



Revolutionary Investments

Equity investment in 4th Industrial Revolution
private British businesses 2013 - 2018



Investment analysis prepared by

Beauhurst

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Foreword

At Newable Private Investing, we like to say that our network supports early stage businesses. We are certainly very active supporters. In fact, in the last two years alone we have participated in over fifty investments, totalling over £35m. However, it has been our firm belief that in the last few years, it has not just been the early stage of specific businesses we have been supporting, but the early stage of something far more significant.

At the core of our investment thesis is that we are witnessing the emergence of new business propositions, models and opportunities. These have arisen as a result of the increasing convergence of science and technology in biotech, from the ubiquity of big data, to step change advances in robotics and automation.

These developments can be considered to be part of what is called the 4th Industrial Revolution. More and more people are becoming attuned to the radical impact this Revolution is having. Indeed, the Government has responded to it by developing a new Industrial Strategy to deal with it. However, it is amazing to reflect on the fact that the concept only came to wider attention as the theme of the 2016 World Economic Forum at Davos, following its coining in a 2015 article by the WEF's executive chairman, Klaus Schwab.

Schwab sees as part of this Revolution "emerging technology breakthroughs" in fields such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3D printing, quantum computing and nanotechnology. The convergence of these technologies serves to disrupt almost every industry in every country.

Whilst much has been written about the 4th Industrial Revolution, we were keen to examine how far the businesses being forged by it had advanced. We wanted to establish whether the future was getting traction in the present. We wanted to explore the extent to which these businesses remained 'moon shot' bets, or had become genuinely investible.

To help us with this analysis, we turned to Beauhurst, the industry leading research platform monitoring the most ambitious early stage businesses in Britain. We decided to chart the progress of private companies from 2013 to the end of 2018. The report clearly shows growing investor appetite for 4th Industrial Revolution businesses, with investment in 2017 & 2018 significantly ahead of the combined amount committed between 2013 & 2016, despite ongoing economic uncertainty. Even more telling is the comparison in the CAGR of our 4th Industrial Revolution cohort and the FTSE100 (which we might consider to be comprised of 3rd Industrial Revolution business propositions.) The growth in valuation of our cohort is extremely exciting.

As Beauhurst point out, it is invidious to use historic data to predict the future. However, many investors looking for high growth assets will feel that 4th Industrial Revolution businesses are where it may well be found.

At Newable Private Investing we are blessed by seeing hundreds of next generation businesses through our Med Tech, Space Tech and Automations programmes. We will continue to present the very best of them to our network of investors. And we look forward to Beauhurst recording their successes over the years to come.



Chris Manson
Chief Executive Officer, Newable

Introduction

ABOUT THIS REPORT

Early-stage private companies are a notoriously volatile class of assets. A few succeed spectacularly. A few fail equally spectacularly. Most, inevitably, fall somewhere in between. It is why prudent investors tend to build portfolios to mitigate against this volatility. It also explains why the government encourages early-stage investment in knowledge intensive businesses through tax incentives as part of the Enterprise Investment Scheme (EIS). However, early-stage companies are interesting for another reason. They can be indicative of mainstream business models of the future. This report sets out to explore this proposition.

METHODOLOGY

As investors will take different stakes and different share classes in multiple rounds of investment, our analysis instead looked at the performance of each company as a whole, rather than the performance of a given investor's stake. We carried out this analysis by selecting a cohort of companies that had received investment in 2013 and looking at the change in each company's valuation up to the end of November 2018. The end valuation of each company was calculated using the fair value of the company at the end of the observation period: the most recent known valuation from an equity investment round, the exit price (if applicable and known) or £0 if the company has died. For more detail on the calculation of fair value, please refer to the full methodology at the end of this report.

VALUATIONS

Beauhurst is able to calculate both the entry valuation and the fair value valuation using forms filed at Companies House by the company itself. Occasionally, complicated share structures prevent the calculation of a valuation with full confidence and these companies have been excluded from the cohort.

SECTORS

This report looks in particular at some sectors of key interest: Automation, Life Sciences and Electronics. These high-level sectors are built on Beauhurst's proprietary classification of 200 sectors. For a detailed map of these sectors, please refer to the full methodology at the end of this report.

ACKNOWLEDGEMENT

This report has been written by and is based on analysis from Beauhurst.

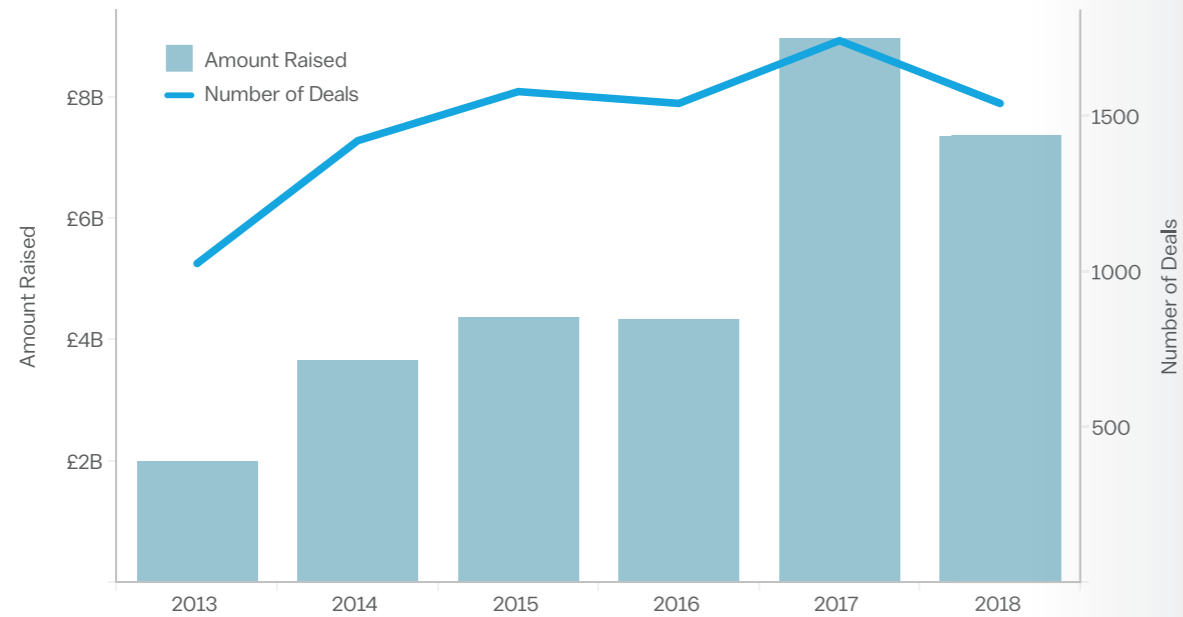
COHORT CRITERIA

Any company in the cohort has met the following criteria:

- (i) received at least one investment between 1/1/2013 and 31/12/2013 for which Beauhurst has been able to calculate a valuation.
- (ii) received at least one investment between 1/1/14 and 30/11/18 for which Beauhurst has been able to calculate a valuation.
- (iii) is a UK-headquartered private company at the point of (i) and (ii).

Equity investment

Investment in UK private companies peaked in 2017. In 2018 levels were still much higher than 2015 and 2016.



A POPULAR ASSET CLASS

The huge volumes of investment seen in 2017 and 2018 speak to the popularity of early-stage, private companies as an asset class. These huge volumes also betray the need for validation of the asset class. The amount of capital being invested into what are inherently risky businesses must make any investor pause to question how and where the returns will be realised.

STILL POPULAR?

Although over £7b was invested in 2018, this figure is nearly £2b less than was invested in 2017. It is difficult to determine whether this represents investors reacting to macroeconomic circumstances, or inter-year volatility that is natural, or if investors are starting to turn away from the asset class. A weak first quarter of 2018 explains some of the year's comparatively lower investment volumes so the first quarter of 2019 will be an interesting indicator of recovery or retrenchment – though political events may well overtake ordinary investment decisions. That being said, the amount invested in 2018 is well above the annual amounts seen in 2013 to 2016. Put another way, the total invested in 2017 and 2018 was more than 2013-2016 combined. We would therefore have to see a real slowdown in investment in 2019 before declaring a change in the popularity of the asset class.

Company valuations

As investment has been increasing since 2013, so too have the average valuations of the companies receiving investment.

2018 KEY FIGURES

£10.7m

average pre-money

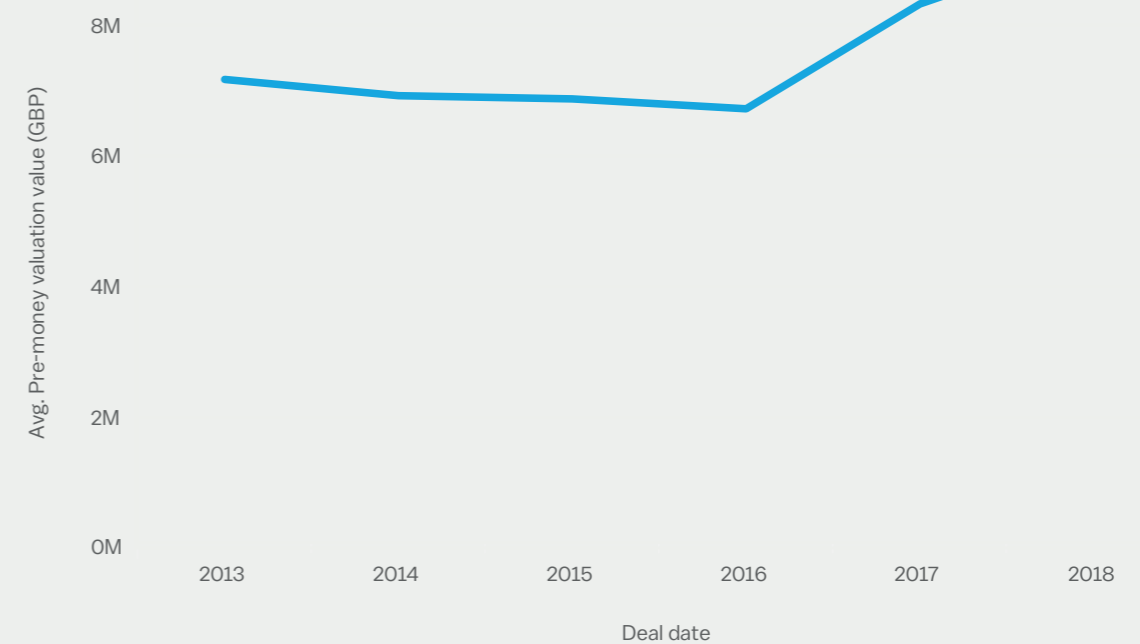
£12.1m

average post-money

15.4%

average stake taken

AVERAGE PRE-MONEY VALUATION OVER TIME



Full cohort

1,229 companies met the criteria to be in the analysed cohort, from a wide range of sectors and across the UK.

THE COHORT

1,229 companies matched the criteria of having an observable valuation in 2013 and at least one subsequent known valuation. (For more detail on the creation of the cohort, please refer to the full methodology at the end of the report). Between them, these companies had 5,419 valuation observable events. Their combined valuation at their point of entry to the cohort was £5.93b; this increased to £23.4b by 30th November 2018, some of which is realised value, some of which is paper value.

VARIETY

The 1,229 companies in the cohort operate in 170 of the 200 sectors in our classification. These range from Accountancy Services (in which sector four companies operate) to Wholesales Supply Chains (in which eleven companies operate).

These companies were to be found across the UK. It was to be expected that the majority (47%) of companies have their head offices in London. 15% were located in the South East. After this, the East of England, the North West and the East of Scotland were the most populous regions.

The companies are also at a variety of stages in their development: 17% of the companies analysed in the cohort that were still actively trading were at the seed stage; 43% at the venture stage, 14% at the growth stage, 4% were established, and 2% were classified as zombie companies. 20% of the companies had also either died or exited.

EXITS

83 (7%) of the cohort have exited realising a CAGR of 26%. These companies were worth £1.22Bb at the point of entry into the cohort; they were worth £3.12B at the point of exit – an increase in value of £1.9b. The exited companies represent 13.3% of the end value of the cohort – that is to say, only 13.3% of the cohort's value has been realised.

DEATHS

162 (13%) companies' valuations were written down to zero. These companies were worth £366m at the point of entry into the cohort. This value has been written down to zero; this means only 6% of the portfolios value has so far been lost through company deaths.

Full cohort performance

The full cohort of 1,229 companies achieved a collective CAGR of 24%.

KEY FIGURES

£5.93b

starting value

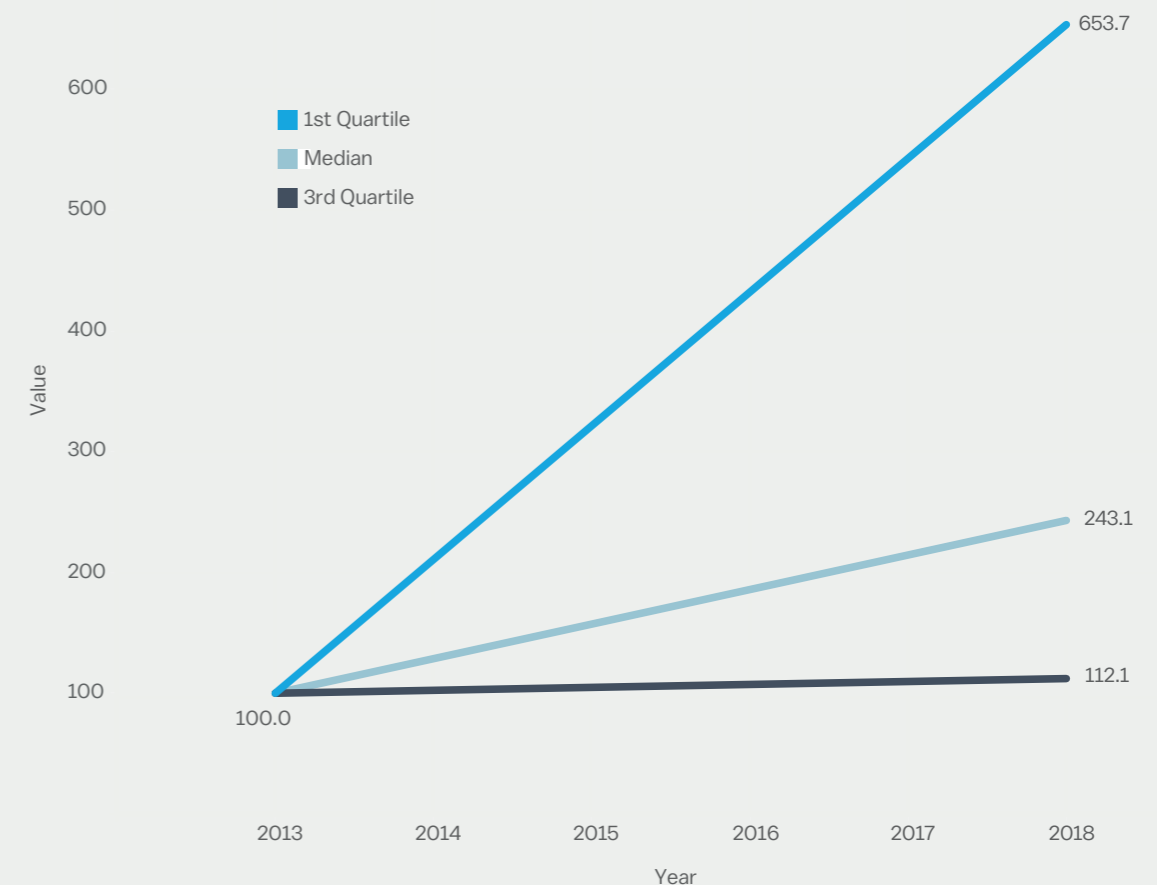
£23.4b

end value

23.7%

CAGR

FULL COHORT QUANTILES



Automation

There are 97 companies in the automation cohort, with an average starting valuation of £8.1m.

Automation businesses are those businesses commercialising the benefits of automating previously manual and time-consuming processes. These businesses utilise technology of varying sophistication: cloud-based software-as-a-service companies are included in the cohort alongside those companies making use of artificial intelligence / machine learning. Typically the benefits of this automation are applied either to a particular sector or to a particular business function.

The average age of the companies in the automation cohort is 8.2 years. Between them the 97 companies in the cohort have received £1.22b of investment – an average of £12.4m per company.

AUTOMATION EXAMPLE COMPANIES



SECTOR
RAISED
DESCRIPTION

Fintech, Business training services
£3.07m
Essentia Analytics produces software to help fund managers collect data on their investment decisions and provides coaching for utilising this information to improve performance.



SECTOR
RAISED
DESCRIPTION

Software-as-a-Service, Internet of Things
£1.17m
Fabriq develops software that allows clients in the construction and building management sectors to monitor data points such as energy usage and pollution in and around their buildings.



SECTOR
RAISED
DESCRIPTION

Artificial intelligence, Big data
£1.9m
Massive Analytic is developing online AI software that provides users with insights into massive data sets.

Automation cohort performance

The automation cohort achieved a CAGR 9% better than the average achieved by the overall cohort.

AUTOMATION KEY FIGURES

£790m

starting value

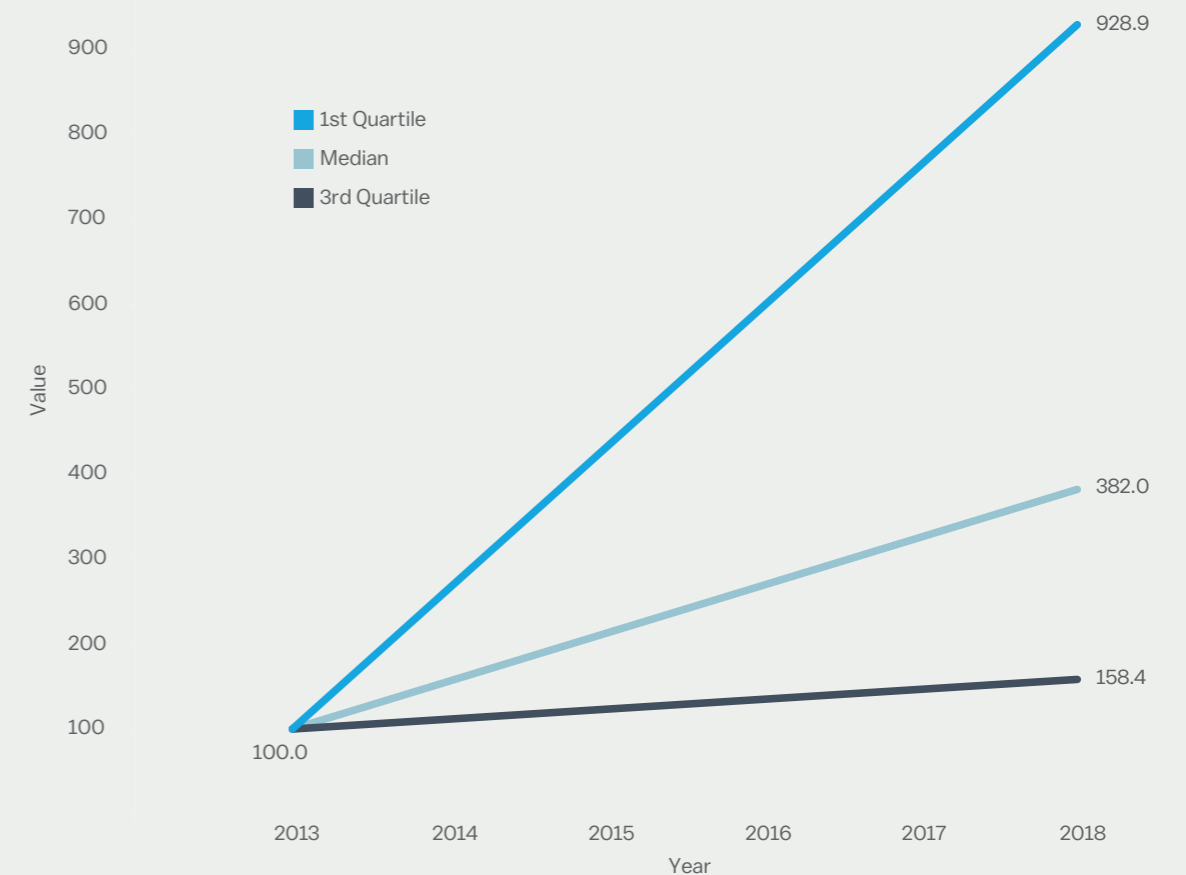
£4.10b

end value

32.7%

CAGR

AUTOMATION COMPANY QUARTILES



Automation cohort highlights

The cohort of automation companies performed well, though only a very small proportion of its value has been realised.

97 companies
32.7% CAGR
7 deaths
4 exits

THE COHORT

The 97 companies in the automation cohort grew in value over the observation period from a combined £790m to £4.1b. The lowest CAGR of any automation company was -22%; the highest was 229%.

EXITS

Four of the companies in the automation cohort have exited. These companies were worth £23.3m at the beginning of the observation period. The total value of the companies at their point of exit was £329m (8% of the total portfolio value of automation companies), an average CAGR of 50%.

DEATHS

Seven of the automation companies in the cohort have died. These companies were worth £6.6m at the beginning of the observation period. This represents an average starting valuation of £944k, considerably cheaper than the average starting valuation for all dead companies in the cohort (£2.26m).

BEST PERFORMERS

Three companies had a CAGR of more than 100%: these companies were worth £1.77m at the start of the observation period and £240m at the end.

Automation case study

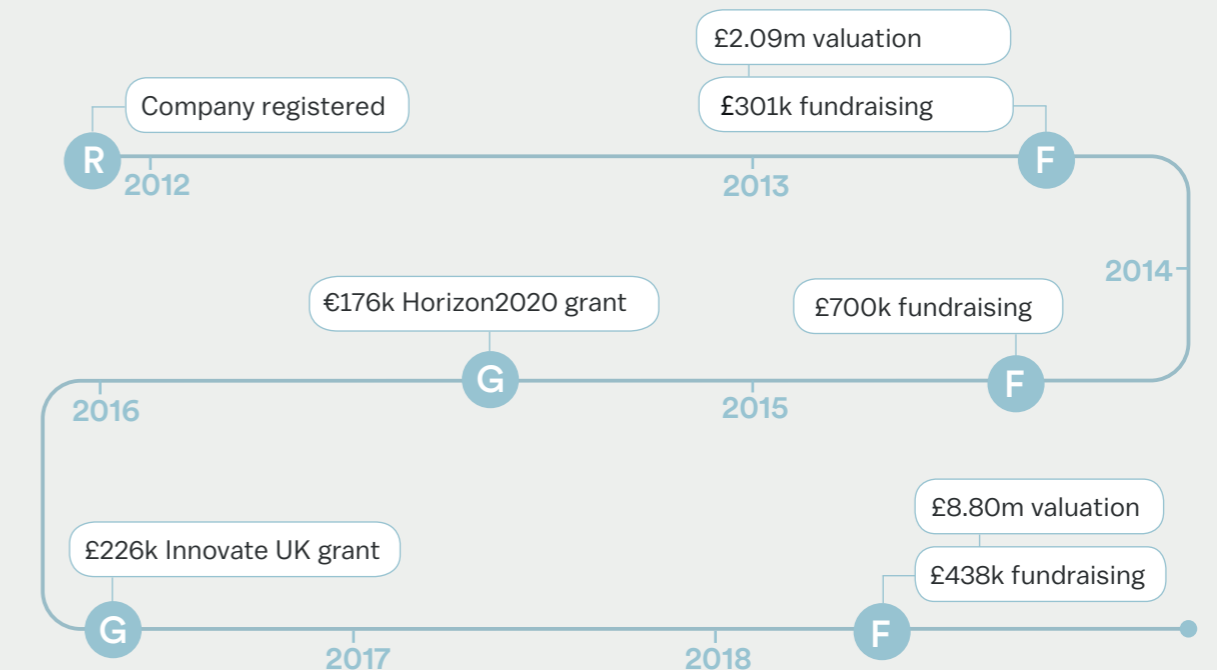
Rezatec's valuation in 2013 was £2.09m, which grew by £6.71m to £8.8m in 2018.

Rezatec develops web-based software that enables clients to analyse satellite and ground data in order to manage sustainability by monitoring and measuring land and land use over time.



SECTORS Information services, Software-as-a-Service, Big data
LOCATION Oxfordshire
INVESTORS Caphaven Partners, Harbert European Growth Capital, Harvard Business School Angels of London, InvestingZone, Newable, Run Capital

10 £5.52m Equity
17 £919k Grants



Life Sciences

There are 154 companies in the life sciences cohort, with an average starting valuation of £8.8m.

Businesses in the Life sciences sectors are Pharmaceuticals, Clinical diagnostics, Medical devices, and Medical instrumentation businesses. 66 of the 154 companies in the Life sciences cohort are spinouts from UK higher education institutions. 74 are venture stage businesses.

The average age of the companies in the life sciences cohort is 10.2 years. Between them the 154 companies in the cohort have received £2.2b of investment – an average of £14.2m per company.

LIFE SCIENCES EXAMPLE COMPANIES

AXOL

SECTOR RAISED DESCRIPTION

Pharmaceuticals, Regenerative medicine
£5.72m
Axol Bioscience collects, stores and reprograms human stem cells for medical research organisations.

nanoTherics

SECTOR RAISED DESCRIPTION

Research tools/reagents
£1.76m
nanoTherics has developed a method of promoting the uptake of molecules by cells, using magnetic technology. It has also designed a device the facilitates this procedure.

Oxford NANOPORE Technologies

SECTOR RAISED DESCRIPTION

Research tools/reagents, Analytics, insights & tools
£493m
Oxford Nanopore Technologies develops a range of portable DNA and RNA sequencing devices, that are also capable of characterising epigenetic modifications.

Life Sciences cohort performance

The companies in the life sciences cohort have so far underperformed the full cohort average by 1.5%.

LIFE SCIENCES KEY FIGURES

£1.53b

starting value

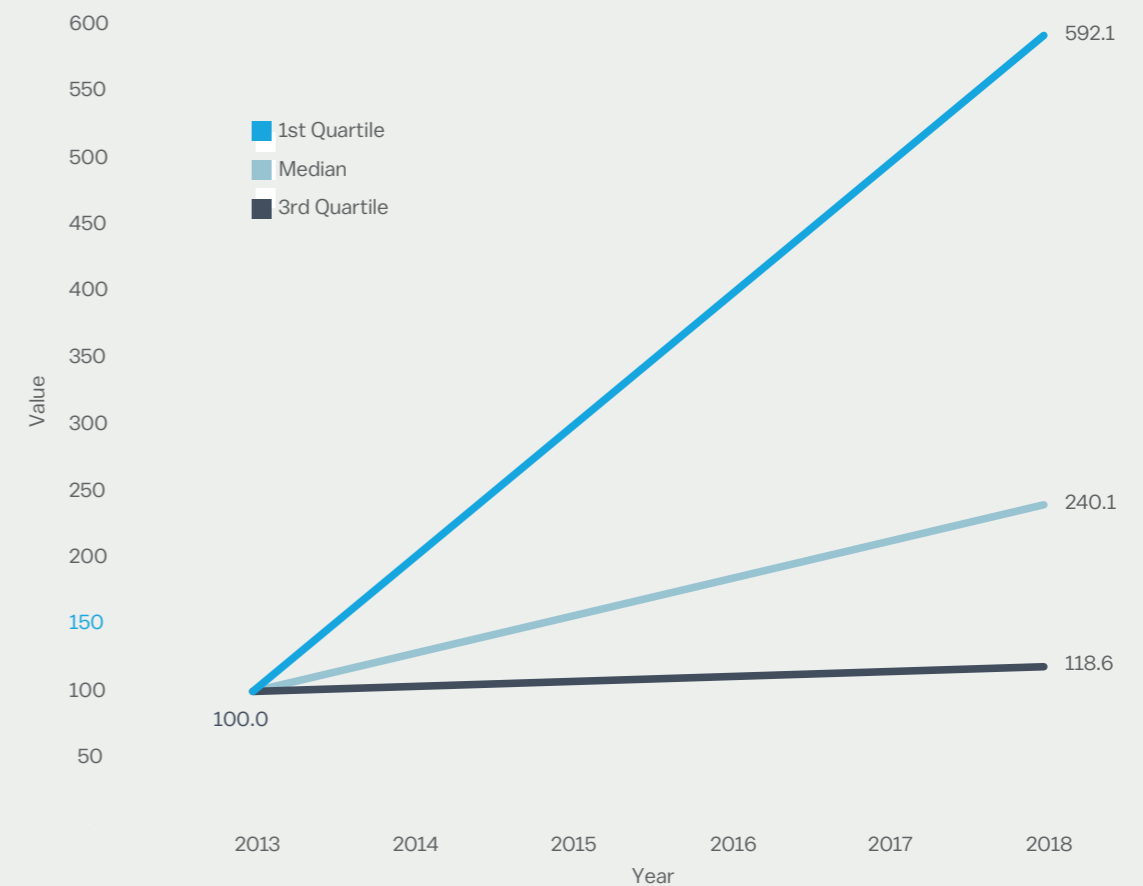
£5.55b

end value

22.2%

CAGR

LIFE SCIENCES COMPANY QUARTILES



Life sciences cohort highlights

The companies were worth more than the average of the full cohort at the start, so its lower CAGR still created large value.

154 companies
22.2% CAGR
14 deaths
13 exits

THE COHORT

The 154 companies in the life sciences cohort grew in value over the observation period from a combined £1.53b to £5.55b. The lowest CAGR of any life sciences company was -56%; the highest was 128%.

EXITS

13 of the companies in the life sciences cohort have exited. These companies were worth £131m at the beginning of the observation period. The total value of the companies at their point of exit was £661m (12% of the total portfolio value of life sciences companies), an average CAGR of 28%.

DEATHS

14 of the companies in the life sciences cohort have died. These companies were worth £17.3m at the beginning of the observation period. This represents an average starting valuation of £1.24m.

BEST PERFORMERS

Two companies had a CAGR of more than 100%: these companies were worth £1.46m at the start of the observation period and £174m at the end.

Life Sciences case study

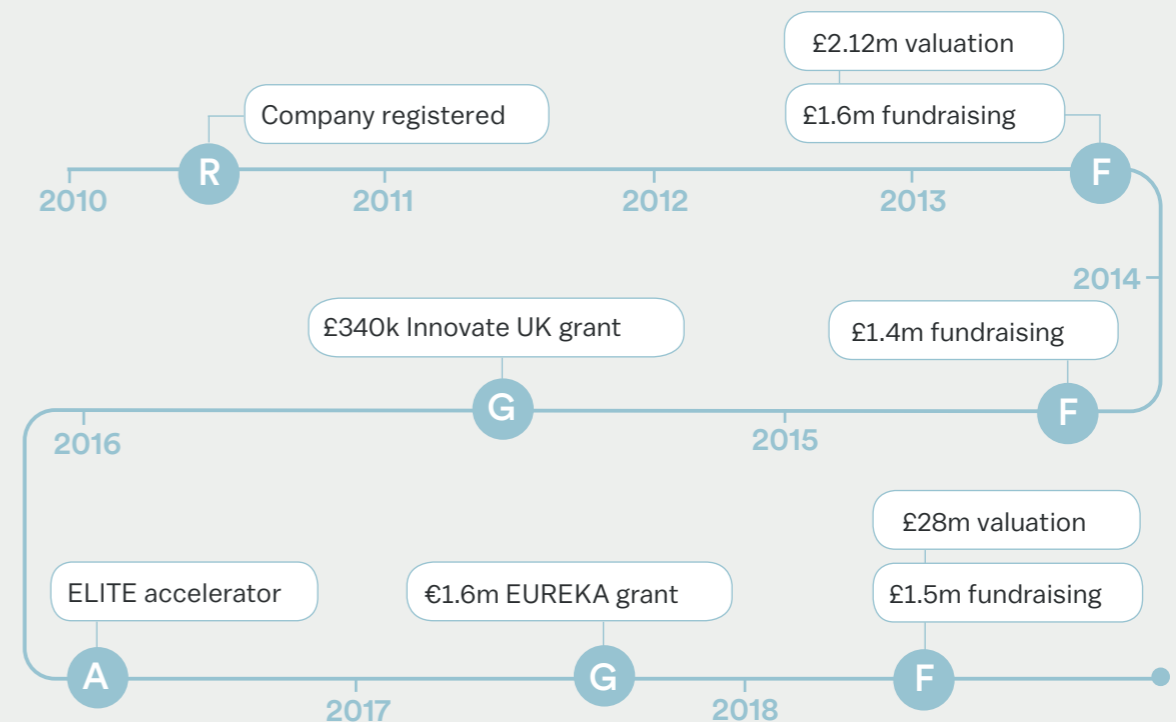
Sphere Fluidics's valuation increased from £2.12m in 2013 to £28m in 2018.

Sphere Fluidics develops microfluidic cell and molecule screening technology with applications in cellular research, biopharmaceutical production, and diagnostics.



SECTORS Research tools/reagents, Pharmaceuticals, Embedded software
LOCATION Cambridgeshire
INVESTORS 24Haymarket, Newable Private Investing, Parkwalk, QVentures, Cambridge Enterprise, Royal Society, Providence Investment Company

10 £13.7m Equity
6 £2.7m Grants



Electronics

There are 77 companies in the electronics cohort, with an average starting valuation of £5.6m.

The electronics companies in the cohort are those companies involved in the manufacture of electronic hardware. Many companies are also developing software that the hardware uses: for example, Internet of Things companies may be creating the hardware appliance as well as the software to run the appliance.

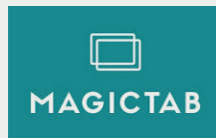
The average age of the companies in the electronics cohort is 10 years. Between them the 77 companies in the cohort have received £770m of investment – an average of £10m per company.

ELECTRONICS EXAMPLE COMPANIES



SECTOR
RAISED
DESCRIPTION

Chips & processors, Embedded software
£10.4m
Cambridge CMOS Sensors develops technology which aims to provide sensors (e.g. for temperature or gas) on electrical chips.



SECTOR
RAISED
DESCRIPTION

Consumer electronics hardware
£150k
Magictab has developed a tablet for use in restaurants; users can order food and settle their bill etc.



SECTOR
RAISED
DESCRIPTION

Internet of Things, Smart homes
£536k
nCube produces a smart home hub that connects all internet-enabled products together in one app.

Electronics cohort performance

The companies in the electronics cohort underperformed the full cohort by 5.3%.

ELECTRONICS KEY FIGURES

£433m

starting value

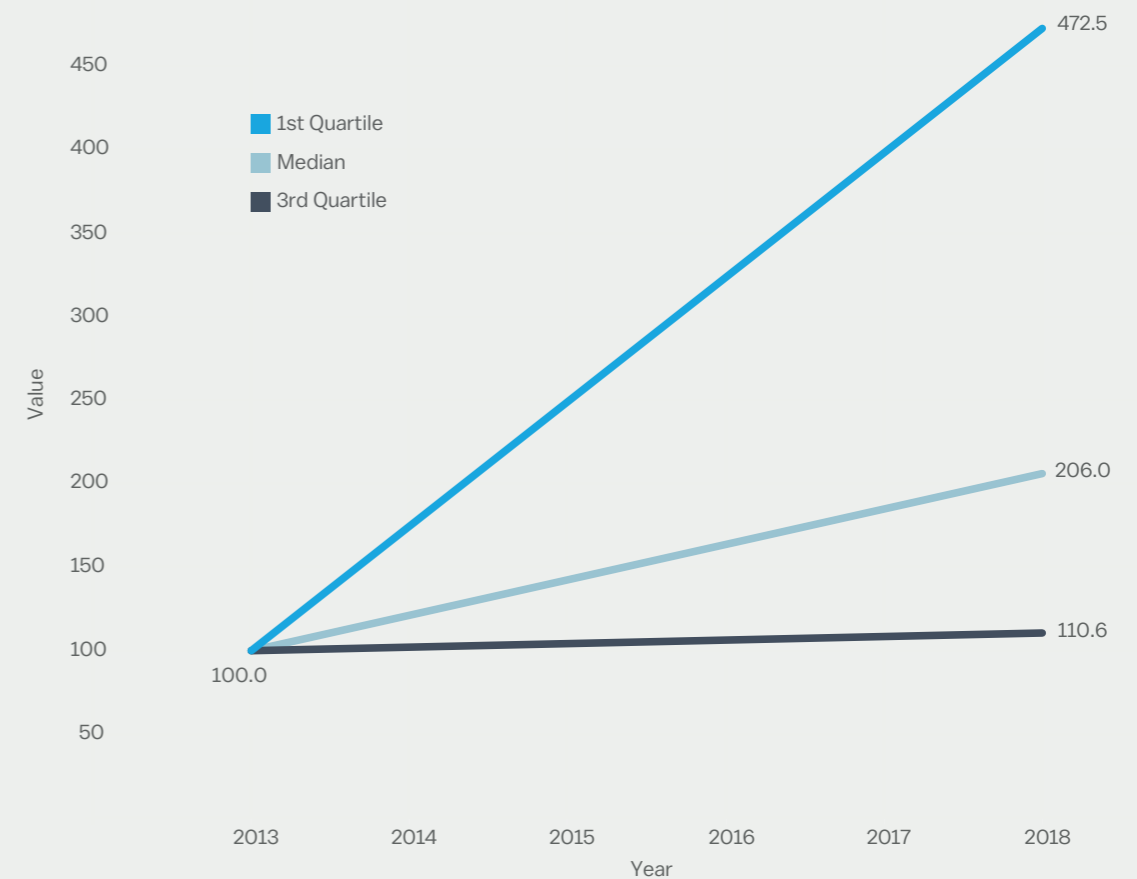
£1.28b

end value

18.4%

CAGR

ELECTRONICS COMPANY QUARTILES



Electronics cohort highlights

The electronics cohort has a lower than average CAGR, due to its large proportion of dead companies.

77 companies
18.4% CAGR
11 deaths
8 exits

THE COHORT

The 77 companies in the electronics cohort grew in value over the observation period from a combined £433m to £1.28b. The lowest CAGR of any electronics company was -57%; the highest was 120%.

EXITS

Eight of the companies in the electronics cohort have exited. These companies were worth £82.1m at the beginning of the observation period. The total value of the companies at their point of exit was £462m (34% of the total portfolio value of electronics companies), an average CAGR of 40%.

DEATHS

11 of the companies in the electronics cohort have died. These companies were worth £28.7m at the beginning of the observation period. This represents an average starting valuation of £2.61m.

BEST PERFORMER

One company had a CAGR of more than 100%: this company was worth £2.93m at the start of the observation period and £305m at the end.

Electronics case study

Blu Wireless Technology has developed 60GHz band technology for smartphones and tablets that aims to speed up wireless internet access.



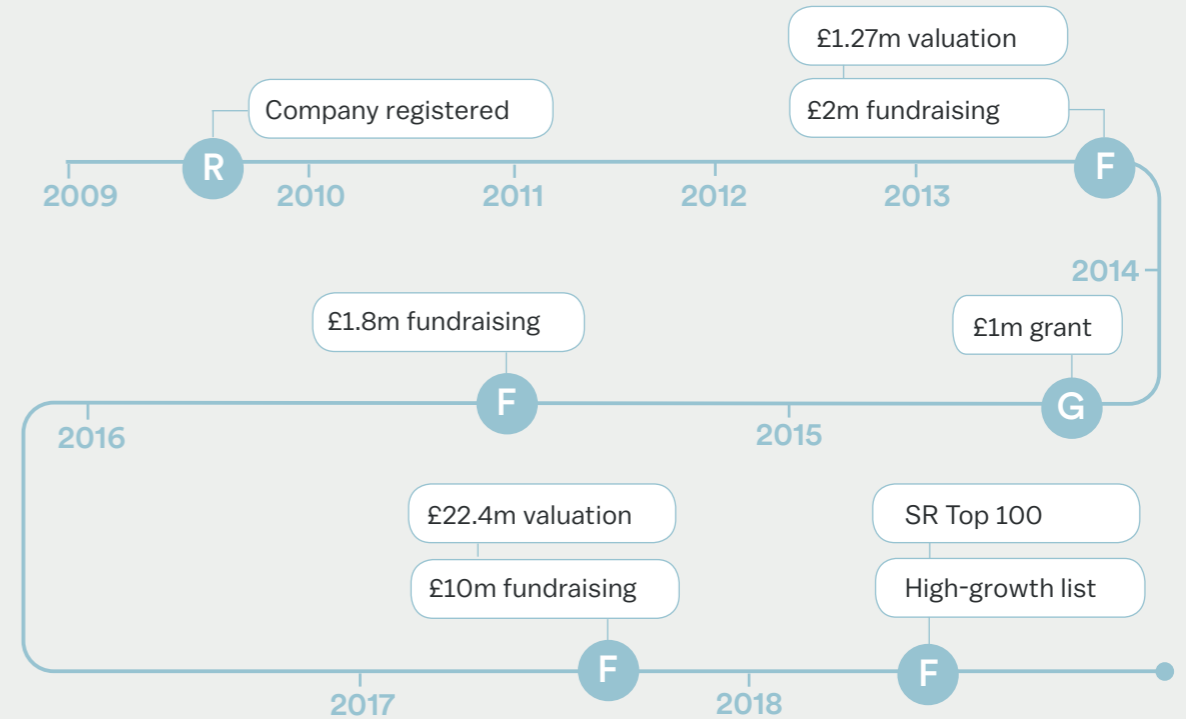
SECTORS Chips & processors, Internet and networking hardware
LOCATION Bristol
INVESTORS Angel CoFund, Newable Private Investing, Calculus Capital, Qi3, Wren Capital, ARM

7

£26m Equity

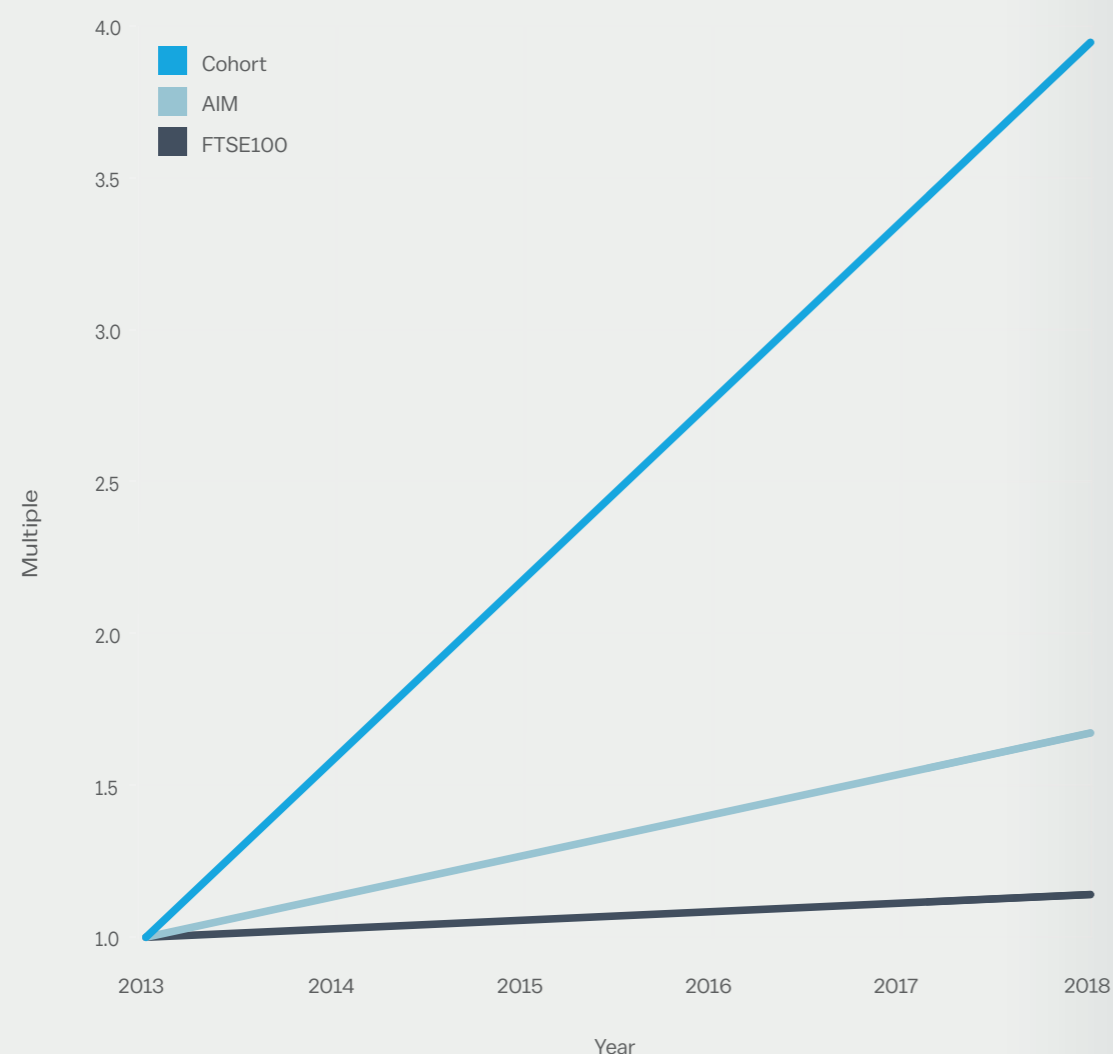
4

£1.43m Grants



Private equities vs public equities

Investments in private companies outperformed those into publicly listed companies.



For the comparison, shares in the FTSE100 saw compound growth in value of just two percent a year. But it is worth noting that this return is exclusive of the dividends the companies in the FTSE100 will have paid out over this period. It is also rare – but not impossible – for the types of private companies considered in this analysis to pay dividends to their investors; any such dividends have not been included.

Conclusion

Over the period 2013 to 2018, assets classes performed with CAGRs as follows:

Private equities:

23.7%

FTSE 100:

2.2%

AIM:

8.9%

FTSE100 (exc. dividends)

PRIVATE COMPANY EQUITIES AS AN ASSET CLASS

This report has shown that investments in growing private companies is lucrative as an asset class. A 24% annual return is a good return for any investor – especially when that rate of return does not include any of the benefit afforded by SEIS and EIS. The majority of companies analysed in this report will have been eligible for SEIS and / or EIS for the investments they received during the observation period.

PERFORMANCE AGAINST OTHER ASSET CLASSES

Even without taking into account the benefits of the tax reliefs available to investors in UK private companies, as an asset class investments into these companies have outperformed other comparable assets. Had one invested in the FTSE100 (or rather a tracker fund thereof), one would have seen a compound annual return of just two percent.

IMPORTANCE OF SECTORS

This report has shown the variance in returns offered by different sectors. Since the ability to invest in every single equity deal in a given year remains purely hypothetical, these sectoral differences are crucial. In looking to benefit from the returns that can be generated from these companies, investors nonetheless need to make the right choices.

WHAT DOES THE FUTURE HOLD?

It is almost impossible from our analysis of this historical data to predict even what investment volumes might look like in 2019; valuations can be an even trickier gamble, especially given the intrinsic and extrinsic factors affecting them, as explained earlier in this report. However, by comparing the performance of this diversified portfolio of private companies with that of public companies, it is clear that this asset class can offer lucrative returns. The variation in returns delivered by our different sectoral cohorts highlights the particular benefits of investing in the cutting edge of technology. The outstanding performance of our Automation cohort speaks the value that is being seen even now from companies leading the charge of the Fourth Industrial Revolution, despite their relative infancy. Investors investing early in these sectors – and for the long term – could reap the benefits.

Full methodology

THE COHORT

Beauhurst identified a cohort of 1,229 companies that received an equity investment in 2013 for which Beauhurst has been able to calculate a valuation at the time of investment and received at least one equity investment between 1/1/14 and 30/11/18 for which Beauhurst has been able to calculate a valuation.

Companies from all sectors are included in this full cohort of 1,229 companies. Where a company has exited or died, it remains part of the cohort and is valued on the basis outlined on the facing page.

SECTORS

Three sectors of particular interest were identified for the purposes of this report: Automation, Life sciences, Electronics. These sectoral cohorts were identified by mapping against Beauhurst's granular sector matrix of 200 sectors. For example, the Life sciences cohort is made up of companies operating in one or more of the following: Pharmaceuticals, Research tools / reagents, Clinical diagnostics, Medical devices, Medical instrumentation.

Fair value

PRINCIPLES OF FAIR VALUE

The principles of calculating fair value for private companies that are set out below are based on those principles established in the International Financial Reporting Standards 13 but tailored to the specifics of investment in private companies.

UP AND DOWN ROUNDS

All companies in the cohort have at least two known valuations: at least one in 2013 and at least one between 1/1/14 and 30/11/18. Where these companies have not exited or died (see below), fair value has been calculated as the valuation of the company at their last known round of investment prior to 30/11/18. This valuation can be higher or lower than their valuation in 2013.

EXITS

There are two kinds of exits: an acquisition of the company (whether the buyer is financial or corporate / trade), or the listing of the company's shares on a stock exchange. For acquisitions, one of two values was used: (i) the sale price if known; or (ii) the last known valuation from a round of funding. For IPOs, the market capitalisation of the company at 30/11/18 was used.

COMPANY DEATHS

Wherever a company in the cohort has died, its fair value was £0. In some cases, investors may have been returned some funds upon the winding up of the company but this is (i) rare and (ii) not disclosed so all deaths have been treated the same.

Beauhurst

Beauhurst is a searchable database of the UK's high-growth companies.

Our platform is trusted by thousands of business professionals to help them find, research and monitor the most ambitious businesses in Britain. We collect data on every company that meets our unique criteria of high-growth; from equity-backed startups to accelerator attendees, academic spinouts and fast-growing scaleups.

Our data is also used by journalists and researchers who seek to understand the high-growth economy, and powering studies by major organisations – including the British Business Bank, HM Treasury and Innovate UK – to help them develop effective policy.

For more information and a free demonstration, visit beauhurst.com

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Newable

Newable helps companies thrive by providing the essential resources – funding, professional support and premises - they need to take the next steps with their business.

Newable acquired the London Business Angels in April 2017 and rebranded as Newable Private Investing (NPI). The network provides Private Investors, Family Offices and Corporate Investors with opportunities to invest in potentially high growth early-stage knowledge-intensive companies.

We have a heritage stretching back over 30 years and have developed a comprehensive ecosystem of investors, co-investors and partners with whom we work to ensure we have an extensive pipeline of early-stage companies.

Investors are able to attend our Investor Events to meet entrepreneurs directly or invest in our Funds for a more passive approach. Typically, we invest in UK based innovative companies who qualify for investment under the Enterprise and/ or Seed Enterprise Investment Schemes.

Newable Private Investing recently launched its first evergreen fund with an initial target raise of £10 million in the first year. The Newable Scale-up Fund 3 aims to invest in seven to ten such businesses operating in knowledge-intensive industries through the EIS fund, with particular emphasis on the specialist areas of electronics, automation, medtech, and spacetech. Focused on investing in game-changing technologies, the fund provides a gateway to Series A for visionary businesses that are now looking to scale commercial operations.

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