



# Investor Presentation

Q2 2022

**The global quantum technology market is expected to reach \$42.4 billion by 2027<sup>1</sup>**

<sup>1</sup> [Mind Commerce, Feb 2022, Quantum Technology 2022-2027](#)

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An abstract, glowing blue circuit pattern on a dark background, resembling a complex microchip or data network, occupies the left half of the slide.

# Overview

Quantum Exponential PLC is a UK listed VC Fund investing in early-stage Quantum Technology start-ups and scale-ups

QE has four portfolio companies and is in the privileged position of seeing the vast majority of early-stage quantum deals

QE's management and advisory team have unique access to deal flow and deep market knowledge. Together with significant venture capital experience, this enables them to access, invest and support high-growth companies in this important sector

# Introduction

- There is a Global Quantum “arms race” to develop and own this emerging and quickly establishing array of technology. The technology should be viewed as a critical enabler for industries in the future with applications including better cybersecurity, better methods of drug discovery and modelling financial markets amongst just few examples<sup>1</sup>
- Quantum computing is a new technology that leverages the laws of quantum mechanics to produce exponentially higher performance for certain types of calculations, offering the possibility of major breakthroughs across several end markets
- Quantum Technology’s ability will improve the speed, scale and efficiency of many technologies used by industry today in most sectors and markets. According to a Gartner report, 20% of global companies will budget for quantum computing projects by 2023. This percentage was less than 1% in 2018<sup>2</sup>
- On 4th May 2022 The White House announced a raft of measures to support Quantum Technology whilst laying out steps to boost cybersecurity to defend against the next generation of supercomputers<sup>3</sup>
- Rishi Sunak in his Budget and Spending Review in October 2021 proposed a sizeable overall investment and give priority to technologies like AI and quantum technology<sup>4</sup>

<sup>1</sup> <https://www.forbes.com/sites/forbestechcouncil/2021/07/30/four-ways-quantum-computing-could-change-the-world/?sh=518d70284602>

<sup>2</sup> <https://www.gartner.com/smarterwithgartner/the-cio-s-guide-to-quantum-computing>

<sup>3</sup> <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/04/national-security-memorandum-on-promoting-united-states-leadership-in-quantum-computing-while-mitigating-risks-to-vulnerable-cryptographic-systems/>

<sup>4</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1062486/Spring\\_Statement\\_2022\\_Web\\_Accessible.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1062486/Spring_Statement_2022_Web_Accessible.pdf)

# Quantum Exponential Purpose

## Mission

To foster and participate in the next leading asset class, quantum technology companies, in order to deliver outsize returns to investors

## Delivery

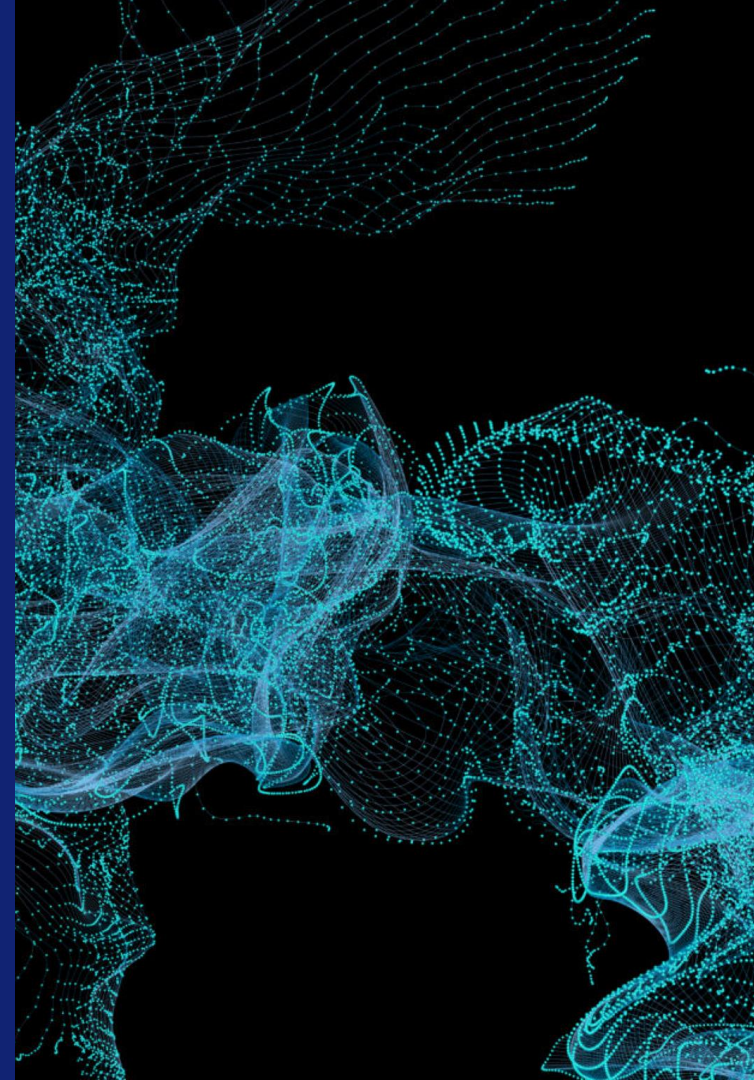
We have delivered the following to date:

- ✓ Recruited an experienced team with complementary skills committed to the mission
- ✓ Set up a UK Company structure with high regulatory standards
- ✓ Raised initial Funds in Quantum Exponential Plc to make 8-10 investments in early-stage companies in QT and ensure the first two year's costs are covered
- ✓ Established superior dealflow through our expert network to uncover the leading QT companies for investment



# Quantum Technologies – Four key areas of QE's focus

Quantum Exponential will prioritise investments into companies likely to have near-term value uplift





## Quantum Computing

Quantum Computers rely on entangling atoms together to create systems that can handle exponential data sets – simulating the real world, also known as Quantum Environments

Applications include creating new chemicals, manufacturing optimisation and financial markets simulation



## Quantum Communications

Technologies can be used to create and distribute unhackable encryption keys through a range of processes

Future possible applications include a “Quantum Internet”, increasing speed and security



## Quantum Sensing

High-precision measurements of electric, magnetic, and gravitational fields, promising to greatly increase the efficacy of today's tools

Applications in medical imaging, underground mapping, materials characterisation



## Quantum Metrology

Technologies developed in this area promise to create a replacement for Atomic clocks and GPS-reliant systems

Applications in satellites and defence industries for signal-free navigation





*"Working with the QE team was great. Thanks to their focus and determination in going the extra mile and managing all of the complexities of this investment, we met our goals."*

*"We're excited about the added-value QE will bring as a specialist investor and looking forward to growing our business with their support. "*

*- Maksym Sich, CEO, AegiQ*

quantumexp.co.uk

# Quantum Exponential Investment Team

Experienced team with complementary  
skills committed to the mission





**Stuart Nicol**  
CIO

Overall responsibility for investments  
Extensive experience in leading VC teams,  
mentoring entrepreneurs & corporate finance  
Previously CIO at two regional UK venture funds,  
Director at Octopus Investments & Crowdcube



**Steve Metcalfe**  
CEO

30 years of experience in regulated markets  
Extensive experience in advising on listings, fund  
raising and capital markets in general  
Board member of several companies

[Identified – to be  
appointed]

Senior Investment Manager

Contribute to the deployment of the second, larger fund

Extensive VC and Deep Tech expertise

Dependent on QE's scaling strategy



**Dr Oliver Cohen**  
Quantum Physicist

Provider of technical deal reviews  
PhD in Quantum Physics – numerous cited academic papers in  
quantum information  
10 years in risk analysis for large financial institutions  
Arqit Quantum Inc employee seconded to Quantum Exponential



**Anna Spandl**  
Investment Analyst

Assist with research and  
Investment Administration  
Supporting European expansion  
Legal graduate – Previously worked for a corporate law firm in Austria  
Fluency in German, English and Italian



**Anthony Lyall**  
Investment Manager

Primary deal doer  
Family Office Investor  
Extensive knowledge and experience of investing  
in technology start-ups  
Founder of several start-up companies  
Investor Relations Consultant

[Identified – to be  
appointed]

Quantum Physicist

Assist with technical reviews, deal sourcing &  
portfolio support as portfolio grows  
Quantum MSc minimum  
Complementary skills to rest of team

# Quantum Exponential Advisory Board

Strong advisory board consisting of renowned scientists, university professors and entrepreneurs







**David Williams**

Adviser

Founder CEO & Chairman of Arqit, Britain's most valuable quantum technology start-up which listed on NASDAQ in Sep 21 to become Arqit Quantum Inc. Market Cap 18 Mar 22 \$2.1Bn



**Prof. Kai Bongs**

Adviser

Leader of the UK Quantum Technology Hub for Sensors and Metrology, Editor-in-Chief for the European Physical Journal (Quantum Technologies). Director of Innovation at the University of Birmingham



**Prof. Rupert Ursin**

Adviser

Senior Group Leader Institute for Quantum Optics and Quantum Information, Austrian Academy of Sciences. Holder of the World Record in Free Space Quantum Optics



**Dr. David Williams**

Adviser

Executive Director Government of Australia CSIRO Digital, National Facilities Group. Includes leading research in Quantum Technology. Ex CEO UK Space Agency & CEO EUMETSAT



**Dr. Justin Hill**

Adviser

Head of Patents, Dentons Europe. Global leader in deep tech physics related patents. PhD Physics



**Stephen Chandler**

Adviser

Experienced venture Investor. Managing Partner at Notion Capital. Investor AllStars Investor of the Year 2020. Previously President & CFO at MessageLabs. Ex UBS Investment Bank



**Dr. Tariq Ali**

Adviser

Deputy Pro-Vice-Chancellor, University of Birmingham and Vice-Provost, Research & Innovation University of Birmingham Dubai, Member of Council, Institute of Physics



**Martin Schwedler**

Senior Advisor for Europe

Previous work experience: Lazard Freres, Raiffeisen Investment (Russia and Austria), GE Capital. Extensive knowledge and experience in TMT M&A and private equity investing



**Katherine Courtney**

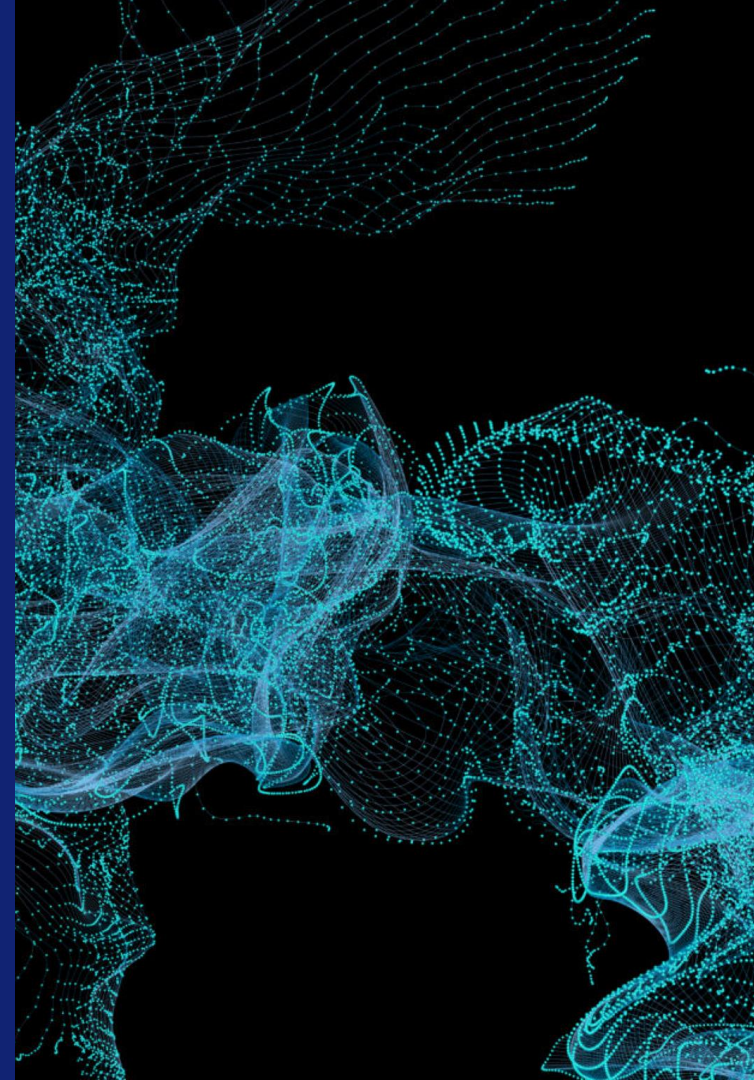
Adviser

Former CEO UK Space Agency, over 20 years' experience in innovation, critical national infrastructure and economic growth



# Quantum Exponential Investment Committee

Internationally experienced team of seasoned  
finance professionals, entrepreneurs and senior  
managers





**Steve Metcalfe**

CEO

30 years of experience in regulated markets  
Extensive experience in advising on listings, fund  
raisings and capital markets in general  
Board member of several companies



**Ian Pearson**

Non-Exec Chairman

Currently Chairman of Eqteq plc and Non-Exec  
Director of Thames Water  
Previous experience includes: Minister of Trade,  
Science Minister, Economic Secretary for Treasury,  
Chairman of Octopus VCT2 plc  
Extensive experience in management of  
companies, excellent network to investors and  
government institutions



**Stuart Nicol**

CIO

Highly experienced VC investor  
Made over 70 VC investments. Sat on numerous  
VC investment committees.  
MSc Fin London Business School  
Former British Army Infantry Officer



**Nigel McNair Scott**

Non-Exec Director

Experienced senior manager with strong financial  
background  
Previous experience includes:  
Chairman of Reaction Engines,  
Chairman Helical Bar, Chairman Avocet Mining,  
Director Govett Investment Trust



**Simon Frost**

CFO

Qualified Chartered Accountant  
Previous experience includes: Partner at Keith,  
Bayley, Rogers & Co. (KBR), head of the KBR, the  
Corporate Finance division of Walker Crips Group  
plc, Group CFO of Proactive investors.

[Unidentified]

Additional Investment Committee Member  
Contribute their diverse perspective to IC proceedings  
Bring their expertise and skills to evaluate merits of QE  
deals



*"We are very pleased to have found a UK-based specialist investor in quantum technologies and we're excited to be a part of the ecosystem they are helping to create."*

*There is tremendous potential in quantum computing, and we're delighted QE has decided to support our vision to build the world's first million qubit machine based on our unique modular, scalable quantum computer architecture."*

*- Sebastian Weidt, CEO & co-founder,  
Universal Quantum*

# Our Investment Strategy

Quantum Exponential expects a ten-fold increase in deals in the next 5 years due to increased investment in academic innovations in the sector <sup>1, 2, 3</sup>

- Position QE to be the preferred investor of Quantum innovators
- Targeting Seed, Series A and Series B initial entry points
- Prioritise deals with solid underlying science ready to be commercialised in the near future
- QE will invest in a portfolio of investments that have realistic cash requirements to reach profitability or exit
- Focusing on the UK and other NATO friendly markets, often co-investing with trusted partners
- Create a portfolio of 8 - 10 investments over a 5-year period
- Initial investments will be between £100k - £500k, using 50% of funds
- Utilising the remaining 50% to back portfolio winners in future rounds

<sup>1</sup> <https://pitchbook.com/news/articles/quantum-computing-venture-capital-funding>

<sup>2</sup> <https://www.bcg.com/press/21july2021-quantum-computing-transform-multiple-industries-create-850-billion-annual-value>

<sup>3</sup> <https://www.ucl.ac.uk/quantum/news/2022/jan/uk-needs-investment-maintain-its-quantum-advantage>

# Our Investment Process

Capturing the market opportunity effectively

## Sourcing

Proven ability to source, approach & complete first-round equity deals.

Collaboration with Institute of Physics and other Quantum Institutions of excellence.

Access to proprietary data streams of The Quantum Insider and Notion Capital.

## Selecting

QE will invest in a portfolio of investments that have realistic cash requirements to reach profitability or exit.

QE expects the portfolio to contain a mix of companies that can deliver near-term applications to market

or are likely to be acquired after certain product milestones are achieved through funding.

## Growing

Scientific and operational expertise is in place to support investee companies through their growth phase and internationalization activities.

Active participation in Boards via NED or Observer position & intra portfolio networking

## Exiting

Liquidity events are expected to be via sale to leading enterprises engaging in M&A (Trade) or strategic investors such as Private Equity.

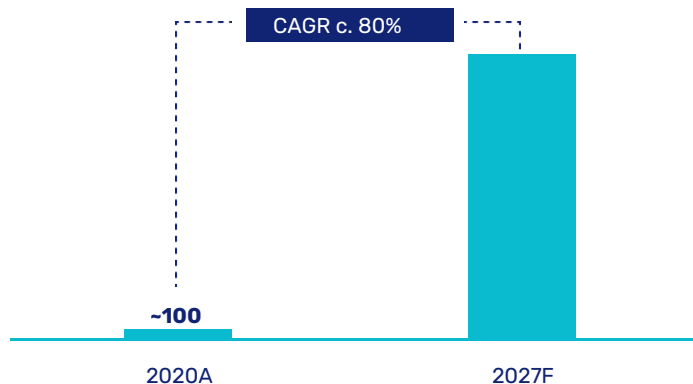
IPOs can be considered as well (given our expertise in fundraising and capital markets) but is not part of the primary strategy



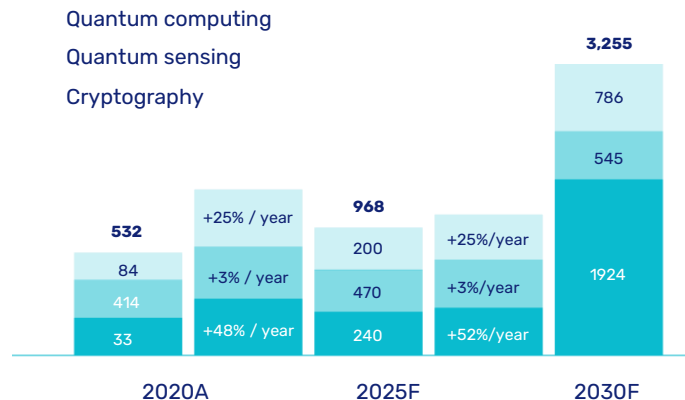
# Quantum Technology Market Overview

QT opportunities expected to accelerate in number, value & impact over the next 7 years

Forecasts of total QT spending (\$m)



2020-2030 QT market value (\$m)



# Additional Drivers of new quantum technology investments

## Geo-political forces are advancing Quantum Technology (QT) investments <sup>1</sup>

Increased Government desire to protect and advance technology, increasingly on a national level  
15 countries now have national quantum initiatives, across APAC, EU, and NA  
Global focus on national Cybersecurity and critical infrastructure technology

## Classical computing is reaching its limits, with the end of Moore's Law <sup>2</sup>

"We're now reaching the end of this amazing technological explosion and we're running out of ways to make our computers faster. Despite the remarkable efforts of research engineers, you can only make transistors so small before you run out of room at the bottom... Go much smaller than this and the transistors become so tiny that the effects of quantum physics start to interfere – electrons start to jump around and turn up in places where you don't want them to be..."

## Quantum Technologies are forecasted to improve and simultaneously disrupt

Secure encryption and scalable comms  
Computing power and speed which, in turn  
Enables more efficient manufacturing in multiple sectors  
Improves healthcare diagnosis, treatment and drug development

<sup>1</sup> <https://thequantuminsider.com/2021/04/29/15-countries-with-national-quantum-initiatives/>

<sup>2</sup> <https://www.sciencefocus.com/future-technology/when-the-chips-are-down/>

# Investments to Date



Quantum Exponential PLC has an option agreement to acquire 199,993 shares in Arqit Quantum Inc.

UK based Arqit has invented a unique quantum encryption technology which makes the communications links of any networked device secure against current and future forms of hacking.

Value of 199,993 shares on 18 March 2022 @ \$16.44 per share is \$3.29m

Arqit Quantum continues to grow in strength and value through collaborations and agreements with Governments and major corporations across the world.



Quantum Exponential PLC has invested c.£300,000 as part of a seed funding round in Siloton Limited resulting in a holding of 12.7%.

UK based Siloton uses quantum techniques and photonic integrated circuits for use in sub-surface optical scanning devices with applications across healthcare, and non-destructive testing.

Siloton uses quantum-aligned technology to create a new generation of equipment that is used as part of a service to monitor disease status of those with age related macular degeneration age-related with the Market for monitoring of age-related macular degeneration expected to reach some 288 million patients by 2040.



Quantum Exponential PLC has invested £406,050 in Aegiq through an equity investment as well as a convertible note.

The company, which is anticipating further funding from Innovate UK this year, has also been awarded funding for several projects supported by Quantum Technologies Challenge at Innovate UK (part of UK Research & Innovation), with total value of the funded consortia exceeding £20m.

Aegiq is accelerating development of its proprietary quantum photonics platform and growing its core R&D team. The technology is based on high-performance single-photon sources and enables a range of new applications.



Quantum Exponential Group plc has invested £450,000 through an ASA in Universal Quantum Limited a company focused on building the world's first million ("qubit") quantum computers. The company was founded by scientists from the University of Sussex.

Universal Quantum has to date received investment from Hoxton Ventures, Village Global, FoundersX, Luminous Ventures, 7Percent and others.

Its unique, electronic quantum computing modules are based on silicon technology in which individual modules are connected using ultrafast electric field links to form an architecture that scales.

# Dealflow Sample

Sector	Description	Stage	Country
Comms & Security	Quantum Random Number Generators (QRNGs)	Series A	EU
Sensing & Imaging	Solutions to enable positioning and time, regardless of connectivity, for GPS	Seed	UK
Sensing & Imaging	Sensing for natural gas leak detection	Seed	UK
Computing	Quantum hardware back-end	Series A	UK
Comms & Security	Single-photon detectors	Seed	EU
Sensing & Imaging	Trace tumours early in the blood	Seed	UK
Computing	Entangled photon generator	Series A	USA
Sensing	Next generation optical sensors	Seed	UK
Hardware	Industrial Components for Quantum Tech	Seed	UK

# Track Record

- Stuart Nicol – 22 years' experience of investing in over 60 high-growth UK firms, and been responsible for £150m early-stage investment funds. Invested British Business Bank funds at The Capital Fund & Cornwall Investment Fund. Invested London Co-Investment funds via Crowdcube. Invested private funds via Octopus Venture Capital Trusts (VCT)
- Anthony Lyall – Founder of several start-ups, family office investor primarily in UK tech start-ups, investor relations consultant under the NOTWICS brand working closely with fast-growing tech start-ups and scale-ups. Anthony has made 17 investments through his family office, advised dozens of companies at NOTWICS, and made 2 investments for QE to date (AegiQ and Universal Quantum).
- Steven Metcalfe – FCA regulated for 29 years, investing in high growth UK firms. Successfully raised over £35m for UK funds/ scale-ups since 2019
- Ian Pearson – Former chair Octopus VCT2 plc, NED Apollo VCT, Economic Secretary to Treasury 2008-10
- Nigel McNair Scott – Chairman Reaction Engines, Former chair, Helical Bar, NED Govett Strategic Investment Trust
- Advisory Board – David Williams, Rupert Ursin, Martin Schwedler, Justin Hill, Stephen Chandler, Kai Bongs, Katherine Courtney and Tariq Ali all have a wealth of experience at the board's disposal



# Why Quantum Exponential?

Clear focus, quick identification of deals, trusted team with reputation for adding value



## Focused

QE's investment focus stands out from the crowd of deep-tech investors. This distinction will create increasing competitive advantages over time

Quantum Tech sector is still relatively new to investment, but is predicted to see huge inflows of high-growth innovative companies as a result of the commercialisation of governments' research funding & market need

## Strong Team & Advisory Board

Strong team of industry advisors, entrepreneurs and tech investment professionals with excellent access to opportunities, networks and markets. Thorough understanding of investment process, portfolio selection, due diligence, deal structuring, team motivation & exit optimization

Cooperation in place with Institute of Physics, regional Universities & Quantum Hubs. Deal introductions from other Co-Investors & data advantage via Notion & Quantum Insider data sources

## Value Added Investor

QE will invest on fair terms & seek alignment with all stakeholders

At the outset we will establish explicit ways to help the investee - such as commercial introductions, growth company admin, grant writing introductions, growth coaching, portfolio peer-to-peer networking among other value-adds

Follow-on investing & further investor introductions (subject to suitable progress being made)

## Diverse Geography (NATO-Friendly)

QE is based in the UK market with an extended geographic network. The UK is a significant market for quantum innovation, alongside additional significant European Quantum Hubs.

QE can invest in deals in the US, Europe and Asia. This is being done in association with trusted partners, such as hubs and universities, where the investee has a clear advantage over any UK equivalent