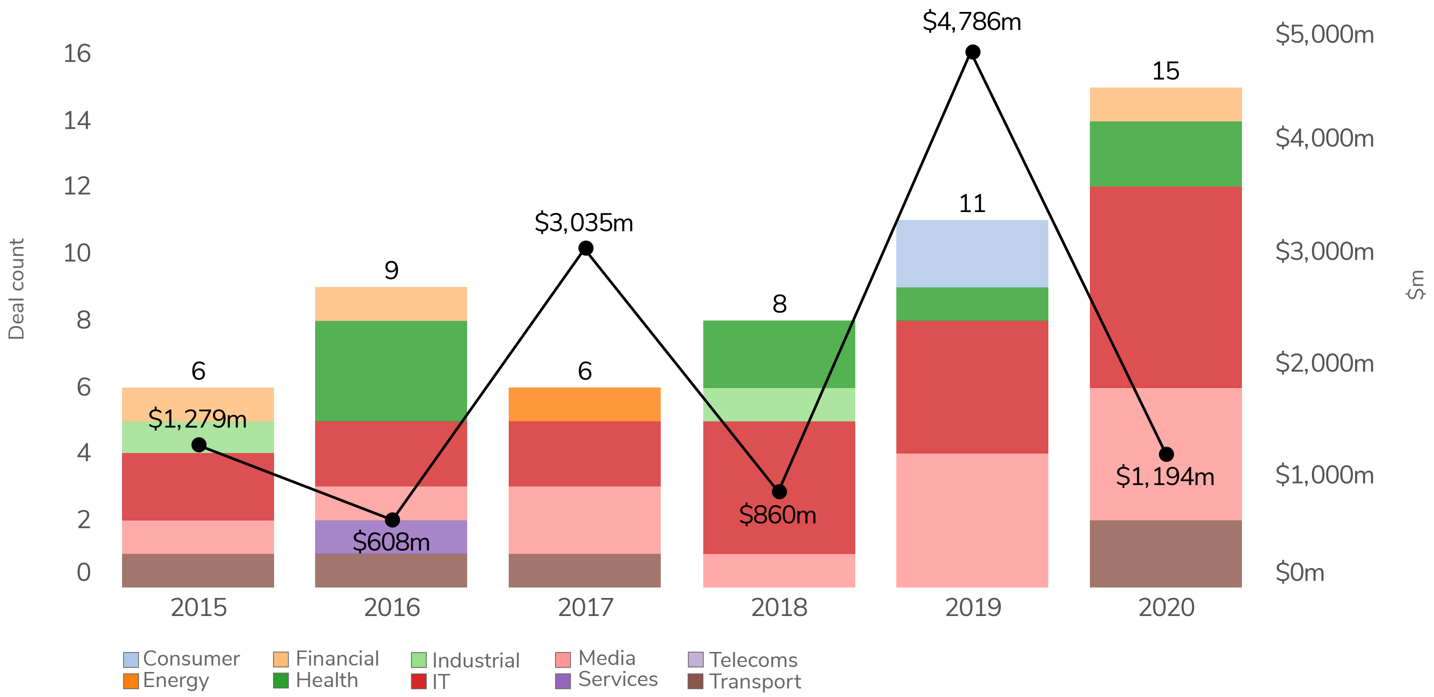


Corporate-backed deals in South Korea-based enterprises

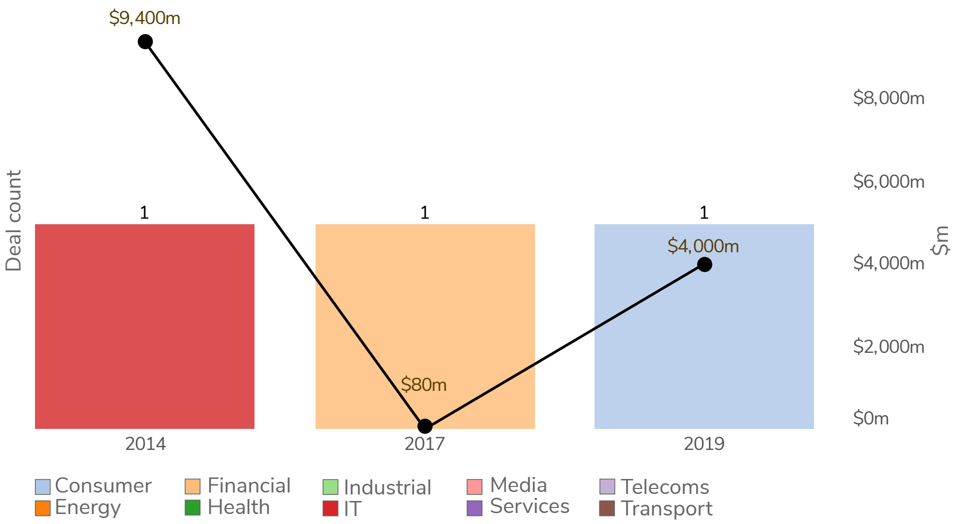


Source: GCV Analytics

Exits of South Korea-based corporates by sector



Corporate exits from South Korea-based enterprises



Source: GCV Analytics

acquisition of [online food delivery service] Woowa Brothers by [Germany-based counterpart] Delivery Hero and the $1.7bn acquisition of [online communication technology provider] Hyperconnect by [online dating platform] Match Group, e-commerce giant Coupang has filed to go public on NYSE for an expected valuation of over $50bn which would be largest IPO by a company based outside of the US since Alibaba."

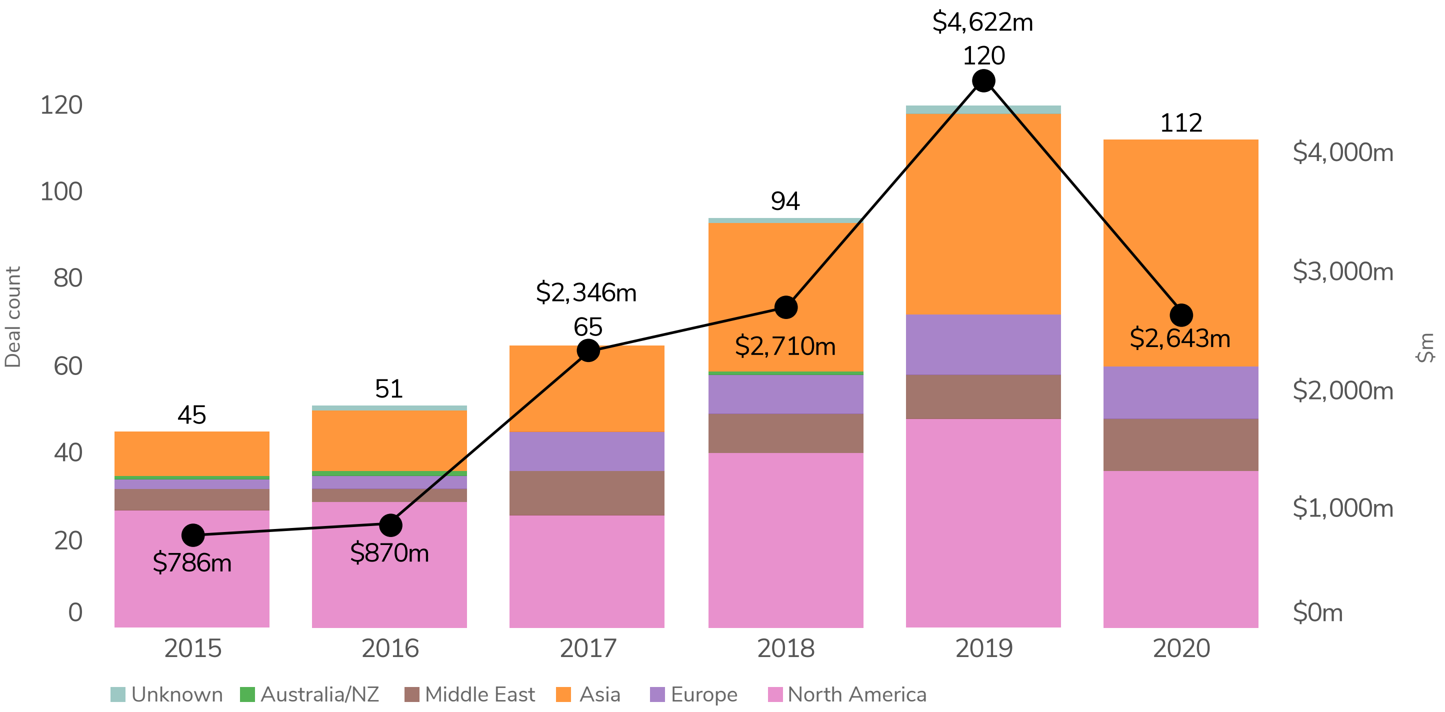
Eum, who was the founding managing director for Samsung Ventures America, a CVC unit of the Korea-headquartered consumer electronics manufacturer, for nearly four years from 2003, added: "CVCs have been active in the ecosystem since the late 1990s. Samsung Venture Investment Corporation was established in 1999 to consolidate and lead the venture investment efforts within the Samsung conglomerate and have since grown to become one of the most active CVCs globally.

"Hyundai Motors, LG and SK have also established and grown their footprint beyond Korea. Several of the largest internet and gaming companies including Naver, Kakao, Smilegate and NC Soft have likewise been active. More recently, the largest financial institutions including Mirae Asset, KDB and KB have entered the industry as well."

In recent years, interest in South Korean startups have increased substantially for both strategic and financial opportunities, added Eum, who also serves as a senior adviser to Deutsche Telekom Capital Partners, a vehicle backed by the German telecommunications firm Deutsche Telekom. "A number of leading global CVCs have invested in Korean startups, including SoftBank, Tencent, Intel Capital, Qualcomm and DTCP.

"As a result, the Korean startup ecosystem has developed into a much more sophisticated

Deals by South Korea-based corporates by region



Source: GCV Analytics

model where entrepreneurs are becoming globally exposed for investment and exit opportunities and investors have had to evolve into value-added investors to remain competitive."

Recent areas of focus for global and domestic corporate venturers in the South Korean ecosystem have included IT, healthcare, industrial, financial, consumer and media technologies. Most deals involving South Korean corporate investors in recent years have taken place in Asia and North America.

Mobile commerce, biotech and electronic components and materials are areas that are particularly strong in the ecosystem, according to Kim.

Eum added: "To date, the most successful areas and verticals have been concentrated around consumer technology. From e-commerce, gaming to cosmetics, almost all of the most successful Korean startups have been business-to-consumer companies.

Jay Eum

"However, most recently there has been tremendous interest in frontier technology areas including artificial intelligence (AI), robotics, digital health, fintech and blockchain, and mobility and electric vehicles, and an increasing number of startups have been founded.

"There are clearly opportunities in these areas since Korea has been an aggressive early adopter of frontier technology and is home to some of the leading customers and partners such as Samsung, Hyundai and LG for frontier technology startups globally."

LG Technology Ventures maintains close relationships with all ecosystem builders including VCs, CVCs, incubators, accelerators, universities and the government, noted Kim, who added: "LG operates Technology Centres in US, Israel and Japan whose mission is to build relationships with various organisations, find collaboration opportunities, and promote open innovation."

Translink Capital also works extensively with CVC investors, having co-invested on many occasions with corporates. The firm counts Akimoto Nobuyuki, previously head of NTT Docomo Ventures, the corporate venturing unit of Japan-based telecommunications company NTT, as a managing partner.

Eum concluded: "My new firm, GFT Ventures, is focused on investing in early-stage frontier technology companies in the US and Israel has completed the first closing of our inaugural fund with commitments from leading corporations and institutions in Korea and beyond."

Global Impact Venturing

How do you get startups to go from zero to scale?

> Creating asset-backed securities in climate
> Financial innovation around carbon required
> Creating a market would be helpful

By James Mawson
Editor-in-chief

When you see hundreds if not thousands of ideas and startups, as Jeff Schumacher, founder of New Asset Exchange (NAX) has, you realise a good team and product-market fit takes you only so far.

The differentiator is volume, often using capital on marketing. Schumacher's latest startup, NAX, has taken this idea and developed a software platform to create corporate asset-backed products, ventures and securities.

Emerging from stealth with $65m in funding from a dozen corporate, institutional and family office investors, NAX has a development unit to take data and turn them into a security or venture with the software to trade it.

This model could, for example, turn an insurance company's data around the 25 attributes needed to underwrite a work of art and allow banks to lend money against it to help fund its purchase.

The law of large numbers then works if there are lots of these credit notes, to package them up and syndicate or tranche the bundles of debt into asset-backed securities, similar to car loans or house mortgages.

Take the idea on and NAX wants to apply the same model to indie games developers for securitising expected revenues. But its biggest target is climate change.

How can carbon be priced or corporations offset emissions? Schumacher, former founder of BCG Digital Ventures and Axon Advisory Partners, said: "Climate is hard to trade because it is opaque, hard to compare and has no scale.

"The Paris Accord will not work because social investment funds are not enough. We need financial innovation and instruments to attract capital."

There is increased attention on the topic this year as COP26 is being held in London and is expected to update the Paris Accord with new emissions targets, carbon reporting, investor incentives and corporate governance standards.

As George Serafeim, professor at Harvard Business School, noted at September's GCV Digital Forum, the creation of impact-weighted accounting standards will help push the main listed corporations to explain and tackle their externalities.

Creating a financial market to help, say, a smelter plant minimise or offset its environmental impact would be useful.

GCV through its Global Energy Council and its sister publications, Global Impact Venturing and Global University Venturing, will be preparing its Symposium in the UK in early November around COP26. Special events are planned to cover the golden triangle between London, Oxford and Cambridge and in Scotland and the north of England.

Building bridges (clockwise from top left): London, Cambridge, Oxford, Gateshead and Edinburgh

Global University Venturing

A shining beacon in the dark

> - Tech transfer offices played a key role in vaccine push
> - Portfolio companies generally saw successful years
> - Pandemic did not substantially affect number of deals

By Thierry Heles
Editor, Global University Venturing

Where do you begin to summarise a year that has been the most challenging on a global scale in living memory? Perhaps, counterintuitively, with some good news: universities and spinouts took up the challenge and now we have not one but three vaccines being administered – in the case of the UK, even at a breakneck speed of 500,000 doses per day. If it continues at this pace, the government will reach its goal of having 70% of the population vaccinated a month early, in August 2020.

Normality will return, thanks to University of Oxford and AstraZeneca, thanks to Johannes Gutenberg University Mainz spinout Biontech and thanks to Moderna, whose success even made Harvard Medical School's Professor Timothy Springer a billionaire.

But also, and do not underestimate this, thanks to everyone in tech transfer offices who worked incredibly hard not only to get these innovations out the door in the first place, but also put in long hours during the pandemic to solve challenges such as a lack of ventilators and medical-grade face masks. It is thanks to everyone who negotiated licences for the vaccines and thanks to everyone who made sure the flood of invention disclosures – following every researcher suddenly having the time to go through their notebooks – kept being dealt with.

The world may have, rightfully so, clapped for care workers and hailed supermarket staff as heroes but everyone in tech transfer offices also deserves a round of applause.

Matt Perkins, chief executive of Oxford University Innovation, said in his office's quarterly update: "The Oxford AstraZeneca vaccine is now rolling out across the UK and around the world. The combined effort across the university this year to make this a reality has been nothing short of extraordinary, and amply demonstrates Oxford's considerable potential to create positive impact globally."

Across town, the university's venture fund Oxford Sciences Innovation (OSI) has similarly not only stepped up to the challenge but, thanks to a £100m ($137m) donation from chemicals company Ineos, is gearing up to tackle another threat looming large over humanity: antibiotic resistance. That is on top of a broad portfolio already covering areas such as cleantech, oncology and biodiversity.

Jim Wilkinson

Jim Wilkinson, chief financial officer of OSI, told sister publication Global University Venturing: "At OSI we firmly believe the future is in our universities and for us Oxford is the only place to be. Even a global pandemic has been unable to slow down the successful development of Oxford's growing science and technology ecosystem."

He added: "In regards to OSI portfolio companies specifically, they continued to exceed expectations, raising capital, striking new partnerships and launching new products. During the year we saw major corporations such as Centrica, Genentech, Eli Lily, Georg Fischer, Takeda, India's Serum Institute and Mayo Clinic announce commercial deals and, in some cases, take stakes in our portfolio companies. We welcomed several new investors into the Oxford ecosystem such as RA Capital, Northpond and Syncona and we continue to attract experienced talent from major industry players such as AstraZeneca and BP into the portfolio.

"Highlights included the sale of Base Genomics to Exact Sciences for $410m – one of the largest diagnostic deals of its kind in the UK to date. More importantly, we were delighted that Base found the perfect partner to supercharge the development of its early cancer detection technology and invest in the expansion of the team here in Oxford to create a world-leading centre. And if we needed any further proof that our model is working, not one but two covid-19 vaccines originated from within our portfolio."

Changes are afoot and OSI is now looking to an even more exciting future, with Alexis Dormandy taking over as chief executive following a period where Wilkinson had held that position in an interim position on top of his CFO duties. Dormandy, he noted, "brings a wealth of experience in science, technology and investment to our team. We know he will have much to offer Oxford, the team at OSI and our portfolio."

Moray Wright

Moray Wright, chief executive of Parkwalk Advisors, the fund management subsidiary of commercialisation firm IP Group, was similarly optimistic despite challenges early on during the outbreak. He said: "Like most of us, Parkwalk had an unprecedented 2020, with a strong start as the uncertainties of Brexit and the UK election translated into a more stable macro-economic environment followed by the spring arrival of covid-19 where we saw horrendous falls in all asset classes and venture was obviously fairly low on investors' agendas.

"However, since those lows, global markets have recovered extensively and, in many ways, deep tech has come to the forefront of investors' minds. It was the behind-the-scenes hard work of many scientists around the world that allowed the covid-19 vaccines to be produced in such incredibly short timeframes, giving a ray of light to global economies for the latter half of this year."

He added: "This focus has also perhaps extended to other areas, with climate change and environmental, social and governance criteria particularly coming to the forefront.

"Many of our portfolio companies are seeking solutions to some of these key challenges, and as the portfolio matures, we have seen some of our companies raise substantial – $50m and more – rounds to address some of these issues."

Parkwalk remains a very active early-stage investor, too, Wright stressed. It launched its seventh University of Cambridge Enterprise Fund and its first Imperial College Innovation Fund last year, all while making more investments from its third Bristol and fifth Oxford funds. Overall, Parkwalk invested in 35 spinouts in 2020, with 13 of these being new additions to its portfolio.

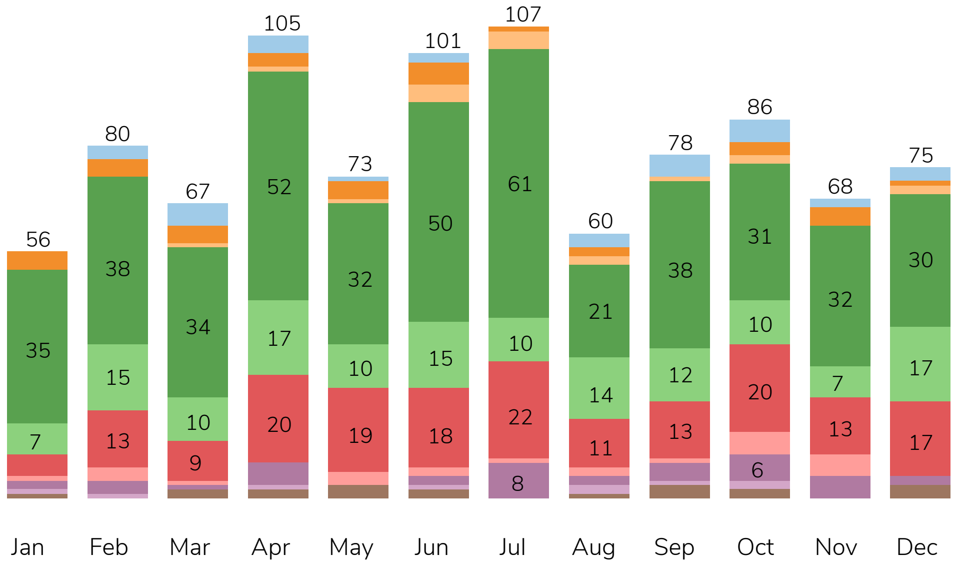
Wright concluded: "So overall, we are extremely pleased with the progress across the portfolio after such a difficult year, and we believe the sector will continue to go from strength to strength as the UK seeks to become a 'science superpower' by increasing the R&D spend to £22bn per annum and re-balance the UK economy for the benefit of us all."

These numbers correlate with the data collected by GUV over the past year: 956 deals in spinouts – and a record-breaking three months with more than 100 deals. If you did not know there was a pandemic, you could not tell from the charts. It was only marginally fewer deals than 2019's 971.

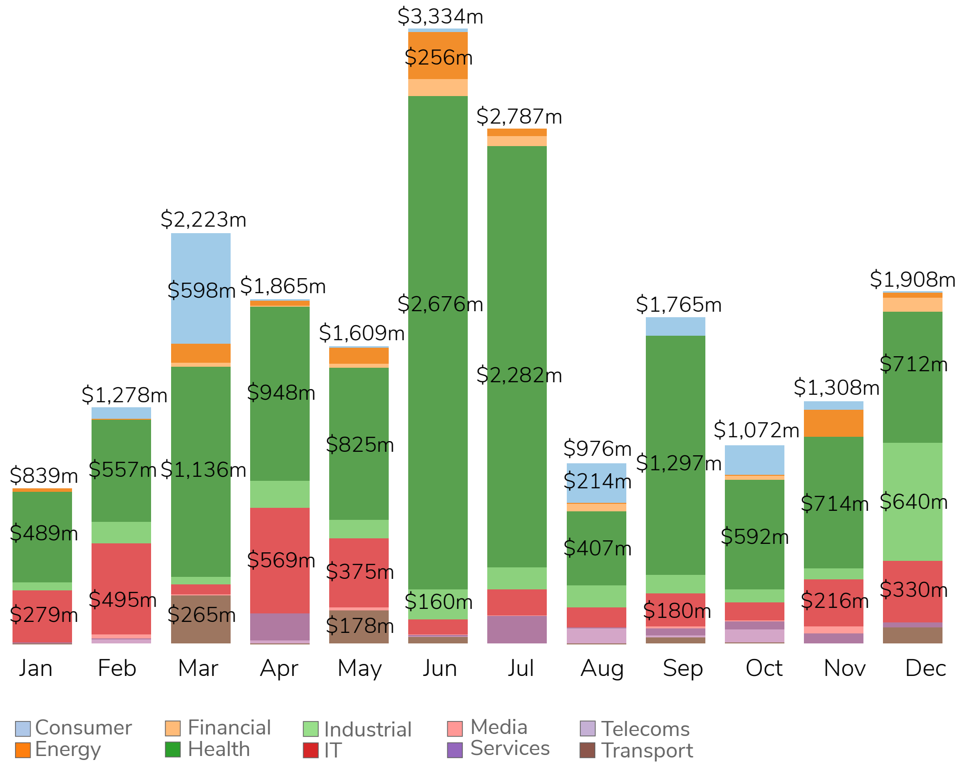
It was not just the sheer volume of deals that was impressive, spinouts also raised more than $20.96bn in 2020. June's $3.33bn towers over everything else – even in 2019, the peak was only as high as $2.69bn in May. What was the total invested in 2019? Only $17.56bn.

The largest sum announced in 2020 was Sana Biotechnology's $700m in capital, although the stem cell medicines developer – linked to Harvard University, University of Washington and University of California, San Francisco as well as, through an acquisition of brain disease drug developer Oscine Therapeutics, University of Rochester – eventually revealed that its "initial financing", as it had called it in a press release at the time, actually consisted of series A1, A2 and B financing. That disclosure, notably,

Number of investments in university spinouts in 2020



Amount of capital invested in university spinouts in 2020



Source: GCV Analytics

Company	Institution	Sector	Round	Size
Sana Biotechnology	Harvard University, University of Washington, UC San Francisco	Health	A1, A2 and B	$700m
Impossible Foods	Stanford University	Consumer	F	$500m
Chang Guang Satellite Technology	Chinese Academy of Sciences	Industrial	Pre-IPO	$375m
CureVac	University of Tübingen	Health	Undisclosed	$339m
Pionyr Immunotherapeutics	University of Toronto	Health	Undisclosed	$275m
Thrive Earlier Detection	Johns Hopkins University	Health	B	$257m
CloudWalk Technology	Chinese Academy of Sciences	IT	Undisclosed	$254m
SambaNova Systems	Stanford University	IT	C	$250m
Lilium Aviation	Technical University of Munich	Transport	Undisclosed	$240m
Recursion Pharmaceuticals	University of Utah	Health	D	$239m

Source: GCV Analytics

was made in a draft prospectus for a $150m IPO that the spinout filed in January 2021.

Impossible Foods, the meat substitute developer founded by then-Stanford faculty member Patrick Brown, may only appear in our top 10 list once but in fact the company raised two nine-figure rounds: a $500m series F roundin March and, having used that money to stock its products in 8,000 shops up from 150, a $200m series G round in August.

Noteworthy deals happened elsewhere, too. Peter Devine, chief executive of multi-university venture fund Uniseed, underlined investments in Ferronova, a University of Sydney spinout that collected $2.6m in series A financing to commercialise its iron magnetic nanoparticles for use in the diagnosis, surgery and therapy of solid tumour cancers, and in Liquid Metal Plus, set to use its cash to advance University of New South Wales technology relying on liquid metal solvent to absorb CO2 and convert it to carbon flake and oxygen through a low-energy process.

Devine also recalled the regulatory approval of Hatchtech's headlice treatment in the US – a fascinating, decades-spanning story he shared in a guest comment for GUV in August. A separate guest comment in our October 2020 issue looked at the 20th anniversary of Uniseed, and Devine added: "Uniseed investee companies have continued to make great progress in 2020, with most of these now growing product revenue or progressing in human clinical trials. Uniseed also celebrated its 20th year of operation.

"Three major deals for Uniseed companies were announced in 2020. First, Exonate's collaboration with Janssen (J&J) for its eye drop for macular degeneration; second, Smart Sparrow's sale of its adaptive e-learning platform to leading education company Pearson; and third, multinational custom compounder RTP Company acquiring the patents for anti-scratch nanotechnology additives from Uniseed investee TenasiTech."

Covid-caused challenges remain, Devine continued, but stressed that it was not all doom and gloom: "Despite this progress, the covid-19 pandemic has been a major disappointment, and has impacted significantly on Uniseed's university partners due to the loss of international student revenue.

"Fortunately, the portfolio is in good shape, though our companies have been impacted to varying degrees by covid-19, examples being clinical trials postponed or on hold; international sales being impacted; some research programmes at partner laboratories delayed or placed on hold; delays in supply of components from overseas for products; and delays in progress of commercial discussions."

However, he mused, "somewhat ironically, a few startups have benefited from the situation. For example, there has been increased customer interest in Cardihab's remote cardiac rehabilitation program due to reimbursement codes for telehealth being opened by federal government and clinicians now unable to perform cardiac rehab face to face as the patient group is very vulnerable to covid-19."

This crisis is, notwithstanding the cost of human life, also not like the last one, he said.

"Unlike the global financial crisis in 2008, the covid pandemic has not impacted on the availability of funds for Australian technology. During 2020, Uniseed Fund-3 invested A$3.71m, the Uniseed Follow-on Fund invested A$3.56m and the Uniseed Co-Investment Fund (Stoic VC) invested A$3.92m.

Peter Devine

"These investments were leveraged with A$49.22m received from other investors and A$33.78m received in non-dilutive funding including grants. A number of major Australian venture funds were also closed in 2020."

Alastair Hick, senior director of Monash University's commercialisation office Monash Innovation, echoed Devine's words: "Covid-19 has meant that 2020 was a challenging year operationally for Monash Innovation and all Australian universities looking to translate their research through spinouts and startups.

"The nature of the Australian research landscape is one with only a small number of research-intensive corporates such as CSL and Cochlear having their research based in Australia. This results in five of the top ten local provisional patent filing applicants in Australia being universities and one was the government research organisation CSIRO.

"As a result, travel is an essential part of finding investors and corporate partners for Australian TTOs and in 2020 this was completely off the agenda, with the effective closure of borders in early 2020 helping with the strong response to keeping the country relatively covid-19 free."

He emphasised, however, that "despite this Monash Innovation has seen a very successful year with no noticeable drop off in activity, either at the early stage of invention disclosures, through to investment deals. This is building on a strong five years of growth and the development of a solid pipeline with good investor relationships, and a significant increase in capital availability. We are also moving our technology transfer and entrepreneurship activities closer together to capitalise on the increasing interest in innovation and entrepreneurship in the research community."

Hick identified a series of trends, such as the rise of founder-led spinouts. "For Monash this is highlighted by Additive Assurance, focussed on quality assurance in additive manufacturing, who received a seed round led by IP Group," he explained. "Additive Assurance have had significant support from Monash via proof-of-concept funds, mentoring, accelerator programmes and access to IP Group funding, much of which was not in place five years ago.

Another trend, he said, was that "ecosystem support is becoming a crucial piece of the spinout landscape," and this included new space for entrepreneurship hub The Generator, a Makerspace and plans to further develop incubator space for spinouts both on and off campus. The Generator has also stepped up its support to help founders launch companies.

Hick added yet another trend was "the development of the investor ecosystem through strategic relationships with investors such the Group of 8 universities with IP Group who have now invested in three Monash spinouts and more than 10 in total over in the past 18 months.

"In the biotech space Monash has BioCurate, a A$60m joint venture to translate biomedical research with University of Melbourne as well as MRCF, the major biotech investor in Australia who continue to invest in Monash spinouts such as Cincera, working on approaches to treat fibrosis, and allergy company Aravax.

"We are also seeing other VC funds such as Blackbird, Square Peg and AirTree raise significant follow-on funds and new funds focussed on university founders such as Galileo Ventures and Skalata Ventures, both of which Monash has actively supported."

Looking ahead, he pointed out that Monash was "starting to see examples of real financial

Alastair Hick

successes as the 10-year overnight success stories start to become significant companies in their own right. Additive manufacturing company Amaero International and 4D Medical who developed respiratory imaging and ventilation analysis both started at Monash around 2013, and both have now successfully listed on the ASX with a combined market cap of A$700m."

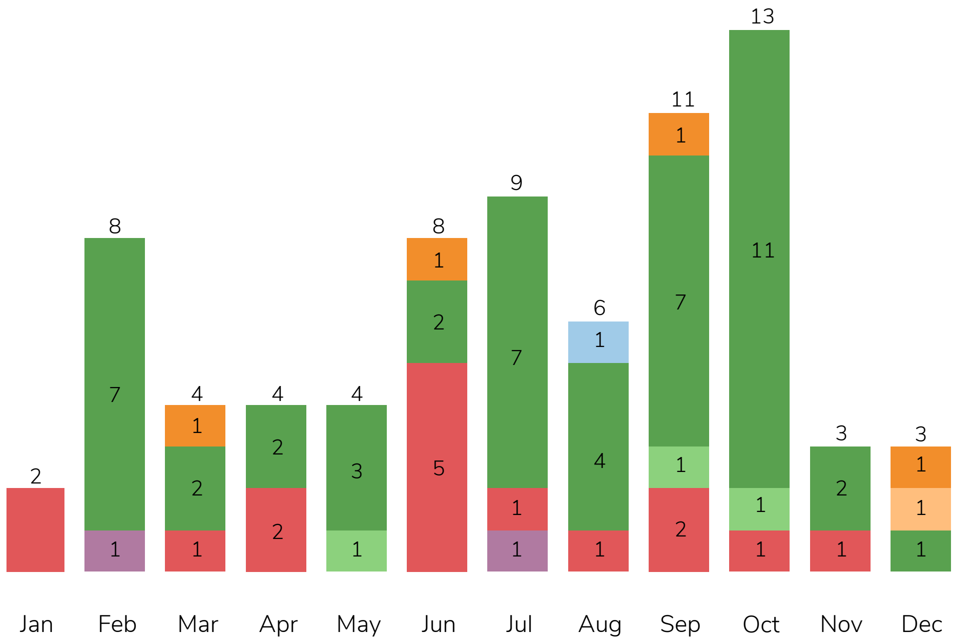
Speaking of exits, the IPO bonanza has meant many spinouts have benefited. Out of the top 10 biggest exits in 2020, four were flotations and all of them fetched nine figures. The biggest was that of AbCellera, an antibody therapy developer based on University of British Columbia research and also backed by University of Minnesota, which first raised $483m in an already upsized offering with shares priced above the range, but when shares shot up from $20 to $61 on opening day, it was inevitable that underwriters would take up the overallotment option – boosting the IPO to $556m in the process.

With 75 exits overall – up from 67 in 2019 – there is no doubt that university tech transfer has nothing to worry about. The $13.1bn all-cash acquisition of MyoKardia, a US-based heart disease therapeutics spinout of University of Colorado, Boulder, by pharmaceutical firm Bristol Myers Squibb also proves that this really is a long game, where an IPO might just be another funding round on the way to a much, much larger exit: MyoKardia's 2015 public listing had brought in a comparatively small amount of $62.5m.

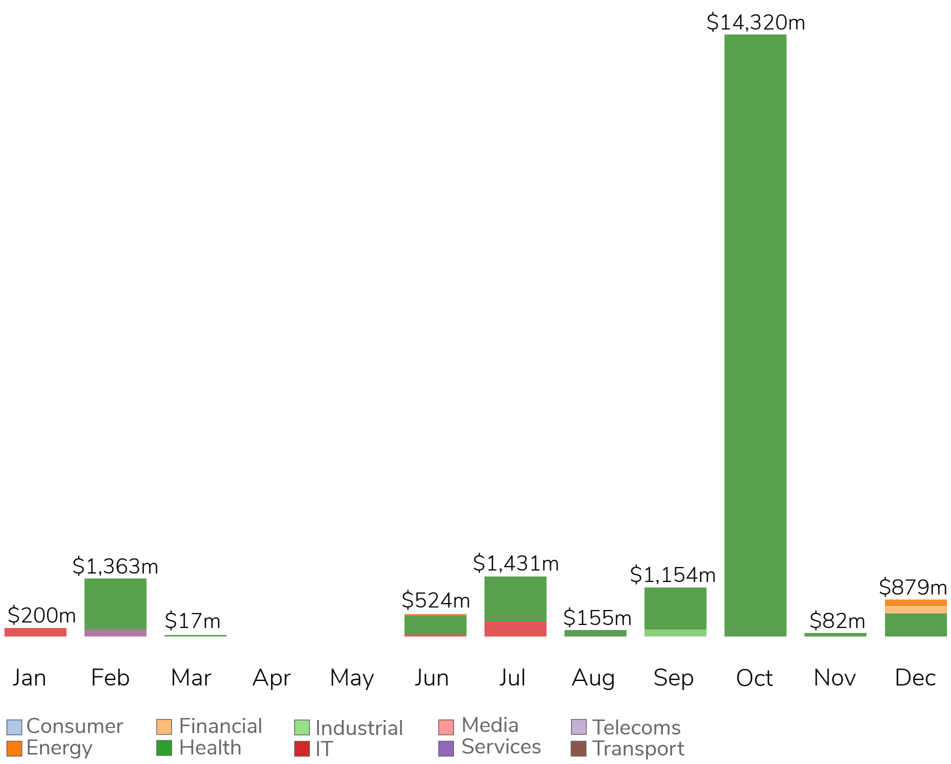
Not all exits are such blockbuster deals, but they can be striking for other reasons. For example, Oxsed, a rapid coronavirus testing spinout of University of Oxford, was acquired in November by genetic testing services provider Prenetics' DNA Fit Life Sciences subsidiary for an undisclosed amount.

In any other year, this would fly under the radar but for one, Oxsed was not just a regular spinout, it was a social enterprise – one of 10 so far set up by OUI – and for another, the exit came just six months after the company was launched.

Number of exits from university spinouts in 2020



Amount of capital in exits from university spinouts in 2020



Source: GCV Analytics

Top 10 deals in 2020

Company	Institution	Sector	Round	Size
MyoKardia	University of Colorado, Boulder	Health	Acquisition	$13.1bn
AbCellera	University of Minnesota	Health	IPO	$556m
Inflazome	University of Queensland,			
Trinity College Dublin	Health	Acquisition	$448m	
Base Genomics	University of Oxford	Health	Acquisition	$410m
Relay Therapeutics	UC San Francisco	Health	IPO	$400m
Cambricon Technologies	Chinese Academy of Sciences	IT	IPO	$368m
PvP Biologics	University of Washington	Health	Acquisition	$330m
Vedere Bio	UC Berkeley	Health	Acquisition	$280m
Outset Medical	Oregon State University	Health	IPO	$278m
Immatics Biotechnologies	University of Tübingen	Health	SPAC merger	$253m

Source: GCV Analytics

Simon Bond, innovation director of SETsquared, declared that 2020 was "a year for fighting back. I was inspired by the way in which our startup and scale-up programme members went above and beyond during the pandemic. They met the disruption head-on with proactive resilience and agility."

It was also a good year for SETsquared more broadly.

He added: "2020 was a year for new venturing capabilities. We incorporated SETsquared in order to lead on raising a venture capital fund to invest in our ventures and we developed two exciting new programmes for commercialising university research – one in collaboration with scale-up ventures and the second for placing ambitious undergraduate and postgraduate student talent in high-growth companies as well.

"It was a year for partnerships. We worked with British Business Angel Association and Innovate UK not only to attract and de-risk angel investment into spin-ins and spinouts, but also to develop the capacity and diversity of angel investors in the UK. Similarly, we have partnered on initiatives with the government research agency, the National Composite Centre Catapult and developing international entrepreneurs with the Royal Academy of Engineering's Leaders in Innovation Fellowship+, the NHS to deliver our Health Innovation Programme and with regional economic development agencies in the digital innovation and sustainable technologies sectors."

Lesley Millar-Nicholson, director of the Technology Licensing Office at Massachusetts Institute of Technology, summed up everyone's feelings: "What a year!"

At MIT, which of course also stepped up to the challenge, one change had somewhat comedic timing. Millar-Nicholson explained: "When I reflect on what we updated GUV about last year, there is a certain irony in that our office refurbishment was on that list: it was concluded on time and on budget in early 2020, but within two days of its completion, we all transitioned to working from home!

"A significant success was that our flexwork infrastructure (also mentioned last year) enabled us to pivot with relative ease to 100% remote working. Maintaining the sense of community at TLO was the first priority through 2020 and everything else was icing on the cake. We have succeeded in that due, in no small part, to our activities committee who have managed to host a scavenger hunt, improv session, cooking sessions, afternoon teas and other gatherings to maintain our togetherness."

The icing on the cake, unsurprisingly, turned out to be much more than anyone could have hoped for. Millar-Nicholson

Simon Bond

continued: “We introduced a covid-19 Technology Access Framework with Stanford and Harvard to enable easy and free non-exclusive access to covid-related technologies. It has been well received with a number of licences signed.

“Our end-of-fiscal-year stats far exceeded prior year records, including the number of inventions received and licences concluded. Our revenue, too, was higher than the past seven years mainly due to three events: 1) a settlement, 2) a milestone payment and 3) an equity sale – all of which we shared with co-owners.”

And MIT did not just merely keep existing programmes running, either. “We successfully launched the Office of Strategic Alliances and Technology Transfer, which provides additional resources to assist faculty with industry and other non-federally funded engagements,” Millar-Nicholson stated. “MIT’s industry funding represented a record 23% of total campus research funding.”

Lesley Millar-Nicholson

She concluded: “At MIT, not only did we survive 2020, but we also thrived, largely due to thoughtful response to the pandemic from MIT senior leadership.

“That said, we cannot forget it has been a tough year for many people, having to manage non-optimal work environments, remote school, care of family members and the inability to see and care for geographically distant relatives.

“However, we maintain a spirit of hope for the coming ‘light at the end of the tunnel’ as we, with the rest of the world, observe the impact of what is truly a significant representation of the best that technology transfer can offer with new therapeutics and other solutions from our colleagues in the Cambridge ecosystem and beyond getting into the marketplace to benefit us all during this public health crisis.”

It is, if you have spent any amount of time in tech transfer, this sort of optimism and can-do attitude that may seem remarkable from outside but permeates the profession. Its people are all truly remarkable. And if you consider that, going back to the opening of this annual review, tech transfer staff have helped deliver multiple covid vaccines all while somehow still churning out more innovation across all other sectors, you really cannot help but wonder: after 2020, is there anything TTOs cannot achieve?

Data

Corporate venturing continues strong in February

- > Deals slightly down in number but up in dollar terms
- > Large number and value of exits, driven by Spacs
- > Funding initiatives up in number and dollar values

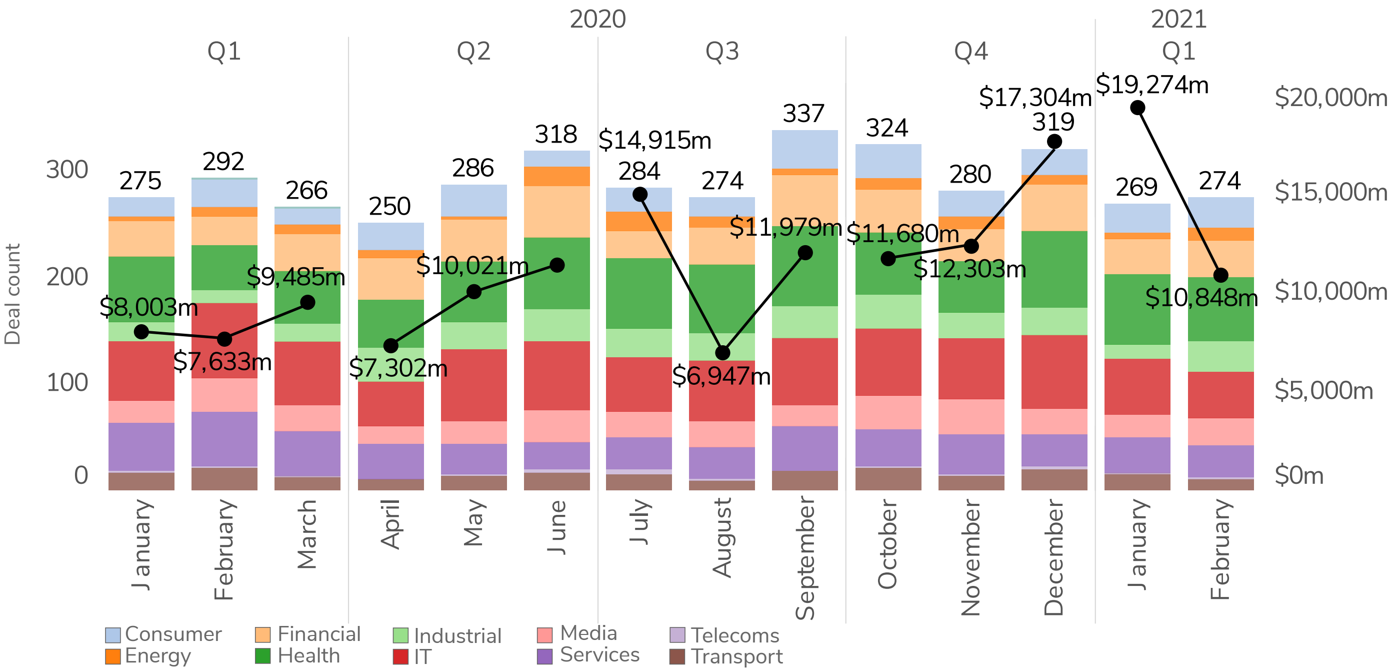
By Kaloyan Andonov
Analyst

The world has started the new year with the hope it can fight off the coronavirus pandemic thanks to the rollout of vaccines – some from corporate backed startups. As the world recovers, an economic improvement seems on the cards and there are early positive signs as investment activity in corporate venturing has increased.

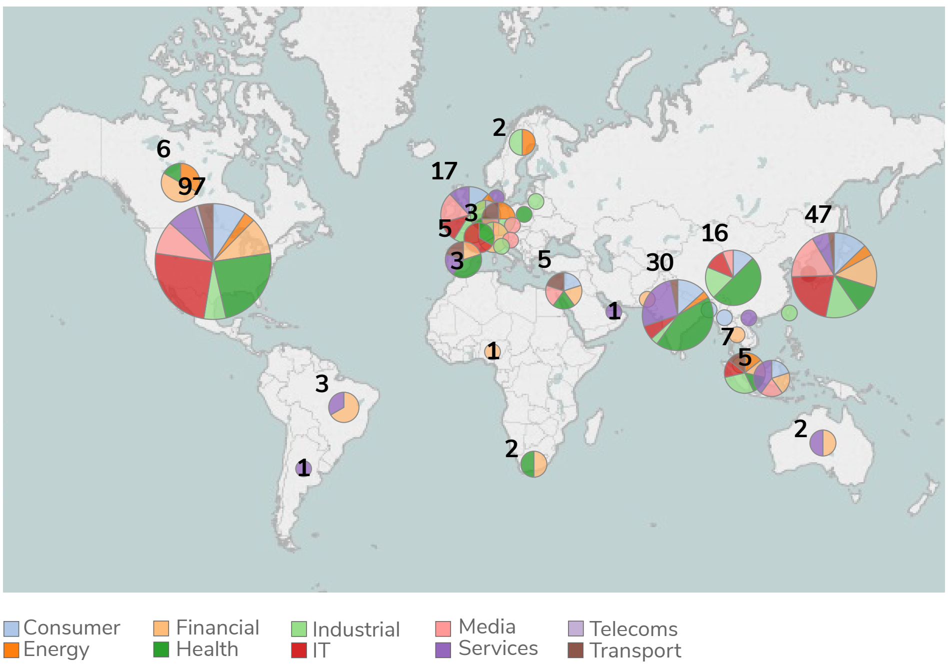
Deals	Exits	Funding initatives
274	43	37

Deals by month

According to GCV Analytics, the number of corporate-backed deals from around the world was 274 in February, only 6% lower than the 292 rounds from the same month last year. Investment value, however, stood at nearly $10.85bn in total estimated capital –up 42% from the $7.63bn in February 2020.



Global view of deals

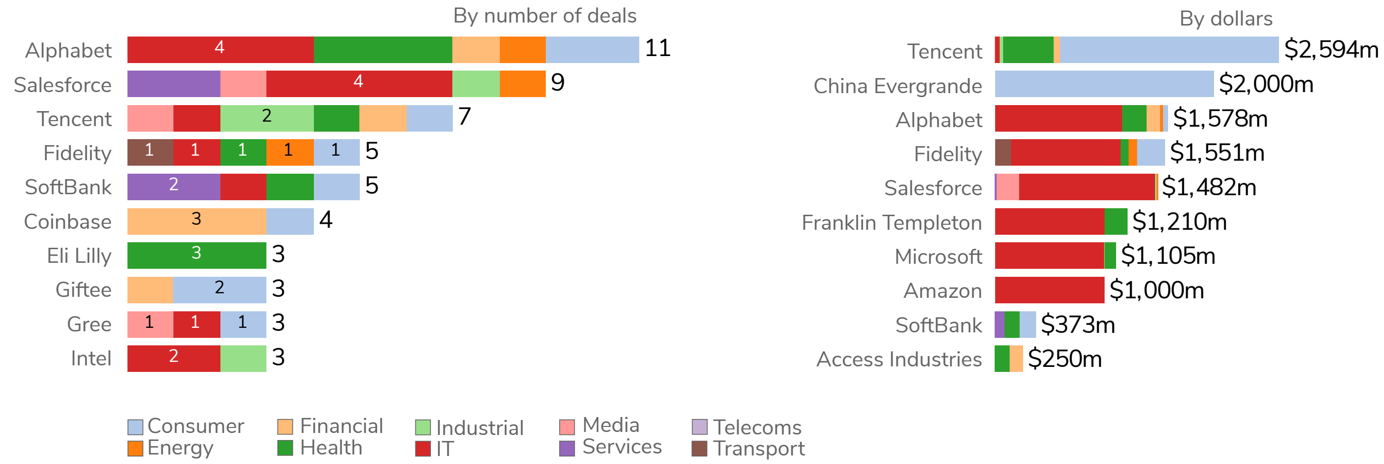


The US came first in the number of corporate-backed deals, hosting 97 rounds, while Japan was second with 47 and India third with 30.

Source: GCV Analytics

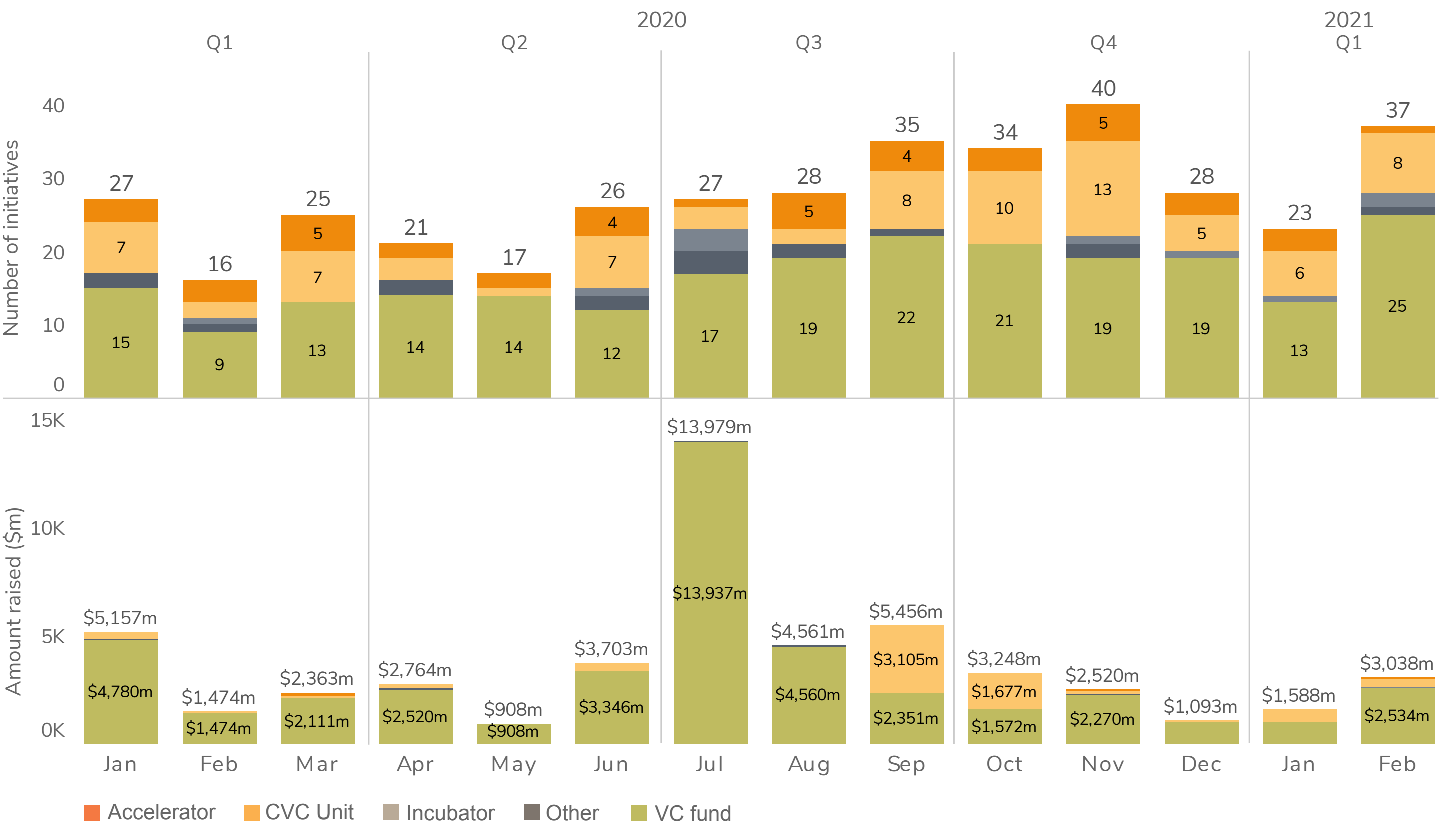
Top investors

The leading corporate investors by number of deals were diversified internet conglomerate Alphabet, enterprise software producer and internet firm Tencent. In terms of involvement in the largest, Tencent, Alphabet and real estate developer China Evergrande Group were at the top of the list.



Funding initiatives

GCV Analytics reported 37 corporate-backed funding initiatives in February, including VC funds, new venturing units, incubators, accelerators and other. This figure is more than the double the one from February 2020, which registered 16 initiatives. The estimated capital raised in those initiatives amounted to $3.04bn, considerably higher (up 106%) than the $1.47bn raised during the same month last year.

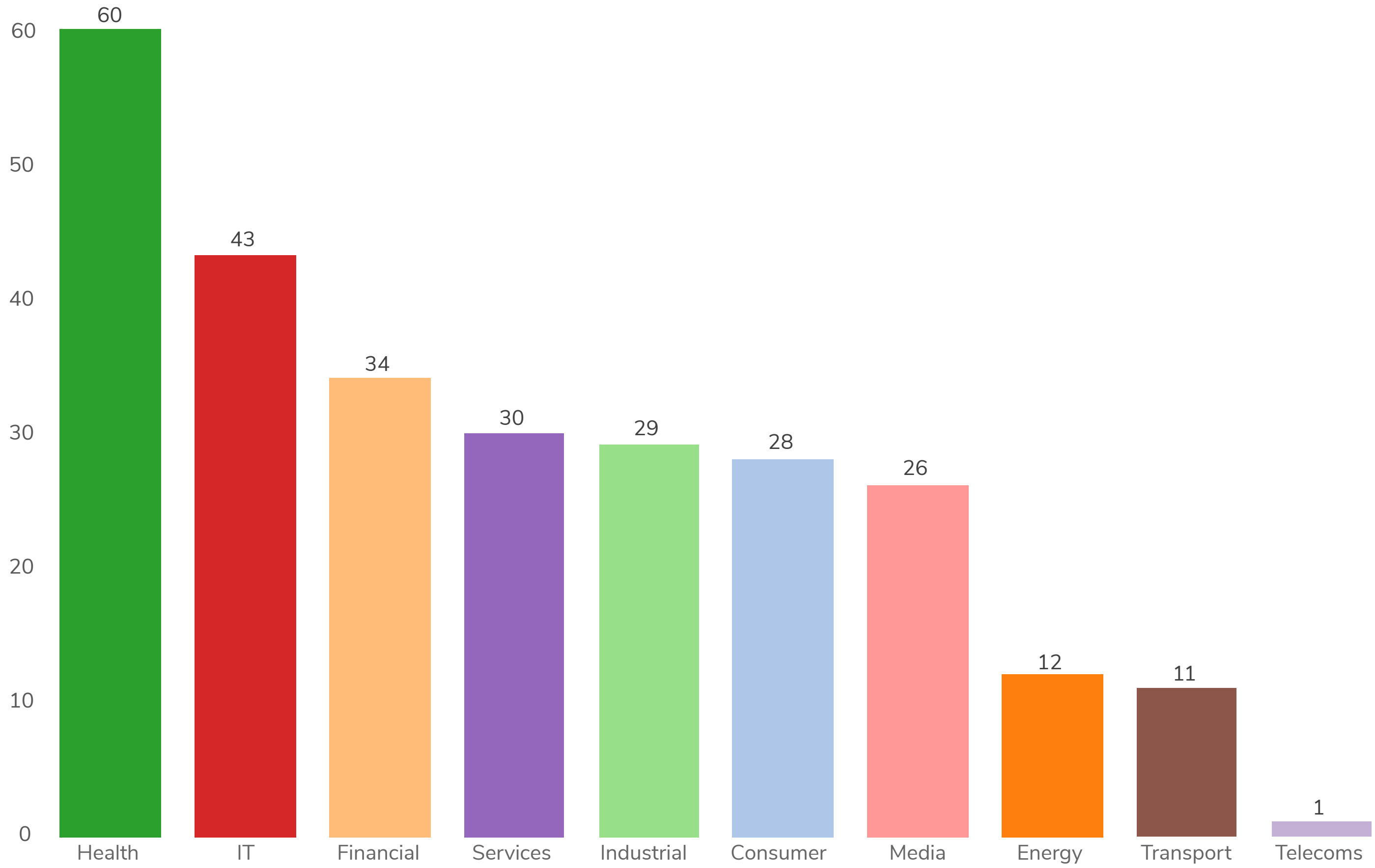


Source: GCV Analytics

Deals

By sector

Emerging businesses from the health, IT, financial, services and industrial sectors led in raising the largest number of rounds in February 2021. The most active corporate venturers came from the financial, IT, health and media sectors.



Heatmap

	Financial Services	IT	Consumer	Media	Health	Industrial	Services	Telecoms	Energy	Transport
Asia	48	22	11	18	8	13	13	5	5	2
North America	36	25	11	9	17	7	12	12	3	3
Europe	10	7	5	3	3	8	2	4	4	3
Middle East	1		4	1	1	1	1			
South America	2		1		1			1		1
Africa	1	1	1							1
Australia/NZ	1	1					1			

Source: GCV Analytics

Top 10 deals

Portfolio company	Location	Sector	Round	Round size ($m)	Co-Participant List
Xingsheng Youxuan	China	Consumer	Undisclosed	$2bn	China Evergrande | FountainVest Partners | KKR | Primavera Capital | Sequoia Capital | Temasek | Tencent
Databricks	USA	IT	E and beyond	$1bn	Alkeon Capital | Alphabet | Amazon | Andreessen Horowitz | BlackRock | Canada Pension Plan | Coatue | Discovery Capital | Dragoneer Investment Group | Fidelity | Founders Circle | Franklin Templeton | Geodesic Capital | GIC | Green Bay Ventures | Greenoaks Capital | Microsoft | New Enterprise Associates | Octahedron Capital | Salesforce | T Rowe Price | Tiger Global Management | Whale Rock Capital
Miaoshou Doctor	China	Health	E and beyond	$466m	China International Capital Corporation | Citic Securities | Qiming Venture Partners | Sequoia Capital | Tencent
Zomato	India	Consumer	E and beyond	$250m	Bow Wave Capital Management | Dragoneer Investment Group | Fidelity | Kora Management | Tiger Global Management
PlusAI	USA	Transport	Undisclosed	$200m	China Wanxiang Holdings | Citic | Guotai Junan | Manbang Group
Highspot	USA	Media	E and beyond	$200m	Bain & Company | Iconiq | Madrona Venture Group | OpenView Venture Partners | Salesforce | Sapphire Ventures | Shasta Ventures | Tiger Global Management
SparkPost	USA	IT	Undisclosed	$180m	LLR Partners | New Spring Capital | PNC Financial Services Group
OwnBackup	USA	IT	D	$168m	Innovation Endeavors | Insight Partners | Oryzn Capital | Salesforce | Sapphire Ventures | Vertex Ventures
Pocket Outdoor Media	USA	Media	B	$150m	Jazz Venture Partners | Next Ventures | Sequoia Capital | Specialized Bicycle Components
WuXi Diagnostics	China	Health	B	$150m	Agricultural Bank of China | China Construction Bank | Shiyu Capital | Sunland Capital | Thermo Fisher Scientific | YF Capital

Source: GCV Analytics

1 China-based community buying platform developer Xingsheng Youxuan has secured approximately $2bn in a funding round featuring Tencent and real estate developer China Evergrande Group. Sequoia Capital China led the round, which also featured FountainVest Partners, Primavera Capital Group, KKR and Temasek. It valued Xingsheng at $6bn pre-money.

Xingsheng Youxuan runs an e-commerce business that allows local communities to club together to purchase items in bulk. The company processes more than 8 million daily orders and covers more than 30,000 towns across China.

2 US-based data analytics software developer Databricks secured $1bn in a series G round featuring Microsoft, Alphabet, e-commerce group Amazon and Salesforce. The round was led by investment firm Franklin Templeton and included investment and financial services group Fidelity, among other investors. Amazon, Alphabet and Salesforce participated through Amazon Web Services (AWS), CapitalG and Salesforce Ventures respectively, and the round valued Databricks at $28bn, up from $6.2bn in its last round, a $400m series F in late 2019.

Databricks has created a data management platform that can handle all structured, semi-structured and unstructured data for enterprise-scale analytics. The technology is based on Apache Spark, the open-source analytics software developed at University of California, Berkeley, by some of Databricks' co-founders, including chief executive Ali Ghodsi, who is an adjunct professor at the university.

3 Yuanxin Technology, the China-based developer of a telemedicine platform, closed a RMB$3bn ($466m) series E round co-led by Tencent. Venture capital firm Sequoia China co-led the round, which also featured VC firm Qiming Venture Partners, investment bank Citic Securities and CICC Capital, a subsidiary of investment banking firm China International Capital Corporation.

Founded in 2015, Yuanxin has created a mobile app called Miaoshou Doctor that enables users to access a network of 1.3 million doctors for online consultations outside normal work hours, in addition to paying for prescription medicine and buying health insurance. The company has about 7 million daily active users and also manages online portals for some 200 Chinese hospitals across 80 cities.

4 Zomato, an India-based food delivery app operator that counts corporates Ant Group, Info Edge and Delivery Hero as investors, secured $250m at a $5.4bn valuation, according to a stock exchange filing. Investment and financial services group Fidelity Management and

Research contributed $55m to the round, which featured $20m from Bow Wave Capital Management, an investment firm that targets companies affiliated with or backed by financial services provider Ant Group and its parent, e-commerce firm Alibaba.

Zomato was founded in 2008 as a restaurant review and discovery platform but has since added on-demand food delivery to its services. The company is reportedly considering an IPO during the first half of 2021.

5 US-based autonomous truck technology developer Plus closed a $200m round, co-led by automotive components producer Wanxiang through its Wanxiang International Investment unit. Investment bank Guotai Junan International and investment banking group Citic's CPE subsidiary co-led the round with existing backers including Full Truck Alliance, the trucking services marketplace also known as Manbang Group.

Formerly known as Plus.ai, Plus is developing a self-driving system designed for use with trucks, and working with original equipment manufacturers, fleet managers and shipping companies to fine-tune its technology.

6 US-based sales management software provider Highspot secured $200m at a $2.3bn valuation in a series E round that included management consulting firm Bain & Company and Salesforce. The latter invested through corporate venturing unit Salesforce Ventures.

Highspot has built an artificial intelligence (AI) and data-enhanced platform that helps sales representatives manage customer relations, leads and accounts. The money will be used to improve the company's products, increase its presence in France and the Asia-Pacific region, boost its partner network and support the sales community.

7 US-based email optimisation technology developer SparkPost received $180m from financial services firm PNC Bank and private equity firms LLR Partners and NewSpring Capital. Founded in

Autonomous truck technology developer Plus closed a $200m round

2014, SparkPost has built a data-enhanced software platform that enables users to send business emails to their target audience that comply with cybersecurity requirements. The company claims the tool is responsible for distributing almost 40% of the world's marketing emails, on behalf of corporate customers including Adobe, Booking.com, Rakuten, The New York Times and Zillow. It will use the cash to accelerate growth, support research and development efforts and boost its sales.

8 US-based data backup platform operator OwnBackup secured approximately $168m in a series D round co-led by Salesforce Ventures. Growth equity firm Insight Partners and VC firm Sapphire Ventures co-led the round, which included Innovation Endeavors, Oryzn Capital and Vertex Ventures. It valued the company at $1.4bn, and it said the round brought its overall funding to about $268m since it was founded in 2015.

OwnBackup has built a software tool that enables enterprise customers to manage and store data on cloud-based platforms such as Salesforce, helping protect data from corruption and loss, meet regulatory compliance requirements and offer cybersecurity services. The cash will be used to expand its business internationally and improve its technology.

9 US-based sports media company Pocket Outdoor Media completed a $150m series B round featuring Zone 5 Ventures, the VC firm funded by bicycle component producer Specialized Bicycle. Sequoia Heritage, the community

Pocket Outdoor Media, a sports media company, completed a $150m Series B

investment platform formed by VC firm Sequoia Capital, led the round, which included Jazz Ventures and Next Ventures. Founded in 2017, Pocket Outdoor provides a diversified media offering focused on active lifestyles and adventure sports that spans web, print, social media and video content as well as podcasting. It has rebranded as Outside and bought or agreed to acquire adventure media company Outside Integrated Media, adventure sports producer Outside TV, event registration software developer AthleteReg, cycling magazine publisher Peloton and mapping app developer Gaia GPS.

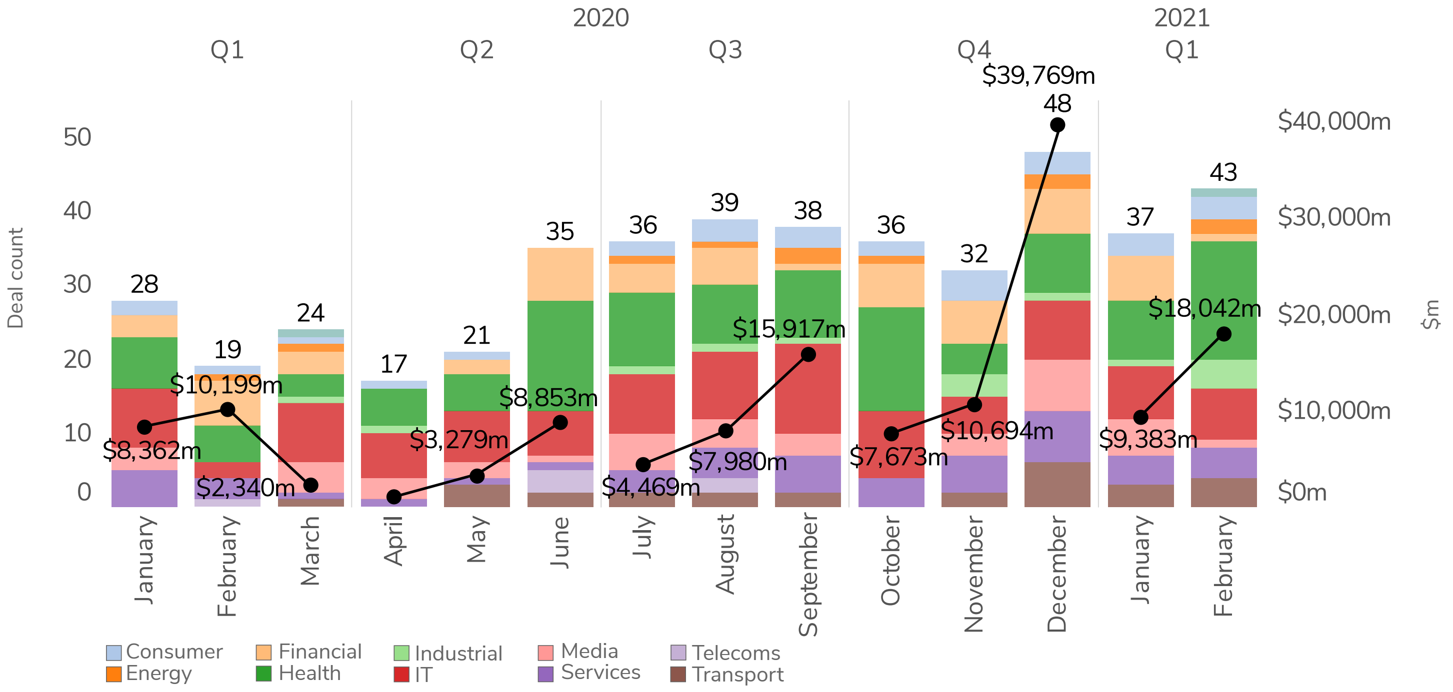
10 China-based medical diagnostics technology provider WuXi Diagnostics closed a $150m series B round featuring scientific instrument producer Thermo Fisher Scientific. ABC International Holdings, a subsidiary of financial services firm Agricultural Bank of China, also took part in the round, as did CCBI Tech Venture, a vehicle for financial services firm China Construction Bank. The round was filled out by healthcare investment firm Shiyu Capital, healthcare fund Sunland Capital and private equity firm YF Capital, while investment bank CEC Capital was the financial adviser.

WuXi Diagnostics has developed a technology platform that uses big data and AI algorithms to create diagnostics products or services or help customers accelerate their research and development activities. The company had already formed a collaboration agreement with Thermo Fisher and medical research and care provider Mayo Clinic that focuses on covid-19.

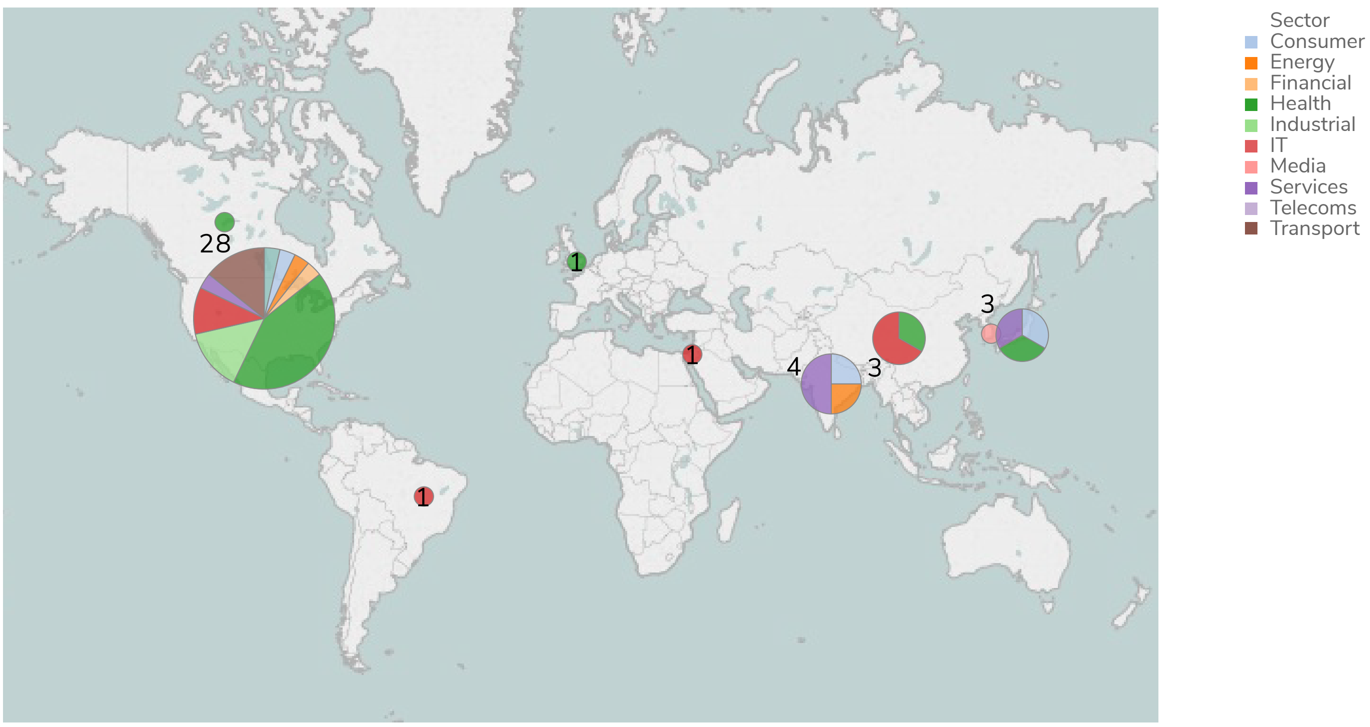
Exits

By month

GCV Analytics tracked 43 exits involving corporate venturers as either acquirers or exiting investors in February. The transactions included 15 acquisitions, 12 initial public offerings (IPOs), 15 other transactions, mostly reverse mergers with special purpose acquisition companies (Spacs) and one merger.



Global view of exits



Source: GCV Analytics

Top 10 exits

Portfolio company	Location	Sector	Exit type	Acquirer	Exit size ($m)	Co-Participant List
Kuaishou	China	IT	IPO		$5.4bn	Boyu Capital | Sequoia Capital | Temasek | Tencent | Yunfeng Capital
Lucid Motors	USA	Transport	Other		$2.5bn	Churchill Capital Corp IV | Mitsui
Hyperconnect	South Korea	Media	Acquisition	Match Group	$1.73bn	Altos Ventures | SoftBank
ReNew Power	India	Energy	Other		$1.2bn	Chubu Electric Power | RMG Acquisition Corporation II | Tokyo Electric Power
Drizly	USA	Consumer	Acquisition	Uber	$1.1bn	Abundance Partners | Atlas Venture | Avenir | Breakaway Ventures | Continental Advisors | Fairhaven Capital | First Beverage Group | Polaris Venture Partners | Reynolds & Company Venture Partners | Suffolk Equity Partners | Tiger Global Management | undisclosed investors | Vayner RSE
Joby Aviation	USA	Transport	Other		$835m	Intel | JetBlue | Reinvent Technology Partners | Toyota | Uber
Decipher Biosciences	Canada	Health	Acquisition	Veracyte	$600m	Baird Capital | CD-Venture | CRG | EVP Capital Management | Merck & Co | Tekla Capital Management | undisclosed investors | UnitedHealth Group | Yonghua Capital
Sana Biotechnology	USA	Health	IPO		$588m	Abu Dhabi Investment Authority | Alaska Permanent Fund | Alphabet | Altitude Life Science Ventures | Arch Venture Partners | Baillie Gifford | Bezos Expeditions | Canada Pension Plan | Fidelity | Flagship Pioneering | Omega Funds | Osage University Partners | private investors | Public Sector Pension Investment Board
23andMe	USA	Health	Other		$500m	Alphabet | GSK | Illumina | Johnson & Johnson | Roche | VG Acquisition Corp | Virgin | WuXi AppTec
Markforged	USA	Industrial	Other		$425m	Microsoft | One | Porsche | Siemens

Source: GCV Analytics

The exit count figure was more than double that of February 2020 (19). The total estimated exited capital stood at $18.04bn, up 76% from $10.2bn recorded in the same month last year and nearly double the estimated $9.38n in January this year.

1 China-based video streaming platform developer Kuaishou Technology raised $5.4bn in an IPO on the Hong Kong Stock Exchange that scored exits for internet groups Tencent and Baidu. The company issued about 365 million shares priced at HK$115 ($14.83) each. Its shares surged to HK$338m at the start of trading and closed at HK$300.00, giving it a market cap of roughly $160bn.

Investment and financial services group Fidelity bought $270m of shares in the IPO while Capital Group purchased $500m, Invesco $270m and Morgan Stanley Investment Management $125m according to Nikkei. The Japanese newspaper also named GIC, Abu Dhabi Investment Authority, Canada Pension Plan Investment Board and Boyu Capital as buying investors.

Kuaishou has built a short-form social video app with more than 300 million daily active users. Its chief rival, Douyin, is better known internationally as TikTok.

2 Lucid Motors, a US-based luxury electric vehicle provider backed by diversified conglomerate Mitsui, agreed to execute a reverse merger with SPAC Churchill Capital Corporation IV. The deal involves a combined equity value of almost $11.8bn and the company will be listed on the New York Stock Exchange, after Churchill's flotation in a $1.8bn IPO in July. Saudi Arabia's Public Investment Fund anchored a $2.5bn private investment in public equity (PIPE) financing for the company at an initial pro-forma equity valuation of approximately $24bn.

The PIPE includes investment and financial services group Fidelity, Franklin Templeton, Neuberger Berman, Wellington Management, Winslow Capital Management and funds and accounts managed by BlackRock. Lucid has been developing a luxury sedan dubbed the Lucid Air that is slated for later this year. It also expects to launch a luxury sports utility vehicle dubbed Gravity in 2023. It also plans to offer its technology to third parties.

3 Online dating platform Match Group agreed to buy South Korea-based online communication technology provider Hyperconnect for approximately $1.73bn, which would allow telecoms and internet group SoftBank to exit. Founded in 2014, Hyperconnect operates

a one-on-one video and audio chatting app called Azar that has been downloaded more than 540 million times, and Hakuna Live, a group livestreaming app featuring augmented reality avatars that has been downloaded more than 23 million times. The company generated more than $200m in revenue over the course of 2020 and claims to have become already profitable.

4 ReNew Power, an India-based renewable energy provider backed by energy utilities Chubu Electric Power and Tokyo Electric Power, agreed to a reverse merger with SPAC RMG Acquisition Corporation II. Funds and accounts managed by BlackRock, BNP Paribas Energy Transition Fund, Sylebra Capital, TT International Asset Management, TT Environmental Solutions Fund, Zimmer Partners and private investor Chamath Palihapitiya have committed $855m of PIPE. With $345m already held by RMG, ReNew Power will have access to $1.2bn in gross proceeds following the merger. The transaction values the combined business at $8bn.

Founded in 2011, ReNew operates more than 100 utility-scale solar power plants and wind farms across nine Indian states. It has also expanded into related areas, such as energy storage. The company will use proceeds to expand its power generation capacity and reduce its debt.

5 Vayner/RSE, the VC firm backed by creative agency VaynerMedia, will exit US-based alcohol delivery service Drizly, which will be acquired by ride hailing service Uber for $1.1bn. Drizly operates an e-commerce platform that offers beer wine and spirits to customers in 1,400 towns and cities through partnerships with local shops, allowing users to schedule delivery. It will operate as a subsidiary of Uber once the transaction closes. Uber already delivers food through its Uber Eats subsidiary, and has moved into areas such as groceries and prescription medicine as coronavirus restrictions have made those services more feasible.

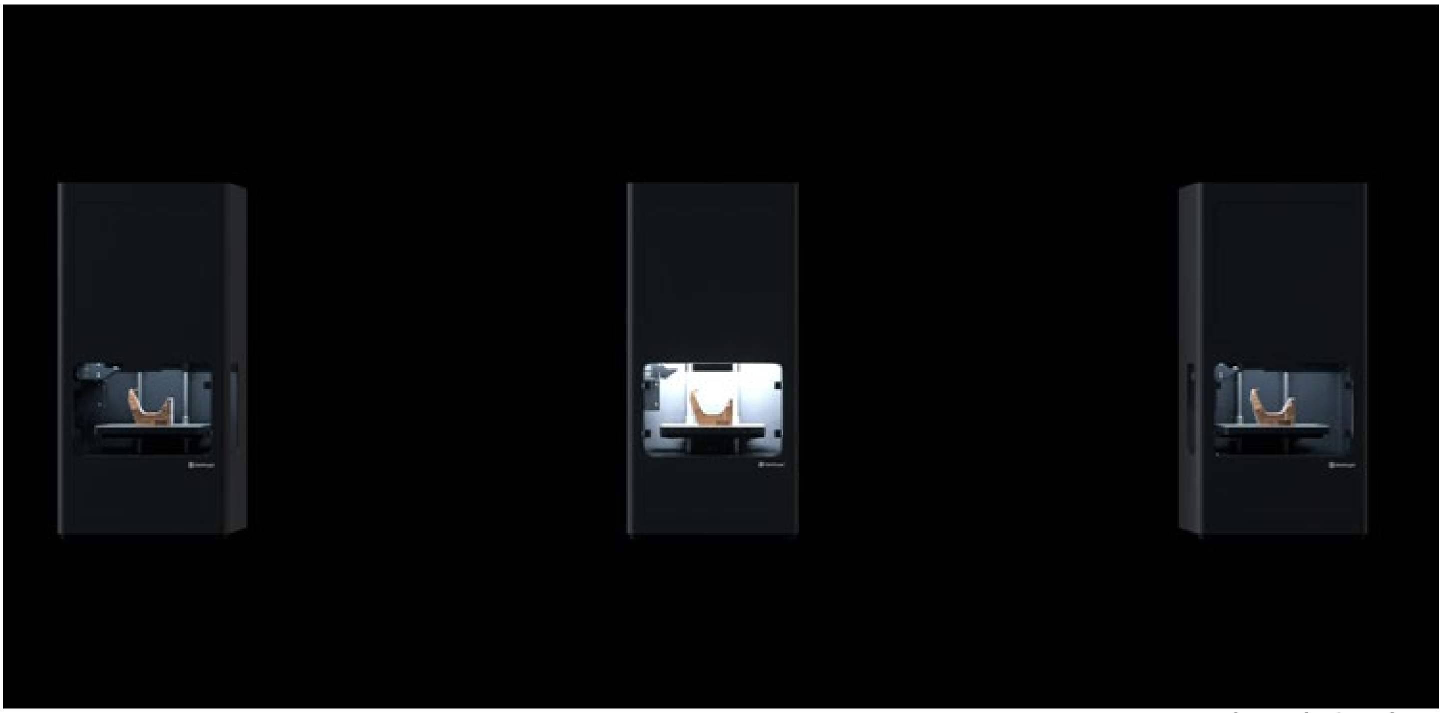
6 Joby Aviation, a US-based air taxi developer backed by chipmaker Intel, airline JetBlue, automaker Toyota and ride hailing service provider Uber, agreed a reverse merger with SPAC Reinvent Technology Partners. Baupost Group, funds and accounts managed by BlackRock, Fidelity and Baillie Gifford have anchored a $835m private investment in public equity, while Uber will convert $75m of bonds into equity. The merged business will trade on the New York Stock Exchange. Founded in 2009, Joby is developing vertical take-off and landing aircraft to take passengers to their destinations by air. The company has conducted more than a thousand test flights and intends to launch its service in 2024. Proceeds will allow Joby to begin its commercial flights by getting regulatory approvals and opening manufacturing sites.

Drizly delivers alcohol

7 Genomic testing technology developer Veracyte agreed to buy Decipher Biosciences, a US-based peer backed by pharmaceutical group Merck & Co and healthcare provider UnitedHealth Group, for $600m. The deal will entail Veracyte paying roughly 40% in cash and the remainder in stock consideration, subject to purchase price adjustments.

Decipher was founded in 2008 as GenomeDx Biosciences, and has built genomic diagnostics products that primarily identify prostate and bladder cancers. Veracyte is working on similar diagnostics tools focusing on breast, lung, thyroid cancers and idiopathic pulmonary fibrosis, a chronic lung disease caused by scarring of lung tissues.

8 US-based stem cell medicine developer Sana Biotechnology raised almost $588m in an enlarged IPO representing an exit for GV,



Markforged's industrial 3D printer

a subsidiary of Alphabet. The company issued 23.5 million shares on the Nasdaq Global Select Market, up from a planned 15 million, priced at $25.00 each, above the $20 to $23 range it had set. The IPO price valued Sana Bio at $4.9bn and its shares surged 40% on the first day of trading to close at $35.10, giving it a market cap above $6.4bn. This was the largest IPO ever for a preclinical biotech company, according to Axios.

Sana Bio is developing cell therapies that are capable of evading the body's own immune system to avoid undesired immune responses. The company will put $190m of the IPO proceeds into development of its in vivo cell engineering platform and related candidates, $190m toward its ex vivo cell engineering platform and related assets, $80m to expanding its manufacturing capabilities and $40m to research and development.

9 23andMe, the US-based genetic testing service backed by Alphabet, WuXi AppTec, pharmaceuticals Johnson & Johnson, GlaxoSmithKline (GSK), Roche and Illumina, agreed a reverse merger with a SPAC. VG Acquisition Corp, which is sponsored by conglomerate Virgin Group, floated on the New York Stock Exchange in a $480m initial public offering in October 2020, and the merged business will take its listing on the exchange.

The transaction will value the company at $3.5bn and will be supported by $500m in financing from Virgin founder Richard Branson, 23andMe co-founder and chief executive Anne Wojcicki, funds managed by investment and financial services group Fidelity, Altimeter Capital, Casdin Capital and Foresite Capital. Founded in 2006, 23andMe provides home testing kits that customers send back in order to get information on genealogy and their potential genetic susceptibility to diseases.

10 Markforged, a US-based industrial 3D printer manufacturer backed by corporates software developer Microsoft, automaker Porsche and industrial conglomerate Siemens, agreed to undertake a reverse merger with special purpose acquisition company One to list on the New York Stock Exchange. Porsche Automobil Holding and M12, vehicles for Porsche and Microsoft, have committed to a $210m private investment in public equity led by Baron Capital Group.

With the money already held by One, Markforged will have access to $425m in gross proceeds. The combined business will be valued at $2.1bn and will trade under the ticker symbol MKFG once the transaction concludes this summer. Founded in 2013, Markforged has developed an artificial intelligence-powered additive manufacturing platform. It will use proceeds to drive business growth, launch additional products and introduce more proprietary materials.

Note: Monthly data can fluctuate as additional data are reported after each issue of GCV magazine goes to press.