



BIG DATA RESEARCH EXHIBITION

Tuesday 15th July 2014, 4.00 – 5.45pm

Members' Dining Room, House of Commons

The Parliamentary Office of Science and Technology and Research Councils UK (RCUK) are hosting an interactive exhibition on the latest developments in UK Big Data research.

There has been an unprecedented increase in the quantity and variety of data generated, with an estimated 90% of all the world's data being produced in the past two years. This has led to the term 'Big Data', which typically describes large or complex datasets that cannot be readily stored and analysed using conventional computers and databases. RCUK is investing £189 million in unlocking the potential of Big Data, providing new insights ranging from health and food security, to the development and evaluation of Government policy.

This reception will give attendees the opportunity to explore exhibits on major UK Big Data projects and to speak to leading researchers about their work, while enjoying afternoon tea.

Programme

4.00pm **Chair's Welcome**

Adam Afriyie MP, Chair of the Parliamentary Office of Science and Technology

Presentations

Francis Maude MP, Minister for the Cabinet Office

Professor Rick Rylance, Chief Executive, Arts and Humanities Research Council and Chair of Research Councils UK

4.20pm **Exhibition accompanied by Pugin Afternoon Tea**

5.45pm **Close**

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Exhibitors



Arts and Humanities Research Council

Big Data - a community asset and understanding our history

The 'Our Data, Ourselves' project is democratizing Big Data, turning it into a community asset for everyday life, and developing tools to enable important new arts and humanities research. Big Data can also transform our understanding of our world. Old Bailey Online is a fully searchable, digitised collection of all surviving editions of the Old Bailey Proceedings from 1674 to 1913, which has transformed our understanding of a crucial period of modern British history. These data are also being re-used in important and fascinating ways – for example by The Digital Panopticon project, which is bringing together genealogical, biometric and criminal justice datasets to explore the impact of the different types of penal punishments on the lives of 66,000 people sentenced at The Old Bailey between 1780 and 1925.

Biology and Biotechnology Research Council

Big Data – analysing the Wheat Genome impact on global food security

Wheat provides 20% of all calories consumed by people worldwide. With the world's population set to reach nine billion by 2050, wheat production will have a crucial bearing on food security and the global economy in the future. Revolutionary sequencing technologies and data analysis approaches are ensuring UK bioscience is leading research to identify the next generation of important traits that will underpin the ability of agriculture to respond by increasing wheat yields sustainably, in the UK and beyond. Researchers from The Genome Analysis Centre will be on hand to discuss their cutting-edge Big Data work and the implications for wheat research and global food security.

Engineering and Physical Sciences Research Council

A sensor platform for healthcare in a residential environment (SPHERE)

SPHERE is developing a system of sensors which will monitor the health and wellbeing of people at home. The system could, for example, spot overnight or mini strokes by noticing small changes in behaviour or expression. It could also be used at home as an early warning system to prevent long-term health conditions such as heart disease, dementia or diabetes as well as depression and obesity. A researcher from the project will explain how SPHERE is working with user groups within the community to ensure that these sensor technologies are deployed in an acceptable way in people's homes, including an Aardman Animations film. This Interdisciplinary Research Collaboration is led by the University of Bristol, together with the Universities of Southampton and Reading, Toshiba, IBM, Bristol City Council, Bristol Health Partners and Knowle West Media Centre.

Economic and Social Research Council

Big Data to evaluate government policy

Data routinely collected by government departments and agencies – known as administrative data – is incredibly useful for economic and social research and can have a real impact on how governments develop and evaluate policies. The Economic and Social Research Council (ESRC) will be showcasing its Administrative Data Research Network (ADRN) that will enable researchers to access administrative data for research to tackle a wide range of social, economic, environmental and health issues. Along with a video introducing Big Data, three ESRC experts will be on hand to introduce the ADRN and Business and Local Government Data Research Centres and explain how they will provide evidence to inform research, and policy development, implementation and evaluation.

Medical Research Council

Big Data - finding the causes of ill health

For more than 50 years, the Medical Research Council (MRC) has funded a diverse range of studies that collect health and lifestyle data throughout participants' lives. These population cohort studies aim to understand the role of biological, environmental and lifestyle factors that shape human health. They include the world's longest-running birth cohort and the largest longitudinal study of women's health. MRC-funded cohorts have made significant contributions to public health policy and led to changes in clinical practice, such as identifying the connection between smoking and lung cancer, and making the link between childhood and health later in life. More than 2.2 million people in the UK participate in cohort studies, and scientists will explain how these important studies benefit the UK's health and wellbeing.

Natural Environment Research Council

Natural hazard risk assessment - insurance data

Around half of the world's \$200 billion annual global reinsurance premiums are spent on protection against natural hazards, with tropical cyclones representing the single largest cause of natural catastrophe risk. The challenge is to identify the relevant hazards within large datasets, which is done using algorithms. For example, climate and weather simulations give valuable information on cyclone formation and motion, with the highest resolution climate models agreeing well with observations. The study of cyclones and storms in these models involves the analysis of Big Data, and can inform decision making, and pricing of risk products in the reinsurance sector. Exploiting these high resolution data sets is made possible with JASMIN; a super-data-cluster providing high-performance, high-volume, data analysis and storage facilities, funded by NERC and deployed by the STFC Rutherford Appleton Laboratory.

Science and Technology Facilities Council

Enabling UK business to be at the forefront of Big Data industries

STFC has always been at the forefront of computer technology including the latest trail-blazing architecture, three times more energy efficient than standard computers, used for both academic and industrial applications. We are providing a real-time pulsar star detection application for the Square Kilometre Array, the world's most powerful radio telescope containing thousands of antennas. Once operational, the telescope will collect enough data in a single day to fill 15 million 64 GB iPods, which would take nearly 2 million years to play back. Development of techniques to transport and process these vast amounts of data will find application in many other areas, enabling UK business to be at the forefront of Big Data industries in the future. These range from meteorology and managing financial markets, to producing a new generation of high speed networks, data analysis software and efficient power sources.



Pioneering research and skills





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