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Global Corporate Venturing

Symposium 2018: meeting of minds

Mark Radcliffe of DLA Piper exchanges cards with Kotaro Yamagishi, CEO of Keio Innovation Initiative and co-founder of Japan-based media group Gree

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Global Corporate Venturing

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EDITORIAL

Pursuit of excellence is the only calling card worth carrying

James Mawson, editor-in-chief

Venture capitalists are notoriously a competitive lot and there is a new bar they are using to gauge status. Can you invest $50m in a round? A decade ago just raising a round size of $50m was considered impressive, but there has been a paradigm shift with the near-$100bn SoftBank Vision Fund and the scaling-up of ambitions from corporate and government investors this decade to turn innovation capital from a parochial cottage industry into a global larger industry.

To date, the Vision Fund has invested $29.7bn in 24 companies, according to SoftBank's most recent financial report, while research firms Hurun and GlobeData estimated Tencent and its affiliates had invested upwards of $30bn between 2015 and 2017.

They could be dwarfed as governments finally turn serious attention to innovation finance. The European Commission alone plans €100bn ($120bn) for its Horizon Europe innovation budget for the seven years from 2021, according to a speech by Günther Oettinger, commissioner for budget and human resources, while, according to the Wall Street Journal last month, China is close to finalising a $47bn investment fund that would finance semiconductor research and chip startup development.

Independent VCs seem to be feeling the heat and in part to be using the metric as an encouragement for limited partners to commit to bigger funds.

The relative lack of venture investors able to invest $50m in a round in Europe was one reason the continent was "terrible" at scale-ups

Hermann Hauser, partner at Amadeus Capital Partners and backer of six unicorns – companies worth at least $1bn – in the Cambridge, UK ecosystem, in a recent Science Business webcast said the relative lack of venture investors able to invest $50m in a round in Europe was one reason the continent was "terrible" at scale-ups.

And while the "remarkable cultural shift" at universities to encourage entrepreneurship among students and faculty was "not to be underestimated", especially alongside the growth of serial and experienced management for startups, Hauser described the relative paucity of European scale-ups as a prime problem.

There is no apparent constraint on the number of ideas or startups – Hauser in his speech said Europe now had more than the US – or capital, although there are still debates about the best mix of grants, loans and equity to offer. Werner Hoyer, president of the European Investment Bank, at the same Science Business event described how a €21bn commitment to the European Fund for Strategic Investments in 2015 was leveraging this total by crowding-in institutional investors.

Hauser applauded corporations for their approach to picking up evolutionary technology innovations from universities and use of corporate venturing to take "lots of bets" and provide a window on more revolutionary ideas, especially compared with the previous wave of corporate venturing around the millennium.

With the fundamentals of the so-called triple helix – industry, universities and government – innovation capital ecosystem in place to support the translation of idea to society, the questions become more about the speed of evolution and how to professionalise the constituent parts.

Hauser's best practices in tech transfer in the UK, and work leading the nascent European Innovation Council, will help focus on supporting excellence and this seems the right goal.

Innovation capital, whether from corporations, impact investors, VCs, angels, universities or governments, is a service industry. What defines the best service professionals is their attention to customer needs – entrepreneurs' desire for cash, customers, product development, hiring and an exit – and network to find and work with the best clients and peers.

As the 450 corporate and university venturers and other innovation capital experts attending the latest GCV Symposium last month found, the data showing the rise of the industry is clear. But getting ahead of the data to collaborate and syndicate to help make the world a better place by going beyond capital in their support of portfolio companies remains a challenge.

A relentless focus on excellence is the only solution to attract and retain the best investor and portfolio company talent, identify and work with the ideas and entrepreneurs that will most significantly impact the world, and shape and grapple with the antibodies trying to unfairly reject them. This rather than braggadocio of cheque sizes is the only truly valuable calling card.

In this enlightened endeavour, truth springs from argument among good friends, as Scottish philospher David Hume once said. ◆

NEWS

SoftBank eyes second Vision Fund

Japan-based telecoms and internet group SoftBank has begun discussions to raise $100bn for a second Vision Fund, Bloomberg has reported.

SoftBank has still not officially closed its first Vision Fund, which by November last year had secured $97.7bn from investors including corporates Apple, Foxconn, Sharp and Qualcomm, and sovereign wealth funds from Saudi Arabia and Abu Dhabi as well as SoftBank itself.

The fund had deployed more than $35bn of capital by February this year – portfolio companies include ride-hailing service Uber, co-working space provider WeWork and Flipkart, the e-commerce company it is set to exit at a profit of just over $1.5bn in a purchase by Walmart.

Masayoshi Son, SoftBank's founder and CEO, has previously said he viewed the Vision Fund as a long-term process that would involve several funds, and told a conference in Tokyo recently: "Vision Fund 2 will definitely come. It is just a matter of when – sometime in the near future."

Son is already speaking to prospective investors for a second fund, whose size would be similar to the first while sourcing capital from a wider range of investors, sources said. Its launch could potentially come as soon as early 2019, they added.

Cisco seeks external CVC initiative

US-based networking equipment producer Cisco is establishing a venture capital fund to be run independently, Bloomberg has reported, citing sources.

Cisco has so far made corporate venturing investments through a unit, Cisco Investments, founded in 1993 and funded from its parent's balance sheet.

However, the corporate will be the anchor investor in the new fund, which will be in the "hundreds of millions of dollars" range and will focus on enterprise software deals, the sources said. It will concentrate on seed and early-stage investments. Jon Sakoda has moved from VC firm New Enterprise Associates to run the fund, according to the Wall Street Journal.

GLP packages $1.6bn aimed at logistics

Singapore-based logistics provider GLP has launched a $1.6bn investment fund targeting the logistics ecosystem in China. It will be managed by Hidden Hill Capital, the private equity arm of the corporate's local subsidiary, GLP China, and its limited partners include unnamed insurance providers and long-term institutional investors, such as investment firm China Post Capital.

Hidden Hill Modern Logistics Private Equity Fund will be the only fund in China dedicated entirely to the logistics sector, according to GLP, and will target innovative companies in the space. The company currently has $50bn of assets under management, much of which is concentrated in real estate, and it expects to establish additional funds in future.

EWTP Ecosystem Fund attracts $600m

Trade organisation Electronic World Trade Platform (EWTP) has launched a $600m investment fund featuring e-commerce group Alibaba and its financial services affiliate Ant Financial as anchor investors, China Daily has reported.

EWTP was first proposed by Alibaba co-founder and chairman Jack Ma in 2016 to help lower trade barriers and support the international expansion of small and medium-sized enterprises by helping them operate online. The EWTP Technology and Innovation Fund will invest in companies expanding internationally and will support technology startups across the world. Alibaba will provide expertise on logistics, payment and e-commerce.

Yu Yongfu is the founding partner and chairman of the EWTP Fund having previously been chairman of Alibaba's Digital Entertainment Group.

SCB scales up venturing to $100m

Thailand-based financial services firm Siam Commercial Bank (SCB) has doubled the size of its strategic investment fund, SCB Digital Ventures, to $100m. The move makes SCB Digital Ventures the largest venture capital vehicle in Thailand, according to the bank, and was made as part of a wider strategy away from contributions to VC funds toward more direct investments in startups. Founded in 2016, SCB Digital Ventures targets subsectors such as data analytics, artificial intelligence, cybersecurity and blockchain technology.

NEWS

AlphaX aligns with corporates for $313m first fund

China-based venture capital firm AlphaX Partners has closed its first fund at RMB2bn ($313m) with backing from online lending platform CreditEase, outdoor advertising firm Focus Media, cybersecurity software producer Qihoo 360, venture capital and startup services provider Zero2IPO Group and government guidance fund CICC, China Money Network has reported.

The fund is dual dollar and renminbi-denominated. Investors include undisclosed institutional investors from Europe and the US as well as Chinese entrepreneurs.

Founded in 2016, AlphaX targets domestically-based, high-growth companies developing technologies in the online, consumer, enterprise software, artificial intelligence, sports and culture sectors.

DCVC Bio flies with Hamer and Stead

US-based venture capital firm DCVC Bio is understood to have reached a first close of its debut fund at nearly half its $250m target, with the remainder expected to be committed this year.

Kirsten Stead and John Hamer of Monsanto Growth Ventures (MGV), the strategic investment arm of agribusiness Monsanto, which is being acquired by Germany-based peer Bayer, will co-manage the fund, which is run by a new management company for the biotech space and affiliated with venture capital firm Data Collective (DCVC).

Hamer and Stead will be joined by two other general partners, Zachary Bogue and Matthew Ocko, Data Collective's co-founders and managing partners.

US-based DCVC concentrates on investments in seed and series A-stage companies looking to apply technologies such as deep computing, big data and IT infrastructure to large traditional industries. MGV has been one of its limited partners. The new fund will focus on companies that fuse artificial intelligence with biotechnology. Its LPs so far include an undisclosed strategic from the pharmaceutical industry.

Corporates fuel third Renaissance fund

Renaissance Venture Capital Fund, a US-based venture capital fund-of-funds manager, has closed its third vehicle at $81m with commitments Michigan-based corporates energy utility DTE, which supplied $10m, and insurance providers AAA Michigan, Blue Cross Blue Shield of Michigan and Burns & Wilcox, as well as furniture producer La-Z-Boy and big-box retail chain Meijer. They were joined by unnamed universities, foundations and pension funds.

Renaissance Fund III will continue to pursue its parent's existing strategy of investing in VC funds across the US with the express aim of attracting them to Michigan and supporting the state's startup ecosystem.

Underscore VC marks second fund with $117m

US-based venture capital firm Underscore VC has closed its latest fund at about $117m, securing healthcare provider Boston Children's Hospital as a limited partner.

The fund's investors include Greenspring Associates and various family offices, according to TechCrunch. The fund was raised after investors in Underscore's first fund approached the firm about a follow-on vehicle.

Apart from providing capital, Underscore VC has also created a network of entrepreneurs, executives and experts called Core Community, through which it pairs startups with mentors.

Fund I raised $85m in 2016, investing in sectors such as augmented and virtual reality, artificial intelligence and machine learning, marketing technology, cloud infrastructure, blockchain and the internet of things. The larger size for Fund II will enable Underscore VC to expand its team with the recruitment of a chief financial officer, chief operating officer, marketing expert and investment professionals.

Salesforce to track Canadian startups with $100m

Salesforce Ventures, the corporate venturing arm of the US-based enterprise software producer, has launched the $100m Canada Trailblazer Fund to focus on cloud services startups. The news follows a February 2018 commitment by Salesforce, which has more than 1,300 employees in Canada, to invest $2bn in the country over the next five years.

Canada Trailblazer Fund follows seven previous Salesforce Ventures vehicles, including the $50m SI Trailblazer Fund, which was launched in July last year to focus on cloud consulting businesses.

Salesforce Ventures will also host the first Canada-based version of its startup competition, Dreampitch, in Toronto as part of a global World Tour roadshow. Three startups will compete for a $100,000 investment.

NEWS

Nan Fung's Pivotal closes at $150m

Pivotal Bioventure Partners China, a China-based life sciences investment vehicle set up by property development group Nan Fung, has closed its first fund at $150m.

Pivotal will incubate and build life sciences technology companies, focusing on pharmaceuticals, medical devices and healthcare services aimed at the Chinese market. Overseen by Nan Fung subsidiary Nan Fung Life Sciences, the firm will primarily look to license innovative technologies that will form the basis of new companies.

Pivotal is being co-led by managing partner Jimmy Wei, who has recent experience at iBridge Capital and KPCB China. Meng Gao, formerly a managing director at Blackstone's Private Equity Group, and Shannon Cheung, founder and former CEO of investment firm Averest Capital, are also leading the vehicle.

7wire transmits $100m from corporates

US-based venture capital firm 7wire Ventures has closed the $100m 7wire Connected Consumer Health Fund with contributions from care providers Allina Health, Bon Secours Health System, Cigna, Memorial Hermann Health System, Rush University Medical Centre and Spectrum Health, and health insurers Arkansas BlueCross BlueShield and Horizon Blue Cross Blue Shield of New Jersey.

Founded in 2011, 7wire Ventures focuses on healthcare and education technology developers, and 7wire Connected Consumer Health Fund will concentrate particularly on technologies that help users maintain health through personalised, consumer-based offerings.

BP and Nio Capital mobilise strategic partnership

UK-based oil and gas supplier BP has formed a long-term partnership with Nio Capital, an investment firm co-founded by China-based smart electric vehicle developer Nio, to target mobility technology. The companies expect to locate opportunities for investments in areas such as electric vehicles, advanced batteries, connected cars, energy infrastructure and other technologies of mutual interest, both in China and internationally.

The agreement forms part of a strategy already pursued by BP through its corporate venturing arm, BP Ventures, whose portfolio includes startups developing low-carbon technologies, and through its product and service-led arm, BP Downstream.

Nio Capital's agreement with BP appears to be unrelated to the former's $500m fund, which was launched in November last year to invest in the automotive sector.

Vidra looks to Reimagine new venture

Eze Vidra, formerly an investment partner at corporate venturing unit GV, has launched VC fund Reimagine Ventures as one of its two founding managing partners, Axios has reported.

Israel-headquartered Reimagine is focusing on media technology developers and has reached the first close of a fund with a $40m target that includes undisclosed media and telecoms companies as investors.

Prior to setting up the fund, Vidra was chief information officer of Antidote.me, the developer of a digital platform that links patients with clinical trials. He joined Antidote in August 2016 having left GV, a subsidiary of internet technology group Alphabet, eight months earlier. He was a general partner at the European office of GV, then known as Google Ventures, when it was set up in 2014.

Reimagine's other founding general partner is Kevin Baxpehler, previously head of Germany-based media group ProSiebenSat.1's Israeli investment office.

Legend Capital to operate third healthcare fund

Legend Capital, the China-based venture capital firm formed by conglomerate Legend Holdings, has closed its third healthcare-focused fund at RMB1bn ($157m), China Money Network has reported.

Founded in 2001, Legend Capital oversees multiple dollar and renminbi-denominated funds, with a total of some $5.5bn under management. The latest fund will be its second renminbi-denominated healthcare fund, in addition to a $250m dollar fund closed in 2016. It will make early and later-stage investments in technologies such as advanced medicines and precision healthcare, genomics, medical devices and diagnostics systems.

Notable healthcare investments made by the firm include medical technology producer WuXi AppTec, which has a current market capitalisation of more than $12.5bn.

NEWS

Philips helps pull $30m for Cardeation Capital

Electronics and healthcare technology producer Royal Philips has provided $10m for Cardeation Capital, a $30m healthcare-focused venture capital fund to be managed by venture firm Aphelion Capital. Healthcare provider University of Pittsburgh Medical Centre and non-profit organisation American Heart Association have also committed $10m each. Cardeation will focus on developers of health management and healthcare delivery technologies intended to improve the prevention and treatment of cardiovascular diseases and strokes, as well as related conditions such as diabetes.

Corporates swarm to The Hive

US-based company builder The Hive has closed a $26.5m fund with contributions from industrial conglomerate General Electric, industrial automation technology producer Rockwell Automation, telecoms firm Verizon and enterprise software provider Software AG. Verizon invested through its Verizon Ventures subsidiary, while the others participated directly. Investors in the fund, The Hive's third, include venture capital firm March Capital Partners and a range of unnamed private investors.

Founded in 2012, The Hive is a VC firm and co-creation studio that targets technologies including artificial intelligence, edge intelligence and computer vision for use in industries such as financial services, retail and insurance. The firm initially makes seed-stage investments ranging from $1.5m to $2m, offering portfolio companies follow-on funding, syndication assistance and co-working space in Palo Alto, California.

The Hive III will favour startups looking to exploit artificial intelligence and blockchain-related technologies in enterprise settings, industrial verticals such as logistics or health, and industrial internet of things. It expectes to spawn seven startups within the next three years.

Raiffeisen offers startups a ride on its Elevator

Austria-based financial services firm Raiffeisen Bank International has formed strategic investment vehicle Elevator Ventures with €25m ($29.5m). Elevator Ventures will make late-stage investments in financial technology developers as well as contributions to venture capital funds. It also plans to utilise its presence in Central and Eastern Europe to help portfolio companies expand in the region.

The unit will be added to Elevator Lab, a banking and finance-focused startup accelerator launched by Raiffeisen in June 2017 which is backed by a €200,000 fund. Elevator Lab graduates will also be considered for funding from Elevator Ventures.

Hannes Cizek, Raiffeisen's head of group digital banking, and Thomas Muchar, the bank's head of Austrian equity investments, will lead Elevator Ventures as managing directors. Maximilian Schausberger, the lead for Elevator Lab, is also part of the team, as a senior investment manager.

Play2Live applies $2m to strategic fund

Cyprus-based gaming and eSports streaming platform Play2Live has launched a $2m corporate venturing fund to invest in eSports and game-focused projects. The unit will invest between $50,000 and $150,000 in game-based computer vision, strategic planning, data analysis and eSports match prediction projects based in Eastern Europe and former Soviet Union states. Play2Live's founder and CEO, Alexey Burdyko, will head the fund as managing director. It plans to put on 48-hour hackathons in the Moscow, Minsk and Kazan with $10,000 prize funds to source potential recipients of funding.

Westpac reinvests in partner firm Reinventure

Australia-based financial services provider Westpac has committed A$50m ($38m) to venture capital firm and partner Reinventure, Australian Financial Review has reported.

Founded in 2013, Reinventure now has $111m under management spread across three funds of equal size. An initial $37m was provided by Westpac, before the banking group returned to put up 99% of the second fund in 2016. Reinventure takes a patient capital approach with investment horizons of five to 15 years. The third fund will operate under a more flexible strategy that will include more investments in foreign companies, with a particular focus on Asia. It will also seek deals beyond traditional equity investments, such as cryptocurrencies, with blockchain-associated technology a key focus.

NEWS

BMW and L Marks drive into US

UK-headquartered L Marks, which operates innovation partnerships linking corporates to startups, has formed its first US venture in collaboration with BMW Financial Services, a subsidiary of automotive manufacturer BMW. BMW Financial Services US Collaboration Lab will be based in Columbus, Ohio, and will be a 10-week scheme in which startups developing disruptive technologies or business models can test their product at scale and access the expertise of BMW staff. The companies are already working together on innovation labs in the UK and Japan.

Severstal sets up corporate venturing arm

Steel and mining company Severstal has formed corporate venturing fund Severstal Ventures to invest in advanced materials and associated technologies. The unit will invest in startups directly and in VC funds, and was announced alongside news that Severstal subsidiary Melsonda Holdings had provided an undisclosed sum for Pangaea Ventures Fund IV, the latest fund being raised by VC firm Pangaea Ventures.

MTN-Irancell picks Tehran for VC initiative

University of Tehran and telecoms network MTN-Irancell are launching an IT-focused venture capital fund of an undisclosed size aimed at building the country's innovation ecosystem, Xinhua has reported. The proposal includes plans for an accelerator and an innovation hub built by Irancell at the university's College of Engineering.

Irancell, a joint venture between South Africa-based MTN and electronics producer Iran Electronics Industries, hopes ideas from the hub, along with portfolio investments and those of other VC partnerships, will help to build its stake in emerging IT technologies. The corporate already has VC agreements in place with the Khuzestan provincial government and the municipality of Mashhad, as well as unspecified IT-focused businesses and research centres.

Ripple launches Xpring to back blockchain projects

Ripple, a US-based creator of a financial transfer system equipped with blockchain technology, has formed corporate venturing scheme Xpring to incubate, acquire and supply equity and grant funding to startups or projects that use Ripple's XRP digital asset and ledger technology. It will be run by recently-hired senior vice-president Ethan Beard, who will also lead Ripple's developer initiative.

Petronas Chemicals experiments with venturing

Petronas Chemicals, the chemical production division of Malaysia-based oil and gas supplier Petronas, plans to leverage corporate venture capital to uncover opportunities for business growth, Sun Daily has reported.

An investment team has been recruited to help Petronas Chemicals identify emerging technologies and markets that could be accessed through strategic investments, as part of a plan that will include mergers and acquisitions and in-house research.

BayWa powers up corporate venturing unit

Germany-based diversified conglomerate BayWa Group has formed corporate venturing vehicle BayWa RE Energy Ventures to back energy-related technologies such as energy digitisation and storage, and e-mobility. The unit will operate as part of BayWay subsidiary BayWa Renewable Energy (BayWa RE), which oversees solar, wind and bioenergy assets in addition to providing energy trading and industry consulting services.

BayWa RE Energy Ventures will back up to five companies each year based in Europe or Israel, making initial investments of up to €5m ($5.9m). The unit will operate independently while drawing on its parent's resources to assist portfolio companies with expertise, distribution and infrastructure.

Ulrich Seitz is heading the vehicle as managing director. He came to BayWa from business and technology consultancy MM1, where he had covered corporate venturing, startup partnerships and company building as a management consultant.

NEWS

Google Assistant assembles strategic fund

Internet and technology group Alphabet has launched corporate venturing initiative Google Assistant Investments to fund developers of technology compatible with its virtual assistant platform, Google Assistant.

Google Assistant Investments will provide portfolio companies with funding and priority access to new features for Alphabet's smart speaker, Google Home, as well as discounted cloud storage and opportunities for co-marketing. The unit has no overall investment limit, according to news provider CNBC, and will focus on strategic investments rather than maximising returns, in contrast with other Alphabet units such as GV and CapitalG.

Ilya Gelfenbeyn has headed the unit since September 2017, according to his LinkedIn profile. He joined Alphabet subsidiary Google in September 2016 when it acquired natural language processing platform Dialogflow, which he co-founded.

Lykke ventures to Blockchain Valley

Switzerland-based venture capital firm and incubator Blockchain Valley Ventures (BVV) has been launched with backing from financial technology provider Lykke Corporation. It will incubate and invest in startups developing blockchain-related technology, and will provide VC funding as well as participation in initial coin offerings (ICOs). It will also provide business, financial, marketing and ICO support for portfolio companies.

Lenskart pursues corporate venturing vision

India-based eyewear retailer Lenskart is to invest between $2m and $3m in businesses developing vision-related technologies and products, the Economic Times has reported. Lenskart sells glasses through an e-commerce platform as well as 410 bricks-and-mortar outlets. It plans to collaborate on product development with portfolio companies as it heads for a public listing it expects to take place by 2020.

Illumina Acclerator calls in new cohort

Illumina Accelerator, the genomics-focused startup accelerator sponsored by US-based genetic technology provider Illumina, has selected five startups for its seventh cohort.

Participants could secure a convertible note from an accredited investor, in addition to matching funds from Illumina's $40m Accelerator Boost Capital fund, contingent on them securing $1m to $5m from qualifying external sources. The startups also gain access to genomics and sequencing resources, mentoring and working space. Helix, the personal genomics marketplace operator in which Illumina owns a stake, is partnering Illumina Accelerator for the latest class.

The five participants are DermBiont, which is developing a range of microbial therapeutics for fungal skin infections; MedAnswers, whose service will match fertility experts with people struggling to conceive; Mediphage Bioceuticals, a University of Waterloo Ontario spinout developing therapies for chronic diseases; TruGenomix Health, which takes a precision genomics-led approach to personalised treatments for post-traumatic stress disorder; and Unite Genomics, a University of California Berkeley spinout offering machine learning and large-scale genomic analysis to the biopharmaceutical and clinical research industries.

Goette gets out of Siemens after nearly 30 years

After nearly 20 years as a corporate venturer, Gerd Goette has left Germany-based industrials group Siemens. He said: "I have decided to end my corporate career and transition out of Siemens. I plan to stay in the energy and sustainability ecosystem, working with startups and VCs in an adviser and board capacity."

Since joining what was then known as Siemens Venture Capital (SVC), now Next47, in 2000 after 13 years in the corporate's engineering team, Goette has invested in more than 50 transactions and taken more than 25 directorships and board observer positions.

His departure follows a changing of the guard at Next47 as it positions itself as more independent of Siemens' business units and an evergreen model reinvesting profits from its €1bn ($1.2bn) fund. Ralf Schnell, former head of SVC before its effective incorporation into Next47 at its launch under Lak Ananth in 2016, has become head of private equity at Siemens Financial Services, while new recruits include Susana Quintana-Plaza and Jack Eadie in Europe.

In the US, Ching-Yu Hu has joined Next47 as a principal based in Palo Alto, California, and new partners include Matthew Cowan, former co-founder of VC firm Bridgescale Partners, and TJ Rylander, who spent a decade as managing partner at In-Q-Tel.

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Samsung's Kim comes to LG

Dong-Su Kim, one of South Korea-based electronics conglomerate Samsung's most experienced corporate venturers in the US, has joined electronics producer LG to set up a new venture fund. As general manager of Samsung Ventures America, Kim led deals for Samsung in more than 20 companies. Henry Chung is managing director of LG Innovation Ventures, the corporate venture capital arm of LG Electronics, but Kim is understood to be setting up a new fund.

Lee steps up at SoftBank Korea

SoftBank Ventures Korea, the local corporate venturing unit owned by Japan-based internet conglomerate SoftBank, has promoted managing director Joon-pyo Lee to chief executive.

Lee replaces Gyu-hak (Greg) Moon, who has become managing partner at the SoftBank Vision Fund, the near-$100bn tech fund led by SoftBank CEO Masayoshi Son and Rajeev Misra, head of the fund's advisers.

Lee said: "We plan to discover promising tech startups in various fields and locations and will continue to work closely with SoftBank's global network to support the growth of startups."

Lee founded software developer Evixar while studying at the Korea Advanced Institute of Science and Technology. Evixar was funded by SoftBank Ventures and later sold to electronics firm LG. Lee was subsequently director of business development at online video technology producer Gom and established another startup, Enswers, a video search technology platform later acquired by telecoms group KT. In 2015, Lee joined SoftBank Ventures.

Kizilbash kisses Schlumberger goodbye


Kizilbash

Imran Kizilbash has left his position as vice-president and treasurer at US-based oil services provider Schlumberger. He said: "I will map out my next steps over the next several weeks. Have a few different irons in the fire."

One of Kizilbash's former colleagues said he would remain close to Schlumberger Technology Investments (STI) after his departure. As vice-president of STI, Kizilbash spoke at the 2017 GCV Symposium about the increased capital and investment mandate of the corporate venturing unit, which is led by Iain Cooper, with Andrea Course and Tyler Durham as venture principals.

Faerber joins the ex-GV mob at Section 32

Jonathan Faerber, chief financial officer of corporate venturing unit GV, has moved to venture capital firm Section 32 where he will take the same position, Axios has reported.

Faerber had been at GV, a subsidiary of internet and technology provider Alphabet previously known as Google Ventures, since it was set up in 2008. He was orignally hired by Google in 2004 as a senior financial analyst.

At GV he oversaw merger and acquisition deals as a senior finance manager between 2009 and 2015. He also managed the finance team for Alphabet's growth equity unit, CapitalG, for two years until December 2016.

Section 32 was launched by Bill Maris, founding managing partner of GV, in May last year with $150m, nine months after he left GV.

Adams filters search down to Mann & Hummel

Mike Adams has become a US-based director of corporate ventures at Germany-based air and water filter provider Mann & Hummel Group. Adams moved to Mann & Hummel in March this year having previously been a principal for just over four years at 8 Rivers Capital, an energy, sustainability, transportation and communications technology developer. He has also been managing director of technology ventures at energy provider Constellation Energy as part of a nine-year stint at the company.

Dairanieh rises to Ascent

Oil major BP's former head of corporate venturing, Issam Dairanieh, has become an operating partner at Ascent Capital Holdings, a secondaries firm recapitalising a sustainable-focused portfolio, after two years as CEO of Global CO2 Initiative.

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Rubasinski leaves Sky to enter Polystream


Rubasinski

Marek Rubasinski has left media company Sky, where he was director of its startup investments and partnerships team, to join UK-based gaming platform developer Polystream as chief commercial officer.

Sky hired Rubasinski in 2008 to be its director of business development, a role that included responsibility for over-the-top video agreements with partners including gaming systems Xbox and Playstation.

Rubasinski began managing Sky's startup investments and partnerships in 2015, partly through corporate venturing unit Sky Ventures, before announcing in October 2017 he would step down to pursue new opportunities.

Polystream is developing a cloud-based platform that will enable users to play any game directly on a website or platform without the need to create an account or download or install software. As part of his new role, Rubasinski will help Polystream put together a series A round later this year while expanding its headcount.

Zhang zips to Sinovation Ventures

Tom Zhang has left GV, the corporate venturing unit formerly known as Google Ventures, to join China-based venture capital firm Sinovation Ventures as chief data scientist.

Zhang joined GV, a subsidiary of internet and technology group Alphabet, in 2014 and was an engineering partner at the unit. He previously worked for nine years at Google as a data analyst. Founded in 2009, Sinovation Ventures oversees six dollar or renminbi-denominated funds, and generally invests between seed and series B stage. It closed the latest $500m fund last month.

Kumar hails Go-Jek job

Aditya Kumar, an experienced corporate venture and venture capitalist in Southeast Asia, has joined Indonesia-based on-demand ride provider Go-Jek as vice-president of corporate development.

The move comes while Go-Jek is in the process of raising up to $1.5bn at a reported $4bn valuation, in a round that so far includes e-commerce firm JD.com, internet technology provider Google, internet company Tencent, local services platform Meituan-Dianping, and a $35m investment from insurer Allianz last month. Go-Jek has already begun moving into corporate venturing, having led Bangladesh-based ride-hailing platform Pathao's $10m series B round last month.

Kumar was previously a senior investment associate at Openspace for nearly two and a half years, and also an associate at telecoms group SoftBank's China and India venture team for a few months.

Keane quits Qualcomm for Promus Ventures

Gareth Keane, an investment manager at Qualcomm Ventures, the corporate venturing subsidiary of the US-based chipmaker, has left to join venture capital firm Promus Ventures.

Keane was at Qualcomm Ventures for nearly six years, having joined in 2012 after Texas Instruments' acquisition of National Semiconductor the year before. He is leaving following a shake-up of Qualcomm Ventures' Americas teams. He joins Promus founder and managing partner Mike Collett, with whom he has been involved in deals for some years.

Keane's move followed a separate change in the Qualcomm unit's Americas teams. At the start of the year, Qualcomm Ventures transferred Carlos Kokron from head of Latin America to head of North America following the sale of two of his portfolio companies. Qualcomm Ventures also hired Alexandre Villela as its managing director for Latin America. Villela came from corporate venturing unit Intel Capital, where he was an investment director.

Villela was responsible for global equity investments in networking and communications from unit Intel Capital's California office, but previously worked for Stratus Investimentos, a middle-market-focused private equity firm based in Brazil.

Davis leaves Samsung for Canapi

Timur Davis has left Samsung Ventures, a corporate venturing subsidiary of the consumer electronics maker, to become principal at Canapi, the fintech-focused investment arm of banking group Live Oak Bancshares.

Davis will oversee work on investment and incubation strategies that further Canapi's ambitions to innovate in the banking space. He had been with Samsung Ventures as a senior investment manager since 2015, leading eight deals worth a combined $19m in sectors including artificial intelligence, big data, e-commerce and digital health.

Before joining Samsung, Davis was a consultant with management consulting firm Boston Consulting Group for two years, assisting corporate clients from the banking and biopharmaceutical sectors with strategic restructurings.

NEWS

Verrilli ventures back to GV


Verrilli

Jessica Verrilli has left social media company Twitter to return to GV, an early-stage investment subsidiary of internet and technology group Alphabet.

Verrilli first joined Twitter in 2009, rising through the ranks to become director of corporate development and strategy in 2014. She then joined GV, but returned to Twitter within six months. She left Twitter again in December last year.

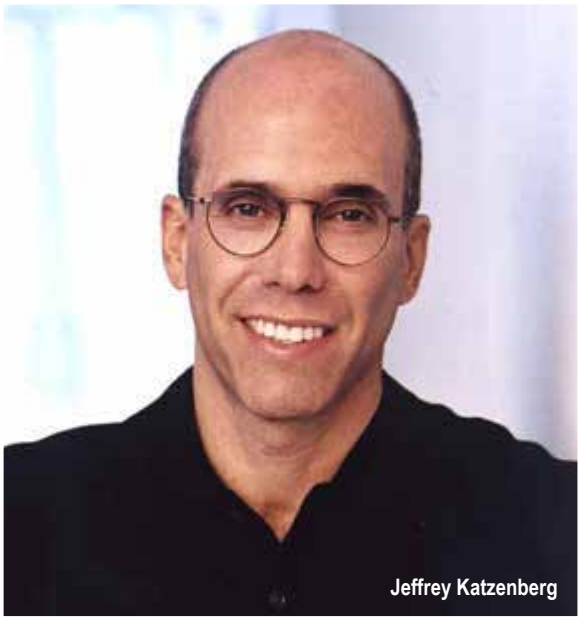
She will be GV's only female investing partner, and will concentrate on consumer technology with an interest in emerging technologies such as cryptocurrencies, according to tech news platform Recode. She also co-founded women's investing group #Angels with a number of other female Twitter executives in 2015. Recode said she has invested in more than 20 companies on her own and wants to use her new seat as a female partner to help get more women into tech and investing.

Big deal: NewTV to switch on with $800m

Rob Lavine, news editor

US-based video production startup NewTV has raised about $800m from investors including several media and entertainment groups, Bloomberg reported, illustrating once again the pull of video content in the tech sphere.

NewTV is looking to develop video content with episodes divided into a length similar to that of a YouTube clip, but with high-level production values comparable to professionally-made television shows.


Jeffrey Katzenberg

The company was founded by Jeffrey Katzenberg, formerly chairman of film producers Paramount and Walt Disney Studios, and a co-founder of multimedia studio Dreamworks with Steven Spielberg and David Geffen. Katzenberg also launched new media and technology holding company WndrCo in 2016.

The corporate investors in question, which include 21st Century Fox and Warner Bros, are providing about $200m of the funding, sources told Bloomberg. WndrCo supplied an undisclosed sum that Bloomberg said represented its largest investment to date. The remaining capital came from undisclosed institutional investors. NewTV will use the cash to finance the production of shows divided into episodes of about 15 minutes or less, but made on budgets of $5m to $6m per hour.

The average high-end Netflix or cable drama now costs a similar amount to produce, according to a Variety report in September last year, while a 30-minute, single-camera show requires about $1m to $1.5m per hour, though the costs of each have risen sharply in recent years as competition has intensified and more and more content producers emerge.

The funding is expected to be announced officially in the next few weeks. Although NewTV has not disclosed plans for any specific shows, Katzenberg has approached several big-name directors and producers, the sources said.

NewTV's emergence will make it the latest entrant into a sector that is beginning to look increasingly crowded as new and old media players compete for viewers and subscribers, and it will be interesting to see where it positions itself.

In the US at least, the traditional broadcasters comprise the large networks – NBC, CBS, ABC and Fox – as well as smaller networks like CW and publicly-funded PBS, small cable channels, and paid premium channels such as HBO, AMC, Showtime and Starz. These last, in particular HBO, began putting big money into high-profile productions that garnered subscribers happy to pay for high-quality content, and that model has been extended by their newer online-focused rivals.

Netflix remains the largest of the new players, having grown its worldwide subscription base to 125 million by the end of March this year, but its stable of high-budget original programming, which includes Stranger Things and Orange is the New Black, as well as film deals with the likes of Adam Sandler, continuations of shows like Arrested Development and a collection of older films and series, has proven costly, and the company said last month it intended to raise about $1.5bn in debt financing to fund operations.

In terms of other online subscription-based streaming services, Amazon Prime has a total of about 26 million viewers, according to an internal document seen by Reuters in March, while Hulu had just over 17 million subscribers by the end of 2017. They will soon be joined by electronics manufacturer Apple, which has been poised to launch its own service for years.

Specialist operators such as horror content producer Crypt TV are also establishing platforms, while WWE Network, the streaming arm of sports entertainment producer WWE, has about 1.6 million paying subscribers. Online sports oferings are also growing quickly.

Meanwhile, video-streaming platforms such as YouTube, MangoTV and Twitch are making strides with user-generated content, and more and more digital media companies are moving from writing to video.

All this adds up to a lot of content, all of which needs to be monetised in some way. How does NewTV fit into this space?

An advertising-based model is a possibility, but the short-form structure of NewTV's content would require any ads to be placed before the shows, which could lead to impatient viewers losing patience and simply clicking out.

Another option would be for NewTV to form its own paid platform, but given its lack of any programming and the absence of traditional content that fills its remit, that is likely to require it to poach a number of big-name personalities from platforms such as YouTube to fill out its schedule.

Licensing NewTV's content to other platforms is probably the strongest possibility, particularly as most streaming platforms now make use of autoplay to aid binge watching, effectively removing the need for longer-length programming.

The preponderance of new media platforms means that quality content, not to mention experienced executives, will be in increasingly short supply, and someone with Katzenberg's contacts could sign up big names, make the shows as an independent and then auction them, though that model is always open to risk, as any indie studio will testify.

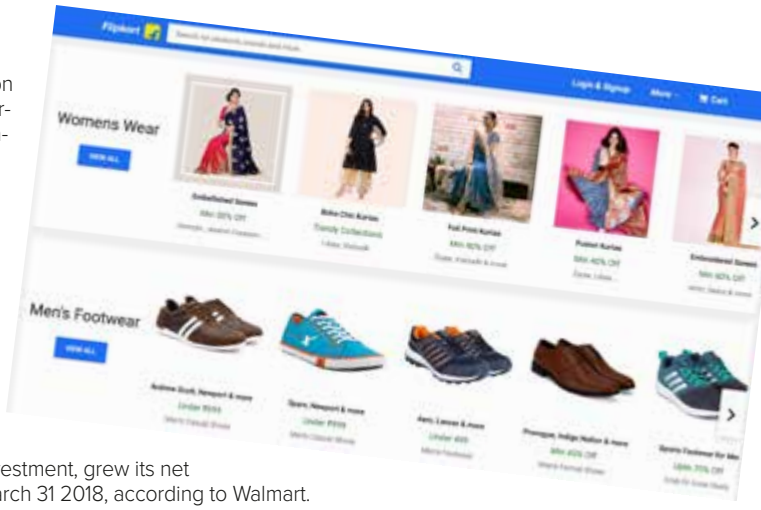
The presence of investors such as Warner Bros and 21st Century Fox does, however, point to another possibility – that existing content has become such a money-maker for the large media companies that it is valuable in itself.

Hulu is owned by Disney, Fox, Comcast and Turner, itself a Warner subsidiary. Warner also owns 50% of CW as well as comics producer DC and film studios New Line and Castle Rock, while 21st Century Fox, soon to be part of Walt Disney, oversees a sea of film and TV assets plus stakes in several new media companies.

Having such a broad range of content gives anyone either a strong basis for their own offering, or simply the kind of product that can be licensed as a revenue generator for decades to come. As the viewing experience becomes more ephemeral, NewTV could prove itself a safe investment in the long term. ◆

Big deal: Corporates win from $16bn Flipkart sale

Rob Lavine, news editor



Big-box retailer Walmart has agreed to pay $16bn for a 77% stake in India-based e-commerce marketplace Flipkart, giving several corporates billion-dollar exits.

The purchase is the largest M&A transaction in the venture capital space since Facebook's $19bn acquisition of WhatsApp in early 2014, though Walmart's valuation of $20.8bn in the deal arguably makes it even bigger.

Founded in 2007 as a book specialist, Flipkart has built a diversified e-commerce platform that sells products across more than 80 categories. Walmart first expressed interest in investing in the company in 2016. The company, which had raised about $7.2bn in funding before Walmart's investment, grew its net sales by more than 50% to $4.6bn in the year to March 31 2018, according to Walmart.

Telecoms and internet group SoftBank's Vision Fund scored the biggest exit in the deal, getting just over $4bn, after paying $2.5bn for a stake of about 20% in August last year.

Naspers, the e-commerce and media company that had been an investor in Flipkart since 2012 when it bought a 10% share for $102m, sold its 11.2% stake for $2.2bn, which it said represented a 32% internal rate of return. Naspers also participated in several of Flipkart's other funding rounds, most recently committing $71m to a $1.4bn round in April last

year that included internet company Tencent, e-commerce firm eBay and software provider Microsoft, at an $11.6bn valuation, after which it held a 16% stake.

Tencent and Microsoft will retain shares of Flipkart, the company said in a statement, but eBay, which invested $500m in the company in the April round, is divesting its stake for $1.1bn. The company, which sold its eBay.in business to Flipkart as part of the April transaction, plans to relaunch its operations in India, most likely under the eBay.in brand, the licence for which is being withdrawn from Flipkart.

The other big winner is hedge fund manager Tiger Global Management which, after initially investing $9m in Flipkart in 2009 and providing a total of about $1bn altogether, is receiving approximately $3bn from a stake sale, a source told DealStreetAsia.

Venture capital firm Accel, which became Flipkart's first significant investor with an $800,000 investment in 2008, has maintained a stake since then, and will sell most of a share that a person familiar with Accel's returns told Recode was worth about $1.1bn.

Other past investors include media group Bennett, Coleman & Co, which provided $39m in February last year, Baillie Gifford, Greenoaks Capital, IDG Ventures India, Qatar Investment Authority, the Singaporean state-owned GIC, Morgan Stanley Investment Management, Accel, Steadview Capital, Iconiq Capital, DST Global, Sofina and T Rowe Price.

Walmart, which runs 21 cash-and-carry stores and one fulfilment centre in 19 Indian cities, will retain branding separate from Flipkart, which still plans to go public in the future, according to a statement announcing the latest investment.

Flipkart co-founder and CEO Binny Bansal, who will retain a share of the company when the transaction closes, said: "While e-commerce is still a relatively small part of retail in India, we see great potential to grow. Walmart is the ideal partner for the next phase of our journey, and we look forward to working together in the years ahead to bring our strengths and learnings in retail and e-commerce to the fore." ◆

Big deal: DocuSign dives into IPO boom

Rob Lavine, news editor

US-based digital signature technology provider DocuSign floated last month in a $629m initial public offering having raised $525m from an investor base that included several corporates, in yet another sign the IPO market is up and running again. DocuSign raised $466m while its shareholders divested a further $164m of shares. The company priced the offering at $29, above its $24 to $26 range, and its share price closed at $38.63 after two days of trading. The stock is now above $65.

The shares of enterprise software producer Smartsheet, floated on the same day, rose from $15 to $19.30 within a day or two and is now above $28, while laser technology provider nLight, which priced its IPO at $16 the day before, saw its stock close at $24.93 two days later. It is now above $39.

Nor are these isolated figures. Within a week or two, software development services provider Pivotal was up 20%, rare disease treatment developer Homology Medicines was up 25% and file storage platform Dropbox rose 43%.

It all seems a long way from the slump that took hold three years back, causing the number of IPOs to fall 65% between 2014 and 2016, according to Fortune. Roughly twice as many companies have gone public so far this year compared with this point in 2017.

NEWS

There were different theories as to the causes of the decline but the general consensus was that it was a combination of an overstocked market and a glut of venture capital which allowed highly-valued companies to stay private longer, while others viewed it as the natural deflation of a tech bubble that had become an increasingly urgent topic of conversation.

In retrospect, there is something in that reasoning but it is not the whole story, though it is undeniable that the entry of private equity and pension funds into the VC space had led to a vast amount of capital targeting the tech sector, helping companies raise large rounds instead of going public.

However, not only is that still the case today, the size of funds is actually increasing sharply. SoftBank's near-$100bn Vision Fund is obviously a zenith, but Sequoia Capital has closed $6bn of a targeted $8bn for its next fund while fellow venture firms like Accel and Andreessen Horowitz are expanding from eight-figure funds into big specialist funds focusing on specific technologies.

As for the bubble, talk of that died down a long time back, even with the seemingly constant controversy surrounding huge players like Facebook, Amazon and Uber. The losses revealed by IPO candidates were often cited by bears as a sign of instability, but Dropbox and Pivotal both rang up nine-figure losses in 2017 and DocuSign has never been in profit.

The general uptick, in the US anyway, seems to be mainly down to the first factor – a cyclical upturn that follows a slump – combined with the increased interest in many unicorns – companies worth more than $1bn – that have long been touted as IPO candidates.

It is important to remember, however, that this is not a US-centric phenomenon. Japan is going through an IPO boom of its own, while in China the regulatory restrictions that led to a queue of tech companies waiting for a go-ahead has been eased as more and more follow Alibaba's lead by floating in the US.

Online streaming platform iQiyi raised $2.25bn in its March offering – and its share price has held steady – and wearable device maker Huami and Bilibili have also floated in the US this year.

Hong Kong Stock Exchange has meanwhile made rule changes that have reportedly led to several candidates earmarking the market for their IPOs, and Reuters has reported that two Chinese drug developers, Innovent Biologics and Ascentage Pharma, have elected to eschew the US in favour of Hong Kong.

The signs are that this is just the beginning. Consumer electronics manufacturer Xiaomi is expected soon to price a $10bn IPO that could reportedly value it at up to $100bn.

Ride-hailing platform Didi Chuxing, valued at $50bn in December last year, is said to be lining up an offering for the second half of this year, while local services platform Meituan Dianping is in talks with banks over a flotation that will value it at $60bn, and Uber has pegged 2019 as its target. It looks like there could be some lucrative times ahead, at least until the next slump. ◆

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SPECIAL REPORT

The shoulders of giants: going beyond capital

What went on at the eighth GCV Symposium in London last month

Alice Tchernookova, features editor
Kaloyan Andonov, reporter, GCV Analytics
Robin Brinkworth, reporter

Day 1: Morning session

The eighth annual global corporate venturing London symposium began with opening remarks from Global Corporate Venturing's chief operating officer, Tim Lafferty, who addressed a crowd of close to 400 attendees.

Investors present at the event manage a total of $100bn in venture assets, for parent companies with aggregate revenues of at least $4 trillion. Entitled The Shoulders of Giants, this year's conference has largely focused on showing the benefits of increased collaboration between ecosystem players, with startups and entrepreneurs helped to new heights by their corporate backers while the latter enjoy increased exposure to emerging technologies.

Shortly after the opening address, Graham Stuart, minister for investment at the UK's Department for International Trade (DIT), took to the stage for a keynote presentation in which he reminded the audience of the key role played by London – Europe's "capital of VC" – in the worldwide venture ecosystem.

According to PitchBook Data, UK tech firms attracted a record £3bn ($4bn) in VC investment in 2017– almost twice that of the previous year (£1.63bn) – with London accounting for around 80% of that alone. The UK is also currently the leading destination for foreign investments in Europe, with around £1.2 trillion of capital invested.

"Too many people see finance and capitalism as a dirty word, but they are the fuel of an advanced economy," Stuart said, adding: "What you do matters to our economy. We need people like you, who are willing to take risks to invest in the future. Our innovation depends on startups, and our startups depend on people in this room.

"In the same way that one cannot have capitalism without capital, we need capital to create the innovations of the future and fund the innovators of the future."

Stuart said the government's role was to understand how it could add value and contribute to attracting investment, both

SPECIAL REPORT

Minister for investment Graham Stuart

from UK investors to foreign companies and from international investors to UK-based businesses. That help, he added, could be divided into the high-growth company question – creating conditions where UK companies are an attractive investment – the venture capital question and the international question.

The DIT had formed a special unit dedicated to venture capital that had collaborated with more than 250 VCs to date and had committed to raising the UK's research and development spending to 3% of GDP.

Stuart said: "What we want is to cement the UK's position as the number-one VC club in Europe. Of course we do have weaknesses, but we want to work with you to fix those. That is why I am keen to hear from you and hear about the barriers you face.

"With your help, the UK will hopefully remain Europe's natural hub for venture capital, creating more jobs and innovation, and changing people's lives for the better – because that is why we do what we do.

"There is a saying – if it ain't broke, don't fix it. Whoever said that was not a venture capitalist. There is always room for improvement, and we should always be striving to improve. That is what VC is all about – seeing the opportunity that others have missed."

Stuart's speech was followed by a panel that brought together Tony Askew, founding partner of information and analytics services firm Reed Elsevier's corporate venturing unit, REV, and a co-chairman of 2018's symposium, and Raj Singh, managing director of JetBlue Technology Ventures, the investment arm of airline group JetBlue.

The pair agreed that although technology used to be a separate branch of corporate activities, it had now become an integral part of any company's development. Askew said: "There is no longer a tech sector. All organisations now think of technology as part of the products they develop and take to market, and that is what has really changed."

Askew added that larger bets were going into unproven technologies such as artificial intelligence, saying: "We are at the point where the human is not necessarily the centre of the workflow and the product, and that will continue to evolve over the next 20 years or so."

Another key change was that corporate venture capital had now become a crucial part of the VC space, representing around 25% of the deals done globally, according to GCV analytics. In the face of those changes, corporates had progressively adapted, explained Singh.

SPECIAL REPORT

"Most companies have recognised that innovation does not just come internally anymore, but that they also have to look outwards," he said. "While internally, we are still pushing towards incremental innovation, we often reach outside for radical innovation. The pace of change is so quick that we have no choice but to do that."

A persistent issue was that entrepreneurs remained largely unaware of what they should look for in an investor when raising funds.

Singh said: "There is recognition that [CVC] is not just about the money, and not just valuations either. Things have evolved in a very positive way, and one of the things that entrepreneurs most regularly ask us to do is help them understand the industry."

Finally, Askew insisted on the importance of talent recruitment in the building a successful business, saying: "It is very easy to buy technology, but it is very hard to find and also keep talent. A business's profitability is dependent on the ability to find that talent pool."

Akira Kirton, managing director for Europe, the Middle East and Africa at BP Ventures, oil and gas producer BP's corporate venturing arm, joined Marianne Wu, president of power and automation conglomerate General Electric's GE Ventures subsidiary, for a discussion moderated by Ken Gatz, founder and CEO of online financial transaction platform ProSeeder.

The panel – Going beyond the core of an organisation: how corporate venture can open up new markets – examined how GE and BP locate and make the right investments.

Kirton said: "A lot of it is about trying to create a win-win situation. Venturing 2.01 was about starting to integrate our investments into the business, and trying to create value in our deployment. Venturing 3.01 is much more about playing a role at platform level, where you have to look at the overall portfolio and value chain."

Detailing GE Ventures' strategy, Wu added: "We are very fortunate in that we report to the company's chief innovation officer, and are an integral part of the company. I often think of our role as extending the core of GE's activity, whose activity focuses on three areas – empowering the world (energy), curing people (healthcare) and helping them move around (aviation)."

Kirton and Wu also discussed the growing importance of impact investing, with Kirton commenting: "Although we do not engage in impact investing for the sake of it, it has definitely become an emerging criterion in our assessments. As investors, if we cannot actually bother to create a business case and say this is the future, then that is a failure for our industry."

The mid-morning break was preceded by a joint keynote session comparing the investment strat-

egies of Johnson & Johnson Innovation–JJDC, the CVC vehicle of the pharmaceutical group, and M12, Microsoft's recently rebranded corporate venturing fund.

M12 was represented by its global head, Nagraj Kashyap, while JJDC's strategy was explained by president Tom Heyman. Their exchange was moderated by financial services firm Silicon Valley Bank's managing director, Alex McCracken.

The two companies' approaches diverged in many ways and Kashyap and Heyman agreed that whether the corporate provided strategic or financial support, a startup should never fully rely on that help. Kashyap said: "Ultimately, we cannot protect the startups from their own failure. We are not responsible for shielding them from their own mistakes. What our investment essentially means is: 'We are giving you a first shot, but if you run slow, you will get crushed.' So they still have to deliver and perform well."

Heyman added: "We will do anything to make our portfolio companies successful and we definitely do not like pulling the plug, but on certain occasions – after repeated failures, for example – there is just nothing more you can do."

Following the mid-morning break, James Mawson, founder and editor-in-chief of Global Corporate Venturing, invited a panel on stage for a discussion around the themes of risk, return and impact. The panel consisted of Laurel Buckner, managing director of telecoms firm ATN International's CVC arm, ATN Ventures; Girish Nadkarni, president of petroleum supplier Total's Total Energy Ventures fund; Ram Jambunathan, managing director of SAP.io, enterprise software producer SAP's innovation unit; and Susana Quintana-Plaza, a partner at industrial technology producer Siemens' Next47 subsidiary.

Nadkarni said: "When the impact issue was first thrown upon us my first reaction was to say: 'I can only juggle with two balls, with three it is getting difficult.' But actually there are many ways of getting involved in this." He cited Total's recent focus on offering access to energy in emerging countries in Africa and Asia.

Buckner said ATN was also attempting to help emerging markets, explaining how its technology can help areas recover more quickly from damage caused by disasters such as hurricanes in the US. "Given where climate change is going, the possibility of bringing faster infrastructure systems to those areas is very important," she said.

Jambunathan said SAP was committed to driving impact in the 17 areas listed by the United Nations as part of the Goal 17 global sustainable development strategy.

Referencing recent privacy and data protection scandals surrounding social media platform Facebook, Mawson asked the panel how they tackled the unintended consequences of technology. Nadkarni recommended avoiding partnerships with companies whose affiliations were unknown or unclear, as this could involve a reputational risk for the investor.

Following a data insights presentation by Martin Haemmig, adjunct professor at the Centre for Technology and Innovation Management in Germany and the Netherlands, and a case study on corporate venturing unit Robert Bosch Venture Capital's recently adopted lean startup strategy, a panel led by GE Ventures executive managing director Karen Kerr brought together representatives from Intel Capital, M12 and ABB Technology Ventures, part of power and automation group ABB.

The panel returned to a topic that was the leading thread at this year's Global Corporate Venturing and Innovation Summit (GCVI) – diversity, which remained a prime source of debate among CVC leaders.

Wrapping up the first day's morning session, Bryan Wolf, Intel Capital's managing director of data centre and cloud infrastructure, spoke to Mike Wall, who was general manager of the group's storage division before joining Intel Capital portfolio company Amplidata as chairman and CEO.

Wolf and Wall discussed the importance of delivering value from term sheet to exit for CVC units at a time where funding sources for startups have become more abundant and diverse.

"There is an ever-increasing amount of CVC money and deals, but there are also a lot of other sources of money," Wolf said, identifying sovereign funds, mutual funds and pensions funds as examples. "So how can we make sure that we stay at the forefront? Beyond just the strategic imperative, we have to be able to offer a lot more value."

"Beyond just the strategic imperative, we have to be able to offer a lot more value"

As mentioned in the introduction to the 2018 GCV Powerlist, Intel Capital has been active on that front, having encouraged collaboration between CVC units in other companies through what is informally known as the Wendell doctrine, named after Intel Capital president Wendell Brooks, who had summed it up by saying: "We are better when we work together."

Wolf said: "As we bring syndicates together, we can offer much more assistance to portfolio companies, helping them with go-to-market processes and facilitating exits. One plus one really does make five when CVCs work together to bring up the value of companies."

Referencing Intel's role in driving Amplidata's development and its eventual successful exit, Wall said: "Once Intel had made the investment, that created a ton of market awareness, progressively transforming an otherwise unknown small Belgian business into a global company.

"It was something that validated the group's technology, and therefore created many market opportunities. There were

also strong synergies between the two product development and technology teams, from which both sides could benefit. This meant that we would always be on the leading edge of the sector."

Reflecting more generally on the value brought by CVCs to their portfolio companies, Wall added: "I have always been a believer in the strategic value of corporate investors – they represent way more than just working capital.

"A corporate validates your technology, your company, and gives you the ability to meet other companies as potential partners or investors. The fact you share your technology also means you increase your competitiveness. A corporate is also likely to bring in people who can be great employees or board members. Cross-functionally, working with corporate venturers has brought way more value than working with purely financial VCs."

See an in-depth discussion between Wolf and Wall on the value of corporate venturing in our comment section

Day 1: Afternoon session

Kotaro Yamagishi, CEO of Keio University's venture capital arm, Keio Innovation Initiative (KII), co-founded digital media company Gree and is still a board member. In a fireside chat with GCV editor-in-chief James Mawson he spoke about how his work at Gree had given him the experience to to lead KII. *Read more about the conversation in our special report on the GUV: Fusion event run in tandem with the symposium.*

Another fireside chat featured Jacqueline LeSage Krause, managing director of corporate venturing unit Munich Re/HSB Ventures and co-chairwoman of the symposium, who spoke to Andrew Rear, CEO of sister unit Munich Re Digital Partners (MRDP), and Scott Walchek, founder and CEO of mobile insurance platform Trov.

This talk delved into the insurance world and how Munich Re, one of the world's largest reinsurance firms, operates beyond its core business of insuring insurance providers and providing cover for innovative large-scale projects such as self-driving cars.

LeSage Krause moderated a discussion between Rear and Walchek, who spoke about their working relationship and what both Trov and MRDP are doing to innovate in the insurance sector.

Attendees heard how MRDP was originally set up to handle the wave of insurance technology being developed, focusing both on tech that was building an experience around the customer, and on services that dealt with the problems the sharing economy brought to the traditional insurance industry.

Trov offered insurance for single items that could be activated through an app with a single click. Rear told the audience how impressed he was with Trov's ambition and scope, and said it was enough to move the needle at Munich Re, not always the easiest task at a business that large.

MRDP's involvement had enabled Trov to enter new markets more quickly, and secured the balance sheet that allowed it to assume greater risk, while Trov had helped MRDP access areas they otherwise would not have entered, such as working with Waymo, internet technology group Alphabet's autonomous vehicle division.

"A corporate validates your technology, your company, and gives you the ability to meet other companies as potential partners or investors"

Mark Muth, director at professional services firm PwC, moderated a session on financial technology that included Jalak Jobanputra, founding partner of VC fund FuturePerfect Ventures, and Benoît Legrand, CEO of financial services firm ING's corporate venturing unit, ING Ventures.

Muth laid out the groundwork based on PwC's 2017 report on the finance sector – 77% of institutions were planning to adopt blockchain by 2020, and there had been a 40% increase in annual investment over the past four years in fintech more broadly, with total investment now standing at $40bn.

Jobanputra emphasised how decentralisation was at the heart of FuturePerfect, while Legrand looked for disruption at the same time as maintaining a top-down view on ING's key sectors.

Jobanputra's answer to the central question of the discussion was an emphatic yes – she believed incumbents had the opportunity to innovate and partner good fintech developers, aided by funds like her own at FuturePerfect.

However, Jobanputra pointed to the 2 billion unbanked people across the world and suggested that many banks remained slow to innovate, hindered by the post-2008 regulatory environment and an inability to manage mobile technology as well as they could.

Speaking specifically about blockchain, Jobanputra noted how Bitcoin was originally created to eliminate the need for banks, yet institutions were now using blockchain technology to increase the efficiency of their backend, while gaining new customers.

Legand took a more cautious position, noting that what made a good fintech company might in five years be different from what made one now. He wanted to innovate at the border of the bank, but noted that banks could still be moving faster.

ING Ventures invested in areas where ING could leverage its commercial edge, but also where technology was emerging fast and had the potential to be disruptive, for example backing a fintech company that was competing directly against ING Spain.

FuturePerfect's lab was not an accelerator, Jobanpuntra said, but a place for specific projects with commercial partners. This was a key place where FuturePerfect could interact and innovate with strategic investors.

Last, the discussion turned to initial coin offerings and whether Legand or Jobanpuntra thought they were an appropriate means of investment. Both offered a clear no, identifying regulatory uncertainty as a key factor.

The last panel of the day focused on the influence exerted by new technologies on venture investing, examining how machine learning and AI were likely to affect venture deal-sourcing, governance and portfolio management.

Moderated by John Riggs, principal and partner at professional services firm PwC, the discussion brought together Jonathan Serfaty, data scientist at telecoms firm Telstra's corporate venturing arm, Telstra Ventures; Jonathan Pulitzer, a managing director for GE Ventures, a subsidiary of General Electric, in Israel and Europe; and Stefano Gurciullo, investor and technology lead at venture firm Redstone VC.

Gurciullo said: "Data science will help a lot of capital investments. CVC is a people's game that is a lot about having the right connections and identifying interesting targets. Data science is not just useful for inbound data, it can also help with finding targets on the investment side."

"CVC is a people's game that is a lot about having the right connections and identifying interesting targets"

Gurciullo suggested the data management software used by Redstone could, for instance, also help him and his team quickly get a thorough view of a potential portfolio company in a given niche or space, providing data that would otherwise take months to collect.

Telstra had begun using machine learning around seven months ago, applying it to deal-sourcing, due diligence and portfolio management, Serfaty said, adding: "There are a lot of companies out there and not so much information on them, so it is really about getting as much of that as possible, to give investors some sort of superpowers in their decision-making."

Pulitzer added: "We are definitely witnessing a dramatic change. At GE, we have used data science to pull together multiple signals, such as which accelerators are coming out with the most interesting dealflow, or which technology is the most conclusive. Although we are definitely utilising technology to guide us, we are not yet at the point where we are jumping in head first to use it as a proper tool in our investment strategy."

Pulitzer's observation raised the question of the extent to which AI should be involved in investors' decision-making, and whether having it serve as a "seat" on investment committees should be an acceptable practice.

Machine learning was a very useful tool, Gurciullo said, adding that investors could not simply rely on data based on past investments, as "the past cannot tell us everything". He added: "Future successful investments will likely differ from past ones, as some form of innovation is also needed. So the question really comes down to evaluating whether human intuition can be automated."

The panellists generally agreed this process would and should always have some form of limitation. Pulitzer said: "You can make computers as smart as you can, but CVC is an interpersonal business that will hopefully still require human interaction for many years to come. By using machine learning exclusively, you might miss out on things that have not been experienced yet, and there are still many undiscovered gems out there."

Day 2: Morning session

The second day of the symposium started with a university venturing panel moderated by Global University Venturing editor Thierry Heles discussing how to build and develop a startup, from idea to scale-up.

The panel featured Paolo Bavaj, head of corporate venturing at adhesive product maker Henkel Adhesive Technologies; Mark Brooks, associate director of innovation and strategic partnerships at the Association of International Certified Professional Accountants; Ilonka Jankovich, venture partner at Randstad Innovation Fund, a subsidiary of recruitment firm Randstad; and Jim Wilkinson, chief financial officer of Oxford Sciences Innovation, the university venture fund of University of Oxford.

Read more about the conversation in our special report on the GUV: Fusion event run in tandem with the symposium.

The next panel, moderated by Oliver Keown, senior associate for healthcare investing at GE Ventures, brought together healthcare industry leaders around a discussion on how to generate access to intellectual property.

Roel Bulthuis, senior managing director at Merck Ventures, part of German pharmaceutical firm Merck, was joined by Neil Foster, partner specialising in M&A and private equity at law firm Baker Botts, Deborah Harland, partner at pharmaceutical group GlaxoSmithKline's SR One unit, and Francesca Wuttke, managing director of the European branch of Merck Global Health Innovation Fund, a subsidiary of US pharmaceutical company Merck & Co.

Asked how an agenda for access to IP and innovation was driven within their respective organisations, Bulthuis stressed the importance of building relationships with other industry players to maintain a reputation and drive success.

"Having a relationship with others is important," he said. "The reputation you create as an investor in that industry has a big impact on the ability of the parent company to access innovation. Our key impact is to create a network, and a profile that makes people want to work with us and see us as a valuable partner."

The healthcare industry, Builthuis added, puts about 20% of its budget into research and development, which has led to a mature VC and business development culture. As an early-stage investor, Merck Ventures dedicated around half of its investments to seed rounds, with the rest going into larger syndicate deals.

"We have to make sure that commitment and resources are engaged there, bearing in mind that we need to take an active role in shaping companies that can help our parent company grow," he added.

Foster then highlighted the "cultural clash" between the technology and pharmaceutical worlds, where best practices had not entirely been established and bad practice could still be common. "The biggest disruptors in biotechnology are in digital and devices, as opposed to pharmaceuticals," Foster said, adding that intellectual property registration remained a more common practice in the US than in Europe.

The panellists concluded by covering the growing importance of data and data management in the healthcare world, especially in relation to the recently enacted General Data Protection Regulation in Europe.

Foster noted that data in the healthcare world, including, for instance, patient information, had been heavily regulated for many years already, particularly in the US and Europe.

Bulthuis explained that progress in data technology meant pharmaceutical companies now had the ability to invest not just in therapeutics, but also in a wider selection of life sciences technologies.

The impact that data could have on the sector as a whole also generated discussion on pricing, with people expected soon to be able to monitor their own health to a greater degree. "The access to data also means we can widen our scope, and not just sell new products but also think of how we can develop new drugs and new types of therapeutic solutions," Bulthuis said.

"The reputation you create as an investor has a big impact on the ability of the parent company to access innovation"

Antoine Maurel, investment manager at Orange Digital Ventures, a subsidiary of telecoms firm Orange, moderated a session on corporate venturing in emerging markets, with industry leaders discussing the booming business opportunities currently emerging from Africa and India – each had a young and fast-growing population, and both were in the middle of a technological and digital boom.

Krishna Chokhani, managing partner at India-based accelerator Zone Startups India, told attendees the average age of a startup founder in India was 28, while, according to official figures, half of the country's 1.3 billion population was below the age of 25 and 65% below 35.

United Nations figures indicated Africa's population is set to grow by about 40% over the next 10 years, while about 19% of its population were aged 15 to 24. Something that had also characterised India and Africa in recent years was their technological transformation and progressive transition into the digital age.

Eric Osiakwan, managing partner at Chanzo Capital, a growth capital firm targeting the "Kings" countries – Kenya, Ivory Coast, Nigeria, Ghana and South Africa – said Africa was behind in terms of funding raised – roughly $560m in 2017 compared with $13.5bn in India – and its digital progression was still to come.

Another characteristic shared by both Africa and India was their booming technology and digital space. Osiakwan told attendees that in Sub-Saharan Africa the mobile industry currently accounted for 6% of GDP, and both regions were experiencing rapid growth of internet penetration.

Chokhani and Vishal Ramaswamy, growth strategist at the Bangalore-based office of US-headquartered investment data provider Tracxn, said India was still in the process of digitising many essential components of what formed a modern society

Despite that, 200 million bank accounts had been opened and 1.2 billion social security numbers generated in recent times, according to Ramaswamy, and India was slowly moving towards disruption.

Chokhani said: "The most famous companies in India are currently in e-commerce. They are filling the gaps in the ecosystem that need to be filled, with digitisation still the prime focus. Filling those gaps will take a bit of time, but it will also yield good profits for investors."

At present, traditional VCs accounted for 40% to 45% of the funding ecosystem in India, with corporate venture capital accounting for roughly 20% and the rest represented by angel investors.

"As the Indian ecosystem matures, so will the CVC space," Chokhani said. Although the largest part of businesses were currently involved in business-to-consumer activities, there should also be a shift towards business-to-business over the years.

As India's startups transition from one side to the other, the country had dreams of becoming "the software-as-a-service (SaaS) hub of the world", Ramaswamy said, adding that there were more than 900 SaaS companies in the country, including 700 operating in the deep-tech space.

Ramaswamy said: "The government is doing quite a bit to push the country's digitisation. The foundations of technology are currently being laid, and soon all villages will be connected with broadband. Once that is done, we can progressively move towards innovation, machine learning, and building more ground-breaking services and products."

Some engagement with early-stage businesses in India had already started creating the local landscape, according to Ramaswamy.

Africa was meanwhile poised for a "tech take-off", as the telecoms, media and technology sector had consistently out-performed other sectors over the past 10 years, generating 19% of annualised returns over the period, Osiakwan said.

Finally, Africa and India had benefited from an increased foreign presence. Roughly 60% of India's 500-plus active venture capital investors were based locally while the rest were of international origin, according to Ramaswamy. In terms of value that ratio was reversed, with foreign investors supplying 65% of the funding.

Referencing US-headquartered Walmart's recent acquisition of a majority stake in India-based e-commerce company Flipkart at a valuation of almost $21bn, Ramaswamy said: "Everyone wants a piece of what is happening in India right now. This deal has totally shaken up the local ecosystem."

Osiakwan responded by stating that in Africa "a lot of local investment is going into the lower end of the market, while foreign investors tend to operate in the larger space. Global money is totally changing the landscape".

Recommending that investors in the room keep an eye on Africa in the near future, Osiakwan added: "Necessity is the mother of innovation, and Africa is the continent that has the most necessities. That is why you must look at it now." ◆

Focus: Artificial intelligence

Artificial intelligence (AI) is predicted to be the next disruptive wave in media and society more generally

James Mawson, editor-in-chief

Massachusetts Institute of Technology's Prof Max Tegmark, in his latest book– Life 3.0 – hypothesises that the first indication that artificial general intelligence (AGI) is a reality will come from the media sector, as it offers the best influence-financial returns equation to help AGI scale.

But in a Chatham House discussion involving some of the industry's leading venture investors at the Global Corporate Venturing Symposium the view by some was that AGI – artificial intelligence that is at least equally as powerful as human intelligence, was about 30 years away.

And while there are plenty of reasons to doubt predictions in AI, as Rodney Brooks, Panasonic professor of robotics at Massachusetts Institute of Technology and founder of Rethink Robotics, wrote in a post: "We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run."

But the short-term effects from AI-related developments are already having an impact through work in areas such as natural language generation (NLG), machine or deep learning, and generative adversarial networks, and these developments were the focus for much of the discussion in the roundtable.

Before this discussion started in earnest, there was an observation on the evolution of market capitalisations of media companies against disruptive tech peers. The main media groups' market caps have grown over the past two decades, but at a rate outpaced by some players from the broader tech industry, such as electronics manufacturer Apple, internet conglomerate Alphabet, social media company Facebook, software developer Microsoft, and Chinese groups, such as Tencent, Alibaba and Baidu, that 20 years ago were either not actively involved in the media space or did not exist.

With these tech disruptors seen as the most focused on AI, particularly through corporate venturing units, such as Google's Gradient Ventures, will this further exaggerate the gap in value and prove a tipping point for media companies?

While participants noted the shift to digital marketing and the increasing importance of data analytics, much of the discussion revolved around the general paradigm shift driven by AI.

Some of the participants said that, in terms of content production, what had fundamentally changed in the past few decades was the evolution of better equipment and streams of data, while the journalistic job remained essentially the same. While this had spurred the rise of data-based journalism and allowed a certain degree of automation, no machine could currently write an article better than a human.

Some noted that one of the hottest issues was content distribution over the online channels, which were dominated by companies like Facebook and Alphabet. Among other things, participants appeared to agree that there were opportunities on the monetisation side in the distribution and in terms of reinventing subscription models.

On the quality of AI-generated media output, it was also expressed that it was largely contingent on the quality of data available, so companies like Google and Facebook with large amounts of data held a competitive advantage.

Other applications of AI mentioned during the discussion were in image recognition or image analysis – used by e-commerce platforms. It was noted that may AI companies were sector-agnostic, so media companies should try to use them to help analyse the large quantities of data. This way, media companies could streamline internal processes, which would allow them to reduce the need for data analysts and scientists.

Media industry roundtable

Moderator: Jarmes Mawson, editor-in-chief, Global Corporate Venturing
Tony Askew, founder partner, REV Venture Partners
Azeem Azhar, chief, Exponential View
Jörn Caumanns, chief financial officer, Bertelsmann Investments
Boon Ping Chua, CEO, SPH Ventures
Camilla Dolan, principal, Burda Principal Investments
Alex Dunsdon, Saatchinvest/Bakery
Solomon Elliott, founder, The Student View
Ling Ge, chief Europe representative, Tencent
Megumi Ikeda, general manager of Europe, Hearst Ventures
Ilonka Jankovich, managing partner, Randstad Innovation Fund
Mike Martin, Sky Ventures
Mike Redding, head, Accenture Ventures
Alan Renwick, director, Radar AI Limited
Vinay Solanki, head of Commercial Growth Fund, Channel 4
Eze Vidra, founder, Reimagine Ventures
Kaloyan Andonov, GCV Analytics

One of the participants drew a distinction between AI and machine learning (ML). Participants pointed to examples of ML used to identify fake news, enabling users to test the veracity of a story.

ML technology is also used to identify what people are wearing in video content and matching fashion retailers that may offer similar clothing. It was also noted that ML and AI had potential applications in call centres, human resources and recruiting technology, real-time multi-language transcription, translations, localisation, brand safety and customer services. One of the participants cited an example of a recruiting chatbot, with which job seekers were willing to spend more than 30 minutes on average. There was also an example of the ability to hire a bot to design a logo for a company.

During the discussion, it became clear that not all media markets are alike and the applicability of AI and ML may greatly vary across geographies. In Asia, media tend to be highly regulated, which requires editors to ensure no important stakeholders are offended or that content is not adult entertainment in nature.

The end of the discussion revolved around interesting existing strategies for media investors. Participants spoke of the new app market and ecosystem around Tencent's WeChat or Meituan Dianping's so-called super apps as great examples of how media could be converged with other commercial activities.

However, it was noted that one of the biggest challenges in integrating media, entertainment and commerce, such as buying clothes worn by stars on TV shows, lay in the difference in margins – double digits in media and up to 10% in e-retail. They also highlighted the importance of creating a relationship with end users.

One participant noted that consolidation was happening in the sector and in order to be a winner, one must first strive for scale. Participants generally agreed on the importance of partnering and collaboration, recognising that with new business models through blockchain and opportunities for decentralisation, the next generation of winners might not the be same as the current tech giants.

It was generally agreed that while media and telecoms were the top industries disrupted by AI, at the moment the overall focus was placed on complementarity – simplifying and organising people's jobs – rather than replacing human labour. However, the most astounding example given was from one company, which had automated the equivalent of 40,000 jobs. The company had, nonetheless, managed to provide its people with other jobs, as it had expanded significantly.

Participants also touched on the issue of ethical concerns in media investing in a world encroached by AI. One pointed out the difficulty of deciding whether to invest in gaming companies, as games played by children and teenagers may be addictive. On a broader scale, the more pressing apprehensions touched on whether it was really ethical to invest in automation, AI or ML if people may be deprived of their jobs at some point in the future.

Or as Henry Kissinger, sectary of state for former US presidents Richard Nixon and Gerald Ford, said in the June issue of Atlantic magazine: "Philosophically, intellectually – in every way – human society is unprepared for the rise of artificial

intelligence." Kissinger gave three areas of special concern – unintended results from AI, changing human thought processes and values and making inexplicable conclusions. Management consultant Venkatesh Rao in his Breaking Smart blog similarly worried that AI would mean "our world will start to seem increasingly non-anthropocentric".

This will matter less if people are changed – transhumanism. Interestingly, at about the same time 60 years ago that the first wave of AI optimism was evident, psychologist Carl Jung published the Undiscovered Self and pointed out that knowledge was not the same as understanding, and "ultimately everything depends on the quality of the individual".

My thanks to all the individual contributors to the discussion and GCV Analytics reporter Kaloyan Andonov for taking notes. ◆

Interview: Caruso channels media's future

Scott Caruso of cable entrepreneurship forum UpRamp, says latency, infrastructure and content would be key venture capital drivers for the media sector


Scott Caruso

Callum Cyrus, reporter

Digitisation is fundamentally changing the media industry – as Global Corporate Venturing reported in Last month's issue. Consumption preferences have shifted already, with digital subscriptions and on-demand programming eating into the market for printed newspapers, broadcast TV and radio.

Content delivery models have also morphed, from a linear relationship between the consumer and a platform which transmits media, to an over-the-top (OTT) model in which customers themselves select what media they wish to consume.

Scott Caruso, director of strategic ventures at UpRamp, part of R&D initiative CableLabs, believes this year will see the OTT model grow even more prevalent, with both internet protocol video and livestreaming generating interest for his members.

"I believe you will see metrics where latency becomes a key component of the service you buy or utilise for a given transaction"

He said: "You hear about cable-cutters [customers who find they no longer require cable subscriptions] and I think it is a big opportunity for the broadband companies to transition their consumer as they switch their consumption from a video-based service to data or digital-based services. Some of this is already happening, but over the next year that is going to be a big change."

And the changes will keep coming.

With 4K-resolution broadcasting, media providers expect audiences soon to be watching videos that are four times the pixel resolution of standard high-definition output. The adoption of virtual reality technologies could fundamentally transform how we engage with communication, films and computer games.

Caruso argued a significant draw for cable and broadband VC activity lay in technologies that reduced latency, the delay that occurs when transferring data via the internet or local area networks. He said: "Any company that is developing a product that leverages high bandwidth and low latency in a symmetrical form is key.

"You can think of a holodeck [a holographic or computer-simulated physical environment] – it is perhaps the ultimate example. To pull that off, you are going to need an infrastructure that fulfils the role broadband did in the past.

"I fundamentally believe you will see metrics where latency becomes a key component of the service you buy or utilise for a given transaction. Latency will be one of those things – I need sub-second or sub-millisecond latency as a guarantee.

"Say there is a medical diagnostic and I am talking to the doctors in the US and you are in India. That kind of engagement, particularly in real time in an overseas operation, means you cannot afford any kind of latency, you cannot afford a hiccup. That sort of stuff is going to happen but not unless someone is really building the infrastructures."

Caruso added there was also a need for capacity to support our ability to broadcast through platforms such as social media and livestreaming, and at higher resolutions such as 4K. The cable broadband industry is already moving ahead on this, developing telecoms standards that provide faster upload speeds than those used today.

"The infrastructure is moving from predominately a distribution system to much more of a flat model where you can broadcast anywhere and consume anywhere. That means you must have just as big a pipe going up as you have going down.

"That kind of symmetrical change in the infrastructure we are already seeing with [the new cable specification]. It is 10 gigabytes each way, up and down. You can imagine how that disrupts the media industry, I can broadcast in higher quality from anywhere."

"The pipes were not designed for 4K. So advances are going to be driven more by the infrastructure than the production, because it is not the production of 4K video that is difficult, it is the distribution." ◆

Unpanel and roundtable sessions

Paul Morris, chief investment officer, venture capital unit, UK Department for International Trade

There were more than 80 speakers in the popular unpanel sessions. They were gathered around seven large round tables, engaged in animated discussions ranging from startups to corporate venturers, innovation to inclusion, and technology to diversity.

The unpanels were guided by 16 moderators who shared enthusiasm, experience and encouragement with participants who networked, exchanged cards, made new contacts and planned many one-on-one follow-ups. Three moderators had the honour of providing a one-minute good, bad and ugly feedback snapshot of their table discussions on the main stage the following day. Thank you Neil Foster of Baker Botts, Laura Chicurel of Nextinit and Jessica Straus of GE Ventures.

Can corporate VCs be true value-added investors?

Moderated by Jon Koplin, managing director Emea, Cisco Investments, and Angélique Peigné, ventures manager, BP

Delegates crowded round the table and, for the majority, confirmed that corporate VCs can and do bring value beyond fungible capital. This can be immediate, both in terms of raised credibility of the startup, and where a corporate investment is perceived as a validation of a startup's technology. Commercial agreements can help accelerate the scale-up phase – but the group cautioned against corporates seeking exclusivity. Managing expectations on both sides through open and frank communication is critical. And woe betide corporates who begin to regard an investee startup as an internal business unit. Shareholders should support startups but not interfere in day-to-day operations. Consistency can be a challenge when the CVC head moves on, and corporates need to look beyond quarterly reporting to support long-term value growth in their portfolio.

initial coin offerings and blockchain

Moderated by Toby Lewis, founder and CEO, Novum Insights, and Neil Foster, partner, corporate – M&A, private equity, Baker Botts

It was standing room only at this session as an animated group grappled with the complexities, opportunities and idiosyncracies of initial coin offerings and blockchain. Some opined that blockchain would revolutionise whole markets and industries and saw almost limitless possibilities. Others were more cautious. The group agreed that investors should not confuse the way that blockchain companies were funded with the underlying technologies. There was consensus that corporate VCs are generally far from understanding the opportunities and threats that blockchain companies and technologies present. The discussion concluded rather obliquely, that new intermediaries are appearing but that "the issue of disintermediaries is a myth".

Driving innovation culture in large organisations: ideation management and other key tools

Moderated by Laura Chicurel, chief operating officer, Nextinit, and Paul Taylor, innovation and architecture, cloud and security technology practice, Vodafone

A large open-minded group exchanged ideas, tips and best and worst practices on how large corporates can become more innovative. Most corporates desire this – most struggle to achieve their desired culture of innovation. Senior management buy-in and active support is essential – a ship will not turn unless the captain desires this. Transparency and recognition are necessary to give exposure and oxygen to those leading the innovation efforts. Their achievements are often steps on a longer journey – but each significant step must be celebrated. A framework that offers a process for ideation and a methodology to develop ideas is required. The group suggested that a visit to the corporate gym, to build internal innovation culture muscle, would render external innovation efforts more likely to succeed.

Setting up a Corporate VC in a conservative industry: do's, don'ts and the role of incubators and accelerators.

Moderated by Crispin Leick, managing director, EnBW New Ventures, and David Byard, project manager, technology venturing, BP Group Technology

If at first you don't succeed, try again. This has been the mantra of some corporates regarding past CVC efforts. This lively and, in some cases, battle-scarred group identified some best practices and pitfalls. Understand the vision and key targets of your business development team and then determine allocation of effort and resources among VC, R&D and M&A. The group trumpeted: "Lots of new CVCs are coming." They did not elaborate as to whether this was a positive or negative development, but did advise newcomers not to underestimate the task ahead. Accelerators should be considered an additional tool, be they university-focused seed-stage vehicles, CVC equity investment platforms, or business scale-up facilitators. Survival of the fittest was the mantra.

How can CVCs more effectively support startups?

Moderated by Julio Romo, founder, Twofourseven, Sharon O'Dea, founder, Lithos Partners, and Lee Sessions, managing director, global corporate venture relationships, Intel Capital

This unpanel was highly productive in producing a wide range of recommendations for CVCs in supporting startups. Aligning cultures is a real challenge – better to align market places. Manage the expectation gap. Provide hands-on support by entering deals at earlier stages. Manage potential conflict by getting two or more CVCs into a syndicated deal. CVCs undersell themselves – get out your trumpets. Focus on providing access to expertise – R&D, manufacturing, marketing, distribution. Manage internal not-invented-here syndrome. Startups also got some advice – nominate a single point of contact for the CVC, focus on where the corporate can add most value, leverage the corporate brand, seek out mentors, entrepreneurs-in-residence and professional services, and beware – CVCs sometimes oversell themselves to get a good deal.

Managing the internal challenges of strategic corporate venturing

Moderated by Mark Felix, investment manager, Dow Venture Capital, and Yair Snir, managing director, Dell Technologies Capital

This roundtable hosted an intense discussion on the complexities of the internal challenges facing every CVC. The existentialist question was raised and the group saw clarity of purpose and consistency backed by key performance indicators as essential. Picking winners was a recommended strategy. Not every business unit will love what the CVC group brings and you cannot keep everyone happy – work with the most receptive ones. There is no single template for internal success – corporates differ in culture, DNA and aspirations. You must find the best way within your organisation. It will be different if you move to another firm. Short and long-term results should be tracked and quantified where possible against stated and agreed objectives. Communicate these broadly internally.

Crowdsourcing best practices for diversity and inclusion

Moderated by Jessica Straus, entrepreneur-in-residence, GE Ventures, Holly Colbo, marketing director, GE Business Innovations, and Kora Abelard, commercial associate, GE Ventures

A dedicated and enthused group debated the meaning of diversity and inclusion, and the associated opportunities and challenges. Many of the other unpanel groups highlighted the importance of people ahead of technology. This group agreed that optimised recruitment depended on diverse leadership. Senior management must provide direction and leadership and act as role models. There is evidence in the form of hard data confirming that diversity and inclusion is an effective strategy for innovation and management. The challenge of changing cultures and preconceptions was discussed. An effective tool is mentoring, where those with experience can help guide others who have had less opportunity to consider what diversity can bring. ◆

Focus: Switching Israel on to energy tech

Tom Whitehouse, contributing editor

For a country whose innovation track record is world-beating in so many industries – for example, agtech, watertech, autotech, particularly in connectivity, cybersecurity and computer vision – the Start-up Nation's contribution to solving energy problems is surprisingly weak.

Why is this? And is it about to change? These were the two main questions discussed on a non-attributable basis by

leading Tel Aviv-based and Israel-focused corporate VCs at a GCV dinner the evening before our first conference in Israel in March. The answers are illuminating and suggest that Israel may be about to do for energy what it has been doing over the past five years for automotive – connect, digitise, autonomise and secure.

One corporate venturer said: "Historically, the fundamental driver for Israeli innovation was survival, not doing good. We could easily import fuel for energy. Coal, oil and gas are highly commoditised markets. But water and food had to be produced at home." Like food and water, security, and the technological means to provide it, could also not be imported. Thus home-based innovation flourished in these areas.

"Sure, Israel missed an opportunity in energy. We could have taken a lead. For example, we were early pioneers in solar thermal power. But there were other, more pressing priorities," said another. This may be about to change.

Solar heaters were first installed in Israel when the country experienced a fuel supply crisis in the early 1950s. The government responded by restricting the times when water could be heated. Israelis in turn responded by purchasing huge quantities of solar water heaters. By 1983, 60% of the population used the sun to heat their water. A law was eventually passed requiring the installation of solar water heaters.

Twenty years ago, disruption of the energy industry was primarily an ethical calling – the domain of renewable technology pioneers and their ethical investor backers. Ten years ago, the rollout of now proven renewable energy technologies such as solar and wind became an infrastructure investment opportunity, one which is still attractive, particularly in parts of the developing world which lack energy but have plenty of sun and wind, like India. But in the developed world, the energy investment opportunity is changing. The growth of renewables and electric vehicles are obliging inflexible dumb centralised power systems to become flexible, responsive, digital, local and smart.

Better call Israel. Jonathan Tudor, technology and strategy director of Centrica Innovations, already has.

"We are looking to invest $140m in the very best ideas and businesses and believe that Israel offers access to both great tech and some of the world's greatest entrepreneurs and innovators," said Tudor, who switched to Centrica, the UK and US-based energy and services provider, from BP Ventures last year.

"We are particularly interested in the distribution of energy, electrification of transport and increasing connectivity through data, blockchain and the internet of things," added Tudor.

Centrica's readiness to make venture capital investments in Israel follows a successful acquisition three years ago. "Having acquired Panoramic Power, a leader in circuit level energy management solutions in 2015, we see Israel as an excellent candidate for investment," he said *(see box above)*.

Jonathan Tudor

Can Israel deliver on energy? Its track record in automotive, an industry facing challenges similar to those of energy, is encouraging.

"Only when the car became a connected device did corporate VCs come to Israel to commission technology solutions," said one of our corporate VCs over dinner. "Israel's engineering expertise in security was easily transferable to the challenges of connectivity, cybersecurity and computer vision faced by the automotive industry." Likewise, the challenges of digitisation, flexibility and responsiveness, should be right up Israel's street. Indeed, a fresh perspective on energy may unlock problems that traditional energy has yet to solve.

In the opinion of one of our corporate venturing diners, a US-based investor: "We all know that content is king.

Israeli energy innovators – outliers or a taste of the future?

Panoramic Power
Before being acquired by Centrica in 2015 for $63.86m, Panoramic's corporate venturing investors included Qualcomm Ventures. Based in Kfar Saba, but now integrated into Centrica's global operations, Panoramic's technology consists of wireless and self-powered circuit-level technology that can be retrofitted to provide owners and operators of energy assets with insights into energy usage and the potential to reduce costs.

APG Aero Systems
APG designs and manufactures solar-powered drones and provides broadcasting and internet communications. The Israel-based business raised €3m ($3.5m) from private investors in January this year.

But energy cannot really be differentiated – electrons are just electrons. Ultimately, disruptive innovation in energy may therefore have to go over the top. No one wants a down-the-pipe solution."

Asked what an over-the-top solution would look like, he spoke of the possibility of free energy in return for data which could be monetised, or energy services which could be bundled with other higher-value services such as televised sport. Meanwhile, Israeli-based CVCs were more cautious. The conversations switched to old-school hydrocarbons, the promise of Israeli offshore gas which may reduce, but not eliminate, Israel's dependence on imported coal as its source of base-load power.

All of a sudden, we had gone from the high-tech prospect of digital energy to the very old-tech world of coal, which has powered Israel's economy since its foundation. As the coffees arrived, it was a sobering thought.

The overall impression left by GCV's Israel conference is of deals being done and deal pipelines being filled. There was a relaxed buzz in the room among entrepreneurs looking for corporate venture capital – some, but by no means all, focused on energy. The extent to which Israel gets switched on for energy-tech will be a function of energy's need for what Israel is good at – connectivity, security, digitisation and more.

Jonathan Tudor is optimistic. "The year 2013 was the beginning of the rapid growth of autotech venturing. Before 2013 autotech was about braking systems. Since then it has been about connectivity, electrification and autonomy. Today, it feels like there is something similar happening in energy as it begins to digitise. Look at the dealflow out of Israel and other innovation hot spots. Feel the buzz." ◆

Disclosure: Centrica sponsored GCV's Israel conference

Keynote: Corporate venturing and sustainable goals

Unable to attend the symposium for health reasons, Lorna Davis, senior adviser to Emmanuel Faber, CEO of packaged food supplier Danone, gave a keynote speech through video call, stressing the value of the B Corporation (B Corp) sustainability movement ahead of an afternoon session of unpanels on the UN's sustainable development goals moderated by Oxford University's Said Business School and organised by B Corp's leaders, Charmian Love and James Dickson.


Lorna Davis

B Corp is made up of more than 2,500 corporations and is intended to reward companies that act as a "force of good". Davis is a global ambassador for the initiative, which certifies businesses for their ability to benefit the world, its inhabitants and future generations.

Danone's involvement began in 2015, when it joined the Multinational and Public Markets Advisory Council of B Corp's organiser, non-profit organisation B Lab. Danone's North America unit, formed in the wake of its April 2017 acquisition of dairy product supplier WhiteWave Foods, has become the world's largest certified B Corp.

Davis, however, argued that Danone's nutritional focus meant social good had long been central to its business strategy, particularly since 1996 when Franck Riboud became CEO and began pushing the company more toward health products.

When Davis joined Danone in 2015 to drive its efforts to combine sustainability with profit, her team found the company's younger employees ready to don the mantle of change.

"We had written a manifesto for the new world, and invited the organisation to that manifesto and to that future," Davis said. "What was interesting to me is that of 100,000 people, about 5,000 people logged on to the website and about 2,500 people actively engaged.

"And they were mostly the younger people in the organisation. It is important for anybody who is on this journey to acknowledge that young people are really engaged."

Once viewed as merely a brand enhancement for small and medium-sized enterprises, B Corp certification now acts as a draw for corporate M&A deals. Consumer goods producer Unilever acquired its fifth B Corp in December 2017 when it bought personal care product maker SheaMoisture.

There is also the prospect of more acquisitions featuring B Corps on both sides of the table, such as cosmetics manu-

The Sustainable Development Goals, otherwise known as the the Global Goals, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. The goals are interconnected – often the key to success on one will involve tackling issues more commonly associated with another.

facturer Natura & Co's acquisition of ethical cosmetic and fragrance chain Body Shop in June 2017.

For Davis and Danone, the scheme's appeal compared with other sustainability programs lies in its tight framework and an ability to attract minds not traditionally considered part of the cliché fabric of the corporate world.

Davis highlighted B Corp's certification system, the B Impact Assessment, which judges the sustainability of businesses on a performance scale of 200, with only those achieving at least 80 officially deemed B Corp standard.

The rigour of this approach is complemented by the enthusiasm of younger adherents determined to celebrate the movement with energy, she added. "We tested 10 business units of ours and we found [the certification] really robust. So actually this element is super important.

"We experimented by having Danone Spain, which is a billion-dollar business, try the system. They got certified, and what I noticed is that so many of the other business units got punished. So I think that second element is really important because that competitive element is a critical part of why business is such a powerful mechanism in the world. And why I really do believe business can be a force for good." ◆

SDG resources

If you are interested in learning more about tools to help you engage more directly in the SDGs, check out the following resources.

Impact Management Project

Learn more about the five dimensions of impact, as agreed by thousands of practitioners around the world. You will find templates, training materials and links to useful resources to manage your positive and negative impacts as a business, and explore your contribution as an investor to the SDGs.

impactmanagementproject.com

Possibilian Ventures

Possibilian Ventures is an emerging fund manager dedicated to embedding impact in the mainstream venture ecosystem. Its assessment framework helps investors understand where and how their portfolio aligns with SDGs.

possibilian.vc *ventureforgood.org*

SDG Platform, based on the B Impact Assessment

B Lab and the UN Global Compact have created an actionable management platform for businesses to assess, compare and improve their performance against the SDGs. Before the platform goes public in late 2019, prospective users will test the metric sets as they roll out, prototype the online platform through development, and pilot features as they are completed. If you are interested in being a part of this development, please email Laura Velez Villa at *lvelez@bcorporation.net*

Global Corporate Venturing

Visit the Global Corporate Venturing website and register for the regular newsletter and daily deals to see where corporate venturing teams are focusing their resources. We will also be posting regular updates on SDG-related activity and relevant reports and articles.

globalcorporateventuring.com

SPECIAL REPORT

Highlights from this year's GUV: Fusion event

Global University Venturing reports on memorable moments at its London conference last month, which also featured the GUV Awards

Thierry Heles, editor

Alison Campbell, director of Knowledge Transfer Ireland, won GUV's Lifetime Achievement Award

GUV: Fusion, Global University Venturing's annual conference, took place on May 22 and 23 alongside its sister event, GCV Symposium, and while many good aspects remained, others have been updated and refreshed.

The first change was perhaps the most obvious. After three years of holding the event near St Paul's Cathedral, the conference was moved to County Hall with the networking area boasting stunning views of the Palace of Westminster across the Thames.

The second change was the more profound one – a closer integration between GUV: Fusion and the GCV Symposium, with countless panels featuring a mix of tech transfer and university venture fund leaders as well as corporate venturers.

The move came out of an organic and logical evolution over the past several years. The two conferences started out as separate entities – GUV: Fusion used to be known as the GUV Summit – but they took place alongside each other for the past three years, with networking and joint discussions encouraged primarily in the networking breaks and the gala dinner.

Feedback called for further integration – something several audience questions at this year's conference illustrated. Despite years of working closely beside each other, there remains a lack of understanding of the other side of the coin, and Global University Venturing is keen to help bridge that gap.

The invitation-only GUV Leadership Society meeting, where tech transfer leaders and selected other actors from the innovation ecosystem discussed best practices, kicked off GUV: Fusion with a two-hour roundtable on the first morning.

Details of that meeting will not be shared publicly to respect several confidential statements made, but the themes included early-stage support for spinouts and different international approaches to funding companies. If you would like to be part of next year's roundtable, reach out to *theles@globaluniversityventuring.com*.

The first university session occurred shortly after the Leadership Society meeting, when Kotaro Yamagishi, CEO of Keio University's venture capital arm, Keio Innovation Initiative (KII), joined GUV editor-in-chief James Mawson on stage for a fireside chat. Yamagishi co-founded digital media company Gree and is still a board member, but told Mawson he had needed a new challenge.

KII, which was founded in 2015, fitted Yamagishi's personal interests, and he spoke about how his experience led to certain decisions with KII, where deals are split roughly evenly into two broad sectors – internet-of-things, artificial intelligence and IT-related technologies, and biotechnology and pharmaceutical-related investments.

Working at Gree often meant leading and growing subsidiary businesses before a specialist could be hired, something Yamagishi did for both Gree's advertising and mobile gaming businesses.

That, and Yamagishi's co-founder position at Gree, had given him the leadership and startup experience he was now utilising at KII. He also required independence from the university's establishment when it came to investment decisions, and a different pay-scale to ensure the right staff were recruited.

Future Planet Capital, the innovation-focused investment platform, then held its second awards ceremony, with six start-ups pitching to a jury that included renowned architect Lord Norman Foster.

First to pitch was Jonathan Carling, chief executive of Tokamak Energy, which claims to have found a way to make fusion technology viable while using smaller more efficient devices that use high-temperature superconductors. The company is expecting to demonstrate positive energy generation within two to three years, with plans to feed energy into the grid by 2030.

The second to pitch was Sophia Yen of women's healthcare and telemedicine company Pandia Health. Yen previously won a pitching session at the GCVI Summit in California, which led to Future Planet Capital inviting her to the London event.

Lord Douglas Dundonald took the stage to talk about his startup, Radio Physics. The company is working on a technology that uses artificial intelligence to detect terrorist threats by identifying people carrying weapons in public or private spaces. The company claims the technology can spot 90% of large guns and bombs and generates low false positives.

David Atkins, chief executive of Congenica, followed by speaking about how his startup was working to develop personalised medicine. Sequencing the human genome could now be done for under $1,000 but generated 100GB of data – it was difficult to find a single error in 3 billion genetic bases. Congenica compared a child's DNA with a parent's genetic code and identified mutations in well-characterised genes. The results helped generate treatment options.

Sandra Sobanska and her startup Oya Labs are working to help children develop their IQ and emotional intelligence by using a platform called Oto to monitor and improve cognitive development. The platform detects abnormal behaviour to enable early intervention. It also incorporates artificial intelligence to improve decision-making.

Finally, Peter Bance, chief executive and founder of Origami Energy discussed how the company's energy distribution management software helped utilities monitor and control energy flow. The company raised $26.8m from investors, including Cambridge Innovation Capital, the patient capital fund affiliated with University of Cambridge, in April this year.

"Once we have spun out a company we try to make sure that it goes on to work with industry leaders"

The winner of the pitching session was announced by Lord Foster, who revealed Origami Energy had convinced the jury in the key factors of immediacy, magnitude of attitude, conviction of entrepreneur, economics and disruptive potential.

Left to right: Tal Badt, Tsinghua University; Patrick Chung, X Fund; Lord Foster; Peter Bance; Douglas Hansen-Luke, Future Planet Capital; and Lilly Bussmann, Oxford Sciences Innovation

The evening on the first day continued with more celebrations as it included not only the gala dinner but also the GUV Awards, with recipients including Indiana University Research and Technology Corp for Tech Transfer Unit of the Year, collected by chief executive Tony Armstrong, and Orchard Therapeutics, a UK-based genetics spinout from University College London, for Deal of the Year, collected by Chris Baker, who led the deal on behalf of tech transfer office UCL Business.

It was a particular honour for Global University Venturing to welcome Alison Campbell on stage to receive the Lifetime Achievement Award. Read our *in-depth interview with Campbell*, chairwoman of professional organisation the Association of University Technology Managers and director of Knowledge Transfer Ireland, the national office responsible for policy, practice and the performance of the domestic tech transfer system.

The second day started with a university venturing panel moderated by editor Thierry Heles discussing how to build and develop a startup, from idea to scale-up.

The panel featured Jim Wilkinson, chief financial officer of Oxford Sciences Innovation (OSI), the university venture fund of University of Oxford; Paolo Bavaj, head of corporate venturing at adhesive product maker Henkel Adhesive Technologies; Mark Brooks, associate director of innovation and strategic partnerships at the Association of International Certified Professional Accountants (AICPA); and Ilonka Jankovich, venture partner at Randstad Innovation Fund, a subsidiary of recruitment firm Randstad.

Wilkinson said: "The problem was that we had great innovation coming out of the university but had no way to fund it. With OSI, our aim is to bring in shareholders to help us scale up, and get industry contacts and management teams in, which we could not do otherwise."

Aiming to exploit and commercialise research from academic departments across the university, OSI had about 70 shareholders who came regularly to its offices to review innovative ideas. "Once we have spun out a company we try to make sure that it goes on to work with industry leaders," Wilkinson said.

The AICPA launched a startup accelerator last year to fuel disruptive technology in the accounting industry, partially

through automation, and has provided an inaugural group of four startups with seed money and access to market expertise and leaders.

Brooks said: "The accounting profession is going to change profoundly over the course of our lifetime, mainly because of automation processes with artificial intelligence and blockchain, and also because the way people are learning is changing. These changes are the reason we started looking at startups, because we know that the most provocative and coolest innovation emerges from them."

Jankovich emphasised the importance of putting certain systems in place and standardising processes, saying: "It is really about putting some very simple metrics in place. We collect data on usage and we really want to track value. Once we have a clear business case we can start scaling up.

"You really need to introduce and drive these processes into your internal business," she added, "or else people just go home and forget about it."

Another common practice at Randstad, Jankovich explained, was to organise client days during which investors could meet the entrepreneurs, which allowed interactions between both sides.

"We also talk to our board of directors every few months to let them know about the progress of invested companies, so that they are on top of everything," Jankovich added, though the greater challenge was to reach out to the entire organisation.

Tony Stanco, executive director of the National Council of Entrepreneurial Tech Transfer (NCET2) invited Matt Perkins, chief executive of University of Oxford's tech transfer office Oxford University Innovation (OUI), and David Richardson, head of partnerships, informatics, at University of Edinburgh on stage, along with Shiva Dustdar, head of division, innovation finance advisory, at EU-owned financial institution the European Investment Bank, and Trond Undheim, chief executive and founder of data platform Yegii and former director of Massachusetts Institute of Technology's Startup Exchange program.

"The accounting profession is going to change profoundly over the course of our lifetime"

The panel discussed how best to nurture and manage the innovation ecosystem.

Dustdar noted that the EIB had invested €750m ($880m) in research technology innovations to date, with a concentration in northern Europe, although the southern countries had started catching up. She worked closely with the corporate venture capital community, she said, and insisted that it was important that investors go the extra mile as more patient capital was needed in the ecosystem.

Dustdar explained that, although the EIB was keen to back the ecosystem, someone else would need to be incentivised to set up an effective funding mechanism so that the continent could bring in more large sums of money.

Perkins, whose team is responsible for handling tech transfer activities at Oxford, described his office as a gateway into the university's community of researchers, urging corporates to reach out to him and his staff for opportunities.

He acknowledged that it had been traditionally hard to interact with the institution, but OUI was working to change that. OUI currently generated more than 20 spinouts a year, with countless more licensing opportunities available to corporates, according to Perkins.

OUI was also becoming more involved in social enterprise, with economic impact becoming a secondary requirement to social impact. The office had already gained approval from the board to invest in social enterprise and had a current pipeline of 15 deals.

Richardson explained how artificial intelligence was a focus for Edinburgh. He worked closely with Edinburgh Innovations, the institution's tech transfer office, and Old College Capital, the university's investment fund.

He noted that, particularly in data science, robotics and the internet of things, there had been an increasing level of interest from corporates. His work also involved helping corporates understand the pipeline, as some opportunities may not be ready for investment, but would be in 12 to 14 months.

Undheim, whose company Yegii has created a search engine to track innovation and technology, previously worked at Massachusetts Institute of Technology until December last year and noted how the university's entrepreneurs cared first and foremost about changing the world – a key point that corporates needed to understand when trying to engage with the institution's faculty and students.

Following this panel, Ali Amin, chief executive and co-founder of incubator benchmarking and research services provider UBI Global, led a discussion on corporate-university innovation.

The panel included Tony Armstrong, introduced by Amin as the biggest star, having taken home a GUV award the previous night, as well as Tal Badt, director of business development at Tsinghua University X-lab; Karen Brooks, program director at enterprise partnership SetSquared; and Christine Gulbranson, senior vice-president of innovation and entrepreneurship at University of California.

Amin gave his personal background – he was born in Iraq and now lives in Sweden, where he works with colleagues

from all over the world – as a key example of why the innovation ecosystem was so strong now.

Brooks said SetSquared's portfolio companies had created 20,000 jobs to date, with part of her job involving corporate engagement for a scale-up program and an initiative to get research into the world. The success for universities, she said, came primarily from the political impact as SetSquared was demonstrating that institutions were good at commercialising research, which in turn helped them secure public funding.

Gulbranson, who sat down with Global University Venturing for an in-depth interview about her work earlier this year, noted that despite her particular challenge of overseeing 10 university campuses and reconnecting with 1.8 million alumni, her mandate was clear – to make sure innovation gets out into the world.

University of California received significant amounts of funding, Gulbranson said, so it was the institution's responsibility to ensure its research made it into the marketplace. When it came to connecting corporates to opportunities across the system, Gulbranson said the best way forward was to contact her office, mirroring the statements of several delegates before her.

The situation in China, meanwhile, was different again, as start-ups were a fairly new phenomenon, Badt explained. Startups had really started making their mark only after the central government decided in 2014 that the country needed to be an innovation economy.

Tony Armstrong, chief executive of Indiana University Research and Technology Corp collects the Tech Transfer Unit of the Year Award

X-lab was responsible for incubating early-stage startups, Badt said, and had been operational for five years. Her job was to secure corporate investments, while the incubator itself did not take equity stakes in its portfolio companies.

Chris Baker of UCL Busines receives the Deal of the Year Award from editor Thierry Heles, centre, and Tim Davison, left, of Baker Botts

Finally, Armstrong discussed his office's $15m Philanthropic Fund, launched in February 2018 to attract donations from alumni and invest in spinouts. Armstrong said he saw the fund as an alternative, but not necessarily competition, to alumni who wanted to give back to the university in a way other than funding scholarships.

Armstrong expected the fund would have the long-term benefit of re-engaging with graduates and noted that, unfortunately, few universities had yet asked their alumni for support in mentoring students, vetting technology or serving on boards. The university was also hoping the fund would attract large companies back to Indiana, where the capital city Indianapolis was also in the running for the second headquarters of e-commerce and internet company Amazon.

The panel brought the day's proceedings for Global University Venturing to an end, though some more corporate-focused talks followed late in the afternoon.

Global University Venturing is launching a flagship US conference on November 8 and 9 in Houston, Texas. At that event, GUV will introduce its inaugural Powerlist, which will rank the top 100 influential leaders in tech transfer and university venture funds. Registration for the conference, which GUV is organising with NCET2, is open now at *www.venture-houston.com*. ◆

Additional reporting by Alice Tchernookova, Global Corporate Venturing features editor, and Robin Brinkworth, reporter

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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.

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COMMENT

The added value in bringing corporate venturers together

Heidi Mason, senior partner, Bell Mason Group

Liz Arrington, partner, Bell Mason Group

Lee Sessions, managing director global corporate venture relationships, Intel Capital

In 2017, Bell Mason Group (BMG) and GCV launched the CVC Trends & Insights project, an annual qualitative research initiative designed to "get in front of the data". The inaugural report capped a look at five years of explosive CVC growth, highlighting the professionalisation of CVC as a speciality practice with defined roles and compensation benchmarks, and the progressive acknowledgement of CVC as a mainstream contributor to corporate growth and innovation strategy.

In 2018, we look forward at how programs at various maturity levels are leveraging this mainstream positioning to accelerate end-to-end investing for impact, scale and sustainability, particularly in the face of a potential market correction, when historically many CVC programs have fallen victim to parent retrenchment. Throughout the year, BMG will be delving into key market trends and corporate venturing best practices through a series of interviews with practitioners from leading programs.

One key trend is elevation of the corporate venture business development (CVBD) and portfolio development function as a strategic capability for CVCs, and integration of this function with CVC investment processes to enhance portfolio financial and strategic impact. It seemed appropriate to kick off the series by talking to Lee Sessions, the veteran architect of the pioneering Intel Capital Portfolio Management program, who is currently breaking ground with Intel Capital's newest and potentially transformative CVBD program.

Intel Capital is arguably the most successful and influential program in corporate venturing. What have been the keys to Intel Capital's staying power and influence over the years?

Sessions: The consistent backing of Intel Corporation leadership over the years, through all economic cycles and under multiple CEOs, has been central to our continued evolution and success. In the 1980s and 1990s, CEO Andy Grove and Gordon Moore, then chairman of the board, boldly instilled the DNA of consistently investing in future growth through research, product development and factory construction, even during economic downturns, which was counterintuitive at the time in such a cyclical industry.

We are fortunate they applied the same approach to Intel Capital, helping us navigate the twists and turns of economic cycles and evolving corporate direction over the years. The keys to leading a great corporate venture firm are striking the right balance between strategic and financial impact, delivering value to the portfolio, and not straying from these objectives regardless of near-term disruption or distractions. Leaders build an organisation to deliver on this.

When Intel Capital started 25 years ago, our first president was Les Vadasz, who reported to Andy Grove. As an influential leader in the company, Les was able to nurture the organisation through its formative days and establish the initial processes and direction as a strategic investor. He developed a team of CVC leaders and established the cultural foundation of the organisation.

Intel Capital was established in 1991 to invest in strategically impactful and financially attractive companies. Les ensured deal terms focused on delivering mutual strategic value to Intel and our portfolio companies – "When the give and get is just money and ownership, then that deal does not go through." Les also set the stage for the types of deals we engaged in, many of which were ecosystem building, to extend beyond what was then our core business, as well as market development and gap-filling investments. From the beginning, there was also a concerted focus on path-finding investments that help Intel gain insights into new and potentially disruptive technologies and business models.

When many of our CVC counterparts disappeared following the internet bubble collapse, Intel Capital stayed the course and emerged with a reputation as a reliable partner. Intel Capital continued to learn and adapt, and over time created a global organisation that is responsive and attractive to entrepreneurs, delivers solid financial returns and delivers impactful strategic value to Intel.

Wendell Brooks, Intel Capital's current president, regularly repeats his mantra about our investment philosophy, which permeates the organisation: "We invest only in companies where we can add or accelerate value." Intel brings incredible resources to support portfolio company growth, which leads to better outcomes. Wendell reminds us: "We are paid

to learn. Our portfolio companies provide insights that inform strategies. When we invest, we don't look for companies that are completely aligned to current business unit strategy. Instead, we need to look further out to find disruptive new startups that will shape business in the future."

Though each generation of Intel Capital leaders has had different styles, and faced different challenges, I sit back in amazement at the consistency of their direction – continue investing in attractive companies beyond the core of our business, add value to portfolio companies, and deliver impact and learning to Intel. I think Andy Grove and Gordon Moore would be pleased.

As one of the early leaders of Intel Capital's CVBD program, which Intel calls "portfolio management", what capabilities and skillsets do you see as essential in a mature and well-resourced CVBD function?

Sessions: One of our core values is "customer orientation". We regularly look at how Intel Corporation can help each portfolio company. Viewed through this lens, we focus our efforts. Every investor talks to entrepreneurs about how to help their portfolio companies. But it takes more than talk. We put resources and expertise to work to ensure we deliver on our commitments, starting with a plan for how to best help a company from the time we close our initial investment.

There are several elements to delivering value beyond the cheque. First and foremost is the role of the individual investment professional on the deal. They leverage their expertise, training and network when working with the CEO and board. To support the investment professionals we have created a specialised team with unique skillsets and capabilities across multiple domains. The skills in this team have grown to include technical expertise, leadership and influence, multi-sector industry knowledge, as well as go-to-market acumen for startups.

This allows us to provide focused expertise and scale on certain activities, beyond the value driven by the investment professionals. For example, a talent management partner can quickly focus on the most effective recruiting strategies, staffing sources and compensation for key positions.

"Hiring the right people with the requisite skills and networks is essential"

Early on, as we experimented with new ways to add value, we defined and resourced business development processes and built an organisation to help our portfolio companies with a systematic, scalable approach to gain new customers, leveraging Intel's vast worldwide customer network of leading companies. Hiring the right people with the requisite skills and networks for these positions is essential.

The core of what we deliver through our Intel Capital Technology Days and our Intel Capital Global Summit is thousands of curated introductions worth millions of dollars in sales. The best business development professionals are able to navigate across several technical domains, understand the emerging technology interests and needs of Global 2000 chief innovation officers and chief technology officers, and connect them with the best solutions. They should have the ability to learn and track the technology and business value of dozens of startups.

I should mention that the needs of our customers and our portfolio companies and the solutions they require are constantly evolving. So adaptability, gravitas, discipline, excellent communication and execution skills all play a part.

This, in addition to technology expertise, business unit alignment, strategic guidance and transaction support, has helped our portfolio companies grow and attain successful outcomes. Over the years, we have enhanced and focused our value-add services, finding the best ways to tap into the technical expertise and business acumen of Intel, provide public relations and marketing support to elevate a startup's profile, and work with Intel's global customers to help portfolio companies expand into new markets and geographies. Under the leadership of Tamiko Hutchinson, we continue to expand our offerings and deepen our collaboration with our portfolio companies.

Describe the vision for this new CVBD program and its primary goals.

Sessions: Wendell spelled out his vision late last year: "Given Intel Capital's history and sustained success, we must take a leadership role in building a stronger CVC ecosystem for collaboration and co-investment. Corporate investors should be our strongest allies across technologies and business models. Working together, we can help our portfolio companies by delivering value beyond our investment, as well as finding new opportunities in emerging pathfinding areas." He asked me and Bryan Wolf, vice-president, managing director and head of Intel Capital's investment committee, to lead our CVC partnership efforts and execute this vision.

Our primary goal is to generate the most impact and best outcomes from the companies we invest in. We know the value beyond the cheque from Intel Capital is a differentiator for our portfolio companies. Increasingly, other CVCs also offer unique and complementary capabilities.

This is the right time to focus on this. In recent years, we have seen the rise and maturation of CVCs worldwide. More corporates are investing in more deals globally. Many have established business development and related practices for their portfolio companies. The deep domain expertise, global reach, brand visibility and deal execution support now offered by many CVCs delivers unrivalled and synergistic value beyond the money invested. With so much money chasing so few deals, rising valuations and super-sized funding rounds, money alone is not a differentiator.

Corporate investors and entrepreneurs benefit from a stronger and more collaborative CVC ecosystem, including faster

COMMENT

fundraising for startups, increased dealflow among investors, and accelerated technology adoption and market success.

How are you approaching implementation of this new program?

Sessions: Bryan and I established goals and an initial process to assess the current landscape. We developed plans to prioritise our outreach and establish new and deeper relationships. We decided early on to keep the indicators simple and to minimise bureaucracy. There are no forms to sign, no secret handshake. Success is having more CVCs collaborating on dealflow, co-investing together, and ultimately adding value to portfolio companies.

We started by gathering feedback from our investment managers. They helped identify CVCs we have successfully invested with in the past, as well as CVCs who are active in sectors we are focused on. We then cross-referenced this with industry data on investment activity, plus references from portfolio CEOs who highlighted CVCs that have added value to their companies. This resulted in an initial list of nearly 100 CVCs.

Wendell formally launched this initiative at the GCV Summit in Monterey in January. Since then, we have conducted more than 70 joint meetings and continue to grow our network. As we work through meetings and deepen awareness of common interests, we are starting to identify opportunities to collaborate across new areas, and earlier in the investment process. As it becomes clear which of these relationships create the optimal value for our portfolio companies, we will focus on nurturing and developing those relationships in more depth. We are actively engaging potential collaborators, and also connecting CVCs with each other to strengthen complementary networks.

What have you learned so far? What do you look for in a good CVC partner?

Sessions: We are investing in this initiative because it is good for our entrepreneurs and good for the CVC industry. We all benefit when corporate investors work together and add more value to startups. There is a multiplier effect. We are also learning more about what other CVCs have to offer, what they really care about. It is great to see that many CVCs have put in place programs and professional resources to add value to their portfolio companies.

"It has been tremendously valuable to learn from other CVCs and to work with our investment teams as they open up their networks to others"

I like to look at this similarly to the way I engage my closest friends and my family members. There are close friends who call each other often and at any time. There are folks that always invite each other to gatherings or opportunities based on proximity or interest, but also cases where we know we need to catch up with a distant friend. And yes, there are those situations where several of us show up at the same party at the same time, look up, notice that we are both there and then later think: "I should have invited them". Or vice versa.

We want more close friends and friends of mutual interest, and to be more intentional about the relationships we sustain and the value they bring to our portfolio companies. And we don't want to bother people with things they don't care about.

We have instances where great relationships already exist, but also many cases where co-investing occurred by happenstance rather than proactive outreach to bring the best investors together for a portfolio company. It has been tremendously valuable to learn from other CVCs and to work with our investment teams as they open up their networks to others. When our team members are in touch with their counterparts at other firms on a regular basis, we are finding new opportunities that otherwise may not have been top of mind.

Bryan and I are acting as catalysts, internally and externally, to initiate and extend a fabric of relationships leading to new opportunities for co-investment with other CVCs. I have been more outward facing, meeting CVCs, connecting them with the right dealmakers at Intel Capital. Since Bryan leads Intel Capital's investment committee, he looks for opportunities to create CVC syndicates for new deals, as well as bring in new corporate investors who can help existing portfolio companies. Together, we are learning about the breadth of CVC investing interests and working to connect relevant parties with each other. Then we are getting out of the way.

Deal-sharing is fuelled by reciprocity, but someone needs to be the first mover. We are sharing deals in our pipeline and we are seeing some of the more engaged CVCs share new opportunities with us. The best CVC co-investors engage each other during the evaluation and diligence process, bringing each other in early and often, rather than waiting for a term sheet in the next round.

What is a good example of next-generation CVBD and CVC partnerships making strategic leverage and impact more tangible to portfolio companies, parent companies and partners?

Sessions: Earlier this year, we led an investment in Joby, alongside two other corporates, Jet Blue Ventures and Toyota AI Ventures. Investors included Allen & Company, AME Cloud Ventures, Ron Conway, Capricorn Investment Group, 8VC among others. We each bring different and complementary domain expertise to the company. I expect more opportunities like this where different industries co-invest to help startups scale with complementary expertise.

We have a growing number of portfolio company exits where Intel Capital successfully collaborated with other CVCs to generate exceptional value. Successful companies like Amplidata, acquired by Western Digital, recognise the value CVCs provide over a company's lifecycle, and look to build a strong CVC investor base throughout, as opposed to doing a one-time strategic round.

I would like to collaborate with my colleagues at other CVCs to build more case studies and examples we can share, demonstrating complementary value-add across industries and sectors. Typically, most of us prefer to wait for an exit before declaring success, but we should see accelerated traction in the first one to two years of an investment. Imagine what we can do together building great companies with the resources we each provide.

What advice would you offer to new programs and leaders looking to accelerate portfolio commercial traction and strategic impact?

Sessions: A starting point is having the right mindset. Begin with the portfolio company. Think through what they need and how your CVC and parent company can help. The CVBD profession is beginning to mature. Portfolio services was once a unique offering. Now it is table stakes. We may have started an arms race, where we each up the ante in terms of the breadth, value and quality of services CVCs need to provide to compete for the best deals and to achieve the best outcomes for portfolio companies. But rather than competing against each other in a zero-sum game, we have an opportunity to form value-added syndicates with CVCs offering complementary expertise.

The practices, systems and means to helping portfolio companies vary widely and continue to evolve. It is important to continue to learn, evaluate and evolve your strategies. Step back and look at what you can tap into from your parent company that can add unique value for your portfolio companies. CVCs can improve their impact by getting to know fellow CVCs and their respective advantages, and co-investing with complementary CVCs to produce the best outcomes.

When I started leading the Intel Capital CVBD team, we focused on our portfolio companies. I don't think we realised just how much impact we were having until we started tracking sales and other activities, and looking at how the resources of Intel and our efforts led to market acceleration, and then to exits.

Similarly, as we look at the value of smart syndication, I have a hunch the impact will be substantially greater than we imagine. I have been inspired by the insights of my colleagues in other industries, not just for the investments we can do together, or the potential for greater returns, but for the substantial impact we can have collectively for our companies and for the markets we serve. One said to me: "If we do this, we are going to save lives." Who doesn't want to co-invest in that? ◆

Debate: In pursuit of corporate venturing's end-to-end value

Intel's Bryan Wolf and Mike Wall, CEO of Intel Capital portfolio companies Amplidata and Atempo, discuss the value CVCs can provide over a company's lifecycle. Their conversation illustrates the value corporate investors bring to entrepreneurs – savvy CEOs recognise this and bring corporate investors in early, rather than waiting for a strategic round.

Bryan Wolf, left, and Mike Wall at this year's GCV Symposium in London

Wolf: Let's discuss what CVCs need to do to remain, and grow, in relevance. Corporate venture investing has experienced quite a surge over the past decade, but with ever more money and financing alternatives flooding the market, it is imperative that CVCs continue to evolve or risk being left behind. CVCs like ourselves are uniquely positioned to provide domain-relevant strategic value to our portfolio companies, and this remains a pillar of our value proposition.

For CVCs to be true industry leaders and continue to compete for the best deals, however, we must continue to enhance our value proposition to help companies throughout their lifecycle, beyond the strategic imperative that may initially drive the deal. Intel Capital has been at the forefront of this evolution throughout our 25-plus years of existence, continuing to add new capabilities and partnering our fellow CVCs to help portfolio companies regardless of stage or maturity.

For us this means the ability to:

- Put down a term sheet, lead a deal and bring together a syndicate at the front end of a deal.
- Assist with company building through recruiting, strategic and operational expertise.
- Bring our technology, roadmaps and manufacturing capabilities to bear for early-stage development companies
- Open Intel's global network when a company is ready to go to market.
- Provide guidance during the exit process given the hundreds of deals we have helped shepherd through the M&A and IPO processes.

COMMENT

- And of course, continue to invest in our experienced investors as board members who help orchestrate these and other activities.

To help demonstrate what this means for our portfolio companies, let's explore a real example with Mike's former company Amplidata. Intel Capital became interested in Amplidata back in 2010, which ultimately resulted in our initial investment in 2011 when we led the series B financing and took both a board observer as well as the right to a board seat.

Wall: In 2011, I was CEO of Atempo, spending a lot of time in Paris. Intel Capital asked me to travel to Belgium to meet the Amplidata team and help evaluate the company for investment. Amplidata was founded in 2006 in Ghent, Belgium. They perfected an erasure code-based object-storage solution for big data customers. The value proposition was amazing, as they could provide much greater data resiliency, requiring only half the capacity compared with legacy solutions.

I really liked the company, the technology and the market opportunity. They needed working capital to implement their go-to-market strategy. Intel Capital invested in the company and, based on my domain expertise, asked me to join the board. Within the year the Amplidata board asked me to become executive chairman, and ultimately CEO after I successfully closed the sale of Atempo. Seeing Amplidata's growth prospects, customer attraction and the need to expand into the US, combined with the backing of Intel Capital, I was excited about taking on this expanded role.

Wolf: Beyond the investment, Intel and Amplidata also signed up for a number of strategic engagements covering technology optimisations, roadmap alignment, reference designs and joint customer engagements.

Wall: Intel provided much more than working capital. In the eyes of the market, the fact that Intel invested provided validation of the technology. We also conducted a lot of joint marketing, which provided exposure to large potential customers in the US, Europe and Asia. Several large customers adopted our solution and several more became original equipment manufacturer (OEM) partners, which helped our sales activities with major telecoms providers in the US.

"I came to appreciate the full-service relationship with Intel Capital and our other active corporate investors"

Finally, Intel Capital helped broaden the relationship between Intel and Amplidata's technical team. We had regular meetings with Intel's product groups to discuss silicon roadmaps, platform and motherboard reference designs and evolving business opportunities, so we were always at the leading edge.

Wolf: Along the way you were fortunate to have other CVC investors in Amplidata, including Swisscom, Quantum and Western Digital, the last of which ultimately acquired Amplidata. Can you discuss the value in having multiple corporate investors involved and some of the considerations in bringing each of them aboard?

Wall: Swisscom was an early investor. They were very supportive of the company. They got us involved with their in-house cloud development team and introduced us to a number of investors. Quantum invested, became an OEM partner, managed our supply chain, and is still shipping those solutions today. Later, Western Digital invested in the company, agreed to OEM the product and got us tremendous exposure to large customers.

Wolf: Western Digital ultimately stepped up to acquire the company after some pretty intense competitive dynamics and deal negotiations. You also accomplished this without a banker. Aside from relying on your own experience, can you talk about how you leveraged Intel Capital in the process?

Wall: We were quite fortunate to have interest from Verizon and AT&T in building their cloud platforms with Amplidata. The AT&T activities resulted in a large multinational company engaging us as an OEM partner. Within nine months, they made an offer to buy the company. The good news for us was that Western Digital also wanted the technology.

We did not have a banker. This all happened really fast. So Intel Capital worked hand in hand with me on the negotiations, legal issues and other matters. You [Bryan], Intel Capital investment manager Mark Rostick, and the Intel Capital head of Europe, the Middle East and Africa at the time, worked around the clock between Belgium and California to get the best outcome. Together, the three of you brought considerable expertise garnered from Intel Capital's history of facilitating hundreds of exits over the years.

Wolf: Beyond the money invested, how would you summarise the value your CVC investors helped drive to get this exceptional outcome for the company, the employees, the shareholders, and yourself? How does this influence your decision to bring CVCs into your next company?

Wall: I came to appreciate the full-service relationship with Intel Capital and our other active corporate investors. They can lead a round, provide working capital for follow on rounds, provide access to the latest technologies, help with supply chain operations, introduce us to OEMs and large customers, and help us recruit board advisers and employees. We had a great experience. The added expertise of acting as a virtual banker and providing cross-functional value at all stages of the company, from building investment syndicates to company operations, is hugely important for a startup.

Wolf: Intel Capital president Wendell Brooks has chartered Lee Sessions and myself to develop the ecosystem for corporate venture capital. We strive to leverage the unique value proposition CVCs bring to the table. Collectively our value proposition is exponentially greater when we work together and each of us brings our own unique value to a portfolio company. We look forward to working with great startups like Amplidata alongside other corporate investors. ◆

COMMENT

Mideast corporates need to get into venture capital

Badr Jafar, CEO, Crescent Enterprises, and founder, the Pearl Initiative

Change – not the long-term gradual kind, rather the type that can be measured on a minute scale – is the undisputed reality of our times. It is the dizzying momentum of a race to stay ahead of the curve that dictates the agenda of corporates – and nations – as they endeavour to stay relevant and strive to be the best.

The winds of change sweeping across countries such as the United Arab Emirates (UAE) and Saudi Arabia have captured the attention of the world, with governments launching transformative national plans that embrace digitisation, demonstrating the incredible potential of these countries as technology-driven growth hubs.

Yet, large corporates in the region have not been as quick to harness the power of technology and implement effective digital transformation strategies, despite the region's consumers being among the most tech-savvy.

Established businesses today need a long-term perspective on their relevance and impact. Given their decades of experience, do large regional companies realise that they are uniquely positioned to channel fresh purpose and vigour into startups, which are increasingly becoming key enablers of innovation? Do these companies consider themselves ready for disruption in the face of an increasingly digital future?

As with all great challenges, necessity leads to invention. This urgent need for business sustainability is gradually leading to the growth of corporate venture capital (CVC) units – arguably one of the most effective ways to revitalise the startup environment. CVCs in themselves are not a new phenomenon, but they are witnessing a resurgence of sorts. In the past five years alone, the number of globally active corporate venture investors has increased threefold. Today, 75 of the Fortune 100 companies are active players in corporate venturing. CVCs represent nearly a quarter of all venture deals in the US, and 30% across Asia.

We are clearly at a juncture where large corporates need to enter the fray

Many businesses are increasingly engaged in their own venture capital activity as a matter of survival. If you started a company in the 1960s, its average lifespan would have been about 60 years. Today, it is down to a mere 15 years. Simply put, 40% of the current Fortune 500 companies are likely to be defunct in a decade. Companies need to innovate or perish.

At their core, CVCs are about marrying the experience of a larger enterprise with the innovative capabilities of a startup. Corporate investors look to leverage the innovation driven by startups with an eye towards stimulating development of complementary products and services, gaining a window on novel technologies, or even identifying new market opportunities.

Furthermore, most CVCs are led by a mission to make strategic long-term investments, unlike institutional venture capital funds that on average have a lifespan of 10 years. For startups, this presents a more resilient and patient source of capital. Corporates can act as strategic financial investors, providing the backing and credibility of a recognised business, as well as access to their own markets.

While the number of globally active CVCs is on the rise, in the Middle East, where venture financing has been driven largely by investments from VC funds, CVCs are yet to be properly directed to benefit our startup community.

In the UAE, for example, of the 10 most active VC investors in the past five years, only two are CVC investors. In comparison, three-quarters of Fortune 100 companies have a dedicated CVC team. This is a significant missed opportunity, especially as the Middle East and North Africa (Mena) region continues to see an entrepreneurial surge. We are clearly at a juncture where large corporates need to enter the fray and play a more assertive role in strengthening the startup ecosystem and driving the next wave of innovation and growth.

At Crescent Enterprises, CVCs are a crucial part of our long-term strategy as we prepare for tomorrow's business environment. Our CVC arm, CE-Ventures, plans to invest $150m in early to later-stage startups over the next three years. In the past nine months alone, we have invested in eight startups across a broad range of sectors from medical technology, artificial intelligence and cybersecurity to food e-commerce and automated industrial drone technology.

In addition to reinforcing our role as strategic investors combined with operational expertise across a number of key sectors, these achievements enable us to support global startups that can transfer and induce disruptive technologies and know-how relevant to the needs of our region.

Equally significantly, we are now investing in developing home-grown entrepreneurs, who could put the Mena region on the map as technology creators, rather than simply technology adopters. Eventually, we believe these efforts will foster the innovation that is critical to addressing some of our greatest challenges. ◆

This is an edited version of an article first published in Gulf News

ANALYSIS

Corporate venturing: a David and Goliath collaboration


Maria Julia Prats
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Josemaria Siota
IESE Business School


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Opinno


Xavier Contijoch
Opinno

Corporate venture capital, scouting missions, hackathons, excubators, venture clients, corporate incubators and accelerators – these are just some of the models for collaboration between large companies and startups. The practice – corporate venturing – has been adopted by firms such as Siemens, General Electric, IBM, Xerox, Merck and Lucent.

There has been significant growth in the use of these types of mechanisms. In 2010, very few of the 210 largest companies by market capitalisation worldwide used incubators and accelerators, compared with almost half of them just five years later.

So where should businesses start? How can they select the most suitable mechanism for collaboration? What sort of budget, timescale and objectives should they work with?

The report – Open Innovation: Building, Scaling and Consolidating Your Firm's Corporate Venturing Unit – based on interviews with the innovation directors of 44 large firms that already had a corporate venturing unit in place, addresses these sorts of questions. The report is the work of Prof *Maria Julia Prats* and Josemaria Siota from *IESE's Entrepreneurship and Innovation Centre*, together with Tommaso Canonici and Xavier Contijoch from consultancy firm Opinno.

Challenges and opportunities

Collaboration between large companies and startups entails different challenges for each, given the significant and almost antagonistic differences in their characteristics and dynamics. However, these differences can also be complementary.

The main challenges for established companies are those related to intellectual property management, brand protection, financial stability and entrepreneurial culture.

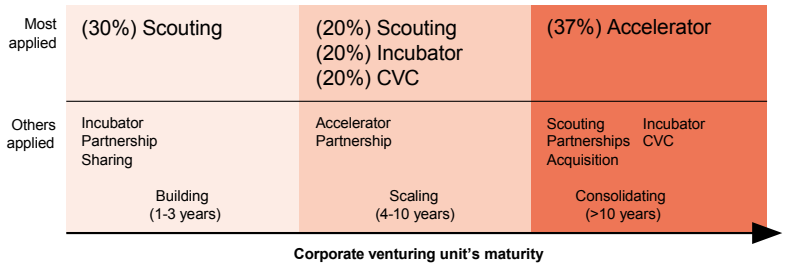
For startups, difficulties most often arise in identifying the appropriate entry point for initiating the collaboration, understanding the role of different individuals and departments in a large corporation, dealing with long decision-making cycles, overcoming a fear of abusive negotiations, and resigning themselves to the fact that the large firm may neither comprehend nor recognise their way of working.

The most common mechanisms

According to the report, most companies have diverse corporate venturing instruments. Corporate incubators – designed to attract and facilitate a relationship with startups – are usually common, though there are differences in the intensity of use of each mechanism and in the objectives pursued depending on how mature the unit is.

During the building phase, for example, the businesses analysed opted for relatively low-cost mechanisms that could be rolled out quickly, such as scouting missions (30%). A few years later, during the scaling phase, these mechanisms were gradually superseded by more complex options such as incubators (20%) and corporate venture capital (20%). During consolidation, accelerators played a more important role in driving forward new projects (37%).

Most commonly applied mechanisms according to a corporate venturing unit's maturity stage



Source: Analysis by the authors. Note: Although companies also use other mechanisms, the ones shown were the most relevant during each maturity stage of the firm's CV unit.

Selection criteria

Choosing the most appropriate mechanism or combination of mechanisms for each stage is one of the keys to success. But what are the selection criteria?

Most of the businesses interviewed relied on strategic considerations, such as the level of innovation required (36%) or the time needed to validate the mechanism (14%). Only one in five businesses (22%) prioritised return on investment.

However, businesses most commonly measured the impact of a mechanism by its short and medium-term return (40%) instead of other indicators – such as the strategic fit of the opportunity with the business (20%), the number of potential products which could be launched to the market (20%) or the required time to market (12%).

The researchers warn of an inconsistency which could create problems – companies that rely excessively on financial indicators may lose potentially lucrative long-term opportunities which have an unclear short-term return.

The average time to implement each mechanism varies. Some, such as scouting missions, can be launched fairly quickly (two to six months), while others, such as corporate venture capital or acquisitions, usually take longer (12 to 13 months).

Average estimated cost to launch an opportunity funnel classified by corporate venturing mechanism

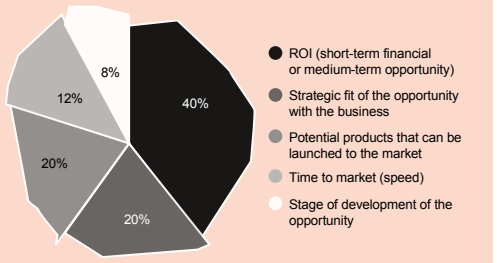
	COST TO LAUNCH		OPPORTUNITY FUNNEL
	TIME (MONTHS)	BUDGET (€ 000)	FUNNEL VISUALISATION
Scouting missions	6	50	20% 4%
Hackathon	4	10	90% 11%
Sharing resources	6	30	33% 7%
Challenge prize	6	100	12% 8%
Corporate accelerator	9	125	21% 13%
Corporate venture capital	13	9,000	1% 0.2%
Excubator	5	350	9% 3%
Corporate incubator	7	150	1% 0.2%
Strategic partnership	2	0	8% 2%
Venture client	3	30	
Acquisition	12	–	

Candidates Accepted Integrated

Source: Analysis by the authors based on the results of the interviews, contrasted with a review of three examples of the literature.

40%

of large firms prioritise their corporate venturing opportunities focusing on short-term returns (ROI), losing long-term opportunities



In terms of costs, the budget for most mechanisms is up to €350,000 ($410,000), although corporate venture capital and acquisitions may entail much greater outlays.

Good practice

According to the report, corporate venturing is a promising solution for generating innovative opportunities relatively quickly.

The authors stress that managers must adopt a strategic long-term outlook and consider the objectives and culture of the business when deciding on the most suitable type of collaboration. They also need to retain the interest and commitment of the startup by offering them a clear and, in some cases, tailored value proposition. ◆

The report compiles the analysis of corporate venturing initiatives found in 44 large companies from eight different countries. Download the complete study at https://www.iese.edu/research/pdfs/ST-0478-E.pdf

COMMENT

Why corporate venture?

Azeem Azhar, senior adviser to Accenture's chief technology officer

Alex Dundson of SaatchInvest has asked the question: "What does corporate venture really do?" Corporate venture's most useful role is a sensing function. It gives corporates a good roadmap for the future. This is the most important function, especially in times of technology change.

For opportunity spaces which are new markets or enabled by new technologies, firms can use corporate venture to understand the market with greater efficiency, nuance and less risk than other approaches.

Startups that are early in their journey are the best place to look to understand the future. Those raising their first meaningful funding rounds – series A – tend to do so four to seven years before mainstream adoption. Seed rounds happen 12 to 18 months before that. Entrepreneurs get their itch a year before that. As an example, Facebook's series A was in 2005, Uber's in 2011, Workday's in 2005.

So you can get a five to eight-year heads up on what trends might be and how they might actually play out in the market. This is more effective than market research because research will struggle to get the timing of a trend right, its potential scale and how well founders are executing against it.

Trend forecasting will not get into the nuance of what it is to make them real, to turn them into viable businesses, to satisfy customers, to change value chains, to grow. This is something entrepreneurs must do as they build their businesses.

I do not believe you can adequately sense the future with traditional research, trend forecasting or innovation tourism

So I do not believe you can adequately sense the future with traditional research, trend forecasting or innovation tourism. You also need to play with "skin in the game" because most of the know-how discovered is held privately by the companies and does not show up in the pages of TechCrunch, let alone the Wall Street Journal, for years.

If you do not come to the table with dollars to invest, you cannot really participate in this innovation ecosystem. And if you are only observing, not participating, you will not really come close to understanding the space. After all, much of the detail and subtlety in an emerging space is usually privately-available information accessible only to people playing in the ecosystem.

And that understanding is both the thematic high-level understanding and a practical understanding of the operations, execution, culture, partnerships and talent required to succeed in these new environments.

Corporate venturing should deliver some kind of positive return on a portfolio of reasonable investments. So corporate venturing is top-tier consulting for free, or possibly for less. Over five years you will actually make money from your CVC efforts, so it may a negative cost to it.

Despite the recent growth in CVC, why don't more firms undertake corporate venturing as a sensing activity?

1. "Our balance sheet is too small." Allocating a small portion of it does not provide enough capital to run a decent portfolio. You need about $40m minimum to run an early-stage portfolio. I reckon that about than 1% of your balance sheet should be allocated to corporate venture. That is a rough rule of thumb, it would be much lower for larger firms.
2. "We cannot be Sequoia. Since we cannot be the best investors, we should not do it." This a fallacy. No-one is asking them to be Sequoia. We are asking for a well-structured CVC activity focused on sensing the uncertain future.
3. "Our cost of capital is too high, and we cannot make internal rate of return metrics." This is overstated. We are only asking for a small portion of the investment pool. Does it really matter if cost of capital is higher than that of a financial investor?

None of these are real excuses.

The real issue seems to be that operational businesses are about minimising variance. Venture capital, or working with entrepreneurs, is about maximising variance – taking enough risk.

This is a clash of mental models or framing the problem, and operators often struggle to yield control of investment practices and mental frames in the ways that playing successfully in the venture ecosystem requires.

However, our turbulent future is less about minimising variance and more about exploring possibilities and helping to make it real. This is something for which venture is well suited. ◆

This is an edited version of an article first published on LinkedIn.

COMMENT

How smart technologies are transforming life and business

Erik Vermeulen, professor of business and financial law, Tilburg University

Will artificial intelligence, the blockchain, and robots change the world? Or, is it all just hype? Are we expecting or hoping for too much? Alternatively, should we be worried about the impact and effect of disruptive new technologies? Will they take over the world and (potentially) destroy humanity? There is considerable interest in these questions about technology – hope, hype or fear?

The most popular stories that popped up in my Medium feed recently seem to suggest that interest in the new technologies is greatly exaggerated. These accounts convincingly argue that the "fourth industrial revolution" has not happened yet.

These stories are probably correct. There are still plenty of usability, scalability and resources issues with most new technologies. We should not expect "singularity" – the point at which artificial intelligence enters runaway evolution – anytime soon. Bitcoin – or any other cryptocurrency, for that matter – will not be a widely-accepted currency tomorrow.

But this does not mean there is no sense of urgency. We should always remember it is not only about what the future will bring. It is about understanding the extent to which technology has already changed the world. Something is happening between the hope, hype and fear. And that is why we need to take immediate action.

Digital technologies have already reshaped the world in which we live and work. This is already our new shared reality.

There is an enormous demand for the ideas and intellectual resources to help us understand the new world we are creating

Academia and research disrupted

Technology has had an enormous impact on research and education.

First, researchers do not have to work at universities or other research institutions anymore. Everyone can be a researcher using technology and smart platforms, such as blogs, online lectures and seminars, videos, podcasts and more. The traditional platforms and methods of teaching and research are becoming much less critical. The role and place of the academic is changing – and it is a good thing.

But, something more important is occurring. The most significant impact is now generated by studying and analysing new digital technologies. This becomes very clear when we examine the rankings of the Social Science Research Network.

I looked at the rankings of the top authors over the past four years, and the results were astonishing. For most of that time, the rankings were stable. Established names from established institutions dominated the download rankings. However, we can observe an apparent shift from last year. The established names are overtaken by a new generation of researchers that are either tech-savvy or write about the development and application of new digital technologies.

My conclusion? There is an enormous demand for the ideas and intellectual resources to help us understand the new world we are creating.

The key takeaway

Traditional models of business, government and education are fundamentally broken. They are ill-suited to this dynamic new world. And by ignoring these trends or, at least, failing to adapt to them, they seal their fate.

The only answer is to develop and share ideas about how disruptive digital technologies are transforming the world now. Technological innovation is shaping our world, but the speed and scale of social change mean that we must be faster in understanding and adapting to this new reality. Everyone needs guidance to make sense of our fast-shifting relationship with sophisticated new technologies.

And, this is the main reason why I want my students to understand the new digital technologies and their impact on society today and tomorrow. I do not want them to just scratch the surface. I really want them to obtain a thorough understanding of artificial intelligence, blockchain and other potentially disruptive technologies.

Because, never forget – there really is something already happening between all the hope, hype and fear. ◆

COMMENT

CVC vs R&D – the good, the bad, and the ugly

Sergey Anokhin, professor of entrepreneurship, Kent State University

When corporate innovative spirit goes stale, many corporations turn for their innovative ideas elsewhere. One popular source of new ideas and technologies is startups that may have the know-how but lack the complementary assets to see the new technology to fruition.

Corporations create special corporate venture capital programs to invest in startups – much like independent venture capitalists. Unlike independent VCs, however, they not only stand to gain from their investments financially but also hope to get a boost in innovativeness. Or so the reasoning goes. But does it hold against the hard evidence?

The good

It is generally true that heavy investments in startups through corporate venture capital programs lead to higher patenting rates. Scholars agree that as a window on technology, new ventures are quite useful to corporations that choose to support them.

Sometimes large companies work jointly with startups to improve their own products. Other times, they take advantage of the new technological insights and claim new ventures' ideas as their own. At any rate, the link between CVC investments and corporate innovativeness is firmly established in the scientific research.

Enthusiastic support of startups through corporate venture capital programs is detrimental to large companies' own R&D efforts

The bad

What is less known, however, is that enthusiastic support of startups through corporate venture capital programs is detrimental to large companies' own R&D efforts. There are two primary reasons.

First, corporate resources are limited, and by channelling the money to CVC programs, the company diverts the money from its own in-house R&D projects. Effectively, corporations rob Peter to pay Paul. Second, it undermines the R&D unit morale by creating mistrust and propping the units against each other.

While in theory healthy competition may have its benefits, in practice it generates a lot of stress for the R&D employees and leadership, and scarce resources are wasted to fix unnecessary problems.

The ugly

The only condition when CVC and R&D programs go hand-in-hand is when the organisation has a lot of available resources, underutilised capacity, or both. I define it as organisational slack. Only then, robbing the R&D Peter is not necessary to pay the CVC Paul. Only then, in-house researchers do not feel threatened by the sudden emergence of alternative sources of innovative ideas. Only then can the employees' concerns be effectively addressed.

The ugly truth is that few companies are in a position to reap such benefits but many engage in active CVC investments following the example of those companies who managed to succeed.

Implications

The implications of my study looking at corporate venture capital investments, R&D activity and corporate innovation in a sample of more than 160 corporations over the course of six years are straightforward.

Startups rarely complement corporations' own R&D programs. If anything, they should be thought of as substitutes to in-house R&D. Unless the corporation has sizeable slack, chasing after two hares will likely get it nowhere. If, however, the company has too much slack on its hands, CVC investment is only one alternative, and careful cost-benefit analysis vis-à-vis other investment options is in order. ◆

SECTOR FOCUS

Health innovations push the sector forward

Kaloyan Andonov, reporter, GCV Analytics

GCV Analytics defines the health sector as encompassing pharmaceuticals, medical and diagnostic devices, healthcare IT and administration, care provision and on-demand services as well as other health businesses.

The life sciences and health sector is facing exponential technological changes on various fronts, in an ever more digitised, automated, data-abundant and data-driven world, which is said to be in the midst of its "fourth industrial revolution".

A Deloitte report – 2018 Global life sciences outlook – summarised the transformation of the sector, brought about by artificial intelligence (AI), automation and computing power, as follows: "Continuous manufacturing technology and robotic process automation (RPA) are shortening production times and increasing process efficiencies. These technologies are benefiting patients and clinical trial productivity but also lead to increase in data volume, further leading to the need for scale and security in the business."

The growing data volume in the sector will undoubtedly necessitate the use of big data and cloud technologies. AI algorithms will be used to help analyse vast amounts of data and streamline clinical trials, patient records and drug discovery. Apart from the convergence with digital tech, the report also notes that "3D printing and gene therapy may disrupt the sector by offering customised targeted patient treatment, including newly-approved Car-T therapies."

The datafication and growing adoption of digital technologies in the life sciences sector will also be accompanied by significant cyberrisks. The Deloitte report highlights that "to mitigate cybersecurity risks, [health] organisations will need to avoid disconnected governance and establish real-time monitoring, cyber-threat modelling and analysis".

A case in point from 2017 was the ransomware WannaCry, which significantly affected the IT systems of the UK's National Health Service. The cyberattack reportedly led to temporary chaos with diverted ambulances and even cancelled surgeries. Despite this, so far there have been no indications of interest in cybersecurity applications by corporate venturers from the health sector. However, it is logical to expect to see more such investments in the near future.

Connectedness of health providers and patients, however, does have a significant upside. Mobile devices and widespread internet access enable healthcare providers to enhance patient engagement, clinical outcomes and health literacy. The field of "digital therapeutics" employs such technologies to supplement or replace traditional clinical therapies.

Some mobile applications help patients with dosage and timing of medication, while others offer sensorial stimuli alternative to chemical-based medicinal drugs for conditions such as depression or insomnia. As a McKinsey article – Digital therapeutics: preparing for takeoff – points out, digital therapeutics solutions tend to target chronic diseases or neurological disorders that are "poorly addressed by the healthcare system".

The reports also notes that there is more emerging evidence on the efficacy of digital therapeutics, citing an example of a US-approved app used to treat alcohol, marijuana, and cocaine addiction. It was found that "40% of patients using the app abstained for a three-month period, compared with 17.6%" of those who did not.

One of the major challenges for digital therapeutics is, however, that it is "often not distinguished from the digital health and well-being market, which includes anything from sleep trackers to fitness apps". Furthermore, there are at present no incentives for stakeholders like healthcare providers, payors, and pharmaceutical companies to adopt digital therapeutics, despite the potential such applications have for generating valuable data.

Sensors, advances in AI and digital therapeutics are broadening the definition of medtech and medical devices to encompass digital products and data-driven services. According to an EY report – Medical technology report 2017: pulse of the industry – medtech generated $360bn in revenue during 2016, the highest figure since the global financial crisis in 2008. However, the report also explains that the growth was largely due to acquisitions, as "device makers have been under pressure to deploy capital more efficiently, which has resulted in increased inorganic activity."

If bundled properly with digital therapeutics and healthcare services, medical devices and medtech could contribute to enhancing patient engagement in real time, monitoring, targeted and customised care, along with other advances, such as in genetics and gene therapy. This will ultimately lead to a more patient-centric model of healthcare.

By far the most important subsector in life sciences is pharmaceuticals. The global outlook for the pharmaceutical industry in the near term, according to experts, appears mostly promising. A 2016 market report on the sector by the

SECTOR FOCUS

US Department of Commerce forecast that the global market for pharmaceuticals would grow to $1.3 trillion by 2020, up from an estimated $1 trillion in 2015. The report also identified key demographic and economic drivers behind this growth. On the demographic side, there is an ageing population worldwide, particularly in the developed world, as well as associated chronic diseases. On the economic side, greater disposable incomes, higher urbanisation and hence more access to healthcare, as well as growing demand for effective treatments, foment the growth of pharmaceutical consumption.

Nevertheless, there will also be challenges for pharma. The Great Recession of the late 2000s has resulted in global fiscal austerity, in light of which governments that pay or co-pay for medicines for their citizens are expected to reduce costs by placing limits on drug pricing. On the other hand, health insurers and providers are becoming increasingly demanding with value-based pricing models, where the inclusion or adoption of a new drug requires evidence of effectiveness, cost savings and clinical benefits. These new trends can significantly affect pharmaceuticals' bottom line and force them to switch business models.

Within the realm of pharmaceuticals and biopharmaceuticals, cancer treatment is among the most important fields to undergo a significant shift in recent years. As the Quintile IMS Institute report – Global Oncology Trends 2017 – notes, 68 novel therapies were launched globally between 2011 and 2016, which have contributed to "improved outcomes for patients, especially for metastatic disease, and have led to an increased number of patients receiving treatment".

A large part of the biopharmaceutical deals tracked by GCV are directly related to cancer treatment. The dealflow in this category is likely to remain high in the future, as cancer continues to be a modern scourge. According to the World Health Organisation, cancer was responsible for 8.8 million deaths in 2015 – one in every six deaths worldwide.

Immuno-oncology – cancer treatments that boost the immune system – have come to the fore. New therapies include monoclonal antibodies, immune checkpoint inhibitors that overcome a cancer's defences against the immune system, immune system modulators, which are chemical agents that change the response or functioning of the immune system, and cancer vaccines, among others. A report by Zion Market Research – Global immuno-oncology therapy market report – estimates that the market for such novel therapies will grow from $42.9bn in 2016 to over $97bn by 2022, stating that this paradigm shift from traditional chemotherapies "is propelling overall market growth".

The aforementioned US Department of Commerce 2016 report on pharmaceuticals also noted that the US "attracts the majority of venture capital investments in startup biopharmaceutical enterprises", which along with its intellectual property legal framework and its vast research base, keeps the country at the forefront of innovation in this area This statement is consistent with our data findings.

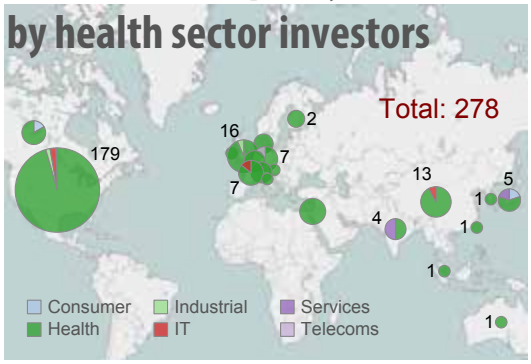
For the period May 2017 to April 2018, we reported 278 venturing rounds involving corporate investors from the health sector. Most (179) took place in the US, while 13 were hosted in China and 16 in the UK.

The vast majority (259) went to emerging enterprises in the health sector, with the remainder going into a few companies developing technologies tangentially related to health – six deals in industrials, mostly advanced materials, robotics and 3D printing with medical applications, and six in IT – software and semiconductor developers – among others.

The network diagram showing co-investments of health corporates illustrates the sector's incumbents have often co-invested in cancer treatment and detection technologies – companies like Effector Therapeutics and Grail – as well as developers of new molecules, such as Lodo Therapeutics, treatments of chronic and viral diseases – Omada Health and Alios BioPharma – as well as healthcare transport and logistics – Circulation.

On a calendar year-on-year basis, total capital raised in corporate-backed investment rounds went up from $8.09bn in 2016 to $9.17bn in 2017, a 13% increase. The deal count also registered a

Global view of past year's deals by health sector investors



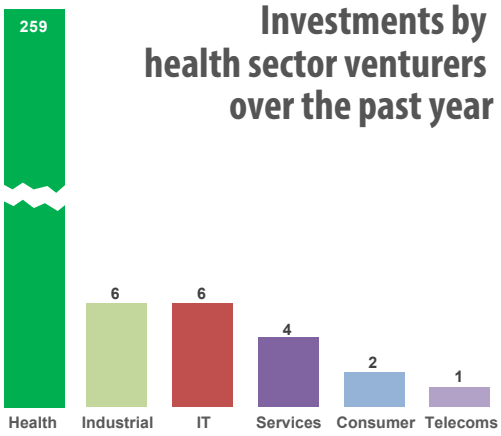
Co-investments by health sector venturers 2014-2018 YTD

modest 4% increase from 275 deals in 2016 to 288 in 2017.

As outlined further in this article, the 10 largest investments by corporate venturers from the health sector were concentrated in the life sciences realm.

The leading corporate investors from the health sector were pharmaceutical firms Johnson & Johnson, Novartis, Novo and Eli Lilly. The list of health corporates committing capital in the largest rounds was topped by pharmaceuticals distributor Dexxon, and pharmaceuticals producers Eli Lilly, Celgene and Novartis. The most active corporate venturers in the emerging health companies were diversified internet conglomerate Alphabet along with Johnson & Johnson and real estate firm Alexandria, telecoms conglomerate SoftBank and financial services firm Fidelity. The presence of Alphabet and SoftBank in this list is not surprising, as both aim for diverse holdings in their broader portfolios, including life sciences.

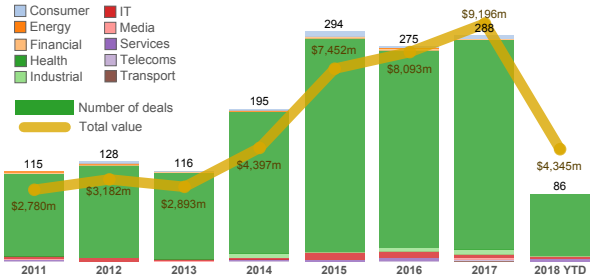
Investments by health sector venturers over the past year



The rising health businesses in the portfolio of these non-traditional investors were varied, encompassing anything from pharmaceuticals and gene therapies through medical devices and diagnostics to healthcare IT.

Overall, corporate investment in emerging health-focused enterprises went up from 2016 to 2017 in terms of both volume and value. According to GCV Analytics data, $13.38bn was invested over 428 rounds in 2017, compared with $9.84bn invested over 383 deals in 2016.

Deals by health sector investors 2011-18



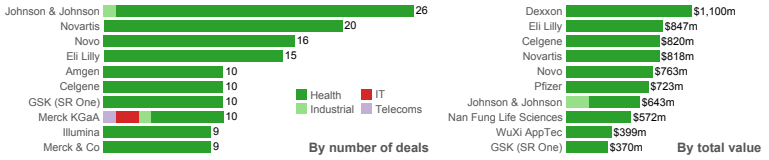
Deals

Health sector corporates invested in a number of large rounds, raised by a range of enterprises, primarily from the same sector, developing treatments for cancer, neurodegenerative diseases, rare and orphan diseases as well as diabetes. Only one of the top rounds was above $1bn.

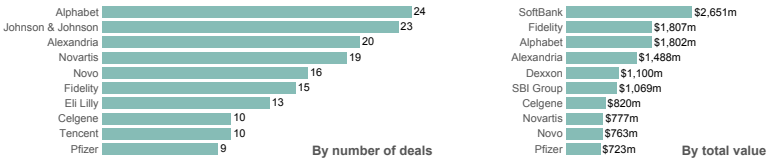
The SoftBank Vision Fund led a $1.1bn round for Switzerland-based drug developer Roivant Sciences that featured existing investors, including Dexxon. Founded in 2014, Roivant pursues a business model whereby it develops therapeutics through a range of subsidiaries, including Myovant, which focuses on endocrine diseases and women's health in general, Axovant (neurology), Dermavant (dermatology), Enzyvant (rare diseases) and Urovant (urology). The funding will be used to launch additional subsidiaries.

US-based immuno-oncology drug developer Allogene Therapeutics was launched with $300m in series A financing

Top health sector investors



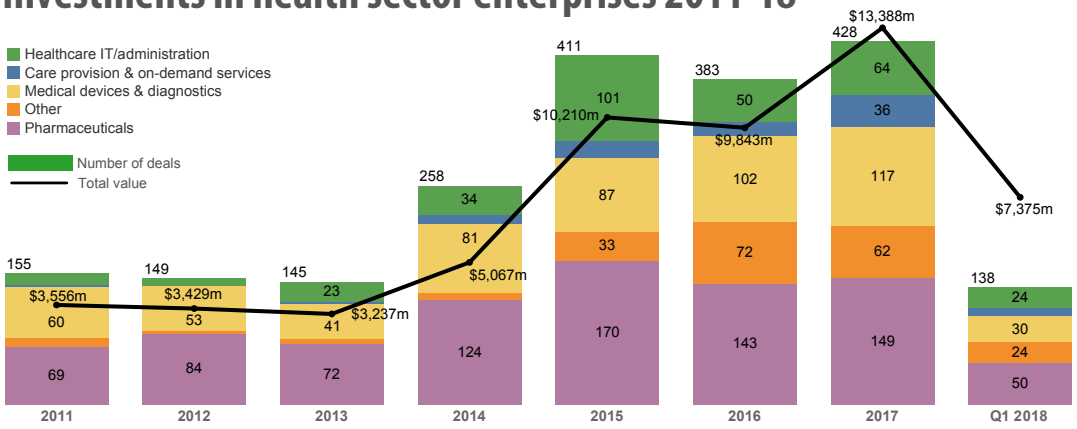
Top investors in health sector enterprises



Co-investments in health sector enterprises 2014-2018 YTD

Selected companies only

Investments in health sector enterprises 2011-18



from investors including pharmaceutical firm Pfizer, which also provided assets. The round was also backed by University of California's Office of the Chief Investment Officer of the Regents, among others. Pfizer will own a 25% equity stake in Allogene following the deal. Allogene was founded to develop 16 preclinical assets and one clinical asset licensed by Pfizer from biopharmaceutical developers Cellectis and Servier for an approach called allogenic Car-T therapy.

US-based biopharmaceutical company Harmony Biosciences closed a $270m funding round that featured Novo and Nan Fung Life Sciences, a subsidiary of property developer Nan Fung. Financial services group Fidelity Management & Research also took part in the round. Harmony is developing drug treatments for rare and orphan diseases, particularly those which affect the central nervous system. It forms part of the Paragon Biosciences group.

US-based biotech startup Celularity secured $250m from investors including pharmaceutical companies Celgene, United Therapeutics and Sorrento Therapeutics, genomic data provider Human Longevity and conglomerate Genting Group. Celularity is developing cell and tissue regenerative therapies derived from the placenta, to address conditions such as autoimmune diseases, diabetes, haematological and solid tumours, and the effects of ageing.

US-based personal genomics marketplace developer Helix closed the first tranche of a $200m series B round featuring genomics technology provider Illumina and medical research firm Mayo Clinic. Helix was launched in 2015 with $100m from Illumina, Mayo Clinic, Warburg Pincus and Sutter Hill, and operates what it refers to as an online store for personal genomics products, offering services such as genetic sample collection, DNA sequencing and secure genetic data storage.

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

Company	Location	Sector	Round	Size	Investors
Roivant Sciences	Switzerland	Health	–	$1.1bn	Dexxon | SoftBank
Allogene Therapeutics	US	Health	A	$300m	BellCo Capital | Pfizer | TPG | University of California | Vida Ventures
Harmony Biosciences	US	Health	–	$270m	Fidelity | HBM Healthcare Investments | Nan Fung Life Sciences | Novo | Valor Equity Partners | VenBio Partners | Vivo Capital
Celularity	US	Health	–	$250m	Celgene | Dreyfus Family Office | Genting Berhad | Heritage Group | Human Longevity | Section 32 | Sorrento Pharmaceuticals | United Therapeutics
Helix	US	Health	B	$200m	DFJ Growth | Illumina | Kleiner Perkins Caufield & Byers | Mayo Clinic | Sutter Hill Ventures | Warburg Pincus
SomaLogic	US	Health	–	$200m	iCarbonX | Madryn Asset Management | Nan Fung Life Sciences
Carbon	US	Industrial	D	$200m	Baillie Gifford | Fidelity | General Electric | Hydra Ventures | Johnson & Johnson | Reinet Investments | Sequoia Capital | Silver Lake
Innovent Biologics	China	Health	E and beyond	$150m	Ally Bridge Group | Capital Group Private Markets | Cormorant Asset Management | Eli Lilly | Hillhouse Capital Management | Legend Holdings | Rock Springs Capital | Taikang Life Insurance Company | Temasek
Hua Medicine	China	Health	D	$117m	6 Dimensions Capital | Ally Bridge Group | Arch Venture Partners | Avict Global Holdings | Blue Pool Capital | Eight Roads Ventures | Fidelity | GIC | Harvest Investments | K11 Investments | Mirae Asset Ventures | Ping An Insurance | VenRock | WuXi AppTec | undisclosed investors
Semma Therapeutics	US	Health	B	$114m	6 Dimensions Capital | Arch Venture Partners | Cowen Healthcare Royalty Partners | Eight Roads Ventures | F-Prime Capital Partners | Frontline BioVentures | JDRF T1D | Medtronic | MPM Capital | Novartis | ORI Healthcare Fund | Sinopharm | Wu Capital | Wuxi PharmaTech

US-based health information platform SomaLogic closed a $200m round following an extension provided by Nan Fung Life Sciences. Digital health technology developer iCarbonX anchored the round, having invested in January last year. Founded in 1999, SomaLogic develops technology that measures changes in thousands of proteins in the body, using the data to provide real-time personalised insights into, and recommendations for, a person's wellbeing and health.

Johnson & Johnson Innovation–JJDC, the corporate venturing vehicle of Johnson & Johnson, invested in US-based 3D manufacturing technology producer Carbon as part of its $200m series D round. Originally known as Carbon 3D, Carbon is developing an alternative to 3D printing that involves a light and oxygen-based process that can construct items from a resin base. Johnson & Johnson and Carbon have been working together on a process that would apply the latter's "digital light synthesis" technology to producing medical equipment, including instruments used in orthopaedics surgery.

China-based biopharmaceutical company Innovent Biologics closed a $150m series E round, featuring Lilly Asia Ventures, a corporate venturing subsidiary of Eli Lilly, as well as insurance provider Taikang Insurance and Legend Capital, the venture capital firm formed by conglomerate Legend Holdings. Founded in 2011, Innovent Biologics develops a portfolio of treatments for cancer, ophthalmology, autoimmune disorders and cardiovascular diseases. It currently has 16 candidates in its pipeline including seven in clinical development.

China-based drug developer Hua Medicine secured a total of $117.4m in series D and E funding from investors including Ping An Ventures, the corporate venturing arm of insurer Ping An. Other backers also included WuXi AppTec Corporate Ventures, an investment vehicle of life sciences R&D firm WuXi AppTec, as well as Eight Roads and F-Prime Capital, two investment branches of Fidelity. Hua is working on treatments for type 2 diabetes and levodopa-induced dyskinesia, a condition that causes involuntary movement disorders and which is often the result of long-term dopamine therapy in people with Parkinson's disease.

US-based diabetes treatment developer Semma Therapeutics closed a $114m series B round that included medical device manufacturer Medtronic and pharmaceutical firms Novartis and SinoPharm. SinoPharm contributed cash through its corporate venturing arm SinoPharm Capital. The round included 6 Dimensions Capital, an investment firm established by WuXi AppTec's WuXi Healthcare Ventures unit. Founded in 2014, Semma Therapeutics is working on stem cell-derived therapies, with an initial focus on type 1 diabetes mellitus patients dependent on insulin. The drug candidate is reported to have proved itself effective in preclinical studies at controlling diabetes.

There were interesting deals in emerging health-focused business that received financial backing from corporate investors from other sectors.

Ping An Healthcare Management, the medical data collection and analysis subsidiary of Ping An Insurance, raised almost $1bn in funding co-led by the SoftBank Vision Fund, which supplied $400m, alongside fellow lead investor financial services firm SBI Holdings, which provided $450m. The deal valued Ping An Healthcare Management at $8.8bn. Established in 2016, Ping An Healthcare Management has developed a platform for public medical insurance services and hospitals to manage various aspects of healthcare, such as social health insurance, drug distribution and medical treatment.

US-based health intelligence provider Outcome Health raised $600m from a consortium that included CapitalG, the growth-stage corporate venturing division of Alphabet. The round valued Outcome Health at $5bn pre-money. Founded in 2006, Outcome Health has developed a platform to deliver health information and intelligence during critical moments to help both medical professionals and patients make better decisions.

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

Company	Location	Round	Size	Investors
Roivant Sciences	Switzerland	–	$1.1bn	Dexxon | SoftBank
Ping An Healthcare Management	China	–	$1bn	SBI Group | SoftBank
Outcome Health	US	–	$600m	Alphabet | Balyasny Asset Management | Goldman Sachs | Leerink Partners | Pritzker Group Venture Capital | undisclosed strategic investors
United Imaging Healthcare	China	A	$505m	Capital Venture Investment Fund | China Development Bank | China Life Insurance | Citic Securities | CMB | SDIC Fund Management | Zhongjin Zhide
Moderna Therapeutics	US	–	$500m	Abu Dhabi Investment Authority | Alexandria | ArrowMark Partners | BB Biotech | EDBI | Fidelity | Julius Baer | Pictet | Sequoia Capital | Viking Global Investors
Guardant Health	US	E and beyond	$360m	8VC | Khosla Ventures | Lightspeed Venture Partners | Sequoia Capital | SoftBank | T Rowe Price | Temasek
Allogene Therapeutics	US	A	$300m	BellCo Capital | Pfizer | TPG | University of California | Vida Ventures
Harmony Biosciences	US	–	$270m	Fidelity | HBM Healthcare Investments | Nan Fung Life Sciences | Novo | Valor Equity Partners | VenBio Partners | Vivo Capital
23andMe	US	E and beyond	$250m	Altimeter Capital Management | Casdin Capital | Euclidean Capital | Fidelity | Sequoia Capital | Wallenberg Foundation
Celularity	US	–	$250m	Celgene | Dreyfus Family Office | Genting Berhad | Heritage Group | Human Longevity | Section 32 | Sorrento Pharmaceuticals | United Therapeutics

China-based medical imaging equipment developer United Imaging Healthcare closed a RMB3.3bn ($505m) series A round co-led by insurance provider China Life Insurance and SDIC Fund Management, a private equity firm majority-owned by the Chinese government's State Development & Investment Corporation. Founded in 2011, United Imaging is working on imaging devices that use computerised tomography, magnetic resonance imaging and digital radiography. It has also developed a full-body Pet scanner to track internal metabolic processes.

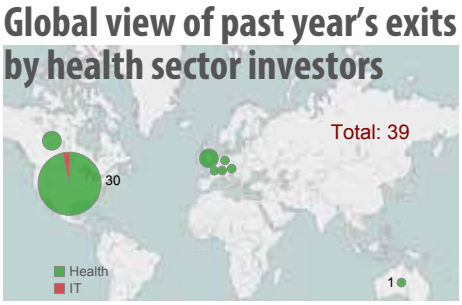
Moderna Therapeutics, a US-based RNA therapeutics developer backed by pharmaceutical firm AstraZeneca, raised $500m from investors including Alexandria Venture Investments, a branch of life sciences real estate trust Alexandria. The round reportedly valued Moderna at $7.5bn. Investors included Singapore government-owned EDBI and sovereign wealth fund Abu Dhabi Investment Authority. Incubated by venture capital firm Flagship Ventures in 2010, Moderna is working on treatments based on messenger RNA, molecules that transmit genetic information. The company is developing 19 drug candidates for treating infectious, rare or cardiovascular diseases, plus immuno-oncology therapies.

Guardant Health, a US-based developer of a liquid biopsy system for cancer detection, raised $360m in a round led by an unnamed subsidiary of SoftBank. The round also featured Singapore state-owned Temasek. Founded in 2013, Guardant is working on non-invasive cancer diagnostics tests that utilise digital sequencing technology to provide a detailed picture of genomic alterations that cause tumours to grow, evolve or form resistance to treatment. The company's first product, Guardant360, tests a patient's blood.

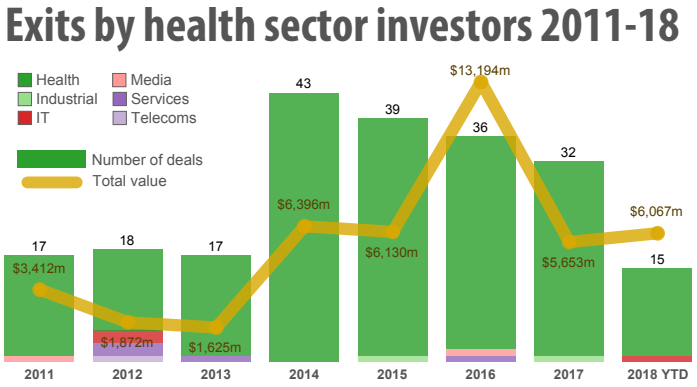
US-based genetic testing and analysis provider 23andMe, backed by corporates such as Alphabet, raised nearly $200m in a series F round. Fidelity Management & Research reportedly invested in the round. Founded in 2006, 23andMe tests customer-supplied saliva for information about ancestry and genetic health issues, including conditions such as lactose intolerance or late-onset Alzheimer's disease, and whether a customer is a carrier for certain inherited conditions.

Exits

Corporate venturers from the health and life sciences sector completed 39 exits between May last year and April this year, including 17 acquisitions, 20 initial public offerings (IPOs) and two mergers. On a calendar year-on-year basis, there was a slight drop in 2017 to 32 exits, fewer than the 36 transactions tracked in 2016. The estimated exited capital went down even more drastically to $5.65bn in 2017, compared with $13.19bn in 2016, a 58% decrease.



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%, meaning the acquisition will value the company at approximately $2.15bn. Founded in 2012, Flatiron has developed electronic health record software configured for oncology research as well as technology to manage and develop cancer research data.



Pharmaceutical firm Lundbeck agreed to acquire Netherlands-based central nervous system disorder therapy developer Prexton Therapeutics for up to €905m ($1.11bn), allowing Germany-based pharmaceutical company Merck to exit. Lundbeck will pay €100m up front, with the rest to come in the form of development and sales milestone payments. Founded in 2012, Prexton is developing foliglurax, an oral treatment for Parkinson's disease.

NeoTract, a US-based medical device manufacturer backed by Johnson & Johnson, agreed to an acquisition by medical device maker Teleflex for $1.1bn. Teleflex will pay $725m in cash on closing the deal. The remaining $375m is dependent on commercial milestones. Founded in 2004, NeoTract has developed a minimally invasive device, UroLift, to treat lower urinary tract symptoms caused by an enlarged prostate gland.

Celgene agreed to acquire US-based cancer treatment developer Impact Biomedicines for $1.1bn, giving an exit to pharmaceutical company Sanofi. Celgene is paying $1.1bn up front, but up to $1.4bn more could come from milestones linked to regulatory approvals. Founded in 2016, Impact Biomedicines develops therapies for complex cancers based on fedratinib, an oral small-molecule inhibitor, which will address bone marrow disorders.

Biotechnology producer Bioverativ agreed to acquire True North Therapeutics, a US-based rare disease therapy devel-

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

Company	Location	Sector	Exit type	Acquirer	Size	Investors
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
Prexton Therapeutics	Switzerland	Health	Acquisition	Lundbeck	$1.11bn	Forbion Capital Partners | Merck Ventures | Seroba Kernel Life Sciences, | Sunstone Capital | Ysios Capital Partners
NeoTract	US	Health	Acquisition	Teleflex	$1.1bn	Johnson & Johnson | New Enterprise Associates | Quilvest
Impact Biomedicines	US	Health	Acquisition	Celgene	$1.1bn	Medicxi Ventures | Sanofi
True North Therapeutics	US	Health	Acquisition	Bioverativ	$825m	Baxalta | Baxter International | Biogen Idec | Cowen | Franklin Templeton Investments | GSK | HBM Healthcare Investments | iPierian | Kleiner Perkins Caufield & Byers | MPM Capital | New Leaf Venture Partners | OrbiMed | Perceptive Advisors | Redmile Group | undisclosed strategic investors
Cell Design Labs	US	Health	Acquisition	Gilead Sciences	$567m	Kite Pharma | Kleiner Perkins Caufield & Byers | Mission Bay Capital | Osage University Partners | Two River
Rigontec	Germany	Health	Acquisition	Merck & Co	$554m	Boehringer Ingelheim | Forbion Capital Partners | High-Tech Gründerfonds | MP Healthcare Venture Management | NRW Bank | Sunstone Capital | Wellington Partners
Apama Medical	US	Health	Acquisition	Boston Scientific	$300m	Ascension Health | Broadview Ventures | Incept | Medvance Incubator Partners | Onset Ventures | Silicon Valley Bank
ImThera Medical	US	Health	Acquisition	Livanova	$225m	LivaNova | undisclosed
Homology Medicines	US	Health	IPO	–	$166m	5AM Ventures | Alexandria | Arch Venture Partners | Deerfield Management | Fidelity | HBM Healthcare Investments | Maverick Ventures | Novartis | Rock Springs Capital | Temasek | Vida Ventures | Vivo Capital

oper backed by pharmaceutical firm GlaxoSmithKline, in a deal that could reach $825m. Bioverativ will pay $400m up front plus up to $425m in milestone payments contingent on development, regulatory and sales achievements. True North was spun out of pharmaceutical company iPierian in 2013. Its lead drug candidate is a monoclonal antibody being developed to combat a rare haemolytic disease.

Pharmaceutical producer Gilead Sciences agreed to acquire US-based cell therapy developer Cell Design Labs in a deal worth up to $567m to help in the development of cancer drugs. The transaction includes a 12.2% stake in Cell Design held by Kite Pharma, which Gilead bought for $11.9bn in October 2017. Both Kite and Cell Design focus on chimeric antigen receptors to reprogram a patient's T-cells to fight cancer, also known as Car-T immunotherapies. Cell Design's pipeline includes early-stage treatments for prostate cancer and a type of blood cancer.

Rigontec, a Germany-based RNA therapeutics developer backed by pharmaceutical firm Boehringer Ingelheim, agreed to an acquisition by US-based pharmaceutical company Merck & Co for up to €464m. Merck, will pay €115m up front, with the remaining €349m dependent on clinical, development, regulatory and commercial milestones. Rigontec, spun out from University of Bonn's Institute for Clinical Chemistry and Clinical Pharmacology in 2014, is developing an immuno-oncology treatment that exploits a mechanism of the body's immune system.

Apama Health, a US-based catheter developer backed by healthcare provider Ascension Health, agreed to an acquisition by medical device manufacturer Boston Scientific for up to $300m. Boston Scientific will pay $175m upfront, with the remaining $125m dependent on clinical and regulatory milestones. Founded in 2009, Apama has been developing a radiofrequency balloon catheter system to treat atrial fibrillation, a condition that affects about 33 million worldwide.

Medical technology producer LivaNova agreed to pay up to $225m to acquire the outstanding shares of US-based sleep apnoea device maker and portfolio company ImThera Medical. The acquisition will consist of $78m up front, with the full amount dependent on regulatory and sales milestones. ImThera produces neurostimulation devices to treat obstructive sleep apnoea by stimulating the tongue muscles to keep a patient's airway open while asleep.

Homology Medicines, a US-based rare disease treatment developer backed by Novartis, raised $165.6m from its IPO on the Nasdaq Global Select Market. The company, which originally targeted $100m, priced shares at $16, offering a total of 9 million. Founded in 2015, Homology Medicines is working on gene therapies that target the underlying causes of rare diseases. The company will use $18m to $20m to advance its lead candidate, HMI-102, through preclinical studies and a phase 1 and 2 trials.

Global Corporate Venturing also reported exits from emerging health-related enterprises that involved corporate investors from other sectors.

Berry Genomics, a China-based prenatal genetic testing company backed by Legend Holdings, completed a merger with Shenzhen-listed automotive parts manufacturer Chengdu Tianxing Instrument and Meter. The transaction valued

Top 10 exits from health enterprises over the past year

Company	Location	Exit type	Acquirer	Size	Investors
Flatiron Health	US	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
Prexton Therapeutics	Switzerland	Acquisition	Lundbeck	$1.11bn	Forbion Capital Partners | Merck Ventures | Seroba Kernel Life Sciences, | Sunstone Capital | Ysios Capital Partners
NeoTract	US	Acquisition	Teleflex	$1.1bn	Johnson & Johnson | New Enterprise Associates | Quilvest
Impact Biomedicines	US	Acquisition	Celgene	$1.1bn	Medicxi Ventures | Sanofi
True North Therapeutics	US	Acquisition	Bioverativ	$825m	Baxalta | Baxter International | Biogen Idec | Cowen | Franklin Templeton Investments | GlaxoSmithKline | HBM Healthcare Investments | iPierian | Kleiner Perkins Caufield & Byers | MPM Capital | New Leaf Venture Partners | OrbiMed | Perceptive Advisors | Redmile Group | Undisclosed strategic investors
Berry Genomics	China	Merger	Chengdu Tianxing Instrument and Meter	$653m	Boyu Capital | Dingfent Asset | Haitong Securities | Legend Holdings | Qiming Venture Partners
Cell Design Labs	US	Acquisition	Gilead Sciences	$567m	Kite Pharma | Kleiner Perkins Caufield & Byers | Mission Bay Capital | Osage University Partners | Two River
Rigontec	Germany	Acquisition	Merck & Co	$554m	Boehringer Ingelheim | Forbion Capital Partners | High-Tech Gründerfonds | MP Healthcare Venture Management | NRW Bank | Sunstone Capital | Wellington Partners
Apama Medical	US	Acquisition	Boston Scientific	$300m	Ascension Health | Broadview Ventures | Incept | Medvance Incubator Partners | Onset Ventures | Silicon Valley Bank
Denali Therapeutics	US	IPO		$250m	Alphabet | Arch Venture Partners | F-Prime Capital Partners | Fidelity

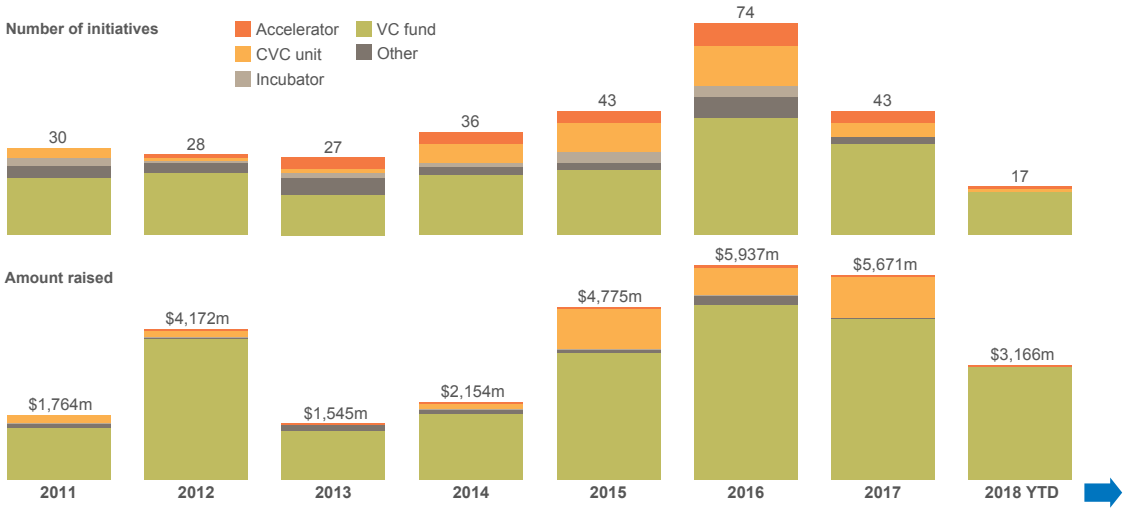
Berry Genomics at RMB4.3bn, down from its 2015 valuation of RMB10bn. Tianxing issued approximately 203 million shares at RMB21. Founded in 2010, Berry Genomics offers non-invasive prenatal genetic testing and diagnostics, such as DNA sequencing for disease screening.

US-based neurodegenerative therapies developer Denali Therapeutics raised $250m in its IPO, which was reported to be the biggest biotech listing of 2017. Denali priced its stock at $18 a share, in the middle of the range it had set, giving the company a market capitalisation of $1.58bn. The flotation reportedly allowed Alphabet to exit. Formed in 2015, Denali Therapeutics develops treatments for diseases such as Alzheimer's, motor neurone and Parkinson's.

Funds

Between May 2017 and April 2018, corporate venturers and corporate-backed VC firms investing in the health sector secured over $7.9bn in capital via 47 funding initiatives, which included 38 corporate-backed VC funds, four new venturing units, four accelerators and one other initiative. On a calendar year-to-year basis, funding initiatives decreased sharply, from 74 in 2016 to 43 last year. Total estimated capital also went slightly down from $5.94bn to $5.67bn.

Health sector funding initiatives 2011-18



SECTOR FOCUS

Top health sector funding initiatives over the past year

Funding initiative	Type	Funds raised	Location	Investors	Focus
Qiming Venture USD Fund VI	VC fund	$935m	China	Duke University | Massachusetts Institute of Technology | Mayo Clinic | Princeton University | Qiming Venture Partners	Early-stage healthcare startups in the US
6 Dimensions Capital	CV unit	$800m	China	Frontline BioVentures | Wuxi PharmaTech	Healthcare companies in the US and China
Medicxi Growth 1	VC fund	$300m	UK	GSK (SR One) | Johnson & Johnson | Medicxi Ventures	Growth-stage biotech companies in Europe
Partners Innovation Fund I	VC fund	$280m	US	Brigham and Women's Hospital | Massachusetts General Hospital | Partners Healthcare	Seed and follow-ons in technology based on intellectual property at least partly owned by Partner Healthcare's hospitals
Optum Ventures	CV unit	$250m	US	Optum	Early-stage companies working on technologies to deliver better healthcare
Rx Healthcare Fund	VC fund	$200m	US	African Development Bank | EFG Hermes | General Electric	High-quality and affordable healthcare across Africa
BioGeneration Ventures III	VC fund	$191m	Netherlands	Biogeneration ventures | Bristol-Myers Squibb | European Investment Fund | Johnson & Johnson | Man Pension Trust | Schroder Adveq	Early-stage therapeutics, medical devices and diagnostics in Benelux and Germany
Sanovas Suzhou Venture Capital Fund	VC fund	$75m	China	Municipal government of Suzhou | Sanovas	Surgical imaging, thoracic oncology, interventional pulmonology, ear, nose and throat, ophthalmology and bioscience
TKS1	VC fund	$50m	Singapore	Sprim | Tikehau Capital Partners	Early-stage life sciences and medtech
AmorChem II	VC fund	$44m	Canada	AmorChem | Merck & Co	Life sciences projects in Quebec
Rabo Food and Agri Innovation Fund	VC fund	–	Netherlands	–	Early-stage food and agriculture technology developers
Tyson-Plug and Play incubator	Incubator	–	US	–	Early-stage companies operating near Silicon Valley-based Plug and Play and Chicago-based 1871

China-based venture capital firm Qiming Venture Partners closed a $935m fund, securing capital from limited partners including Mayo Clinic. Other investors included Princeton University, Massachusetts Institute of Technology and Duke University, among others. The vehicle was announced alongside two other funds – the Chinese renminbi-denominated Qiming Venture RMB Fund V, which attracted RMB2.1bn in commitments as well as Qiming US Healthcare Fund I, which secured $120m. This last fund will invest in early-stage healthcare startups in the US.

WuXi Healthcare Ventures, the strategic investment arm of WuXi PharmaTech, agreed to merge with venture capital firm Frontline BioVentures. The merger created a new entity – 6 Dimensions Capital – which has approximately RMB5.5bn of assets under management. WuXi Healthcare Ventures was launched in 2011 as a VC firm affiliated with WuXi PharmaTech, which is also known as WuXi AppTec. It had more than $350m under management in December 2015 when it closed its second fund at $290m.

UK-based life sciences-focused investment firm Medicxi closed a late-stage fund at $300m with contributions from Novartis and Verily, a life sciences subsidiary of Alphabet. Medicxi Growth 1's limited partners include the multilateral European Investment Fund and undisclosed investors and backers from its first fund, which included GlaxoSmithKline and Johnson & Johnson. The fund will aim to provide growth-stage funding to biotech companies in Europe that are looking to expand but lack access to the same level of late-stage funds as their US counterparts.

US-based healthcare system Partners HealthCare closed approximately $171m in financing that will be put into two corporate venturing funds. The overall amount consists of a $105m investment by institutions in the group's Partners Innovation Fund, which invests in early-stage healthcare companies, and $66.1m in capital raised from external investors that will go to its Partners Innovation Fund II. Partners Innovation Fund was launched in 2008 with a $35m investment by Partners Healthcare. It focuses on seed and follow-on investments in developers of technology based on intellectual property at least partly owned by its hospitals.

US-based health services provider Optum launched a $250m corporate venturing fund – Optum Ventures – to focus on the healthcare sector. The fund will be led by partners AG Breitenstein and Virginia McFerran, who will report to Larry Renfro, chief executive of Optum and managing partner of Optum Ventures. It will operate out of offices in Boston and Menlo Park. The fund will particularly seek out early-stage companies working on technologies to deliver better healthcare, such as digital health startups that aim to improve access to services and businesses that enhance the healthcare system.

GE Healthcare, the health technology division of diversified conglomerate General Electric, agreed to be the anchor

investor in a $200m healthcare-focused fund formed by investment bank EFG Hermes. Multilateral development finance provider African Development Bank was also a limited partner in the fund, though neither revealed the size of their commitments. The Rx Healthcare Fund, as it was dubbed, has a target size of $200m and will focus on companies that can help meet the demand for high-quality and affordable healthcare across Africa. It will scout for opportunities in specialised hospitals, medical diagnostics and pharmaceutical sectors across Kenya, Nigeria, Ethiopia, Egypt, Tunisia and Morocco.

Netherlands-based venture capital firm BioGeneration Ventures (BGV) closed its third fund at €82m, having secured capital from limited partners including pharmaceutical firms Bristol-Myers Squibb and Johnson & Johnson. The fund's investors include the European Investment Fund among others. BGV III seeks to identify early-stage opportunities in the biotechnology sector, particularly in therapeutics, medical devices and diagnostics. It will invest across Europe, with a focus on Benelux and Germany.

US-based medical devices manufacturer Sanovas signed a deal with the government of the Chinese city of Suzhou to create a venture capital fund and establish an innovation centre. The Sanovas Suzhou Venture Capital Fund is equipped with $75m and will focus on areas relevant to the company's operations, including surgical imaging, thoracic oncology, interventional pulmonology, ear, nose and throat treatments, ophthalmology and bioscience. The innovation centre will be located at the Chinese Academy of Sciences' Suzhou Institute of Nanotechnology and Nanobionics. The hub's aim is to help drive the company's product development and sales in China.

Healthcare technology services provider Sprim launched a Singapore-based venture capital initiative in partnership with asset management firm Tikehau Capital with $50m. Sprim's participation in the fund – TKS1 – will be conducted by its local corporate venturing unit, Sprim Ventures. The $50m figure represents its initial close. TKS1 aims to provide between $500,000 and $5m for early-stage life sciences and medical technology developers.

Canada-based venture capital fund manager AmorChem Group launched a seed-stage life sciences fund with $44.2m of capital from limited partners including US-based Merck & Co. AmorChem II's other limited partners include the Quebec government and its capital development organisation, Fonds de solidarité FTQ. The fund will focus on investments in life sciences projects at universities and research centres in Quebec. AmorChem has managed biotech-focused VC funds since 1997 and has more than $350m in assets across five funds. It launched AmorChem I in 2011 with approximately $41.3m in capital, $6.9m of which came from Merck.

People


Maris


Zipkin


Williams

Bill Maris, former CEO of corporate venturing unit GV, formally closed the first fund for his new venture capital firm, Section 32, at $150m. Maris was the first chief executive of GV, a subsidiary of Alphabet then known as Google Ventures, when it was launched in 2009. He left in August 2016. Section 32 will invest in healthcare technology as part of a wider mandate that will also include agriculture technology.

Ilan Zipkin, senior investment director at Takeda Ventures, Japan-based pharmaceutical company Takeda's corporate venturing unit, left after five years to become vice-president of business development at the Parker Institute for Cancer Immunotherapy. Zipkin's departure from Takeda came after 17 years in the venture industry. He has previously been a partner at venture capital firm Prospect Venture Partners and an associate at investment firm MPM. Zipkin told Global Corporate Venturing: "It is a slight departure from the more focused institutional or corporate venture capital work I have done for the past 17 years".

Ajay Khatri took an investor role at Johnson and Johnson Innovation–JJDC. Khatri was previously a senior finance manager in Johnson & Johnson's oncology business development team as well as a senior finance manager for venture deals and analysis.

McKesson Ventures, the corporate venturing arm of US-based healthcare services and IT provider McKesson Corporation, hired Carrie Hurwitz Williams as principal and Irem Mertol as a director. After 15 years in the healthcare industry, Hurwitz Williams will concentrate on strategic investments in companies developing technology or services covering consumerism, channel development or retail transformation. Mertol will be tasked with sourcing and planning investments and supporting portfolio management. She has spent her career as an investment banker, investor and operator in technology and healthcare services.

Jayson Punwani became an investment director at Takeda Ventures. Punwani came from life sciences-focused VC firm Pappas Ventures, where he was principal, having been promoted in mid-2015. He initially interned at the firm in 2011 before taking on associate and senior associate roles in 2012 and 2014 respectively.

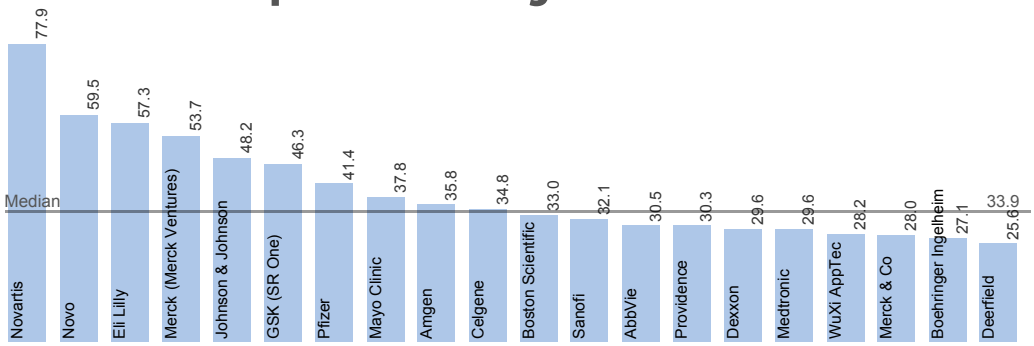
Mark Barrett, formerly global head of strategy and business development at pharmaceutical firm Sanofi Genzyme, joined the life sciences team of investment firm Frazier Healthcare Partners as entrepreneur-in-residence. Barrett was responsible for Sanofi's global rare diseases, immunology, multiple sclerosis and oncology businesses. Before joining the company in 2013, he was director of business development for pharmaceutical group Johnson & Johnson between 2002 and 2009.

Laura Bond left her role as senior innovation partnerships manager at UK-based pharmacy and retailer Alliance Boots

to join UK-based funding platform Accelerated Digital Ventures (ADV). Bond will be investment lead for venture partnerships at ADV, which was founded in 2016 by CEO Lee Stafford, co-founder of telecoms operator PlusNet. ADV invests in digital tech companies at seed, venture and growth stage.

Jody Holtzman, former senior vice-president for market innovation at US-based age-related network AARP, left to become senior managing partner at Longevity Venture Advisors. The advisory firm looks to identify and leverage business and investment opportunities presented by what Holtzman calls the "$7.6 trillion longevity economy". In 2015, AARP and bank JPMorgan set up the AARP Innovation Fund to target startups developing technologies and services for customers aged 50 and above.

Health sector power rankings

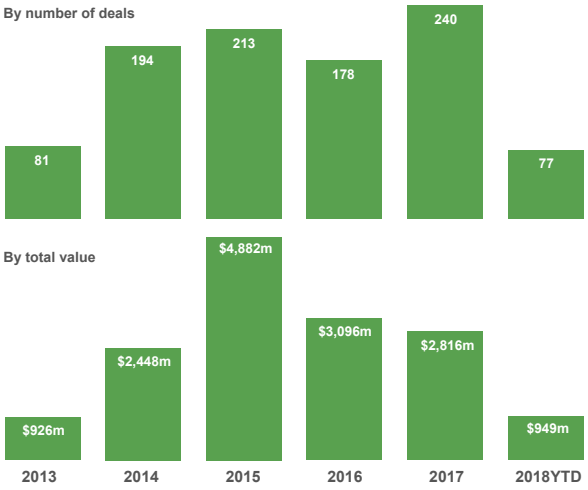


University and government backing for health businesses

Over the past 12 months, there were many commitments to university spinouts in the health and life sciences sector reported by our sister publication, Global University Venturing. In 2017, we reported 240 such deals, up from the 178 in 2016. The estimated total capital employed in such rounds, however, dropped to $2.82bn, down from $3.09bn in 2016.

Research-oriented academic institutions back promising companies from the broader health realm – mostly in genetics and oncology-related therapies – that often manage to raise sizeable rounds featuring a variety of co-investors, including corporate venturers and government-backed funds. In the ever more interconnected and data-drive life sciences, we expect to see more partnerships between corporate players – whether providers or pharmaceuticals – and academia in terms of harnessing research.

Investments in university spinouts in the health sector 2013-18



A good example is Orchard Therapeutics, a UK-based genetics spinout from University College London (UCL), which closed an oversubscribed $110m series B round with contributions from UCL and Temasek. UCL took part in the round through the UCL Technology Fund, which was established to invest in commercial opportunities derived from the university's research. Orchard is working on gene therapies for diseases such as adenosine deaminase severe combined immunodeficiency, an inherited disorder that compromises the immune system.

Arcus Biosciences, a US-based cancer-focused biotechnology producer backed by Stanford University, raised $107m in series D capital from investors led by GV, the early-stage investment arm of Alphabet. The round, which took the company's

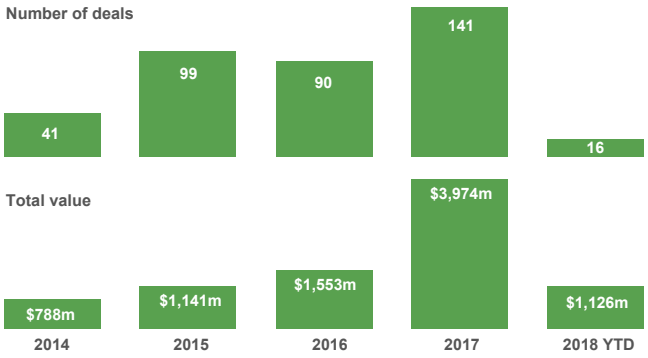
overall funding to $227m, also featured pharmaceutical firms Celgene and Taiho, the latter participating through its Taiho Ventures unit. Founded in 2015, Arcus is working on cancer immunotherapies. It has two lead drug candidates in phase 1 clinical trials and another two antibodies are undergoing investigation.

Autolus, a UK-based biopharmaceutical spinout from University College London (UCL), raised $80m in a series C round that included investment firm Woodford Investment Management. Syncona, backed by medical charities Wellcome Trust and Cancer Research UK, also participated. Founded in 2014, Autolus was spun out from UCL to develop and commercialise immunotherapies – cancer treatment that exploits engineered T-cells, a natural part of the body's immune system.

Codiak BioSciences, a US-based therapeutics company, closed a $76.5m series C round backed by sovereign wealth fund Qatar Investment Authority. Alexandria Venture Investments also contributed. Founded in 2015, Codiak Biosciences is working on therapies exploiting exosomes – tiny vesicles transmitted between cells that can change cell function.

Government investments in health and life sciences, reported by our sister publication Global Government Venturing, followed a similar trail. Last year, governments and government-backed investors participated in 141 rounds, up from the 90 tracked in 2016. The total estimated capital deployed was $3.97bn, more than double the $1.55bn recorded in 2016.

Government-backed health sector deals 2014-18



Governments and government-backed investors are interested in enhancing the health and wellbeing of citizens. Given issues such as ageing and increasingly more vulnerable populations in the developed world, it is not surprising they are backing promising therapies for a wide range of maladies as well as providers of healthcare services. Technologies that streamline care provision and efficiency – from medical devices and diagnostics to health IT applications – are also alluring to such investors.

US-based genomics services provider Wuxi NextCode closed its series B round, already backed by pharmaceutical firm Amgen, at $240m, following a $165m extension led by Sequoia China. The extension also featured Temasek. Founded as NextCode Health in 2013, Wuxi NextCode operates a contract genomics platform that offers features such as sequencing, secondary analysis, storage, interpretation and scalable analytics. Wuxi NextCode rebranded when China-headquartered Wuxi AppTec bought a majority stake.

Radiology Partners, a US-based physician-led radiology practice, closed a $200m funding round co-led by Australia sovereign wealth fund the Future Fund and VC firm New Enterprise Associates. Founded in 2012, Radiology Partners operates an on-site radiology practice that spans some 280 hospitals and other healthcare facilities in nine US states – Georgia, Illinois, Indiana, Iowa, Kentucky, North Carolina, Ohio, Oklahoma and Texas.

China-based medicine clinic operator Gu Sheng Tang secured RMB1.01bn n a series D round that included two undisclosed government guidance funds. The round, which consisted of RMB510m in equity and RMB500m in debt, also featured China Life, financial services firm China Merchants Bank and state-owned entities iCapital Risk Investment Fund and China Orient Asset Management. Gu Sheng Tang runs 31 clinics in 13 Chinese cities which operate through a partnership franchise model. The company owns a 70% stake in each branch while the remaining 30% is held by local doctors. ◆

Interview: William Taranto, Merck & Co

Taranto runs US-based Merck & Co's Global Health Innovation (GHI) Fund. He spoke to Robin Brinkworth about the health sector, and what excites him.

How has the fund changed Merck & Co, and, particularly given the length of time you have been there, what changes have you found rewarding?

Not a lot has change with the fund since we started in 2010. The subtle change to the fund is around our strategy. When we first launched, the goal was to provide Merck optionality around M&A as they looked to enter new businesses. Though this remit is still there, we have begun to focus the portfolio and investing in companies that have a more direct and immediate impact on our core business. If they can be standalone and provide optionality or revenue, then that is

an added bonus. One of the rewards of this change, as Merck has focused on oncology, is that we have done a number of investments in this space which have real impact on patient's lives and the health ecosystem.

How does a venture unit in pharma and health handle the risk, not just that of a small company, but of a technology or innovation that may not deliver, particularly given the heightened regulatory environment?

Regulatory requirements tend to increase costs and risk greatly for early-stage companies and their technologies. A convenient answer for many firms is to invest only in non-regulated healthcare businesses. While there are certainly opportunities to make money in consumer-focused businesses, it may be a smaller market than many think. The US Food and Drug Administration (FDA) exists to protect the public. Consumers will certainly have an important role in healthcare. But recent FDA actions show the fuzzy line that separates consumer use from medical use is squarely in their sights. The stance on 23andMe, recent guidance on mobile apps, and actions against clinical decision software providers all point to an evolving regulatory position that broadly wants to ensure data is not used in ways that harm patients.

If companies and investors do not understand the regulatory risk, then both the company and its technologies will ultimately fail. We have to understand that risk as we invest.

In respect of e-health solutions and digital health more broadly, what excites you, what are the trends, and what are some of the potential limitations?

With a vision that data will be the currency in healthcare, Merck GHI invests broadly in digital health with specific focus in personalised big data and technology-enabled care. With that as a backdrop, we are excited about a number of areas. First, we think body-sensor monitoring and monitoring in general is really the first wave of the future of healthcare. In big data, we still believe aggregation, integration and analytics will be big factors, especially with advances in artificial intelligence (AI), machine learning, natural language processing and blockchain. We are now just understanding the impact of these technologies on healthcare.

"Regulatory requirements tend to increase costs and risk greatly for early-stage companies and their technologies"

Limitations are always hovering around technologies. Ultimately, it is about the data and can these technologies produce outcomes. It is not just about tracking with on-body monitors, it is the clinical data output that leads to a specific patient outcome. Without an outcome these technologies have little clinical relevance.

How does the Global Health Innovation Fund stand out from its competitors by leveraging Merck & Co?

First and foremost, Merck is a world-class science company. This alone gives us credibility. While the GHI Fund is established as an limited liability company to ensure agile decision-making, we do actively leverage the global capabilities of Merck. When appropriate, the GHI Fund will introduce portfolio companies to Merck to provide access scientific, commercial, regulatory and supply chain expertise. In some cases, Merck has become a customer of our portfolio companies. In other cases, Merck has promoted solutions for our portfolio companies. We believe this gives us a competitive edge over other corporate funds.

In terms of technologies, what excites you?

An area we are interested in and looking closely at is the real-world evidence and real-world data space. For pharmaceutical companies, they want to prove the real-world effectiveness of their therapies, longitudinally track outcomes of patients on therapy, and enter into value-based payment models. We are also interested in companies that provide different types of data globally, and ingest data across sources in real time and run visual analytics and other AI tools. ◆

Interview: Roel Bulthuis, Merck

Roel Bulthuis of M Ventures, Germany-based Merck's venture unit, spoke to Robin Brinkworth about trends in the health sector and the year ahead.

How do you feel that the venture unit has changed the parent, particularly given how long you have been at Merck?

I started this venture unit as part of Merck, and as a pure-play healthcare therapeutics focused fund, investing strategically for the benefit of Merck's pharma business. It improved the reputation of the corporate to a large extent. It has also put them in a place where they have been able to partner several of our portfolio companies. One of our earliest investments in 2009 was in a technology that we developed for in vitro fertilisation (IVF) clinics at a time when Merck's IVF business was purely pharma, purely therapeutics. That investment really helped them to transform, over time, their fertility business towards what is today a fully integrated pharma and technology business. We made our investment in 2009, and Merck made a decision in 2013 to acquire the commercial rights to the technology. That has really opened the eyes of our executives to what we can achieve with venture to build things that we would not be able to build internally.

We also have an agreement with Merck that we will take a look when they decide to shelve assets, where historically they would sell off the intellectual property, and you would not get much of an income. If we see the opportunity to build these assets into something new we take them on, because often they get shelved not because they are not good assets but because they do not fit the strategy. We have done that for six new companies we have built. Those companies are purely financial investments. We manage those in exactly the same way and we have generated quite a good return on those companies. One of our companies from that portfolio listed on Nasdaq last year and is trading really well. Last month we sold a company called Prexton Therapeutics to Lundbeck, for a total deal value of up to $1bn. For Merck it was an asset that was written down, and we created something valuable.

Once we showed that making those investments in therapeutics was leading to strategically relevant returns, but also to financial returns that justified the long-term sustainability of the fund, we went back to the board. Merck has three businesses – pharma, life sciences technology, and materials. We went back to the board and showed them that what we have done in healthcare we can do for other divisions. For the past three years we have been building new funds in life sciences tech and new performance materials. We have also started a fourth fund, which we call our new businesses fund, and that has a blue-skies mandate. It allows us to cross over between Merck's traditional businesses, but also go beyond that. If you think about where healthcare in general is going, what we see is much more of a combination of traditional therapeutics development with need for more complex life sciences technologies, synthetic biology technologies, but also new materials, sensor technologies, digital technologies.

You typically go for early-stage bets. How do you handle the risk, not just with it being a small company but a technology that may not end up delivering?

The first thing is that we assume that when we invest at that stage there is a high risk. We try to limit the execution risk by doing our diligence on everything available. We generally position our investment decisions so that we are convinced at that early stage that the science or technology can translate into something commercially relevant. That may sound like a very trivial point but we see lots of venture funding going into companies that are driven purely by scientific or technical differentiation. We do a lot of early work with the founding team – can we help them translate what they do into something that would benefit a patient, that would convince a physician to prescribe a drug, that could convince a payer to finance that? It very often leads you to a different critical path, to a different development plan than when you try to prove a scientific hypothesis. We cannot be opportunistic as an investor.

What are your thoughts on specific areas such as immuno-oncology? What trends and challenges are emerging?

We believe it is a relevant development, but it is not the panacea, it is not the solution to all cancer care. It is an additive tool, but I think the industry as a whole understands

that helping the immune system to clean up cancer tissues requires a combination of tools that allow us to trigger that immune response, and very often that comes back to traditional targeted therapeutics. We see oncology and immuno-oncology as two integrated businesses. In immuno-oncology, there is a lot of clinical development right now around checkpoint inhibition. The amounts being invested by Merck Sharp and Dome, by Pfizer, by our parent Merck, in these clinical programs run into the billions because you have to run separate clinical programs for all types of combination studies in different syndications. As an investor, we are concerned about how sustainable it is to focus so much on the combination therapy.

We have invested in a number of companies that look at new technologies. One of our companies, Iomix, a German-based company that we funded together with MPM Capital and with Sofinnova, is looking at new targets in immune-oncology. In the UK, F-Star is a company that develops strategies with bispecific antibodies that could have an effect on immune system function, and also on the recruitment of the immune system to target cancer cells. And we have just established a company called iOnctura to develop effective combination partners for checkpoint protein strategies. We are really balancing and building a portfolio that looks at what strategies we find relevant in immuno-oncology, but at the same time building up a portfolio in targeted therapeutics to trigger cell-death directly.

What are your thoughts on gene therapeutics? Is it in its infancy with great potential, or does it promise too much?

That field is emerging very fast. The way that we have traditionally seen gene therapy is through the actual definition of gene therapy – inserting or replacing genetic information in a patient. It is really to use that in a therapeutic setting. The only way where we have seen that work is if I am deficient in a specific enzyme, whether I can build in that genetic information to be able to produce that enzyme again. That limits it. In a broader definition, using gene-editing technologies, using synthetic biology, we are able to use gene therapy or gene editing in such a way to influence our immune system or develop therapeutics based on modified human cells. The current state of cell therapy is that I have to produce a product on a patient-specific basis. If I can get to a situation where I can use gene-editing technologies to do that with an off-the-shelf product that obviously gets me to a different stage. We actively look at technologies that enable the development and manufacturing of gene therapy, cell therapy and other insertion or editing-based therapeutic strategies.

"As an investor, we are concerned about how sustainable it is to focus so much on the combination therapy"

In terms of e-health solutions and digital health more broadly, what are the trends and what are the potential limitations?

Let me start with the limitations because that is the most challenging part. About 90% to 95% of the business plans we see in digital health are relatively low investment and consumer-targeted. The 5%, however, left over has the potential radically to change the way we look at therapeutics, drug development, patient care, and therefore very interesting and relevant for us as a corporate investor.

Our first investment in this space was in a Boston-based company called Akili Therapeutics. And Akili developed something that we call digital medicine. That interface has gone through a full set of regulated clinical trials, where we validated that we can use a video game to treat patients with attention deficit hyperactivity disorder. In neurology, we do not understand as much about that disease pathology as we do about oncology or immunology, so we feel that these kinds of approaches have a place and could have an impact on the way we treat patients. We went on and made an investment in a medication adherence platform, Medisafe. We have also just funded a company that makes sensor technology that allows you to measure some key metabolites on a continuous basis. Our overall thesis there is that we believe these technologies will allow you as a patient to continuously monitor your health, and that will put you in a position to have earlier and different conversations with your physician.

How does M Ventures stand out from its competitors and leverage Merck?

The fact that we have capital to invest does not differentiate us from anyone. Our differentiation needs to come from the way we support our founders and our entrepreneur teams, and in our case that is very much based on the strategy to be involved with our companies from the early stage. We do a lot of seed-stage investing and company creation, where we feel we can take a responsibility with our team to support our entrepreneurs, who are often scientists, in translating their science into a business. We are quite hands-on with that.

The other thing that we focus lots on is developing our executive teams. That may sound trivial, but I see a tendency in the venture community that is, when we do our A round or B round and we raise a lot of capital, we need a new CEO because "blah blah we are becoming a bigger company". We have always said that when we build a company the culture of its leadership towards its teams and building that up to be successful together is critical. We can sometimes see the need to replace people, but generally we are committed to developing our CEOs and the rest of our founder teams into entrepreneurs and then into executives.

How does the next year look like for you?

I will have to put this in two parts. The first part is with our new funds – life sciences, performance materials, new businesses. It is really a year to establish our position in the market. We have made our first four or five investments in the last year and a half for these funds, and now it is really time to firm up their positions and get into the right syndicates and deals. We have added leadership roles for the life sciences and for the performance materials fund with two experienced individuals.

In healthcare, our biggest and oldest fund, there are two ways. There is a huge interest on the pharma side to add technologies and to add products relatively early in the lifecycle through M&A. I mentioned Prexton, which we sold to Lundbeck earlier this year, and quite a few of our portfolio companies have had significant interest from pharma. In healthcare we are focusing on capitalising on some of the portfolio assets, and there are some great discussions going on there.

We are making a lot of new investments, so we are probably looking at five or six new healthcare investments this year, in oncology and immunology primarily – overall the fund aims to make up to 16 new investments this year. Even if there are a lot of opportunities in this market to invest at a later stage, to get to shorter investment cycles, and lower risk, we are going to be committed to the principle that we invest at seed and early stage. We think that is where we add the most value, that is where we can be capital efficient, and frankly we think that is the most exciting part of investing, where we really can get our hands dirty and work with people to build new companies. ◆

Focus: Bridging the gap between man and machine

Callum Cyrus, reporter

CVCs are experimenting with how much mileage can be gained from emerging interfaces such as virtual reality, exoskeletons and brain-computer implants.

To blur the lines between man and machine is an ambition lifted straight from the pages of science fiction. Take for instance Imp, a disembodied and progressively unhinged human brain sent into space to control humanity's interplanetary monitoring platform in Joseph McElroy's 1977 post-modern story, Plus.

Sci-fi anticipates the invention of technologies we hope to utilise one day. And while Imp's invention remains unlikely – the concept almost certainly violates Isaac Asimov's Laws of Robotics in terms of causing harm to a human being – researchers still hope to deliver brain-computer interfaces that put our minds directly in control. For example, using brain signals as a control point could enable medical applications that empower the patient, perhaps even detecting illnesses automatically.

Returning to sci-fi for inspiration, we could instead cite The Terminal Man, published in 1972, whose protagonist relies on a neuromodulator to temper the frequency of violently epileptic seizures. Twenty-five years later, a vagus nerve stimulator received US regulatory approval to manage epilepsies resistant to medication and surgery.

More recently, demonstrations on mice have shown how an implant could flag up potential health complications by interpreting body-brain nerve signals, in a study led by Theodoros Zanos, an assistant professor at the Feinstein Institute for Medical Research's Neural Decoding and Data Analytics Laboratory, with support from GE Global Research, the R&D division of industrial technology manufacturer General Electric.

Other brain-computer interfaces could make it easier for the disabled to engage with the world around them. Social network operator Facebook's new research unit, Building 8, is working on one such technology, a neurological imaging implant that could enable us to type, using only our brains, at a rate of 100 words per minute. Elsewhere, US-based Synchron has closed a $10m series A round ahead of clinical trials of a miniaturised neurological device that could one day help paralysed patients control communication aids or robotic limbs.

Nearer-term developments in interface technologies may seem more mundane by comparison. Human-machine interfaces (HMIs) broadly include any system through which people interact with their computers, and thus we must also consider the successors to the humble mouse and keyboard. Consumers are now accustomed to needling their smartphone touch screens, dictating memos to voice-activated assistants or even immersing themselves in virtual or augmented reality. Healthcare CVCs, among others, are increasingly looking at similar functionality for their systems.

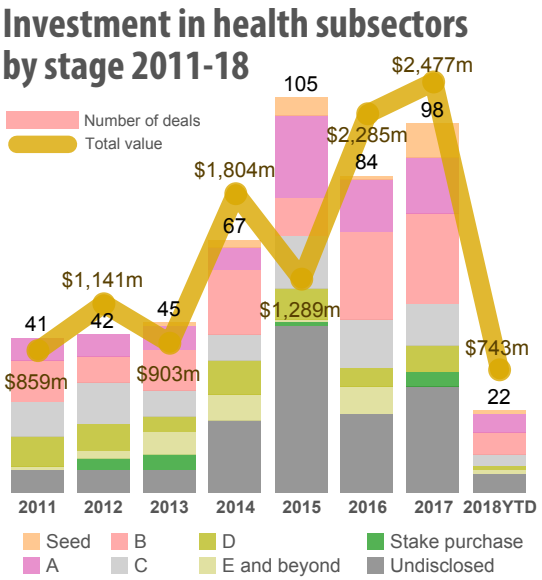
The number of deals in the four health subsectors most likely to generate HMIs rose to 98 in 2017 from 84 the previous year, according to GCV Analytics, though this was lower than the 105 recorded in 2015. Those four subsectors are health IT and administration, internet-of-things products, medical devices and diagnostics, and virtual or augmented technologies. Together, they registered a cumulative deal value of $2.5bn last year, up from $2.3bn in 2016 and $1.3bn in 2015.

Roel Bulthuis, senior vice-president and managing director of M Ventures, the strategic venture fund of Germany-based pharmaceutical firm Merck, said immediate interface developments were piquing his company's interest, rather than electronics which plug directly into the body.

He said: "What we are very interested in is that we have so many interfaces with technology in our day-to-day lives. Our interest is how we can use those interfaces when I use my phone, when I connect to wifi spots, to beacons. I have phones and I have electronics in my car and everywhere.

"So, there are so many things that I do as an individual or as a patient. Just as an example, if I have Parkinson's disease at a stage where I am still using my cell phone effectively, there is a gyroscope in my cell phone and I can record my voice on my cell phone. Can I use those measurements to inform my physician whether he needs to up-or-down-titrate my medication?

"I think that these kinds of approaches are very interesting. It is really difficult to introduce a medical device that patients need to use to record something unless it has a huge impact. It is really easy to say: 'I am generating data, why do I not use that to help us manage disease in a better way?'"



Investment in the four health subsectors most likely to generate human machine interfaces: health IT and administration, internet-of-things products, medical devices and diagnostics, and virtual or augmented technologies

"It is really difficult to introduce a medical device that patients need to use to record something unless it has a huge impact"

Healthcare businesses in this space include Akili Interactive Labs, which creates interactive video games to build the cognitive abilities of people with conditions such as autism spectrum disorder and major depressive disorder. Akili, which closed a $55m series C round backed by M Ventures in May 2018, uses designs partially created by cognitive neuroscientists to target affected neural systems.

Industrial interfaces are also becoming more nuanced, with industrial CVCs searching for HMIs that could be imported from other segments to give clients a tighter command of their day-to-day operations. Tyler Durham, venture principal at oilfield services firm Schlumberger, said gains could be made from interfaces finding favour in the consumer and computing sectors, though many of these plans remain early stage.

Schlumberger regards virtual and augmented reality (VR and AR) as two of the most important emerging technologies in the interface space, according to Durham. He said: "One of the key things we are concentrating on is trying to take the cool, showy AR and VR technology that is out there and apply it back into our data. That could mean freeing up people's hands when they are working or connecting them remotely to subject matter or experts.

"We opened up our research centre in Menlo Park recently and invited people [representing companies] from all over the world to look at the VR tech coming out of the valley, to let them try out new hardware and see demos from companies like Google, Microsoft or [industrial AR technology developer] RealWare, letting the business units see that type of technology so they can go back, look at their day-to-day operations and see how to apply that technology."

In addition to VR, Schlumberger is keeping an eye on the possibilities of full-body interfaces such as exoskeletons, wearable suits or vests that feature embedded supports, equipment or electronics. Durham said one of the corporate's portfolio companies would begin testing the lower half of a model exosuit later this year.

Schlumberger executives joined the Exoskeleton Technical Advisory Group initiative formed by robotics and microelectromechanical technology developer Sarcos Robotics in March 2018. The group featured industrial corporate representatives from GE, engineering and construction company Bechtel, carmaker BMW, construction machinery supplier Caterpillar, air carrier Delta Air Lines, industrial assembly parts supplier Würth Group and equipment dealer KG Industrial Product.

Durham said: "It is about seeing how [the exoskeleton] develops in one stream and with VR and AR in the other stream. I think it is going to be a progressive development.

"What we took away from the [Menlo] workshop is that some things can be done with today's technology, so it is about understanding what we currently do and trying to make those processes that little bit easier. It is about trying to get comfortable with it, maybe get some small wins to get us more familiar before we see it changing things fundamentally."

It is clear corporate venturing approaches to interfaces can vary depending on one's view on the adoption timeframe for such technologies. Corporates will naturally seek easily implementable interfaces which could yield rapid gains, but it is also important to track more fundamental changes that require significant research. Both approaches are likely to result in more venturing dollars pouring into companies working with innovative interfaces in the years ahead. ◆

GOVERNMENT HOUSE

Rise of Chinese innovators lights fire under US leaders

James Mawson, editor-in-chief

A fire is being lit in the US as Chinese competition comes increasingly to the attention of its political leaders. One battleground coming into view concerns how much the US government is getting by way of jobs and economic development from its federally-funded R&D dollars.

As one veteran Washington insider said: "I would like to highlight what China is doing with my congressional contacts to see if it can light a fire under them to deliver on the $2bn they have been promising for R&D commercialisation."

The timing could be right to add a spark to the tinder.

A few weeks ago at a symposiuim convened by the National Institute of Standards and Technology (NIST), Deborah Wince-Smith, CEO of the US-based Council on Competitiveness, reportedly garnered one of the biggest applauses of the day when, after recounting the perennial nature of technology transfer challenges, she said: "I hope in my lifetime I will come to a meeting like this and not see the chart of the valley of death [the gap between idea generation and startup funding success]."

In a review of this symposium and general government plans, the American Institute of Physics (AIP) said: "The Trump administration is ramping up a cross-agency effort to review and redesign policies that govern the commercialisation of federally-funded technologies, with the goal of increasing the returns on taxpayer investment in R&D."

In a keynote address at the symposium, US Commerce Secretary Wilbur Ross said action was needed given that federal technology transfer efforts had "stagnated" and other countries were capitalising on US R&D, according to the AIP report.

GOVERNMENT HOUSE

The AIP added that Ross said universities "seem to be doing far better than the federal labs" in technology commercialisation. Universities received $1.9bn in licensing income from inventions in 2014 while government inventions garnered only $194m the same year.

Ross said this disparity was significant given universities and federal labs received comparable amounts of R&D funds – $66.5bn and $42bn respectively in 2014.

Outlining his specific concerns with the current system, the AIP noted that Ross said landmark technology transfer laws enacted in the 1980s — namely the Bayh-Dole Act and the Stevenson-Wydler Act — were outdated and had created unintended barriers.

Ross said the laws did not fully protect the intellectual property rights of companies that enter into Cooperative Research and Development Agreements with federal agencies and made it difficult for federal researchers to become entrepreneurs. More broadly, Ross said that over time "there has been a shift away from technology transfer as an important focus of our R&D enterprise".

He added: "To the directors of federal laboratories, I challenge you to make it clear to your legal, research and administrative staff, that technology transfer must move as rapidly as industry does."

Ross concluded by calling on the academic and private sector R&D communities to share best practices with the government, the AIP said.

As an initial step toward meeting that goal, the NIST has issued a request for input on what principles should be protected or changed as the administration works to "refocus federal technology transfer on sound business principles based on private investment". Between now and the July 30 comment deadline, the NIST is holding four stakeholder engagement events across the US.

"The integration of China into the global system has seen more than a billion people move out of poverty and into the middle class in less than 20 years"

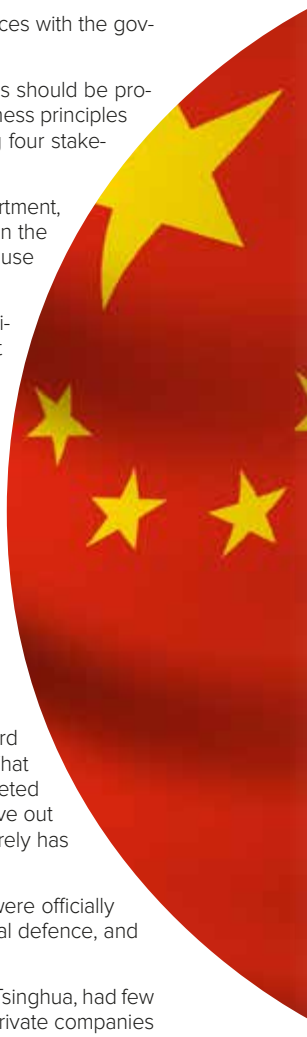
Early in his tenure, Walter Copan, director of the NIST, which comes under the US Commerce Department, said the time was ripe to conduct a comprehensive review of the practices and policies that underpin the federal technology transfer framework. It is now a cross-agency priority goal to include the White House Office of Science and Technology Policy (OSTP) and the NIST as lead agencies.

As well as her wish not to see another valley-of-death chart, Wince-Smith adroitly observed current anxiety about technological competition with China was strikingly similar to concerns the US government had about Japan in the 1980s, the AIP said.

Wince-Smith recalled how that period, during which she worked in the OSTP and the Commerce Department, was a time of "policy fermentation and policy innovation" that put in place structures that exist today, and that now emphasis also needed to be placed on establishing cross-sector, multidisciplinary partnerships to secure leadership in the industries of the future.

And while the stimulus of competition is a driver of reforms and improvement, fear can be easy to exaggerate. In a column for the Washington Post, Zachary Karabell, author of The Leading Indicators: A Short History of the Numbers That Rule Our World, described how the past half-century was full of moments where fears proved wrong.

One example Karabell gave was how "the 9-11 attacks and the resulting US invasion of Afghanistan focused the world's attention in late 2001, understandably overshadowing China becoming a member of the World Trade Organisation (WTO) in December 2001.



"In many ways, this was the second act to the bolt from the blue in February 1972 when President Richard Nixon and Secretary of State Henry Kissinger flew to Beijing to meet China's Chairman Mao Zedong. That opening heralded an end to the Asian Cold War. China's move into the WTO three decades later completed that process. The integration of China into the global system has seen more than a billion people move out of poverty and into the middle class in less than 20 years. Whatever tensions may exist now, that surely has been one of the more positive stories of the past few decades."

China's growth has driven US profits and its own economic growth since the "four modernisations" were officially set out 40 years ago this year by Chairman Deng Xiaoping to strengthen agriculture, industry, national defence, and science and technology in China.

The economic liberalisation has been successful in part because two leading universities, Peking and Tsinghua, had few alternatives other than encouraging startups as a strategic necessity given the relative lack of large private companies and government funding compared with US peers in the 1990s, or even the ability to charge high tuition fees.

Last year more than 1.5 million students from 2,241 universities and colleges took part in the China College Students' Internet Plus Innovation and Entrepreneurship Competition. The number of students starting businesses right after graduation rose from 1.6% in 2011 to 3% in 2017, according to a report by Mycos Research and the Chinese Academy of Social Sciences. This means more than 200,000 of the 7.95 million college graduates in 2017 became entrepreneurs.

Both Peking and Tsinghua universities are now enormous asset managers and supporters of entrepreneurs and increasingly global, with Tsinghua setting up an accelerator in the UK last year.

GOVERNMENT HOUSE

The soft power risk for the US could be for authorities to take too literally Ross's concern that other countries are capitalising on US R&D and retreat inwardly. China's economic genie is out of the bottle but Wince-Smith's "cross-sector multidisciplinary partnerships" could also result in international agreements where the best R&D can be conducted and commercialised.

This would chime with two of what Harvard Business Review has regarded as the most disruptive and important insights it has seen since the millennium – reverse innovation from emerging markets to the US, co-authored by then General Electric CEO and chairman Jeff Immelt in 2009, and open innovation, coined by US academic Henry Chesbrough in 2003.

Venture investors regard a business model innovation as potentially more disruptive than any single piece of technology, and the rapid and widespread adoption of open innovation, including corporate venturing, is arguably unprecedented among theories in how quickly it has been demonstrated and adopted.

Corporations were involved in more than 2,000 venture rounds in 2017 worth an aggregate $109bn, according to GCV Analytics. This corporate venture capital activity represented about a fifth of all venture rounds and two-thirds of the $163bn of aggregate rounds, according to data provider PitchBook.

However, corporations have struggled to find all the university intellectual property (IP) and startups and spinouts that meet their strategic and business needs. This is even true at a time when about 1,000 US university spinouts are being launched annually, let alone with a proposed increase to 10,000 or more under plans circulated by the Washington-based National Council for Entrepreneurial Tech Transfer (NCET2).

At its annual conference and demo day for corporations this week, NCET2 laid out a new startup development model that asks corporations to pull in the IP and technology developed under startups formed out of university faculty and student research rather than have it pushed at them by the universities.

Venture investors regard a business model innovation as potentially more disruptive than any single piece of technology

This chimes with the success of the US National Science Foundation and National Institutes of Health's I-Corps programs developed by academic Steve Blank, which require putative startups to conduct about 100 customer interviews as market validation of the idea and strategy.

So while there is evident concern in Washington over China's rapid and successful economic development and long-term focus on strategic priorities through its five-year plans, allied to commercial entrepreneurship and regulatory grey areas to test new markets, the US's starting point is already strong.

A 2015 study by Millennial Branding and Internships.com found 61% of US high school students wanted to start their own business right out of college, compared with about 20% of the graduates who started one while in college the year before, according to a separate survey by legal service provider CT Corporation in 2014.

Taking this latent entrepreneurial demand and bringing strategic focus for university and public research institutions to support and aid them will, to tweak a Chinese phrase used by chairman Mao Zedong, let far more than 100 flowers bloom. And it is already clear US universities are moving their priorities towards entrepreneurialism as a strategy.

Dennis Whyte, head of nuclear science and engineering at Massachusetts Institute of Technology (MIT), whose research helped conceive Commonwealth Fusion Systems (CFS), an energy startup that this year raised $50m from Italy-based energy group ENI, said in a call before his expected talk at the Venture Houston conference in November *(see panel below)* that it was increasingly clear universities had to look beyond government funding, which would be cut by more than 50% over the next decade – which he called a "seismic change" – but their role was more vital for fundamental research than in trying to pick winners, such as solar energy company Solyndra, whose bankruptcy after government grants still looms large.

CFS will join MIT to carry out rapid, staged research leading to a new generation of fusion experiments and power plants based on advances in high-temperature superconductors — work made possible by decades of federal government funding for basic research, it said in a release. Using money from ENI and others, CFS will fund fusion research at MIT as part of this collaboration.

So perhaps the fire has already been lit, but the fear of Chinese competition is certainly adding fuel to efforts to improve tech commercialisation and economic development in the US. ◆

NCET2 has announced a partnership with Mawsonia, a global publisher of trade papers including Global Corporate Venturing and Global University Venturing, to develop a best practices conference in Houston, Texas, on November 8-9, 2018 – *http://www.venture-houston.com*. The partnership will continue the best practices conferences held annually by NCET2 under Global Corporate Venturing and Global University Venturing leadership as NCET2 focuses on the development of its IP2Startups program. The Houston conference will bring the state and other corporations together alongside a best practices conference for university startups and venture funds. More information overleaf.

Global Corporate Venturing

Global University Venturing

Venture Houston

November 8-9, 2018

Take Advantage of Early Bird Rates!

Our second annual Houston conference, hosted by Global Corporate Venturing (GCV) and Global University Venturing (GUV), will see concurrent tracks debate the convergence of digital, decarbonisation and centralisation on the energy sector by the main corporate venturing units and their portfolio companies while, in partnership with the National Council for Entrepreneurial Tech Transfer (NCET2), the main US and international universities will gather to develop best practices for their venturing and startup approaches in parallel through the GUV Leadership Society and its Powerlist 100.

Last year's inaugural conclave championed the resilience of the Houston-based and broader Texan venture capital and innovation industries. It came on the day the Houston Astros won their first World Series, and the world will once again turn to the city for inspiration.

Contact us for more information
tlafferty@globalcorporateventuring.com

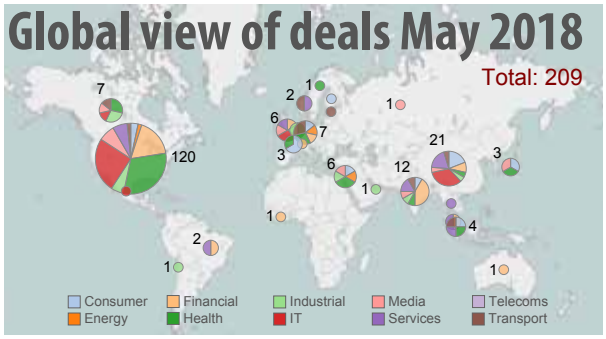
www.venture-houston.com

MONTHLY ANALYSIS

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

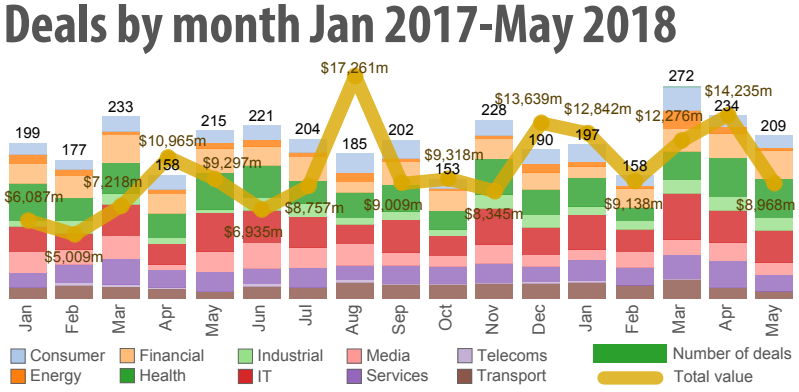
Slight decrease in May

Kaloyan Andonov, reporter, GCV Analytics

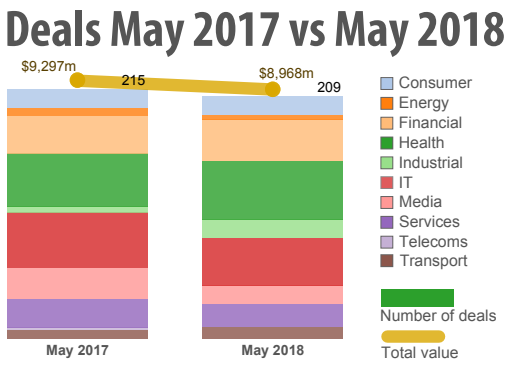


The number of corporate-backed rounds reported in May was 209, down slightly from the 215 in the same month last year. Total investment value fell to $8.99bn, down 4% from $9.3bn in May 2017. Compared with the first four months of 2018, May registered weaker results than March and April, with their 272 and 234 rounds respectively. However, total capital invested was lower than any month so far this year.

The US hosted the largest number of corporate-backed deals at 120, while China was second with 21 and India third with 12.



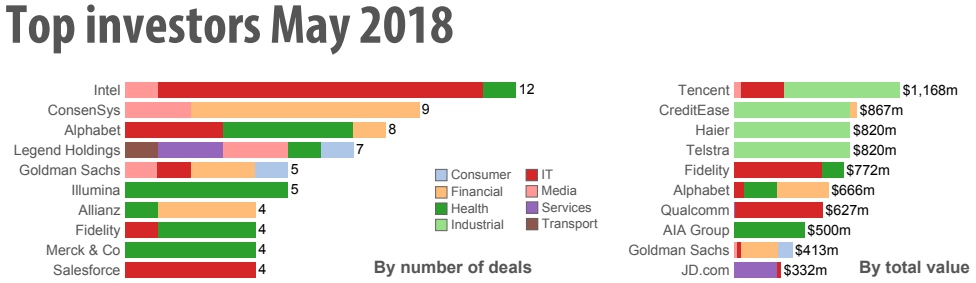
The leading corporate investors by number of deals were semiconductor manufacturer Intel, blockchain software provider ConsenSys, whose venturing unit disclosed its first investments, as well as diversified conglomerate Alphabet. In terms of involvement in the largest deals, internet company Tencent topped the ranking, along with wealth management and microfinance firm CreditEase and electronics manufacturer Haier.



GCV Analytics reported 26 corporate-backed funding initiatives in May, including VC funds, new venturing units, incubators, accelerators and others. This figure was an increase over April, when there were 16 such initiatives. The estimated capital raised in those initiatives amounted to $3.19bn, up 34% from an estimated $2.39m in the previous month.

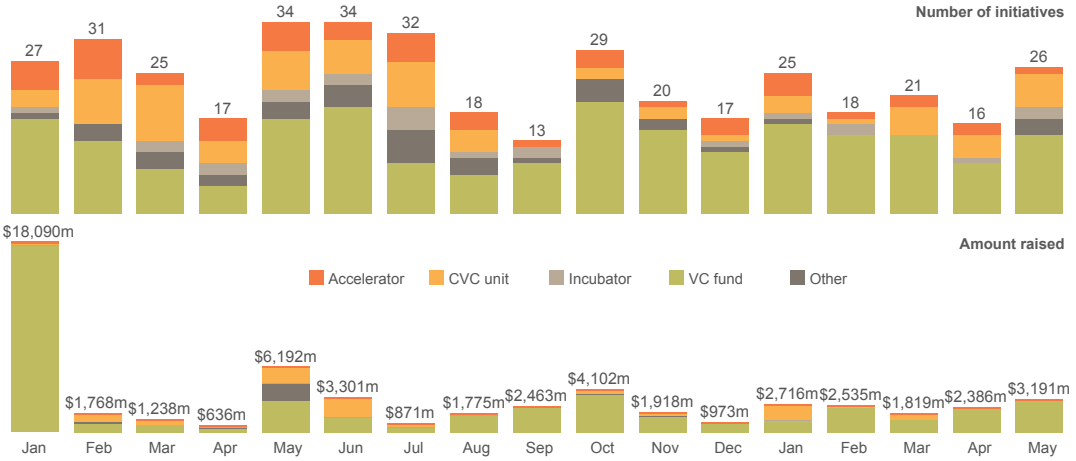
Deals

Emerging businesses from the health, IT, financial services and business services sectors led in raising the



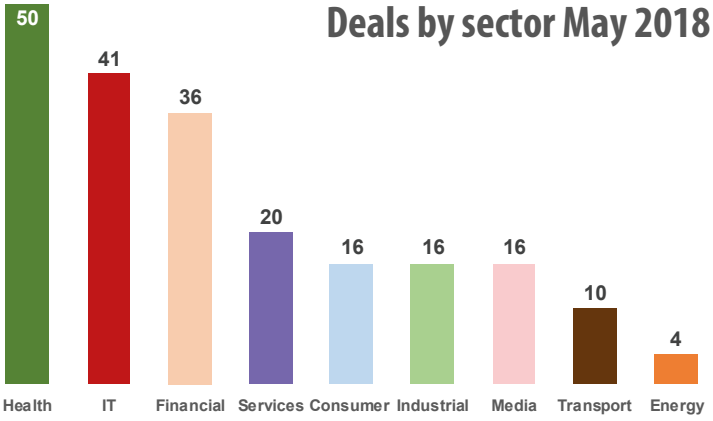
MONTHLY ANALYSIS

Funding initiatives by month Jan 2017-May 2018



largest number of deals last month. The most active corporate venturers came from the financial services, IT, health and industrial sectors.

Deals by sector May 2018



China-based robotics technology producer UBtech Robotics raised $820m in a series C round led by Tencent. The round also featured Haier Group, CreditEase, telecoms firm Telstra, furniture rental service Easyhome Furnishings, conglomerate Chia Tai Group and power producer China General Nuclear. The round reportedly valued UBtech at $5bn. Founded in 2012, UBtech creates family-friendly humanoid robots for entertainment and educational applications. Its range includes a service robot called Cruzr and a Stormtrooper robot, based on the Star Wars franchise and produced in partnership with media company Disney.

Deals heatmap May 2018

	Financial services	IT	Health	Industrial	Media	Services	Consumer	Transport	Telecoms	Energy
North America	54	32	26	16	10	9	5	7	5	1
Asia	19	9	2	1	3	5	9	2	3	2
Europe	6	3	4		4	3	2	2		2
Middle East		1	1	1	1		1	1		1
South America	3	1						1		
Africa	1			1						
Australia / NZ						1				
Eastern Europe		1								

China-based artificial intelligence technology provider SenseTime closed a series C-plus round featuring Qualcomm Ventures, the corporate venturing subsidiary of the mobile semiconductor technology producer, at $620m. Investment and financial services group Fidelity International also participated in the round, among others. The transaction valued SenseTime at over $4.5bn. The company supplies computer vision and deep learning technology based on its supercomputing platform, powering functions such as facial and textual character recognition, video analysis and autonomous driving software.

China-based online healthcare services platform WeDoctor raised $500m in a round co-led by a subsidiary of insurance group AIA. Infrastructure and services conglomerate NWS Holdings co-led the round, which valued the company at $5.5bn. Also known as Weiyi, WeDoctor operates an online platform that enables users to book medical appointments with more than 220,000 doctors and at some 2,700 hospitals, and receive consultations from qualified physicians. The company also offers pharmaceuticals and insurance products.

US-based online trading platform Robinhood Financial secured $363m in a series D round featuring Alphabet's CapitalG unit that valued it at $5.6bn. Investment firm DST Global led the round. Robinhood operates a secure, commission-free

MONTHLY ANALYSIS

Top 10 investments May 2018

Company	Location	Sector	Round	Size	Investors
UBtech	China	Industrial	C	$820m	CDH Investments | CreditEase | Haier | Industrial and Commercial Bank of China | Minsheng Securities | Shenzhen Green Pine Capital Partners | Telstra | Tencent
SenseTime	China	IT	C	$620m	Fidelity | Hopu Investments | Qualcomm | Silver Lake | Tiger Global Management | undisclosed investors
We Doctor	China	Health	–	$500m	AIA Group | NWS Holdings
Robinhood Financial	US	Financial services	D	$363m	Alphabet | DST Global | Iconiq Capital | Kleiner Perkins Caufield & Byers | New Enterprise Associates | Sequoia Capital | Thrive Capital
ESR Cayman	China	Services	–	$306m	JD.com
Grail	US	Health	C	$300m	6 Dimensions Capital | Ally Bridge Group | Blue Pool Capital | China Merchant Securities International | CRF Investment | Hillhouse Capital Management | HuangPu River Capital | ICBC International | Sequoia Capital | Wuxi PharmaTech
CStone Pharmaceuticals	US	Health	B	$260m	3W Partners | 6 Dimensions Capital | Arch Venture Partners | Avict Global Holdings | Boyu Capital | Citic PE | Frontline BioVentures | GIC | Hillhouse Capital Management | King Star Capital | Oriza Holdings | Sequoia Capital | Taikang Life Insurance Company | Terra Magnum Capital Partners | WuXi AppTec | Yunfeng Capital
Byton	US	Transport	–	$260m	FAW Group
Tradeshift Studio	US	Financial services	E and beyond	$250m	Goldman Sachs | GP Bullhound | Gray Swan | H-14 | HSBC | Public Sector Pension Investment Board
Xiyun International	China	Consumer	A	$200m	Alibaba | CDH Investments

trading platform, generating income through the interest on the capital and securities in its clients' accounts, and through an optional subscription service called Robinhood Gold that offers expanded trading options.

ESR Cayman, a China-based real estate developer focused on logistics, raised $306m from JD Logistics, the logistics spinoff of e-commerce firm JD.com. ESR Cayman was formed in 2016 through the merger of warehousing services provider E-Shang, which was founded in 2011, and logistics-based real estate investment firm Redwood Group Asia, founded in 2006. The company owns more than 10 million square metres of logistics real estate across China, India, Japan, Singapore and South Korea. JD Logistics' investment will form the basis of a strategic collaboration agreement that will cover multiple areas, including property development, fund management and investments across Asia.

US-based cancer test developer Grail secured $300m in an oversubscribed series C round co-led by 6 Dimensions Capital, the healthcare investment firm co-founded by pharmaceutical group WuXi AppTec. The round, which was co-led by healthcare investment group Ally Bridge and hedge fund manager Hillhouse Capital, also featured WuXi AppTec's genomic information subsidiary, WuXi NextCode. Spun off from genomics technology producer Illumina in 2016, Grail is using a combination of high-intensity sequencing, computer and data science technology and large-scale clinical studies to develop a blood test to detect cancer at early stage.

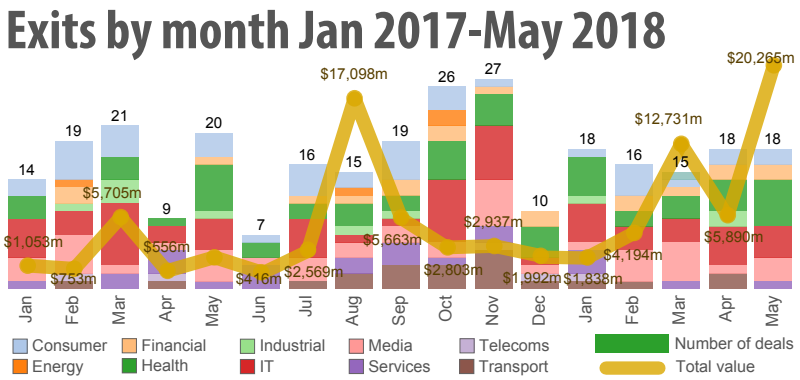
China-based biopharmaceutical company CStone Pharmaceuticals closed a $260m series B round featuring insurance provider Taikang and WuXi Healthcare Ventures, the strategic investment arm of WuXi PharmaTech. The round, led by Singaporean sovereign wealth fund GIC, also featured 6 Dimensions Capital. Founded in 2016, CStone is working on a combination therapies for diseases such as cancer, cardiovascular diseases, rheumatoid arthritis, haematology and autoimmune conditions, with a particular focus on immuno-oncology.

Chinese government-owned automotive manufacturer FAW Group agreed to provide $260m of funding for China-based smart car developer Byton. The investment was part of a larger series B round Byton aims to close at about $500m. Founded in 2016 as Future Mobility, Byton is developing an electric sports utility vehicle that will incorporate features such as a gesture-based control system, a driver-assistance system, augmented reality mirrors in place of rear-view mirrors and a 49-inch electronic display on the dashboard.

US-based invoicing software provider Tradeshift secured $250m in a series E round featuring financial services firm HSBC that valued it at $1.1bn. Investment bank Goldman Sachs and Canadian state-owned pension fund manager Public Sector Pension Investment Board co-led the round. Founded in 2010, Tradeshift operates a cloud-based supply chain payments and marketplaces platform aimed at business-to-business transactions. The company's offering includes a tool for digital invoicing and accounts payable automation.

China-based catering service provider Xiyun International received $200m in a series A round featuring two spinoffs from e-commerce group Alibaba – Koubei and Ant Financial. Ant Financial, the financial services provider formed by Alibaba in 2014, and Koubei, the local services provider formed by Alibaba and Ant, were joined in the round by alternative asset manager CDH Investments. Xiyun runs an outsourced food supply business that operates some 30,000 food stalls and 2,100 dining halls across businesses, universities, government agencies, hospitals, factories, airports and railway stations. The company also links catering customers to restaurants and provides a range of associated services such as marketing and customer data analysis, food services training and food safety testing, monitoring and training.

Exits



In May, GCV Analytics tracked 18 exits involving corporate venturers as either acquirers or exiting investors. The transactions included 12 acquisitions, five initial public offerings (IPOs) and one merger.

The number of exits remained unchanged compared with April, when there were also 18 exits. Total estimated exited capital, however, amounted to $20.27bn, three times the previous month's figure, which included a record-breaking acquisition sized at $16bn.

Big-box retailer Walmart agreed to pay $16bn for a 77% stake in India-based e-commerce marketplace Flipkart, giving several corporates billion-dollar exits. The purchase is the largest M&A transaction in the venture capital space since Facebook's $19bn acquisition of WhatsApp in early 2014. Walmart valued Flipkart at $20.8bn. Telecoms and internet group SoftBank's Vision Fund scored the biggest exit, receiving just over $4bn, after paying $2.5bn for a stake of about 20% in Flipkart in August last year. Other exiting corporates included e-commerce and media company Naspers, media group Bennett, Coleman & Co, research firm International Data Group through its IDG Ventures India subsidiary as well as financial services firm Morgan Stanley. Founded in 2007 as a book specialist, Flipkart has built a diversified e-commerce platform that sells products across more than 80 categories.

Online payment platform PayPal agreed to acquire Sweden-based mobile payment technology developer iZettle for $2.2bn, allowing a host of corporate investors to exit, including Intel, payment services firms Mastercard and American Express, and financial services firm Santander. Founded in 2010, iZettle has built a small card reader enabling small businesses to accept contactless and mobile payments, as well as software that allows them to take payments using smartphones, and e-commerce tools that help users create and run an online store.

Human resources firm Recruit agreed to acquire online recruitment and employment assessment platform Glassdoor for $1.2bn, giving CapitalG, Alphabet's growth equity arm, an exit. Glassdoor has built an online platform that enables employees to leave feedback anonymously on the companies for which they work while also accessing newly listed positions. The company had 59 million monthly active users by January this year, and reviews for more than 770,000 businesses, incorporating features such as photographs, salary information and interview questions.

US-based genetic screening service Counsyl agreed to a $375m acquisition by molecular testing service provider Myriad Genetics, which will provide Illumina with an exit. Counsyl will become a wholly-owned subsidiary of Myriad once the deal closes next year. Founded in 2007, Counsyl operates a laboratory that offers low-cost non-invasive prenatal and cancer screening. It has also developed a suite of tools integrating its tests into existing clinical workflows and electronic medical records.

Huya, a gaming-themed subsidiary of China-based livestreaming platform operator YY, raised $180m from an IPO on the New York Stock Exchange. The offering consisted of 15 million American depositary shares at $12 each, at the top of the $10 to $12 range it had set earlier. The proceeds will support the company's content and eSports partner ecosystem as it looks to beef up its content. Huya operates what it claims is China's most popular live game-streaming platform, with almost 87 million monthly active users. YY launched the Huya platform in 2014 before it was officially spun out at the start of 2017.

Inspire Medical Systems, a US-based sleep apnea device developer spun out of medical device maker Medtronic, raised $108m in an IPO on the New York Stock Exchange. The offering consisted of 6.75 million shares priced at $16 each, the top of its $14 to $16 range. Founded in 2007, Inspire Medical has developed what is so far the only neurostimulation treatment for sleep apnoea, a disorder in which breathing is interrupted during sleep, to win approval from the US Food and Drug Administration.

Unity Biotechnology, the US-based ageing disease drug developer backed by pharmaceutical companies WuXi PharmaTech and Mayo Clinic, raised $85m in an IPO consisting of 5 million shares issued on the Nasdaq Global Select Market at $17 each, at the midpoint of the $16 to $18 range the company set earlier. Founded in 2016, Unity develops treatments for a range of conditions related to ageing, such as kidney disease, eye diseases and atherosclerosis, a buildup of white blood cells in a patient's arteries. The company will use $10m to $20m of the IPO proceeds to advance its lead candidate, a musculoskeletal disease treatment, into a phase I clinical study.

Scholar Rock, the US-based spinal muscular atrophy therapy developer backed by consumer conglomerate Kraft Group, raised $75m in an IPO. The offering on Nasdaq consisted of 5.36 million shares at $14 each, in the middle of the $13 to

MONTHLY ANALYSIS

Top 10 exits May 2018

Company	Location	Sector	Type	Acquirer	Size	Exiting investors
FlipKart	India	Consumer	Acquisition	Walmart	$16bn	Accel Partners | Baillie Gifford | Bennett Coleman & Company | DST Global | GIC | Greenoaks Capital | Iconiq Capital | International Data Group | Morgan Stanley | Naspers | Qatar Investment Authority | Sofina | SoftBank | Steadview Capital | T Rowe Price | Tiger Global Management
Izettle	Sweden	Financial services	Acquisition	PayPal	$2.2bn	American Express | Creandum | Dawn Capital | Fourth Swedish National Pension Fund | Greylock Partners | Hasso Plattner Ventures | Index Ventures | Intel | Mastercard | Northzone | Santander | SEB | Victory Park Capital | Zouk Capital | undisclosed investors
Glassdoor	US	Services	Acquisition	Recruit Holdings	$1.2bn	Alphabet | Battery Ventures | Benchmark | DAG Ventures | Dragoneer Investment Group | Sutter Hill Ventures | T Rowe Price | Tiger Global Management
Counsyl	US	Health	Acquisition	Myriad Genetics	$375m	Goldman Sachs | Illumina | Perceptive Advisors | Rosemont Seneca Technology Partners
Huya	China	Media	IPO	–	$180m	Banyan Partners | Engage Capital Partners | Morningside | Ping An Insurance | private investors
Inspire Medical Systems	US	Health	IPO	–	$108m	Amzak Capital Management | GDN Holdings | Johnson & Johnson | Kleiner Perkins Caufield & Byers | Medtronic | OrbiMed | Synergy Life Science Partners | TGap Ventures | US Venture Partners
Unity Biotechnology	US	Health	IPO	–	$85m	6 Dimensions Capital | Altitude Life Science Ventures | Andalucia Ventures | Arch Venture Partners | Baillie Gifford | Bezos Expeditions | Com Investments | Cycad Group | EcoR1 Capital | Fidelity | Founders Fund | Invus Opportunities | Longevity Fund | Mayo Clinic | Partner Fund Management | Pivotal Alpha | Three Lakes Partners | VenRock | Vulcan | Wuxi PharmaTech | private investors
Scholar Rock	US	Health	IPO	–	$75m	Arch Venture Partners | Cormorant Asset Management | EcoR1 Capital | Fidelity | Kraft Group | Polaris Venture Partners | private investors | undisclosed investors
Aslan Pharmaceuticals	Singapore	Health	IPO	–	$42m	Accuron | BioVeda Capital | Cenova Ventures | China Galaxy | Daiwa Securities | Haitong International | KGI | Milestone Capital | Morningside | MVP Capital Partners | Sagamore Bioventures | Taya Ventures | Tianda Pharmaceuticals | TopTaiwan
Cask Data	US	IT	Acquisition	Alphabet	–	Amplify Partners | Andreessen Horowitz | Battery Ventures | Data Collective | Ericsson | Ignition Partners | Safeguard Scientifics | undisclosed investors

$15 range set earlier. Founded in 2012, Scholar Rock is working on monoclonal antibodies for diseases associated with signalling by protein growth factors. The IPO proceeds will advance the company's lead drug candidate into phase 1 clinical trials.

Singapore-based oncology therapy developer Aslan Pharmaceuticals – which counted engineering technology producer Accuron, pharmaceutical firm Tianda Pharmaceuticals and manufacturing services provider Advanced Materials Technologies as backers – raised $42.2m in an IPO in the US. Aslan priced 6 million American depositary shares, each representing five common shares, at $7.03 each. Founded in 2010, Aslan is working on treatments for orphan diseases in the US and Europe, and diseases that are prevalent in Asia. It will use $23.5m of the IPO proceeds to fund clinical trials in biliary tract cancer and gastric cancer for its lead drug candidate.

Cask Data, a US-based big data software developer backed by networking and telecoms equipment maker Ericsson, agreed to an acquisition by Google. Financial terms of the deal were not disclosed. Ericsson invested an undisclosed amount in Cask in 2016. The company will be absorbed into Google's cloud computing services division, Google Cloud. Founded in 2011, Cask has created a software platform that enables enterprise clients to develop and run big data applications. The product sits atop Hadoop, an open-source framework for large-scale data applications. ◆

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

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