



UK Defence Tech 2023

Advancing National Security through Innovation

Beauhurst

MD ONE

Contents

- 01.** Defining national security technology
- 02.** Foreword by Will McManners, MD One
- 03.** Foreword by Emile Simpson, MD One
- 04.** Investing in defence tech
- 05.** Private investment
- 06.** Public grants
- 07.** Spinouts
- 08.** Fastest-growing companies
- 09.** Example investments
- 12.** About the contributors

Defining defence technology

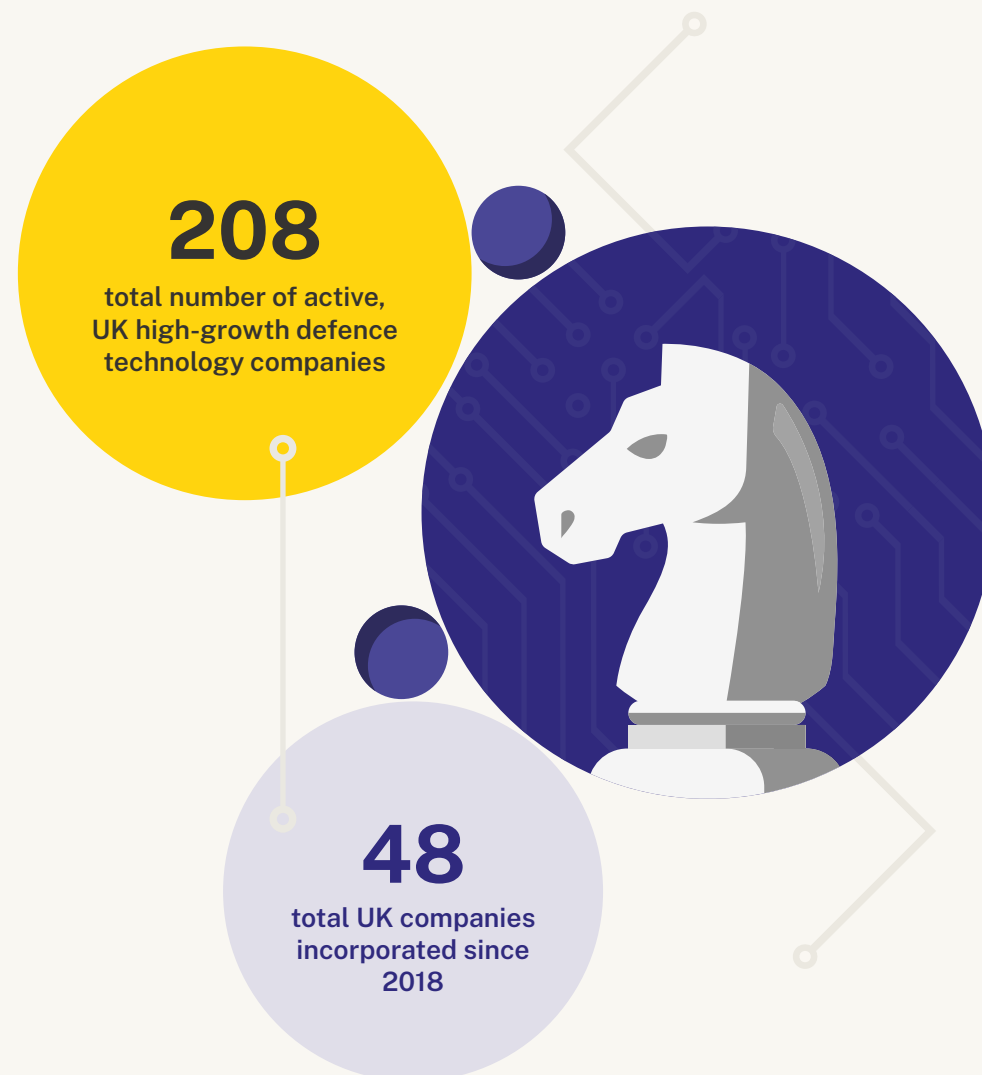
Defence technology is shorthand for technologies that underpin national security at the level of states, companies, and individuals.

Defence technologies stem from a range of industries, from the traditional robotics-based engineering used in security operations, to cybersecurity software for sensitive information. This report will focus on private technology companies whose products have defence applications, or which have received funding from organisations with a focus on the security sector.

Within the UK, the Ministry of Defence (MOD) aims to support innovation within the defence sector through various entities, including the Defence Science and Technology Laboratory and the Defence and Security Accelerator, which aim to collaborate with academia and industry to deliver the latest innovations to benefit the country's security. As part of The

Defence Innovation Initiative, the MOD has committed £800m from 2015 to 2025 to fund private sector companies developing technologies that are of strategic advantage.

The data in this report encompasses 251 UK-based defence technology companies, including both currently active, private companies and those that have previously been a part of this group but have since exited via an acquisition or IPO, or have ceased operations. As technological advancements in areas such as quantum computing and artificial intelligence continue to be used to advance society, they also introduce new threats to the global security landscape, requiring the development of new technologies to defend against such threats.



Foreword

Will McManners
Tech VC Investor and
Portfolio Manager at MD One



MD One Ventures is glad to have partnered with Beauhurst to identify and share some objective insights into the national security innovation landscape across the UK. In this age of material geopolitical and market uncertainty, there has understandably been an increased level of sector interest from a range of stakeholders.

Whilst within all early-stage ecosystems there is natural information inefficiency, we have drawn data from a range of sources to objectively map relevant global, European and UK domestic trends.

We see defence tech in broad terms: we focus both on technologies in the traditionally defined defence and aerospace sectors, as well as the security sector more broadly, which covers corporate and personal security. Specialist sectors such as cyber security, critical national infrastructure, gaming, DeFi and fintech, quantum computing and space all have enormous roles to play in supporting our societal security systems.

“**Specialist sectors such as cyber security, critical national infrastructure, gaming, DeFi and fintech, quantum computing and space all have enormous roles to play in supporting our societal security systems.**”

Pitchbook and the Financial Times recently published data showing that global deal activity from PE and VC investors had increased by 2022 to \$20bn, up from an annual average between 2015-2019 of \$10.4bn.

Given the US's prominence within the aerospace and defence sector, it is no surprise that the same data saw Europe only contributing around a tenth of this figure. There are, however, various initiatives to promote defence tech in Europe (including both the EU and the UK) — including the new \$1bn NATO Defence Innovation Fund.

The historic consistency of national defence and public spending is a unique factor to this sector, relative to other technology sectors, which should be noted. Whereas in a range of other verticals in both equity and debt markets we have seen, and continue to see material volatility, an anomalous stabiliser in this sector is the remarkable consistency of defence spending as a percentage of GDP for the last 20 years. For the same period, World Bank data shows us percentages broadly between 2-2.5% for NATO and EU Countries.

We are excited by the opportunity that this sector presents to founders and investors and are glad that the data in this report tells the story of the past few years' growth in momentum. We look forward to sharing follow-up studies that will focus on some of the more thematic trends within the sector.

Foreword

Emile Simpson
Investment Strategist and
Senior Advisor at MD One



Military technology is downstream from economic transformation. A century ago, the industrial revolution produced mechanized warfare: the “horse v tank” moment. Today, the information revolution points to another transformation in warfare, which might be labelled the “tank v drone” moment.

Already, automated technologies — and in particular surveillance platforms — are routinely used on the battlefield in Ukraine. However, more sophisticated technologies are being developed that point towards a paradigm shift in warfare, in which the focus will be on unmanned platforms and automation. The timing of this transformation depends primarily on the development of computing power, and the deployment thereof onto the battlefield: so-called “edge” computing.

Geopolitically, competition to develop the next generation of defence tech, including the computing that underpins it, is driving policy across several other

areas, from digital sovereignty to semiconductor supply chains, not only in the UK and Europe but globally.

This trend plays out in structural changes in global defence spending today, both in terms of an increase in scale, but crucially too, in terms of a renewed focus on technological innovation, of an intensity not seen since the early Cold War. Further, for western states, there is significant focus on domestic defence spending to rebuild the defence industrial base that has withered since the end of the Cold War.

Practically, this has seen the UK and European governments committing to programmes to support companies not only in defence but in the security sector more broadly: the security of companies and individuals is as much a national security priority as that of the state itself.

Of course, there remain challenges in the defence tech sector:

“Geopolitically, competition to develop the next generation of defence tech, including the computing that underpins it, is driving policy across several other areas, from digital sovereignty to semiconductor supply chains.”

a central issue is the middle of the capital structure since most western governments are good at supporting large defence companies (though standing contracts) and small firms (through grants and tax breaks); but for innovative companies to become tomorrow’s leaders they need to bridge that gap. That is where private capital really matters, and where the UK and Europe lag behind the US: but that is precisely the investment opportunity.

Investing in defence tech

Companies creating world-beating technologies that address the UK Government's security priorities will see faster growth than incumbents who fail to innovate.

HM Government's *Integrated Review Refresh 2023* "identified five priority technologies crucial for delivering UK objectives, including the cyber power agenda: AI, semiconductors, quantum technologies, future telecommunications and engineering biology. Under the 'own, collaborate, access' model introduced in IR2021, [Government] will ensure the UK has a clear route to assured access for each."

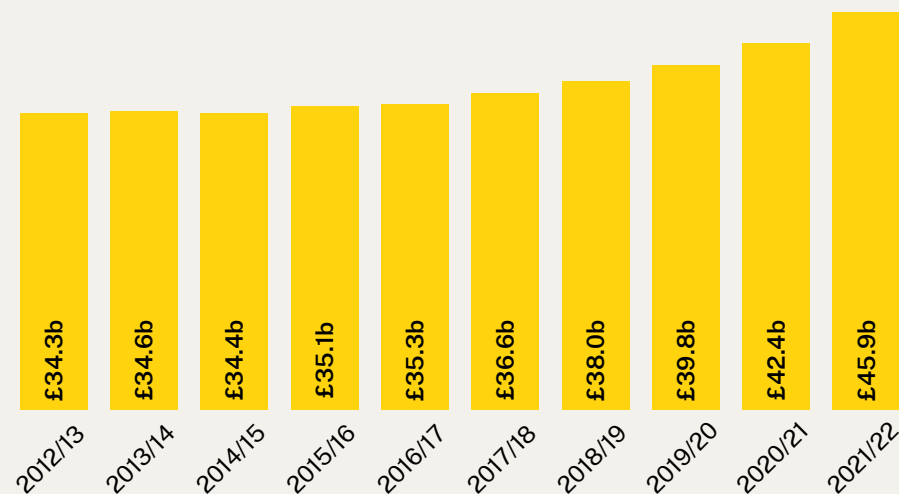
This perspective of the relationship between science and technology, and the UK's national security interests, demonstrates the likely continuation of a supportive environment in the UK

for innovation. Part of this will involve a "significant share of the defence budget orientated to R&D." Given the trajectory of defence budgets, the UK Government will remain a relatively stable procurer of relevant technologies.

Companies creating world-beating technologies that address the UK Government's security priorities will see faster growth than incumbents who fail to innovate. Fundamentally, the companies creating those technologies are one of the best counter-cyclical asset classes. As the data shows, defence budgets remain fixed regardless of changes in GDP.

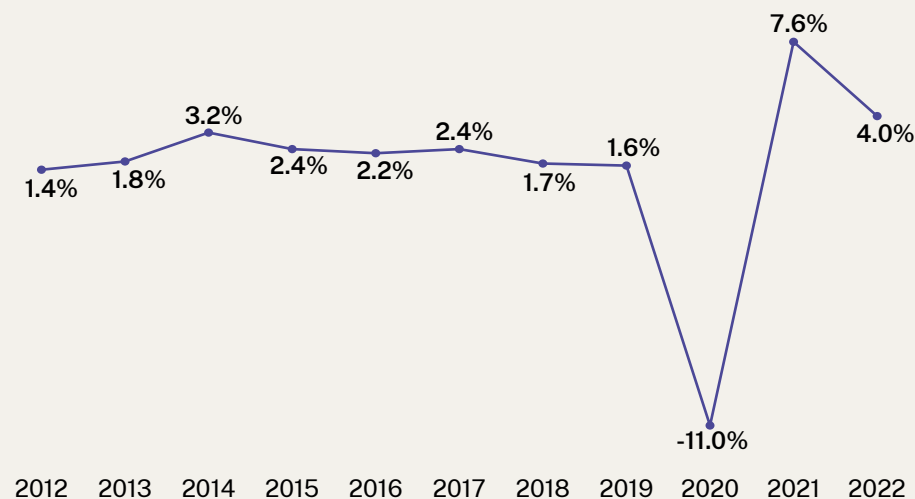
UK defence spending (2012-2022)

Source: Ministry of Defence



UK Gross Domestic Product: Year on Year growth: CVM SA % (2012-2022)

Source: Office for National Statistics



Private investment

Defence technology companies have secured significant equity investment over the past decade, both in deal numbers and value.

400

total number of
UK equity deals
2013-2022

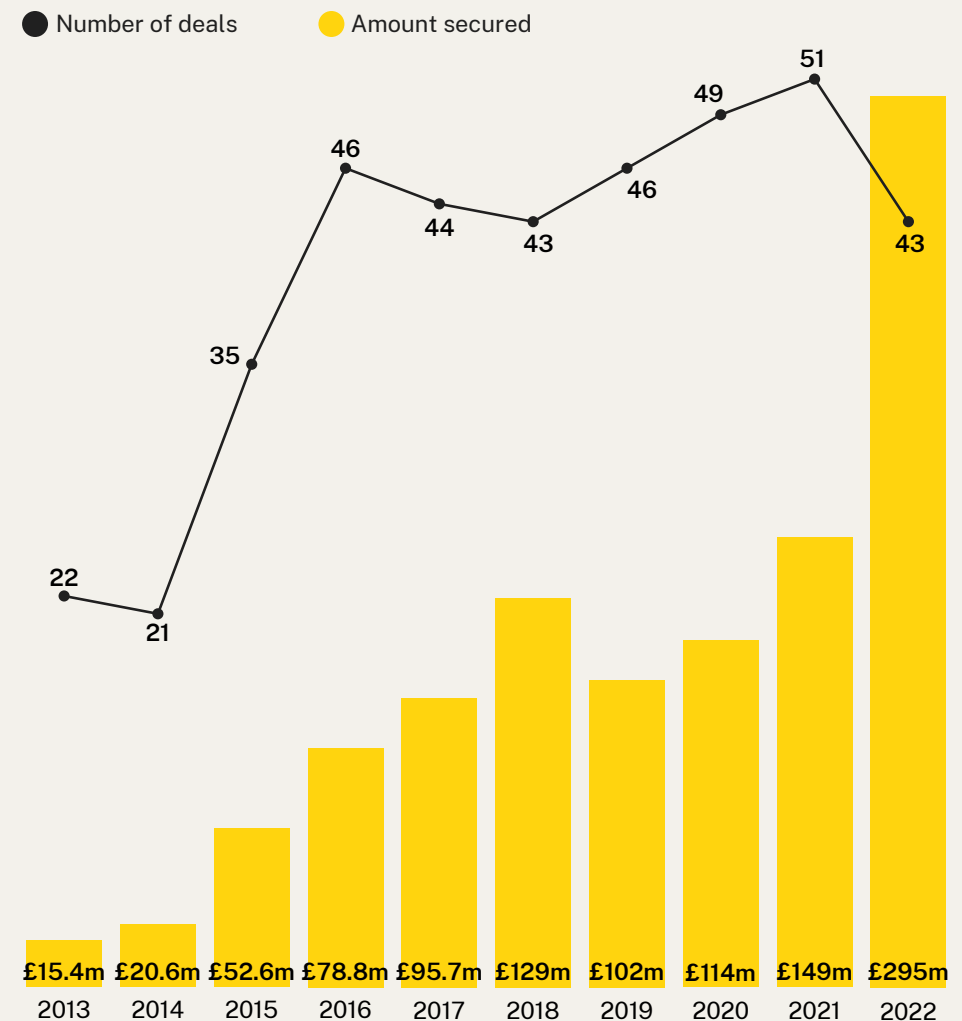
£1.05b

total value of
UK equity deals
2013-2022

Between 2013 and 2022, the total value of equity investment secured by UK defence tech companies rose from £15.4m to a record £295m, and the number of deals almost doubled, rising from 22 to 43. While deal numbers declined slightly from 2021 to 2022, this aligns with a drop in deal numbers across the UK's high-growth ecosystem as investors pulled back in the face of worsening economic conditions. The record investment in defence

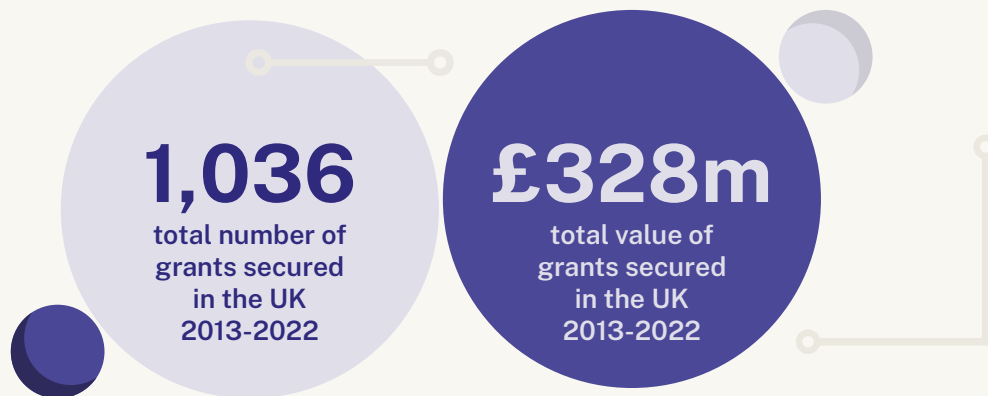
tech shows that the sector is gaining traction as national security becomes increasingly pertinent to the outcome of global conflicts such as that in Ukraine. Two large deals account for 63.6% of £295m raised in 2022. In November, Oxford-based spinout Osler Diagnostics, which has developed a lab to perform high-quality diagnostic tests, secured £73.8m. Then in December, Oxford-based autonomous vehicle developer Oxbotica raised £114m.

Equity investment into defence technology companies
(2013-2022)



Public grants

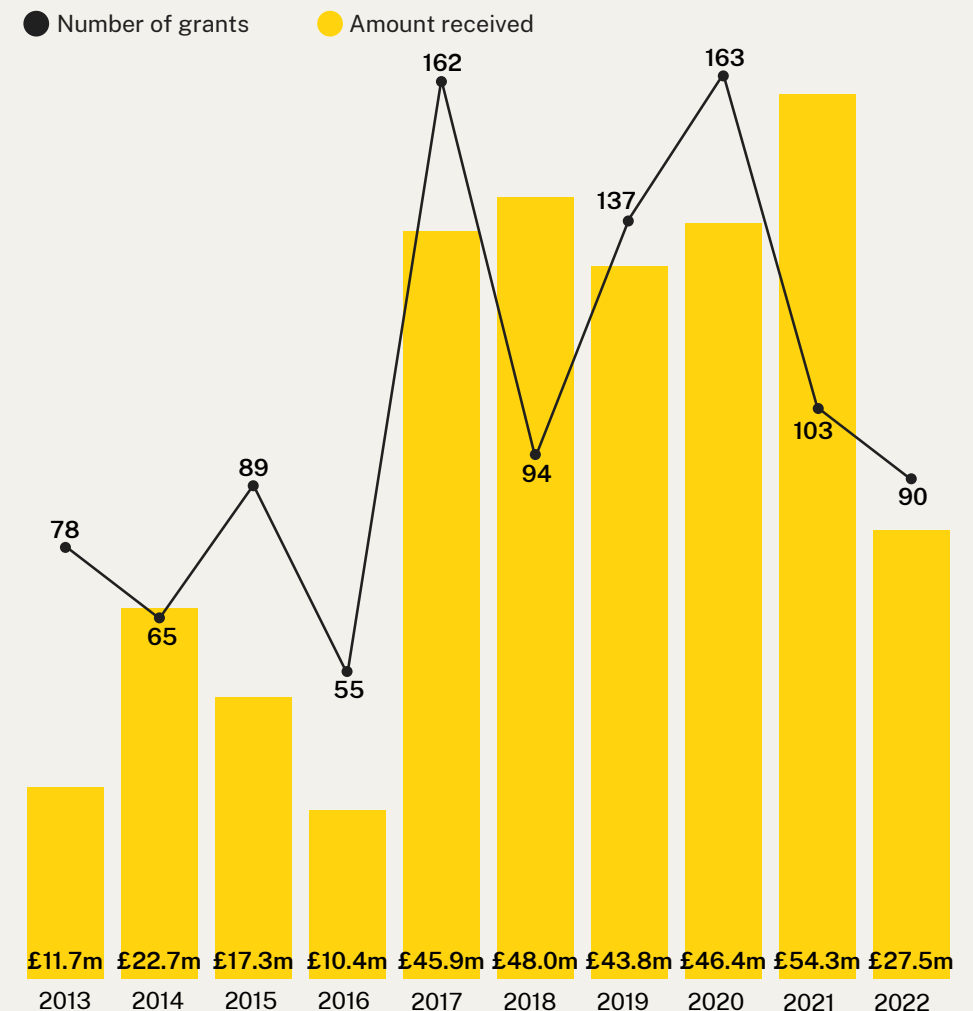
Grants can be a key source of funding for defence technology companies, as is also the case for other technology-focused sectors.



Grant activity by UK defence technology companies was at its highest between 2017 and 2021, with the value of these grants reaching a peak of £50.5m in 2021. This includes a £20.0m grant secured in March 2021 by Solihull's GKN Aerospace, a developer of advanced aerospace technology. Grant funding has fallen in the past year but the award of grants is volatile on a year-on-year basis — as the data shows — and reflects the availability of relevant defence grant opportunities and Government funding.

Between 2013 and 2022, defence technology companies secured 1,036 grants. Of these, 68.1% (706) were funded by Innovate UK and a further 23.8% (247) were funded by the Defence and Security Accelerator (managed by the Ministry of Defence). This breakdown highlights the strong links between UK Government agencies and the sector, which are important as the UK looks to leverage the innovation of private sector companies in its national security initiatives.

Grant funding into defence technology companies (2013-2022)



Spinouts

Academic spinouts can harness cutting-edge university research and intellectual property to create applied technologies for national defence.

Spinout companies are often of interest to investors, government entities and other institutions due to their cutting-edge technologies, which fall across a range of sectors. Naturally, this includes the security sector, which aims to utilise the latest innovations for the benefit of the UK's national security. Of the 251 defence technology companies in the UK, 19.1% (48) were spun out of an academic institution, while for the technology companies as a whole, this figure is 7.60%, highlighting the importance of spinouts for the sector.

The University of Oxford has produced seven (14.6%) spinout

companies operating in the defence technology sector, the highest number out of all academic institutions in the UK. This aligns with the university's position as the top origin university for academic spinouts across all sectors.

An example of these companies is Oxbotica, which develops autonomous vehicle software. Since its incorporation in 2014, the Oxford-based company has secured £185m in equity investment across five fundraising rounds and a further £14.6m in grant funding. This grant funding includes a £549k research and development grant from the

Defence and Security Accelerator. Also among the University of Oxford spinouts is Living Optics, a developer of hyperspectral imaging technology. The company's hyperspectral camera can be used across a range of sectors for its remote sensing and surveillance capabilities. Founded in 2020, Living Optics has since raised £25.7m in equity investment across three fundraising rounds.

The University of Cambridge is the second most frequent origin university for defence technology spinouts with four (8.33%) companies in the sector. This also

aligns with the University's ranking as the second-most frequent origin university for spinouts. Founders of spinouts at the University are supported by its commercialisation arm, Cambridge Enterprise. This includes SuperSharp, a space technology company that develops unfolding, self-aligning thermal infrared telescopes and is a spinout from the University. Incorporated in 2017, the Cambridgeshire-based company secured £130k in equity investment in February 2022. It also secured a £299k contract from the Defence and Security Accelerator in order to continue the development of its unfolding telescope.



Number of defence technology spinouts: 7
Proportion of defence technology spinout population: 14.6%



Number of defence technology spinouts: 4
Proportion of defence technology spinout population: 8.33%

Fastest-growing companies

During the past three years, the following firms have achieved UK defence tech's highest compound annual growth rates (CAGRs) in turnover or headcount as disclosed in their financial accounts. Alloyed exhibited the greatest turnover growth, having grown its revenue by a CAGR of 293%. In terms of headcount growth, Luffy AI, Herotech8 and Flare Bright have the greatest growth, having increased by 52%, 71% and 55% respectively.

Alloyed

CAGR (turnover): 293%
Turnover (FYE 2022): £4.50m
Headcount (FYE 2022): 30

Alloyed manufactures a range of alloys for use in a variety of sectors, including defence and automotive. Founded in 2017, the Oxfordshire-based company has secured £45.2m in equity investment across four fundraising rounds and a further £1.57m in grant funding. Alloyed acquired fellow materials technology company Betatype in December 2019.

Luffy^{AI}

CAGR (headcount): 52%
Headcount (FYE 2022): 7

Launched in 2019, Luffy AI utilises artificial intelligence to develop autonomous software for robotics and industrial processes. The Oxfordshire-based company has received £2.45m in equity investment and £518k in grant funding, including a £97.2k from the Defence and Security Accelerator in February 2022.

HEROTECH8 OPEN AIR

CAGR (headcount): 71%
Headcount (FYE 2022): 10

Based in Bedfordshire, Herotech8 develops fully automated drone surveillance systems that can be remotely accessed through secure servers. Since its incorporation in 2016, the University of Cranfield spinout has secured £1.41m in grant funding, including an £81.9k R&D grant from the Defence and Security Accelerator in January 2019.

FLARE/BRIGHT

CAGR (headcount): 55%
Headcount (FYE 2022): 15

Co-founded by Kelvin Hamilton and Conrad Rider in 2015, Flare Bright develops autonomous drones that are capable of flying without GPS or remote control. The Buckinghamshire-based company has secured £1.08m in grant funding, of which £651k came from two grants funded by the Defence and Security Accelerator.

Sector companies



Incorporation date: 04/11/2019

Sector: Mobile apps

Headquarters: Berkshire

Launched by founder Max Buchan in 2020, Worldr develops security, compliance and privacy products that exist on top of communication and collaboration platforms such as WhatsApp and Slack. The company's zero-trust architecture allows organisations to continue to use these communication platforms while

retaining control over their data and complying with industry regulations. These solutions can also be utilised across the security sector to reduce the risk of state-sponsored attacks by protecting personally identifiable information and implementing a principle of least privilege security framework.

Based in Slough, Worldr has received £12.0m in equity investment across two fundraisings, including a £9.80m deal in November 2022 involving MD One Ventures. The company plans to expand into the US with an office in New York City and aims to develop a solution that works across all of an organisation's collaboration tools.



Incorporation date: 19/04/2021

Sector: Analytics, insights, tools

Headquarters: London

Founded in 2021, Januus identifies connections between individuals' real-life identities and their cryptocurrency wallets. It curates a dataset of the wallets' assets and transactions which can be utilised by the financial community and public sector. This allows intelligence

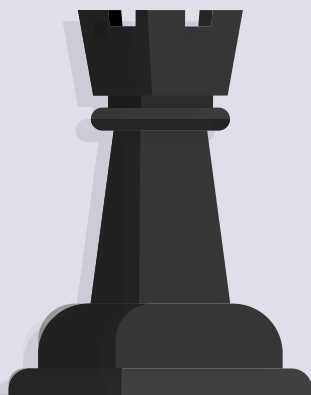
organisations and government entities to link criminals to their illegal on-chain activity. The London-based company continuously updates its dataset utilising its data collection technology and proprietary sources.

The blockchain services company secured £6.64m in equity investment in August 2021, with backing from MD One Ventures. Following this, in October 2021 Januus attended Outlier Ventures' Base Camp accelerator, which aims to develop Web3 and metaverse companies.

“If the UK's aspiration for a 'whole of society' approach to cyber resilience is to be realised, how the country responds to cyber extortion over the coming years may be one way to bring the concept to life.

James Sullivan

Director of Cyber Research at the Royal United Services Institute



Sector companies



Incorporation date: 20/11/2015

Sector: Artificial intelligence

Headquarters: Oxford

Founded in 2016, Mind Foundry develops an artificial intelligence (AI) platform that aims to help its customers collaborate with AI to improve their decision making. Mind Foundry's platform helps organisations to make data-driven decisions by ingesting their data to

provide analysis and forecasts. It can be implemented across a range of sectors, including the defence sector, where use cases include aiding police forces in processing and using intelligence data more effectively.

The University of Oxford spinout has raised £40.1m in equity funding across six fundraising rounds and has received £2.84m in grant funding. The Defence and Security Accelerator provided £498k of this across two grants in November and December 2021.



Incorporation date: 29/11/2022

Sector: Aerospace

Headquarters: Bedfordshire

Greenjets is a Bedford-based aerospace company that specialises in the development and production of cutting-edge electric propulsion technology for drones and commercial aircraft. The company was founded by a team of industry experts from Blue Bear and Rolls

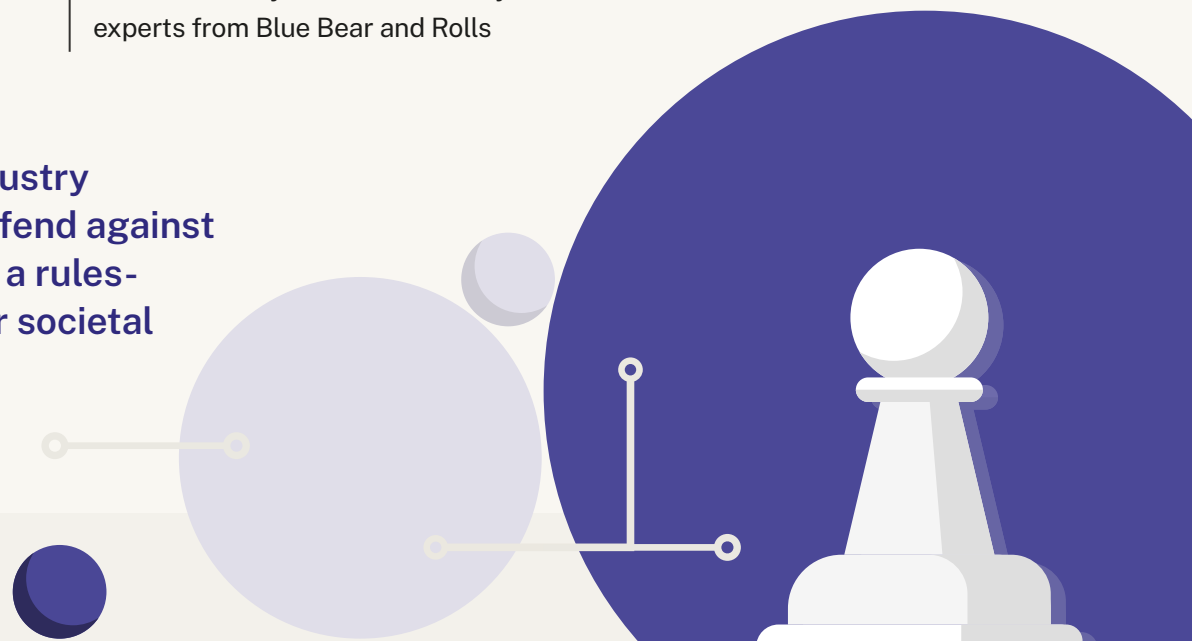
Royce Electric, combining their collective knowledge and experience to create innovative, efficient, and quiet engines.

The company was spun out from autonomous systems specialist Blue Bear in 2022 and has secured equity investment from MD One. The company is focused on research and development and aims to revolutionise the aviation industry by incorporating its advanced jet propulsion technology into electric engines that can be easily adopted by aircraft manufacturers.

“It is increasingly recognised that a strong defence industry backed by technological innovation is necessary to defend against the spread of authoritarian governments and advance a rules-based international order, as well as providing broader societal value in supporting domestic national security.

Jamie Gray

Senior Manager at CIT Group



Sector companies



Founded: 2019

Sector: Software-as-a-service (SaaS)

Headquarters: London

Labrys is a software company that focuses on assisting public and private sector clients in coordinating and visualising globally distributed people and teams. Its flagship

product, Axiom C2, is a command and control software platform that supports the visualisation of team locations, secure communications, task management, and payments. The platform is designed to be flexible and adaptable, integrating into existing systems to support asset network management.

Founded in 2019 by two British military veterans, Labrys was created to address the fragmented and disorganised process of

coordinating human networks. With global collaboration becoming more integral and commonplace to how organisations operate, Labrys has identified a gap in the market for more efficient tools to manage human networks. By leveraging key trends in data security and defence, Labrys' platform provides customers with traceability, ease and consistency of use, and information protection.

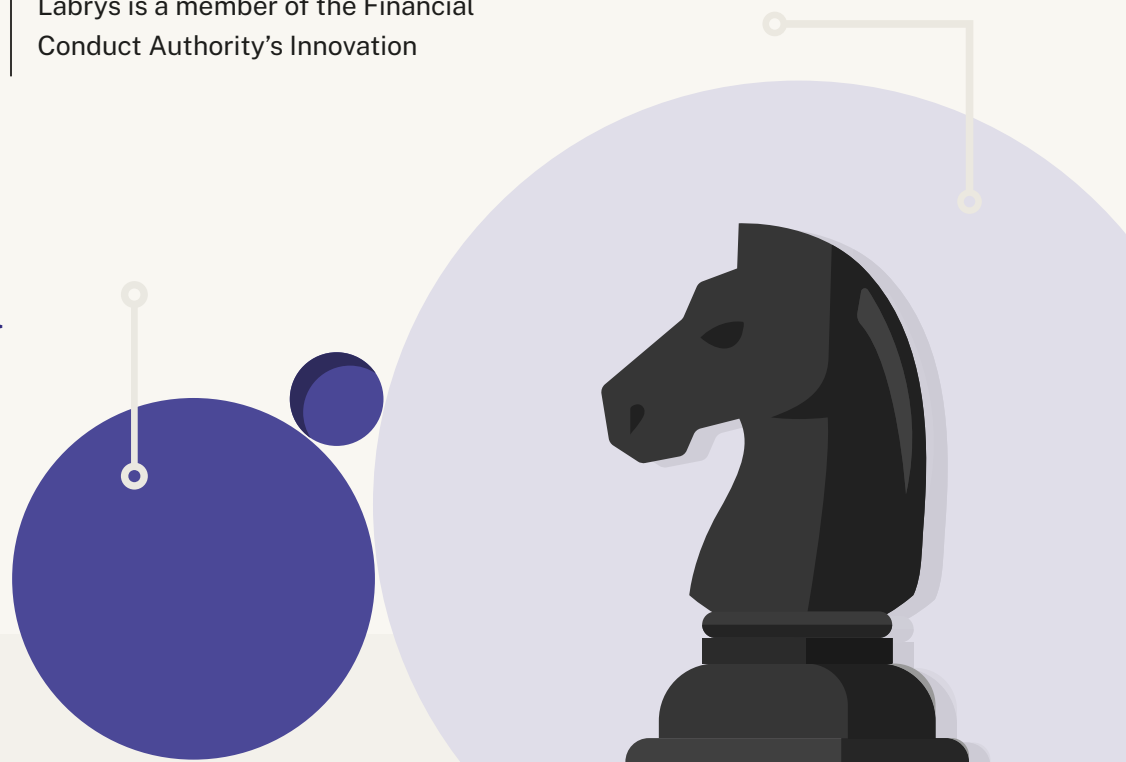
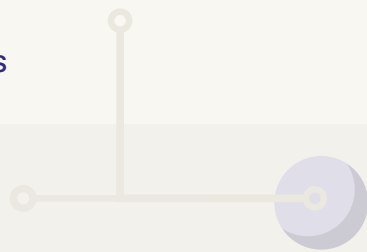
Labrys is a member of the Financial Conduct Authority's Innovation

Pathways programme, which supports companies delivering cutting-edge technologies to financial services customers as they navigate the UK's regulatory environment. The company's clientele includes governments, NGOs, and multinational corporations.

We combine geospatial data with integrated tasking, secure communications, and digital payments in a cloud environment. In terms of how governments deliver global policy at reach, how militaries run campaigns at scale, to how vaccines or humanitarian aid is distributed, this innovation will wholly redefine legacy delivery models.

Gus Lersten

CEO and co-founder at Labrys



About the contributors

Beauhurst

Contact

4th Floor, Brixton House
385 Coldharbour Lane
London
SW9 8GL

www.beauhurst.com
+44 (0)20 7062 0060
consultancy@beauhurst.com

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

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

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

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

MD ONE

Contact

1 Connaught Street
London
W2 2ET

www.md-one.com

MD One Ventures is the European and Israeli National security venture capital team. We invest in frontier technologies that matter and support teams who deliver a technical advantage to the UK and allies' national security.

Our team combines comprehensive venture capital experience across multiple sub sectors, with deep operational expertise from Tier One special forces and intelligence communities.

To learn more, visit md-one.com





Editor Henry Whorwood
Production Dan Robinson, Advone Katsande, Ethan Yip, Blanca Valencia
Design Freya Hyde

© Beauhurst 2023