Creating the UK Quantum Computing Economy

NQIT Networked Quantum Information Technologies

NQIT Industry Day 2018
Saïd Business School, Oxford

NQIT Industry Day

The NQIT Industry Day 2018 was our second such event, held in June in Oxford. It was a day dedicated to quantum computing, the status of the Networked Quantum Information Technologies (NQIT) Hub and the opportunities for business to engage with this exciting new technology.

83 Attendees

70% Representatives from Industry & Government Agencies

Spinouts Startups Component Manufacturers Finance Quantum Computing Companies Major IT Firms Users of Quantum Computing Logistics Investors Aerospace Business Support

14 Companies already involved in Partnership Projects with NQIT

28 New companies attending

13 NQIT Academic experts on quantum computing

Quantum Computing in Oxford: A Global Leadership Opportunity

Professor Ian Walmsley
Pro-Vice Chancellor for Research & Innovation
Hooke Professor of Physics
NQIT Director

June 21 2018

Why attend the NQIT Industry Day?

➢ See our achievements in quantum computing

➢ Hear talks from technology industry leaders

➢ Meet with foremost international scientists and other international quantum programmes

➢ Learn about quantum computing devices available now and in the future

➢ Explore opportunities using the first quantum computing applications

➢ Network with senior business executives

Building the Quantum Computer

The first session was an introduction from academic experts in the field to the key hardware architectures in development to build a quantum computer.

- ➢ Ion traps
  Professor David Lucas, NQIT
- ➢ Superconducting Circuits
  Dr Peter Leek, NQIT
- ➢ Diamond Qubits
  Professor Jason Smith, NQIT
- ➢ Silicon Qubits
  Professor John Morton, UCL

The session was followed by a Q&A panel moderated by Professor Simon Benjamin.

Programming the Quantum Computer

The second session looked at how you might programme a quantum computer and what problems you might be able to solve with it.

➤ The emulator,
  Dr Tyson Jones, Oxford

➤ Software for Stabiliser Emulation
  Dr Earl Campbell, Sheffield

➤ The CQC compiler,
  Dr Seyon Sivarajah, Cambridge Quantum Computing

➤ Early Applications in Chemistry,
  Dr Sam McArdle, Oxford

The session was introduced and moderated by Dr Niel de Beaudrap.

Networking & Demonstrations of NQIT Technologies

During the breaks, there was an opportunity to network with other delegates and to interact with hands-on demonstrations of NQIT technologies.

The Quantum Computing Economy

The first afternoon session looked at the new Quantum Computing Economy which we are working to build in the UK.

Evert Geurtsen, NQIT Co-Director for User Engagement, introduced the session with an overview of the activities in the UK.

This was followed by talks on key elements of the new industry.

➢ Enabling Technologies
   Jospeh Thom, MSquared Lasers
   Ziad Melhem, Oxford Instruments
➢ System builders
   Andy Mason, D-Wave
➢ Developers
   Paul Guthrie, QxBranch
➢ Investors
   Manjari Chandran-Ramesh, IP Group
➢ Review of UK Industry Engagement
   Rhys Lewis, National Physical Laboratory (NPL)

Quantum Computing for the Real World Today

Andy Mason
22nd June 2018

Company Confidential

NPL

Quantum

Building a strong voice for
Industry in Quantum Technologies

http://talkquantum.npl.co.uk/

rhys.lewis@npl.co.uk   talkquantum@npl.co.uk

IBM Q Collaboration

We recently announced that the University of Oxford, representing NQIT, has become a member of the IBM Q Network.

As part of this collaboration, we were fortunate enough to host IBM's Quantum Computer Exhibit in the foyer of the new Oxford Physics Beecroft Building for the week when our Industry Day took place.

Visitors from the University, industry and the general public came to find out what a quantum computer will actually look like.

Professor Ian Walmsley, NQIT Director, and Dr Anthony J. Annunziata, IBM Q Network Global Leader
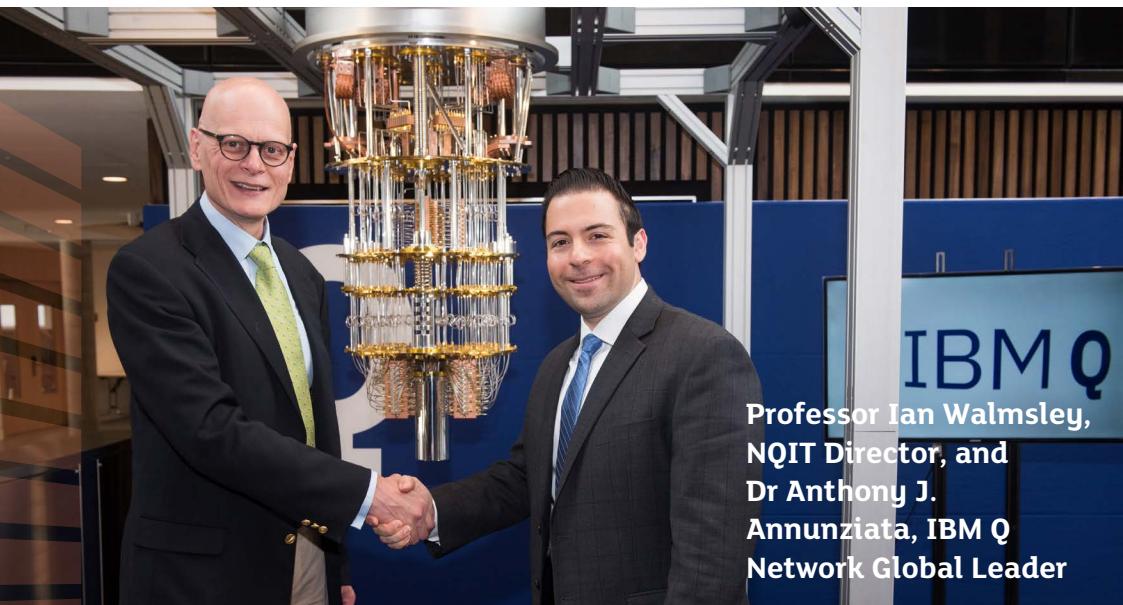
Reflections on Innovation and Disruptive Technologies

Before lunch, delegates listened to an inspiring talk by prominent writer, political economist and journalist, Will Hutton, about the nature of innovation and the impact of disruptive technologies.

How to Get Involved

The final session of the day explored opportunities to get involved with NQIT.

Evert Geurtsen introduced the session and was followed by presentations from existing partners

➢ QCAPS: Quantum Algorithms for Optimised Planning Applications
Roberto Desimone, BAE Systems

➢ Entrepreneurship in Quantum
Dr Neil Carhart, Quantum Technology Enterprise Centre, Bristol University

➢ Oxfordshire Local Industrial Strategy
Ahmed Goga, Oxfordshire Local Enterprise Partnership (OxLEP)

➢ Supporting Innovation in Quantum Technologies: QIP
Sir Peter Knight

£385m UK Investment

£20m Pioneer Fund

+ Industrial Strategy Challenge Fund

+ next 5 years being planned
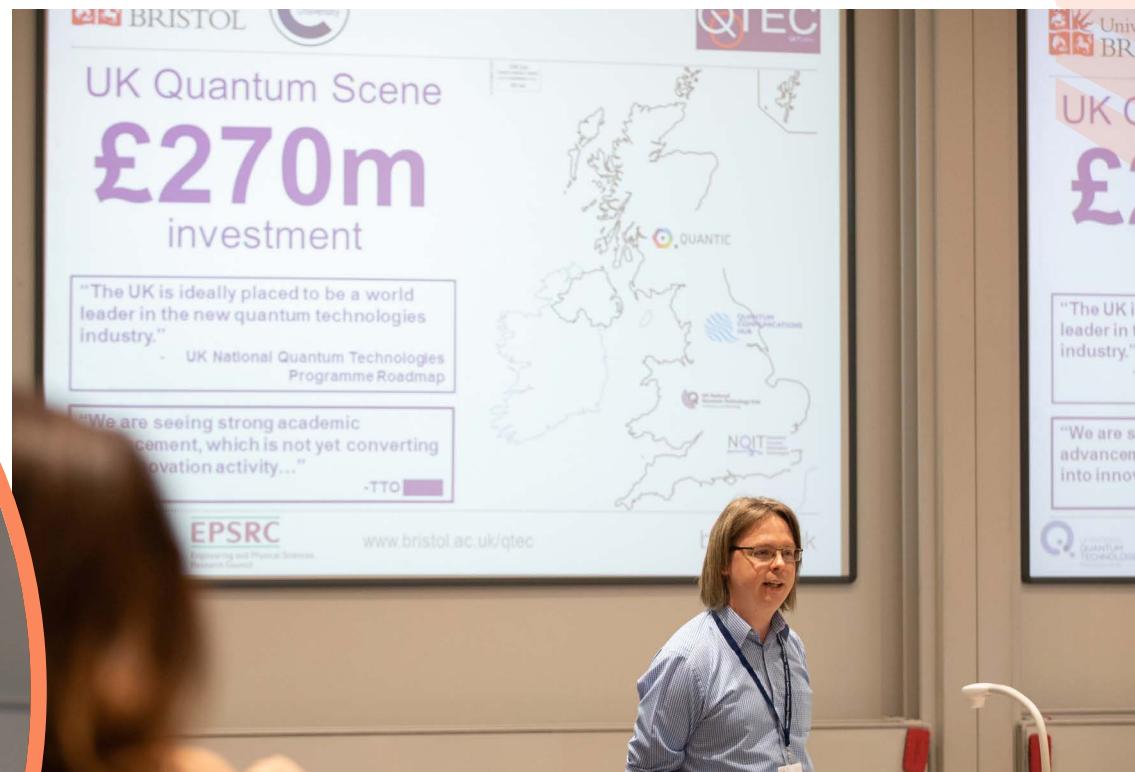
NQIT Annual Report 2018

We were very pleased to launch our third NQIT Annual Report at the 2018 Industry Day.

To download the Annual Report, please follow this link: http://bit.do/NQIT2018

If you would like a print copy, please get in touch: engage@nqit.ox.ac.uk

"The third year of NQIT has been an important transition year, embedding new applications programmes as well as a software emulator, and working with the other UK Quantum Technology Hubs to deliver improved public and industry engagement.

NQIT continues to lead the UK's efforts in quantum computing and simulation, achieving key milestones in the development of hardware and software that will deliver core capabilities in these disruptive technologies by harnessing expertise across the UK and partnerships across the world."

Foreword by NQIT Director,
Professor Ian Walmsley

Annual Report 2018

NQIT — Networked Quantum Information Technologies

UK NATIONAL QUANTUM TECHNOLOGIES PROGRAMME

NQIT has a portfolio of reports, including previous Annual Reports as well as reports looking at the wider landscape of quantum computing development and the potential market impact.

All these reports are available to download for free from our website:

http://www.nqit.ox.ac.uk/content/reports

Save the Date!

National Quantum Technologies Showcase
London, 9 November 2018

Come and take a look at the latest technology demonstrations from NQIT at the fourth National Quantum Technologies Showcase on November 9 at the Queen Elizabeth II Conference Centre, Westminster, London.

This Showcase event will highlight technological progress and its relevance to commercial sectors and the collaborative nature of the UK National Quantum Technologies Programme.

If you would like a free ticket to attend the foremost showcase event for Quantum Technologies in the UK, please send us an email:

engage@nqit.ox.ac.uk
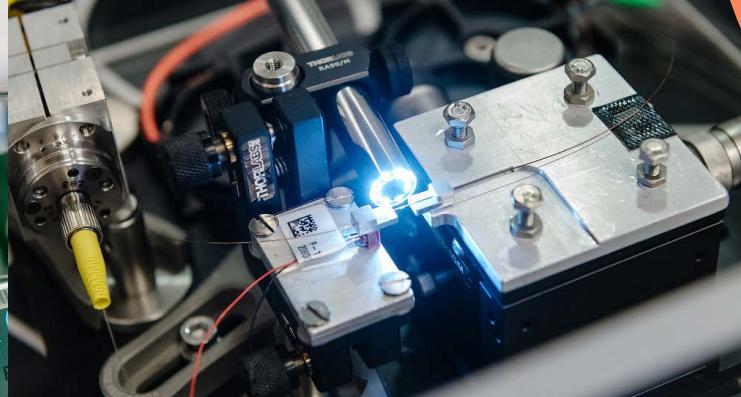
What Next?

We are looking for new partners to participate in research and development of what promises to be a technology of historic importance.

There are opportunities to invest in quantum spinouts or to license available IP for new products and services.

Interested in the opportunities for quantum computing for your business? We'd be delighted to hear from you!

If you would like to come to future NQIT Industry events or find out more about NQIT then please get in touch:

engage@nqit.ox.ac.uk

🐦 @NQIT_QTHub

www.nqit.ox.ac.uk

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