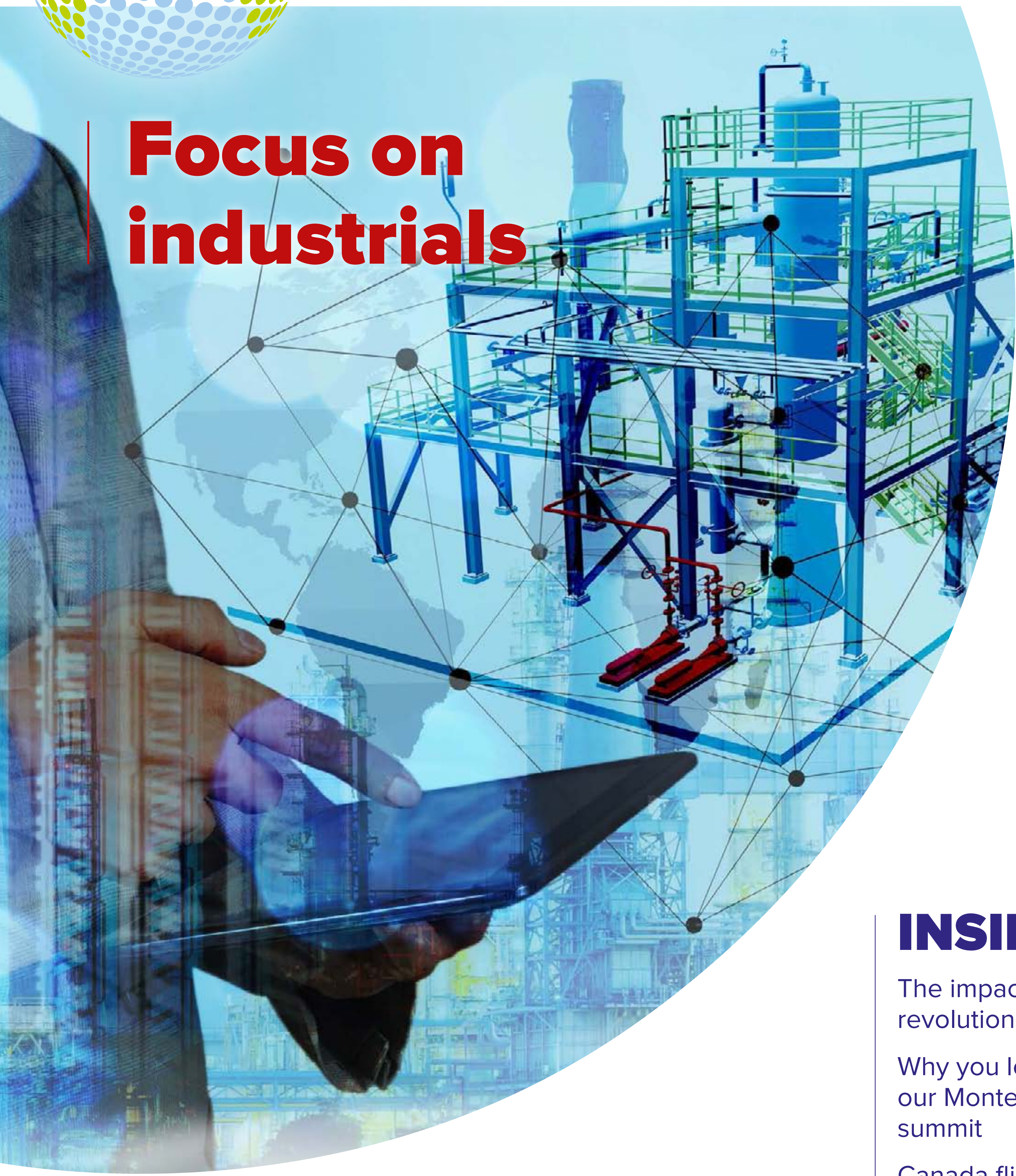
March 2018

Global Corporate Venturing

Focus on industrials



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EDITORIAL

The way forward

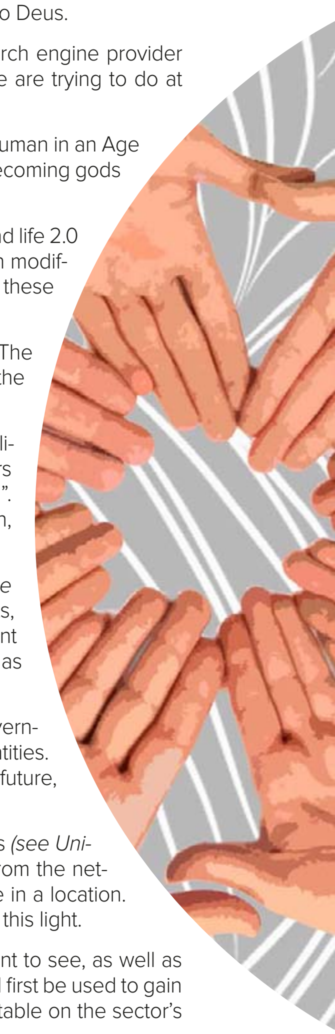
James Mawson, editor-in-chief

Entrepreneur Elon Musk has a handy way of thinking about challenges, whether interplanetary exploration or building batteries and cars. In a 2012 interview, Musk said: "It is important to reason from first principles rather than by analogy. The normal way we conduct our lives is we reason by analogy. We are doing this because it is like something else that was done or it is like what other people are doing – slight iterations on a theme. First principles is kind of a physics way of looking at the world. You boil things down to the most fundamental truths and say: 'What are we sure is true?', and then reason up from there."

For people, a first-principles approach could be looking at the way they dealt with the initial challenges of dealing with famine, plague and war, and are now starting to grapple with second-order priorities of immortality, happiness and gaining the god-like powers to achieve them, according to Yuval Harari in his books, Sapiens and Homo Deus.

As Demis Hassabis, founder of UK-based machine learning platform DeepMind, acquired by search engine provider Google, has said: "We really believe that if you solved intelligence in a very general way, like we are trying to do at DeepMind, then step two [using intelligence to solve everything else] would naturally follow on."

As with Harari, Prof Max Tegmark, founder of the Future of Life Institute and author Life 3.0: Being Human in an Age of Artificial Intelligence, is trying to ask people to project forward from the implications of humans becoming gods and then help influence and decide how we get there.



As Tegmark said, if life 1.0 primarily consisted of bacteria working towards replication and survival, and life 2.0 consisted of animals pursuing goals beyond survival by manipulating their environment rather than modifing themselves, then life 3.0 is the "master of its own destiny". But the organising principles while these modifications are under way are at an interesting point.

Gerald Davis, professor of management and organisations at University of Michigan, in his book – The Vanishing American Corporation: Navigating the Hazards of a New Economy – said: "We are past the point where [corporations] are the most sensible way to organise the economy."

"We are past the point where corporations are the most sensible way to organise the economy."

To Davis, signs of the corporation's challenges began in the 1980s and 1990s, as the rise of financialisation – in which financial services account for a higher share of national income than other sectors – transformed the US economy and "they learned it does not pay to be big, but it pays to be small". Or it pays at least to work in a distributed way with smaller companies and rely less on financialisation, with Davis pointing to Canada *(see innovative region report)* as an example for the US.

Whether through the potential break-up of storied corporations, such as industrials group GE *(see sector focus)*, or distributed conglomerates owning partial or majority stakes in a wide range of assets, including Google's parent Alphabet, or equivalents, such as South Africa's Naspers, China's Tencent and Alibaba and US stalwart Berkshire Hathaway, the creative disruption and relationships offer as much potential as cause for concern.

This re-evaluation of structures and purpose is encompassing almost all areas. Politicians and government officials are looking at how technology changes how they represent people, robots and entities. Universities are also looking more closely at how they engage with where their students will work in future, and the results, or impact on society and the economy, of their research and teaching.

This is also pushing academic institutions towards encouraging or incubating startups and spinouts *(see University Corner)*. Threats might emerge in new ways as university power has as much emanated from the network effects of its students and faculty as from the power to accredit or hold stores of knowledge in a location. Different models developed by venture capital and their portfolio companies could pose threats in this light.

As artificial intelligence comes increasingly to the fore, people are asking what change do we want to see, as well as where will we first see signs of its emergence? The media is one of Tegmark's hypotheses, that it will first be used to gain both money and influence in the world. This will form the starting point for an invitation-only roundtable on the sector's future at our GCV Symposium in May 22-23.

Form, however, follows function. Sir Ronald Cohen, serial entrepreneur and investor *(see comment)*, talks about the 21st century being about risk, return and impact.

And if the goal of business moves beyond profit or loss considerations then longer-term impact analysis will be important. The GCV Symposium's theme is "going beyond capital" because while the focus will be on how startups and entrepreneurs can benefit from being lifted by their corporate investors and those corporates benefit from increased exposure to emerging technologies, the ability to create new ecosystems and to connect their startups to other parts of their own corporations for commercial arrangements and other collaborations, the provision of money is only one factor.

For entrepreneurs and incumbent corporations to change the world, regardless of principles held, the same building blocks are required – capital, customers, product development, hiring and, eventually, an exit. ◆

NEWS

Ugras bids goodbye to IBM

George Ugras has left his position as head of US-listed computing technology provider IBM's corporate venturing unit, IBM Ventures, and is looking to set up a new venture capital fund. According to a source, Wendy Lung – a 2018 Global Corporate Venturing Rising Star – is understood to be stepping up as acting head of IBM Ventures. Lung declined to comment.

Ugras, who was unavailable for comment, replaced Claudia Fan Munce as head of IBM Ventures after she announced her retirement during the Global Corporate Venturing & Innovation Summit in January 2016.

When he joined IBM Ventures, Ugras described his mission as "aiming to be one of the leaders in the new approach to corporate venturing". He said: "Our goal is to impact every aspect of our business – how we deliver products and services to our clients, ensuring innovation that now is being distributed across so many great startups is accessed by us and by our clients."

A source close to the company said IBM Ventures' mission had changed since then, possibly in response to the parent company's declining revenues and to the unit being spread across multiple business units, rather than operating centrally.

Ugras's career in the venture capital arena started at Apax Partners in New York, where he invested in early-stage technology companies. He subsequently moved to Silicon Valley and was a partner at Adams Capital Management, where he funded and helped develop a number of companies in the enterprise sector.

In 2014, Ugras launched CyteGen, a neurodegenerative disease treatment development group funded by Peter Thiel's Breakout Labs initiative. He has also advised a number of incubators and startups, as well as corporate and financial venture funds.

George Ugras

Wendy Lung

Volk vacates GE Ventures for NVCA role

Stephanie Volk has left GE Ventures, the corporate venturing unit of industrial products and appliances maker General Electric, to become vice-president of development at US trade body the National Venture Capital Association (NVCA).

Volk had been a manager for commercial development at GE Ventures since 2014, overseeing the launch of Edge, an initiative enabling GE Ventures portfolio companies to access expertise, resources and connections. Volk was a deputy communications director for the New York City Department of Education for two years from 2007, taking roles at New York City Economic Development Corporation, Clean Energy Coalition and Pacific Gas and Electric before registering for GE's Experienced Commercial Leadership Program in 2012.

The NVCA expects Volk to bring expertise in building partnerships in the venture capital community and setting up resources for startups, as well as experience in business, marketing and economic development. Her appointment also expands NVCA's presence in the San Francisco Bay area.

Kovacs to cover communications at Vision Fund

Andrew Kovacs has left venture capital firm Sequoia Capital to be global head of communications at the near-$100bn SoftBank Vision Fund, the venture capital fund run by telecoms firm SoftBank.

Sequoia appointed Kovacs in 2012 as its first communications and policy lead, assigning him responsibilities that included marketing services for the firm's portfolio companies. Previously he spent five years working in communications and public affairs as a senior manager at internet technology provider Google.

SoftBank hired 10 team members for the Vision Fund at its London headquarters at the end of 2016, but Kovacs will be based in San Francisco, alongside other recent hires.

Campbell settles into innovation at Gore

Paul Campbell has joined US-based advanced materials manufacturer WL Gore & Associates as co-leader of its co-innovation lab, Gore Innovation Centre.

The centre is an 11,000-square-foot hub for product development and prototyping that connects Gore with Silicon Valley's entrepreneurial ecosystem. Campbell will continue to work at Startup Genie, the entrepreneurial consultancy where he has been CEO since 2009, with responsibility for incubation and corporate entrepreneur programs as well as partnerships with unspecified Fortune Global 500 companies.

A co-founder of Silicon Valley Innovation Group, which advises innovation executives and corporates, Campbell also helped launch a global product development course at Hult International Business School, where he remains involved as a professor.

NEWS

Schüller shelves Google job for Capnamic return

Sebastian Schüller has moved from a position working with startups at internet technology provider Google to an investment manager role at Germany-based venture capital firm Capnamic Ventures. He worked with Germany-based technology startups as a digital growth strategist at Google for almost 18 months, having previously worked at Capnamic from 2014 to 2016.

Capnamic invests in companies focusing on business-to-business technology and services, digital transformation and infrastructure in German-speaking regions from seed stage to series B stage. The firm announced Schüller's hiring at the same time as the promotion of Christian Knott from principal to partner, and the appointment of Frederik von Bossel as an investment analyst.

George Gogolev

Gogolev goes to Severstal

Steel producer and mining company Severstal has hired George Gogolev from state-owned fund of funds Russian Venture Company as head of disruptive innovation. Gogolev joined Russian Venture Company in 2012 as head of high-tech products market development. He moved through a variety of roles before being appointed director of corporate innovation and technology transfer in August last year.

Laurence Toney

Toney applies himself to Plexo

Laurence "Lo" Toney, a partner at GV, Google's corporate venturing vehicle, is to leave the unit once he has completed raising a spinoff fund, Axios has reported. The US-based fund in question, Plexo Capital, will back venture capital funds with women or underrepresented ethnic minorities as limited partners. It also plans to make direct investments in the portfolio companies of funds to which it has provided capital. Toney joined GV in 2015 from Comcast Ventures, the corporate venturing arm of the mass media group, where he was a partner for its Catalyst Fund.

Baidu Ventures bands together $318m

Baidu Ventures, the corporate venturing subsidiary of the China-based internet group, has closed its third fund after raising almost RMB2bn ($318m).

The vehicle, Baidu's second renminbi-denominated fund, will invest in artificial intelligence and big data-orientated companies, China Money Network reported. In addition to capital from Baidu itself, the fund has secured commitments from undisclosled external limited partnerssaid to include industrial firms and a government-owned entity. Baidu generally investing at seed to series B stage in China and the US. .

Workday Ventures earns $250m from parenty

Workday Ventures, the corporate venturing vehicle formed by US-based enterprise human resources and finance management software provider Workday, has announced a $250m fund. The funds were provided in full by the unit's parent company, which launched the venture arm in 2015.

Workday Ventures invests in machine learning, artificial intelligence, enterprise-applicable technologies such as blockchain, and augmented and virtual reality. The fund will be run by Leighanne Levensaler, senior vice-president of corporate strategy, and Workday co-president Mark Peek, both acting as managing directors.

Ping An Ventures pursues $1.3bn

Ping An Ventures, the corporate venture capital vehicle for the China-based insurance group, is looking to raise $1.3bn, accordinf to Reuters. The unit is seeking between $300m and $500m for a dollar-denominated fund, and between RMB4bn and RMB5bn ($640m to $800m) for a renminbi-denominated fund, both of which will invest at growth and pre-initial public offering stages.

Founded in 2012, Ping An Ventures participates in deals covering a relatively wide range of sectors, including science and technology, media, internet and mobility technology, consumer platforms, finance and healthcare. Both the new funds will focus on healthcare.

NEWS

V2 hits $10m target for seed fund

V2 Games, a Canada-based former video game studio now operating as an investment company, has launched a $10m seed vehicle with a commitment from its venture builder Victory Square Technologies.

The unit, Future Fund, will invest in businesses in gaming, including game developers, eSports startups and companies that use blockchain, a priority sector in the gaming ecosystem for Victory Square, the fund's largest limited partner.

At least half the funds capital will go to Canada-based gaming startups. It will aim to exploit growth in the video games industry and identify "blue ocean opportunities" presented by changing technologies.

V2 Games was founded in 2013 and has previously received equity funding from Victory Square, according to the latter's website.

B Capital caps fund at $360m

B Capital Group, the US-based investment firm sponsored by management consultancy Boston Consulting Group (BCG), has closed an oversubscribed venture capital fund at $360m.

Founded in 2015 in partnership with BCG, B Capital invests globally in healthcare, financial and insurance technology, transportation and industrial logistics, and what it refers to as "consumer enablement". The new fund reached its first close at approximately $144m in 2016, and co-founders Eduardo Saverin and Raj Ganguly hinted at the time that the firm was aiming for a final close of about $250m.

The firm – which operates from three US offices and one in Singapore – intends to back between 20 and 25 portfolio companies with the fund, with the extra capital allowing it to make follow-on investments, Ganguly said in a blog post.

Armstrong last in for Singapore initiative

Industrial equipment maker Armstrong Industrial Corporation has joined Spring Seeds Capital, the venture capital branch of government agency Spring Singapore, in a S$200m ($150m) co-investment scheme. The corporate is the last of nine co-investment partners rounded up by Spring Seeds Capital (SSC) to be part an eight-year scheme to invest in startups in advanced manufacturing and engineering, health and biomedical sciences, and urban and sustainability technology developers.

Other partners include infrastructure support services provider Silicon Solution Partners; Heritas Capital Management, a private equity arm of diversified holding group IMC; and Trendlines Medical-K2 Global, a partnership between innovation commercialisation firm Trendlines and venture capital firm K2 Global; VC firm HealthXCapital, startup accelerators Small World and MedTech Alliance 2; technology investment firm Incuvest-Avior; and investment manager Millennia-VFT Ventures.

Vision Esports wins $38m

US-based private equity firm Vision Venture Partners has launched an eSports-focused fund with $38m funding round led by Evolution Media, the investment firm co-founded by talent agency CAA.

The fund's other backers include baseball franchises New York Yankees and St Louis Cardinals, and Shamrock Holdings, an investment firm owned by the estate of Roy Disney, formerly a senior executive at entertainment conglomerate Walt Disney. Other investors are Seth Bernstein Capital Management, Simon Tikhman of music management and publication services provider First Access Entertainment, and private investors including American footballer Odell Beckham.

While Vision Esports is an investment fund, it also hosts production studios and eSports training facilities. It is the largest shareholder in eSports talent agency Echo Fox, gaming world record validator Twin Galaxies and eSports content and event provider Vision Entertainment.

Corporates to star in Stellaris fund

Networking equipment maker Cisco, enterprise software producer SAP and IT services firm Infosys have backed India-based venture capital firm Stellaris Venture Partners' first fund, Times of India reported.

Stellaris raised an initial $50m for the fund early last year and is targeting a $100m final close. It is focusing on consumer and business-orientated startups from sectors including cloud computing, the internet of things, machine learning, enterprise applications and analytics. The fund has also attracted capital from the state-backed Small Industries Development Bank of India, as well as undisclosed family offices and individual investors.

Cisco reportedly made a $10m contribution through its corporate venturing arm, Cisco Investments. Infosys provided $4.6m for the fund from its $500m Innovation Fund in November 2016.

NEWS

NVP initiates $1.5bn fund

Norwest Venture Partners (NVP), the US-based venture capital firm sponsored by financial services firm Wells Fargo, has closed its largest fund yet at $1.5bn.

Norwest Venture Partners XIV will invest from seed to late stage in consumer, enterprise and healthcare technology developers. The firm's last fund, Norwest Venture Partners XIII, closed at $1.2bn at the start of 2016.

NVP is due to open a new office in San Francisco, and has hired Parker Barrile and Scott Beechuk as partners, the former for its internet and consumer team and the latter for its enterprise team. The firm has also promoted Jon Kossow, who joined NVP in 2009 to develop its growth equity practice, from general partner to managing partner, and Lisa Wu, who joined in 2012, to partner on its venture capital team.

Alibaba ventures to SkyDeck for $24m fund

SkyDeck, a startup accelerator run by University of California Berkeley, has closed an oversubscribed $24m fund with capital from limited partners including e-commerce group Alibaba, Axios reported.

Venture capital firms Sequoia Capital and Mayfair Venture Capital supplied capital along with assorted alumni who participated through various investment vehicles. The fund had an original target size of $10m, according to Axios.

The Berkeley SkyDeck Fund has an exclusive licence with the university to invest in SkyDeck's accelerator participants. It emerged with a portfolio of 16 companies, all of which are members of the current Skydeck cohort, receiving $100,000 in return for a 5% equity stake. The fund will donate half its profit to UC Berkeley to support research, education and entrepreneurship. It is led by founding partner and former hedge fund manager Chon Tang.

Spiral Japan reaches $64m close

Venture capital firm Spiral Ventures has closed its first Japanese fund at ¥7bn ($64m) after receiving commitments from a range of corporates.

Spiral Ventures Japan Fund 1's investors include Asics Ventures Corporation, the corporate venturing arm of apparel brand Asics, as well as logistics service provider Seino Holdings, property developer Mori Trust and publisher Tosho Printing Company. The corporates were joined by the Japanese state-mandated Organisation for Small & Medium Enterprises and Regional Innovation, an undisclosed Japan-based domestic security company and an unnamed international hedge fund.

The Spiral fund invests in the space where technology and the internet meet traditional offline industries such as transport, agriculture, logistics or healthcare. It typically provides ¥50m to ¥300m for early-stage investments and up to ¥500m for later-stage deals. Spiral's Japanese activities are conducted alongside those of its other venture capital arm, Spiral Ventures Asia, which is in the process of raising $50m for its own fund.

Tyson Foods forms regional incubator partnerships

US-based meat processor and supplier Tyson Foods has forged partnerships with innovation platform Plug and Play and startup hub 1871 to help it access startups in their local communities.

The agreement means Arkansas-headquartered Tyson will be able to form connections with early-stage companies operating near Silicon Valley-based Plug and Play and Chicago-based 1871.

Tyson has been active in corporate venturing over the past year, backing plant-based food developer Beyond Meat and smart oven producer Tovala, while establishing the $150m unit Tyson New Ventures.

Mumtalakat confirms Vision Fund discussions

Bahraini sovereign wealth fund Mumtalakat has begun negotiations concerning a commitment to telecoms and internet group SoftBank's Vision Fund, which has so far secured $97.7bn in funding, Reuters reported.

The fund reached $97.7bn in November last year, six months after its $93bn first close. In addition to investment from SoftBank, the fund's limited partners include fellow corporates Apple, Qualcomm, Sharp and Foxconn. However, the largest external contributors are Saudi Arabia's Public Investment Fund, which provided $45bn, and Abu Dhabi's Mubadala Investment Company, which supplied $15bn.

Mumtalakat was first reported as being in talks with the fund in October. The discussions remain at an early stage, according to Reuters. The Vision Fund has so far committed about $40bn. Its largest deals are the $7.7bn purchase of a reported 15% stake in Uber and a $4.6bn investment in Chinese ride-hailing service Didi Chuxing.

NEWS

Corporates experiment with Israeli incubator

Crowd equity platform OurCrowd has launched an Israel-based seed-stage incubator in partnership with telecoms equipment provider Motorola Solutions and diversified conglomerate Reliance Industries.

Yissum, the technology transfer office of Hebrew University of Jerusalem, has also put its weight behind the scheme, which will form part of the incubator program administered by the Ministry of Economy's Israel Innovation Authority.

The incubator will invest in up to 100 companies over 10 years, focusing on artificial intelligence, deep learning, autonomous transportation and smart cities. It will be led by managing partner Moshe Raines, who is also general partner at OurCrowd.

OurCrowd has also co-founded a $50m fund with sports technology accelerator Lead Sports. The vehicle – Advantage – is expected to make about 15 investments in early-stage sportstech startups. It will be co-managed by Jeremy Pressman, business development associate at OurCrowd, and Christoph Sonnen, founding partner and managing director of Lead.

Disney helps increase Working Capital to $23m

Humanity United, a foundation owned by US-based impact investment firm Omidyar Group, has launched a $23m venture capital fund backed by entertainment and media group Walt Disney.

The fund, Working Capital, also has among its partners and supporters Walmart Foundation and C&A Foundation – backed by their respective retailers – Stardust Equity, Open Society Foundations and philanthropic organisation the Ray and Dagmar Dolby Family Fund. The UK government's Department for International Development has agreed to provide £2.5m ($3.5m) in sidecar grant funding for pre-investment and seed-stage support.

Working Capital aims to nurture scalable technologies that improve global labour practices, reducing worker vulnerability and encouraging better transparency and ethics in the supply chains of multinational corporations. The fund will target blockchain, machine learning, artificial intelligence, digital identity and internet-of-things technologies related to product traceability, worker engagement, sourcing platforms, risk assessment and ethical recruitment.

Calldorado to connect app developers to $12m fund

Denmark-based mobile advertising software provider Calldorado has launched a $12m investment fund to back developers of mobile apps using its caller ID-based advertising platform.

Calldorado's software development kit helps developers monetise their apps through advertisements displayed on a caller ID screen that can be added as a tool. The screen identifies callers even if they are not listed on a user's phone contacts.

Calldorado App Growth Fund will provide capital in the form of a marketing budget and will generate returns through revenue sharing, as opposed to taking an equity stake in the startups. The company plans to focus on communication, utility, productivity, tools and business apps, and the fund is intended to help developers cover user acquisition costs until adoption rates become strong enough to support their business.

Internal Calldorado specialists will provide marketing assistance to recipients of App Growth funding, focusing on areas including user acquisition, asset creation and revenue generation.

Lonza finds Prolog for corporate venturing story

Switzerland-headquartered biotechnology and chemicals supplier Lonza Group has formed a corporate venturing fund in partnership with US-based venture capital firm Prolog Ventures.

Prolog Lonza Consumer Fund will invest in North America-based consumer healthcare technology developers working on products that improve or maintain the health of people and their pets.

In particular, the fund will target areas such as personal and home care, medical food, dietary supplements, and functional food and beverages. It will be managed by Prolog Ventures and will look to back two to three startups in the "mid-single-digit million-dollar range" each year.

In addition to the formation of the fund, Rob Rosenberg has joined Prolog Ventures as a partner. He previously spent two years as senior vice-president of business and corporate development at vision-testing technology developer EyeNetra.

The Shoulders of GIANTS

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SECTOR FOCUS

Industrials forge forward

Kaloyan Andonov, reporter, GCV Analytics

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

GCV reported 227 venturing rounds involving corporate investors from the industrial sector between February 2017 and January 2018. More than half of those (118) took place in the US, while 21 were hosted in China and 12 in India.

The majority of these commitments went to emerging enterprises from the same sector (59), with the remainder going to companies from the IT (45) and health (30) sectors, among others. Industrial corporates seem to have co-invested most frequently in industrial enterprises such as Precision Hawk, Agrivida and Sarcos Robotics in recent years.

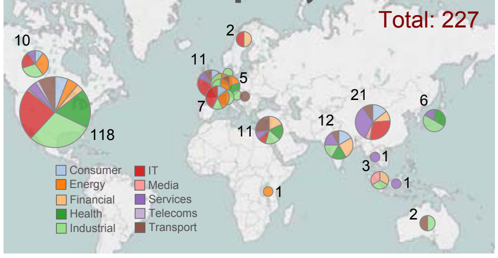
Investments in IT emerging businesses by industrial corporates can be attributed to developments in fields with applications in the industrial sector. Horizontals such as artificial intelligence and the internet of things are currently disrupting industry and piushing it towards what is often called "industry 4.0". This is largely understood to be the amalgamation of automation and big data use in manufacturing.

The interest in IT enterprises, therefore, is hardly surprising. The health and life sciences fields, on the other hand, pique corporate interest due to the potential application of advanced materials and robotics in the manufacture of pharmaceuticals and medical devices.

On a calendar year-on-year basis, total capital raised in corporate-backed investment rounds dropped 29% from $7.37bn in 2016 to $5.22bn in 2017. The deal count, however, increased by 12% from 184 in 2016 to 226 in 2017.

The 10 largest investments by corporate venturers from the industrial sector are mostly within non-industrial businesses such as consumer and transport. This indicates that industrial manufacturers, standing further down the traditional supply chain and production structure, find interesting opportu-

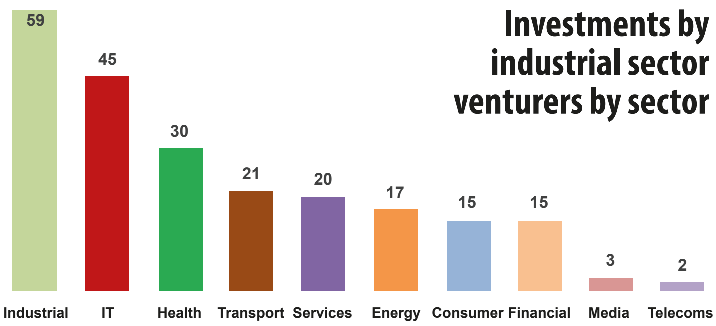
Global view of past year's deals



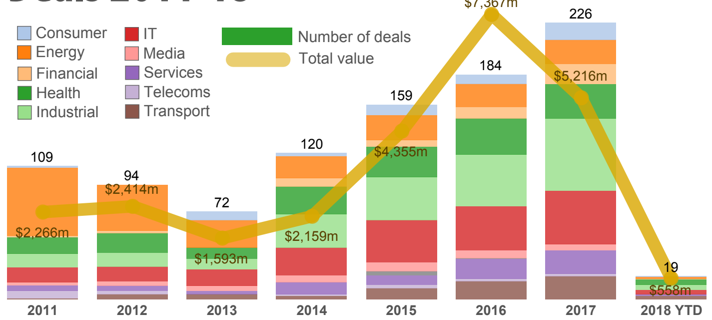
Co-investments by industrial sector venturers 2015-18

Includes only companies with two or more industrial corporate co-investors

Investments by industrial sector venturers by sector



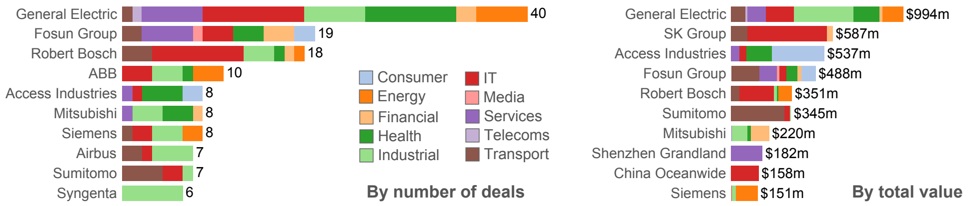
Deals 2011-18



Global Corporate Venturing

SECTOR FOCUS

Top industrial sector investors over the past year



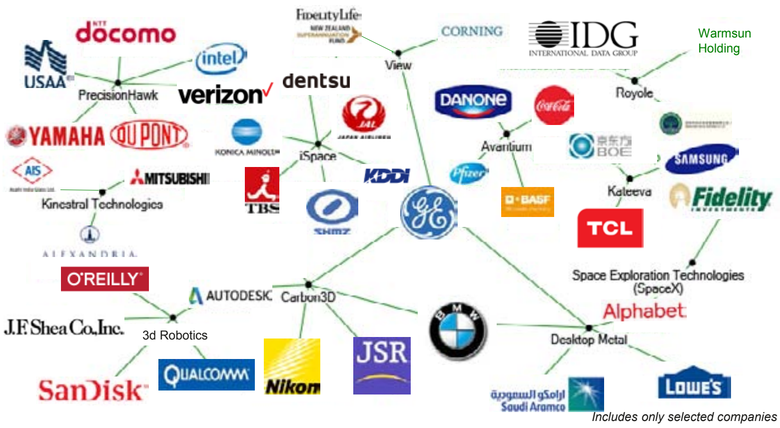
Top investors in industrial enterprises over the past year

nities in a variety of sectors that may be deemed to have strategic potential for them.

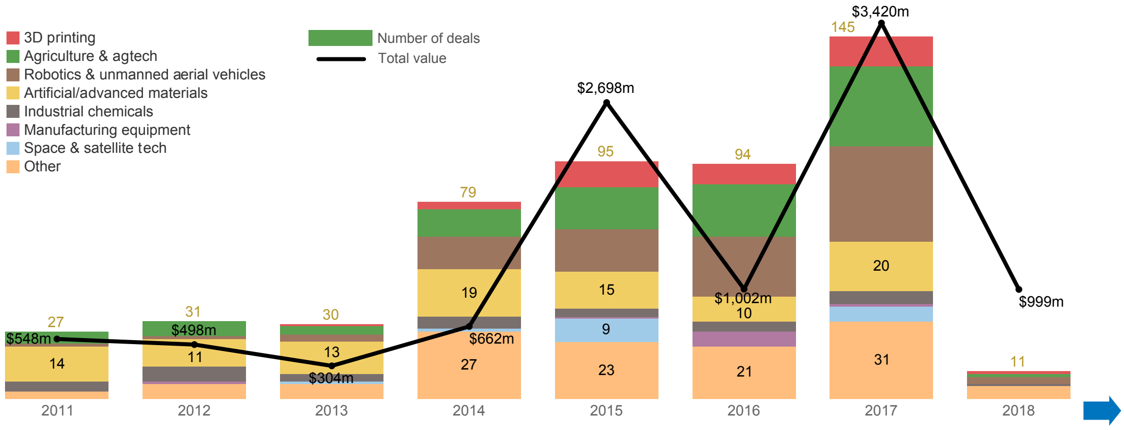
The leading corporate investors from the industrial sector were industrial conglomerate General Electric (GE), diversified conglomerate Fosun and industrial goods company Robert Bosch. GE also topped the list of industrial corporates committing capital in the largest rounds, along with conglomerates SK Group and Access Industries. The most active corporate venturers in the emerging industrial companies were diversified internet company Alphabet, mobile chip manufacturer Qualcomm and GE. Alphabet's industrial portfolio consists mostly of enterprises in areas like additive manufacturing (Desktop Metal), agtech (Farmers' Business Network, Bowery Farm) as well as robotics and drones (Veo Robotics, Airware).

Robotics and unmanned aerial vehicles, agtech and 3D printing are the three industrial subcategories that have driven most of the growth of

Corporate co-investments in industrial enterprises 2014-17



Investments in industrial enterprises 2011-18



SECTOR FOCUS

the sector since 2014. Promising enterprises in these areas, like Precision Hawk, 3D Robotics, Carbon and Desktop Metal, have attracted a network of varied corporate backers from industrial manufacturers through insurers and automotive companies, media and research firms to food and beverage producers.

Corporate investment in emerging industrial-focused enterprises grew from 2016 to 2017 in terms of both volume and value. According to GCV Analytics data, $13.42bn was invested over 145 rounds in 2017, significantly up from the $1bn invested over 94 deals in 2016.

Deals

Industrial corporates invested in a number of large rounds, raised primarily by transport-focused businesses. While there were multimillion-dollar transactions, none of the top rounds was above $500m.

Megvii, a China-based facial recognition technology developer also known as Face-plus-plus, secured about $460m in a round featuring SK Group and contract electronics manufacturer Foxconn. Russia-China Investment Fund, a private equity fund backed by the governments of each of those countries, led the round, which also reportedly featured Ant Financial, the financial services affiliate of e-commerce group Alibaba. Megvii supplies facial scanning and recognition technology to electronics and internet companies including Ant Financial, and its systems draw on identification files the Chinese government holds on its citizens.

Access Technology Ventures, the corporate venturing vehicle of Access Industries, invested $100m in US-based smartphone producer Essential Products as part of a $300m funding round. E-commerce and cloud computing firm Amazon also participated in the round, through its Alexa Fund, as did internet group Tencent, among other investors. Essential Products develops a smartphone with a high-quality 360-degree camera, an edge-to-edge display and a magnetic connector that connects accessories wirelessly.

US-based electric scooter provider Gogoro closed a $300m series C round, which valued it at more than $800m. The round included diversified conglomerate Sumitomo, energy utility Engie and consumer electronics producer Panasonic. Founded in 2011, Gogoro has developed a smart electric scooter plus a battery-swapping network for its customers, both of which were launched in Taipei, Taiwan, in 2015.

US-based 3D manufacturing technology provider Carbon raised $200m from investors including GE, apparel manufacturer Adidas and chemicals producer JSR for its series D round. Adidas and GE invested through their respective corporate venturing units, Hydra Ventures and GE Ventures. Founded in 2013 and previously known as Carbon 3D, Carbon has developed a method of 3D printing called continuous liquid interface production, a photochemical process that uses oxygen and light to produce objects from resin.

China-based bicycle rental service Hellobike received RMB1bn ($153m) in series D2 funding from investors including Fosun Capital, a subsidiary of Fosun, and venture capital firm GGV Capital. The funding will be added to the $350m in series D funding the company raised from electric vehicle developer WM Motor, VC firm Chengwei Capital and Ant Financial earlier this month. Hellobike has built an app-based bike-sharing network. Rivals Mobike and Ofo each have far more daily users but operate mainly in large urban areas, while Hellobike targets the surrounding rural areas and smaller cities.

US-based electric vehicle charging network operator ChargePoint closed a series G round led by carmaker Daimler at

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

Company	Location	Sector	Round	Size	Investors
Megvii Technology	China	IT	C	$460m	Hon Hai | Russia-China Investment Fund | SK Group | Sunshine Insurance Group
Essential Products	US	Consumer	B	$300m	Access Industries | Altimeter Capital Management | Amazon | Redpoint Ventures | Tencent | Vy Capital
Gogoro	US	Transport	C	$300m	Engie | Generation Investment Management | Panasonic | Samuel Yin | Sumitomo | Temasek
Carbon	US	Industrial	D	$200m	Baillie Gifford | Fidelity | General Electric | Hydra Ventures | Johnson & Johnson | Reinet Investments | Sequoia Capital | Silver Lake
Hellobike	China	Transport	D2	$153m	Fosun Group | GGV Capital
ChargePoint	US	Energy	E and beyond	$125m	BMW | Braemar | Linse Capital | Rho Capital Partners | Siemens
Desktop Metal	US	Industrial	D	$115m	Alphabet | Data Collective | Future Fund | General Electric | Kleiner Perkins Caufield & Byers | Lowe's Companies | Lux Capital | Moonrise Venture Partners | New Enterprise Associates | Saudi Aramco | Shenzhen Capital Group | Techtronic Industries | Tyche Partners | Vertex Ventures
Element AI	US	IT	A	$102m	Business Development Bank of Canada | Data Collective | Fidelity | Hanwha | Intel | Microsoft | National Bank of Canada | Nvidia | Real Ventures | Tencent | undisclosed investors
LeddarTech	US	Transport	–	$101m	Delphi | Fonds de solidarité FTQ | Integrated Device Technology | Magneti Marelli | Osram
Turo	US	Transport	D	$92m	Daimler | Founders Circle | Liberty Mutual | SK Group | undisclosed investors

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

Company	Location	Round	Size	Investors
Katerra	US	–	$865m	Canada Pension Plan Investment Board | Divco West Real Estate Services | Navitas Capital | SoftBank | Soros Fund Management | Tavistock Group
UBtech	China	C	$400m	Tencent | undisclosed strategic investors
Plenty	US	B	$200m	Bezos Expeditions | Data Collective | DCM | Finistere Ventures | Innovation Endeavors | SoftBank | private investors
Carbon	US	D	$200m	Baillie Gifford | Fidelity | General Electric | Hydra Ventures | Johnson & Johnson | Reinet Investments | Sequoia Capital | Silver Lake
Ouyeel	China	–	$140m	Benxi Steel Group | CCB Trust | Global Logistic Properties | Jiangsu Shagang | Mitsui | Shougang Group
Katerra	US	C	$130m	Draper Fisher Jurvetson | Greenoaks Capital | Hon Hai | Khosla Ventures | Lucas Venture Group | Moore Capital | Paxion Capital Partners | undisclosed investors
Desktop Metal	US	D	$115m	Alphabet | Data Collective | Future Fund | General Electric | Kleiner Perkins Caufield & Byers | Lowe's Companies | Lux Capital | Moonrise Venture Partners | New Enterprise Associates | Saudi Aramco | Shenzhen Capital Group | Techtronic Industries | Tyche Partners | Vertex Ventures
Brain Corp	US	C	$114m	Qualcomm | SoftBank
Farmer's Business Network	US	D	$110m	Acre Venture Partners | Alphabet | DBL Partners | Kleiner Perkins Caufield & Byers
iSpace	Japan	A	$90m	Dentsu | Development Bank of Japan | Innovation Network Corporation of Japan | Japan Airlines | KDDI | Konica Minolta | Real Tech Fund | Shimizu | Sparx Group | Tokyo Broadcasting System | Toppan

$125m, after raising an additional $19m from investors including industrial product manufacturer Siemens. BMW i Ventures, the strategic investment arm of automotive manufacturer BMW, also took part in the round. ChargePoint runs a network of almost 38,000 chargers and has more than 7,000 corporate and individual customers. It also develops the hardware and software, and intends to use the series G money to expand its network.

US-based metal 3D printing technology producer Desktop Metal closed a $115m series D round that included a range of corporate investors, including GE Ventures, petroleum provider Saudi Aramco, retailer Lowe's, home product manufacturer Techtronic Industries and Alphabet, which invested through its GV subsidiary. Desktop Metal has developed systems capable of printing 3D metal parts, one of which is small enough to fit in an office.

Canada-based Element AI secured $102m in the largest series A round for an artificial intelligence (AI) technology developer, featuring industrial conglomerate Hanwha, Tencent, software company Microsoft, semiconductor manufacturer Intel, and graphics technology provider Nvidia. Element AI is developing AI technology for use by businesses in sectors such as cybersecurity, finance, manufacturing, robotics, logistics and transportation.

Canada-based optical sensing technology developer LeddarTech secured $101m in funding from a consortium of investors led by lighting manufacturer Osram. Automotive components manufacturers Magneti Marelli and Delphi Automotive as well as semiconductor technology producer Integrated Device Technology also participated in the round. LeddarTech, spun out of National Optics Institute in 2007, is working on automotive-grade light detection and ranging (lidar) technology that uses more affordable and readily available components than similar products. Lidar technology uses a pulsed laser light and a sensor to measure reflected pulses to generate a 3D image of the environment.

US-based car-sharing service Turo raised $92m in a series D round co-led by Daimler and SK Holdings. The round also featured Liberty Mutual Strategic Ventures, the corporate venturing unit of insurance provider Liberty Mutual, among others. Founded in 2008 as RelayRides, Turo operates a peer-to-peer car-sharing marketplace.

Emerging industrial companies received financial backing from corporate investors from other sectors.

SoftBank Vision Fund, the $98bn investment fund formed by telecoms and internet group SoftBank, led an $865m series D round for US-based construction services platform Katerra. Foxconn also participated in the round. Katerra has created an end-to-end construction services business that includes architecture and interior design, engineering, the supply and construction of building materials and the construction itself. Katerra had earlier raised $130m at a valuation of more than $1bn in a series C round. Investors in that round were not disclosed.

China-based robotics technology producer UBtech Robotics closed a $400m series C round led by Tencent, reportedly valuing the company at approximately $4bn. Founded in 2012, UBtech produces family-friendly humanoid robots for a range of applications. Its products include educational kits that enable children to build and program their own robot, and a services robot that provides information in hotels and airports.

The SoftBank Vision Fund led a $200m series B round for US-based indoor farming company Plenty. The round was described by Plenty as the largest agricultural technology investment to date. Plenty is combining plant science with LEDs, microsensors and big data to grow fresh produce indoors in urban locations where it can be more easily shipped to nearby stores.

China-based online steel transaction platform Ouyeel collected $140m in funding from investors including industrial con-

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glomerate Mitsui & Co. The round was also backed by steel companies Jiangsu Shagang, Benxi Steel and Shougang, through its unit Beijing Shougang Fund Investment Company, as well as logistics services provider Global Logistic Properties and financial services firm CCB Trust. Founded in 2015 by steel company Cihna Baowu Steel, Ouyeel operates a platform that offers several steel industry-related services, such as transactions, logistics and storage, industry news, processing, investment and funding, as well as financial products.

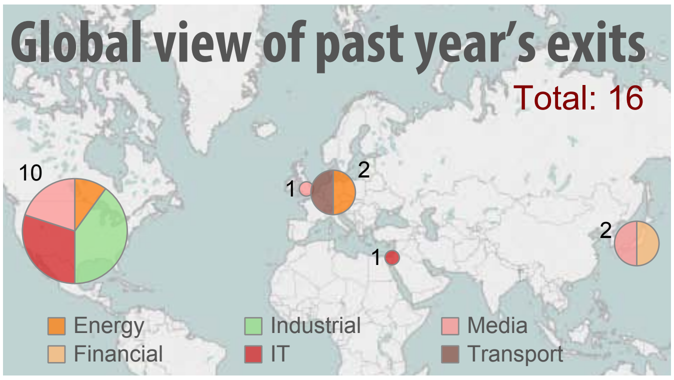
The SoftBank Vision Fund also led a $114m series C round for autonomous robotics technology developer Brain Corp. Qualcomm Ventures, the corporate venturing subsidiary of the chip company, also took part in the round. Brain is developing AI technology to allow robots to learn from their physical environments and move in a path that avoids people and obstacles. Corporate customers will need a subscription to use the platform.

US-based data-sharing platform Farmer's Business Network (FBN) obtained $110m in series D funding from investors including GV. Founded in 2014, FBN operates a social network for famers that enables the anonymous input of information on topics such as pricing and seed performance. The platform aggregates the input to provide precision agronomic data on more than 115 million acres.

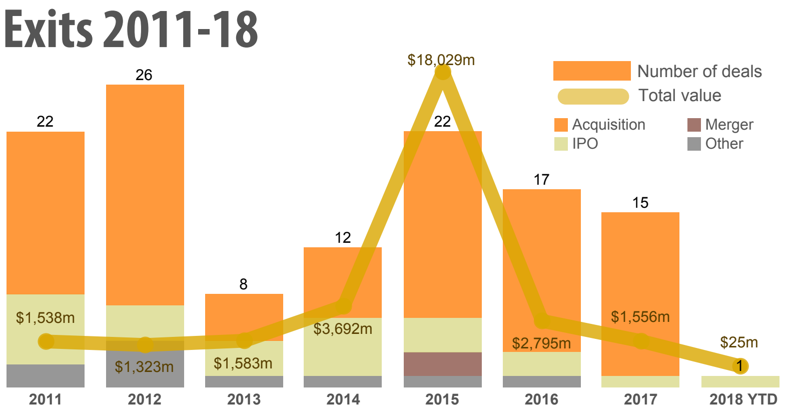
Moon exploration company iSpace secured $90.2m in a series A round it claims is the largest yet raised by a Japan-based startup. Media company Tokyo Broadcasting System, office equipment provider Konica Minolta, engineering firm Shimizu, marketing agency Dentsu, telecoms firm KDDI, aviation company Japan Airlines, printing services supplier Toppan and motor vehicle maker Suzuki were among the investors. Founded in 2010, iSpace is looking to launch two lunar missions by the end of 2020. The first will orbit the moon and relay data to earth while the second will land on the moon to test the transportation of payloads of up to 30kg in weight.

Exits

Corporate venturers from the industrial sector completed 16 exits between February 2017 and January 2018 – 14 acquisitions and two initial public offerings (IPOs). These figures were only a slight decrease from the 17 transactions recorded in 2016. The estimated exited capital also decreased to $1.56bn, down from $2.8bn in 2016.



Siemens, Intel and software provider Red Hat exited US-based software management technology provider Black Duck Software, which agreed to an acquisition by electronic design software producer Synopsys for approximately $565m. Black Duck provides technology that automates the process of securing and managing open-source software.



Electronics producer Apple acquired Shazam, a UK-based music identification app developer backed by a range of corporate investors. Although neither company disclosed how much Apple paid, a source reported the price to be about $400m. Shazam has developed an app capable of identifying background music through a mobile device's microphone, though the company has expanded into commercial partnerships with television media campaigns.

Agricultural and construction equipment manufacturer John Deere agreed to buy Blue River Technology, a US-based agriculture technology developer previously backed by agrochemical company Monsanto. Founded in 2011, Blue River produces robotic systems that integrate computer vision and machine learning technology to detect and monitor individual plants in a crop and apply herbicides and fertilisers only when needed.

Enterprise security software provider Proofpoint agreed to acquire US-based cybersecurity technology developer Cloudmark for $110m, enabling communications technology provider Nokia and trading group Sumitomo to exit. Proof-

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

Company	Location	Sector	Exit type	Acquirer	Exit size	Investors
Black Duck Software	US	IT	Acquisition	Synopsys	$565m	Fidelity | Flagship Ventures | Focus Ventures | General Catalyst Partners | Intel | Red Hat | Sapphire Ventures | Siemens | Split Rock Partners
Shazam	UK	Media	Acquisition	Apple	$400m	Acacia Capital Partners | Access Industries | America Movil | Buran Venture Capital | DN Capital | Institutional Venture Partners | International Data Group | Kleiner Perkins Caufield & Byers | Sony | Universal Music Group
Blue River	US	Industrial	Acquisition	John Deere	$305m	Data Collective | Innovation Endeavors | Khosla Ventures | Monsanto | Pontifax Global Food and Agriculture Technology Fund | Stanford Business School Alumni Angels | Steve Blank | Syngenta | Ulu Ventures
Cloudmark	US	IT	Acquisition	Proofpoint	$110m	Ignition Partners | Industry Ventures | Nokia | Sumitomo | Summit Partners
LightCyber	Israel	IT	Acquisition	Palo Alto Networks	$105m	Access Industries | Amplify Partners | Battery Ventures | Claltech | Glilot Capital Partners | Shlomo Kramer
DeviantArt	US	Media	Acquisition	Wix	$36m	Autodesk | DivX
Money Forward	Japan	Financial services	IPO	–	$25m	Credit Saison | Dentsu | Fenox Venture Capital | GMO Internet Group | Isetan Mitsukoshi Holdings | Jafco | Mitsubishi | Mitsui | Mizuho Financial | Shizuoka Bank | Sourcenext | Sumitomo Mitsui | Toho Bank | Yamaguchi Financial Group
Knightscope	US	Industrial	IPO	–	$25m	Bright Success Capital | Konica Minolta | undisclosed investors
C-Labs	US	Industrial	Acquisition	Trumpf	$10m	Trumpf | undisclosed investors
O-Flexx Technologies	Germany	Energy	Acquisition	Mahle	–	BankInvest Group | Emerald Technology Ventures | Partech Ventures | Sam Private Equity | Schneider Electric | Set Venture Partners

point will integrate Cloudmark's threat telemetry and intelligence data into its Nexus platform, which powers its product portfolio. Founded in 2001, Cloudmark provides messaging security software to protect communications service provider networks and their subscribers against a range of threats.

Access Industries exited Israel-based cybersecurity software developer LightCyber through a $105m acquisition by cybersecurity technology provider Palo Alto Networks. LightCyber has built automated behavioural analytics software that uses machine learning to detect and identify cyberattacks by seeking out behavioural anomalies in a client's network.

DeviantArt, a US-based online community for artists, backed by design software company Autodesk and video technology producer DivX, was acquired by cloud-based web development platform Wix, which paid approximately $36m in cash, including some $3m in assumed liabilities. Founded in 2000, DeviantArt operates a website that enables artists and designers to share their work. It currently lists more than 325 million pieces of original work uploaded by more than 40 million members.

Money Forward, a Japan-based financial management app developer backed by several domestic corporates, including Mitsui and financial services firms SBI Group, raised approximately $25m in its IPO. The offering took place on the Tokyo Stock Exchange's Mothers Index Futures market and valued Money Forward at $505m. Money Forward has built app-based financial management platforms for personal and business accounting, and is the first Japan-based fintech developer to float.

US-based autonomous security system developer Knightscope closed $25m in funding, consisting of $20m in a regulation A-plus offering and $5m in related private placements from backers including Konica Minolta. Knightscope had secured more than $15.9m in the offering as of September 2017. The offering involved shares issued to backers who buy a minimum of $999 worth of stock, and was conducted on equity crowdfunding platform SeedInvest. Founded in 2013, Knightscope produces robots that act as mobile security guards.

US-based industrial internet-of-things software developer C-Labs was acquired by Trumpf International, the industrial conglomerate that was already an investor in the startup. Financial terms were not disclosed, but the deal was reportedly worth more than $10m. Founded in 2009, C-Labs has developed software that enables enterprise users to monitor their manufacturing plants. The technology makes it possible to access data collected remotely while guaranteeing security frameworks are adhered to. The company will continue to operate independently.

O-Flexx Technologies, a Germany-based thermoelectrics technology developer, was acquired by automotive parts manufacturer Mahle. The transaction provided an exit to Emerald Technology Ventures, a cleantech-focused VC firm that counts Mahle among its limited partners. Financial terms of the acquisition were not disclosed. Founded in 2006, O-Flexx produces thermoelectric elements that convert heat into electrical energy.

GCV also reported exits from emerging industrial-related enterprises that involved corporate investors from other sectors.

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Top exits from industrial enterprises over the past year

Company	Location	Exit type	Acquirer	Size	Investors
Blue River	US	Acquisition	John Deere	$305m	Data Collective | Innovation Endeavors | Khosla Ventures | Monsanto | Pontifax Global Food and Agriculture Technology Fund | Stanford Business School Alumni Angels | Steve Blank | Syngenta | Ulu Ventures
Avantium	Netherlands	IPO	–	$109m	Aescap | AlpInvest | Alpla | Aster Capital | Capricorn Investment Group | Coca-Cola | Danone | De Hoge Dennen | DFJ Esprit | Eastman Chemical | ING Corporate Investments | Navitas Capital | Pfizer | Singapore Economic Development Board | Sofinnova Partners | Swire Pacific Limited
Tanyuan Tech	China	IPO	–	$59m	GSR Ventures | Legend Holdings | undisclosed investors
Knightscope	US	IPO	–	$25m	Bright Success Capital | Konica Minolta | undisclosed investors
C-Labs	US	Acquisition	Trumpf	$10m	Trumpf | undisclosed
Skyward	US	Acquisition	Verizon	–	Draper Associates | Founders Co-op | TechStars | Verizon | Voyager Capital | Wells Fargo (Norwest Venture Partners)
Sirrus	US	Acquisition	Nippon Shokubai	–	Arsenal Venture Partners | Braemar | General Motors | Mitsui
Yard Club	US	Acquisition	Caterpillar	–	Andreessen Horowitz | Caterpillar | Dorm Room Fund | Harrison Metal Capital | private investors

Netherlands-based renewable chemicals producer Avantium secured €103m ($109m) when it floated on the Euronext Amsterdam and Bruxelles exchanges, providing exits to a host of corporate backers: chemicals producer Eastman Chemical, pharmaceutical firm Pfizer, plastics manufacturer Alpha, beverage producer Coca-Cola, conglomerate Swire Pacific, food and beverage manufacturer Danone. Avantium develops techniques and processes to convert biological materials into new materials. Its products include PEF, a recyclable plastic made from plant-based industrial sugars that is used in packaging.

Legend Capital, a corporate venturing fund backed by conglomerate Legend Holdings, exited China-based graphite film producer Tanyuan Tech in a RMB409m ($59m) IPO. The company issued 52 million shares on the Shanghai Stock Exchange, priced at RMB7.87 each. Founded in 2010, Tanyuan produces graphite film with high potential for thermal conductivity and heat dissipation, meaning it can be used to release heat generated by smartphones.

Telecoms firm Verizon acquired US-based drone operating software provider Skyward for an undisclosed amount, giving an exit to its corporate venturing unit, Verizon Ventures. Skyward produces software that makes the management and operation of unmanned aerial vehicles more efficient and cost-effective. Companies can use the platform to integrate and connect their drone network in a single place. Verizon will use Skyward's technology to provide an end-to-end drone operations service that incorporates planning, workflow, airspace data, registration and regulatory compliance support.

Chemical supplier Nippon Shokubai agreed to acquire US-based chemical producer Sirrus for an undisclosed sum, allowing carmaker General Motors and Mitsui to exit. Founded in 2009 as Bioformix, Sirrus makes monomers and derivatives that enhance performance and cut energy consumption in advanced manufacturing and assembly processes.

Construction machinery supplier Caterpillar acquired Yard Club, a US-based construction equipment management platform that is also one of its portfolio companies, for an undisclosed sum. Founded in 2013, Yard Club has developed an online-based operating system that enables contractors and machinery rental companies to manage their equipment. The company also allows customers to rent equipment directly through the platform, taking a percentage of the revenue in the process.

Funds

Between February 2017 and January 2018, corporate venturers and corporate-backed VC firms investing in the industrial sector secured over $3.67bn in capital via 31 funding initiatives, which included 13 corporate-backed VC funds, 11 new venturing units, three accelerators, one incubator and three others. On a calendar year-to-year basis, the number of funding initiatives fell from 42 in 2016 to 37 last year. Total capital, however, went up from $2.28bn to $14.05bn, almost seven times more, during the same period.

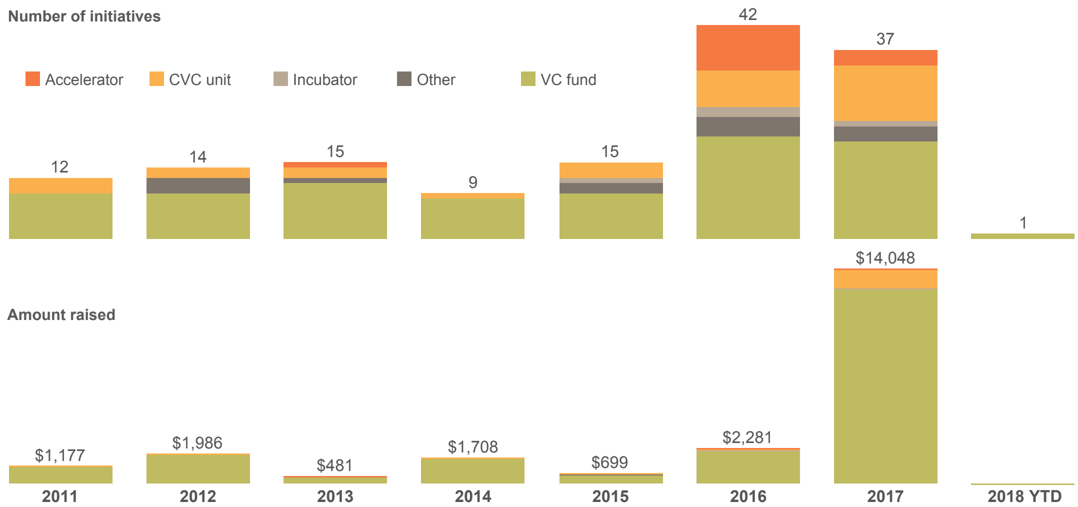
Apple announced the setup of a $1bn investment fund focused on advanced manufacturing. The company did not disclose details about structure, strategy or staffing. The initiative followed the corporate's $1bn commitment to the SoftBank Vision Fund.

Foxconn paid $600m in return for a 54.5% stake in investment fund SoftBank Asia Capital, previously wholly-owned by SoftBank. The transaction turned SoftBank Asia Capital into a joint venture. Foxconn will take over management of the fund. Foxconn said it hoped to merge SoftBank's investment expertise with its own global presence as well as advanced manufacturing and technology services knowhow.

US-based venture capital firm Fifth Wall Ventures launched officially with $212m from a syndicate of limited partners that includes several corporates. The firm will seek to invest in real estate technology developers. Fifth Wall's anchor inves-

SECTOR FOCUS

Industrial funding initiatives 2011-18



tors included real estate services provider CBRE, real estate and warehouse logistics company Prologis, house-builder Lennar, office space developer Hines, apartment owner Equity Residential and real estate investment trusts Macerich and Host Hotels & Resorts. Lowe's, the home improvement retailer that owns corporate venturing unit Lowe's Ventures, is also an limited partner, as is real estate holding company Rudin Management. Fifth Wall is concentrating on technologies that feed into what it calls the "built world", the ecosystem of companies that own and operate space, as well as those developing technologies that can modify and innovate how that space is accessed and used.

Singapore-based integrated engineering and industrial product manufacturer ST Engineering launched corporate venturing subsidiary ST Engineering Ventures, armed with $150m in funding. ST produces a range of aerospace, defence, electronics and marine products. Its venturing unit will seek opportunities in sectors relevant to ST's long-term growth, such as robotics, autonomous technology, data analytics and cybersecurity, and will initially operate out of offices in Singapore, Israel and the US.

Germany-based venture capital firm Project A closed a €140m ($148m) early-stage fund with contributions from several domestic corporates – retailer Otto Group, broadcaster ProSiebenSat.1, diversified holding company Franz Haniel & Cie, games and toy maker Ravensburger, food producer Dr Oetker and publishers Axel Springer and Gruner & Jahr are all limited partners. EU financing agency the European Investment Fund is cornerstone investor in the fund. The firm now has €260m under management, including a €40m fund that is about to close and will enable follow-on investments in Project A's portfolio companies. It targets fintech, human resources, insurance technology, property technology and industry 4.0.

Top 10 industrial sector funding initiatives over the past year

Funding initiative	Type	Funds raised	Location	Focus
Apple Advanced manufacturing fund	VC fund	$1bn	US	Advanced manufacturing
SoftBank Asia Capital	CVC unit	$600m	Japan	Advanced manufacturing and technology services knowhow
Fifth Wall Ventures	CVC unit	$212m	US	Companies that own and operate space, as well as those developing technologies to modify and innovate how space is accessed and used.
ST Engineering Ventures	CVC unit	$150m	Singapore	Robotics, autonomous technology, data analytics and cybersecurity
Unnamed Project A fund	VC fund	$148m	Germany	Fintech, human resources, insurance technology, property technology and industry 4.0 sectors
CapAgro Innovation	VC fund	$146m	France	Growth-stage market-ready businesses in farming-related sectors such as agriculture, agro-economy, agri-food, nutrition and bioenergy
Yi Capital Fund I	VC fund	$110m	China	Industrial internet startups that will participate in the accommodation, transport and financial services industries
Honeywell Venture Capital	CVC Unit	$100m	US	Aerospace systems, chemicals, fuels, safety and monitoring equipment and home-building and control technology
Toyota AI Ventures	CVC unit	$100m	US	Early-stage companies developing artificial intelligence, robotics, autonomous mobility, data and cloud technology
FirstMinute Capital	VC fund	$85m	UK	Medical, governmental and financial technology and robotics, as well as data, artificial intelligence and software-as-a-service companies with valuations lower than $10m

France-based farming-focused venture capital fund Capagro Innovation reached a €124m second close, following a €66m second tranche featuring a host of corporates. Insurer Groupama, agribusinesses Agromousquetaires and InVivo, agricultural software provider Isagri and liquids packaging producer LSDH committed capital alongside financial services firm Crédit Agricole and French state-owned investment bank BPIfrance. Capagro Innovation invests in growth-stage market-ready businesses in farming-related sectors such as agriculture, agro-economy, agri-food, nutrition and bioenergy. Following the second close, the fund plans to invest €10m in each portfolio company.

China-based venture capital firm Yi Capital closed a first fund at RMB800m ($116m) after securing home appliance manufacturer Joyoung as a limited partner. Joyoung was joined by national industrial guidance fund Zhongjin Qiyuan and Citic Industrial Fund of Funds, part of alternative investment management firm Citic, as well as additional publicly-listed companies and state-owned guidance funds. Founded in 2014, Yi focuses on online and IT technologies enabling traditional industrial companies to upgrade. In particular, the firm is looking to back industrial internet startups that will participate in the accommodation, transport and financial services industries as well as those providing other traditionally offline-based services.

US-based industrial product and software producer Honeywell unveiled strategic investment vehicle Honeywell Venture Capital, which is expected to provide about $100m to startups. Honeywell provides a range of products, from aerospace systems, chemicals and fuels to safety and monitoring equipment and home-building and control technology. It has made strategic acquisitions in the past but done very little in the way of corporate venturing. Honeywell Venture Capital will target companies that could grow more quickly through access to the firm's resources, including its intellectual property and advanced manufacturing. Murray Grainger will lead the unit as managing director, having taken on a variety of roles since he joined Honeywell in 2004. He was most recently vice-president of business development, M&A and integration.

Toyota Research Institute, the US-based research arm of the Japan-headquartered car manufacturer, committed an initial $100m to corporate venturing unit Toyota AI Ventures. The fund will target early-stage companies developing artificial intelligence, robotics, autonomous mobility, data and cloud technology, and some portfolio companies will benefit from support and mentoring at its Silicon Valley headquarters. Toyota AI Ventures said it intended to also explore a call-and-response approach that involves supporting the creation of companies that can solve specific problems.

UK-based venture capital fund FirstMinute Capital raised $25m from limited partners including Tencent to reach an $85m second close. Tencent was joined by another China-headquartered corporate, property developer Nan Fung Group, and entrepreneurs Cheung Chung-Kiu, Frederic Mazzella and Wes Nichols. FirstMinute Capital aims to tap entrepreneurial expertise drawn from across Europe to support tech startups on the continent. It targets startups operating in sectors such as medical, governmental and financial technology and robotics, as well as those with a focus on data, artificial intelligence and software-as-a-service.

People

Siegel

General Electric promoted Sue Siegel, CEO of its corporate venturing unit GE Ventures, to chief innovation officer. She will retain responsibility for GE Ventures, which encompasses equity investing, licensing and new business creation, but will now have overall responsibility for developing and accelerating GE's long-term innovation strategy. Siegel will report to John Flannery, chairman and CEO. She previously reported to GE vice-chairman Beth Comstock, who runs GE Business Innovations, developing new businesses, markets and service models.

Nachtigal

Dirk Nachtigal, managing director and founder of BASF Venture Capital, the Germany-based chemicals company's corporate venturing unit, left to become a venture capital consultant. BASF had hired Markus Solibieda, formerly a partner at private equity firm Mandarin Capital Partners, as managing director at BASF Venture Capital to work alongside Nachtigal. Solibieda now heads the venturing unit. Nachtigal had built what became one of Germany's most active corporate venturing units. He had been chief financial officer and managing director of the €175m unit since its formation in September 2001.

Nadkarni

Girish Nadkarni, formerly president of Switzerland-based power and automation group ABB's corporate venturing unit, ABB Technology Ventures, joined France-based oil and gas producer Total to lead its corporate venturing subsidiary. Nadarkani moved to Paris to become president of Total Energy Ventures. Francois Badoual, the unit's former chief executive in France, moved to San Francisco as president of Total New Energies Ventures USA. After Nadkarni's departure in October 2016, Grant Allen stepped up to head ABB Technology Ventures *(see interview overleaf)*.

Alex Lin, formerly head of ecosystem development at the Singapore government's innovation agency SGInnovate, joined integrated engineering group ST Engineering. Lin will head corporate venturing unit ST Engineering Ventures, which was set up with $150m in capital. The division is expected to invest in sectors relevant to the corporate's long-term growth, such as autonomous driving, cybersecurity, data analytics and robotics.

Brian Walsh joined Konica Minolta as head of new ventures. Walsh will lead the company's innovation strategy and venture development activities in North America. The role involved work on corporate venturing investments as well as partnerships, startup incubation and acquisition deals. His stay at Konica Minolta was short-lived, however. Later last year, he joined management consultancy McKinsey's New Ventures Fast Growth Tech practice.

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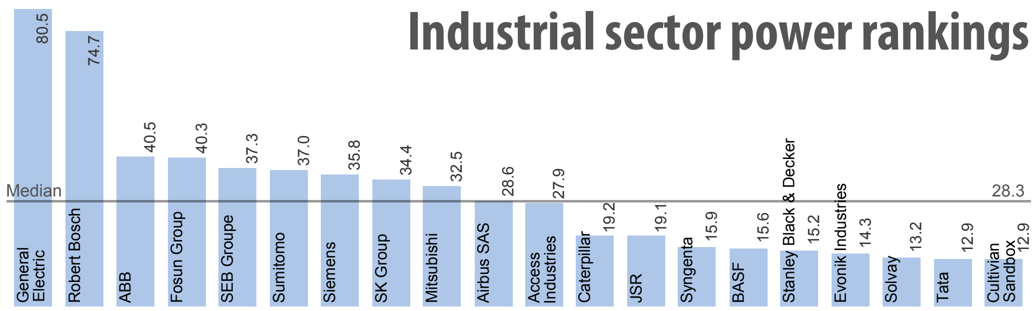
Maryanna Saenko left Airbus Ventures, the corporate venture capital arm of the aerospace company, to take a senior associate role at VC firm DFJ. Saenko joined Airbus Ventures as an investment partner in April 2016, having spent two years as a research analyst at research and advisory firm Lux Research. Airbus Ventures operates from offices in Silicon Valley and Paris.

Jessica Straus took an entrepreneur-in-residence position at GE Ventures. Straus was vice-president of development for US trade body the National Venture Capital Association for 18 months before moving to GE Ventures in 2014.

Andrei Zuzin joined Russia-based aluminium producer Rusal and is overseeing its open innovation activities as director of its venture investment division. Zuzin was previously managing director of VEB Innovation, a venture capital fund sponsored by Russian state-owned bank Vnesheconombank, investing in developers of technology at research hub Skolkovo Innovation Centre.


Vančura

Cyril Vančura, investment principal at Robert Bosch Venture Capital (RBVC), the corporate venturing unit of the Germany-based industrial goods company, left to join Imec, a Belgium-based micro and nanoelectronic research centre. Vančura has been investing for RBVC since the start of 2009, particularly in enabling technologies. Initially managed by Tom Vanhoutte and Peter Vanbekbergen, Imec.xpand will back both Imec spinouts and external startups. ◆



Interview: Grant Allen, head of ABB Technology Ventures

GCV reporter Robin Brinkworth spoke to Grant Allen, the global lead for ABB's corporate venturing unit, ABB Technology Ventures (ATV), about ATV's lifecycle, investment strategy, and what excites him in 2018.

What is ATV's primary value to ABB, financial or strategic?

We are valued very much as a technology scout and an R&D accelerant and catalyst. We report to the chief technology officer, Bazmi Husain. Our investment committee consists of him, the head of operations for R&D, and then a floating member, who comes out of the business unit supporting the specific deal we are looking at. But at the end of the day we have to show that we are not just spending ABB's money, that we can create a financial platform that is sustainable.

The good part about where we are in our lifecycle is that having been stood up in 2009, some of those bets we made earlier are starting to mature. We are going to be selling two of those this year and those companies will return probably two-thirds of the capital we deployed in the first half of ATV's life.

If you look at our portfolio, a lot of the companies are providing technologies that can amplify something we already sell. For instance, we have two robotic gripper companies. One is SoftRobotics. One is a company called Grablt, using electro-adhesion to pick up various objects. You stick those things on to our robots, they can do more. My thesis is that even if those companies were acquired, we would still be working with them, and in some cases, we go so far as to strike partnership agreements that would outlast any acquisition.

What is ATV's current status, and what are you hoping to do in 2018?

With the team, we are in growth mode and that is an exciting time. We have been a very lean team for five years and really stuck to our knitting. We have been given the charter to invest $50m a year. Part of that will go into serving the existing portfolio, but we have a fair amount of cash to put into new investments and we aim do eight investments a year. Because of the size of our team, we are very bandwidth constrained.

If I were to look at the output, we are probably in the top decile among the kind of deal-dollars per investment profes-

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sional. We are viewed as a Swat team of sorts, to go quickly in to deploy capital and drive value for the company. We look at value extraction very much as a two-way street. So that is why we have hired a vice-president of engagement because the startups going to us want to tap into ABB, whether it is our brand or our technical bench. We need to make sure that they get what they came for.

Do you think that the relationship you build between ABB and your portfolio companies provides you with an institutional edge in CVC?

I would not be so bold as to say that we provide more strategic value than any competitor. We have become very good at it, because we have been out there for eight years, exposing the startup to our technical bench very early. For companies that we invest in, I think they would say they have more ready access to the technical experts inside ABB. Some other corporates, they are either working with the labs or the technology transfer group.

We are a bit more bespoke, partially because it is all coming through one house – the group I run. Depending on the situation, we might deploy one of our research managers at the very first meeting. If it is a sensor company, it will have direct access to Barbara Panella, our global research manager for sensors, and that, for a company like Kespry, which is looking to put additional telemetry on drones, was of huge value. I don't want to be a gatekeeper, I want to be a connector.

How do you think this more bespoke approach is translating, along with your own personal experience as an investor, into how you are investing in 2018?

I generally think of myself as a bit of a contrarian investor. I like to invest where things are not popular at all – so completely countercyclical. With robotics, I think ABB did a good job of investing in companies like Vicarious and SoftRobotics when they were a bit more out of favour. Just recently I was on a call with a VC who said he really wished he had seen the company two years ago, and I said: "I think you guys are late to the party." Valuations are out of whack. There are too many firms chasing too few deals.

That is one of the big reasons that even though we have done seven deals in the robotics and artificial intelligence space, I see us pulling back a little bit, because we are going to look at the next out-of-favour space. It is a great time to hit these emergent areas maybe three years in advance of when they are really going to go primetime. Distributed energy resource management systems is another example, where we are engaged with Enbala. They are just starting to ramp revenues in a serious way and it really helps to have ABB there as a partner, because in some cases we are actually selling alongside them. That is a pretty valuable proposition.

What are your current and future priorities in terms of investments and emerging technologies?

For 2018, we are likely to be on pace, if not up 10% from last year, which is going to put us on track to do eight or nine investments for the year. If you look at the capital we are being asked to deploy, the cheque size will go up. I think you will see our average cheque, which today is around $3m, increase to $5m.

You will see us break away from what we have been doing in the past two years, which is a lot of factory intelligence. We are considering two thematic camps. One is later-stage strategic deals that map to what our power grids and electrification product businesses are doing, so two of our four divisions.

On the other end of the spectrum, we are looking at breakthrough technology for our robotics and motion, and industrial automation businesses. We have been talking about th internet of things as a buzzword for probably three or four years now. I think the technology is at a point where we are starting to look at it more seriously even though the market traction has not been very impressive.

What excites you about the implementation of Industry 4.0?

The area I am very excited about is what we call automation of automation. This is the ability to deploy robotics – increasingly mobilised robotics – where you put one of our arms on top of automated guided vehicles. Deployable, train-

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able and testable in a very quick fashion, so that we can do machine tending, flexible manufacturing, short run cycles, and have them be truly adaptive. This has been talked about for a while but I have yet to see any robust solutions that you can drop in and have a three to eight-week testing cycle and automation deployment cycle become a one-week, if not one-day, deployment cycle.

As we are talking about themes, it is important to go through what are still our four thematic buckets because those generally do not change. We serve three types of customers – factories, utilities and the built environment – which can include a lot of different types of customer. We are looking at technologies that map to the theme of future factory, which is really what you are looking at as industry 4.0. That is robots, other manipulation, training control software, advanced human machine interface, safety systems.

Other than utilities and the built environment, the fourth bucket is the horizontal layer which sits on top of all of that – the digitisation layer. Just like GE and Siemens are looking at Predix and MindSphere respectively, we are looking at our ABB Ability digital platform, which is really a connective tissue layer, a set of common components that our businesses can point to build value-added solutions for our customers.

You were on a two-deal-a-year track, and that has gone up significantly to what was eight deals last year. Why the shift, and how did you make that shift?

The biggest thing to note is that we had a CEO change. We did drive a lot of value for the company, but after the failure of ATV investment GreenVolts, we went into retrenchment mode. We were only investing where it was truly critical. We were working on the existing portfolio and making sure that these companies stayed afloat. Companies like Scotrenewables, which is in a very tough space – offshore marine power – are doing quite well. We are raising £20m ($25m) right now and it is one of the world leaders in offshore energy generation.

Once we came out of cost-cutting mode and began focusing on what the next wave of technology was, we saw interesting trends in the market as it started to open its eyes to industrial tech. I would go and talk about robots in industrial internet of things with Sand Hill VCs three or four years ago. They would glaze over. Now they are the ones calling us and saying: "What do you think about this robotics company? What are you doing about this sensor company?"

"I think we should be even more aggressive in investing in breakthrough technologies"

You sound confident going into 2018.

I am. I also have fears as well, that we are not moving fast enough. Our team could easily be three or four times the size it is today. For a company that has a $40bn top line and a $1.5bn R&D budget, I think we should be even more aggressive in investing in breakthrough technologies. That is probably the biggest thing that keeps me up at night, that we are seeing some great things, but every day I am passing on amazing technologies.

As an example, we are a leader in robust power gear and we have built high-voltage transformation systems that will be sitting at the bottom of the ocean a thousand feet down. In my mind, that sort of expertise is relatively fungible, and you could translate it to doing power transformation equipment and energy storage that would exist in the outer reaches of space. That may sound like a bold statement but I think there is no reason ABB should not be planting seeds today to be a leader in powering next-generation built environments that exist on Mars and other places in space.

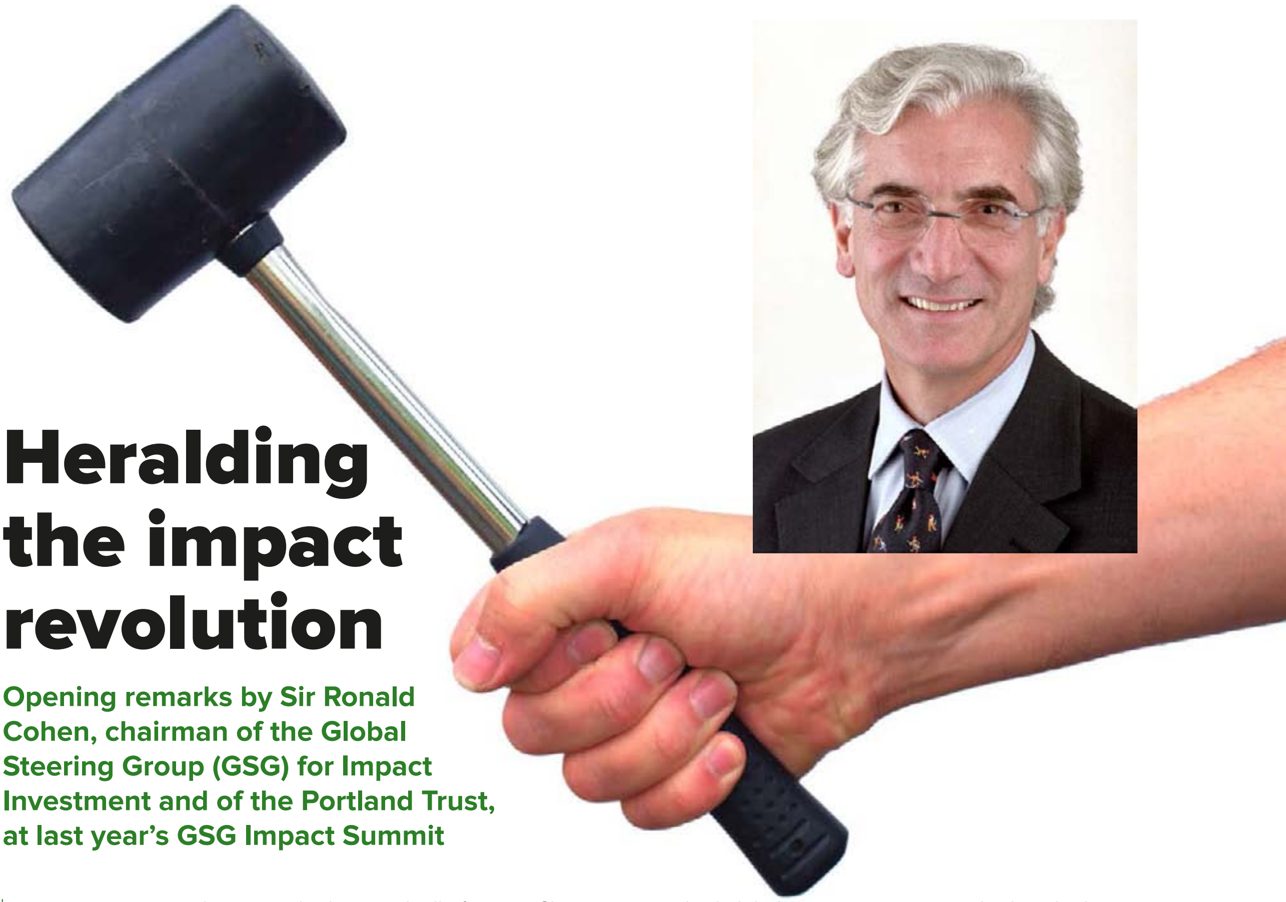
What can we expect from ATV in the next few months, and further into the future?

We did end 2017 pretty strong. We invested in a fund called G2VP, which is a spin-off from Kleiner Perkins Caufield & Byers [founded by its green growth fund senior partners Ben Kortlang, Brook Porter, David Mount and Daniel Oros].

We also invested in Kespry, which is a drone company working in industrial field services. We will be helping Kespry expand from insurance applications and mining automation to other areas that are germane for ABB. If you look to 2018, we are taking that mining automation thread and extending it. We are looking at additional sensing and automation technologies which will push mine intelligence to the very edge, to the point that we are collecting ore and understanding what is in that ore with high accuracy, which is really the holy grail to drive efficiency and increase profitability for mines. On that investment, stay tuned.

As we show that we can provide strategic value and I gain the confidence of the groups I am working with inside ABB, two things will probably happen. For strategic deals, we will see the cheque size go up. You will see us driving much more progressive big bets for the businesses which I think will really break through. With some of those categories I mentioned, such as space tech or advanced transportation, they are going to say: "Yes, you know this is important to ABB even though it is not in our current roadmap. Grant, we trust you, we trust your team."

They are still high-risk, but they help ABB by getting early insight into some of these emergent areas. Autonomous transportation is clearly one of those, as we are seeing a lot of that sensor tech trickle over into the factory, into drones. There are a lot of progressive bets we can be making and hopefully in the back half of 2018, into 2019, we will be making a lot more of those. ◆



Heralding the impact revolution

Opening remarks by Sir Ronald Cohen, chairman of the Global Steering Group (GSG) for Impact Investment and of the Portland Trust, at last year's GSG Impact Summit

It is a great pleasure to be here, with all of you, in Chicago, at our third global meeting since we picked up the baton from the G8 Taskforce in 2015.

There are 560 of us present, from 43 countries, up from 320 and 32 countries in Lisbon last year. The impressive growth of our meeting reflects the progress we have made. Over the next two days we will work together, to refine how we reach the next stage, how we bring impact investment to tipping point by 2020, and spark a chain reaction of impact creation across our constituencies – investors, foundations, social organisations, profit-with-purpose entrepreneurs, big businesses and governments.

Much has been accomplished, but much work remains to be done, if we are to achieve our ambition to improve billions of lives and help restore the planet. We are all here because we are acutely aware that billions of people around the world lead lives of hunger, sickness, hardship and despair. Lives that are nasty, brutish and short, in our developing and developed countries alike. We realise that this is unfair and untenable, that our societies will not thrive if we do not change path, that a curtain of fire will come to separate rich and poor across our cities and countries, if we do nothing.

We also realise that governments and philanthropists alone cannot possibly cope with the challenge of social and environmental issues. Organisation for Economic Cooperation and Development governments are spending about 20% of GDP, more than $10 trillion, on social issues, about double the percentage they spent in 1960. They are constrained in spending more, yet social issues continue to proliferate. Governments are starting to realise that they do not have the resources or the ability to provide a solution.

Philanthropists across the world donate some $500bn a year. Generous as they are, and for all the good they certainly do, their donations cannot bring the solution either.

So we, here, find ourselves innovating through the creation of impact investment, leading an evolution in thought and a revolution in means, to bring about the historic shift that is needed. The impact revolution we lead promises to be as far-reaching in disruptive innovation as the hi-tech one before it, which has transformed our lives completely in just three decades.

Underlying this new revolution, is the fact that the business and investment mindset has started to shift. It shifted from the focus on financial return alone, in the 19th century and before, to focus on both risk and return in the 20th century. Now, it has started to shift again, to focus on three dimensions – risk, return and impact.

Until we came along, conventional wisdom held, for too long, that it was impossible to measure anything much in the social sphere. How can you measure an improvement in the life of a released prisoner who does not reoffend? Or of a child who does not drop out of school? But we brought the realisation, embodied in the social impact bond (SIB) that first appeared in 2010, that an improvement in the numbers of people involved can be accurately measured, and so can the saving to the country, and that taken together they provide a measure of the social gain, which can be tied to a financial return for investors.

And that this is the key to the capital markets for non-profits as well as profit-with-purpose businesses that seek positive impact at scale, that in this way capital can be applied to prevention, which generally costs a fraction of attempted social remedies, and that governments can attract investment from the capital markets, to harness entrepreneurship and innovation, and pay only when the targeted social improvement has been achieved.

Like the tech revolution, the impact revolution will be driven by a new generation of young entrepreneurs, the millennials, who search for greater purpose than just making money – partly as a reaction to the disturbing increase in inequality they see, and partly because they are interconnected globally, they feel empathy for those who are worse off, wherever they be. They feel the necessity to do something about it, something significant to improve others' lives and the planet.

That their ventures and the companies they join should have social as well as financial goals, is for them a natural edifying ambition. They are innovating by creating new business models that integrate impact, where the more impact you deliver, the more profit you generate, like the Gym with 80 locations in poorer areas of the UK, or Rubicon which targets a reduction in landfills through its approach to waste collection in the US, or Aravind Eyecare Systems in India, which brings improved sight to poor people, free or at hugely reduced prices – or Tom's Shoes, or Warby Parker.

Investors are heading in the same direction as millennials. Since the UN Principles of Responsible Investment were established in 2006, nearly 1,700 investment institutions from 50 countries, holding $62 trillion of assets, have signed the pledge. Two Dutch pension funds, APG and PGGM that manage more than €600bn ($750bn), along with 15 other Dutch pension funds, have decided to link the investment of their portfolios to achievement of the UN Sustainable Development Goals. In France, pensioners have directed €10bn of their pension money to funds that invest 10% of their portfolio in "solidarity" investments.

And in a great step forward, the Ford Foundation, under the dynamic and enlightened leadership of Darren Walker, has announced that $1bn of its $12bn endowment will be allocated to mission-related investments. The biggest global asset managers, including Goldman Sachs, Axa, BlackRock, UBS, Wellington, Morgan Stanley and Bank of America Merrill Lynch, many of which are present here today, are creating platforms and products to satisfy their clients' desire for investments that avoid negative impact or, even better, that create positive impact.

Foundations, both legacy names like Ford, MacArthur and Rockefeller and living donor foundations like Omidyar, Gates, Bloomberg and Chan-Zuckerberg, are likely to lead the shift to a new philanthropic model. One where impact objectives and measurement will be central, and where experimentation will hopefully lead to some of the grant allocation going to outcome funds, that pay for achieved social or environmental improvement, and one where the endowment establishes an impact allocation across asset classes, and a team to deploy it, as a step to the endowment becoming entirely mission-aligned.

Big business is also beginning to move in the same direction. There is hardly a major boardroom where impact is not being discussed. The Embankment Project, launched in London last week by the Coalition for Inclusive Capitalism, brings together CEOs of more than 20 global corporations and asset managers, representing more than $20 trillion of assets, to measure value creation.

While the current emphasis of socially responsible investment has centred around the negative screening of undesirable impact, some multinationals have begun to set positive outcome objectives, like Danone's and Mars's €120m impact fund, which aims to improve the standard of living of poor farmers working in their supply chains in Africa, Asia and Latin America.

Social sector organisations have also begun to integrate impact objectives and measurement into their thinking. Those raising SIBs and development impact bonds (DIBs), in order to scale their activities beyond what they can achieve through grant funding, have drawn much attention to our efforts, like the Educate Girls Development Impact Bond in Rajasthan, the $30m South Carolina maternal and child health SIB, the Tomorrow's People SIB helping unemployed youth in the UK, and the Pathways SIB just announced which helps immigrants in Massachussetts.

There are now 87 SIBs and DIBs, across some 20 countries, tackling 10 different social issues, and many more on the way, including in first-time countries such as France, Italy, Japan, Argentina and Chile. Most SIBs have been painfully crafted over 18 months or two years, which is far too long. Here, it is helpful to recall that with the pressure of an impending General Election, the first SIB was put together and signed in 2010 in just three months. So how is it that they have not been executed faster and spread further?

The primary cause is the long and complicated processes involving our most natural partner, governments. The biggest surprise for me about the last three years is that it is with governments that we have made least progress. Given our dual emphasis on achieving measured outcomes and on doing so through pay-for-success, and given the pressure on government budgets everywhere, governments should be our most natural champions. Yet the shift to an impact mindset and culture seems to be progressing slowest there.

The biggest surprise for me about the last three years is that it is with governments that we have made least progress

For sure, government has been successful, in some countries, at introducing initiatives that support impact investment. In the UK, we can cite tax incentives for investment in SIBs, a government outcome fund, regulatory change to encourage trustees of foundations to engage in impact investment, release of unclaimed assets to establish Big Society Capital, publication on the web of the cost to the country of more than 600 social issues and establishing the G8 Taskforce.

In the US, we can cite important regulatory guidance that enables trustees of pension funds and foundations to engage

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in impact investment. In Japan, we can point to the release of $900m of unclaimed assets a year for social purposes. But we have not yet succeeded in recruiting a government as a motivated champion of impact investment at a scale large enough to bring real improvement to those that need it most.

If we are to reach tipping point by 2020, this is where the greatest effort will need to be made over the next three years. Both through the creation of a supportive eco-system and through the use in procurement of SIBs and other pay-for-success instruments, government has the ability to accelerate dramatically the spread of impact investment.

Still, looking at the progress we have made over the past three years, such has been the evolution in thought that impact has become a mainstream subject of conversation at home, in boardrooms and in many government offices.Impact investment's focus on delivering measurable impact, through both non-profits and profit-with-purpose businesses, is influencing positive impact creation across an Impact Continuum that goes from big businesses on one side of impact investment, to philanthropy on the other side. We have met the first challenge which was to attract general interest.

Our second challenge is achieving recognition of the need for impact measurement. Here too acceptance is now spreading among philanthropists, foundations, social organisations and businesses. But in order for measurable impact to become an obvious objective, we need to progress our work in establishing impact accounting policies and conventions and to show how they can be used to manage the achievement of impact and to maximise it.

The third and most exciting challenge is now coming into sight – to alter capital flows in a systematic way. To meet this challenge, we need to bring entrepreneurs, investors and businesses to make decisions that optimise risk, return and impact, to show that achieving positive impact contributes to mitigating stakeholder risk, reducing the cost of capital, recruiting the best talent, and enhancing financial returns through the discovery of new sets of profitable less-correlated investment opportunities.

It is appropriate that it is here in Chicago, where, 40 years ago, Milton Friedman put forth a restricted view of the purpose of business, that we declare a broader view today, one that is capable of altering capital flows across our entire financial system, to direct them to achieving social and environmental good, as well as profit. As the dean of Insead recently pointed out to me, there is a Nobel prize waiting for the economist who best frames the interaction between risk, return and impact. Who knows, perhaps it will be another Chicago economist, more appropriate to our times and the challenges our world faces, who will pick up that Nobel.

Our task at this summit is to define how to bring impact investment to tipping point over the next three years. It is a very ambitious timeframe, but we would not be here if we did not relish challenges, would we? The professional venture capital industry got to tipping point in about 20 years. If we look at impact investment, we have already climbed to $150bn of cumulative investment, growing at 29% a year. Everything is happening faster now than 30 years ago and, unlike VC, impact investment springs not from choice, but out of necessity. So let's give it everything we have got.

What would represent a tipping point for each of our constituencies? I offer the following suggestions as a starting-point for our discussions here:

- For entrepreneurs: When 10% of visible startups integrate the achievement of measurable impact into their business model and they adopt a profit-with-purpose corporate form or certification like B Lab.
- For investors: When 100 prominent pension funds and endowments create a 5% to 10% allocation to impact investment, across asset classes.
- For foundations: When 50 leading foundations establish a 5% to 10% endowment allocation to impact, and allocate 10% of their grant programme to charitable outcome funds that pay for impact achieved.
- For social organisations: When 10% of the expenditure of 100 prominent social delivery organisations is provided by way of pay-for-success securities.
- For big businesses: When 50 Fortune 500 multinational businesses measure and report on their impact annually, and when they set some specific measurable impact objectives and report on their achievement.
- For government: When 10% of sub-contracted expenditure and foreign aid goes to pay-for-success contracts that attract outside investment, like SIBs and DIBs, and when they publish the cost of social issues.

We will need to pass key milestones on the way to the tipping point. It is important that we identify them during this summit, so that when we leave we see a clear path forward. I participated in the tech revolution and today feels very much like déjà vu. The impact revolution will enhance and disrupt the existing model of each of our constituencies, setting off a chain reaction of change, just as hi-tech has done.

Venture capital and Nasdaq-like stock markets were the response to the financing needs of the tech entrepreneurs who brought us the tech revolution. Impact investment is today's response to the needs of impact entrepreneurs and all those who aspire to improve, at scale, lives and the planet. It is the invisible heart of markets which we bring to guide their invisible hand. ◆

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Microsoft's startup initiatives

Iskender Dirik, managing director, Microsoft ScaleUp Berlin, and venture adviser, EQT Ventures

Microsoft provides an excellent example for a 360-degree startup strategy and a seamless integration of a corporate VC, accelerator and startup "evangelism motion" – motion is a term often used at Microsoft. There are only a few corporates on such a scale that are more serious about digital transformation.

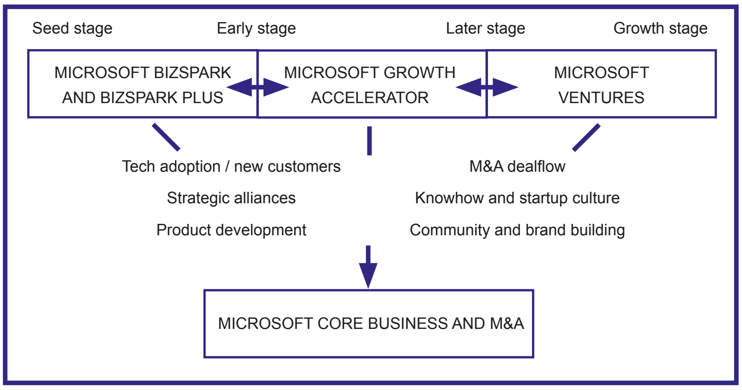
The cloud is Microsoft's number-one priority. The whole organisation and product roadmap is designed to shift the core business to cloud offerings. Under Satya Nadella, Microsoft succeeded in positioning its Microsoft Azure cloud service as the most important Amazon AWS competitor. Microsoft's three main startup motions are finely tuned to contribute to this digital transformation:

Microsoft BizSpark and BizSpark Plus: BizSpark is a startup program addressing seed and early-stage companies and providing them with credits for the Microsoft Azure cloud. BizSpark is open to every startup that meets certain criteria, such as age and revenue. BizSpark Plus is a program in which Microsoft partners more than 200 startup accelerators around the world to provide their cohorts up to $120,000 of Azure cloud over two years.

Microsoft Growth Accelerator: Seven growth accelerator programs worldwide – Seattle, London, Berlin, Tel Aviv, Bengaluru, Beijing, Shanghai – help series A-stage business-to-business tech companies to scale their business. The accelerator invests no money and takes no shares. It provides access to Microsoft's enterprise customers and partners, tech support, executive coaching in topics like pricing, sales and negotiation strategy, and talent development, and a significant amount in Azure credits on top.

Microsoft Ventures: Microsoft Ventures, Microsoft's corporate venturing unit, is a strategic investing partner at key stages of a startup's growth, typically investing between series A and C or D. Microsoft Ventures invests in startups in North America, Israel and Europe.

Nagraj Kashyap, head of Microsoft Ventures, said: "When I came to Microsoft in 2016, I was driven by the opportunity to establish a corporate venture group that would create an additional channel to engage the startup ecosystem. It would support not just company objectives, but our customers, partners and the ecosystem more broadly. The idea was that we would take an approach which would augment our own product and technology efforts, and enable us to place both strategic and financial bets with early-stage companies."



The diagram shows how the three different motions contribute to Microsoft's core business and each other.

Microsoft BizSpark & BizSpark Plus – offering seed and early-stage companies Azure credits – contribution to core business:
- **Tech-adoption:** Increasing adoption of Azure and other Microsoft technologies; winning the successful businesses of tomorrow at very early stages.
- **Community:** Community building in the early stage startup ecosystem.
- **Brand:** Helping Microsoft to be perceived as an innovative, disruptive, fresh brand.

Contribution to Microsoft Growth Accelerator:
- **Dealsource:** Referring later stage companies to the Accelerator programs.

Contribution to Microsoft Ventures:
- No direct link, stage-wise the targeted companies are too far from the focus areas of both entities.

Microsoft Growth Accelerator – helping later-stage startups to scale – contribution to core business:
- **Tech adoption and new customers:** Increasing adoption of Azure and other Microsoft technologies in mature startups. Winning the successful businesses of tomorrow as customers.
- **Strategic alliances:** Finding complementary startups as cooperation and co-selling partners. Offering startup products to enterprise customers to drive own revenues directly. Leveraging startups to position Microsoft products at the startup's customers.
- **Community:** Positioning as a platform for startups and VCs, community building in the startup ecosystem and in stages where real businesses start to evolve.
- **Brand:** Helping Microsoft to be perceived as an innovative disruptive fresh brand.

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- **Product development:** Identifying product and feature needs of mature startups, collecting their feedback to improve the core cloud products and increase their competitive edge.
- **M&A:** Feeding Microsoft's corporate M&A with interesting strategic acquisition cases.
- **Knowhow:** Being at the core of innovation, learning from the markets – trends, best practices, startup culture – and using the lessons in support of the core business.

Contribution to Microsoft Ventures:
- **Deal source:** Referring the best later-stage companies to Microsoft Ventures – accelerator startups and alumni, and external startups seen during the accelerator team's deal-sourcing activities.

Contribution to Microsoft BizSpark (Plus):
- **Deal source:** Referring seed and early-stage companies that they come across to the BizSpark team.

Microsoft Ventures – providing money for later and growth-stage startups – contribution to core business, besides financial returns:
- **Tech adoption and new customers:** Increasing adoption of Azure cloud and other Microsoft technologies in growth stage startups. In 2017 Microsoft invested directly – not via Microsoft Ventures – in Flipkart, an Indian unicorn (a business valued at $1bn or more). Flipkart, an online markeplace, is a great example of a financial investment that comes along with a strong strategic component related to the core business of the corporate parent. As reported in Microsoft News, "Microsoft and Flipkart announced a strategic partnership to provide consumers in India with the best online shopping service. As a first step in the broad collaboration between the two companies, Flipkart will adopt Microsoft Azure as its exclusive public cloud platform. Starting with computing infrastructure, Microsoft Azure will ultimately add a layer of advanced cloud technologies and analytics to Flipkart's existing data centres. Microsoft's strong presence in India, along with its global scale, allows for continued growth and expansion, setting the stage for the long-term partnership."
- **Strategic alliances:** Finding complementary startups as cooperation and co-selling partners.
- **Brand:** Helping Microsoft to be perceived as an innovative disruptive fresh brand.
- **Product development:** Identifying product and feature need of startups in the growth stages.
- **M&A:** Feeding Microsoft's corporate M&A with interesting strategic acquisition cases.
- **Knowhow:** Being at the core of innovation, learning from the markets and using the lessons in support of the core business.

Contribution to Microsoft Accelerator:
- **Deal source:** Referring relevant companies that they came across during their own deal-sourcing activities to the Accelerator teams.
- **Knowhow:** Providing knowledge, experience and network in selecting and scaling the Accelerator startups.

Contribution to Microsoft BizSpark and BizSpark Plus:
- No direct link, stage-wise the targeted companies are too far from the focus areas of both entities.

Core business and M&A – contribution to startup motions, especially Microsoft Ventures and Accelerator:
- **Dealflow:** Referring interesting startups that business development executives and sales people in the field identify during their work.
- **Knowhow:** Helping to evaluate tech cases with expert knowhow in tech, markets, products, enterprise sales and so on.
- **Business development:** Supporting portfolio companies to scale their businesses – strategic alliances, co-selling and so on.
- **Tech & Tools:** Providing tools and deep tech support for portfolio startups.

Microsoft Ventures invested in Element AI, a platform for companies to build artificial intelligence (AI) solutions, in a $102m series A round. Being able to leverage Microsoft's core business capacities was an important added value for Microsoft Ventures and Element AI:

It sounds like Microsoft is approaching this investment not just as financial backing, but also as more pragmatic operational backing. It is providing software, cloud storage via Azure and more of Microsoft's existing tools. This ensures that whatever does get built, it has some degree of Microsoft baked into it.

Element AI CEO Jean-François Gagné, who is leading the effort, said: "We all know you are only as good as your tools, and now Element AI is getting supercharged with Microsoft Ventures. Along with a strategic investment that is a real vote of confidence for Element AI, Microsoft is giving us the tools and services which will help our AI network achieve scale, which will undoubtedly create new technologies that help tackle some of the world's biggest problems."

To reduce complexity, Microsoft's other existing startup and growth programs – Success Management, Customer Access Program, Independent Software Vendor – and tech engagement with startups in third-party accelerators is being faded out. ◆

This is an edited version of an article first published on Medium

GAULE'S QUESTION TIME

Innovation initiative supplies food for thought

Andrew Gaule, left, talks to Juan Amat, vice-president and general manager nutrition, western Europe and sub-Saharan Africa, PepsiCo

Give us a brief introduction to yourself.

I have been with PepsiCo for 14 years. I joined after four years in management consulting in telecoms and digital and an MBA at Insead. I have held marketing, sales and finance roles in the Iberian business unit. Then I took my first general manager assignment for three years in Central Europe based in Warsaw and the past three years in my current role based in Geneva.

Give us an introduction to PepsiCo and the role of your unit.

PepsiCo products are enjoyed by consumers a billion times a day in more than 200 countries and territories around the world.

We generated approximately $63bn in net revenue in 2016, driven by a complementary food and beverage portfolio that includes Frito-Lay, Gatorade, Pepsi-Cola, Quaker and Tropicana. PepsiCo's product portfolio includes a wide range of enjoyable foods and beverages, including 22 brands that generate more than $1bn each in estimated annual retail sales.

We believe that continuously improving the products we sell, operating responsibly to protect our planet and empowering people around the world is what enables PepsiCo to run a successful global company that creates long-term value for society and our shareholders.

Our nutrition category encompasses Pep fruit and veg, and grains businesses – the other two Pep categories are snacks and social beverages.

Give us a brief introduction to the Greenhouse innovation initiative.

The PepsiCo Nutrition Greenhouse was launched in April 2017 to support breakthrough food and beverage nutrition brands aimed at European consumers. It has part of our commitment to open innovation and to collaborating with the entrepreneurs and innovators helping to shape the food and beverage industry.

The program helps us realise our "performance with purpose" goal of transforming the portfolio and bringing more convenient nutritious options to consumers.

What have been the objectives of the Greenhouse?

Eight companies were chosen based on the following criteria.

Product and brand qualities – based on nutrient profile, potential health claims, natural or organic sourcing, clean label and other factors that appeal to consumers, as well as the obvious qualities of taste, brand presentation and value for price.

A clear focus on consumer health – includes human performance, condition-specific functionality and healthy lifestyles and life stages. There has to be a scalable business model and uniqueness in the market.

Explain the process you followed.

The program was open to nutrition entrepreneurs with a market-ready health and wellness brand. The brand or company should have sales of €2m ($2.5m) or less and not be in direct or indirect competition with PepsiCo or any of its brands. Applications to the program were submitted using a secure online process.

An independent adjudicator initially assessed entries to determine eligibility for the program, and then a selection committee made up of industry food and investment experts and PepsiCo professionals evaluated submissions. Up to eight companies were chosen and received €25,000 as well as entry to the six-month incubator program. Among them were:

- Jimini's from the UK on edible insects.
- Your SuperFoods from Germany on Plant based supplements.
- Divingmar from Spain on Kumbu seaweed.
- Frecious from Switzerland on Veggie purees.

Along with the funding, the selected entrepreneurs benefited from access to PepsiCo experts who helped them in areas such as brand optimisation, product development, supply chain management, customer acquisition and distribution. The program also addressed critical early-stage business issues, like business planning, corporate structuring and fundraising.

GAULE'S QUESTION TIME

At the end of the program, Erbology was granted an additional €100,000 to support further growth. The criteria to select the recipient of this money was:

- Growth of the business or specific products over the course of the program.
- Specific impacts and use of the €25,000 grant and measurable results from that.
- Level of collaboration with their PepsiCo mentor as well as breadth and depth of contacts with other departments.
- A rating from each committee member.

In accepting the €100,000 grant, Erbology agreed to grant PepsiCo exclusive rights for a period of six months to make an equity investment on mutually agreed terms.

Describe the experience and skills of your team members. How have you tried to engage the core business people from your parent company?

The selected companies had the chance to collaborate with experienced executives who worked with them to help realise their market potential. The mentors were from different areas of expertise, such as marketing, public policy and communications, trade marketing and sales, and from different markets across Europe, like the UK, Spain or the Balkans. The mentors helped participating entrepreneurs to gain access to PepsiCo experts who helped them in the areas they needed the most.

- Gaining distribution and listings in large retailers – our top key account managers were on hand.
- Cashflow – our top finance experts were on hand.
- Cut-through brand marketing – our top marketers were on hand.
- Building a sustainable supply chain – our supply chain experts were on hand.

What benefits have you seen in PepsiCo?

We launched the Nutrition Greenhouse to partner the best and the brightest entrepreneurs in the food and beverage nutrition space. Our goal was to work with breakthrough brands that share our vision to deliver more convenient great-tasting everyday nutrition products and we have achieved just that with these eight stand-out companies.

Everyone who has worked on this program has given their all and embraced the learning experience. Not only have the entrepreneurs had the benefit of tapping the vast knowledge and experience we have in PepsiCo, but the mentors, as well as other members of our team that have joined in, have benefited from experiencing first-hand the pace and challenges of entrepreneurial life. This program has reminded them of the importance of being curious and pragmatic about overcoming challenges, also to be passionate about your products and what you do.

When you are not venturing what do you do to relax?

I enjoy reading about global state of affairs and novels, working out and spending time with my wife and four kids. ◆

You can listen to this and other interviews on a podcast, subscribe at *gaulesqt.podomatic.com*. Andrew Gaule supports innovation programs and collaborations with "innovative new value chains" in global organisations. If you have interview ideas, email *andrew.gaule@aimava.com* or James Mawson *jmawson@globalcorporateventuring.com*

Global Corporate Venturing

Leadership Society

GCV Leadership Society mission:

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

	Premium* (Company) $12,500 per year	Luminary (Company) $50,000 for 2 years
Executive Advisory Role - act as GCV Leadership Society Ambassador for a two-year period	–	✓
Branding on Leadership Society materials as Luminary members	–	✓
Invitations to exclusive leadership society networking events worldwide	–	✓
Showcase portfolio companies during GCV events	–	✓
Right to join and use the *'GCV Leadership Society'* Name	✓	✓
Get the Weekly Community Newsletter	✓	✓
Entry in the Member App	✓	✓
Pro Bono - Bridging communications to third parties	✓	✓
Enhanced Company Profile in the Directory app	✓	✓
Free Ticket to either the annual Summit or Symposium	TWO	THREE
Assistance in arranging one-to-one meetings and/or private meeting space during GCV events	✓	✓
GCV Subscription** - access the monthly magazine (pdf), news website and special reports	UNLIMITED USERS	UNLIMITED USERS
GCV Analytics for 1 user (add an extra user for $5,000 more) - access 10,000+ deals through GCV Analytics for bespoke reports	✓	✓

* GCV Subscribers can upgrade for a limited time. Subscription fee already paid will be subtracted from the amount due on a pro-rated basis.
** Includes access to Global Government Venturing and Global University Venturing.

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

$10,000 per year*

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

Why Join?

- Support your industry
- Help shape thought-leadership and best practice to increase success
- Network with the most influential corporate venturers in the world – these could be your co-investors or partners
- Raise your company's profile to increase co-investment and deal-flow opportunities
- Increase your personal profile for your next career move
- Join sub-committees to move the industry forward in areas such as deal flow, investment models, partnership approaches, innovation excellence and intellectual property

Luminaries include:

Wendell Brooks
Intel Capital

John Hamer
Monsanto

Akira Kirton
BP Ventures

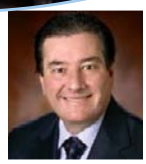
Jacqueline LeSage Krause
Munich Re / HSB Ventures

Jeffrey Li
Tencent

Michael Redding
Accenture Ventures

Jaidev Shergill
Capital One

Sue Siegel
GE Ventures



Bill Taranto
Merck

The benefits of the **Mawsonia** brands under one umbrella

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Global Corporate Venturing Academy
Global Corporate Venturing Analytics
Global Government Venturing
Global University Venturing

For more information or to apply today contact Janice Mawson:
+1 (703) 380 25 69 | janicemawson@globalcorporateventuring.com

REVIEW

What you had to say about this year's GCVI Summit

Testimonials from industry professional attending the Global Corporate Venturing & Innovation Summit in Monterey, California, in January

GCVI had grown two times since last year. The attendees were still of great calibre and from interesting backgrounds. The networking opportunities for both first timers and experienced attendees were great. It is easy to have meaningful conversations with many like minded people. The quality of speakers as well as the moderators were top notch. Majority of the speakers had good chemistry with one another and the moderators definitely prepared well.

Jay Onda, Startup Investments, Orange Silicon Valley

Onda

The 2018 GCVI event was extremely successful and useful. Great networking with the who's who of corporate ventures. very good and relevant presentations covering all the key topics .

Eric Buatois, managing partner, Benhamou Global Ventures

Cooper

This was the first time I was attending GCVI and it was very insightful, informative and inspiring. The speakers were great and the topics were chosen to reflect market trends and top-of-mind topics. Congratulations to the organisers who were able to get such high-powered leaders to attend.

Ravishankar Gundlapalli, CEO, MentorCloud

The 2018 GCVI is now the unparallelled leader in terms of networking with potential co-investors. It may surprise you who – in non-competing areas – are looking at similar technologies and businesses. Leverage each others' investment dollars for a win-win-win for corporates, institutions and most importantly, portfolio companies.

Iain Cooper, manager corporate venturing, Schlumberger

Compton-Bishop

GCVI summit was truly amazing with great content, and insights shared by experts in the corporate venture industry. It was a unique opportunity to interact with other corporate venture units. Great learnings, great networking and a truly awesome conference put together by the GCV team!

Ashish Mahashabde, principal, IBM Ventures

Effective snapshot of the current situation among the companies.

Pauli Marttila, senior lead, Sitra

Isacke

GCVI is a great event for meeting and getting to know the CVC community.

Quentin Compton-Bishop, CEO, Warwick Ventures, University of Warwick

This year's GCVI summit was incredible. The number of companies represented really highlights the growing importance of this sector, and the opportunity to meet and hear from so many amazing people made this one of the best events in the calendar.

Tracy Isacke, head of corporate relationship management, Silicon Valley Bank

Hoyem

The GCVI Summit is hands down the best event for people and organisations interested in corporate venturing.

George Kellerman, chief operating officer and general partner, Yamaha Motor Ventures & Laboratory Silicon Valley

I attend many conferences and have to say that the GVCI conference is one of the most productive conferences I attend each year. The content, networking, quality of people, contacts and opportunities to collaborate with the largest corporations in the world is frankly in my experience unprecedented.

George Hoyem, managing partner, In-Q-Tel

Hansen-Luke

Este summit es una excelente oportunidad para entender lo que esta pasando por la cabeza de las grandes corporaciones en relación a la innovación y al corporate venture capital. Imperdible.

Jose Catalan, head of innovation, Masisa

GCVI has created an institution and given a voice to corporate, university and government venture. I would thoroughly recommend them as a knowledge partner to any investor in the venture or growth arena.

Douglas Hansen-Luke, founder and executive chairman, Future Planet Capital

REVIEW

The GCVI was an invaluable experience. The summit connected me with potential industry partners that, as a new startup, I would not have met otherwise.

Michael Urner, CEO, Tergis Technologies

Probably *the* event for all CVCs out there. It is a great platform to network, share common best practices and to discuss opportunities and dealflow.

Matthias Schmidt, director strategic value creation, Swisscom Ventures

Excellent opportunity to be surrounded by so many people who understand your role, and what you are trying to accomplish.

Carrie Walker, Director, Explore New Growth, CarMax

Gillard

The GCVI Summit is the single most important event on my conference calendar every year. After 17 years of attending venture conferences, 10 of which as a CVC, my expectations are very high. The GCVI Summit delivers with the most impactful private meetings, top-notch networking, and topical presentations to anchor the entire event.

Keith Gillard, general partner, Pangaea Ventures

Hawkins

I felt the 2018 GCVI Summit was a great way to immerse myself in the mindset of the VC world. I found it was filled with passionate intelligent people who seemed legitimately interested in using their gifts and resources for the betterment of all stakeholders. The annual GCVI Summit event is a must-attend conference for any CVC and is a great opportunity for financial VCs to gain privileged access to the most active and respected CVCs in the world in order to collaborate on mutually beneficial dealflow.

Tom Hawkins, managing partner, Forté Ventures

The 2018 GCVI Summit was my first of many. As an accelerator with a goal of connecting startups to large corporations, I attended to hear perspectives from leaders in the space but also to meet them and discuss collaboration. I had 40-plus meetings with top CVCs, all in two days. These meetings would have taken me six months to organise outside of this event. I came out of the event versed in top CVC trends and with new connections that I hope to work with for years to come.

Brian Tetrud, corporate partnerships manager, Plug and Play Tech Centre

For startups like QC Ware that are advancing new technologies like quantum computing, getting in direct contact with industry players who want to explore these new technologies is very valuable. GVCI is a very efficient means of connecting startups with potential corporate customers and investors.

Matt Johnson, CEO, QC Ware

The great summit for networking!

Weera Paramasawat

This summit is definitely the most important about CVC in the world, where you can know not only what is going on in this industry and best practice, you can also make a great network with other executives making the same job of trying to bring innovation from outside the company, just like you.

Country manager Chile, Telefónica Open Future

The GCVI Summit is the must-attend event for corporate innovators and VCs. Whether you are new at the practice or an experienced professional, there is always value in listening to others.

Managing director, a food industry organisation

GCVI provides ample opportunity to learn more about the CVC space, especially from companies who have been doing it for a while. Networking is great as there are so many companies that do not compete in your industry.

Vice-president ventures, a digital and high-tech organisation

The quality of networking at GCVI was excellent. The most difficult decision I had to make was whether to spend my time listening to panels or with additional networking.

Anonymous

The GCVI Summit is a great conference to attend for networking opportunities. It was nice to speak with other CVCs and learn their areas of focus, processes and procedures and ways to learn from one another.

Anonymous

REVIEW

Wendell Brooks addresses the Global Corporate Venturing & Innovation Summit in California

From left: Claudia Fan Munce, Magdalena Yesil, Kate Mitchell and Tracy Isacke

Cisco's Rob Salvagno, left, talks to GCV editor-in-chief James Mawson

Sophia Yen of Pandia and Christine Gulbranson of University of California

Sue Siegel makes a point

REVIEW

Some of GCV's Rising Stars pose with HCV editor-in-chief James Mawson, lower left

Young Sohn speaks to delegates

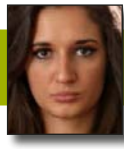
Qualcomm's Quinn Li takes part in a panel

Some of the University of California alumni who pitched their ideas at the summit

INNOVATIVE REGION

Canada flies high

Alice Tchernookova, features editor



There is indeed many a thing that can attract foreign investors to the Great White North. The world's second-largest country after Russia, with close to 9.9 million square kilometres of land area, Canada also has around 9% of the world's forests and half the world's natural lakes – all testimony to an abundance of natural resources.

Consisting of 10 provinces and three territories, Canada is home to a diverse and multicultural population, with immigrants accounting for just over a fifth of its 37 million inhabitants and representing around 200 ethnic origins. In 2017 alone, the country had a net immigration of close to 250,000.

Keeping its doors open, local investors agreed, stands out as one of Canada's most precious assets. Paul Sestili, a San Francisco-based general partner at Rogers Venture Partners, the corporate venturing unit of Canadian telco Rogers Communications, said: "Canada is one of the most welcoming countries in terms of policy, and frankly in terms of the quality of the people. It is generally a very open and friendly place."

Sestili's opinion was reinforced by Barrie Laver, managing director at the Royal Bank of Canada (RBC), who said: "A defining characteristic of Canada is its strong global reputation and its immigration-friendly climate."

The election of Prime Minister Justin Trudeau and the Liberal party in 2015 heralded a switch in the country's approach to immigration. Standing out as a place wide open for exchanges, both on human and financial levels, Canada has increasingly placed itself in stark opposition to the US, which has instead been marked by an increasingly inward-looking and closed foreign policy under President Donald Trump.

This split could provide the land of the maple with a golden opportunity to try to gain ground on its dominating southern neighbour. Sestili added: "The fact that Canada is welcoming to immigrants – something the US is currently struggling with – means it is likely to see its venture activity grow, with an increasing number of entrepreneurs likely to choose to locate there instead.

"Silicon Valley is, of course, and will continue to be, a very important place, and we ought to continue looking at deals there. But at the same time, there is no other market that is more competitive, which forces us to look to other markets to find high-quality deals that are more appropriately priced. Canada is one of them."

This brings to light another one of Canada's key incentives – providing quality deals and entrepreneurs more cheaply than other VC activity hubs. "Canada's currency and valuations are making deal pricing incredibly attractive compared with the US, Asia and western Europe," said Richard Osborn, managing partner at Telus Ventures.

Neal Hill, vice-president of market development at BDC Capital, investment arm of the government-owned Business Development Bank of Canada (BDC), added: "Canada's labour rates are lower compared with many other G7 or G20 countries. Considering the quality of local higher education institutions, you basically get a community of highly-qualified engineers that cost way less than in the US or the UK. Wage rates just tend to be inferior here, making the overall cost of doing business cheaper, and therefore attractive."

With all these advantages, it is up to Canada to take advantage of the momentum playing in its favour. The government is aware of this, having put in place a number of support programs and tax incentives to boost the local venture ecosystem.

The government's role

Canada's government has been active in supporting the country's VC sector. Some significant investments have, for instance, been made by BDC through its venture arm BDC Capital. Over the past two years, the unit has taken part in several large venture rounds, including a $153m round for IT company Big Stew Systems alongside Cisco Systems, General Electric and others, and a $120m round for healthcare group Clementia Pharmaceuticals alongside EcoR1 Capital, New Enterprise Associates and others.

But the government's major contribution has perhaps been the launch of two largescale investment programs – the Venture Capital Action Plan (VCap), and its new version, the Venture Capital Catalyst Initiative (VCCI).

Launched in 2013, VCap was a $400m program created to encourage private investments in early-stage companies, with goals to help small and medium-sized Canadian businesses grow and prosper, according to BDC. Looking to boost the creation of VC funds supporting smaller structures, VCap pledged that for every $2m committed by the private sector, the government would contribute an additional $1m, up to a maximum of $100m per fund.

Hill, who as part of his role at BDC oversees the development of the two programs, said: "The idea is to use public money to fund incentives to attract money into funds of funds. The government's money goes in first, and goes out last, which means private money has amplified returns and lowered risks."

According to BDC, between 2013 and 2016, the structure backed four private sector-led funds, which resulted in $900m in private investor capital being added to the ecosystem across four funds of funds – Teralys Capital, Northleaf Venture Catalyst Fund, Kensington Venture Fund and HarbourVest Canada Growth Fund. In addition, as of April 2016, a total 19 venture capital funds had benefited from capital raised through VCap, translating into investments in around 100 Canadian companies.

With all the above funds now being close to fully committed, the government recently created a new program similar in size and function – VCCI. The new structure makes $400m available to boost late-stage venture capital. BDC projects that the initiative could help inject around $1.5bn into the local market – private and public funds combined.

Announced as part of the 2017 budget, VCCI fits into the government's larger Innovation and Skills Plan, which should "help develop innovative high-potential startups, and build Canada as a world-leading innovation economy that will create jobs and grow the middle class", according to an official statement.

The federal department of Innovation, Science and Economic Development of Canada said 2016 was the seventh straight year of growth for VC in Canada, with the highest level of VC money invested in startup companies since 2001.

Top 10 government-backed deals 2011-17

Company	Sector	Sub-sector	Size	Investors
Lightspeed POS	Financial services	–	$163m	Caisse de dépôt et placement du Québec | iNovia Capital | Investment Quebec
Bit Stew Systems	IT	Big data & analytics	$153m	BDC Capital | Cisco Systems | General Electric | Kensington Capital Partners | Yaletown Venture Partners
Clementia Pharmaceuticals	Health	Pharmaceuticals	$120m	BDC Capital | EcoR1 Capital | New Enterprise Associates | RA Capital | Rock Springs Capital | UCB Pharma
Element AI	IT	Artificial intelligence	$102m	BDC Capital | Data Collective | Fidelity | National Bank of Canada | Real Ventures
LeddarTech	Transport	Vehicle hardware & maintenance	$101m	Delphi | Fonds de solidarité FTQ | Integrated Device Technology | Magneti Marelli
Repare Therapeutics	Health	Pharmaceuticals	$68m	BDC Capital | Celgene | Fonds de solidarité FTQ | MPM Capital | Versant Ventures
Hopper	Services	–	$61.3m	Accomplice | BDC Capital | Brightspark Ventures | Caisse de dépôt et placement du Québec | Investment Quebec | Omers
Clementia Pharmaceuticals	Health	Pharmaceuticals	$60m	BDC Capital | EcoR1 Capital | Janus Capital Management | New Enterprise Associates | OrbiMed | RA Capital | Rock Springs Capital | UCB Pharma
Zymeworks	Health	Pharmaceuticals	$58.5m	BDC Capital | Celgene | Eli Lilly
Milestone Pharmaceuticals	Health	Pharmaceuticals	$55m	BDC Capital | Domain Associates | Fonds de solidarité FTQ | Forbion Capital Partners | Go Capital | Novo | Pappas Capital | Tekla Capital Management

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The Canadian Venture Capital and Private Equity Association (CVCA) attributed much of this growth to VCap's impact.

RBC's Laver said: "The current government has made innovation and reorienting the economy around it a very high priority. It is notably supporting investment in university programs, as well as investment in a number of key sectors."

Another recent announcement was the Innovation Supercluster Initiative – a $950m federal funding program to be distributed over five years to support Canadian "superclusters", defined as "made-in-Canada Silicon Valleys" and hotbeds of innovation, research and business activity. The initiative aims to "build world-leading innovation ecosystems, secure Canada's future as an innovation leader, and accelerate economic growth", the government announced, and, more generally, attract worldwide talent, technology and investment.

The five funding recipients were announced in a public address by the country's minister of innovation, Navdeep Bains. These will be the Ocean supercluster, in Atlantic Canada, the Scale.AI supercluster, based in Quebec, the Prairies-based Protein Industries supercluster, British Columbia's Digital Technology supercluster, and the Advanced Manufacturing supercluster in Ontario. Each of the five superclusters should, in turn, support around 300 local businesses.

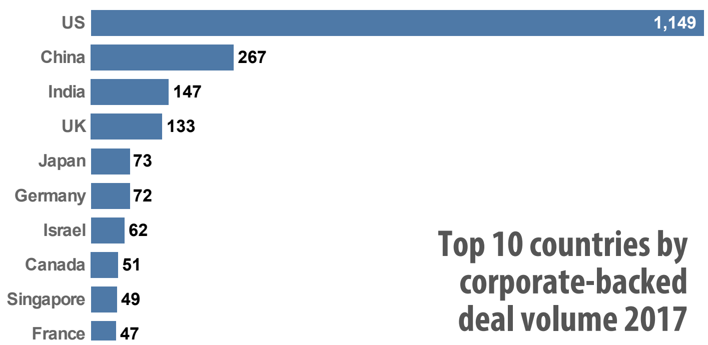
A number of Canadian government grants and loans have also been made available for small businesses in the areas of hiring and training, research and development, capital investment funding and business development. Among these are the Scientific Research and Experimental Development Program, a federal tax incentive for companies conducting research, and the Industrial Research Assistance Program, providing entrepreneurs with funding and advisory services in the development of their innovation and technology.

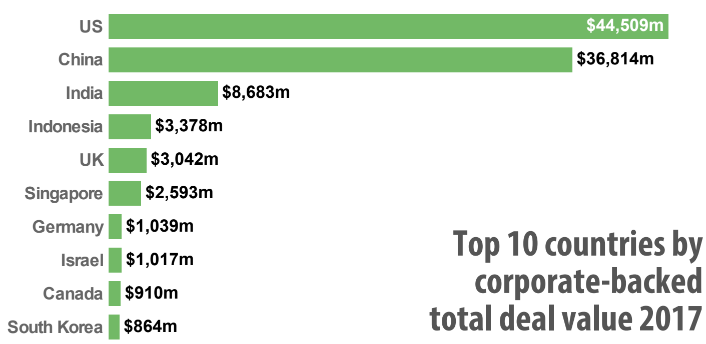
A number of other tax incentive schemes are also in place to encourage investment in venture, whereby, for instance, corporations qualifying as Canadian-controlled private corporations (CCPCs) can get preferential tax treatment and lower tax rates, while CCPC shareholders can claim capital gains tax exemption, tax deferral or federal tax credits under certain conditions.

Looking at the data, it appears the results of that sustained support have already started to show.

The numbers

According to GCV Analytics, Canada was the eighth-largest country by number of corporate-backed deals last year with 51 reported. The country ranked ninth in terms of total deal value at $910m. Although these figures are far behind the US, China and India, it is worth noting the market size of these countries – the US had a GDP of $19.4 trillion in 2017, China $11.9 trillion, India $2.4 trillion and Canada $1.6 trillion.





Canada's VC and corporate venture capital (CVC) market has grown strongly over the past few years. According to the CVCA, from 2013 to 2017, the amount of invested money grew from C$1.9bn ($1.5bn) to close to C$3.6bn.

Hill said: "Five years ago, venture capital as an asset class in Canada was showing negative returns and was not profitable for investors. This has now changed, with internal rates of return (IRR – a measure of fund profits) having gone from minus 7% a year to plus 4% or 5%. This is a good baseline indicator of a general improvement of the market."

CVC figures alone have also risen, both in value and volume. According to GCV Analytics, since 2013, the number of CVC deals per year increased consistently, from 10 to 23, to 45, to 47, to peak at 51 last year. Deal values followed suit, with a sharp increase from $312m to $789 between 2014 and 2015, reaching $793m and $910m in the following two years.

RBC's Laver said: "It has only been over the last several years that private capital started coming back into the industry. That goes hand-in-hand with successful exits, and a growing community of founders who have 'been there, done that'.

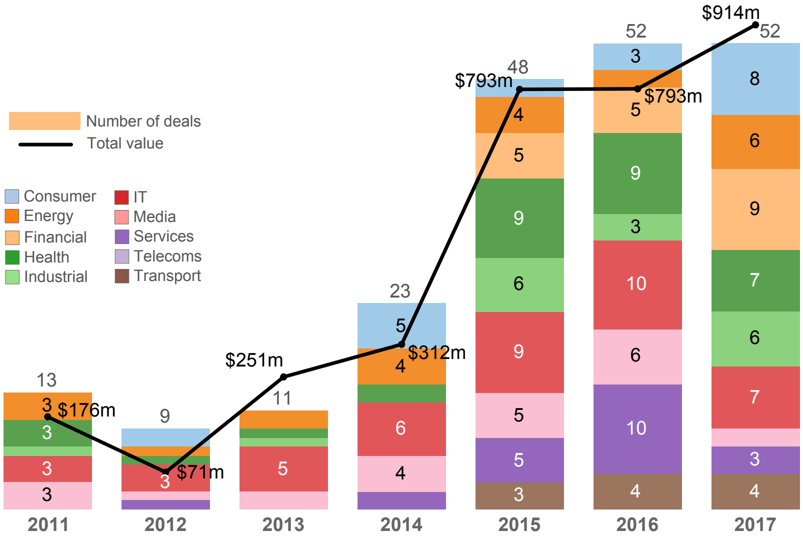
"The last five years in particular have given way to a substantial maturing of the market, with an increasing number

INNOVATIVE REGION

of quality managers and entrepreneurs, and an improvement on all the metrics that matter, such as dollars deployed, number of exits, or investor type."

In a recent report on the state of VC in Canada, the federal department Western Economic Diversification Canada (WD) claimed that in 2015 "VC investment in Canada was, in absolute terms, second-highest of the G7 countries, trailing only the US. As a share of the economy measured by GDP, Canada's VC market also ranked second in the G7".

Deal volume and value in Canada 2011-17



But if Canada's VC market has shown great growth as a whole, regional disparities remain. According to WD, western Canada – the provinces of Alberta, British Columbia, Manitoba and Saskatchewan – has for decades been lagging behind Ontario and Quebec, where most activity is concentrated.

Over the past two years in particular, due to an economic slump caused by low oil prices, the west's share of the market fell to its lowest point since 2003, the department added. In 2016, western Canada attracted $609m of VC investment, $420m of which was concentrated in British Columbia. Ontario and Quebec, meanwhile, raised a respective $1.4bn and $1.1bn that year.

The key cities in the Canadian VC landscape seem to be Montreal, Vancouver, Ottawa, the Toronto-Waterloo Corridor – often likened to the San Francisco Bay area and nicknamed "the Silicon Valley of the north" – and, more recently, Edmonton.

Reflecting on the country's progress, Telus Ventures' Osborn said: "The Canadian VC market is currently experiencing incredible growth. Venture deals have grown in a similar fashion to the US, with more activity in series A and B and more megadeals – defined here as rounds over $50m – with 15 of these in 2017 compared with only five five years ago. We also have an increasing number of narwhals [Canadian unicorns – companies worth at least $1bn] and several startups poised to get there soon."

Canada has been home to a number of startups that subsequently developed into global companies. One is Slack, founded in 2009 in Vancouver, and whose $250m SoftBank-led round last year brought its total raised funds to $841m and gave it a valuation of $5.1bn. Another Vancouver-born company, Hootsuite, reached an estimated valuation of $1bn after raising a $60m round that brought its total funding to around $250m in 2014.

Photography sharing platform 500px, based in Toronto and founded in 2009, is another success, receiving a total of $23m in funding and acquired by Visual China Group for a rumoured $17m last month. Finally, Shopify, an Ontario cloud-based e-commerce platform that received over $250m in funding, launched its IPO in 2015 with an initial market capitalisation of close to $1.3bn.

Sectors

According to GCV Analytics, IT has been consistently strong over the past three years, with eight deals recorded in both 2015 and 2016, and seven in 2017. Healthcare stands out as another important investment area, having been successively the first and third strongest investment area in 2015 and 2016, with nine and seven deals respectively.

In addition, services and financial services led the pack in 2016 and 2017 respectively, with 10 services deals in 2016 and nine financial services deals in 2017. The consumer sector was also strong last year, raking second with eight deals.

An area of activity booming in Canada now is artificial intelligence (AI). A determining event was notably the raising of $102m by the Montreal-based startup Element AI last year, through a series A round led by Data Collective and joined by Development Bank of Canada, Fidelity Investments Canada, Hanwha Investment, Intel Capital, Microsoft Ventures, National Bank of Canada, Nvidia, Real Ventures and global wealth funds. The group, which was only eight months old at the time, had previously raised money from Tencent, Microsoft and Hanwha.

Telus Ventures' Osborn said: "From our point of view, AI, healthcare, cybersecurity and the internet of things (IoT) are the most compelling segments, not only because they drive business performance for our parent company, but also because the strength of opportunities in the market is incredible.

"We have been committed to these sectors for a while, and have already completed two exits – one in IoT with the sale of Otono Networks to the private equity-backed group Idemia in late 2017, and the other in security with the acquisition of Zenedge by Oracle earlier this year."

The Toronto-Waterloo corridor, Montreal and Edmonton were recently identified as three strong AI superclusters towards which funding, business and people are gravitating. To help these locations grow further, the government launched a $125m Pan-Canadian Artificial Intelligence Strategy, administered by the Canadian Institute for Advanced Research and working in partnership with three new AI institutes – the Alberta Machine Intelligence Institute in Edmonton, the Vector Institute in Toronto and the Montreal Institute for Learning Algorithms.

A number of international corporations have already understood the growing importance of these innovation hotbeds in the VC landscape, and have been quick to make a move in the region. In September last year, Facebook followed in the footsteps of Google and Microsoft by opening its own AI research laboratory, Fair Montreal. The previous year, IBM had already set foot in Hamilton, Ontario, having launched a collaborative research initiative with the Hamilton Health Sciences medical group.

Hill said: "AI, IoT and genomics are three very interesting areas currently attracting a lot of capital to Canada, with foreign investors looking to take advantage of the quality and talent in innovation that exists here. We are seeing investments in university labs, incubators, and in some cases in venture funds. And as success brings success, those places have become centres of gravity attracting more capital, more talent and more resources."

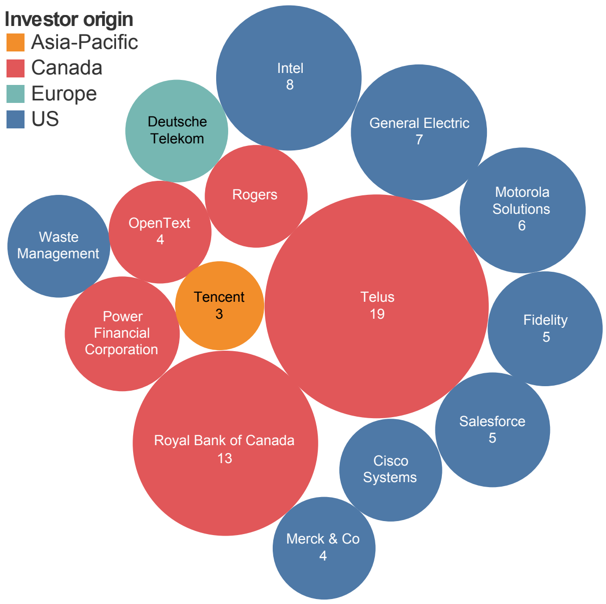
Growing interest from abroad

Telus Ventures' Osborn said: "There is absolutely no doubt that Canada and Canadian entrepreneurs are on the radar for global players – both for investments and acquisitions – in a way they have not been before. There is a lot of dry powder [uncommitted investment capital] as we all know, which combined with currency, R&D tax incentives and low interest rates makes for a very attractive set of conditions in Canada. While they are creeping elsewhere, domestic valuations are generally 20% to 40% lower for comparable-stage companies."

And as the government continues to operate its charm offensive with initiatives such as the startup visa, or with facilitated entrance requirements and immigration processes for highly-skilled workers, foreign investors are taking the bait. According to data collected by Canada's private capital news and intelligence provider CPE Media, close to 55% of Canada's VC capital came from foreign investors in the first half of last year, with the US alone accounting for around 40%.

According to GCV Analytics, between 2011 and 2017, eight of the country's top 15 corporate investors were US-based – Intel, which closed eight deals over that period, General Electric with seven, Motorola Solutions with six, Fidelity and Salesforce with five each, and Merck & Co, Cisco and Waste Management with four each. Five investors were Canadian – Telus Ventures, which was number one with 19 deals, RBC with 13 deals, Power Financial Corporation with five deals and OpenText and Rogers with four each.

Top corporate investors in Canada by number of deals 2011-17



RBC's Laver said: "There is a recognition that there are more and more quality management teams and opportunities in Canada, while the community of experienced local VC investors is also growing. This is very positive for foreign investors coming into the market and willing to establish local partnerships, as a larger base of credible ventures funds with good track records opens up more possibilities for collaboration."

The central role of universities

The Canadian venture ecosystem probably would not be what it is without the central role played by its universities, in terms of both talent and innovation.

Top 10 university-backed deals 2011-17

Company	Round	Size	Sector	Affiliated institution	Investors
BlueRock Therapeutics	A	$225m	Health	Kyoto University	Bayer | Versant Ventures
Xagenic	B	$20m	Health	University of Toronto	CTI Capital | Domain Associates | Ontario Emerging Technologies Fund
Chipcare	B	$18.8m	Health	University of Toronto	Biotech Alliances International | undisclosed investors
Encycle Therapeutics	–	$11.5m	Energy	University of Toronto	BDC Capital | EnerTech Capital | Export Development Canada | NGEN Partners | Prelude Ventures
NoviFlow	A	$9m	IT	Montréal University	Undisclosed investors
Landr	A	$6.2m	IT	Queen Mary University of London	HDGL | Plus Eight Private Equity | Real Ventures | Warner Music Group | Yul Ventures | individuals
Chipcare	A	$5m	Health	University of Toronto	Epic Capital | Maple Leaf Angels | Mars Innovation | Puffin Partners | Winfield Venture Group | angel investors
Oohlala	–	$4m	Services	University of Toronto	GoAhead Ventures | Real Ventures | University Ventures | Y Combinator | angel investors
Privacy Analytics	Seed	$3.5m	IT	University of Ottawa	Vanedge Capital
Sparq	–	$2.75m	Energy	Queen's University, Canada	Investment Accelerator Fund | Mars Innovation | Ontario Centres of Excellence

According to the most recent data provided by the Organisation of Economic Cooperation and Development (OECD), Canada had the largest proportion of educated population in 2016 at 56.3%, ahead of Israel (49.9%) and Japan (50.5%). The OECD's indicator defined this as the highest level of education completed by 25 to 64-year-olds. Canada was also second that year in terms of people with tertiary education – 46.2% of 55 to 64-year-olds and 60.6% of 25 to 34-year-olds, right behind Korea.

This should come as no surprise, since the country is home to some of the world's most prestigious higher education institutions – University of Toronto, University of British Columbia, McGill University in Quebec, McMaster University in Ontario and University of Montreal. Ontario's University of Waterloo, meanwhile, is often referred to as Canada's Massachusetts Institute of Technology, and has earned itself the reputation of being Silicon Valley's number-two choice for graduate recruitment, right behind University of California Berkeley.

Many of these institutions have contributed directly to the ecosystem's development. To name a few initiatives, the Simon Fraser University, in Vancouver, offers the SFU Innovates program, supporting innovation and entrepreneurship across the university. TEC Edmonton, a joint University of Alberta and City of Edmonton initiative, was recently ranked one the world's top business accelerators linked to a university. And a few years ago, Toronto's Ryerson University launched Digital Media Zone, one of Canada's largest business incubators for emerging technology startups, which has helped incubate or accelerate more than 317 businesses to date.

Hill said: "First and foremost, one of Canada's biggest strengths is its employee base. Talent is in high demand these days, and the country provides an extremely well-educated population, and at a lower cost than elsewhere."

Conclusion

In many ways, Canada is already on the right track for building one of the world's greatest venture ecosystems. But there is room for improvement, and local market players have identified areas that could use a boost.

For Paul Sestili, the priority for big corporations in Canada is to embrace venture and see it as a critical part of innovation strategy. He said: "The rest of the pieces are in place in terms of the critical infrastructures required to have a successful entrepreneurial and venture ecosystem, so the corporates just have to make a decision to be more actively focused on direct investing."

This observation was confirmed by BDC's Hill, who said: "Only around 15 corporations in Canada have a designated venture arm at present, which as a percentage of all the venture entities worldwide is not reflective of what our economy represents on a global scale."

Over the past four years, only three CVC units have been launched in Canada, according to GCV Analytics.

"To me, that means Canadian corporates have tended to be more conservative in terms of technology-driven innovation, and have invested less, both inside their own walls and abroad," added Hill, who last year organised the Canadian Corporate Innovation Summit in partnership with Global Corporate Venturing to attract foreign corporations to the country and provide open innovation and venture insights to locals. "That is a source of capital that we would like to see more present in the market."

RBC's Laver, meanwhile, insisted on the importance of having a growing number of successful exits. According to GCV Analytics, 18 exits have been recorded in Canada since early 2012 – two IPOs and 16 acquisitions.

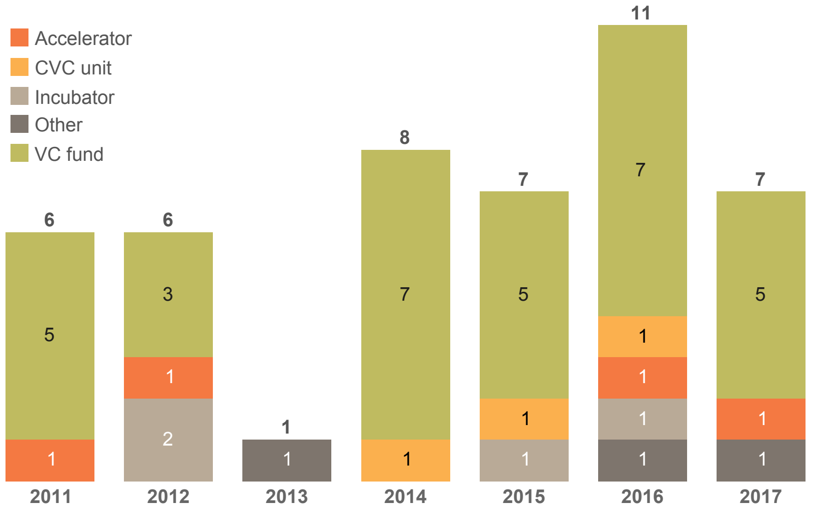
Laver said: "I do not think there is one silver bullet that will accelerate growth – it is a gradual process. As you continue to see a greater breadth and depth of venture funds, more exits, more investments and as a consequence – more

INNOVATIVE REGION

entrepreneurs able to redeploy their efforts in capital back into new startups, that will over time attract more capital into the market, and the sector will continue to grow. It is a sort of circle, where one things feeds into another."

Another element that is improving but could still progress, he added, is the access to a larger pool of late-stage investors, with people "who can write \$15m, \$20m or \$25 cheques in support of growing companies at series C stages and above."

Corporate-backed funding initiatives in Canada 2011-17



Similarly, Telus Ventures' Osborn expressed his wish to see the average deal size go up in value in Canada, where according to him it "has not increased as rapidly as in other countries". He said: "All things equal, our companies are getting less money than competitors in other countries, and that needs to change."

Finally, he added, the country could benefit from having a higher number of serial entrepreneurs. "It is improving, but you do not see the multiple-success teams as often as you do in the US and other regions," he said. "Sometimes successful entrepreneurs are happy to be one and done, or they get into the venture business but not enough get back into the startup game." ◆

Exits 2012-17

Company	Acquirer	Exit type	Size	Investors
DVS Sciences	Fluidigm	Acquisition	\$207.5m	Pfizer | Roche
Bit Stew Systems	General Electric	Acquisition	\$153m	BDC Capital | Business Development Bank of Canada | General Electric | Kensington Capital | Yaletown Venture Partners
Clementia Pharmaceuticals	–	IPO	\$120m	BDC Capital | EcoR1 Capital | Janus Capital Group | New Enterprise Associates | OrbiMed | RA Capital | Rock Springs Capital | UCB Pharma
Zymeworks	–	IPO	\$58.5m	Merlin Nexus | BDC Capital | Brace Pharmaceuticals | Celgene | CTI Life Sciences Fund | Eli Lilly | EMS pharmaceuticals | Fonds de solidarité FTQ | Lumira Capital | Perceptive Advisors | Teralys Capital | The Northleaf Venture Catalyst Fund
GenoLogics	Illumina	Acquisition	\$40m	Illumina | OVP Venture Partners | Yaletown Venture Partners
Rx Networks	Beijing BDStar Navigation	Acquisition	\$23.1m	British Columbia Discovery Fund | Telus
Bufferbox	Alphabet	Acquisition	–	Alphabet
PerspecSys	Blue Coat	Acquisition	–	Blue Coat | Intel
Sago Mini	Spin Master	Acquisition	–	Bonnier | Spin Master
Termtter	Hootsuite	Acquisition	–	Blumberg Capital | Hearst | Millennium Technology Ventures
Belair	Ericsson	Acquisition	–	Business Development Bank of Canada | Comcast | Deutsche Telekom | Export Development Canada | McClean Watson | MMV Financial | Panorama Capital | Trilogy Equity Partners | VenGrowth | Ventures West Management | Wellington Financial
Neuralitic Systems	Guavus	Acquisition	–	Business Development Bank of Canada | Export Development Canada | Go Capital | Research in Motion | Vertex Ventures
Acquisio	Web.com Group	Acquisition	–	Crédit Mutuel-CIC Group | Desjardins Insurance | Fonds de solidarité FTQ | Tandem Expansion | Wellington Financial
Pinshape	Formlabs	Acquisition	–	DeNA
BTI Systems	Juniper Networks	Acquisition	–	Fujitsu | Juniper Networks
Recon Instruments	Intel	Acquisition	–	Intel | Motorola Solutions
DiscoverText	Vision Critical	Acquisition	–	Omers | Telus | Wellington Financial
Wurldtech	General Electric	Acquisition	–	Siemens | Vanedge Capital

UNIVERSITY CORNER

The strategic necessity of university innovation tools

James Mawson, editor-in-chief

Two related discussion items dominated the conversation at the World Incubation Summit hosted by the DMZ incubator at Ryerson University in Toronto, Canada, and organised by data provider UBI Global – first, whether or how university-managed and affiliated incubators could become the primary development tools for entrepreneurs, and second, how the support tools for these student and faculty startups and spinouts could become more strategic for their education institutions.

Ali Amin, CEO of UBI Global, said he had founded the company five years earlier out of his own master's degree research in order to "speak on your [university incubators] behalf" so corporations did not have to white-label independent incubators and accelerators but instead work with universities.

Discussions at the summit by university incubators indicated many still felt their mixed strategic or financial goals put them at a disadvantage compared with independent platforms, such as Techstars, RocketSpace, which raised $336m from China-based NHA two years ago, and Plug and Play.

Holger Meyer, head of research at UBI, in an opening panel at the summit claimed this insecurity was often misplaced. He said with $4.7bn invested in clients of 259 benchmarked university-linked business incubators, they had had a 59% success rate – surviving at least five years – with 72,000 employees among them. This was good news for the more than 15,000 startups being incubated at 700 universities and contrasted with the 75% failure rate for venture-backed startups, according to a Harvard Business School study by Shikhar Ghosh.

And the message is being heard by leading corporations. In a series of discussions at the summit, Diego De Biasio, CEO of Technoport, and Warrick Cramer, CEO of Tomorrow Street, founded by phone operator Vodafone, explored the later-stage opportunities between corporations and incubators, while Shaheel Hooda, entrepreneur-in-residence at Telus-TEC Accelerator, and Amir Sayegh, strategic partnerships lead at phone operator Telus, talked about early-stage support and shifting metrics in judging the success to the Canadian telco.

Sven De Cleyn, professor in entrepreneurship at University of Antwerp and program manager at Imec.istart, and Zane Smilga, innovation lab coordinator at Verhaert, then discussed the corporate-incubator relationship and the power of the community joining together to develop the entrepreneurial ecosystem.

In a presentation by "competent tyrant" Howard Tullman, former CEO at 1871 incubator, described how its work has helped the entrepreneurs, both those who make it through and those who do not by reducing their opportunity cost, and the city of Chicago.

Initiated by JB Pritzker in 2012, 1871 had started incubating 50 startups in its 50,000 square feet of space using 125 mentors. Now, it has 500 startups in 150,000 feet of space requiring about 900 mentors, of whom half are women.

UNIVERSITY CORNER

Tullman, whose successor as CEO has recently been named as Betsy Ziegler, chief innovation officer at Northwestern University's Kellogg School of Management, admitted to a 70% to 80% failure rate and said its model required critical mass and so could not be replicated everywhere. 1871 is affiliated with eight universities, most of which have dedicated spaces at the facility for students and faculty to develop businesses.

The power of such incubators for regional development is shown in 1871's case by its member companies and alumni having raised more than $280m and created more than 8,000 jobs.

Michael Benarroch, provost and vice-president at Ryerson University, had earlier attributed part of Ryerson's renaissance to the DMZ, which UBI had ranked number one along with UK-based SetSquared, and its other incubator areas. He said: "In eight years, DMZ has risen to be Canada's largest commercial startup incubator with more 300 clients and $400m in funding. The DMZ has pioneered student and faculty zone learning."

Brandon Paschal from incubation manager at Launchlabs, based in South Africa, then moderated a panel including Jairo Orozco, associate professor on entrepreneurship at Ean University, Martin Croteau, director of academic entrepreneurship at Ontario Centres of Excellence, and PKB Menon at Ginserve–Global Incubation Services in India.

Orozco explained that three of the top five city applications to the UBI awards had come from Latin America as a result of public policies developed over the past 20 years to focus on reducing poverty through entrepreneurship.

Incubators had been one path for university students to find jobs but developing an entrepreneurial culture required everyone's support, he added.

Menon said the shift in culture could happen relatively quickly. He said Bangalore in India had been regarded as a retirement city but now had 2,500 startups using the knowledge capital developed from locals working at the 400 or so corporate research and development centres set up in the region. The Indian government had tried to encourage incubators as a source of these startups through allowing corporations to back them too. The government had mandated that 2% of corporate profits had to be used for socially and environmentally-responsible measures, and incubators were included within this bracket.

Global University Venturing will be updating its review of university venture funds ahead of its GUV:Fusion conference held as part of the GCV Symposium in London on May 22-23, so please help us improve our knowledge of the community so there is better understanding of its importance to entrepreneurs, co-investors and society.

UBI's Meyer had earlier talked about the importance of diversifying funding for university-affiliated incubators to survive longer, and Croteau and Paschal touched on their approaches. In Ontario, Canada's most important economic province, its centres of excellence had state funding but this had challenges given changes in political governance, while in South Africa, Paschal said its Launchlabs out of Stellenbosch University had been set up to be self-funding within three years. Paschal said this focus on being an efficient startup itself had helped it serve startups, and whether incubators took equity stakes in startups impacted their mindset and who they chose to serve. UBI estimated the average incubator received five applications for every client taken on.

The panel involving Flavio Wagner, director of the Zenit Science and Technology Park at the Federal University of Rio Grande do Sul (UFRGS) in Brazil, Chris Lumb, CEO at TEC Edmonton incubator in Canada, Kjell Håkan Närfelt, chief strategy officer at Vinnova in Sweden, Irene Fialka, CEO of Austria's Inits incubator, and Agnès Flemal, general manager of the WSL incubator in Wallonia, Belgium, agreed context was the most important consideration in measuring success.

The UBI metrics classify absolute and relative efficiency and effectiveness, but Lumb said Canada had set up a working group to develop a framework for Canada over the next year. Närfelt said performance indicators were useful if context applied. Its measurements looked at how incubators changed behaviour by using interviews to see the kinds of companies selected and how they had performed over three years. Given the heterogeneity of startups and that entrepreneurship results are influenced by outliers rather than normal distribution curves, it can also take a long time, seven to 10 years, to see the fruits of the policies.

Fialka and Flemal then talked through their similar approaches to matching the technology readiness of a startup with the market readiness for the product or service. Flemal said: "The maturity of a project is key."

However, most incubators in UBI's rankings were still effectively regarded as pilots. Monash University, Australia's largest with more than 70,000 students, set up its incubator last year to take on five clients initially. But demand for places proved so large the cohort was more than doubled. Elsewhere in Australia there have been interesting partnerships between corporations and universities. Scott Gunther, director of commercial development at IAG Firemark Ventures, the corporate venturing unit of the local insurer, referred to its "unique partnership" with Deakin University.

Simon Bond, innovation director at SetSquared, a multi-university incubator in the UK, outlined the lessons in running a successful incubator. The goals had changed since its foundation in 2002 but the key was feeding the machine – finding out what works for its five backing universities.

UK government policy had pushed academic institutions to consider the impact of their teaching and research on the wider economy, and changed funding to encourage these policies even if their funding of universities had often fallen in absolute or relative terms.

The European Universities Association Public Funding Observatory said funding to universities had been decreasing in 15 out of 28 higher education systems since 2008, and the European Commission estimated an additional €62.4bn ($77bn) would have been necessary to fund all high-quality research proposals for 2014-16 alone.

In the US, the Association of University Technology Managers found federal sources of funding to academia had fallen from 70% in the 1990s to 58% in 2016. And Japan has since 2004's incorporation of national and public universities seen a fall in government expenditure.

While it has been more than 70 years since Myles Mace created the first entrepreneurship course at a university, Harvard Business School, in 1947, student pressure for teaching and education has increased, particularly since the global financial crisis a decade ago.

In 2009, an Organisation of Economic Cooperation and Development survey showed 43% of students were expected to be self-employed within five years of graduating. Development of proof-of-concept funding, startup clubs, accelerators and incubators, alumni and university-managed and affiliated venture funds and deeper connections between business schools and arts and science courses have deepened since then.

Gregg Bayes-Brown, marketing and communications manager at Oxford University Innovation, in a LinkedIn discussion thread, said: "45% of our spinouts are started by foreign founders, while 78% of startups in our incubator have international innovators at their core. Having the infrastructure to support those founders says we are open to people from all walks of life to come and start something here, and positions Oxford not as a university of the past, but one of the future."

In the same thread, Chris Donegan, co-founder of Invention Capital Associates, warned: "Universities view these things as strategic priorities because they are deluded into trying to emulate Stanford. Bolt on incubators and venture hubs are largely economically pointless vanity projects or PR stunts. It is a benefit in kind for academic staff encouraged by government quango funding."

Nevertheless, the examples of Oxford, Stanford, Massachussetts Institute of Technology and Tsinghua have shown the potential for focusing on complementing research and teaching funding with entrepreneurship as a strategic priority.

Stanford alumni have started more than 40,000 companies since engineering department head Fred Terman encouraged two students, Bill Hewlett and Dave Packard, to set up a company in their garage in the 1930s.

These 40,000-plus Stanford-educated startups now have annual revenues of more than $2.7 trillion, and while Stanford initially tried to avoid direct funding of entrepreneurs due to risks to its now-$26bn-plus endowment, instead indirectly funded them by committing to venture capital funds, this policy has changed and the university balance sheet is used to support independent but affiliated StartX, which has an effectively open chequebook. The university still benefits from philanthropy and its technology licensing office.

And as a later Stanford's school of engineering head, John Hennessy, has said: "There are two kinds of technologies in the world. Ther is stuff that is patentable and broadly applicable and the right thing to do is to give it to the technology licensing office, Then there is stuff that is more a preliminary proof of a concept. It is not patentable, and the real value is in the people and their understanding of that technology and how it can develop into a useful product. The office's role there is not to get in the way. That is when the right thing to do is to say: 'Godspeed, go do it'."

Hennessy correctly realised the value for the institution was often more to be found in its relationship with its intangible asset, the people passing through the institution, than in trying to capture the shorter-term economics from them.

In this light, a strategic threat to universities comes less from online courses, given the power of universities to deliver accreditation, but from organisations that can convene and educate groups of people and deliver long-term network effects to them.

In this light, VC or other service providers offering portfolio companies their own entrepreneurship knowledge and networking tools, whether formalised in the way True Ventures' True University or Tim Draper's Draper University have started to do, or others, have less formally reached the core competence that universities have offered society, faculty and students.

As Toronto mayor John Tory said at the World Incubation Summit, his city's policies were focused on how investing in people to become smarter and expediting immigration to boost a region's overall brainpower can act as a rising tide to lift all boats through collaboration. Universities might ask, with an emergent strategic threat being unveiled, whether they have invested enough in their own tactical asset of entrepreneurship incubation and venture funding tools and people. ◆

Turning Raw Data into Meaningful Insights

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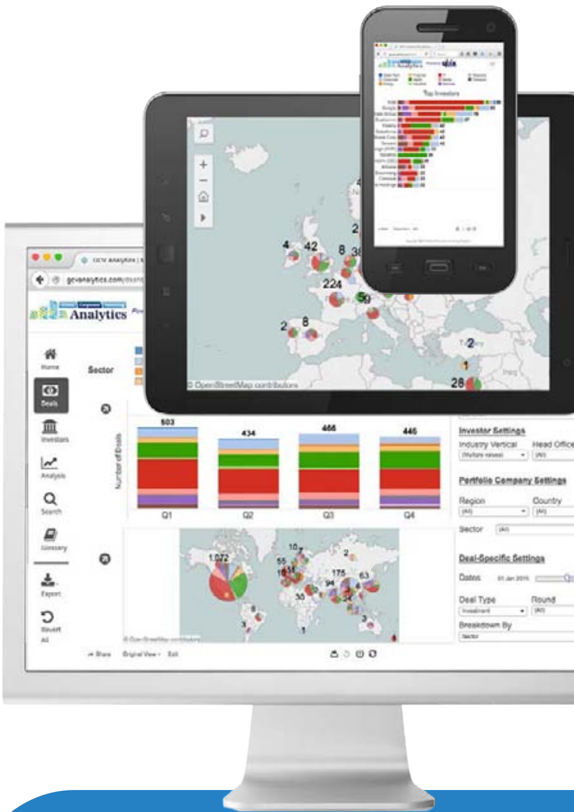
Global Corporate Venturing **Analytics**

Arnaud's CEO asked him how many deals their closest five competitors had done that year. Minutes later he pinged her the answer – and all the detail plus some cool looking charts.

Marie urgently needed to create a graph showing the number of CVC investments, and their dollar value, in healthcare in Asia over the past two years. Three minutes later the graph was in her presentation.

Zhang is a consultant and had a meeting scheduled with a CVC. Needing to do a quick bit of background research he popped into GCV Analytics. He walked into the meeting knowing what deals they had done and who they had co-invested with and was also able to tell them what the competition had been doing.

Anika works for a government and needed to benchmark inward venture investment from corporates, compared to other similar countries. She used the information to get an increased marketing budget.



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ANALYSIS

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

Number of deals declines

Kaloyan Andonov, reporter, GCV Analytics

The number of corporate-backed deals in February was 131, noticeably down from the 174 funding rounds in the same month last year. Investment value, however, increased significantly – up from $5bn in February 2017.

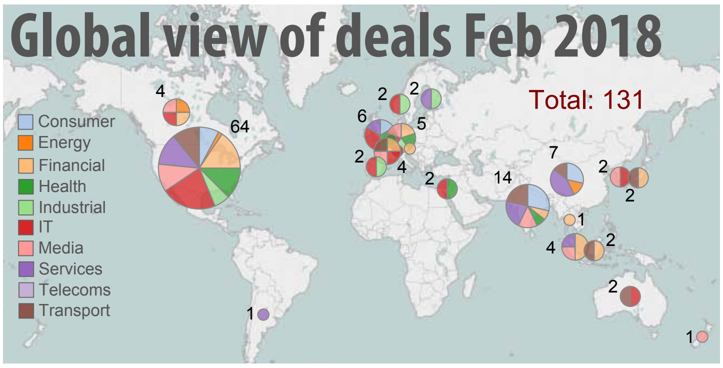
The deal count in February declined from the previous month (191 rounds). Total capital invested in corporate-backed rounds in February also went down from $12.84bn in January, a 30% drop.

As usual, the number of corporate-backed deals was greatest in the US, which hosted 64 rounds, India was second with 14 rounds, China third with seven and the UK fourth with six.

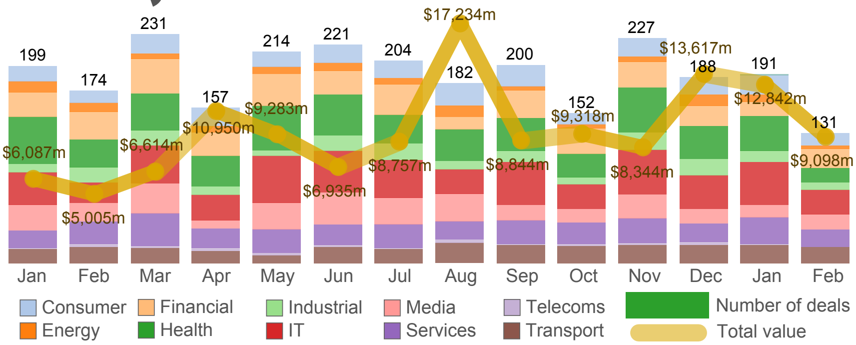
The leading corporate investors by number of deals were semiconductor manufacturer Intel, media group Bertelsmann and internet company Tencent. In terms of involvement in the largest deals, Tencent topped the ranking, along with insurer China Life and e-commerce company Alibaba.

GCV Analytics recorded 18 corporate-backed funding initiatives in January, including VC funds, new venturing units, incubators, accelerators and others. This figure implies a decrease from January, when there were 25 such initiatives. The estimated raised capital in February's initiatives was about $2.5bn, down from an estimated $2.7bn in January.

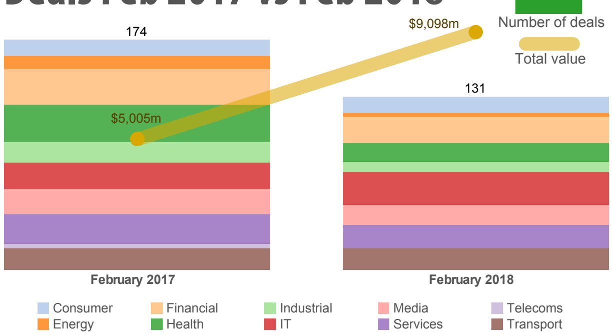
Global view of deals Feb 2018



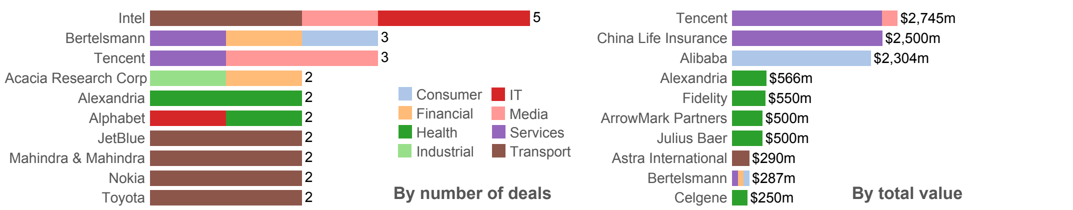
Deals by month 2017-Feb 2018



Deals Feb 2017 vs Feb 2018

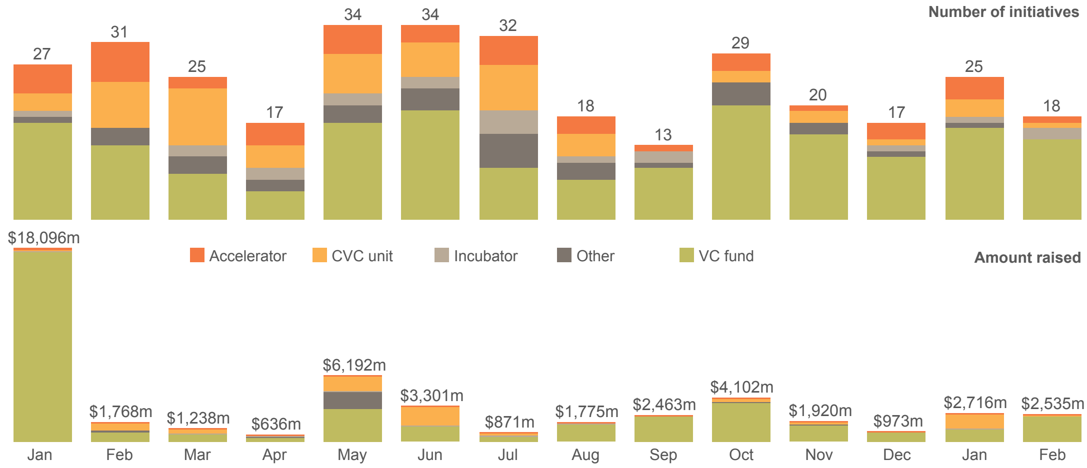


Top investors Feb 2018



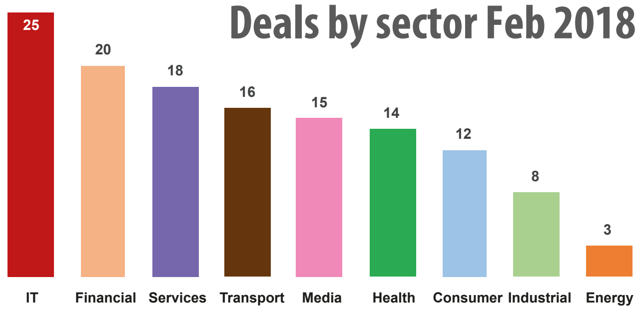
ANALYSIS

Funding intiatives by month 2017-Feb 2018



Deals

Deals by sector Feb 2018



	Financial services	IT	Media	Services	Consumer	Telecoms	Transport	Industrial	Health	Energy
North America	28	14	13	10	9	5	8	1	5	3
Asia	7	7	10	4	5	1	3	5		
Europe	7	4	2	3	1	6	3	4	2	1
Australia / NZ	1					1		1		
Middle East	1					1		1		
South America	1									

Deals heatmap Feb 2018

Emerging businesses from the IT, financial, services, transport and media sectors raised the largest number of rounds in the second month of 2018. The most active corporate venturers came from the financial services, IT and media sectors.

JD Logistics, the logistics spinoff of China-based e-commerce firm JD.com, received funding from investors including Tencent and China Life for a round expected to close at about $2.5bn. JD Logistics was formed by its parent company in April 2017 out of a logistics operation it had been running for a decade. It has seven “fulfilment” centres and more than 400 warehouses, which it claims represents the largest fulfilment infrastructure of any China-based e-commerce firm.

Alibaba paid approximately $857m for a 15% stake in China-based furniture retailer Beijing Easyhome Furnishing Chain Store Group as part of a RMB13bn ($2.04bn) funding round. The round also featured insurance firm Taikang and private equity firms Yunfeng Capital and Harvest Capital. Founded in 1999, EasyHome operates a chain of 223 stores across 29 Chinese provinces and municipalities that sell furniture, home improvement and building materials. It also provides home design and renovation services.

Moderna Therapeutics, a US-based RNA therapeutics developer backed by pharmaceutical firm AstraZeneca, raised $500m from investors including Alexandria Venture Investments, a branch of life sciences real estate trust Alexandria Real Estate Equities. The round valued Moderna at $7.5bn, according to the Financial Times. Moderna Therapeutics is working on treatments based on messenger RNA, molecules that transmit genetic information. It is currently developing 19 drug candidates taking in treatments for infectious, rare or cardiovascular diseases along with immuno-oncology therapies.

Alibaba led a $300m round for India-based online grocery BigBasket that included private equity firm Abraaj Group and venture capital firm Bessemer Venture Partners. Alibaba committed $146m in the round, which reportedly valued BigBasket at $950m. Founded in 2011, BigBasket runs an e-commerce platform that sells fresh produce, packaged food and beverages, spices and a range of household goods. It has 6 million registered users spanning 26 Indian cities.

E-commerce firm Blibli and industrial conglomerate Astra International reportedly agreed to invest up to $290m in a $1.5bn funding round being raised by Indonesia-based on-demand ride platform Go-Jek. Astra could provide between $150m and $170m, while Blibli would supply $100m to $120m for the round, which would value Go-Jek at $4bn. Founded in 2010, Go-Jek has some 900,000 drivers, and has branched out to adjacent services such as removals and delivery of restaurant food, groceries and prescription medication.

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Top 10 investments Feb 2018					
Company	**Location**	**Sector**	**Round**	**Size**	**Investors**
JD Logistics	China	Services	–	$2.5bn	China Development Bank | China Life Insurance | China Merchants Group | China Structural Reform Fund | Hillhouse Capital Management | ICBC International | Sequoia Capital | Tencent | undisclosed investors
Beijing Easyhome Furnishing Chain Store Group	China	Consumer	–	$2.004bn	Alibaba | Harvest Capital Management | Taikang Life Insurance Company | Yunfeng Capital
Moderna Therapeutics	US	Health	–	$500m	Abu Dhabi Investment Authority | Alexandria | ArrowMark Partners | BB Biotech | EDBI | Fidelity | Julius Baer | Pictet | Sequoia Capital | Viking Global Investors
BigBasket	India	Consumer	–	$300m	Abraaj Group | Alibaba | Bessemer | Helion Ventures | International Finance Corporation | Sands Capital | Trifecta Capital
Go-Jek	Indonesia	Transport	–	$290m	Astra International | Blibli
Celularity	US	Health	–	$250m	Celgene | Dreyfus Family Office | Genting Berhad | Heritage Group | Human Longevity | Section 32 | Sorrento Pharmaceuticals | United Therapeutics
Enerkem	Canada	Energy	–	$224m	BlackRock | Braemar | Cycle Capital | Fondaction CSN | Fonds de solidarité FTQ | Investment Quebec | National Bank of Canada | Rho Canada Ventures | Sinobioway | Waste Management of Canada | Westly Group
Zomato	India	Consumer	E and beyond	$200m	Ant Financial | Info Edge
Kakao Games	South Korea	Media	–	$130m	Actozsoft | Bluehole | Netmarble Games | Premier Growth | Tencent
Gaana	India	Media	–	$115m	Tencent | Times Internet

US-based biotech startup Celularity secured $250m of funding from investors including pharmaceutical companies Celgene, United Therapeutics and Sorrento Therapeutics, genomic data provider Human Longevity and conglomerate Genting Group, which invested with traditional venture firms. In addition to investing, the three corporates have supplied synergistic assets to set up the company. Celularity is developing cell and tissue regenerative therapies derived from the placenta, to address conditions such as autoimmune disease, diabetes, haematological and solid tumours, and the effects of ageing.

Enerkem, a Canada-based developer of a process that converts waste to biofuel, secured C$280m ($224m) from investors including waste management services provide Waste Management of Canada and industrial conglomerate Sinobioway. Financial services firm National Bank of Canada also took part in the round. Enerkem produces biofuels and chemicals such as methanol and ethanol from solid waste using a proprietary system. It operates from a commercial facility in Alberta.

Ant Financial, the financial services affiliate of Alibaba, agreed to invest $200m in India-based restaurant listings and reviews platform Zomato at a $1.1bn valuation. Info Edge, the online classified listings company that was Zomato's majority investor as recently as 2015, is selling $50m of shares to Ant Financial as part of the round and will own a 30.9% stake once the deal closes. Zomato operates an online listings platform for restaurants that includes menus and reviews from its users. It covers a total of more than a million restaurants spanning some 10,000 cities across 24 countries.

Kakao Games raised $130m in funding from investors including Tencent, which participated through two unnamed subsidiaries and was joined by mobile game publisher Netmarble, game development studios Actozsoft and Bluehole, as well as mergers and acquisitions fund Premier Growth. Nikkei Asian Review put the size of Tencent's commitment at $46.4m but reported that only one unit of Tencent took part in the deal. Kakao Games was spun out of Kakao last year, having begun life as Daum Games, a subsidiary of Daum Communications, the internet portal that merged with Kakao in 2014.

Tencent and Times Internet, the online services subsidiary of media group Bennett, Coleman & Co, co-invested $115m in India-based music-streaming platform Gaana, whose platform was launched by Times Internet in 2010 offering both a free version supported by advertising and a premium subscription service. In addition to sorting songs by categories such as genre and artist, Gaana also allows users to select music by language.

Exits

In February, GCV Analytics tracked 15 exits involving corporate venturers as either acquirers or exiting investors. The transactions – most of which took place in the US – included 11 acquisitions, two initial public offerings (IPOs), one merger and one shutdown. The number of exits went down slightly compared with January, when there were 17 exits. Estimated exited capital, however, totalled $3.49bn, a significant increase (89%) over January's estimated at $1.84bn.

Pharmaceutical firm Roche agreed to acquire cancer research technology provider and portfolio company Flatiron Health, paying $1.9bn for the remainder of the company's shares. Roche already owned 12.6% stake in Flatiron, mean-

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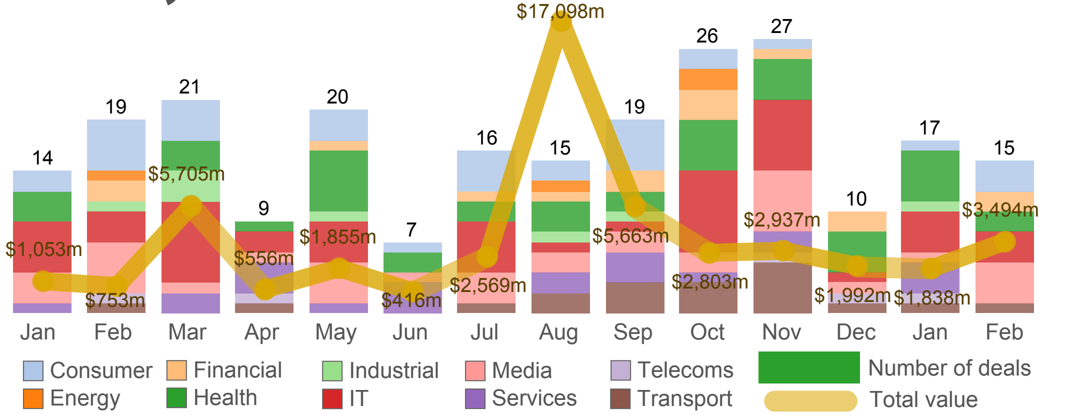
Exits by month 2017-Feb 2018



ing the acquisition valued the company at approximately $2.15bn. Founded in 2012, Flatiron has developed electronic health record software configured for oncology research, as well as technology that can manage and develop cancer research data.

Social media company Momo agreed to acquire China-based social engagement platform Tantan for about $760m, allowing Bertelsmann and social network operator YY to exit. The transaction will consist of $601m in cash and 5.3 million new shares in YY equating to $162m based on its Nasdaq price. The deal would give Tantan's shareholders a 2.7% stake in Momo. Tantan runs a social meeting app that operates through a swipe-left-or-right mechanism that can be used to make platonic or romantic connections.

Mobile news platform Toutiao reportedly acquired China-based photo augmentation app developer Faceu for $300m, giving an exit to image modification platform Meitu. Faceu has created an app that uses augmented reality to add filters such as text, emojis or overlaid facial modifications to users' selfies in real time, rather than editing them in afterwards. The technology can also be used for video clips and chats. Faceu had 250 million registered users as of October last year, most of whom are girls under 18.

E-commerce holding group Rocket Internet sold about 5.7 million shares in Delivery Hero, a Germany-based food ordering platform that went public in July last year, for approximately €197m ($242m) . The sale valued the shares at roughly €34.50 each, a substantial jump from the IPO price of €25.50. Delivery Hero operates an online service where users

Top 10 exits Feb 2018

Company	Location	Sector	Type	Acquirer	Size	Investors List
Flatiron Health	US	Health	Acquisition	Roche	$1.9bn	Allen & Company | Alphabet | Baillie Gifford | Casdin Capital | First Round Capital | Great Oaks Venture Capital | IA Ventures | Laboratory Corporation of America | Social & Capital | SV Angel
Tantan	China	Media	Acquisition	Momo	$760m	Bertelsmann | DCM | DST System | Genesis Capital | GX Capital | LB Investment | SAIF | Vision Plus | YY
Faceu	China	Media	Acquisition	Toutiao	$300m	International Data Group | Lightspeed China Partners | Meitu
Delivery Hero	Germany	Consumer	Acquisition	Rocket Internet	$242m	Rocket Internet
Huami	China	Consumer	IPO	–	$110m	Banyan Capital | Morningside | Sequoia Capital | Xiaomi
Elastagen	Australia	Health	Acquisition	Allergan	$95m	AmorePacific | Brandon Capital Partners | GBS Venture Partners | Korea Investment Partners | Wellcome Trust
Cardlytics	US	Financial services	IPO	–	$70m	Aeroplan Holdings Europe | Aimia | Atlanta Ventures | Canaan Partners | Columbia Partners | Discovery Capital | Kinetic Ventures | Polaris Venture Partners | West Coast Capital
500px	US	Media	Acquisition	Visual China Group	$17m	Andreessen Horowitz | Creative Artists Agency | ff Venture Capital | Harrison Metal Capital | private investors | Rugged Ventures | Visual China Group
Hightail	US	IT	Acquisition	OpenText	–	Accolade Partners | Adams Street Partners | Alloy Ventures | Cambrian Ventures | Emergence Capital Partners | Sevin Rosen Funds | Sigma Partners | Western Digital
Ring	US	Consumer	Acquisition	Amazon	–	Amazon | American Family Insurance | CRV | DFJ Growth | First Round Capital | Goldman Sachs | Shea Ventures | Kleiner Perkins Caufield & Byers | private investors | Qualcomm | QueensBridge Venture Partners | Silicon Valley Bank | True Ventures | Upfront Ventures

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can order food for delivery from a network of local restaurants. It increased the number of orders on its platform by 48% to almost 292 million last year, and its revenue by 60% year on year.

Huami, a China-based wearable device producer that counts electronics manufacturer Xiaomi as an investor, raised $110m in an IPO in the US. The offering consisted of 10 million American depositary shares issued on the New York Stock Exchange at $11 each, in the middle of the IPO's $10 to $12 range. Founded in 2013, Huami makes smart, wearable biometric devices that track a user's physical activity, monitoring heart rate, steps, length of sleep, weight or body fat composition. Its sole partner is Xiaomi, for which it creates products such as watches or smart bands.

Pharmaceutical firm Allergan agreed to buy Australia-based dermatology product developer Elastagen for an initial $95m, allowing cosmetics producer AmorePacific's corporate venturing unit, AmorePacific Ventures, to exit. The size of the deal, which is subject to regulatory approval, could be increased by contingent commercial payments, the details of which were not disclosed. Founded in 2005, Elastagen is developing tissue repair products based on human tropoelastin, a building block of elastin that gives skin, arteries and lung tissue its elasticity.

Cardlytics, a consumer purchase data platform backed by marketing and loyalty analytics provider Aimia and financial technology provider Fidelity Information Services, secured $70.2m when it went public. The company issued 5.4 million shares on the Nasdaq Global Market at $13 each, the bottom of the IPO's $13 to $15 range. Cardlytics has created a purchase intelligence platform that analyses consumer purchase data from about 2,000 financial institutions.

VCG Hong Kong, a subsidiary of image licensing service Visual China Group, paid $17m for one of its portfolio companies, photography-focused social community 500px. Founded in 2009, 500px has built an online community of 13 million photographers who share and license their images. VCG has distributed content on behalf of 500px since 2015, and the companies jointly launched a Chinese platform called 500px.me the same year.

Data storage technology provider Western Digital exited US-based file-sharing service provider Hightail in an acquisition of undisclosed size by enterprise software producer OpenText. Founded in 2004 as YouSendIt, Hightail operates a cloud-based service that enables users to share files too large for email. The company has also launched a platform aimed at creative professionals to facilitate collaborations and feedback.

E-commerce firm Amazon agreed to acquire US-based smart security technology provider and portfolio company Ring, reportedly paying more than $1bn. Mobile semiconductor technology producer Qualcomm, property developer JF Shea and insurance firm American Family will exit. Multiple sources told Axios the acquisition was Amazon's second-largest yet, which suggests it is above the $1.2bn it paid for online shoe seller Zappos but below the $13.7bn purchase of grocery chain Whole Foods. Founded in 2012 as Doorbot, Ring's core product is a smart doorbell with a camera and an attendant app, but it has extended into other security products such as motion-sensitive outdoor lights and security cameras. ◆

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