Royal Academy of Engineering | Enterprise Hub

Royal Academy of Engineering

State of UK Deep Tech 2024

Data provided by PitchBook

Contents

Foreword

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We are delighted to publish the second edition of the 'State of UK Deep Tech' led by the Royal Academy of Engineering Enterprise Hub, with data and analysis from Pitchbook. Our aim is to provide a comprehensive overview of the current landscape and future potential of deep tech in the UK.

The Enterprise Hub has a unique vantage point on the nation's deep tech scene: It has spent over a decade supporting entrepreneurs and business leaders to convert breakthrough engineering innovations into disruptive spinouts, startups and scaleups across the UK.

The UK is home to thousands of active deep tech companies, including successful regional clusters like the Compound Semiconductor Centre in Cardiff; the Edinburgh Science Triangle and the Cyber-AI hub in Belfast. From advanced semiconductors and quantum encryption to biodegradable seaweed plastics and filtering toxic chemicals from water, deep tech companies – many supported by the Academy – are already helping to transform entire industries and address some of the world's most pressing challenges.

In recent years, critical technologies like engineering biology, semiconductors, quantum, AI and telecoms have been identified as UK strengths and areas for opportunity. Indeed, the UK government has highlighted 'Digital and Technologies' as a high-growth sector in its Industrial Strategy Green Paper, Invest 2035[1]. Government support and encouragement for deep tech is welcome. The AI Opportunities Action Plan, Regulatory Innovation Office and cross-government Review of Technology Adoption are expected to drive progress in developing and adopting transformative technologies. Public and private investment in R&D are crucial, with public investment playing an important role leveraging private investment, while partnerships between academic institutions and deep tech enterprises can be catalytic for successful commercialisation and growth.

Kickstarting Economic Growth[2] is the government's number one mission. Driving innovation and capitalising on the UK's excellence in science and technology are an important part of that mission. Deep tech companies are key drivers of innovation and economic opportunity, generating high value jobs and contributing to the economy.

Successful deep tech industries can reap high rewards but there are key barriers to growth, including significant capital investment and infrastructure requirements. The UK deep tech environment requires growing private capital and improving the effectiveness of VC backing. Despite being third in the world for venture capital investment, the UK is proportionally weak at scaleup, particularly in comparison to the US. Investors need sufficient technical expertise to understand complex scientific engineering solutions and access related investment opportunities.

Deep tech companies often require complex and costly infrastructure requirements, that often go above and beyond generic business R&D needs. As these ventures grow and scale their operation, these requirements can compound along with regulatory, planning and cost-related barriers. While not unique to deep tech enterprises, the need for flexible and affordable lab and office space is also a key part of the infrastructure equation. As businesses scale up both their headcount and their operations, the need for space is imperative and, in certain areas of the country, difficult to secure. Nowhere is this clearer than in the 'Golden Triangle' of London, Cambridge and Oxford as well as the South East of England, where demand for lab space is far outstripping supply, particularly in life sciences.

The UK has the foundations of a strong deep tech hub, based on its advanced and broad talent and research base. The Academy's vision is for a future where high-tech innovative startups can flourish and readily access the finance, facilities, infrastructure and talent they need to grow. A landscape where their products, processes and services benefit customers and citizens, with rapid adoption, deployment and procurement from the UK public sector. UK deep tech enterprises are well placed to lead on the global stage with inspiring technological solutions and to help share the fruits of prosperity across all regions and groups in society.

1: https://www.gov.uk/government/consultations/invest-2035-the-uks-modern-industrial-strategy/invest-2035-the-uks-modern-industrial-strategy
2: https://www.gov.uk/missions/economic-growth

Executive summary

What is deep tech?

Deep technology companies build on the fundamental principles of engineering and science to create novel solutions and are recognised as being capital, time, and R&D intensive. Being grounded in cutting-edge advances in engineering and science, deep tech offers solutions to the world's most complex environmental, economic and societal challenges.

Due to deep tech encompassing many concepts and capital-intensive technologies, there is often not a single definition upon which to work from. For the purposes of this report, deep tech refers to the following seven areas: manufacturing and materials; robotics, hardware and chips; networks; healthcare; frontier applications; energy; and AI and computing.

Some companies operate within multiple segments given the nature of their work, but deals for these companies are deduplicated in the overall deep tech data to prevent double counting. Similar measures were taken to define deep tech in the previous edition of this report, though discrepancies exist. Historical data in this edition is consistent with the latest methodology. Further detail on methodologies can be found on page 40.

UK deep tech companies secure substantial venture capital (VC) investment

- Since 2020, UK deep tech has consistently attracted over £5 billion in annual VC funding, and closed £3.6 billion in the first half of 2024 (page 12).
- Despite a slowdown in overall VC activity due to macroeconomic pressures since 2022, key sectors like healthcare and AI continue to drive significant deal flow, with each securing more than £1 billion in value in the first half of 2024 (pages 21, 24).
- Two segments - energy and robotics, hardware and chips - faced sharper declines in deal value in the first half of 2024 compared with other segments (pages 19, 23).

Deep tech companies are uniquely positioned

- Deep tech companies secure larger VC cheque sizes compared with the broader population of VC-backed companies in the UK, with median deal sizes of £2 million and £1.2 million, respectively (page 5).
- Deep tech companies also historically notch higher pre-money valuations, with a median of £7.3 million in the first half of 2024, growing 8.8% from 2023, while the median for all VC-backed companies declined 6.9% in the same period (page 5).
- Late-stage companies account for a growing portion of deep tech VC funding, representing more than 30% of total deal count since 2023 as investor risk appetites shifted (page 16).
- However, the deep tech industry has seen a resilient amount of first-time VC financings since 2020, indicating that opportunities still exist for new entrants (page 16).

A small deep tech investor base faces global competition

- Deep tech companies face steep development costs and prolonged commercial timelines. Meanwhile the UK faces a shortage of investors with relevant technical backgrounds who are best equipped to guide deep tech startups to scale.
- Cross-border and nontraditional VC investors are moving in on the UK's deep tech opportunities, participating in a growing number of deals in recent years. 32.5% of deep tech VC deals for UK companies involved no UK investors in the first half of 2024, up from 29.8% in 2023 (page 16).

Read on for a detailed breakdown of the industry's investment trends and expert discussion on some of the most exciting innovations at play.

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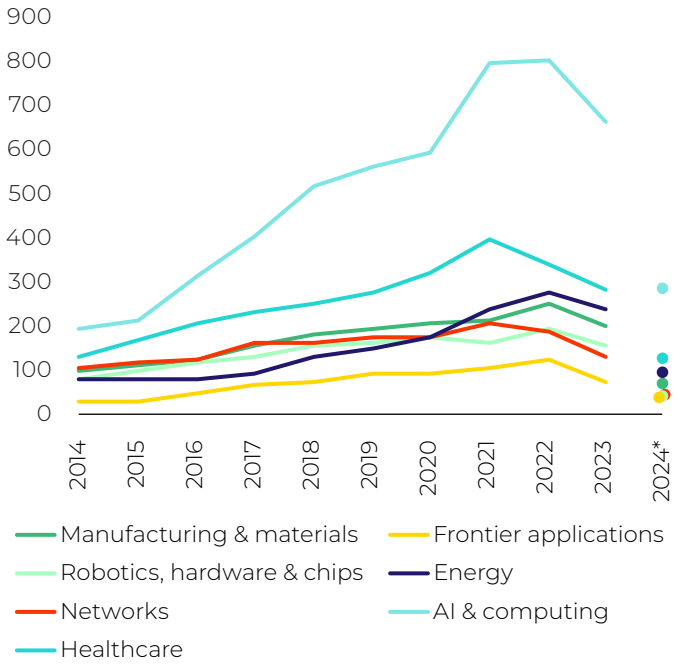
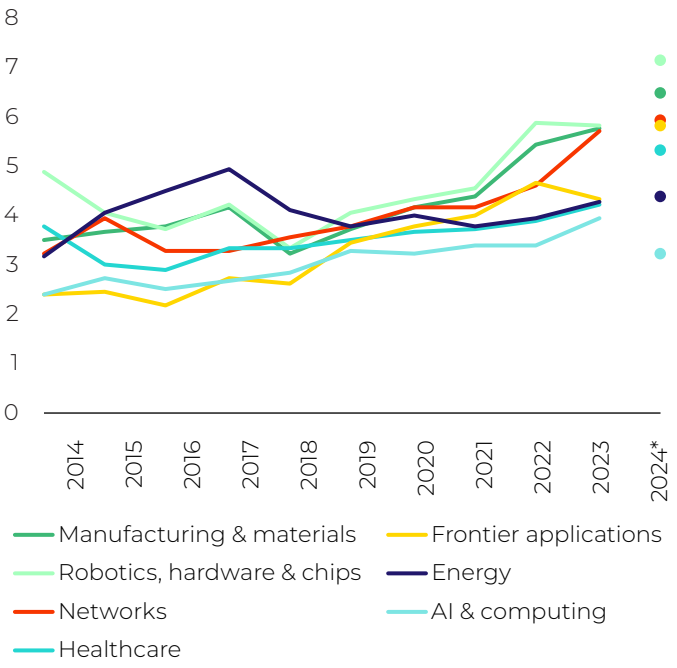
Population statistics

Deep tech VC-backed company count by area



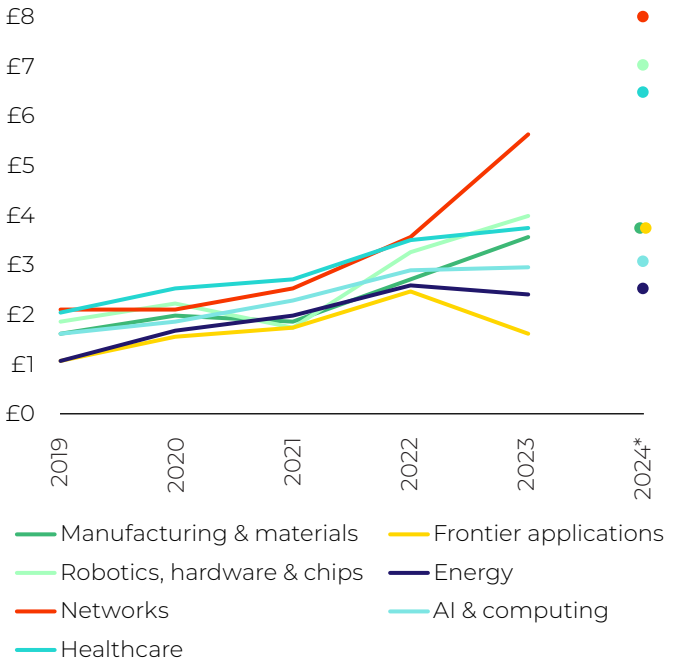
Source: PitchBook · Geography: UK · *As of 3 June 2024

Median deep tech VC-backed company age (years) by area



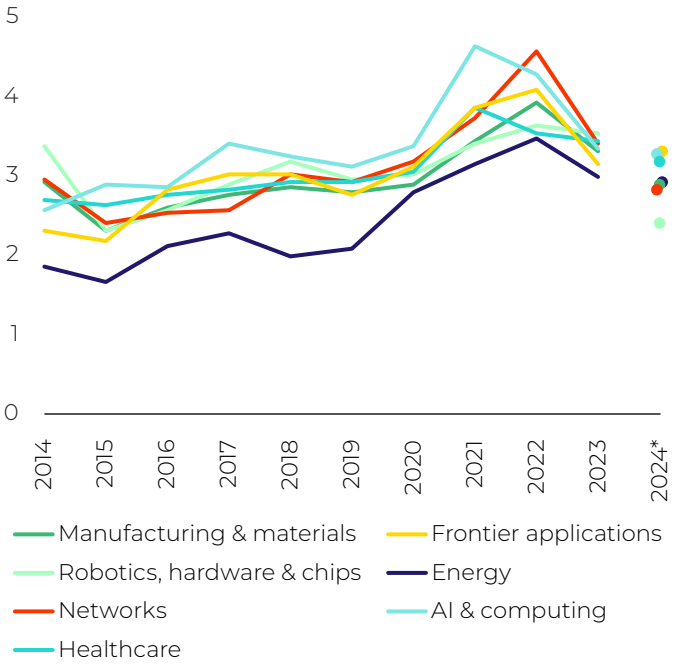
Source: PitchBook · Geography: UK · *As of 3 June 2024

Median deep tech VC raised (£M) by area



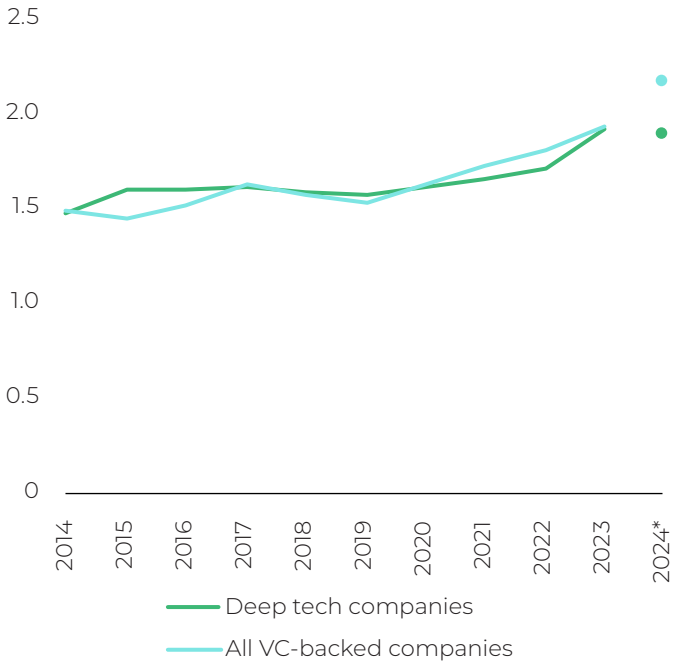
Source: PitchBook · Geography: UK · *As of 3 June 2024

Average deep tech VC investor count by area



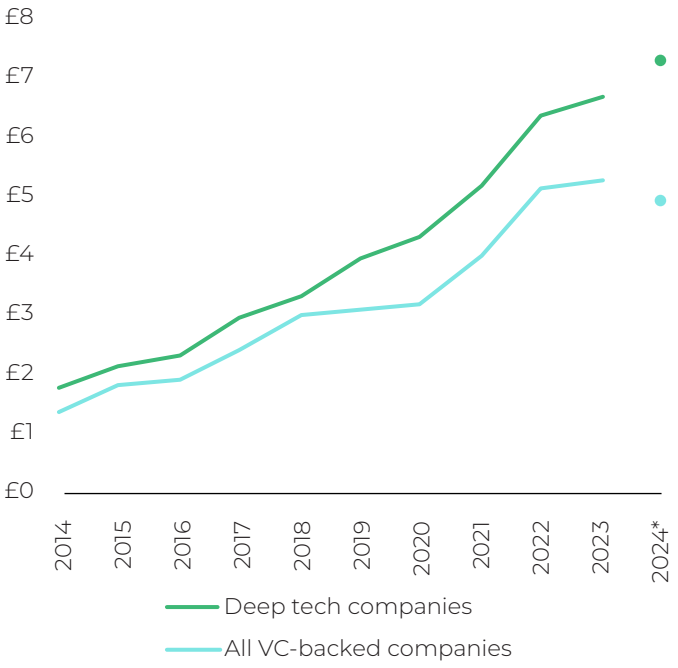
Source: PitchBook · Geography: UK · *As of 3 June 2024

Average time (years) between VC rounds



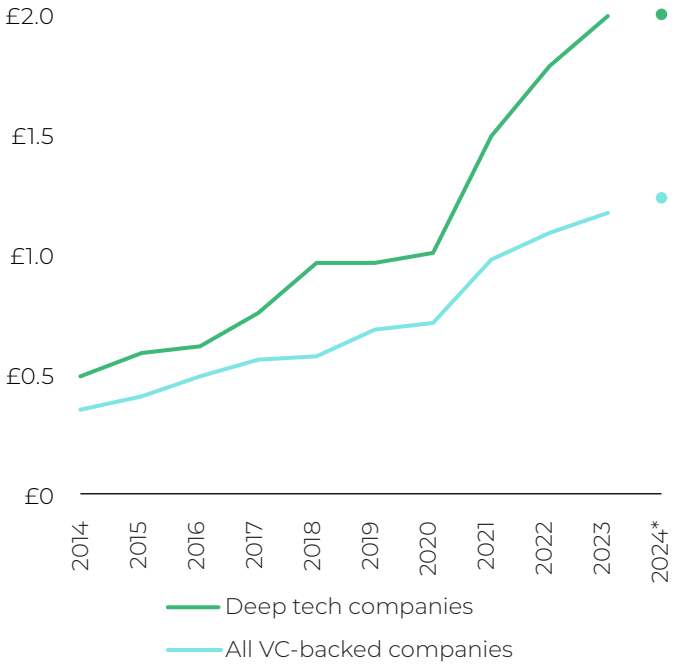
Source: PitchBook · Geography: UK · *As of 3 June 2024

Median VC pre-money valuation (£M)



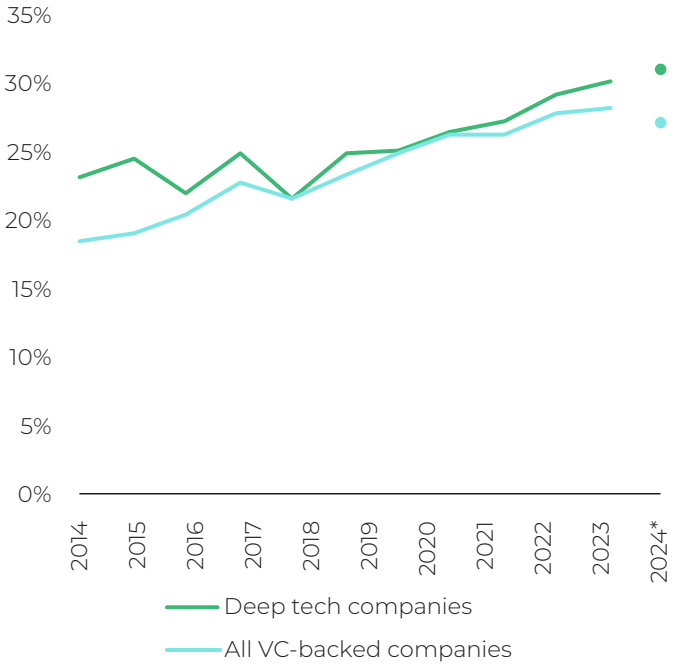
Source: PitchBook · Geography: UK · *As of 3 June 2024

Median VC deal value (£M)



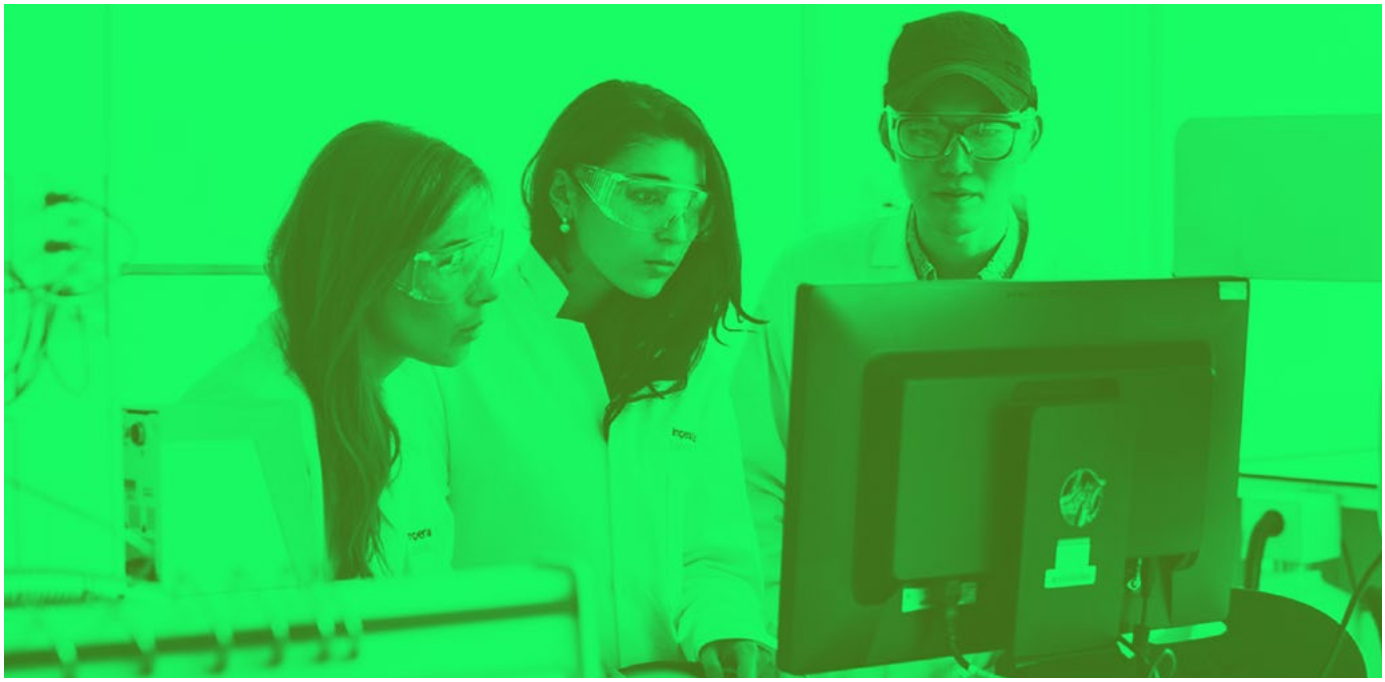
Source: PitchBook · Geography: UK · *As of 3 June 2024

Share of VC-backed companies with at least one female founder



Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: Share of companies to receive VC funding that have at least one female founder

Macro trends



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Strong investment flow into the UK's deep tech ecosystem over the past decade reveals how startups are leading the development of novel technologies that can transform the UK's technological capabilities and global competitiveness. Investment activity exhibited a compound annual growth rate (CAGR) of 24.3% for cumulative deal value and 10.7% for total deal count between 2013 and 2023. However, 2024 presented significant challenges for startups seeking funding due to ongoing economic stressors. Deep tech investment activity has decelerated each year since 2021, alongside economic headwinds like persistent post-pandemic inflation and lagging labour productivity growth.[3] More can be done to sustain a pipeline of well-capitalised deep tech players in this environment.

A mix of variables can increase the pool of capital available in the UK and strengthen incentives to invest in riskier innovative projects, potentially pushing the UK forwards in the technological race. This section will examine how the UK has balanced five factors - talent development, academic institutions, industrial policies, regulations, and geopolitics - to spearhead a wave of domestic technological innovation.

Academic institutions

Academic institutions are hotbeds of scientific research and continue to incubate and spin out firms that form the bedrock of the deep tech environment. The quality of advanced education in the UK is underscored by top global rankings secured by several universities and a growing number of foreign students flocking to the nation's institutions. International students represent 45.4% of postgraduate enrolment, and UNESCO identified the UK as the second-most-popular destination for international students as of 2022.[4] Universities provide the physical space, resources, and mentorship for students to research new technologies that could lead to an entrepreneurial endeavour without all the risks associated with a new startup. Collaboration requires a clearly defined product road map, but academic and investor incentives are not always aligned. Academics are more knowledgeable on the technical aspects of a product, while investors are more focused on its scalability and commercialisation. Nonetheless, investors have expanded their investments into UK spinouts over the past decade, while the average equity stake that universities take in their spinouts has decreased, as noted in the latest edition

3: "Low Growth: The Economy's Biggest Challenge," UK Parliament, House of Commons Library, Daniel Harari, 16 July 2024.
4: "International Facts and Figures 2023," Universities UK, 5 December 2023.

of the Academy's Spotlight on Spinouts report.[5]
A variety of factors influence these stakeholder dynamics, but the door has opened for more commercial and external engagement with innovations originating within academia.

Talent development

To sustain a business environment conducive to pushing innovative technologies to market, startups need a specialised labour force. Legislators, academic institutions, and corporates must collaborate to create opportunities that will draw in talent. The bottom line for talent acquisition is payroll, which historically presents a challenge for cash-strapped startups prioritising research and development (R&D) and other expenses before achieving economies of scale. Survey data indicates that prior to raising a Series B, most deep tech executives across Europe bring home an annual median salary of less than £85,000, but see a significant jump in compensation following a Series B.[6] Equity stakes are therefore a critical consideration for startups and prospective employees looking to align incentives in the low-liquidity early stages, and VC investment can enable startup leaders to fully dedicate themselves to advancing their company's mission. Beyond the executive level, immigration policies also shape the talent pipeline for startups. Skilled workers and entrepreneurs from other countries may access the UK's technology sector through academic tracks or specialised visas. The UK's visa system needs to be proportionate and contain within it the flexibility to attract and retain global talent which fills the skills and knowledge gaps in deep tech companies.

Within the existing domestic workforce, upskilling and reskilling initiatives are needed to address the proliferation of deep tech and its societal implications. Engineers are likely to confront these advancements sooner than other professions given the nature of their work, and successful adaptations will require a supportive skills ecosystem. In a 2023 literature review on engineering education and skills policy, the Academy recommends several approaches to developing these ecosystems, including collaborations between employers and trade unions and localised approaches to skill development.[7]

Industrial policies

Industrial policies are instrumental to the development of capital-intensive industries. In recent years, public sector actions to support domestic deep tech innovation included dedicated funds, accelerator programmes, and preferential tax treatment, and a particular focus on five critical technologies: AI, Engineering Biology, Future Telecommunications, Quantum and Semiconductors . Most recently, the Autumn Budget 2024 allocated £20.4 billion for UK R&D, including £520 million for the Life Sciences Innovative Manufacturing Fund and £40 million over five years to support university spinouts.[8] State aid can give domestic startups a leg up by providing

5: "Spotlight on Spinouts: UK Academic Spinout Trends," The Royal Academy of Engineering, Beauhurst, April 2024.
6: "How Much Are European Deeptech Executives Paid?" Sifted, Daphné Leprince-Ringuet, 1 April 2024.
7: "Literature Review on Engineering Education and Skills Policy," the Royal Academy of Engineering, January 2023.
8: "Autumn Budget 2024: Fixing the Foundations to Deliver Change," HM Treasury, October 2024.

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additional capital support and enabling them to extend their cash runways without yet achieving profitability or scale. The Mansion House Reforms, announced in 2023, aim to support growth across the economy by unlocking capital for high-growth companies. The speed at which these reforms materialise and start making a difference will be key to accelerating growth of UK deep-tech companies. Fiscal policy stability and certainty are key to influencing investment decisions. Consistency is the key to building confidence among investors and innovators, empowering risk-takers, and encouraging founders to take the next step in the development of their idea. The Enterprise Investment Scheme (EIS) and Seed Enterprise Investment Scheme (SEIS) have been transformative to improving the UK's startup ecosystem. R&D tax reliefs play a crucial role in increasing available finance to small innovative companies.

2025 should see the launch of the UK's Modern Industrial Strategy, Invest 2025, framed as a central driver of "desperately" needed economic growth.[9] The 2024 Green Paper shows government plans to prioritise eight growth-driving sectors, several of which overlap with deep tech, including advanced manufacturing, clean energy, digital and technologies, and life sciences. Proposed action items include direct R&D investment, buildouts of regional innovation clusters, and public—private collaboration to scale technologies and address adoption gaps in emerging tech. The Industrial Strategy and Sector Plans will be revealed in spring 2025.

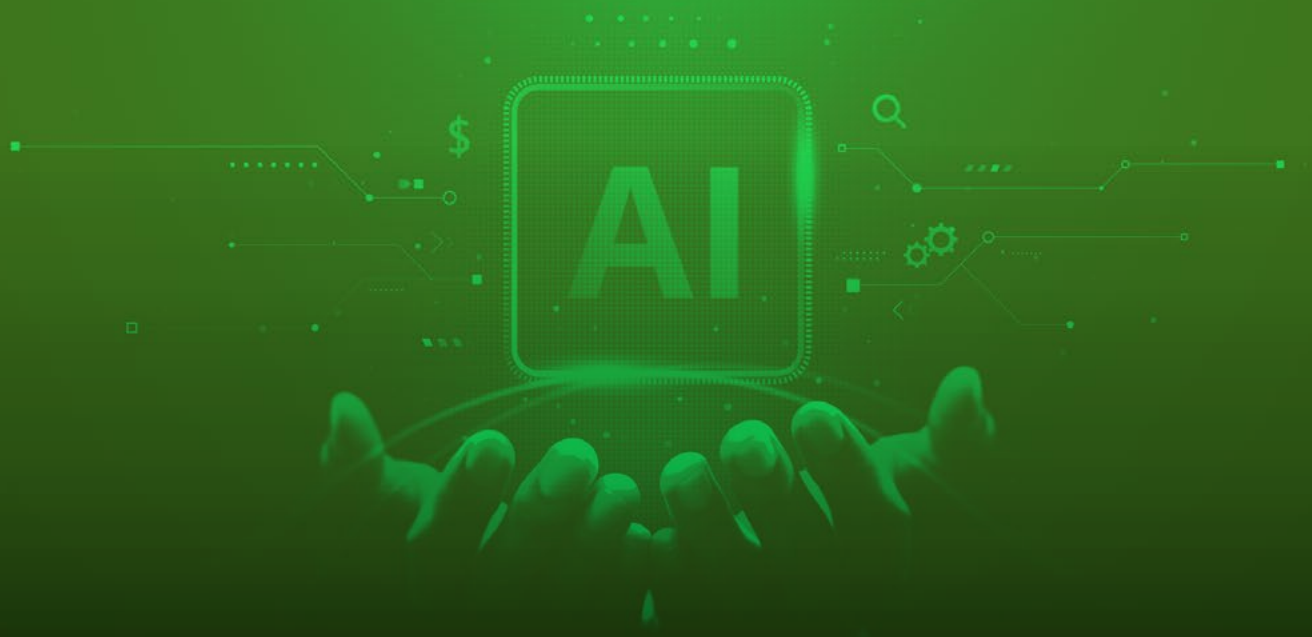
Regulations

Aside from favourable industrial policies, the overall regulatory landscape dictates the pace of technological innovation. Favourable antitrust regulations, public—private sector cooperation, and private investment incentives work in tandem to promote the domestic development of deep tech. Other regulations limit commercial activity in areas like defence and advanced robotics, along with 15 other sensitive areas identified by the National Security and Investment Act (NSIA) of 2021, which grants governmental authority to scrutinise and potentially block transactions in these areas as a matter of national security.[10] Acquisitions are a common exit path for startups that may fall under this jurisdiction, but the NSIA is designed primarily to prevent adverse foreign influences while preserving an active investment ecosystem. The UK government actively encourages foreign direct investment (FDI) into domestic firms, with few restrictions beyond disclosure of major stakeholders as required by the Economic Crime (Transparency and Enforcement) Act of 2022.[11] A Regulatory Innovation Office is being established by the government to help speed up regulatory decisions for new technologies and position the UK as the best place in the world to innovate.

Geopolitics

Within the global technology race, the UK is contending with US and Chinese technological might, but geopolitics are playing in the country's favour as the most innovative collaborators are also the UK's closest allies. Healthy international relationships play a key role in the trading of academic talent and advanced technologies. Companies that operate at a critical junction in a technological supply chain typically operate in democratic societies. For instance, the US, South Korea, Japan, and the European Union are a few powerhouses that the UK maintains vigorous diplomatic relations with. On the other hand, unaligned regimes have been subject to export bans, limited academic cooperation, and reduced nondomestic corporate activity. Supply chain vulnerabilities are a priority amid ongoing conflicts and tensions in Eastern Europe, the Middle East, and the Taiwan Strait. Semiconductor production capacity and critical battery minerals are of particular importance to energy transition plans and are exacerbated by mounting calls for tighter global supply chains and manufacturing self-reliance.[12, 13]

9: "Invest 2035: The UK's Modern Industrial Strategy," UK Department for Business and Trade, 24 October 2024.
10: "National Security and Investment Act: Details of the 17 Types of Notifiable Acquisitions," UK Cabinet Office, 6 February 2024.
11: "Fact Sheet - Economic Crime and Corporate Transparency Act 2023 Overarching," UK Government, n.d., accessed 19 November 2024.
12: "£11.5M To Improve Semiconductor Manufacturing and Supply Chains," UK Research and Innovation, 27 September 2024.
13: "Critical Minerals: Research Landscape Review," UK Critical Minerals Intelligence Centre, Matthew Reeves, n.d., accessed 19 November 2024.



Balancing AI opportunities and risks

In July 2024 the Chair of Advanced Research and Invention Agency (ARIA) Matt Clifford, was commissioned by the government to produce an AI Opportunities Action Plan. The plan set out to identify how to accelerate the use of AI to bolster the nation's economic productivity and improve lives through better public services. It also focuses on positioning the UK as a globally competitive AI powerhouse and delivery of sustained economic growth.[14]

Published in January 2025, the AI Opportunities Action Plan sets out 50 actions that focus on:

- Investment in foundations for AI development including compute and data infrastructure and access to talent;
- Cross-economy AI adoption in the public and private sectors through rapidly piloting and scaling initiatives;
- Positioning the UK to be an AI maker, developing AI champions in all layers of the AI stack.[15]

These recommendations have been accepted by the government and include commitments to developing a long-term compute strategy, scholarship and fellowship programmes to address skills demands and access to public sector data through the National Data Library.

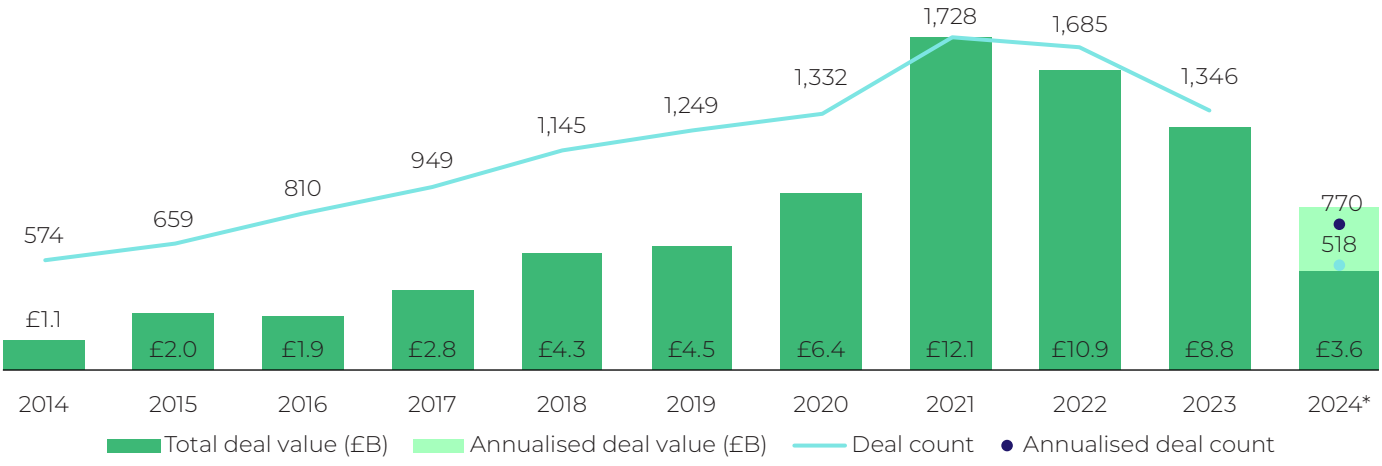
Realising the opportunities of AI requires careful management of the risks. In February 2023, the government established a new state body, the AI Safety Institute, to assess and oversee potential AI risks. Several months later, in November 2023, the UK held the world's first AI Safety Summit, with representatives from 28 countries in attendance, ultimately resulting in the Bletchley Declaration, which represents mutual acknowledgement of the importance of international cooperation on AI safety.[16] More recently, under new UK Science Secretary Peter Kyle the UK hosted a conference in San Francisco with AI developers to support the development of their AI safety frameworks. This signalled the UK's continued ambition to design practical and effective approaches to AI safety.[17]

Regulation is another key component through which AI opportunities can be realised in a way that addresses risks, supports innovation and helps build public trust. As AI is adopted across the public and private sectors, public trust of AI is of ever-increasing importance. In the response to the AI Opportunities Action Plan, the government have committed to set out its approach on AI regulation.[18]

14: "AI Expert To Lead Action Plan To Ensure UK Reaps the Benefits of Artificial Intelligence," UK Department for Science, Innovation & Technology, HM Treasury, Peter Kyle and Rachel Reeves, 26 July 2024.
15: https://www.gov.uk/government/publications/ai-opportunities-action-plan/ai-opportunities-action-plan#lay-the-foundations
16: "The Bletchley Declaration by Countries Attending the AI Safety Summit, 1-2 November 2023," UK Department for Science, Innovation and Technology, 1 November 2023.
17: https://www.gov.uk/government/news/uk-to-bring-global-ai-developers-together-ahead-of-ai-action-summit
18: https://www.gov.uk/government/publications/ai-opportunities-action-plan-government-response/ai-opportunities-action-plan-government-response

Market trends

Deep tech VC deal activity



Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: Annualised value based on Q1 2024 figures.

The UK deep tech ecosystem receives a strong volume of private investment, with annual VC funding exceeding £5 billion each year since 2020. The value of deals in the first half of 2024 shows £3.6 billion raised across over 500 transactions, with an uptick in Q2 indicating that funding in the first half of this year is keeping pace with the previous year's activity. Many deep tech founders bucked the "summer slump" for dealmaking, including a few large outlier deals that drove a Q2 uptick. VCs have slowed their volume of investment over the past two years amid macroeconomic headwinds, however. As a result, a more selective population of companies has been able to successfully secure funding, and these companies often receive larger cheque sizes because investors are not spread as thin across their pipeline of portfolio additions. Autonomous driving technology developer Wayve brought in the largest deal of the quarter with its £840 million Series C, which was also the largest UK deep tech round on record, with participation from leading global firms and corporates, including SoftBank (Japan) and NVIDIA (US). The funds will be used to launch Wayve's novel Embodied AI products for existing original equipment manufacturers, primarily in the automotive industry and eventually broader robotics.[19]

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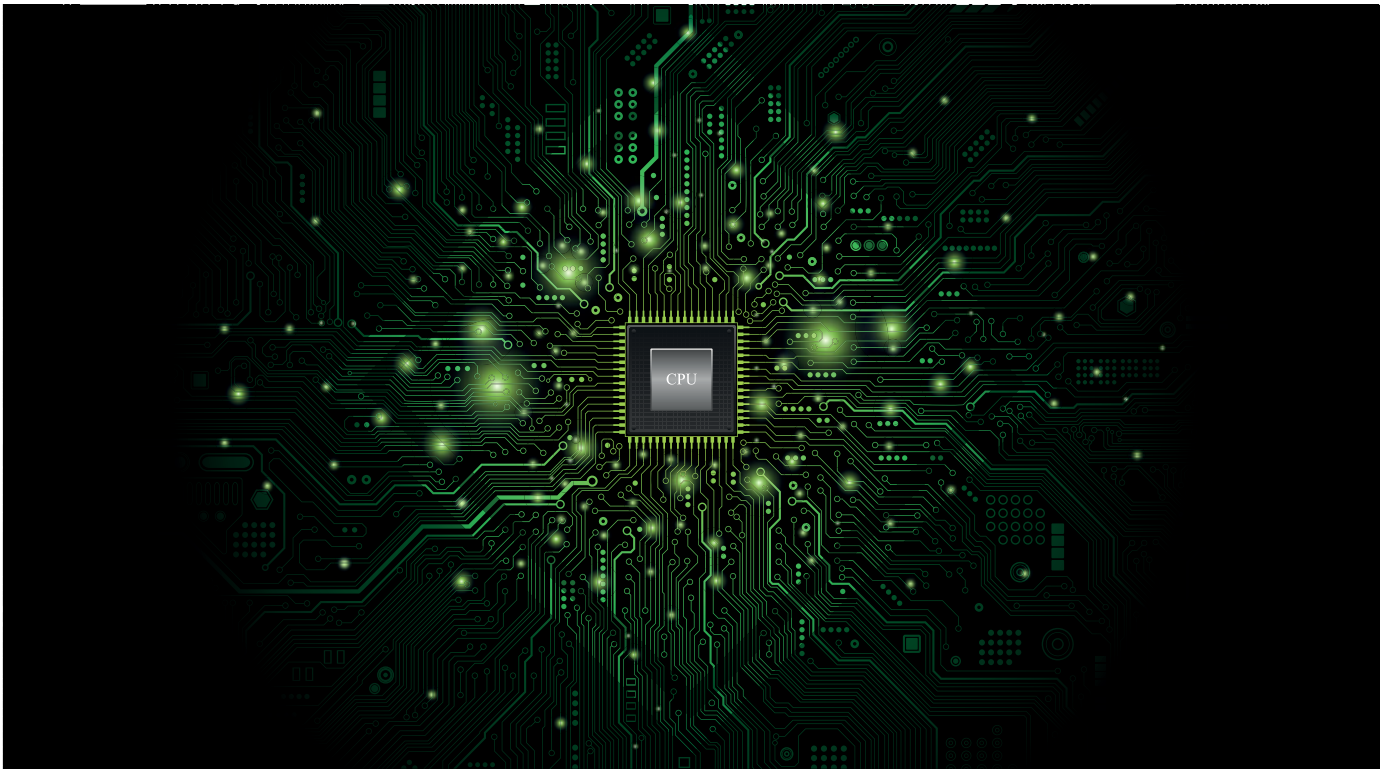
Recent deep tech investment sums are skewed to a degree by artificial intelligence (AI), though the technology's influence is legitimately driving more action in several segments, and the flow of activity outside of AI is better reflected in sustained deal counts. AI-enabled software products have recently expanded their reach on a commercialised scale, garnering massive interest throughout both enterprise and consumer channels. The software industry has witnessed several cycles of innovation over the years, often providing a channel for emerging technologies to reach wider markets. Software products, and business-to-business software-as-a-service models in particular, have proliferated throughout the mainstream for more than a decade and have become arguably the most popular destination for VC investment with relatively low startup costs, high margins, and predictable revenue streams. However, against a backdrop of saturated software markets, the next era of deep tech is showing signs of a return to technology's hardware roots. The AI revolution has brought increased attention

19: "Pioneering a New Way To Solve Self-Driving With Embodied AI," Wayve, n.d., accessed 21 June 2024.



to physical technologies, including semiconductor chips and energy storage facilities, which are the critical infrastructure upon which digital technologies rely. Other popular hardware-related verticals include Internet of Things (IoT), robotics, and extended reality (XR). Startups operating in each of these areas appear throughout the UK deep tech universe and represent several of the top-funded companies highlighted in the following sections, signalling growing investor interest in their potential.

Several aspects of deep tech set its VC players apart from other verticals. These include its founders' advanced academic backgrounds, its complex tracks to commercialisation, and the specialised knowledge required of investors to fully gauge the potential of a deep tech startup's success. Companies within deep tech are insulated from widespread competition due to wide economic "moats," which US investment research firm Morningstar defines as a company's ability to remain competitive for an extended period.[20] Two of the five factors Morningstar identified that contribute to the width of moats are intangible assets and a presence within niche markets, known as efficient scale. Deep tech companies are more likely to hold intellectual property protections for their novel products and operate within niche markets, offering attractive moats. Another moat factor - switching costs - may also be more common in deep tech areas. Once a novel and truly innovative product is adopted by customers, it becomes difficult for them to switch providers because of its integration within their operations and the lack of comparable offerings from other companies. Some popular engineering software programs have high switching costs, for example. Network effects also play a role in moat creation. As the number of users grows, a product's utility increases. One example of positive network effects in deep tech is in training generative AI (GenAI) algorithms. The higher the volume of inputs from which the program learns, the better the quality of the outputs. The fifth moat factor - cost advantages - is where deep tech segments are most likely to face difficulties. Structural cost advantages take time and effort to establish, especially in new and emerging industries. Deep tech plays often require steeper and extended J-curve scenarios because of capital-intensive laboratory and testing costs at the earliest stages of development, which can slow progress. Grants and research institutions play a critical role in the formation and beta testing stages for companies before they enter the venture arena by absorbing many of these costs.

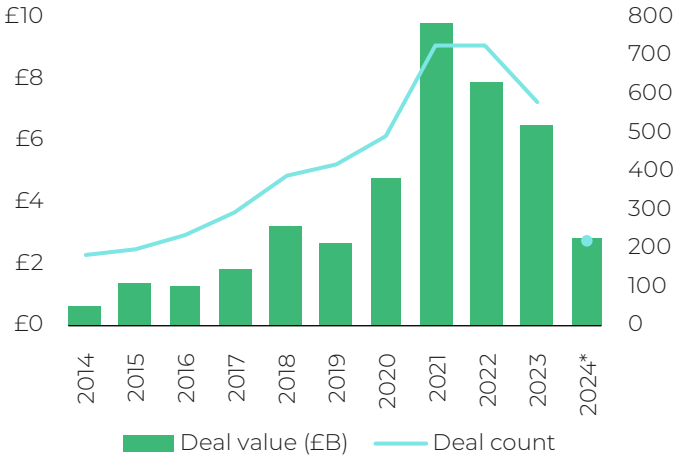
20: "Economic Moat," Morningstar, 10 February 2023.

All companies with a particular deep tech focus will more than likely face the same daunting cost challenges though, which mitigates the competitive downside.

Barriers to entry exist on the other side of deep tech venture transactions as well. Successful deep tech investing requires specialised knowledge and experience from the cheque writers themselves. The ability to withstand lengthier commercialisation ramps and niche operational challenges is critical for deep tech investors as well. This creates a smaller pool of potential funding sources for companies in deep tech areas compared with other areas. Despite these hurdles, deep tech's success has attracted a growing number and variety of investors. Top investment firms in UK deep tech include SFC Capital, one of the most active early-stage firms in the UK; Scottish Enterprise; and Parkwalk Advisors. Deep tech startups also continue to draw interest from nontraditional VC investors, which include any investor not classified primarily as a traditional VC firm, such as mutual funds, family offices, sovereign wealth funds, and corporate venture capital arms (CVCs). Nontraditional investors participated in over 500 UK deep tech VC deals annually since 2021, and 215 such deals less when observed halfway through 2024.

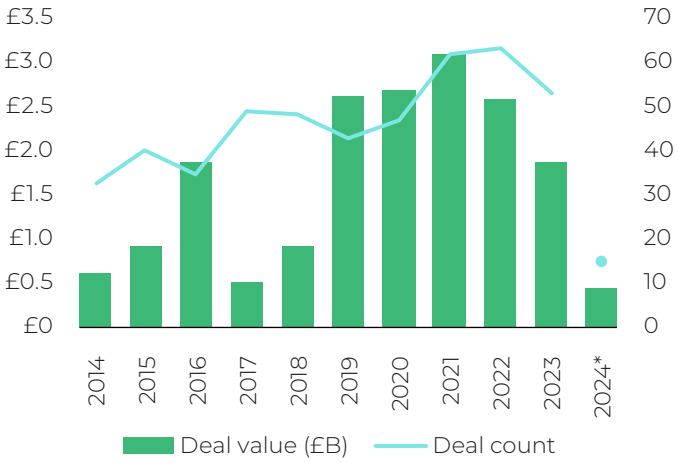
CVCs represent a large and growing contingent of nontraditional VC investors. Corporations are increasingly entering the VC arena by establishing their own investment firms. These can generate financial returns to fortify the parent organisation as well as provide a pipeline of strategic partnerships and market research through their due diligence processes. The deep tech ecosystem presents a particularly strong case for CVC engagement given its barriers to entry and significant long-term upside potential. Corporations have a strategic imperative to keep pace with rapidly evolving technologies to remain competitive, and investing through CVC vehicles can provide critical insights into future industry movements and troubleshooting existing issues. Incumbent technology giants, including Alphabet, Microsoft, and Amazon, all operate CVC arms to fortify their finances and stay on top of emerging technology trends. One of the top CVCs investing in UK deep tech is PDS Ventures, with three deep tech deals closed since 2023.

Deep tech VC deal activity with nontraditional investor participation



Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: Deal value denotes sum of total cheque size and includes contributions from all investor types.

Deep tech PE growth deal activity

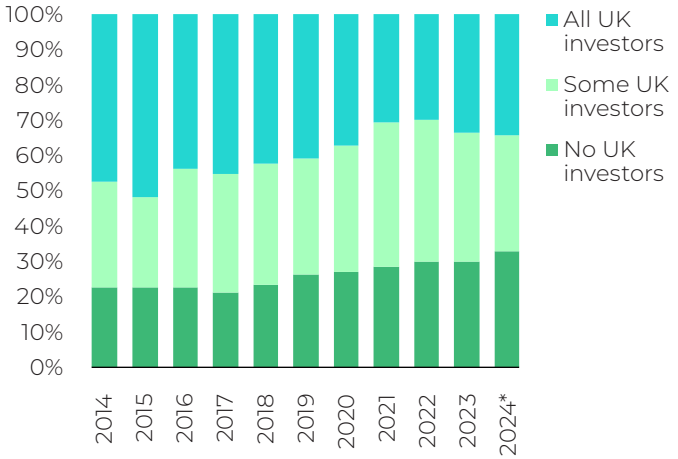


Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: PE-growth deal activity is excluded from VC deal activity.

Universities and VC firms are not the only institutions that contribute to the growth and development of deep tech startups. Private equity (PE) firms typically operate in larger, more mature industries and take majority ownership of their

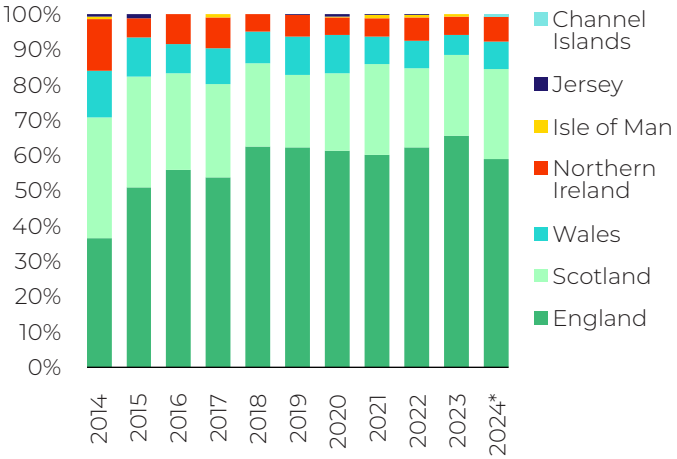
portfolio companies. However, these firms have recently taken notice of the strong returns generated by younger companies and more nascent industries. As a result, PE firms are making more minority-stake investments known as growth or expansion deals. The volume of such deals in the deep tech space has grown substantially over the past five years, with PE firms contributing more than £2 billion to deep tech companies in the UK each year from 2019 to 2022. Total deal value dipped moderately in 2023 with £1.9 billion, and activity slowed further in the first half of 2024 as many firms hedged riskier bets in a slower macroeconomic environment. Still, 15 PE growth deals closed by early June. Of the 15 companies receiving these investments, all were at least revenue generating, three were profitable, and

Share of deep tech VC deal count by investor region



Source: PitchBook · Geography: UK · *As of 3 June 2024

Share of deep tech VC deal count by company region



Source: PitchBook · Geography: UK · *As of 3 June 2024

Regional highlights

England

YTD deal count: **463**
Deal count growth rate between 2013 and 2023: **228.6%**
Highlights: **London's status as a global financial and technology hub; intellectual prowess of the golden triangle (Oxford, Cambridge, and London).**

Scotland

YTD deal count: **33**
Deal count growth rate between 2013 and 2023: **83.3%**
Highlights: **Active economic development agency (Scottish Enterprise); Edinburgh Science Triangle; highly ranked universities.**

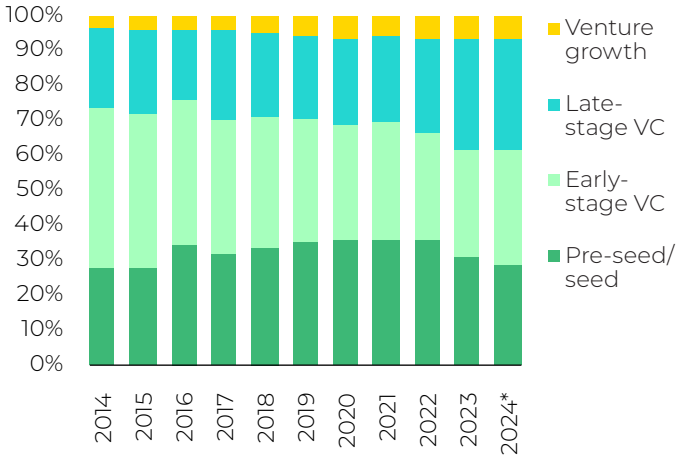
Wales

YTD deal count: **10**
Deal count growth rate between 2013 and 2023: **72.7%**
Highlights: **History in heavy industry complementing advanced manufacturing output; Compound Semiconductor Centre in Cardiff.**

Northern Ireland

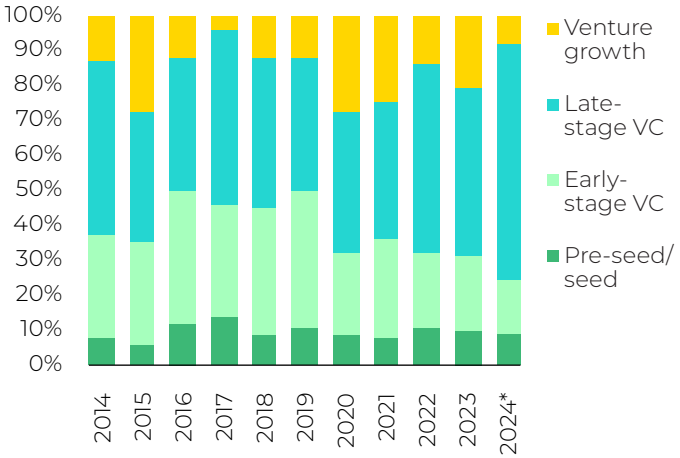
YTD deal count: **9**
Deal count growth rate between 2013 and 2023: **28.6%**
Highlights: **Significant growth potential; Northern Ireland Engineering Education Program; Cyber-AI Hub in Belfast.**

Share of deep tech VC deal count by stage



Source: PitchBook · Geography: UK · *As of 3 June 2024

Share of deep tech VC deal value by stage

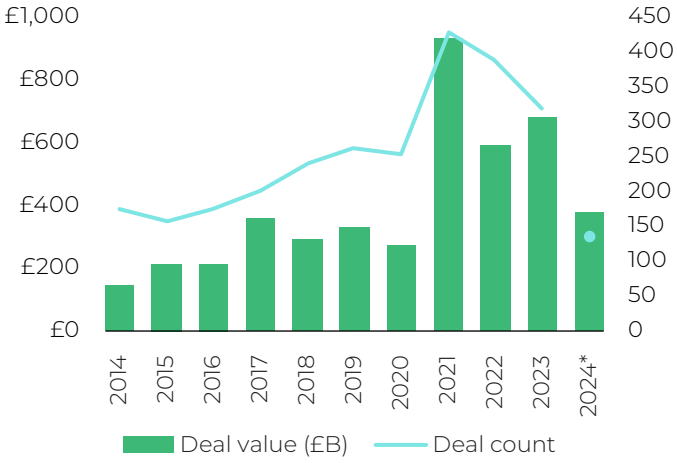


Source: PitchBook · Geography: UK · *As of 3 June 2024

nine operated in IT subsectors. Greater PE involvement in deep tech could provide alternative funding sources and additional operational guidance to disruptive scientific applications, however startups are more likely to receive PE funding in more advanced stages of development dependent on a viable business model.

The profile of a deep tech VC investor is expanding and transforming. Along these lines, cross-border activity is more common than ever, and the UK has become an attractive destination for investors seeking out the most promising deep tech companies. Nondomestic investment into UK-based deep tech companies remains elevated, with firms from outside the UK participating in more than 300 deals each year since 2021. These investors are collectively on pace to reach a similar figure in 2024 with 135 deals closed less than halfway through the year. London's status as one of the top VC hubs globally based on its size and maturity is among the draws for nondomestic investors,[21] as access to reliable future funding sources can sway initial cheque-writing decisions. The nation's extensive network of academic and research institutions also attracts a strong pool of talent, resulting in a larger volume of inbound global interest. Some of the most active nondomestic VC investors in UK deep tech companies include US-based capital firm SOSV with 10 investments in the healthcare area and Singapore-based Antler with four deals in the networks area. The number of UK deep tech deals that involve exclusively UK-based investors has waned over the past decade, and that contingent has represented less than half of total deal count each year since 2016. Meanwhile, the number of

Deep tech first-time financing VC deal activity



Source: PitchBook · Geography: UK · *As of 3 June 2024

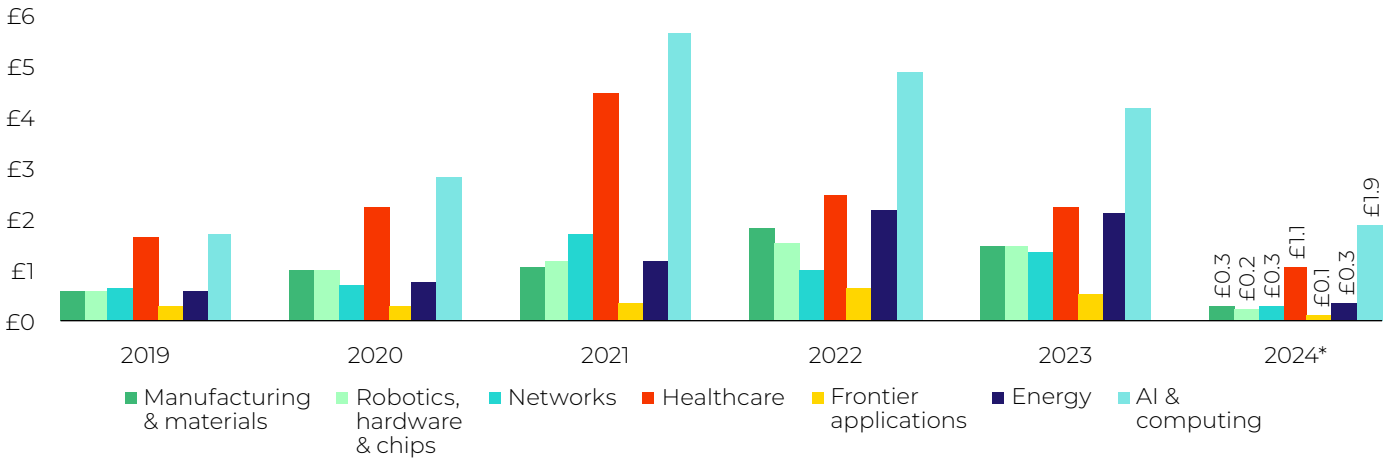
deals that involve no UK investors at all has grown. More often than not, UK deep tech companies will receive some form of nondomestic investment as the strength and status of the nation's technology sector continue to grow.

VC activity is distributed across four distinct phases of company maturity, including pre-seed/seed, early-stage VC, late-stage VC, and venture growth (Series E or later). Investment into UK deep tech companies is typically concentrated in the two earlier stages given their relative sizes, and a descending number of companies successfully graduate to the later stages. However, the economic downturn in 2022 caused a shift towards later-stage investments, which are typically deemed less risky.

21: "The World's Top Startup Cities," PitchBook, Nalin Patel and Jordan Rubio, 18 April 2024.

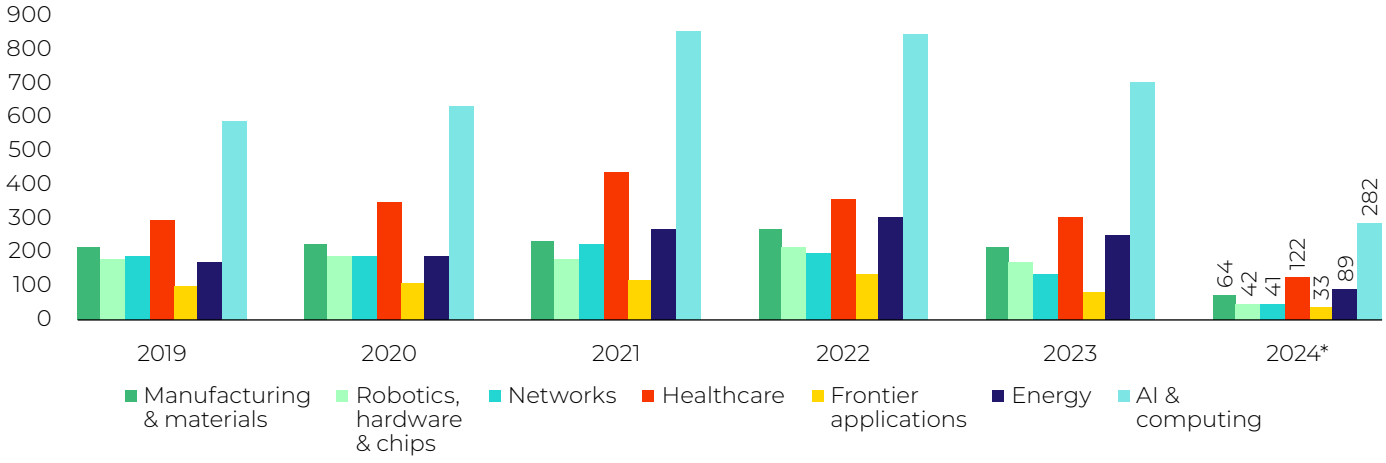
First-time financings are typically harder to secure in times of a broader VC slowdown, but UK deep tech companies defied this trend with annual first-time VC deal value growing 14.7% between 2022 and 2023. By comparison, overall UK deep tech VC deal value dropped 19.1% in the same period. First-time financing VC deal value in the first half of 2024 already exceeds the annual levels generated prior to 2021, indicating a continued strong pipeline of new entrants. Sizeable first-time VC rounds this year include those of AI research organisation Exohood Labs, cloud mining service provider MAR mining, and electric vehicle (EV) charging platform Energy Park. The prevalence of AI- and EV-related startups within UK deep tech cannot be understated: Venture investors are betting heavily on these two areas shaping the frontier of commercialised technology. However, they are not the only areas witnessing breakthroughs, and many investors are taking note of their potential as well. The following sections take a closer look at seven segments of deep tech.

Deep tech VC deal value (£B) by area



Source: PitchBook · Geography: UK · *As of 3 June 2024

Deep tech VC deal count by area

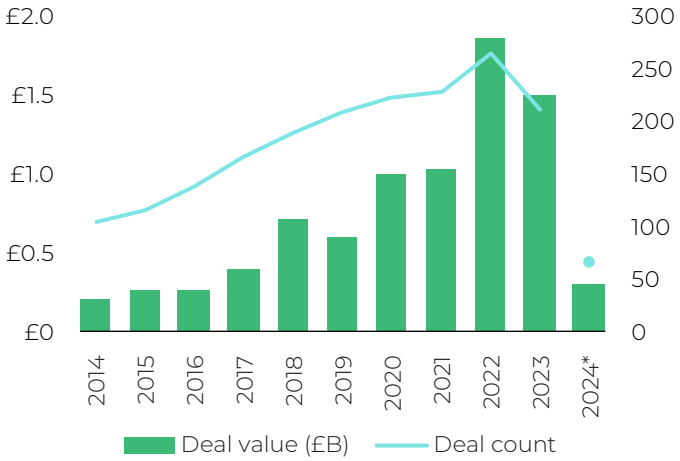


Source: PitchBook · Geography: UK · *As of 3 June 2024

Note: Areas are not mutually exclusive, meaning a company may fall under more than one segment, but deals are de-duplicated in overall deep tech data to prevent double counting.

Manufacturing and materials

Manufacturing and materials VC deal activity



Source: PitchBook · Geography: UK · *As of 3 June 2024

3D printing, advanced manufacturing, innovative materials, construction technology, and more

The world recently witnessed the emergence of new tech industries, but deep tech is also transforming legacy industries. Manufacturing accounted for the third-highest share of the UK's economic output in 2022 at 9.4%.[22] National authorities have identified lagging labour productivity and ageing infrastructure as pain points,[23, 24] creating opportunities for deep tech players to fill in the gaps by reinvigorating manufacturing processes and facilities.

3D printing and additive manufacturing show promise in addressing housing supply constraints by facilitating faster and more cost-efficient home construction.[25] In early 2024, the Defence Science and Technology Laboratory established a £42.5 million research partnership to develop new materials,[26] and VCs have responded with several recent investments at the cross-section of manufacturing and defence. Aerospace and defence company Skyports Infrastructure secured the largest VC deal in the area in H1 2024 with £91.2 million to support its urban aviation infrastructure program, which includes the building of vertiports intended for more rapid and efficient movement of goods. IT hardware companies have a notable presence among the area's recent top VC deals, highlighting how more efficient and disruptive equipment may contribute to both public- and private-sector goals.

Active VC-backed manufacturing and materials companies by total capital raised (£M)*

Company	Total capital raised (£M)
Conigital	£501.7
Oxford Nanopore Technologies	£157.9
Britishvolt	£117.5
GrowUp	£100.0
CloudNC	£54.3
IGS	£89.3
Quantum Motion	£42.0
Paragraf	£41.8
Automata	£37.0
Gravity Sketch	£33.0

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: Total capital raised since company's year of founding

Active investors in manufacturing and materials VC deals by deal count (2023-YTD)*

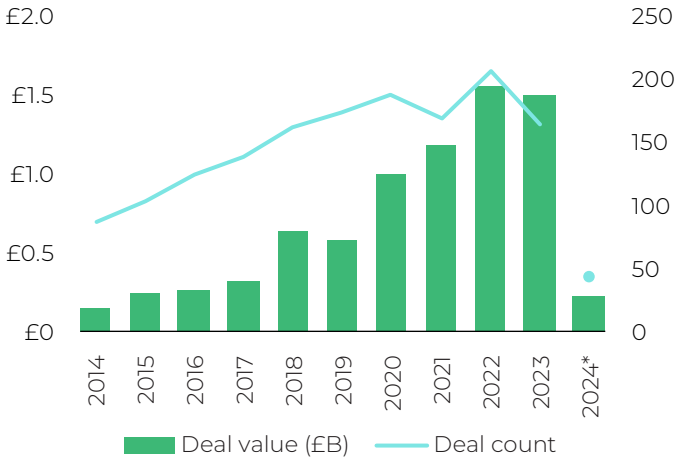
Investor	Deal count
SFC Capital	19
Scottish Enterprise	11
Parkwalk Advisors	9
Mercia Asset Management	7
Oxford Science Enterprises	7
Fuel Ventures	5
Foresight Group	5
Northern Powerhouse Investment Fund	5
Octopus Ventures	5

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: All investor types are included to the extent they participated in VC deals.

22: "Industries in the UK," UK Parliament, Abbas Panjwani, 31 October 2023.
23: "Productivity: Key Economic Indicators," UK Parliament, Daniel Harari, 20 May 2024.
24: "Getting Great Britain Building Again: Speeding Up Infrastructure Delivery," Department for Levelling Up, Housing and Communities, 22 November 2023.
25: "Are 3D-Printed Homes the Future of Housing?" U.S. News, Kristi Waterworth, 19 January 2024.
26: "New Advanced Materials Centre of Excellence," Defence Science and Technology Laboratory, the Ministry of Defence, and James Cartlidge, 30 January 2024.

Robotics, hardware and chips

Robotics, hardware & chips VC deal activity



Source: PitchBook · Geography: UK · *As of 3 June 2024

Robotics and drones, semiconductors, computer hardware, nanotechnology, and more

The semiconductor industry is attracting major attention and investment as a matter of national interest and safety. Chips used to power AI technologies operate in an extremely competitive environment, and the largest global leaders in chip manufacturing have been established, including Taiwan Semiconductor Manufacturing (TSMC), NVIDIA, and Broadcom. That said, there are areas of improvement that are more conducive to smaller and more nimble companies, and VC backing provides a vote of confidence in their ability to improve the industry. Application-specific semiconductor companies receive a material volume of investment, along with other electronic equipment providers. Robotics and drones are also popular areas for VC backing, with some of the largest deals in the area since 2022 operating in the space, including Dendra Systems and Dronamics, which provide drone products serving industries such as cargo transport and agriculture. The median age of companies raising VC in this segment is a bit higher than others, meaning new entrants may take longer to scale operations, but the impact of this segment is far-reaching and poised for further growth through multiple channels. The ripple effect of surging AI investments has reached the chips space, which results in a broader swath of investor types participating in the segment, although specialist firms and relevant corporates have a notable footprint in the space as well.

Active VC-backed robotics, hardware and chips companies by total capital raised (£M)*

Company	Total capital raised (£M)
SumUp	£2,388.7
Graphcore	£546.9
Pragmatic	£356.0
Nexeon	£185.4
Ultraleap	£126.3
Skyports Infrastructure	£120.9
Oxford Quantum Circuits	£119.8
Roborace	£72.7
Precision Robotics	£39.5
WaveOptics	£39.0

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: Total capital raised since company's year of founding

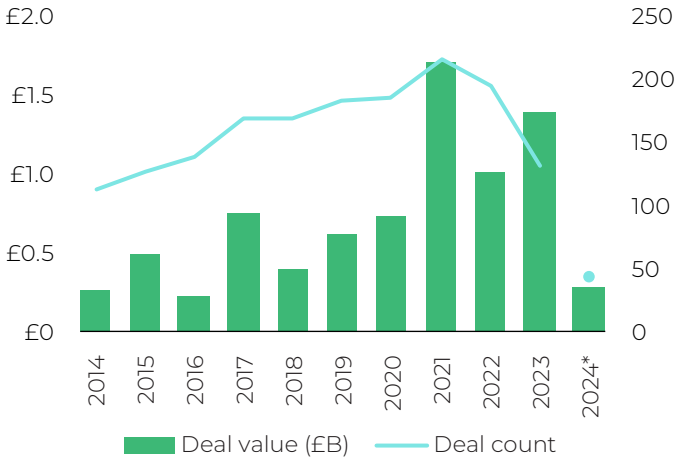
Active investors in robotics, hardware and chips VC deals by deal count (2023-YTD)*

Investor	Deal count
SFC Capital	12
Octopus Ventures	7
Oxford Science Enterprises	7
Parkwalk Advisors	7
Scottish Enterprise	5
Deepbridge Capital	4
IQ Capital Partners	4
Mercia Asset Management	4
Innovate UK	4
The FSE Group	4
IP Group	4
Future Planet Capital	4
Foresight Group	4
UK Innovation & Science Seed Fund	4

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: All investor types are included to the extent they participated in VC deals.

Networks

Networks VC deal activity



Source: PitchBook · Geography: UK · *As of 3 June 2024

Digital and physical networks, including IoT, cloud technology, supply chain tech, and more

In its 2022-2023 report, the Infrastructure and Projects Authority identified four categories that its major projects fall under: infrastructure and construction, transformation and service delivery, military capability, and information and communication technology.[27] Public sector backing within these categories may facilitate greater private investment as well, and startups within the networks areas are best poised to benefit from those backers. Government entities and economic development agencies like Scottish Enterprise are among the most active direct investors in the area's VC deals. The median VC deal size for networks companies has exceeded all other deep tech areas since 2022 and reached a record £3.2 billion in the first half of 2024. Annual VC deal value in networks companies also rose 36.0% in 2023, during a period when most other areas saw declines. While the monetary value of VC investment in the segment has grown, the number of deals contributing to those totals has dropped, pointing to some concentration of capital across fewer players. Large, mature conglomerates in the communications industry and certain areas of supply chains can provide lucrative avenues for developers of new advancements in the field.

Active VC-backed networks companies by total capital raised (£M)*

Company	Total capital raised (£M)
G.Network Communications	£1,198.0
Conigital	£501.7
Thought Machine	£489.2
O3B Networks	£304.1
Zapp	£260.5
Truphone	£255.0
Oxa	£201.6
GoFibre	£178.7
Kraydel	£155.4
County Broadband	£146.3

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: Total capital raised since company's year of founding

Active investors in networks VC deals by deal count (2023-YTD)*

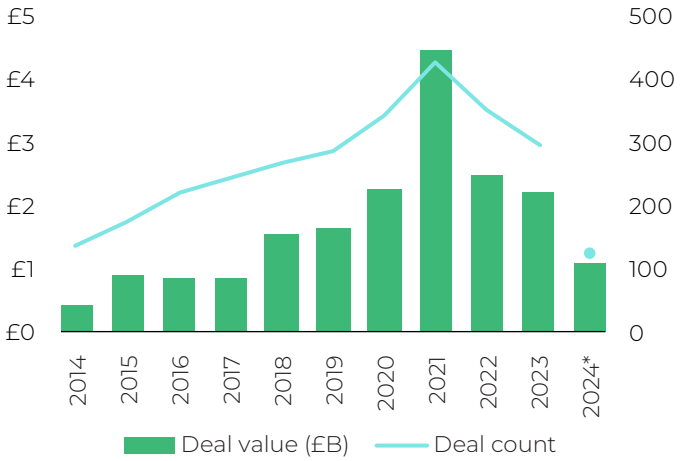
Investor	Deal count
SFC Capital	7
Parkwalk Advisors	6
The FSE Group	4
Antler	4
Scottish Enterprise	4
Ascension	4
PDS Ventures	3
ACF Investors	3
Mercia Asset Management	3
Foresight Group	3
Haatch	3
Calm Ventures	3
KCP Nominees	3

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: All investor types are included to the extent they participated in VC deals.

27: "Annual Report on Major Projects 2022-2023," Infrastructure and Projects Authority, 20 July 2023.

Healthcare

Healthcare VC deal activity



Source: PitchBook · Geography: UK · *As of 3 June 2024

Emerging healthcare technologies, biotech, drug discovery, and more

Biotechnology & pharmaceutical companies are extremely capital-intensive, which results in overall larger cheque sizes from their VC backers. As a result, healthcare was one of the most resilient deep tech areas in the first half of 2024, with total deal value representing just shy of half the annual total for 2023. Apollo Therapeutics brought in £205.2 million in January 2024 to support its advanced drug pipeline, and the company also maintains an active portfolio of discovery assets supported by partnerships with universities and other research institutions. The surge of pandemic-inspired VC funding in 2020 and 2021 has come down, but evergreen interest in healthcare innovations inspires a robust flow of deals. Recent breakthroughs in vaccines, genetic editing, and Alzheimer's treatments have renewed confidence in emerging healthcare technologies. Other more nascent areas of healthcare include advanced surgical robots and AI-driven improvements to diagnostics and drug discovery processes.

Notable VC-backed companies at the cross-section of AI and healthcare include Perspectum and Huma, which leverage data to improve the delivery of patient care. Like the networks segment, private investment in the healthcare industry is swayed heavily by several large entrenched pharmaceutical giants that may absorb smaller, innovative players as part of their enterprise strategies. Because of this, exit opportunities for VC-backed healthcare plays have some fortification from macro volatility, insulating deal activity to a degree as well. Continued resilience in deal activity is therefore expected in this area.

Active VC-backed healthcare companies by total capital raised (£M)*

Company	Total capital raised (£M)
CMR Surgical	£887.0
Cera Care	£351.6
Huma	£240.0
Artios	£200.0
Crescendo Biologics	£199.3
QuellTX	£196.1
Pulmocide	£169.2
bit.bio	£152.3
Pheon Therapeutics	£151.3
Touchlight	£143.3

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: Total capital raised since company's year of founding

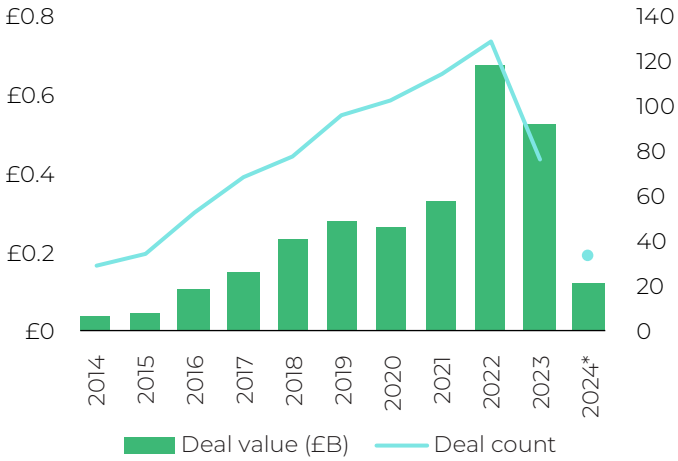
Active investors in healthcare VC deals by deal count (2023-YTD)*

Investor	Deal count
Meltwind Advisory	23
Mercia Asset Management	16
SFC Capital	16
Scottish Enterprise	14
Octopus Ventures	13
Parkwalk Advisors	12
UK Innovation & Science Seed Fund	12
Future Planet Capital	12
SyndicateRoom	11
SOSV	10
WCS Nominees	9

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: All investor types are included to the extent they participated in VC deals.

Frontier applications

Frontier applications VC deal activity



Source: PitchBook · Geography: UK · *As of 3 June 2024

Space tech (spaceflight, satellites, rocket technology), construction tech, extended reality (XR), and more

Frontier technologies are transitory by nature, meaning the technologies considered to be a part of this area are ever-evolving. As the smallest deep tech area, the investor landscape for frontier technologies is relatively limited but includes a diverse array of firm types, including industry-agnostic SFC Capital, accelerator programmes like Plug and Play Tech Center, and specialist firms like 7percent Ventures.

XR refers to a collection of technologies including virtual reality, augmented reality, and mixed reality. XR researchers are aiming to solve some of the most pressing societal issues of today, with particularly exciting consumer applications. The largest frontier applications VC deal last year was a £78.8 million Series C raised by Envisics, a holography platform aiming to improve automotive driver safety. The deal was led by Hyundai Mobis and GM Ventures, with participation from several other leading car manufacturers. On the space tech front, recent notable deals include microsatellite manufacturer Open Cosmos, which closed a £40.1 million Series B for international growth in its satellite offerings and related analytics. In May 2024, the UK Space Agency announced a £9 million early-stage investment programme for satellites with a focus on climate monitoring, underscoring growing public sector engagement with private space tech players.[28] The sky is the limit for frontier applications, with commercial scale presenting the greatest hurdle.

Active VC-backed frontier applications companies by total capital raised (£M)*

Company	Total capital raised (£M)
Planet Smart City	£209.5
Stability AI	£163.9
Reaction Engines	£128.8
Envisics	£119.1
Proximie	£108.7
Orbex	£84.7
ALL.SPACE	£83.4
Supponor	£58.1
AutogenAI	£51.5
Open Cosmos	£45.7

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: Total capital raised since company's year of founding

Active investors in frontier applications VC deals by deal count (2023-YTD)*

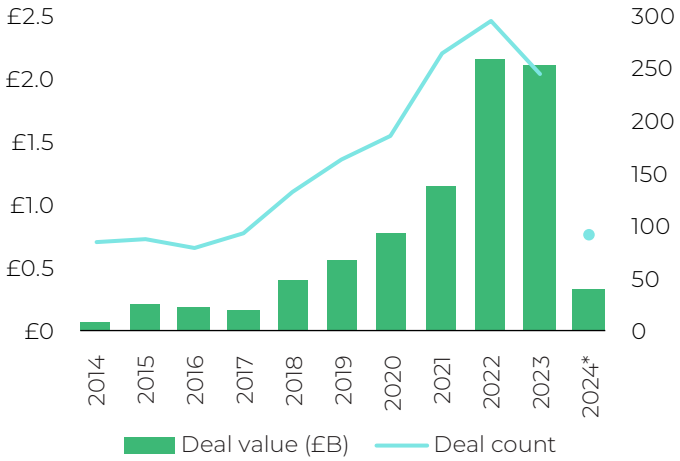
Investor	Deal count
SFC Capital	11
Pi Labs	4
Plug and Play Tech Center	3
Concrete VC	3
7percent Ventures	3
Scottish Enterprise	3

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: All investor types are included to the extent they participated in VC deals.

28: "£9 Million Funding for Satellite Instruments to Monitor Climate," UK Space Agency, 14 May 2024.

Energy

Energy VC deal activity



Source: PitchBook · Geography: UK · *As of 3 June 2024

Alternative and sustainable energy exploration, production, and distribution, clean tech, climate tech

Growing energy consumption has created a need for new and novel sources of power to fuel daily life and commercial operations alike. The AI revolution in particular has exacerbated the need for innovative energy solutions, with commercial AI software relying on massive data centres that are testing the limits of existing infrastructure.[29] The desire to mitigate emissions and impacts on the environment has also accelerated energy investment. Research focused on alternative and renewable energy sources has emerged in recent years, with promising clean tech and climate tech players pulling in a robust and resilient flow of VC investments. Among the seven deep tech areas, energy exhibited the strongest growth in deal count between 2018 and 2023 with a compound annual growth rate of 12.9%. Investment in alternative energy sources is sustainable in an environmental sense and potentially a financial sense, with longer upside potential and growing public sector support. Broadly speaking, the active investor landscape demonstrates a narrower focus compared with other segments, with several organisations dedicated specifically to clean energy and decarbonisation efforts.

Active VC-backed energy companies by total capital raised (£M)*

Company	Total capital raised (£M)
First Light	£478.3
Ovo	£455.0
Field	£288.3
Cornish Lithium	£265.4
Tokamak Energy	£198.8
Carbon Clean	£188.4
Hybrid Air Vehicles	£182.7
Riversimple	£180.0
Tevva	£175.9
One Moto	£164.1

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: Total capital raised since company's year of founding

Active investors in energy VC deals by deal count (2023-YTD)*

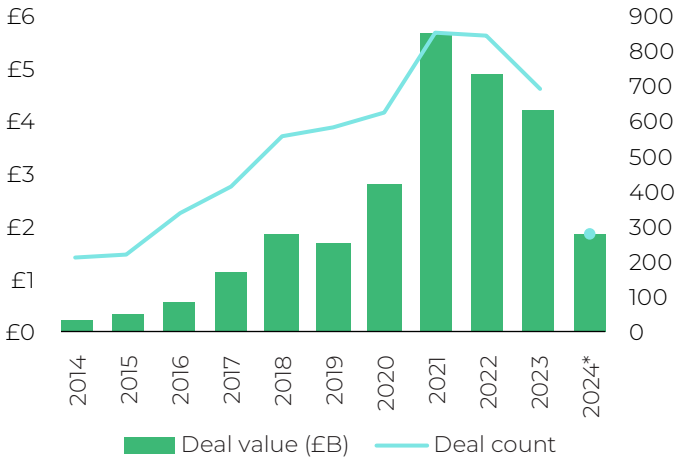
Investor	Deal count
SFC Capital	15
Turquoise International	8
Clean Growth Fund	8
Unreasonable Impact	7
Low Carbon Innovation Fund	7
The FSE Group	7
Innovate UK	6
Scottish Enterprise	6
Green Angel Ventures	6

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: All investor types are included to the extent they participated in VC deals.

29: "Power Hungry Processing: Watts Driving the Cost of AI Deployment?" arXiv, ACM Conference on Fairness, Accountability, and Transparency, Alexandra Sasha Luccioni, Yacine Jernite, and Emma Strubell, 23 May 2024.

AI and computing

AI and computing VC deal activity



Source: PitchBook · Geography: UK · *As of 3 June 2024

AI and machine learning (ML) developers, quantum computing, and more

Undoubtedly the fastest-growing vertical and current darling of the VC world, AI is here to stay. Like many deep tech innovations, the most influential AI companies evolved from research labs into full-scale operators sending seismic shock waves throughout nearly every other industry. There is heavy crossover between AI and other verticals, contributing to its dominance on the broader VC stage and presence within other areas. Although peak excitement may have passed now that consumer-facing GenAI products have entered the market, several next-generation advancements remain on the horizon, including verified and established artificial general intelligence and computer vision applications.[30] The quantum computing space is another longer-term vision for the industry, with expectations of a truly usable quantum computer at least a decade away.[31] In the meantime, rapidly growing related technologies are leveraging quantum principles to make headway in areas including photonics, cryogenics, and compound semiconductors. AI's proliferation across industries has made it the largest of the seven deep tech areas, with 280 companies raising capital in the first half of 2024 compared with 122 companies in the second-largest segment of healthcare.[32]

Active VC-backed AI and computing companies by total capital raised (£M)*

Company	Total capital raised (£M)
Revolut	£1,381.5
Wayve	£1,056.1
Blockchain.com	£879.3
Builder.ai	£345.8
Kao Data	£327.3
Quantexa	£287.6
PatSnap	£215.2
TUBR	£161.7
Zoovu	£135.5
Matillion	£108.9

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: Total capital raised since company's year of founding

Active investors in AI and computing VC deals by deal count (2023-YTD)*

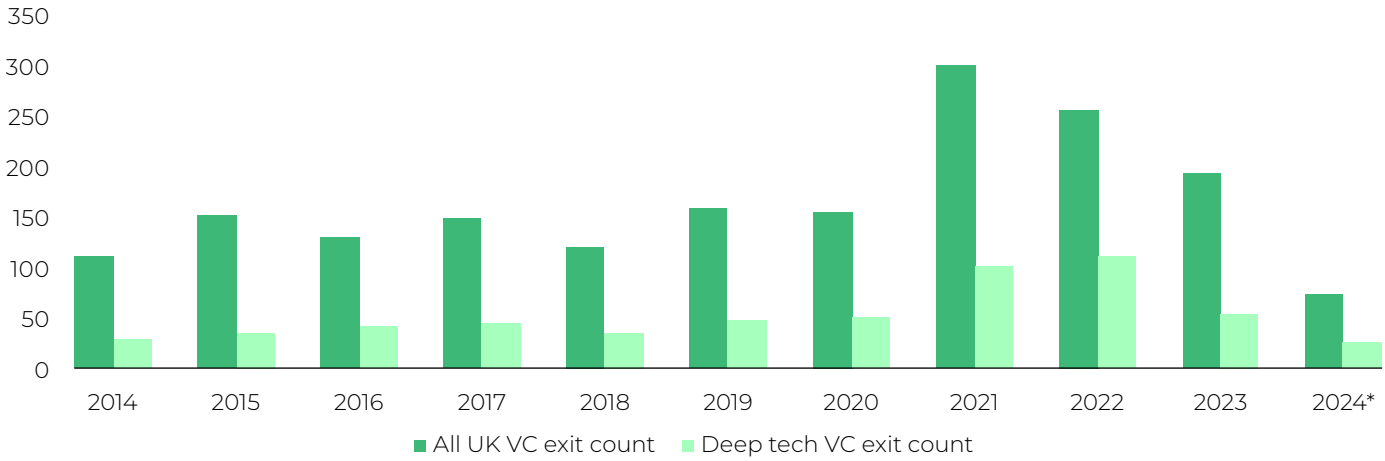
Investor	Deal count
SFC Capital	43
Haatch	23
Seedcamp	16
Octopus Ventures	16
Mercia Asset Management	14
Ascension	12
Fuel Ventures	12

Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: All investor types are included to the extent they participated in VC deals.

30: "What's New in Artificial Intelligence From the 2023 Gartner Hype Cycle," Gartner, Lori Perri, 17 August 2023.
31: "The Professional's Guide to Quantum Technology," Quantum.Amsterdam, Koen Groenland, 15 March 2024.
32: Overlap exists between segments. See the "Methodology" section for more detail.

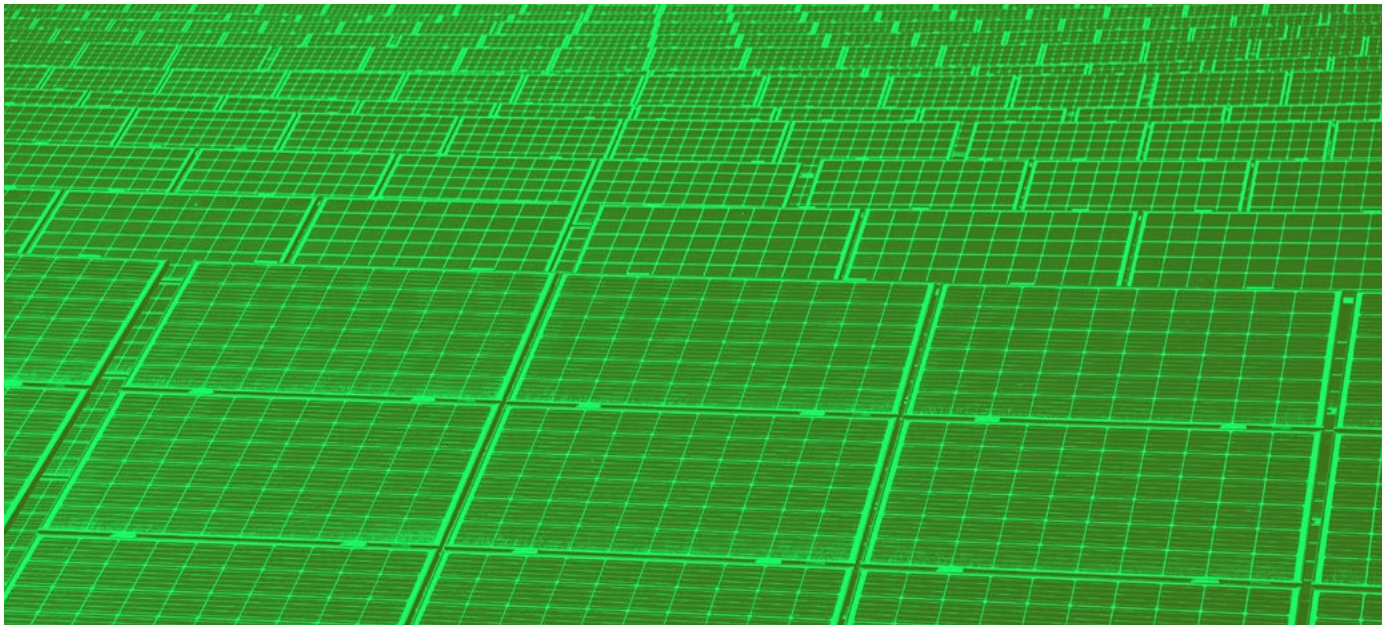
IPO and exit activity

VC exit count



Source: PitchBook · Geography: UK · *As of 3 June 2024

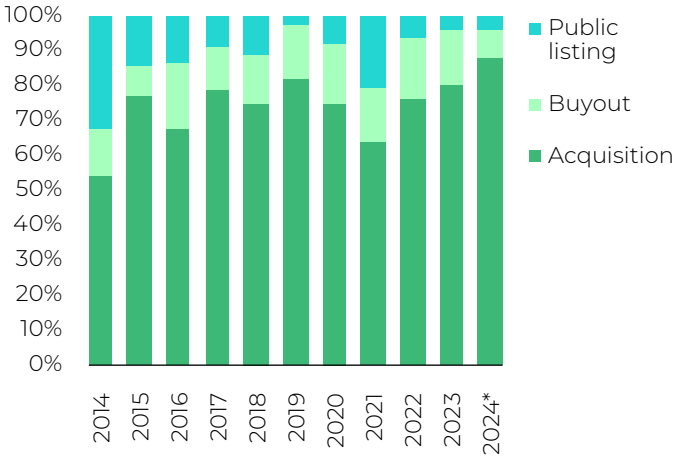
Deep tech exit trends fall largely in line with broader UK VC exit trends, including peaks in 2022 and 2021, followed by decelerating activity since. Annual deep tech exit value reached £2.2 billion across 56 transactions in 2023, compared with £4.1 billion across 194 transactions for all UK VC-backed companies. Mergers and acquisitions (M&A) activity in deep tech picked up in 2023 and sustained momentum in the first half of 2024, representing more than 80% of total exit count in both periods. A rise in M&A volume highlights how many larger firms are capitalising on opportunities to integrate advanced technologies and expand product offerings. Examining the largest deep tech acquisitions since 2023 reveals heavier consolidation in the software industry, particularly for AI-enabled providers. A few large healthcare transactions closed as well, including GSK spinout Autifony Therapeutics' £631.3 million exclusive collaboration agreement with Jazz Pharmaceuticals to develop novel treatments for rare neurological disorders.[33]



33: "Autifony Announces Exclusive Global License and Collaboration Agreement With Jazz Pharmaceuticals on Two Ion Channel Targets for Neurological Disorders," BioSpace, 14 November 2023.

The initial public offering (IPO) environment has experienced a slump globally since 2022, and the UK market is no exception. However, seven deep tech startups have made the leap into public markets in this period. Among them are TC Biopharm and GenFlow Biosciences, biotechnology companies that traditionally conduct public listings early on in operations and pre-revenue to support heavy R&D programmes. Other industries represented include alternative energy provider Clean Power Hydrogen and semiconductor company EnSilica. Most deep tech companies have chosen to list on the London Stock Exchange (LSE), though not all. TC BioPharm, which logged the second-largest IPO in the space since 2022, listed on the US-based Nasdaq. Compared with other markets, the LSE has seen a declining number of new listings due to lower valuations,[34] but the UK's Financial Conduct Authority enacted new listing rules in July 2024 to make it easier for companies to raise money in the UK, which could revive the pipeline of new domestic listings.[35]

Share of deep tech VC exit count by type

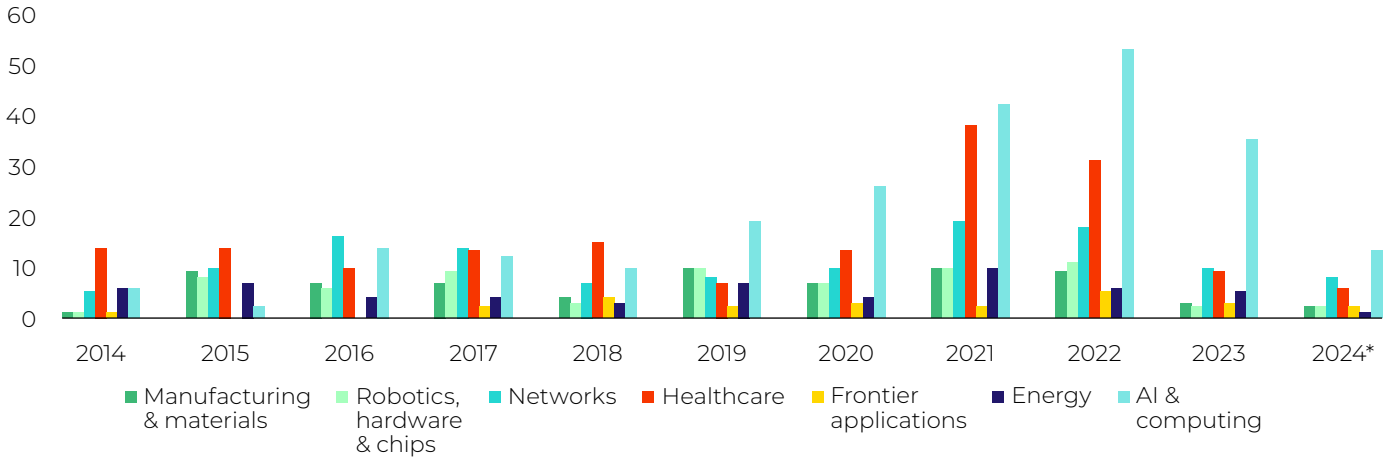


Source: PitchBook · Geography: UK · *As of 3 June 2024

IP implications

In the earliest stages of innovation and formation, intellectual property (IP) can protect a company's unique ideas and facilitate a more efficient path to profitability. IP can include trademarks, copyrights, design rights, and patents. According to PitchBook research, a strong correlation exists between a startup's success and its patent-holding status.[36] Companies that have patents - either pending or granted - have historically raised more capital at higher valuations and have generated notably higher exit values than their nonpatent counterparts. IP is an indicator of strong technological value and protected assets, which can benefit startups as they enter the market and can benefit investors as they approach an exit. However, correlation does not imply causation, and patent holdings do not guarantee commercial success. Startups face three hurdles in leveraging their IP: the process of establishing IP protection in the first place, progressive renewal fees, and costs of enforcing it, which may involve hefty legal fees. In university spinout scenarios, company ownership and licencing agreements are more fragmented, which further complicates IP management.

Deep tech VC exit count by segment



Source: PitchBook · Geography: UK · *As of 3 June 2024

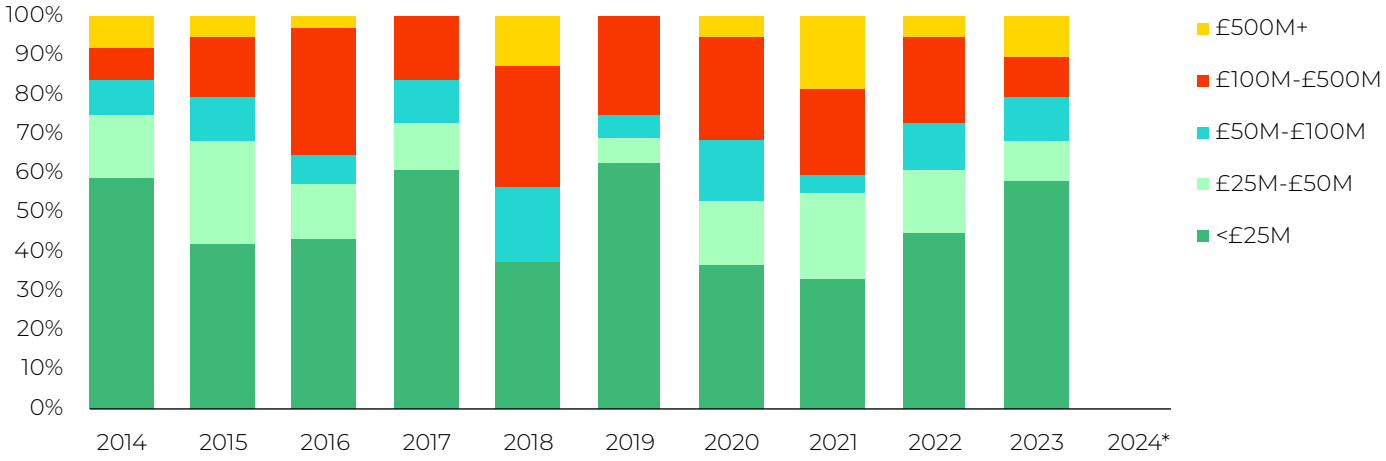
34: "Why Is the London Stock Exchange Failing?" Warwick Business School, John Colley, 25 March 2024.
35: "The FCA's New Listing Rules and What's To Come," Financial Conduct Authority, 6 September 2024.
36: "Introducing PitchBook Patent Research," PitchBook, Andy White and James Ulan, 6 February 2023.

Investor expertise is critical

Investment into deep tech is historically constrained by a limited number of investors with the technical backgrounds needed to understand the fundamentals and potential of deep tech startups. The lack of specialists in cheque-writing roles presents a major roadblock for the development of a thriving tech ecosystem and creates headwinds for companies looking to de-risk their technologies and achieve growth.

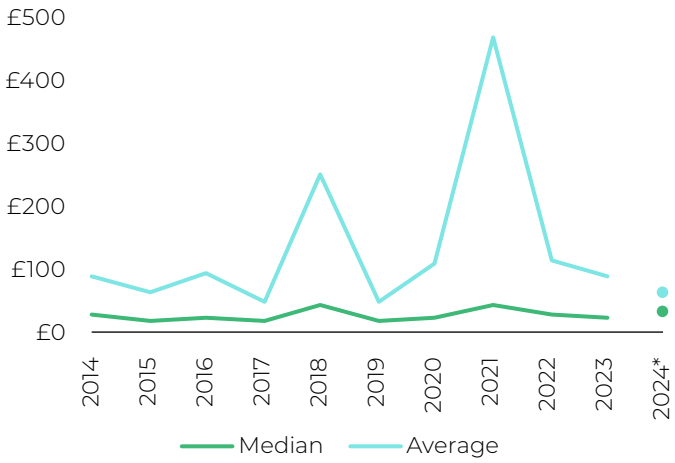
By comparison, the US VC ecosystem is more conducive to specialisation among investors due to the sheer size of its market and strong competition between firms. There also exists an established pipeline from academia into US VC roles, as well as training programmes like the Kauffman Fellowship initiative to bolster VC expertise and facilitate successful transitions for those with diverse and technical backgrounds into investing roles. Proposed solutions to the UK's investor knowledge gap include the formation of similar UK-based fellowship programmes like the Science and Technology Venture Capital Fellowship, extending Tier 1 visas for foreign investors to relocate to the UK, and a focus on increasing diversity in the financial sector to expand pathways for educated individuals to begin careers as investors.[37]

Share of deep tech VC exit count by size bucket



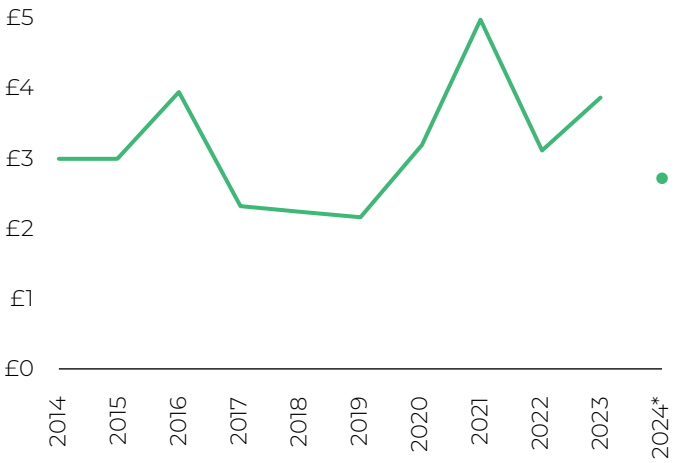
Source: PitchBook · Geography: UK · *As of 3 June 2024
Note: There have been 26 undisclosed exits so far in 2024.

Median & average deep tech VC exit values (£M)



Source: PitchBook · Geography: UK · *As of 3 June 2024

Median VC raised (£M) prior to exit for deep tech companies



Source: PitchBook · Geography: UK · *As of 3 June 2024

37: "Letter to the Prime Minister From the Council for Science and Technology," Council for Science and Technology, 23 September 2021.

2024 in full

This report includes detailed data and is based on analysis up to the first half of 2024, including exploration into the political landscape and conditions across the year in its entirety. As we look to analyse 2024, it is important to note headline trends for each of the deep tech areas in the latter quarters of the year. These were:

Manufacturing and materials: quarterly deal counts decreased since Q2, with only 24 completed VC deals in the latter half of 2024.

Robotics, hardware and chips: quarterly deal counts decreased since Q2 with 37 VC deals closed in latter half of 2024.

Networks: quarterly deal counts steadily declined since Q1 into Q4. While deal counts have declined, the number of outlier deals ticked up each quarter with companies raising the most capital this year in Q4.

Healthcare: deal counts declined each quarter since Q1. Four late stage deals exceeding US$100M in Q3 pushed quarterly deal value figures to new highs, but funding activity slowed going into Q4.

Frontier applications: deal counts declined since beginning of 2024 with Q3 and Q4 being the slowest quarters in terms of both deal counts and deal value.

Energy: deal counts in 2024 steeply declined from 202 completed VC deals in Q1 to 46 completed. Q4 saw much larger checks being written compared to Q3, which had the lowest quarterly deal value of the year, but latter half of 2024 activity still pales in comparison to the first half of the year.

AI and computing: while deal counts have steadily declined since 2024 Q1 and going into Q4, 2024 Q4 was an outlier quarter for AI companies in the UK as quarterly capital invested more than doubled from Q1. An early-stage deal for GreenScale's US$1.3B constituted more than half of the total capital raised in Q4 at US$2.3B.

2024 quarterly deal counts reached its peak during the first two quarters and proceeded to decline going into the latter half of 2024 across all areas. Late-stage deep tech companies were the most successful in closing larger check deals, which held up Q3 and Q4 deal values, but AI startups were the exception with GreenScale's US$1.3B early-stage deal constituting more than half of total capital raised in Q4.

From the data, it is evident that deep tech startups in the UK faced an increasingly challenging year in 2024 with fewer VC deals being completed across all seven deep tech areas. The exception to this was the area of AI and computing which was the only area to significantly exceed prior quarters' capital invested figures. This performance aligns with the global upwards trend towards investment into AI that has been observed.

Entrepreneur viewpoints

To give further insights into the UK's deep tech landscape in 2024 the Royal Academy of Engineering Enterprise Hub asked several of its portfolio companies about their experience as deep tech business leaders and decision makers.

Each entrepreneur shares their unique experience of working in deep tech in the UK, the barriers faced and what can be built on to further strengthen the sector.

Henrik Hagemann
Puraffinity

About

Puraffinity is developing advanced adsorbent materials to remove per- and poly-fluoroalkyl substances (PFAS) from water, addressing the environmental and health risks associated with these 'forever chemicals'. Our mission is to provide one billion people with PFAS-safe water by 2030.

Viewpoint

As co-founder of Puraffinity, I've seen firsthand the importance of fostering the right conditions for deep tech companies. Our journey in developing PFAS-removal technology has shown that deep tech is crucial for solving global challenges. However, we face unique hurdles. Patient capital is essential; our investors understand that breakthroughs take time. Clear communication is vital - we've learned to simplify complex concepts for stakeholders. Assembling a diverse team with both technical and business acumen is crucial. This requires entrepreneurs and business leaders of equal technical and leadership skills in equal measures, and the infrastructure to develop these types of individuals. Creating an ecosystem that supports deep tech isn't just about individual success; it's about enabling innovations that can change the world. It's challenging, but the potential impact makes it worthwhile.

The UK's world-class universities and research institutions provide a solid foundation for innovation, especially in material science and chemistry. The supportive ecosystem, including funding opportunities and accelerator programmes, has been crucial for advancing deep tech. Puraffinity has benefited from the UK's strong talent pool and the commitment to addressing environmental challenges has also created a favourable market for our PFAS removal technology and deep tech as a whole.

Critical enablers in our sector include strong academic—industry partnerships, supportive government policies, and increasing environmental awareness. However, we face significant barriers. Access to capital remains challenging, as these technologies often require longer development cycles. Scaling up from lab to industrial applications is another hurdle, requiring substantial investment and partnerships.

To address these, we need more targeted funding programmes for deep tech, better incentives for industry adoption of new environmental technologies, and streamlined regulatory processes. Enhancing collaboration between academia, industry, and government could accelerate innovation, ultimately helping us tackle pressing environmental challenges more effectively.

Brian Cobb
Pragmatic Semiconductor

About

Pragmatic Semiconductor provides low cost and low carbon, with an ultra-thin, flexible form factor, FlexICs – flexible integrated circuits – unlock the potential of edge and item-level intelligence to fuel sustainable digital transformation.

Viewpoint

Deep tech companies operate at the cutting edge of science and engineering, pushing the boundaries of what we know and can achieve. Their innovations have the potential to transform entire industries and address some of the world's most pressing challenges. Because of their transformative potential, I see that these companies can open up new markets and business models generating high-skilled jobs, stimulating economic growth and creating a competitive advantage for the countries and sectors in which they operate.

Countries that nurture deep tech position themselves to lead the global economy, not only leading emerging sectors but also influencing global technological standards and policies.

The UK is the world's third-largest tech economy, with more tech unicorns than France and Germany combined.[38] Wiht specific focus on the semiconductor industry, the UK is a bed of groundbreaking innovation, with particular strengths in research, design and IP. The UK semiconductor industry contributed £12 billion in turnover in 2021, hosting 12% of UK R&D spend[39]. A Government poll showed that 90% of semiconductor companies surveyed expected to see rapid or moderate growth within the next two years[2].

Building on these solid foundations, the UK has an opportunity to build a leading position on the global stage in advanced material semiconductor design and manufacturing. New, alternative production models – such as Pragmatic Semiconductor's 'Fab-as-a-Service', which leverages the low-cost, compact 'Fab-in-a-Box' to provide onsite semiconductor fabrication – would enable more secure, local supply of semiconductors, adding resilience to local supply chains, and creating dedicated secure fabs for critical sectors such as defence.

The semiconductor industry faces a range of unprecedented global challenges, from supply chain constraints and geopolitical complexities to skills shortages and sustainability challenges. These have all compounded to disrupt multiple industries, delaying manufacturing and impacting economic growth.

Governments around the globe are reacting, moving to secure the long-term future of their semiconductor industries, and the supply chains, skills, R&D and manufacturing that underpin them.

The UK's Semiconductor Strategy, and related policy development, has resulted in several significant advances for the UK's semiconductor industry. However, there are still significant steps that can be taken to drive support the sector, including provision of internationally competitive incentives for UK-based semiconductor manufacturing; improved access to domestic finance for innovation; and further steps to build a skilled domestic workforce.

38: https://www.great.gov.uk/international/investment/sectors/technology/
39: https://www.gov.uk/government/publications/semiconductor-sector-study/semiconductor-sector-study

Wenmiao Yu
Quantum Dice

About

Quantim Duce offers a high-speed and self-certifying 'Quantum Random Number Generator' to enhance encryption and simulations.

Viewpoint

I co-founded Quantum Dice straight after university, meeting my co-founders during the University of Oxford's Student Enterprise Programme. My experience to date taught me that deep tech ventures, especially those involving hardware, face unique challenges because of their long gestation periods and extended product development cycles. This makes early access to the right investors - those willing to commit to scientific founders for the long haul - absolutely critical. Structured yet efficient entrepreneur support programs accessible at various stages, from pre-seed to growth phases, are equally vital as they help founders evolve into capable business leaders while enabling them to build and strengthen their internal teams. Good examples are the Quantum Technology Enterprise Centre for pre-seed, and the Shott Scale-Up Accelerator programme at the Royal Academy of Engineering Enterprise Hub.

The UK is a world leader in scientific research, supported by top-tier academic institutions and industry-specific hubs such as the Quantum Hubs. The government's commitment to identifying and supporting emerging technologies through phased, targeted funding programmes has been instrumental in driving progress. For instance, the UK National Quantum Technologies Programme, now in its 10th year, has played a significant role in advancing quantum technology spinouts. Early-stage grant funding, such as those delivered through Innovate UK for quantum technologies in particular, has been crucial to accelerate product development while mitigating risks for investors. These UK companies have successfully raised international funding, sold to global clients, and many are now scaling up.

Key enablers in the quantum sector include government-led procurement programmes and leadership from national bodies to encourage enterprise adoption of new quantum solutions. For example, the work that the National Physical Laboratory did to develop new standards for QRNGs really helped Quantum Dice's commercialisation process. However, significant barriers still remain. As the quantum sector is still relatively nascent, and the pool of early adopters in the UK is understandably limited, UK-based quantum companies need to establish pilots and sales with overseas buyers to survive. Facilitating easier international market entry is critical as it would enable UK quantum companies to scale more effectively, drive technology adoption, and establish a stronger global presence.

Katerina Spranger
Oxford Heartbeat

About

Oxford Heartbeat's PreSize® Neurovascular is AI-powered medical software for real-time planning of brain implant surgeries. PreSize shows, with 95% accuracy, how implants would fit in a patient's anatomy, enabling surgeons to select the optimal device first time around, significantly improving patient outcomes.

Viewpoint

Deep tech applied to healthcare can bring solutions to the hardest problems of our time. This is where the future of medical innovation lies; it must be given space to develop so that clinical practice can benefit from technological advances that have already reached other fields (e.g., aerospace), enabling every patient to receive cutting edge care of the highest standard.

However, working in healthcare deep tech is uniquely challenging, particularly due to the significant potential risks involved for patients. Alongside the inherent technological risks of deep tech innovations - where the technology might not work - there are regulatory hurdles with lengthy approval processes, slow pace of adoption typical in medicine, and substantial market risks. These combined challenges create multiple layers of complexity, making it exceptionally difficult for especially rigorously developed deep tech, designed with patient safety in mind, to achieve timely clinical implementation. It is therefore essential to create the right conditions to mitigate these risks and support the development of safe and effective deep tech solutions.

The UK – and London especially – is a leading hub of medtech development. The country has world-class research facilities and universities, as well as a vibrant startup and industry ecosystem, attracting some of the best global talent and developing groundbreaking ideas. Importantly for the medtech sector, the UK has strong interdisciplinary research, with engagement from fantastic clinical institutions. These provide top-quality care, and welcome clinical investigations and deployment of new tech.

One of the biggest barriers to adopting new innovations in the UK, particularly those that truly disrupt the current clinical standard, is the lack of allocated budgets within the NHS. This results in significant delays in adoption despite interest from clinical teams, which not only deprives patients from potential care benefits but also adversely affects innovative companies developing those deep-tech technologies. These delays prevent such companies from speedily scaling and becoming revenue-generating, at which the current market environment can be unforgiving. This challenge could be addressed through the creation of innovation funding pools, either managed centrally or allocated to individual NHS Trusts, streamlining the way hospitals could access and procure novel technologies.

Pierre Paslier
Notpla

About

Notpla is a family of regenerative packaging materials made from seaweed and plants. Our materials are carefully engineered to eliminate waste and make the planet a healthier place.

Viewpoint

Deep tech companies need innovation and breakthroughs in engineering and technology to thrive. It is incredibly important that the right conditions are curated for this to happen. Investment requirements are heavy for R&D and consequently strong financial support is important, as well as access to the best talent to nurture and develop. Partnerships are also helpful, with like minded organisations that are visionary, as timelines to market are long. Finally, having the right regulatory and policy support can enable quicker routes to commercialisation.

The UK gives access to leading universities and research institutes, as well as a fantastic pool of university talent. The UK's strong innovation culture, supported by an accessible and conducive environment for entrepreneurs, makes it a great place to set up a business. The vibrant startup ecosystem, where securing support from funding initiatives like Innovate UK, particularly in the early stages, is straightforward and accessible.

The UK has an opportunity to position itself as a leader in sustainable packaging innovation, particularly given the increasing concerns on environmental matters and the government's ambitions towards net zero.

The sector would benefit from stronger R&D tax incentives that are not as competitive as some of our European neighbours. When transitioning from lab-scale to industrial scale, some of the entry costs are prohibitive, and the UK could better support with investments in manufacturing assets or supporting re-purposing manufacturing plants.

Dorian Haci
MintNeuro

About

MintNeuro leverages advanced semiconductor technology to develop efficient, modular chips that enhance the scalability and affordability of neural implants, while reducing invasiveness. Our compact chips integrate sensing, stimulation, and data processing, transforming treatment options for neurological and mental health conditions.

Viewpoint

Deep tech offers immense opportunities to tackle complex global challenges, and MintNeuro is proud to contribute to this mission. As a founder, I've experienced the rewards of operating in a sector that blends cutting-edge engineering with impactful medical innovation. The UK's support ecosystem, including the MedTech SuperConnector, Royal Academy of Engineering Enterprise Fellowship, and EPSRC Impact Accelerator Account, has been crucial. These programmes provided both funding and venture-building training, helping us navigate the complexities of building a deep tech company. With this support, we've transitioned from an academic spinout to a company ready to make a global impact in neurological care.

The UK stands out for its strong foundation in research and development, a skilled talent pool, and initiatives fostering science-engineering innovation. For MintNeuro, partnerships with Imperial and participation in programmes like ChipStart UK have been instrumental in advancing our semiconductor technology. What makes the UK ecosystem unique is its holistic and multidisciplinary approach – combining research, commercial support, and networks that help startups navigate the challenges of translating science into impactful products. This environment has been pivotal for us as a deep tech company working at the cross section of the highly specialised domains.

Growth in the UK's semiconductor and medical technology sectors is driven by access to talent, public grants, and academic collaboration. However, challenges remain. There are limited domestic semiconductor manufacturing, design, and packaging facilities often requiring reliance on international partners. Additionally, the regulatory landscape for medical devices remains intricate, slow, and resource-intensive. Private investment poses another significant barrier. The UK has only a few venture capital firms capable of supporting early-stage deep tech companies, who face elongated timelines to secure funding, resulting in slow growth. Addressing these barriers through investments in domestic infrastructure, streamlined regulatory pathways, and fostering a stronger and accessible deep tech VC network would allow more startups to thrive and contribute to the UK's leadership in critical fields.

Marco Ghibaudi
Riverlane

About

Riverlane's mission is to make quantum computing useful far sooner than previously imaginable, starting an era of humann progress as significant as the industrial and digtial revolutions. To achieve this they are solving the quantum error correction problem across all quantum computing technologies.

Viewpoint

Quantum technology has increasingly been positioned by successive UK governments and policymakers as a critical driver of the nation's economic growth. It represents one of the early success stories in terms of deep-tech investment and policy making. The UK's quantum sector ranks second only to the US, in terms of both start-ups and private investment, thanks to the continued support of the UK government over the last 10 years. Two key strategic decisions have led to this result.

The first: enter early. The UK government entered the quantum deep-tech arena in 2013 with a visionary mission and significant, continued investment. This has generated an incentive for academics to convert their findings into transferable technologies, leading to the creation of various start-ups. The open nature of the mission 'create a coherent government, industry and academic quantum technology community that gives the UK a world-leading position ... in new quantum technologies... ' has allowed exploration of different routes and prevented premature pruning of high-potential/high-risk solutions. For key industries and sectors in deep tech this approach must be replicated and built on.

The second: educate, educate, educate. Even though The Quantum Missions have been refined over the last decade, they have retained a key value: collaboration to bring academia, public and private investors and industry together. With deep tech technologies, the biggest hurdle is to communication. The UK recipe has been extremely effective: the UK government has set up the National Quantum Computing Centre with the goal of linking and disseminating efforts between academia and industry whilst companies like Riverlane have organised industry events and produced targeted reports to increase collaboration and exchange knowledge across the quantum computing community.

Expert essay

What might the UK learn from Silicon Valley?

Silicon Valley is widely recognised as one of the world's global leaders in deep tech. It is recognised for its high risk appetite, and the resultant high rewards that have have seen boundaries pushed and sectors disruped through technological innovation. It has produced innumerable game-changing companies and contiues to attract top talent and investment from across the globe, as a hot bed of innovation.

In this expert essay Dr Mallik Tatimapula, Chief Technology Officer for Ericsson Silicon Valley, explores the foundational principles upon which Silicon Valley's success is built and thrives and what the UK might be able to learn to strengthen the deep tech landscape.

What the UK might learn from Silicon Valley to advance deep tech

By Dr Mallik Tatipamula, FREng FRSE
Chief Technology Officer of Ericsson Silicon Valley

The successes of Silicon Valley offer valuable insights for any region aspiring to become a leader in deep tech. The UK, with its strong academic institutions, growing tech ecosystem, and strategic focus on innovation, is well-positioned to emulate and adapt aspects of the Valley's most effective strategies, while also retaining its unique business culture, social benefits and harness its distinctive strengths. Through examining Silicon Valley's model in areas like mindset, access to capital, and its unique ecosystem can shed light on how the UK might strengthen its own deep-tech sector.

The intention should not be for the UK to directly replicate the Valley, but rather develop its own unique model upon which it can embrace the Valley's foundational principles to create a distinct path that leverages its own strengths.

Mindset of innovation and resilience

Silicon Valley's core strength lies in a mindset that embraces openness, adaptability, and a proactive entrepreneurial spirit. It's not simply about developing new ideas, but about consistently challenging boundaries and redefining what's possible. For the UK, fostering a culture that not only welcomes but actively seeks out change can help cultivate a robust deep tech sector. Encouraging entrepreneurs, engineers, scientists and investors to embrace risks and view failure as a steppingstone, rather than a setback, will be essential to sustaining innovation.

Networking and collaboration for rapid growth

Silicon Valley's culture of collaboration accelerates technological advancement through open-source projects, industry standards, and cross-company initiatives. In the UK, building a similarly open and collaborative environment can foster deep tech advancements, especially in areas requiring shared infrastructure, such as data centers or testing facilities for quantum computing. Bringing companies together to work on foundational technologies can help drive significant innovation in deep tech while avoiding redundant development costs.

A core strength of Silicon Valley is its interconnected network of individuals and organisations that drive collective progress. Its ecosystem combines startups, VCs, and major tech firms that together form a self-sustaining environment for startups to receive funding, mentoring and potential acquisition opportunities. A point of uniqueness for the Valley is the notion of competitors frequently collaborating knowing that partnerships can yield mutual benefits in emerging technologies. For the UK, creating networks that unite academia, industry, and government can catalyse innovation in deep tech, particularly in sectors like AI, quantum computing, and advanced manufacturing. Being an active participant in both national and global tech networks can elevate the UK's status as an innovation hub while encouraging knowledge sharing.

Access to capital and the venture capital ecosystem: fuelling startups and scale-ups

Silicon Valley's venture capital ecosystem provides not only financial backing but also mentorship, strategic guidance, and a risk-tolerant attitude. The UK's venture capital scene could grow to offer similar benefits, with increased focus on deep tech. Supporting investors who specialise in high-risk, high-reward sectors and creating funds dedicated to long-term deep tech development can significantly impact startups. The UK's public sector can also support this by providing match funding, tax incentives, and clear pathways for deep tech companies looking to scale.

The venture capital infrastructure in Silicon Valley has been instrumental in turning high-risk ideas into high-growth companies. For deep tech, which often requires long development timelines and significant funding, such access to capital is critical. In the UK, government-backed initiatives alongside private VC investment could provide the resources and patience that deep tech start-ups need to succeed. Creating incentives for venture capitalists and angel investors who are specifically interested in deep tech could further accelerate the growth of UK-based innovation. The 2023 Mansion House reforms, aimed at unlocking pension funds to invest in high potential high growth businesses, will be a step in the right direction here.

Proximity to major influencers and companies

One of Silicon Valley's advantages is its close-knit community of tech giants, start-ups, venture capitalists, and academic institutions. This clustering of talent and resources allows companies to tap into a constant flow of expertise, ideas, and partnerships. There are long-standing tech hubs like London, Glasgow, Cambridge, and Oxford which exemplify such clustering in the UK. It is exciting to see other tech hubs continue grow in strength and resilience, like Bristol and the Northern Triangle (Sheffield, Manchester, Leeds), as well as increased clustering in tech hot spots in the devolved regions. The clustering effect encourages deep-tech companies and investors to set up operations in these regions and facilitates access to expert talent, university research, and resources.

Academic excellence as a pillar of innovation

For decades, Stanford and UC Berkeley have been integral to Silicon Valley's growth, producing graduates who not only excel technically but think entrepreneurially. These institutions instill a mindset of openness and risk-taking, equipping their graduates to make bold advances in technology and business. The UK's leading universities, including Oxford, Cambridge, and Imperial College London, already play a similar role, and in the past few years, other universities have started to follow suit by providing in-house commercialisation training to academics, and by reviewing their spinout equity policies. By fostering a close relationship between academia and industry, these institutions can produce talent ready to lead and innovate in deep tech, ensuring that breakthrough research reaches commercial markets.

The importance of technical and business prowess

A deep tech ecosystem thrives when its leaders understand both the technical and business dimensions of innovation. In Silicon Valley, successful CEOs and founders balance technical acumen with strategic business insights, blending the two skillsets to lead their companies effectively. UK startups, in particular, could benefit from nurturing this dual expertise within their leadership teams. Programmes or initiatives that expose scientists and engineers to business development and strategic planning, such as those run by the Royal Academy of Engineering Enterprise Hub, could help deepen the talent pool's ability to commercialise complex technologies effectively.

Building a unique UK model for deep tech

While Silicon Valley's model cannot be directly transplanted, the UK can adopt and adapt these principles to foster a thriving deep-tech ecosystem. By cultivating a culture of innovation, building networks of collaboration, and strengthening access to capital and mentorship, the UK can position itself as a global leader in deep tech. Leveraging the strengths of its academic institutions, increasing venture capital investment in high-risk technology sectors, and fostering collaboration between start-ups and established companies can collectively create an ecosystem that supports cutting-edge innovation.

The principles that enable Silicon Valley to thrive are ones that might not work in all contexts or regions. The UK offers a distinctive landscape to that of the United States, however that does not preclude it from developing a unique, bespoke model, that builds on the Valley's foundational principles whilst also harnessing its own strengths. With targeted support and an aligned vision, the UK can emerge as a prominent player in the global deep tech landscape.

Methodology

A comprehensive list of VC and PE growth/expansion company deals was compiled with respect to seven segments representing an application area of deep technologies. The combined segments define the overall deep tech space. The segments' lists are not entirely mutually exclusive, and companies have been deduped as needed.

Deep tech is defined as deep technology companies that build on the fundamental principles of engineering and science to create novel solutions and are recognised as being capital-, time-, and R&D-intensive. Any company that is tagged with one or more of the verticals and/or industry codes in the PitchBook Platform listed below are included in the deep tech data:

- **Manufacturing & materials**
  - 3D printing
  - Emerging Spaces: Materials & resources
  - Advanced manufacturing
- **Robotics, hardware & chips**
  - Robotics & drones
  - Semiconductors
  - Nanotechnology
- **Networks**
  - Internet of Things (IoT)
  - Communications & networking
  - Supply chain tech
- **Healthcare**
  - Biotechnology
  - Emerging Spaces: Healthcare
- **Frontier applications**
  - Spacetech
  - Construction technology
  - Augmented reality
  - Virtual reality
- **Energy**
  - Emerging Spaces: Energy
  - Cleantech
- **AI & computing**
  - Artificial intelligence & machine learning (AI & ML)
  - Quantum computing
  - Cloudtech & development operations (DevOps)
  - Blockchain

The Emerging Spaces segments included in the list of verticals and industry codes are manually curated company lists representing startups engaged with emerging and novel technologies. Due to the manual-curation aspect, there may be overlap between the Emerging Spaces segments and the deep tech verticals.

Due diligence was performed to ensure that the list of verticals and industry codes created a company list that accurately reflected the defined deep tech space and reduced dupes between segments. Thus, additional criteria were added to each segment to refine the company list and align it to the definition of deep tech and better reflect the scope of this report.

This report applies all PitchBook's standard report methodologies, especially for venture capital transactions. Only closed deals are included for analysis. Investor participation includes both lead and non-lead investors. PE-growth activity is not included in VC activity.

Geography is determined by the office location that is marked as the primary headquarters on a given company profile. All companies included in the data are headquartered in the UK. Deals are quoted in British pound sterling (GBP).

40: https://pitchbook.com/news/pitchbook-report-methodologies

Royal Academy of Engineering

The Royal Academy of Engineering is harnessing the power of engineering to build a sustainable society and an inclusive economy that works for everyone.

In collaboration with our Fellows and partners, we're growing talent and developing skills for the future, driving innovation and building global partnerships, and influencing policy and engaging the public.

Together we're working to tackle the greatest challenges of our age.

What we do

TALENT & DIVERSITY

We're growing talent by training, supporting, mentoring and funding the most talented and creative researchers, innovators and leaders from across the engineering profession.

We're developing skills for the future by identifying the challenges of an ever-changing world and developing the skills and approaches we need to build a resilient and diverse engineering profession.

INNOVATION

We're driving innovation by investing in some of the country's most creative and exciting engineering ideas and businesses.

We're building global partnerships that bring the world's best engineers from industry, entrepreneurship and academia together to collaborate on creative innovations that address the greatest global challenges of our age.

POLICY & ENGAGEMENT

We're influencing policy through the National Engineering Policy Centre – providing independent expert support to policymakers on issues of importance.

We're engaging the public by opening their eyes to the wonders of engineering and inspiring young people to become the next generation of engineers.

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