The Alan Turing Institute

2016–17

Annual report 2016–17

Data science will change the world.

Chair's foreword

It has been a landmark year for The Alan Turing Institute.

We have moved from start-up to full operations and are already generating impact, thanks to the efforts of our excellent faculty of academics, our business team and the support of our founding members and partners.

We have been fortunate to attract great talent to work with us and I am extremely grateful to Andrew Blake for leading the Institute through its start-up and to Alan Wilson, who joined us as CEO in October 2016 and to all our executive and academic colleagues. I would also like to thank my Board colleagues, who have been unstinting in the time they have given to the Institute and in particular Julie Maxton, Executive Director of the Royal Society and Wendy Tan White, General Partner at Entrepreneur First, who joined our Board of Trustees in November 2016.

Investment in artificial intelligence and data science research will be critical to national prosperity for the foreseeable future. The last decade saw the world wake up to the power and value of its data and this decade is focused on developing the right algorithms to help data owners to organise, understand and exploit it.

This cannot be achieved without powerful analytical tools, privacy-preserving technology, enhanced computer processing and appropriate considerations of ethics, fairness and transparency. These are all areas in which the Institute has formidable expertise and we intend to use this knowledge to have a transformative effect on the UK economic and scientific landscape.

We operate in a time of political uncertainty. The Institute has an opportunity to make a real difference to post-Brexit Britain. Through our applied research we will make a substantive contribution to the UK economy and generate new services, products and jobs. Our world-class research will keep the UK at the forefront of data science and will act as a magnet for international talent. We will train the next generation of data science leaders. In a global economy tackling the impact of artificial intelligence, we will provide a trusted voice on new data-driven technologies.

I look forward to working with the remarkable team at the Institute to build on the foundations established so far and to make 2017/18 another year of great achievement.

Howard Covington/
Institute Chair

Howard is a graduate of St John's College, Cambridge. He has a double first in theoretical physics and a distinction in post-graduate maths.

His first career was in the City as an investment banker and asset manager. He became a director of SG Warburg and then European chief executive of Wasserstein Perella, a U.S. investment bank. He co-founded New Star Asset Management and was its chief executive until it was sold to Henderson in 2009. In 2014, he cofounded Greenrock Homes, a property developer.

His second career is in promoting mathematical sciences and action to reduce climate change.

He has been a trustee of the Science Museum, is chair of the Isaac Newton Institute for Mathematical Sciences, the UK's national maths research institute at Cambridge, and is the inaugural chair of The Alan Turing Institute.

He is vice-chair of ClientEarth, an environmental law firm, and an adviser to Preventable Surprises, a think-tank. He has written on the response of the investment industry to climate change for the Wall Street Journal, the Financial Times and Nature.

CEO's foreword

I joined the Institute as a Faculty Fellow in July of last year and from the 1 October, I have been privileged to be the CEO. I watched the physical creation of the Institute in my early months and from October, a considerable, almost instantaneous, research base has been established through our Faculty Fellows, Research Fellows, Software Engineers and doctoral students. There is a buzz about the place that has enabled us to launch research projects and interest groups and to establish programmes with our four strategic partners. We have built new partnerships, for example with the British Library, Microsoft and the Office for National Statistics and many others are the subject of active conversations.

We have developed a new strategic plan which provides the basis for expanding our fellowships, our universities' network and our research funding base. Within this, our research strategy is critical. Its further development is an exciting challenge. We are combining a wide range of disciplinary contributions to data science into a new multidisciplinary coalition. We are functioning from end-to-end: from data wrangling through developing and deploying a rich data analytics toolkit in a range of applications domains. We can make potentially game-changing contributions along this spectrum: making richer and bigger data sets available for analysis; developing algorithms and models which will tackle challenges such as high dimensionality; and making transformative discoveries in domains such as data-centric engineering, computing technology, defence and security, finance, cities and health.

We already have the beginnings of programmes in the first four of these, we are actively developing the other two and we will develop new themes — including those that are cross-cutting such as data ethics.

I think we can be proud of what we have achieved in a start-up year and my thanks go to the Board, the business team, the connected research community and our partners for getting us to this point. We relish the chance to rise to the challenges that lie ahead.

Alan Wilson/
Institute CEO

Sir Alan Wilson FBA FAcSS FRS is CEO of The Alan Turing Institute and Professor of Urban and Regional Systems in the Centre for Advanced Spatial Analysis at University College London. He is Chair of the Home Office Science Advisory Council.

He is a Cambridge Mathematics graduate and began his research career in elementary particle physics at the Rutherford Laboratory.

He turned to the social sciences, working on cities, with posts in Oxford and London before becoming Professor of Urban and Regional Geography in Leeds in 1970.

His research field covers many aspects of mathematical modelling of cities and the use of these models in planning. His models have been widely used in areas such as transport planning, demography and economic modelling.

He has published over 200 papers and his recent books include *The science of cities and regions* (2012), his five volume *Urban modelling* (2012, edited), *Explorations in urban and regional dynamics* (2015, with Joel Dearden), *Global dynamics* (2016, edited) and *Geo-mathematical modelling* (2016, edited).

He has a particular interest in interdisciplinarity and published *Knowledge power* in 2010; he writes the quaestio blog: **quaestio.blogweb.casa.ucl.ac.uk** and was knighted in 2001.

The Alan Turing Institute is the national institute for data science, headquartered at the British Library.

Five founding universities — Cambridge, Edinburgh, Oxford, UCL and Warwick — and the UK Engineering and Physical Sciences Research Council created The Alan Turing Institute in 2015 in order to answer a national need for investment in data science research.

Our mission

Our mission is to make great leaps in data science research in order to change the world for the better.

Research excellence is the foundation of the Institute: the sharpest minds from the data science community investigating the hardest questions. We work with integrity and dedication.

Our researchers collaborate across disciplines to generate impact, both through theoretical development and application to real-world problems. We are fueled by the desire to innovate and add value.

Data science will change the world. We are pioneers; training the next generation of data science leaders, shaping the public conversation, and pushing the boundaries of this new science for the public good.

Our research

The Alan Turing Institute is interested in research which tackles the big challenges in data science with lasting effects for science, the economy and the world we live in.

We apply our data science research to real-world problems, working with partners in industry, government and the third sector.

Part 01
Our year

Research

We have had an exceptional first year of research at The Alan Turing Institute. We published our strategic priority areas for research, spanning financial services, health and well-being, urban analytics, defence and security, technology and engineering.

We recruited more than 150 talented researchers from our five founding universities and beyond. And six months into our first academic year, collaborations and projects are being formed around some key challenges in data science.

Andrew Blake/ Research Director

Professor Andrew Blake is Research Director at The Alan Turing Institute. Prior to joining the Institute in 2015, Professor Blake held the position of Microsoft Distinguished Scientist and Laboratory Director of Microsoft Research Cambridge, England.

He joined Microsoft in 1999 as a Senior Researcher to found the Computer Vision group. In 2008 he became a Deputy Managing Director at the lab, before assuming the directorship in 2010.

Before joining Microsoft Andrew trained in mathematics and electrical engineering in Cambridge England, and studied for a doctorate in artificial intelligence in Edinburgh.

He was an academic for 18 years, latterly on the faculty at the University of Oxford, where he was a pioneer in the development of the theory and algorithms that can make it possible for computers to behave as seeing machines.

Andrew Blake/
Research Director

150+

We have kick-started a vibrant research community at The Alan Turing Institute, with more than 150 researchers working together to advance the world-changing potential of data science.

5000+

More than 5000 researchers through our doors for workshops, seminars and events.

7

7 world-leading experts in data science and its applications appointed to our Scientific Advisory Board.

16

16 full-time Research Fellows recruited to run 3-5 year research projects at the Turing.

4

4 talented Research Software Engineers transforming our research into high quality software.

14

14 of the best and brightest doctoral students selected from 250+ applicants to undertake their full PhD at the Turing.

23

23 doctoral students spending a year at the Turing as part of our unique enrichment programme.

12

12 interest groups created to advance collaboration.

93

93 senior computer scientists, statisticians, mathematicians and social scientists from our five founding universities joined the Institute part-time as Faculty Fellows.

8

Eight leading data scientists from around the world hosted as Visiting Researchers.

One of the most exciting research challenges for me is to find out how much of data science we can automate. My Short Talk in October introduced my work on the Automatic Statistician, the principles of which have become part of a major new collaborative research project at the Turing.

Zoubin Ghahramani/ Faculty Fellow

Zoubin Ghahramani presents 'The Automatic Statistician'

Open for business
In October 2016 we opened our new, custom-built Turing research space in the British Library.

Comprised of open collaborative spaces, with bespoke areas for quiet study, the Institute headquarters has become a buzzing centre of activity.

To mark the opening of the space and the start of our first ever academic term, we held a welcome event for researchers, partners and the business team. Opening speeches were given by Howard Covington, Institute Chair, Sir Mark Walport, the government's Chief Scientific Advisor and Douglas Flint, Chairman of HSBC.

Faculty Fellows
More than 90 senior mathematicians, computer scientists, statisticians and social scientists joined the Turing community in 2016.

A major focus in 2016/17 has been building a framework for the Fellows to collaborate and connect with one another, to cut across disciplinary boundaries and to bring together some of the greatest minds in the data science community to spark new ideas.

In our busy first term, more than 70 Fellows delivered 'Short Talks' on their research areas and collaborative interests at the Institute.

These Short Talks are available on YouTube and provide a valuable resource for Turing researchers and the broader academic community.

Sir Mark Walport speaking at the Institute welcome event in October 2016.

The journey from a Prime Minister's Council for Science and Technology letter about algorithms, to a functioning research institute, has happened at a fantastic speed. There is no question that the power of big data is going to change things in extraordinary ways, and I look forward to seeing The Alan Turing Institute leading the way in these changes.

Sir Mark Walport/ Government Chief Scientific Advisor

Office build

Days to complete

154

Sq. ft. refurbishment

18,126

Workstations installed

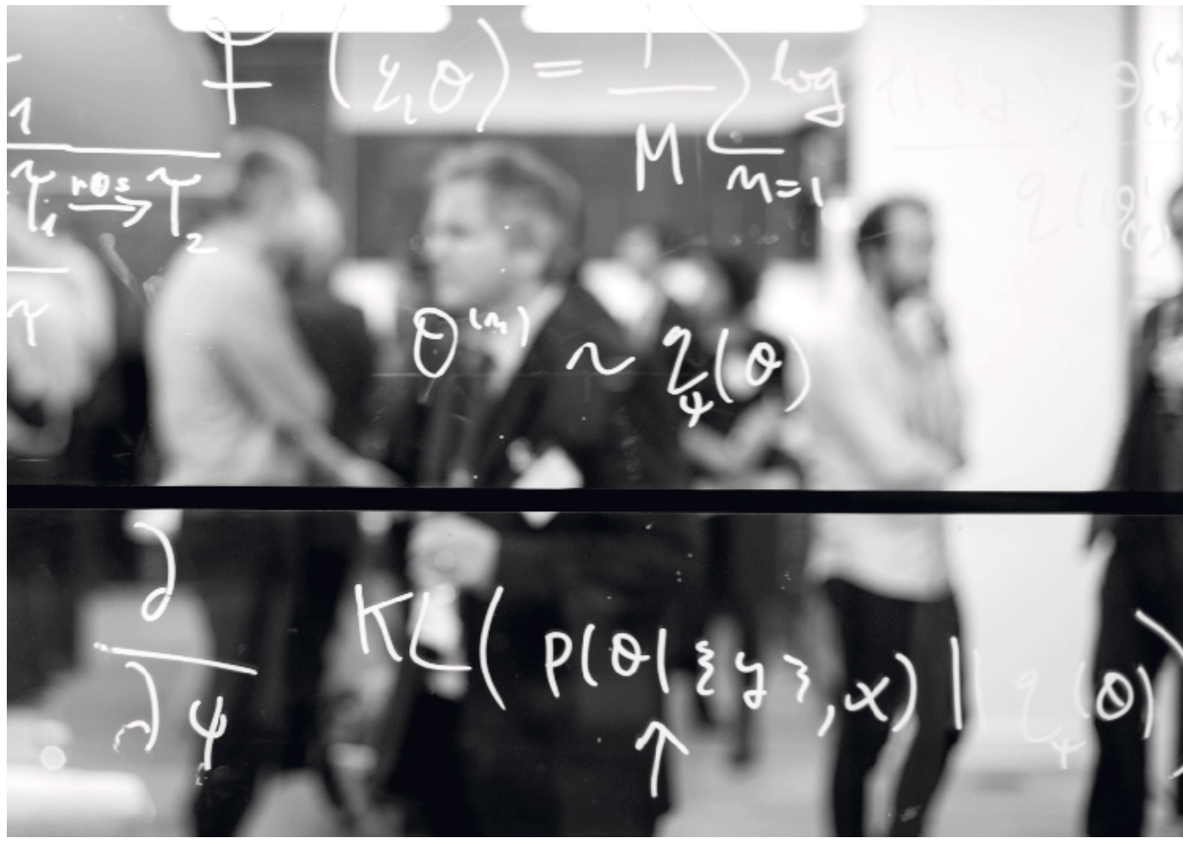
143

Lockers

103

Meeting rooms

8



Early career researchers
During our first academic year, 16 researchers have joined the Institute as Research Fellows. These early career researchers are undertaking projects in data science at the Institute for 3-5 years.

These projects complement our strategic priorities and support the Institute's overall mission.

The Research Fellows were selected from over 500 applicants through an intensive peer-reviewing system and an interview programme at the Institute. They specialise in subjects ranging from machine learning to 3D modelling and the ethics of algorithms. All work full-time at the Institute's headquarters in the British Library and benefit from opportunities for collaboration with Faculty Fellows, students and Visiting Researchers.

Software Engineers and Data Scientists
Translation of research into applications is a high priority for the Institute. We have assembled a team of Software Engineers and Data Scientists for this purpose. This team plays a crucial role in turning the results of the Institute's research into software that can be used to drive jobs, services and create real-world applications.

They collaborate directly with researchers, helping to translate prototypes into applications and advising on software development techniques such as version control, testing and deployment.

In the Institute's first year of operations, the team implemented a pair of novel network comparison algorithms developed by Turing researchers as a package for R, one of the most widely used programming languages for data analysis. The algorithms were made available as an open, robust and easy to use R package, enabling a wide range of data analysts outside academia to easily use them in their own work.

The engineers are also playing a critical role in the development of our 'Artificial intelligence for data analytics' research project, through supplying a repository of challenge datasets to test the new algorithms.

We expect to grow the team over the coming year and to attract key translational talent to work at the Institute.

What I find exciting is the chance to bridge the divide between theoretical advances in data science and real-world problems. These days, that bridge is often built out of software. It's a privilege both to be able to step back and think carefully about particular problems, and to use software to turn today's hard, research-level problems into the routine solutions of tomorrow.

James Geddes/ Research Software Engineer

Dong Nguyen/
Research Fellow

The Turing is one of the few places in the world that enables early career researchers to carry out independent research. Furthermore, the unique, interdisciplinary nature of the Institute makes it the perfect place to carry out my research agenda, in which I have a basis in computer science but work closely with social scientists and linguists. I have also gained more experience in advising students, organising academic events, and applying for research funds, which are a valuable preparation for next steps in my career.

Dong Nguyen/ Research Fellow

Interest groups

12

01. Data Ethics Group
02. Topology and geometry for data
03. Low-dimensional structure in data
04. Bitcoin, blockchain and distributed ledger technologies
05. Sampling algorithms for data analytics
06. Social data science
07. Natural language processing
08. Data science for mental health
09. Data and inequality
10. High dimensional statistics
11. Fairness, transparency, privacy
12. Working group on probabilistic numerical methods

Research publications

41

Research online

Research projects

13

01. Co-designing algorithms and computer architecture
02. The Gamma: democratising data science
03. Counterfactual fairness
04. Text as social and cultural data
05. Making things simple before learning them
06. Artificial intelligence for data analytics
07. Security in the cloud
08. Bayesian analysis of single cell sequencing data
09. Predictive monitoring of gas turbine engines
10. Statistical methods for instrumented infrastructure
11. Coupled human and natural critical ecosystems
12. Cancer pre-diagnostic analytics with AI
13. Machine learning in disaster management

Scientific Advisory Board
We have appointed seven world experts in data science and its applications to our Scientific Advisory Board.

Cynthia Dwork/ Chair
Harvard

Sinan Aral
MIT Sloan School of Management

Robert Devereux
Department for Work and Pensions, UK Government

Mike Lynch
Invoke Capital and Council for Science and Technology

Michael Kearns
University of Pennsylvania

Stéphane Mallat
École Polytechnique

Bin Yu
University of California, Berkeley

Drawn from a diverse range of specialisms from privacy, machine learning and engineering to macroeconomics and entrepreneurship, the members of the Board will advise on our scientific programme and ensure the Turing's research remains internationally cutting edge.

Visiting Researchers
The Alan Turing Institute's visiting researcher programme was launched in October 2016.

In our first academic year, we held two open calls for Visiting Researchers from organisations around the world to come and work with us on a short-term basis, to spearhead innovation in specific areas of research, and to enhance international collaboration.

From over 60 applications, eight Visiting Researchers were selected and they have collectively spent 170 weeks at the Institute collaborating with researchers on subjects ranging from machine learning tools and privacy, to systems and platforms and understanding human behaviour.

A further six Visiting Researchers were recruited to work in small groups at the Institute, with groups looking at subjects including algorithms, statistical theory, and distributed systems.

Cynthia Dwork delivering a Turing Lecture in December 2016

Data-driven technologies are provoking a number of hard questions in science, with potentially huge impact for society and the economy on a global scale. The Institute is positioned to play a key leadership role in driving research in this area.

Cynthia Dwork/ Chair of the Institute's Scientific Advisory Board

I have been a part-time Visiting Researcher at The Alan Turing Institute during my sabbatical from Leigh University in the U.S. The main benefit for me has been the ability to expand the group of people I get to meet and professionally interact with, and to attend presentations of a variety of topics that I otherwise would be far less likely to encounter. As a direct result of my placement at the Institute I have developed a new collaboration with a Faculty Fellow and we hope to publish a joint paper as a result.

Katya Scheinberg/ Visiting Researcher from Leigh University, U.S.

Interest groups
The interest groups established at the Turing in its first year showcase the exciting concentrations of expertise in our research community.

Made up of interdisciplinary researchers, the groups collaborate on topics ranging from social data science to low and high dimensional statistics and deep learning.

Data ethics
Understanding the legal, ethical and societal implications of data is an important role for the Turing.

In January 2017 we announced the membership of our Data Ethics Group, chaired by Luciano Floridi, Faculty Fellow and an internationally recognised expert in the ethics of data science.

Made up of academics specialising in ethics, social science, law, policy-making and data and algorithms, the Data Ethics Group will drive the Institute's research agenda in this area and work across the organisation to provide advice and guidance on ethical best practice in data science.

Research generated by a Turing workshop examining the ethical impact of data science was the basis of a themed issue of *Philosophical Transactions of the Royal Society* edited by Faculty Fellows Luciano Floridi and Mariarosaria Taddeo.

The special issue contained 15 articles on subjects including privacy, smart cities and health data, which together have been accessed more than 17,500 times since their publication in November 2016, making it among the most successful publications of the year for the journal.

The Turing also organised two workshops on the ethics of biomedical data, the proceedings of which are forthcoming in a special issue of *Philosophy & Technology*, guest edited by Research Fellow Brent Mittelstadt.

The ethical expertise concentrated in the Data Ethics Group complements a wider group of researchers in the Institute exploring issues of fairness, transparency and privacy in data science. This interest group, led by Faculty Fellow Adrian Weller, includes experts in machine learning, security, causal inference and algorithm design. The group aims to develop new technical approaches to managing these ethical challenges, and to inform a broader discussion.

The researchers in our interest group come from a range of backgrounds — machine learning, natural language processing, maths, psychology, psychiatry, neuroscience, statistics, human computer interfaces. We hope to work together to kick-start one or more projects using data for mental health, leading to suitable clinical interventions which could improve diagnosis, monitoring and clinical outcomes for a number of mental health conditions.

Maria Liakata/ Faculty Fellow and convenor of the interest group in Data Science for Mental Health

Blockchain
Blockchain technologies have the potential to influence many aspects of life, from future currencies, delivery of government services and supply chains.

In response to growing interest in this disruptive new technology from the Turing community, industry, government and beyond, we have convened researchers at the Institute to work with industry to explore it further.

More than 70 academics, policy-makers and industry experts attended a day-long 'Cryptocurrencies and beyond' workshop at the Institute in November 2016 to scope potential research directions and debate the real-world implications of a blockchain-driven economy.

Expert speakers from the Home Office, Department of Work and Pensions and the Bank of England took part and the associated videos from the event have been watched more than 2,000 times on YouTube.

In February 2017, in partnership with the Lloyd's Register Foundation, we hosted a workshop exploring engineering applications of blockchain technologies.

The workshop allowed participants to explore some of the basic principles of how blockchain works, but more importantly to anticipate the social, technical and economic opportunities that distributed ledger technologies may offer.

An Insight Report, penned by Turing-Lloyd's Register Foundation researcher Gary Pogson will be published in 2017 and will share the findings of this workshop.

There is keen interest in blockchain technologies from Turing researchers with backgrounds in statistics, security, systems, social science and algorithms, and we've worked with people from Lloyd's Register, British Standards Institute, and the Cabinet Office. Over the next year, we will release a report on blockchains, and run a project on distributed ledgers for digital rights management.

Graham Cormode/ University Liaison Director for Warwick and convenor of the Bitcoin, Blockchain and Distributed Ledger interest group

Research projects
Six months into our first academic year, projects are emerging and Turing research is already making an impact.

Artificial intelligence for data analytics
In this project Turing researchers are drawing on new advances in artificial intelligence and machine learning to develop systems that help to automate each stage of the data analytics process.

The resulting technology has the potential to revolutionise the speed and efficiency with which data can be transformed into useful knowledge.

Co-designing algorithms and computer architecture
In this project in partnership with Intel, Turing researchers are working to co-design computer hardware and software in order to suit the needs of data science algorithms. The research, once complete, will dramatically improve the speed of data-driven computing tasks and will provide Intel with the tools to build the next generation of computer processers and high performance systems.

Security in the cloud
Much of today's data is stored and processed in the cloud. However, the cloud may not always meet the stringent technical, legal and regulatory requirements required to manage sensitive information. This project aims to create a new secure big data platform that enables data sharing without compromising data privacy, with a potentially transformative effect for sectors such as health, financial services and crime.

Better data for better decisions
In collaboration with the Office for National Statistics Data Science Campus, Turing researchers are investigating whether online data can be used to develop quicker measurements of changes in the economy and society. The project aims to generate new indicators to support decision making across a range of policy domains and will contribute towards the development of the next generation of data scientists within government.

Collaboration

The Institute is a place where I am guaranteed to meet interesting researchers I wouldn't readily encounter at my own university.

It's a real opportunity to make new connections and collaborate in an open and cross-disciplinary environment.

Jon Crowcroft/ Faculty Fellow

Strategic partners
The Alan Turing Institute has collaboration at its heart: researchers from a range of disciplines working with partners in industry, government and the third sector under a shared goal to advance research in data science.

Lloyd's Register Foundation
It has been a pivotal year for the partnership between The Alan Turing Institute and the **Lloyd's Register Foundation**, who pledged £10 million to support a programme in data-centric engineering in 2015.

Leading statistician Mark Girolami was appointed to lead the programme, and together he and the Foundation have launched research, education, training and standards activities to drive forward their ambitious goals.

The programme has identified three scientific grand challenges:
— how to ensure the resilience of complex infrastructure systems such as cities, railways, industrial plants, ships, road networks and supply chains.
— how to monitor the safety of complex engineering systems, such as aircraft engines and vehicle electrical systems, to anticipate malfunctions and avoid high-impact safety failures.
— how to use data-driven techniques to design systems for optimal longevity, performance and safety.

A team of seven academics have been appointed as Group Leaders to drive research projects in these challenges, and industry collaborations are already underway with Siemens, Shell, National Grid, Thames Water and many others.

Data-centric engineering will greatly enhance our ability to understand and improve the safety of engineered systems. Analytics will create value from a wide range of data, informing not only asset and machine performance but linking these to the physical, economic, social, and human environments in which they sit.

The future value of big data will only be realised if there is organisational and cultural change, accompanied by appropriate analytical tools, skills and practices. Such change requires leadership, and we look forward to working with Mark Girolami and The Alan Turing Institute in developing the first generation of 'data-centric engineers'.

Ruth Boumphrey/ Director of Research at Lloyd's Register Foundation

Intel
Our Strategic Partnership with **Intel** has hit major milestones in 2016/17.

Computational statistician Anthony Lee was appointed as Strategic Programme Director, responsible for ensuring the collaborative programme meets its goal to shape the future of computation for data science.

Intel has set up a dedicated team at the Institute's facilities at the University of Edinburgh. They work on algorithm-architecture co-design, which promises to dramatically increase the speed and efficiency of data-driven computing tasks, and will provide Intel with feedback to build the next generation of high-performance computing and artificial intelligence systems.

These co-design insights are applied in a project on natural language processing, to accelerate the recurrent neural networks. Projects are also developing in the life sciences, for example to apply machine learning techniques for applications in digital pathology, thus enabling new advances in diagnostic medicine.

As well as conducting research, the partnership is also looking to help train a new generation of data scientists through the Institute's doctoral programme, ensuring students are equipped with the latest data science techniques, tools and methodologies.

It has been fantastic working with The Alan Turing Institute to scale data science solutions in major computing environments, and we look forward to building on the exciting research programme already underway.

Together, we aim to shape the future of computation for data science.

Karl Solchenbach/ Intel's Director for Data Center Pathfinding Europe

UK Government defence and security
The Institute launched its partnership with the UK Government Defence and Security sector, signing an agreement to work with **GCHQ** and the **Ministry of Defence** — including the **Defence Science and Technology Laboratory (Dstl)** and **Joint Forces Command** — in 2017.

This agreement follows a year of intensive knowledge exchange and research scoping activities with Turing researchers to determine the most fruitful areas of collaboration.

Early areas of interest for the partnership include creating intelligent data systems, securing cyber-space and enhancing data privacy and trust.

Driving the research and collaboration will be Mark Briers, appointed as Strategic Programme Director for defence and security at the Institute in March 2017.

Collaborating with leading experts from diverse academic and industrial backgrounds is the key to solving the difficult data science challenges that the UK's defence and security agencies face.

The Defence and Security Research Programme at The Alan Turing Institute will play a key part in delivering the next generation of data science technologies based on advances in computer science, machine learning and mathematics.

GCHQ/ Director General of Technology

HSBC
The global financial bank HSBC is the latest strategic partner for the Institute.

The multi-million pound partnership was announced in October 2016 and aims to help economists, researchers, policymakers and businesses to better understand the UK economy and its interconnection with global markets.

In its first six months, Turing researchers and HSBC economists are scoping potential research activities and building data-sharing capability and the next year promises to be a pivotal year as we map our research agenda.

As the first financial sector partner for the Institute, we are excited about the prospect of working with the Institute's world leading scientists using big data analytics to better understand economic trends.

Though early days, we have discussed the potential of research into a range of issues, from the effect of the rise of the gig economy through to analysing factors impacting trade corridors and how quickly business and government needs to adapt to changes.

Douglas Flint/ HSBC Chairman

Partnerships and collaborations

British Library

Over the past year the Institute has been working with the British Library to explore how to use data science to manage the Library's vast digital assets, and open up access to its collections.

Early projects in development include: data-driven libraries, blending digital humanities and computational social science, and heritage data. Institute and British Library researchers have also been working together to develop web archives as research resources.

Microsoft

In October 2016 the Institute was awarded $5 million worth of Microsoft Azure cloud computing credits to support its research into data science.

The collaboration with Microsoft has meant that Turing researchers can undertake more ambitious, large-scale data analytics and machine learning quickly and easily using the Azure cloud platform.

Through the collaboration with Microsoft, the Institute is also helping to shape the future of cloud computing capabilities, helping to test its limits and learn the kind of resources data scientists need.

Kenji Takeda, Director of the Azure for Research programme at Microsoft, has been embedded in the Turing to develop collaborative research opportunities and assist with Azure training for researchers and students.

The bold, cloud-first approach at the Turing is helping to inform both UK and international policy-makers and funding agencies on how cloud computing can transform research around the world.

Key projects in social science, computer vision and machine translation are now benefiting from access to cloud computing infrastructure and we are looking forward to an exhilarating year ahead as we continue to ramp up our collaboration.

Kenji Takeda/ Director of Azure for Research at Microsoft

Data study groups

In December 2016, the Institute hosted a successful data study group, funded by the Lloyd's Register Foundation with the support of six industry partners — Airbus, National Grid, Siemens, Shell, Sygenta and Tata Steel.

During the event, 65 researchers from 12 universities applied their knowledge to real-world data science problems and industry data sets provided by the partners.

The challenges included how to predict oil and water flow through pipelines using acoustic signals (Shell), determining the fuel gas value for an industrial gas turbine (Siemens) and real time balancing of electricity transmission and distribution networks (National Grid). The results of the data study group work will be used by the companies to inform how they run their business.

Industry participants in the 2016 data study group including National Grid, Shell and Siemens have all gone on to supply data science problems for the Turing's 2017 summer internship scheme. Three further data study groups are planned for 2017.

Winton Labs

In December 2017, the Institute collaborated with Winton, a data-driven global investment firm, to offer expert advice to five AI or data science start-ups taking part in the Winton Labs accelerator programme.

Throughout the programme Faculty Fellows acted as mentors for the five companies, offering technical advice building on their own academic and industry experience and connections in the field.

Since the completion of the project, Winton Labs recorded marked growth for each of the five companies — including attracting new business and making international trading connections.

The data study group is a fantastic way to tackle problems together through training and exchanging knowledge and information, and a great way to build connections in the community.

Iris Fermin/ Participant in the data study group from Tata Steel

Office for National Statistics
In December 2016 the Institute signed an agreement to work with the Office for National Statistics (ONS).

The agreement, which is an important part of the Institute's growing commitment to developing data science capacity across the public sector, aims to develop joint research in data science, work collaboratively and share knowledge and resources between the organisations.

The agreement was kick-started through a scoping workshop held in January 2017, which brought data scientists from the newly-launched ONS Data Science Campus and Faculty Fellows together to scope shared research interests and potential areas for collaboration.

In the coming year joint work with the ONS will focus initially on using new forms of data to understand the economy, building on the Institute's partnership with HSBC and further developing the use of social media data to improve survey-based analyses of the movement of people.

The UK's National Statistician, John Pullinger, delivering a Turing Lecture in December 2016.

Leaders of the future

The Institute has a crucial role to play in ensuring the UK has the right skills to meet the demands of our data-driven economy.

A significant focus for the past year has been bringing early career researchers into the Institute and strengthening their data science skills.

Doctoral scheme
The Institute's doctoral scheme was launched in 2016 with a call for students in our five founding universities to apply to undertake their PhD in subjects related to data science at the Institute.

As well as offering a typical 3.5-year studentship scheme, in an initiative unique to the Turing, enrichment placements were also offered. An enrichment doctoral student spends one year at the Institute working on their existing PhD, but also engages in training activities to enhance their data science skills and capitalise on the opportunity to build new collaborations.

The demand for places in the Turing's first academic year was exceptional, with more than 250 students from around the world applying to study with us.

From an impressive set of applicants, researchers selected 37 students — 14 doctoral and 23 enrichment — each supervised by a researcher from one of our five founding universities.

Turing doctoral students
The calibre of recruits and range of projects among the Turing's inaugural doctoral student cohort is impressive, with projects looking at social media, deep learning, retail analytics and cryptography.

All the students work in the interdisciplinary environment in the Institute headquarters and are able to network with Fellows and build relationships with other early career researchers, for example through networking events with PhD students at the British Library and the Francis Crick Institute.

Turing enrichment students
23 students are taking part in an enrichment year at The Alan Turing Institute. Typically they are two years into their PhD at a UK university, and come to the Turing to broaden their skills and network, and start new collaborations.

By the end of the enrichment placement, students will have enhanced their research background, broadened their experience and acquired new knowledge and data science skills.

Chanuki Seresinhe/
Turing enrichment student

As a researcher working on the ethics and politics of data science, I always talk about the need for more multi-disciplinary research. The Turing embodies that. The lectures, informal talks, seminars, masterclasses, and many cups of coffee provide unique moments for researchers, from different fields, to come together and collectively shape the field of data science, in a way that is mindful of the ethical conundrums of our information society and conducive to innovation. Being a doctoral student here enriches my PhD experience tremendously.

Corinne Cath/ Turing doctoral student

It has been fantastic to be based at The Alan Turing Institute this year, which will make it very difficult to leave when the year ends. What makes being here special is having ready access to many bright minds, being able to have stimulating conversations over lunch, and having someone at hand to talk over any tricky problem that needs solving. I am thrilled to be involved at the beginning of something I believe is going to have a positive impact on our society.

Chanuki Seresinhe/ Turing enrichment student

Rodrigo Mendoza-Smith/
Turing enrichment student

The enrichment scheme at the Turing has been intellectually refreshing and stimulating. While I find the daily interaction with Turing researchers the most valuable experience, I have also greatly benefited from weekly reading groups, seminars, masterclasses and meet-ups. The Turing space has been designed to be collaborative and everyone is approachable and keen to talk about their research. There is always an opportunity to find someone to collaborate with in terms of learning about a new topic or tackling a new research question.

Rodrigo Mendoza-Smith/
Turing enrichment student


Assumption:
In practice:
Recall:

An estimated 1.2 million new technical and digitally skilled people are needed by 2022 to satisfy future skills needs.

Government Digital Strategy 2017

Data science masterclasses
Data science is an emerging new academic discipline, requiring early career researchers to have a sound understanding of many different skills.

In order to address the breadth of skills required in data science, in Autumn 2016 the Institute launched its data science masterclasses: a series of talks given by researchers from our five founding universities and experts in other partner organisations, designed to give Turing doctoral students the essential building blocks for their first year as data scientists and to enhance the existing skills of enrichment students. Over the course of 26 masterclasses delivered in the Institute's first academic year, doctoral students have been taught core skills in programming, statistics and machine learning modelling, as well as classes in ethics and privacy and entrepreneurship.

In order to share this valuable content more widely, the masterclasses are live streamed on YouTube and are hosted online as a learning tool for the wider data science community.

To date the videos have been watched more than 3,700 times.

Internships
In the summer of 2016, the Institute was home to 12 doctoral students taking part in a summer internship programme.

Working across five projects ranging from comparing brain scan data to analysing the results of a major citizen science project, the interns spent eight weeks working intensively at the Institute, enabling them to network with Faculty Fellows and gain valuable experience of working with industry datasets.

In one project the interns analysed the data from over 9,000 UK participants in the 'Cloudy with a chance of pain' project, who entered their daily symptoms into a smartphone app which linked up with hourly weather data from the Met Office.

The data analysis undertaken by the Turing interns contributed to scientific findings indicating a link between weather conditions — specifically rain and lack of sunshine — and chronic pain.

In June 2017, 21 students from universities across the UK will join the summer internship programme to work on nine industry-led challenges from major global companies including Shell, Siemens and National Grid.

Cloudy finished with 13,256 participants and over five million symptoms. Without our exceptionally hard working interns we wouldn't even have started to understand this complex dataset, and their analysis continues to be very valuable as the project advances.

Katie Druce/ from the University of Manchester, who worked on the project at The Alan Turing Institute in Summer 2016.

Shaping the public conversation

We are at the same place that biology was post Crick, Watson and Franklin. This is a new science that is going to shape the world that we see, able to create new services, discoveries, potentialities.

Anthony Finkelstein/ Chief Scientific Advisor for National Security to HM Government

Data science is an emerging new discipline already having a major impact on society, economy, science and our way of life.

An essential part of the Institute's role is leading the public conversation around data science, bringing together the best minds to ask the hardest questions and providing a platform for debate, discussion and new ideas.

What is data science?
To coincide with the launch of the Institute's first academic year in October 2016, we created a short film asking Turing researchers from different disciplines — including software engineers, statisticians, social scientists, mathematicians and machine learners — plus partners including HSBC, to define 'data science' for a public audience.

The resulting film has been viewed more than 2,500 times and is a valuable tool to introduce the concept of data science to a public audience.

James Geddes/ Research Software Engineer, in the 'What is data science?' film.

Turing Lectures
In 2016/17 the Institute hosted 13 Turing Lectures, in which an invited expert speaker from academia, industry or third sector presented the big issues, trends and problems in their area of data science.

The events regularly attract an audience of 150-200 attendees and are live-streamed to audiences around the world.

Between September 2016 and January 2017 Turing Lectures were themed around data science in government, featuring speakers ranging from Sir Mark Walport on AI and public services, Dame Julia Slingo on big data and the Met Office, Chief Scientific Advisor Philip Blythe on transport data and Chief Scientific Advisor Anthony Finkelstein on data science and national security.

In summer 2016 we hosted two visiting Turing lecturers; Ralf Herbrich who presented an overview of real-world problems at Amazon and Andrea Bertozzi from UCLA, paired with Faculty Fellow Mark Girolami, who delivered lectures on the intersection of mathematics, statistics and computation.

The final Turing Lecture in the 2016/17 period was given by DeepMind scientist Thore Graepel, who delivered a talk on multi-agent learning in artificial intelligence to a sell-out audience of more than 250 attendees.

Data debates
In collaboration with the British Library, the Arts and Humanities Research Council and the Economic and Social Research Council, the Institute has developed a series of 'data debate' events which aim to de-mystify the complex technologies and algorithms which drive many of our day-to-day interactions for a public-facing audience.

The first data debate featured Faculty Fellow Helen Margetts taking part in a panel debate on the use of social media in industry and society.

Two further data debates are planned for 2017/18.

Turing lecturers Thore Graepal (Deepmind) and Mihaela van der Schaar (Faculty Fellow).

Total number of events

120

Attended

5,147

Over 5,000 people have come through our door for lectures, workshops and seminars in the past year and our talks have been viewed more than 38,000 times online.

Event	Total number of events	Attended
Turing Lectures	13	1,277
Workshops	46	1,955
Seminars	17	875
Other events	44	1,040
Total	**120**	**5,147**

Workshops, seminars and events
Over the past year the Institute hosted over 100 workshops, seminars and other events, reaching more than 3,800 attendees from our five founding universities and the wider data science community.

Workshop highlights include a joint session with the British Heart Foundation to explore opportunities for data science in cardiovascular research and a two-day workshop on optimal experimental design and inverse problems as applied to earth, environmental, material and biomedical sciences, in partnership with the Turing-Lloyd's Register Foundation data-centric engineering programme.

In addition to hosting research-led workshops, the Turing has been a platform for frequent visiting speakers, with more than 15 invited speakers, often from industry or international, giving talks open to Turing researchers and the wider community.

Highlights from 2016/17 include a talk from the co-founder and chief scientist at Magic Pony Technology Zehan Wang, about their artificial intelligence technology, and Nuria Oliver, the first Director of Research in Data Science at Vodafone, discussing modelling human behaviour from mobile data.

Video library
The Alan Turing Institute is committed to sharing its academic expertise with the world.

Since October 2016 we have live streamed or recorded more than 100 Turing talks via our YouTube Channel, and the talks have become a growing resource for the academic community.

The channel has over 900 subscribers, and the Turing video library has attracted more than 38,000 views, chiefly drawn from the UK and US.

The Institute continues to add an average 5-10 new videos a month, and will continue growing this important resource for the benefit of data scientists worldwide.

YouTube video stats

Total number of videos
1 April 2016–31 March 2017
103

Number of views
38,551

Total watch time
283,024 mins

Number of subscribers
954

People watching live
2,478 views
58,188 mins

People watching later
36,073 views
224,836 mins

Top 5 videos/ by watch time

Stéphane Mallat
High-dimensional learning and deep neural networks
24,665 mins

Luciano Floridi
Ethics in the age of information
24,054 mins

Mark Girolami
Probabilistic numerical computation: a new concept?
20,667 mins

Thore Graepel
The role of multi-agent learning in artificial intelligence research at DeepMind
13,565 mins

Mike West
Structured dynamic graphical models & scaling multivariate time series
9,129 mins

Top 5 videos/ by views

Mark Girolami
Probabilistic numerical computation: a new concept?
2,877 views

Stéphane Mallat
High-dimensional learning and deep neural networks
2,769 views

What is data science?
2,435 views

Luciano Floridi
Ethics in the age of information
2,053 views

Sarah Meiklejohn, UCL
Centrally banked cryptocurrencies
1,689 views

Top views/ by country

United Kingdom
43%

USA
16%

Germany
4.2%

Canada
3%

France
3%

Policy
In the short time the Turing has been fully operational, we have worked with policy-makers and participated in the public debate around how data affects our economy and society.

In March 2017 the publication of a paper by Turing researchers recommending a stronger legal framework to manage algorithmic transparency in the upcoming general data protection regulations provoked considerable media and policy interest.

The Institute contributed to the Royal Society and British Academy project on data governance, which will publish its findings in 2017.

In addition, the Institute has engaged in discussions with several government departments and is starting to establish more formal joint working. In addition to the strategic partnership with the UK defence and security sector and collaboration with the Office for National Statistics, the Institute will start a joint project with Defra in 2017 and aims to develop further joint projects with other departments over the coming year.

Sandra Wachter/
Research Fellow

The aim of my paper was to start an open and public discussion about algorithmic transparency, fairness, and accountability. Following the publication, numerous conversations between policy-makers were provoked, and the Commons Science and Technology Committee launched an inquiry into the subject.

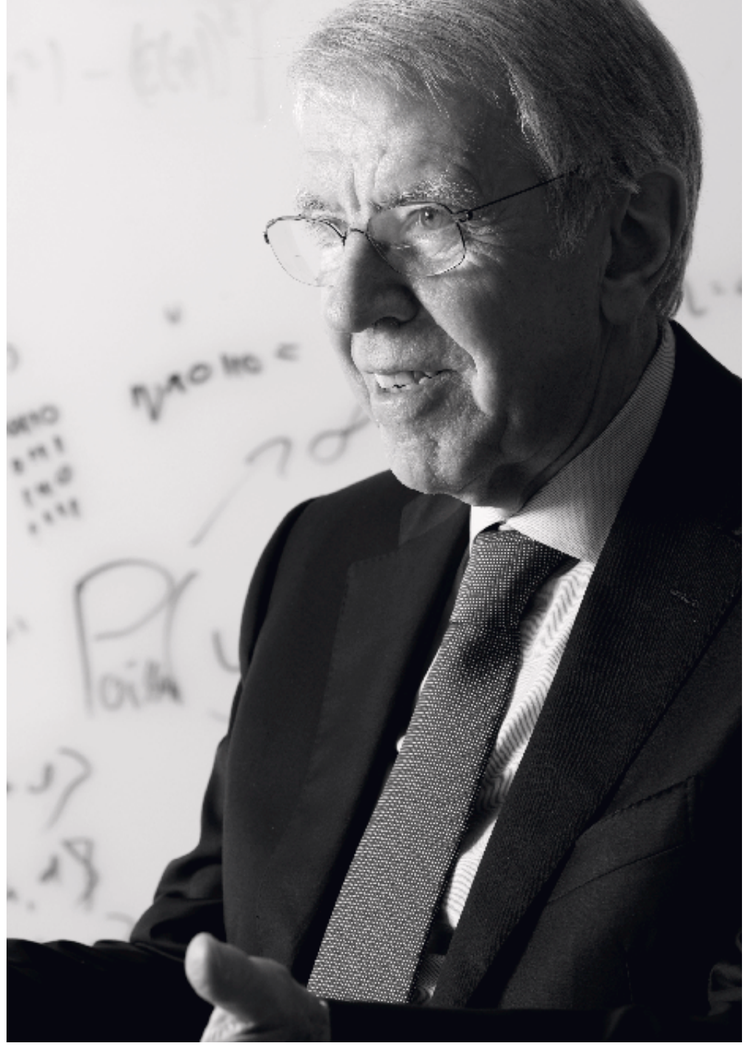
With its blend of synergies and expertise, the Turing is in a unique position to provide the interdisciplinary approach which is crucial for building responsible innovation, and this is an excellent first step to shaping the algorithmic society we want to live in.

Sandra Wachter/ Research Fellow and lead author of the paper *Why a right to explanation of automated decision-making does not exist in the general data protection regulation*

Looking ahead

The Institute's first year has left us in an exceptional place to move forward. The next phase is to innovate and to grow.

Alan Wilson/ Institute CEO



2017/18 will be a pivotal year for the Institute.

In June 2017 we will host the first visit of our Scientific Advisory Board, which will help us to shape our research programme and test our ambitions against a group of international experts.

In early 2018 we will have the first opportunity to present how we have met the benefits outlined in the Institute's original brief back to our government funders, the Engineering and Physical Sciences Research Council, at the mid-way point through our initial funding period.

The Turing research community will work together to refine our broad strategic priority areas into scientific challenges: exemplars of how the Institute will tackle big problems in society, economy, the world we live in.

We will add new research themes, assessing where our data science could have the most impact on the economy, society and the world we live in based on national need.

Recognising our role as a national institute, we will develop plans to enable more universities to join the Institute's network. In response to the strong demand from industry to work with us, we will also devise new ways in which companies can access Turing talent and resources.

We will develop our contribution to building data science skills for the UK and enhance our doctoral scheme to ensure the next generation of data science leaders meets the needs of the UK's industrial ambitions.

The Institute's first year has left us in an exceptional place to move forward. The next phase is to innovate and to grow. We look forward to rising to the challenge.

Alan Wilson/
Institute CEO

Part 02
Trustees' and strategic report

The Trustees present their annual report together with the consolidated financial statements for the charity and its subsidiary for the year ended 31 March 2017.

The financial statements comply with the Charities Act 2011, the Companies Act 2006, and the Statement of Recommended Practice (SORP) applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK (FRS102) which became effective in January 2015.

Legal and administrative information
The Charity is registered and is a Company Limited by Guarantee governed by its Articles of Association dated 26 March 2015.

Company Number: 09512457
Charity Number: 1162533

Directors/Trustees
The subscribers/directors of the charitable company (the Charity) are its Trustees for the purposes of charitable law and throughout this report are collectively referred to as the Trustees. The Trustees serving during the year and since the year end were as follows:

Trustees

Howard Covington/ Chair

John Aston

Anthony Finkelstein
Resigned: 1 February 2017

Peter Grindrod

Timothy Jones
Resigned: 31 July 2016

Richard Kenway

Julie Maxton
Appointed: 16 November 2016

Wendy Tan-White
Appointed: 16 November 2016

Pam Thomas
Appointed: 5 September 2016

Neil Viner

Patrick Wolfe
Appointed: 11 May 2017

Key management personnel

Alan Wilson
Chief Executive Officer

Jonathan Atkins
Chief Operating Officer

Andrew Blake
Research Director

Donna Brown
Director of Academic Engagement

Ian Carter
Head of IT

Emma Cook
Head of Finance

Helen Davies
Head of Academic Programmes

James Geddes
Acting Head of Research Software Engineering

Nicolas Guernion
Director of Partnerships

Sophie McIvor
Head of Communications

Clare Randall
Head of HR and Operations

Registered office
The British Library
96 Euston Road
London, NW1 2DB

Auditors
Kingston Smith LLP
Chartered Accountants
Devonshire House
60 Goswell Road
London, EC1M 7AD

Bankers
Barclays
Leicester
Leicestershire, LE87 2BB

Solicitors
CMS Cameron McKenna
Nabarro Olswang LLP
90 High Holborn
London, WC1V 6XX

Structure, governance and management

Our legal structure
The Alan Turing Institute was founded in March 2015 as a registered charity (1162533) and Company Limited by Guarantee (09512457).

The Institute is governed by its Articles of Association that were adopted on incorporation on 26 March 2015. The Articles of Association establish the governance of the Institute as the responsibility of the Board of Trustees who are Directors of the company and are its Trustees for the purposes of charitable law.

Purpose of the charity and main activities
The charitable object of the Institute, as set in its Articles of Association, is the furtherance of education for the public benefit particularly through research, knowledge exchange and public engagement, in the field of data science. The Institute has power to do anything which is calculated to further its objects or is conducive or incidental to doing so. In particular the Institute's ambition is to:

— produce world-class research in the foundations of data science;
— have a transformative impact on the way that data and algorithms are used in the economy, in government and in society; and
— educate and train data scientists.

The Trustees confirm that they have paid due regard to the Public Benefit Guidance published by the Charity Commission, including the guidance 'public benefit: running a charity (PB2), in shaping their aims and objectives for the year and in planning their future activities.

Related parties
The Institute's Founder Members are the Engineering and Physical Sciences Research Council ("EPSRC") and the Universities of Cambridge, Edinburgh, Oxford, University College London and Warwick. The Founder Members have entered into a Joint Venture Agreement which establishes the basis on which funding will be made available to the Institute.

The Institute has a wholly owned subsidiary, Turing Innovations Limited (company registration number 10015591) which exists to manage trading activity. Any surplus funds generated by this subsidiary will be transferred to the Institute as gift-aid.

Board composition and responsibilities
The Institute is governed by its Board of Trustees who are also its Directors. The Board of Trustees has been established in accordance with the terms of the Joint Venture Agreement between the six Founder Members ("Founder"), dated 30 March 2015.

The Board composition is determined as follows:
— each Founder may appoint one Trustee
— founders may, by a unanimous decision, select and appoint an independent Trustee who acts as Chair of the Board and may from time to time remove and replace such independent Trustee by a unanimous decision of the Founders.
— the appointed Trustees may appoint further independent Trustees such that, so far as possible, the total number of Trustees on the Board at any particular time will be an odd number.
— the Trustees appointed by the Founders must always form a majority of the Board and may from time to time remove and replace independent Trustees.

Biographies of all Trustees are available at **turing.ac.uk/people/leadership/**

Organisational management and responsibilities of the board
The Institute has a clear organisation structure, with documented lines of authority and responsibility for control.

The Board of Trustees are responsible for setting the aims and direction of the Institute. Trustees set the strategy, establish funding policies, approve the annual budget and expenditure targets and monitor actual and forecast financial results. The Trustees also develop and agree the overall strategy and policies related to research, knowledge and public engagement, in the field of data science.

Trustees meet formally as a Board with the senior management team six times a year, plus at least one away day, and undertake further meetings as and when needed. The senior management team also provide Trustees with regular reports on the Institute's financial position, current activity, organisational news and significant issues affecting the Institute.

In October 2016, the Founders gave their unanimous approval to appoint an interim Chief Executive Officer, Sir Alan Wilson.

The senior management team, led by the Chief Executive Officer is responsible for the day-to-day management of the Institute's operations and activities. The Chief Executive Officer is responsible for appointing senior managers. The senior management team is also responsible for implementing the strategy and policies agreed with Trustees and reporting on its performance to the Board.

Committees
The Institute is supported by a range of committees, whose members include Trustees, the Chief Executive Officer, representatives from the Founder Members and other individuals with appropriate expertise. The following committees report directly to the Board of Trustees:

Audit Committee/ This committee reviews the effectiveness of the Institute's internal control framework and risk management process and compliance with reporting requirements. It monitors the terms of appointment and the work of the external auditors and receives and reviews audit reports. It monitors the full external audit process and resulting financial statements, including overseeing the terms of appointment of the external auditors.

Commercial Development Board/This group provides assistance to the Chief Executive Officer and the Board of Trustees in building engagement with industry, charitable foundations and individuals in furtherance of the objects of the Institute.

Nomination Committee/ This committee is responsible for all aspects of the appointment of new non-Founder Trustees to the Board of Trustees. It also has responsibility for monitoring boardroom diversity and makes recommendations on appointments within the Audit and Remuneration Committees in consultation with the chairs of those committees.

Programme Committee/ This committee supports the Chief Executive Officer in the preparation and subsequent execution of the Institute's scientific and innovation strategy, as envisaged in the Joint Venture Agreement. It supports the institute with research and training programmes and reports appropriately to the Institute's stakeholders.

Remuneration Committee/ This committee advises the Board of Trustees and oversees the preparation of policies and procedures in respect of salaries, emoluments and conditions of service. In line with these approved policies and procedures, the committee approves the total remuneration package for the Chair of the Institute, the Chief Executive Officer, the Research Director and those senior staff reporting directly to the Chief Executive Officer. The criterion for setting pay is the market rate taking into account industry standards.

Scientific Advisory Board/ This is an independent group made up of experts in academia, industry and government drawn from organisations around the world. This group provides strategic advice to the Institute's Board of Trustees and the Chief Executive Officer on its scientific research programme.

Strategic Partners Board/ This group advises the Board of Trustees on the content and translation of research generated at the Institute and collaborates across the Institute and its partners to identify new opportunities.

The Trustees will set up other committees as necessary to provide assistance with their Board's duties.

Recruitment and appointment of Trustees
The Nomination Committee undertakes an open recruitment process, recommends new candidates for appointment when necessary, and ensures appropriate recruitment and succession plans are in place for non-Founder appointed Trustees.

On appointment, each Trustee completes a declaration of interests form which is held within a register of interests and updated annually. Their related party transactions are disclosed in greater detail at note 23 to the financial statements later in this report. All conflicts are actively managed through early identification of potential areas of conflict and appropriate action taken where necessary.

Trustee induction and training
There is a tailored induction programme for new Trustees that includes a programme of meetings with the Chief Executive Officer, senior management team and other Trustees. New Trustees are provided with a Trustee information pack which includes initial information about the Institute and its work, a copy of the previous year's annual report and accounts, a copy of the Institute's Articles of Association, a copy of the Joint Venture Agreement, information about their powers as Trustees of the Institute and a copy of the Charity Commission's guidance 'The Essential Trustee: What you need to Know'.

Additionally, Trustees are invited to and encouraged to attend short training sessions to familiarise themselves with their duties as Trustees of the Institute. The most recent training session on Trustees duties was led by Olswang LLP and took place on 26 November 2016. The session covered the following areas of Trustees duties:
— Trustees duties arising under company law as Directors of the Institute
— compliance with the Institute's Articles of Association
— directors conduct duties
— conflicts of interests
— the Charity Commission

Equality and diversity
It is the Institute's policy to provide equal opportunities to job applicants and employees. The Institute recognises that everyone should be treated with respect and dignity and that a working environment must be provided which is free of any form of discrimination, harassment, bullying or victimisation. In addition, the Institute's site at the British Library provides access arrangements in order to allow unrestricted employment of individuals who have special access needs.

The Institute is committed to the effective implementation of this policy and will not condone any form of discrimination, whether engaged by employees or by outside third parties who interact with the organisation.

Financial review
The Institute is funded through grants from its founding members and strategic partnerships. Income of £15.7m has been received during the year. Expenditure of £13.3m has been incurred in the year. A surplus of £2.5m has been transferred to reserves and will be used to fund research and Institute costs during 2017/8 and beyond.

The most significant event affecting finances within the year was the launch of the Institute's academic year in October with significant new grants being awarded to the Founder Universities to secure the Institute's initial community of researchers.

Reserves policy
The Institute reviews its reserves policy each year, taking account of its planned activities and the financial requirements for the forthcoming period. The Trustees believe that the charity should have access to reserves appropriate to the scale, complexity and risk profile of the Institute. Currently, to cover any shortfall in grants and to maintain the viability of the Institute, these reserves are set at the equivalent of 3 to 6 months of operating costs.

As of 31 March 2017, the general unrestricted funds amounted to £5.5m. The Engineering and Physical Sciences Research Council (EPSRC) has awarded a grant of £42 million to enable the Institute to carry out its charitable objectives. This grant is split between operating resource of £22 million and capital of £20 million. The grant may not be used for any other purpose without the prior written consent of EPSRC. The first drawdown notice in respect of this grant was issued in December 2015 and the grant expires on 31 March 2022. Drawdowns have been made in accordance with the agreed payment schedule through the fiscal year. The annual budget is prepared in consultation with EPSRC and sets out the amount of the grant to be paid to the Institute in the next financial year, and the payment profile for that financial year, with the intention that the profiled payments over the financial year will accord with the Institute's cash flow requirement.

As at 31 March 2017, the Institute holds £3.3m of restricted reserves. This is after allowance has been made in respect of future years' commitments to current researcher grant awards amounting to £4.9m.

Remuneration policy
The Institute is committed to ensuring a proper balance between paying staff (and others who work for the Institute) fairly to attract and retain the best people for the job with the careful financial management of our charity funds. The Remuneration Committee oversees the overall remuneration of staff and specifically key management.

The Remuneration Committee assumes the responsibilities of remuneration within the Institute. Formal consideration of remuneration matters takes place annually, usually at the committee's March/April meeting; however, they may also be considered at other meetings if ad hoc issues arise during the year. The committee does not have full delegated authority to approve all matters relating to remuneration and any recommendation or decision must be ratified by the Board prior to implementation.

The Institute discloses all payments to Trustees and the number of staff with a total remuneration of £60,000 and above in accordance with the Charity Commission's Statement of Recommended Practice 2015 (SORP).

Investment policy
The investment policy is, at this stage, confined to the management of short term liquid funds. The investment principle is to achieve the secure investment of excess cash resources of a short-term nature.

Assets are protected by investing with approved counterparties. Investments are risk averse and non-speculative, and the Institute places no income reliance on interest earned.

Grant making policy
A proposed grant making policy is due for review by the Board of Trustees, however some fundamental principles have been established and adopted by the Institute.

These are as follows:
— the Institute will award grants that are in line with the charitable aims of the organisation.
— the Institute intends to assess grants bi-annually to ensure compliance with the terms of the grant.

The Institute expects to assess the progress of each grant within three months of the end of the grant period.

Risk management
Significant risks to which the Institute is exposed are reported formally to the Audit Committee and the Board of Trustees via the Institute's risk register.

The Institute has a formal attitude to risk management via a framework captured within the business to support the identification and effective management of risk across the Institute. The senior management team is responsible for managing and reporting risk in accordance with the Institute's risk management policy and standards.

As is common in similar organisations and as recent events have demonstrated, the Institute faces many risks and uncertainties. For example, economic instability or political change could impact the funding of research at the Institute or reduce the Institute's ability to find additional strategic partners and/or achieve financial sustainability. The Institute may become the victim of a cyber-attack. It may not achieve its ambition of becoming a national Institute. It may not be able to deliver its research challenges effectively.

The Board of Trustees seeks to ensure that these risks are mitigated, so far as reasonably possible, by actions taken by the Institute's senior management team. This mitigation includes prudent financial management of the Institute such that it can react to changes in external funding in an agile, controlled manner; robust security processes both physical and virtual; plans to engage the wider academic and public communities in the work of the Institute; and instigating collaborative feedback that will enable impact to be measured and subsequent direction of travel to be amended if necessary.

Trustees' responsibilities statement
The Trustees are responsible for preparing the Trustees' report and the financial statements in accordance with applicable law and regulations.

Company law requires the Trustees to prepare financial statements for each financial year. Under that law the Trustees have elected to prepare the financial statements in accordance with United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice, GAAP) including FRS 102 'The Financial Reporting Standard Applicable in the UK and Ireland'. Under company law the Trustees must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the charitable company and the result for that year.

In preparing these financial statements, the Trustees are required to:
— select suitable accounting policies and then apply them consistently;
— comply with applicable accounting standards, including FRS 102, subject to any material departures disclosed and explained in the financial statements;
— state whether a Statement of Recommended Practice (SORP) applies and has been followed, subject to any material departures which are explained in the financial statements;
— make judgements and estimates that are reasonable and prudent;
— prepare the financial statements on a going concern basis unless it is inappropriate to presume that the charitable company will continue in business.

The Trustees are responsible for keeping adequate accounting records that are sufficient to show and explain the Institute's transactions, disclose with reasonable accuracy at any time the financial position of the Institute and enable them to ensure that the financial statements comply with the Companies Act 2006. They are also responsible for safeguarding the assets of the Institute and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities. The Trustees are responsible for the maintenance and integrity of the corporate and financial information included on the Institute's website. Legislation in the UK governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Disclosure of information to the auditor
The Trustees who held office at the date of approval of this Trustees' report confirm that, so far as they are each aware, there is no relevant audit information of which the Institute's auditor is unaware; and each Trustee has taken all the steps that they ought to have taken as a Trustee to make themselves aware of any relevant information and to establish that the Institute's auditor is aware of that information.

Kingston Smith were appointed as auditors by the Board in March 2016 and have been reappointed for another term.

Signatory
The Trustees' annual report is approved by the Trustees of the charity. The strategic report, which forms part of the annual report, is approved by the Trustees in their capacity as directors in company law of the charity.

Howard Covington/
Chair
21 June 2017

Part 03
Financial statements

Consolidated financial statements for the year ended 31 March 2017.

The Charity is registered and is a company limited by guarantee governed by its Articles of Association dated 26 March 2015.

Company Number: 09512457
Charity Number: 1162533

We have audited the financial statements of The Alan Turing Institute for the year ended 31 March 2017 which comprise the Group Statement of Financial Activities, the Group Summary Income and Expenditure Account, the Group and Parent Charitable Company Balance Sheet, the Group Statement of Cash Flows and the related notes. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice) including FRS 102 'The Financial Reporting Standard Applicable in the UK and Ireland'.

This report is made solely to the charitable company's members, as a body, in accordance with Chapter 3 Part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the charitable company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to any party other than the charitable company and charitable company's members as a body, for our audit work, for this report, or for the opinions we have formed.

Respective responsibilities of Trustees and auditors

As explained more fully in the Trustees' responsibilities statement (set out on page 74) the Trustees (who are also the directors of the charitable company for the purposes of company law) are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view. Our responsibility is to audit and express an opinion on the financial statements in accordance with applicable law and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Auditing Practices Board's (APB's) Ethical Standards for Auditors.

Scope of the audit of the financial statements

An audit involves obtaining evidence about the amounts and disclosures in the financial statements sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of: whether the accounting policies are appropriate to the charitable company's circumstances and have been consistently applied and adequately disclosed; the reasonableness of significant accounting estimates made by the Trustees; and the overall presentation of the financial statements. In addition we read all the financial and non-financial information in the Trustees' annual report to identify material inconsistencies with the audited financial statements and to identify any information that is apparently materially incorrect based on, or materially inconsistent with, the knowledge acquired by us in the course of performing the audit. If we become aware of any apparent material misstatements or inconsistencies we consider the implications for our report.

Opinion on the financial statements

In our opinion the financial statements:

— give a true and fair view of the state of the group's and the parent charitable company's affairs as at 31 March 2017 and of the group's incoming resources and application of resources, including its income and expenditure, for the year then ended;
— have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice applicable to Smaller Entities; and
— have been properly prepared in accordance with the requirements of the Companies Act 2006.

Opinion on other matters prescribed by the Companies Act

In our opinion, based on the work undertaken in the course of the audit:

— the information given in the strategic report and the Trustees' annual report for the financial year for which the financial statements are prepared is consistent with the financial statements; and
— the strategic report and the Trustees' annual report have been prepared in accordance with applicable legal requirements.

Matters on which we are required to report by exception

In the light of the knowledge and understanding of the company and its environment obtained in the course of the audit, we have not identified material misstatements in the strategic report or the Trustees' annual report.

We have nothing to report in respect of the following matters where the Companies Act 2006 requires us to report to you if, in our opinion:

— adequate accounting records have not been kept or returns adequate for our audit have not been received from branches not visited by us; or
— the financial statements are not in agreement with the accounting records and returns; or
— certain disclosures of Trustees' remunerations specified by law are not made; or
— we have not received all the information and explanations we require for our audit.

Kingston Smith LLP

Shivani Kothari/
for and on behalf of
Kingston Smith LLP
Statutory Auditor
21 June 2017

Devonshire House
60 Goswell Road
London, EC1M 7AD

The Alan Turing Institute
Consolidated statement of financial activities
(incorporating an income and expenditure account)
For the year ended 31 March 2017

	Note	2017 Unrestricted funds £	2017 Restricted funds £	2017 Total funds £	2016 Total funds £
Income and endowments					
Donations	2	0	242,562	**242,562**	**86,414**
Investment income Gross interest		4,686	0	**4,686**	**734**
Charitable income Grant income	3	8,000,000	7,500,000	**15,500,000**	**7,638,931**
Total income		**8,004,686**	**7,742,562**	**15,747,248**	**7,726,079**

The Alan Turing Institute
Consolidated statement of financial activities
(incorporating an income and expenditure account)
For the year ended 31 March 2017

	Note	2017 Unrestricted funds £	2017 Restricted funds £	2017 Total funds £	2016 Total funds £
Expenditure					
Raising funds	4	172,140	0	**172,140**	**22,402**
Charitable activities Education and research	5	4,210,854	8,886,738	**13,097,592**	**1,363,587**
Total expenditure		**4,382,994**	**8,886,738**	**13,269,732**	**1,385,989**
Net income/(expenditure) for the year before transfers	8	3,621,692	(1,144,176)	**2,477,516**	**6,340,090**
Transfers between funds	21a	859,000	(859,000)	**0**	**0**
Net movement in funds		**4,480,692**	**(2,003,176)**	**2,477,516**	**6,340,090**
Reconciliation of funds Balance brought forward at 1 April 2016		1,023,572	5,316,518	**6,340,090**	**0**
Balance carried forward at 31 March 2017	**20**	**5,504,264**	**3,313,342**	**8,817,606**	**6,340,090**

The Alan Turing Institute
Balance sheet — Group and charity
At 31 March 2017

	Note	Group 2017 £	Group 2016 £	Charity 2017 £	Charity 2016 £
Fixed assets					
Tangible assets	13 & 14	1,969,660	154,441	1,830,806	154,441
Intangible assets	15	27,242	0	0	0
Investments	16	0	0	1	1
		1,996,902	**154,441**	**1,830,807**	**154,442**
Current assets					
Debtors	17	755,621	73,783	589,524	73,783
Cash at bank and in hand		14,101,962	6,447,021	14,101,962	6,447,021
		14,857,583	**6,520,804**	**14,691,486**	**6,520,804**
Creditors Amounts falling due within more one year	**18**	**(3,123,982)**	**(335,155)**	**(2,957,886)**	**(335,156)**
Net current assets		11,733,601	6,185,649	11,733,600	6,185,648
Creditors Amounts falling due in more than one year	19	(4,912,897)	0	(4,912,897)	0
Net assets		**8,817,606**	**6,340,090**	**8,651,510**	**6,340,090**

The Alan Turing Institute
Balance sheet — Group and charity
At 31 March 2017

	Note	Group 2017 £	Group 2016 £	Charity 2017 £	Charity 2016 £
Funds					
Restricted funds	21	3,313,342	5,316,518	3,147,246	5,316,518
Unrestricted funds — general funds	20	5,504,264	1,023,572	5,504,264	1,023,572
Total funds	**20**	**8,817,606**	**6,340,090**	**8,651,510**	**6,340,090**

The financial statements of The Alan Turing Institute were approved and authorised for issue by the Board of Trustees on 21 June 2017 and signed on its behalf by:

Howard Covington/
Chair
21 June 2017

The Alan Turing Institute
Company number — 09512457

The notes on pages 83 to 105 form part of these financial statements.

The Alan Turing Institute
Consolidated statement of cash flows
For the year ended 31 March 2017

	2017 £	2016 £
Cash flows from operating activities		
Net income for the year	2,477,516	6,340,090
Adjustments for:		
Depreciation of tangible fixed assets	273,082	2,381
Interest received	(4,686)	(734)
Increase in debtors	(681,838)	(73,783)
Increase in creditors	7,701,724	335,155
Net cash generated by operating activities	**9,765,798**	**6,603,110**
Cash flows from investing activities		
Purchase of tangible fixed assets	(2,088,301)	(162,222)
Purchase of intangible fixed assets	(27,242)	0
Proceeds from sale of fixed assets	0	5,399
Interest received	4,686	734
Net cash from investing activities	**(2,110,857)**	**(156,089)**
Change in cash and cash equivalents in the year	**7,654,941**	**6,447,021**
Cash and cash equivalents at beginning of year	6,447,021	0
Cash and cash equivalents at end of the year	**14,101,962**	**6,447,021**

The Alan Turing Institute
Notes to the financial statements
For the year ended 31 March 2017

1/ Accounting policies
A summary of the principal accounting policies adopted, judgements and key sources of estimation uncertainty, is set out below.

Basis of preparation
The financial statements have been prepared in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (FRS 102). The Charitable Company and its subsidiary is a public benefit group for the purposes of FRS 102 and therefore the Charity also prepared its financial statements in accordance with the Statement of Recommended Practice applicable to charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK and Republic of Ireland (The FRS 102 Charities SORP), the Companies Act 2006 under the provision of the Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (SI 2008/410) and the Charities Act 2011.

The financial statements are prepared in sterling, which is the functional currency of the charity. Monetary amounts in these financial statements are rounded to the nearest pound.

Going concern
The Trustees have assessed whether the use of going concern basis is appropriate and have considered possible events or conditions that might cast significant doubt on the ability of the charitable company to continue as a going concern. The Trustees have made this assessment for a period of at least one year from the date of the approval of these financial statements. In particular, the Trustees have considered the charitable company's forecasts and projections and have taken account of pressures on income. After making enquiries, the Trustees have concluded that there is a reasonable expectation that the charitable company has adequate resources to continue in operational existence for the foreseeable future. The charitable company therefore continues to adopt the going concern basis in preparing its financial statements.

Group financial statements
These financial statements consolidate the results of the Charity and Turing Innovations Limited, its wholly owned trading subsidiary on a line by line basis. A separate Statement of Financial Activities and Income and Expenditure Account are not presented for the Charity itself as the Charity has taken advantage of the exemptions afforded by section 408 of the Companies Act 2006. The net income of the charity was £2,311,420 (2016: £6,340,090).

Income
All income is recognised when there is entitlement to the funds, the receipt is probable and the amount can be measured reliably.

Donations and grants, including grants in respect of major items of refurbishment, improvements or the purchase of fixed assets are recognised in the Statement of Financial Activities when receivable. Where income is received in advance of meeting any performance-related conditions there is not unconditional entitlement to the income and its recognition is deferred and included in creditors as deferred income until the performance-related conditions are met.

Expenditure
Expenditure is included in the Statement of Financial Activities on an accruals basis, inclusive of any VAT which cannot be recovered. Expenditure is recognised once there is a legal or constructive obligation to transfer economic benefit to a third party, it is probable that a transfer of economic benefits will be required in settlement and the amount of the obligation can be measured reliably.

Grants payable are payments made to third parties in the furtherance of the charitable objects of the Charity. Unconditional grant offers are accrued once the recipient has been notified of the grant award and its payment is probable. Grant awards that are subject to the recipient fulfilling performance or other conditions are accrued when the recipient has been notified of the grant and either the performance condition is met or any remaining unfulfilled condition attaching to the grant is outside of the control of the Charity.

(i) Useful economic lives: the annual depreciation charge for property, plant and equipment is sensitive to change in the estimated useful economic lives and residual value of assets. These are reassessed annually and amended were necessary to reflect current circumstances.

Cost of raising funds
The costs of raising funds consist of direct costs of raising funds and an apportionment of overhead, support and governance costs.

Cost of charitable activities
Costs of charitable activities include costs directly associated with research activities and an apportionment of overhead, support and governance costs.

Gifts in kind
Where goods are provided to the charity as a donation that would normally be purchased from suppliers this contribution is included in the financial statements as an estimate based on the value of the contribution to the charity.

Tangible fixed assets and depreciation
Depreciation of tangible fixed assets is calculated to write off their cost or valuation less any residual value over their useful economic lives (i) as follows:
— leasehold land and buildings/ term of lease
— fixtures, fittings and fittings/ 5 years
— IT equipment/ 3 to 5 years

Tangible fixed assets costing more than £1,000 are capitalised.

Intangible fixed assets and amortisation
Amortisation of intangible fixed assets is calculated to write off their cost or valuation less any residual value over their useful economic lives (i) as follows:
— software/ 3 years

Intangible fixed assets costing more than £1,000 are capitalised.

Fund accounting
General unrestricted funds are those available for use at the discretion of the Trustees in furtherance of the general objectives of the charity and which have not been designated for other purposes.

Restricted funds are funds which are to be used in accordance with specific restrictions imposed by donors or which have been raised by the charity for particular purposes.

Cash and cash equivalents
Cash and cash equivalents include cash in hand, deposits held at call with banks, other short-term liquid investments with original maturities of three months or less.

Financial instruments
Basic financial instruments are measured at amortised cost other than investments which are measured at fair value.

Employee benefits
The costs of short-term employee benefits are recognised as a liability and an expense.

Critical accounting estimates and areas of judgement
In preparing financial statements it is necessary to make certain judgements, estimates and assumptions that affect the amounts recognised in the financial statements.

2/ Donations

	2017 Unrestricted £	2017 Restricted £	2017 Total £	2016 Total £
GCHQ	0	166,096	166,096	0
Intel	0	76,466	76,466	0
Gift in kind-rent	0	0	0	86,414
	0	**242,562**	**242,562**	**86,414**

All donations received in 2016 were related to unrestricted funds.

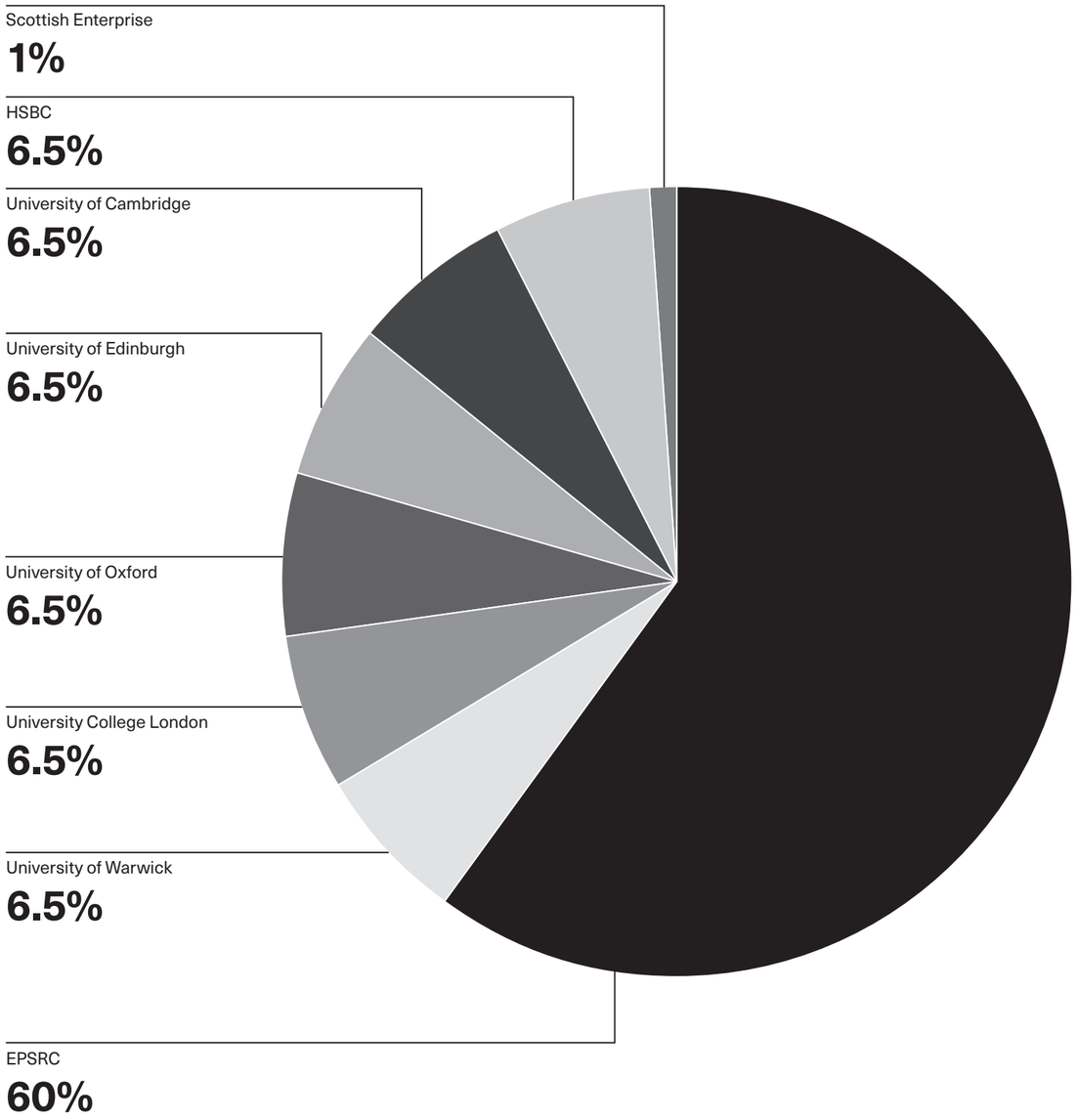
The Alan Turing Institute
Notes to the financial statements
For the year ended 31 March 2017

3/ Grants received

	2017 Unrestricted £	2017 Restricted £	2017 Total £	2016 Total £
EPSRC	8,000,000	1,250,000	**9,250,000**	**2,750,000**
University of Cambridge	0	1,000,000	**1,000,000**	**750,000**
University of Edinburgh	0	1,000,000	**1,000,000**	**750,000**
University of Oxford	0	1,000,000	**1,000,000**	**750,000**
University College London	0	1,000,000	**1,000,000**	**750,000**
University of Warwick	0	1,000,000	**1,000,000**	**750,000**
Lloyd's Register Foundation	0	0	**0**	**1,000,000**
HSBC	0	1,000,000	**1,000,000**	**0**
Scottish Enterprise	0	250,000	**250,000**	**0**
Intel	0	0	**0**	**138,931**
	8,000,000	**7,500,000**	**15,500,000**	**7,638,931**

3/ Grants received

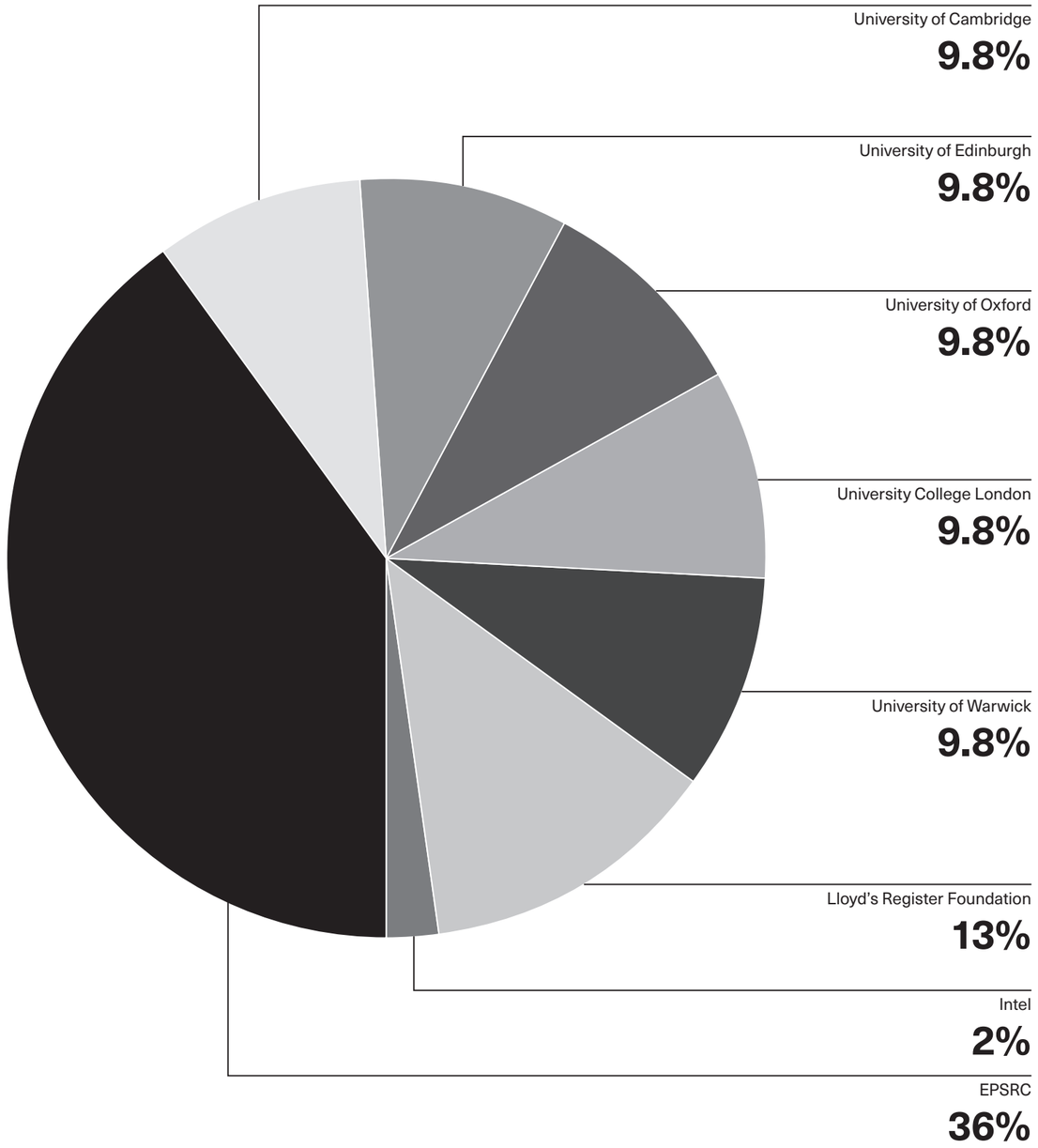
2017



The Alan Turing Institute
Notes to the financial statements
For the year ended 31 March 2017

3/ Grants received

2016



4/ Cost of raising funds

	2017 £	2016 £
Marketing costs	172,140	22,402
	172,140	**22,402**

5/ Cost of charitable activities

				2017 £
	Grants payable See opposite	**Other direct costs**	**Support costs** Note 6	**Total**
Research	6,602,028	1,650,026	4,709,242	**12,961,296**
Workshops	0	136,296	0	**136,296**
Other	0	0	0	**0**
	6,602,028	**1,786,322**	**4,709,242**	**13,097,592**

For the purposes of these statements, support costs include all costs associated with the administration of the grants.

				2016 £
	Grants payable	**Other direct costs**	**Support costs** Note 6	**Total**
Research	0	0	0	**0**
Workshops	0	175,458	1,177,268	**1,352,726**
Other	0	10,861	0	**10,861**
	0	**186,319**	**1,177,268**	**1,363,587**

Analysis of grants payable
Analysis of institutions receiving grants

	2017 £	2016 £
University of Cambridge	1,254,081	0
University of Edinburgh	1,145,575	0
University of Oxford	1,574,471	0
University College London	1,429,305	0
University of Warwick	1,198,596	0
	6,602,028	**0**

6/ Support costs

	2017 £	2016 £
Travel and subsistence	61,182	35,451
Office costs	56,662	10,760
Rent, rates and service charge	907,768	86,414
Repairs and maintenance	25,703	0
Subscriptions	5,499	0
Staff costs	2,661,393	715,514
Staff training and entertainment	16,812	6,686
Recruitment	171,472	25,104
Telecommunications	55,970	19,783
Computer running costs	116,418	65,144
Legal fees	151,370	66,154
Other professional fees	47,865	34,205
Consultancy	58,118	21,625
Events	127,186	64,462
Depreciation	105,243	0
Insurance	8,882	0
Marketing	32,481	0
Foreign exchange (gain)/loss	(23,433)	0
Sundry costs	5,038	7,786
Governance costs (see note 7)	117,613	18,180
	4,709,242	**1,177,268**

The Alan Turing Institute
Notes to the financial statements
For the year ended 31 March 2017

7/ Governance costs

	2017 £	2016 £
Auditor's remuneration		
Audit of the financial statements	12,600	10,740
Other services	3,338	7,440
Legal and professional fees	101,675	0
	117,613	**18,180**

8/ Net income/expenditure

Net income is stated after charging	2017 £	2016 £
Depreciation	273,082	2,381
Operating lease rentals	633,258	0
Auditor's remuneration	15,938	18,180

9/ Total staff costs

Staff expenses includes the following employee costs:	2017 £	2016 £
Wages and salaries	1,324,212	174,708
Social security costs	154,105	31,201
Other staff costs:		
Contractors	626,636	284,033
Secondments	1,145,338	152,765
Re-charged salaries	0	72,807
Pension costs	77,917	0
	3,328,208	**715,514**

Key management personnel include those involved in executive decision making and are listed on 71.

The total employee benefits of the charity's key management personnel was £1,123,774 (2016: £183,160).

During the year the following number of employees received emoluments in excess of £60,000:	2017	2016
£70,000 – £79,999	2	0
£80,000 – £89,999	1	0
£110,000 – £119,999	0	1
£140,000 – £149,999	1	0
£220,000 – £229,999	1	0

The Alan Turing Institute
Notes to the financial statements
For the year ended 31 March 2017

10/ Trustees' payments

Howard Covington received remuneration totalling £18,000 (2016: £15,000) during the year for the purpose of being Chair of the Charity. No other Trustee received any remuneration or emoluments.

Three Trustees received travelling and accommodation expenses during the year totalling £8,537 (2016: £6,100).

11/ Employees

The average number of employees by function were:	2017 Number	2016 Number
Executive	3.5	4.5
HR and Finance	5.6	4
Communications and Events	4.7	2
Research and Training	7.8	3
IT and Comms	1.4	1.5
Policy	0.9	0
Partnerships	1.5	0
	25.4	**15**

12/ Taxation

The charity is entitled to certain tax exemptions on income and profits from investments and surpluses on any trading activities carried on in furtherance of the charity's primary objectives.

13/ Tangible fixed assets — group

Cost or valuation	Leasehold improvements £	Equipment and machinery £	Total £
At 1 April 2016	136,094	20,728	156,822
Additions	1,393,798	694,503	2,088,301
At 31 March 2017	**1,529,892**	**715,231**	**2,245,123**
Depreciation			
At 1 April 2016	0	2,381	2,381
Charge for the year	161,438	111,644	273,082
At 31 March 2017	**161,438**	**114,025**	**275,463**
Net book value			
At 31 March 2017	**1,368,454**	**601,206**	**1,969,660**
At 31 March 2016	**136,094**	**18,347**	**154,441**

14/ Tangible fixed assets — charity

Cost or valuation	Leasehold improvements £	Equipment and machinery £	Total £
At 1 April 2016	136,094	20,728	156,822
Additions	1,393,798	555,649	1,949,447
At 31 March 2017	**1,529,892**	**576,377**	**2,106,269**
Depreciation			
At 1 April 2016	0	2,381	2,381
Charge for the year	161,438	111,644	273,082
At 31 March 2017	**161,438**	**114,025**	**275,463**
Net book value			
At 31 March 2017	**1,368,454**	**462,352**	**1,830,806**
At 31 March 2016	**136,094**	**18,347**	**154,441**

15/ Intangible fixed assets — group

Cost or valuation	Software £
At 1 April 2016	0
Additions	27,242
At 31 March 2017	**27,242**
Amortisation	
At 1 April 2016	0
Charge for the year	0
At 31 March 2017	**0**
Net book value	
At 31 March 2017	**27,242**
At 31 March 2016	**0**

The Alan Turing Institute
Notes to the financial statements
For the year ended 31 March 2017

16/ Investments in subsidiaries

Cost	Investment in subsidiary £
At 1 April 2016 and 31 March 2017	**1**

The investment represents 100% of the share capital of Turing Innovations Ltd, a company incorporated in England & Wales, company number 10015591.

The following is an extract of its results for the year to 31 March 2017:

	2017 £	2016 £
Income	166,096	0
Expenditure	0	0
Net income	**166,096**	**0**
Total assets	332,193	1
Total liabilities	(166,096)	0
Net assets	**166,097**	**1**

17/ Debtors

	Group 2017 £	Group 2016 £	Charity 2017 £	Charity 2016 £
Trade debtors	675,448	0	509,352	0
Prepayments and accrued income	71,500	73,783	71,500	73,783
Other debtors	8,673	0	8,672	0
	755,621	**73,783**	**589,524**	**73,783**

Trade Debtors above are measured at amortised cost.

18/ Creditors: amounts falling due within one year

	Group 2017 £	Group 2016 £	Charity 2017 £	Charity 2016 £
Trade creditors	359,047	198,126	192,951	198,126
Taxation and social security	70,816	22,463	70,816	22,463
Grant creditors	1,499,942	0	1,499,942	0
Accruals	1,141,546	114,566	1,141,546	114,567
Other creditors	52,631	0	52,631	0
	3,123,982	**335,155**	**2,957,886**	**335,156**

The Alan Turing Institute
Notes to the financial statements
For the year ended 31 March 2017

19/ Creditors: amounts falling due in more than one year

	Group 2017 £	Group 2016 £	Charity 2017 £	Charity 2016 £
Grant creditors	**4,912,897**	**0**	**4,912,897**	**0**

20/ Analysis of net group assets between funds

At 31 March 2017	Unrestricted £	Restricted £	Total £
Tangible fixed assets	1,748,637	221,023	1,969,660
Intangible fixed assets	0	27,242	27,242
Net current assets	3,755,627	7,977,974	11,733,601
Long term creditors	0	(4,912,897)	(4,912,897)
	5,504,264	**3,313,342**	**8,817,606**
At 31 March 2016			
Tangible fixed assets	154,442	0	154,442
Intangible fixed assets	0	0	0
Net current assets	869,130	5,316,518	6,185,648
Long term creditors	0	0	0
	1,023,572	**5,316,518**	**6,340,090**

The Alan Turing Institute
Notes to the financial statements
For the year ended 31 March 2017

21/ Restricted funds

	At 1 April 2016 £	Income £	Expenditure £	Transfers £	Balance 31 March 2017 £
a. EPSRC capital fund	613,906	1,250,000	(175,452)	(859,000)	829,454
b. Research fund	3,564,384	5,000,000	(8,474,823)	0	89,561
c. Lloyd's Register Foundation fund	999,297	0	(112,213)	0	887,084
d. HSBC fund	0	1,000,000	(14,405)	0	985,595
e. Scottish Enterprise fund	0	250,000	0	0	250,000
f. Intel Corporation fund	138,931	76,466	(98,856)	0	116,541
g. GCHQ — Defence and security fund	0	166,096	(10,989)	0	155,107
	5,316,518	**7,742,562**	**(8,886,738)**	**(859,000)**	**3,313,342**

a/ The EPSRC capital fund was granted by the Engineering and Physical Sciences Research Council for the purposes of capital expenditure on its premises. The transfer to unrestricted funds has been authorised by the funder to cover office rent costs.

b/The Research fund represents amounts received from the charity's university members that must be directly spent on research activities.

c/ The Lloyd's Register Foundation fund will finance a research programme that supports data-centric engineering.

d/ The HSBC fund will finance a research programme that supports collaboration in economic data science.

e/ The Scottish Enterprise fund will support the expansion of research activities in Scotland.

f/ The Intel Corporations fund will finance data science research and its application.

g/ The GCHQ fund will finance the Turing defence and security research programme.

22/ Financial commitment

The charitable company was committed to making the following total payments under non-cancellable operating leases as at 31 March 2017:	2017 £	2016 £
Payments due:		
Within one year	689,617	0
Between 2 and 5 years	2,298,723	0
	2,988,340	**0**

The Alan Turing Institute
Notes to the financial statements
For the year ended 31 March 2017

23/ Related parties

During the year the following transactions were undertaken with the members of the charity.

Other than the amounts noted below, no amounts were due or payable at the year end.

The re-charged expenditure relates to staff time, administration and workshop costs.

The Group has taken exemption under paragraph 33.1A of FRS 102 from disclosing transactions with wholly owned subsidiaries consolidated in these financial statements.

	Grant expenditure awarded £	Grant income received £	Re-charged expenditure £	Year end debtor (creditor) £
Engineering and Physical Sciences Research Council	0	9,250,000	71,363	0
University of Cambridge	1,254,081	1,000,000	58,305	(27,224)
University of Edinburgh	1,145,575	1,000,000	94,484	(4,838)
University of Oxford	1,574,471	1,000,000	125,413	239,470
University College London	1,429,305	1,000,000	415,584	45
University of Warwick	1,198,596	1,000,000	102,301	0
	6,602,028	**14,250,000**	**867,450**	**207,453**

24/ Company status

The charity is a company limited by guarantee. In the event of the charity being wound up, the liability in respect of the guarantee is limited to £1 per member of the charity.

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