

## Results of competition:

### Data exploration - creating new insight and value - Collaborative R&D

Total available funding for this competition was £7m from the Arts & Humanities Research Council, the Biotechnology and Biological Sciences Research Council, the Defence Science and Technology Laboratory, the Economic and Social Research Council, the Engineering and Physical Sciences Research Council, the Natural Environment Research Council and the Technology Strategy Board.

**Note: These proposals have succeeded in the assessment stage of this competition. All are subject to grant offer and conditions being met.**

Participant organisation names	Project title	Proposed project costs	Proposed project grant
<b>Audio Analytic Limited (lead)</b> Queen Mary, University of London	Audio Data Exploration	£264,128	£189,357
<b>Project description - provided by applicants</b>			
<p>The “Audio Data Exploration” project is a collaboration between Audio Analytic Ltd. and the Centre for Digital Music &amp; Centre for Intelligent Sensing at Queen Mary University of London (QMUL). Compared to mathematical, textual or visual data, audio data has remained largely underexploited and undervalued, and thus represents a significant opportunity to grow innovation and to develop new markets.</p> <p>While Automatic Speech Recognition and Music Analysis have seen a fairly recent boom in their industrial value, Automatic Environmental Sound Recognition needs new R&amp;D to solve broader sound recognition challenges. Such advanced audio data analysis and modelling techniques can indeed create value across a variety of applicative domains.</p> <p>While proven markets include Professional Security and Home Security, a range of novel markets can be developed in many domains including Multimedia Database Indexing, Environmental and Industrial Monitoring, the Internet of Things and more.</p> <p>The project will gather the newly developed audio analysis and modelling techniques into a demonstrator instantiated as a “Personal Audio Space Indexer”.</p>			

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<b>BAFTA (British Acad. of Film and Television Arts (lead))</b> Media Research Partners t/a The Media Institute	VideoClarity: High-speed meaning extraction in large video datasets	£459,088	£260,554
<b>Project description - provided by applicants</b>			
<p>Video content is a primary business asset of the thriving UK and global creative industries, and represents a substantial proportion of today's "big data" deluge.</p> <p>Beyond the creative industries, video comprises a major communications tool, occupying 60% of today's Internet traffic. However, with millions of users creating, processing and (not always legally) uploading exabytes of video content each week, video remains the least-manageable element of the big data ecosystem. This is because all current methods for high-level semantic description in video require either manual annotating or compute-intensive video decoding &amp; processing.</p> <p>Delivering cost-effective and meaningful video search has therefore proved to be an insurmountable problem. This project takes a novel insight: that a hidden source of coding-related metadata already exists within modern compressed video file containers, and it is sufficient for automated tagging and visualization. Tapping into this "hint" metadata enables video streams to be analyzed with 3~6 orders increase in speed and decrease in cost, enabling exabyte-scale video datasets to be newly-discovered and analysed over commodity hardware.</p>			

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<b>Bet Buddy Limited (lead)</b> City University	Advancing Consumer Protection Through Machine Learning: Reducing Harm in Gambling	£395,246	£279,003
<b>Project description - provided by applicants</b>			
<p>Bet Buddy, a London-based gaming analytics start-up, and City University London are collaborating to use Big Data to develop the world's most advanced consumer protection solutions to support the global \$500bn gaming (i.e. gambling) industry. Regulation and consumer protection are major factors shaping the UK and global gaming industries, in that licensed operators need to show a duty of care to protect the vulnerable from the harmful effects of gaming.</p> <p>Through addictions research and applied science, machine learning techniques and software engineering, Bet Buddy and City University London are helping consumers to make more informed choices about their health and wealth and protecting vulnerable people from harm.</p> <p>The project builds on the successful solution that Bet Buddy has implemented for the government of Ontario in Canada.</p>			

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<b>CambridgeIP (lead)</b> The Institution of Engineering and Technology University of Essex	Innovative tools to enable exploration of complex and specialised data sets	£365,572	£262,116
<b>Project description - provided by applicants</b>			
<p>In the age of Big Data, knowledge workers - individuals, companies and organisations whose primary focus is knowledge and information extraction and usage - find it increasingly difficult to search for and identify accurate and relevant information.</p> <p>In the domain of scientific literature and IP search, where the underlying corpora are growing at a huge rate, this is a daunting task and human expertise and involvement remain critical.</p> <p>This project aims to develop a suite of tools that will enable users to search for and identify relevant information within a corpus more efficiently and effectively. The methods developed will deploy new search paradigms together with semantic-based analysis, domain and lexical linguistic ontologies in order to understand the user needs based on the underlying domain of application and subsequently enable accurate information retrieval through enhanced search and cross-reference of information.</p> <p>The project aims to offer tools for sharing of search strategies which will be identified by observing and understanding patterns in users' search behaviours.</p>			

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<b>Customer Service IP Limited (lead)</b> Logic Programming Associates Limited	IMPACC - IMProved Analysis of Contact Centre performance for non-technical users	£276,267	£165,760
<b>Project description - provided by applicants</b>			
<p>The data gathered in modern industrial workplaces is often inaccessible to non-technical people who work 'on the shop floor', yet these are the people making important decisions every day that impact on companies' bottom lines.</p> <p>Customer Service IP, a performance analytics specialist in the contact centre industry has partnered with Logic Programming Associates, a specialist in developing expert system technology, to tackle this problem by making management reports easier to use for non-technical people.</p> <p>This is achieved by automatically analysing management information, and then only displaying the most important facts, so that opportunities are not swamped by too many numbers, using a novel reporting methodology to help non-technical people to read and digest information.</p>			

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<b>Geospatial Insight Ltd (lead)</b> Cranfield University Food Investments Limited Kings College London Satellite Applications Catapult	Commodity Market Transparency Through Data Exploration	£484,897	£347,744
<b>Project description - provided by applicants</b>			
<p>This project will explore a range of datasets to create new insight and value. The collaborative research and development team will produce a new high value product for the food manufacturing and financial services industry. This new product is needed by these industries to enable lower risk decision making and to help secure lower futures prices when trading soft commodities.</p> <p>The project will explore datasets from wheat futures, the high volume of wheat market news reports and real-world satellite data. From this, the product will be developed, enabling users to trade with greater market transparency, enabling surety of raw material cost for food manufacture and higher returns for traders.</p> <p>The product is needed now to help address food security and to help commodity traders meet new legislation. It is further driven by the growth in higher risk, 'opaque' alternative asset classes, such as investments in agricultural projects in frontier and emerging markets. It is enabled by the increase and forecast growth in suitable satellite data.</p>			

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<b>Growing Interactive Limited (lead)</b> University Of York	Crowd-Sourced Prediction of Plant Pest and Disease Occurrence using Mobile Apps	£284,060	£204,321
<b>Project description - provided by applicants</b>			
<p>Growing Interactive produces the leading online software and apps that gardeners and small-scale farms use to plan the edible crops they grow and achieve increased levels of success. Over ¼ million gardeners and farmers have used our software and apps. We hold a wealth of location-based information on which crops, varieties and quantities gardeners are growing in their location and we are extending the recording to include dated observations of pests and diseases on crops.</p> <p>This project will statistically analyse the crowd-sourced pest and disease observations recorded in our apps in conjunction with meteorological information to develop much more accurate predictive systems along with innovative visualisations to help predict pest and disease emergence on crops.</p> <p>Meteorological information and weather forecasts can then be used to provide significantly improved pest prediction for growers for the current growing season specific to their location. These will form the basis of new services for our customers, the horticultural industry and agriculture, helping growers to reduce losses due to plant pests and diseases.</p>			

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<b>International Paint Limited (lead)</b> PHP Genie Limited South Coast GIS Limited	ELM - Marine vessel efficiency insight through data rich visualisation and modelling	£319,724	£171,633
<b>Project description - provided by applicants</b>			
<p>The shipping industry is essential to global trade and thus the economy of the UK, yet it is also a significant producer of greenhouse gases. Therefore it is essential to optimise the efficiency of individual ships to reduce their impact on global climate change. One way to do this is ensure that their hulls are smooth and clean by using the best possible fouling control coating.</p> <p>This project aims to connect a company with a vast amount of data and traditional industry expertise, International Paint Ltd. with three high-tech companies, South Coast GIS, PHP Genie , and Ecoteknica, who can process/sort vast amounts of data into a useable formats, undertake advanced data analysis and predictive modelling and produce innovative intelligent tools to visualise ship efficiency and in doing so enable the application of bespoke fouling control coatings to each and every ship, saving owners money and reducing greenhouse gas emissions.</p>			

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<b>Jellybooks Ltd (lead)</b> University College London	Data Driven Discoverability in Publishing for Segmenting Audiences and Targeted Reader Campaigns ("Project Rambutan")	£407,666	£286,812
<b>Project description - provided by applicants</b>			
<p>In the past few years, book publishing has been transformed by the rapid growth of online book sales, the emergence of ebooks and eReaders, such as the Kindle and iPad, and the rise of self-publishing with mega successes such as Hugh Howey's "Wool" and E.L. James "50 Shades of Grey". Readers have benefited immensely, but the changes are having a big impact on authors and publishing.</p> <p>Project Rambutan by Jellybooks and the computer science department at University College London is a pioneering initiative in applying new approaches in machine learning to book marketing and for authors and publishers to better understand, target and interact with readers and audiences.</p> <p>Project Rambutan promises to give authors and publishers the tools to make data-based decisions. The consortium expects that applying data-driven approaches to publishing could lead to far greater efficiency and productivity in the UK book industry and help it compete better in a global marketplace dominated by Amazon, Apple, Google and others. Today many authors and publishers still view data-based decision making to be as exotic as a Rambutan (a delicious fruit from Southeast Asia).</p>			

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<p><b>K2L Ltd (lead)</b> Edinburgh Napier University</p>	<p>Protalk 2 - Speech data exploration for creating new insight into the diagnosis and learning experiences required to remediate problems that non-native speakers have with English prosody.</p>	<p>£248,698</p>	<p>£178,802</p>
<p><b>Project description - provided by applicants</b></p>			
<p>Protalk2 gives learners of English the insight and information they need to improve their pronunciation - not just for individual words but for phrases and sentences. Protalk2 does not just tell learners when they are right or wrong: it provides instant feedback in real time on the four components learners need to improve:</p> <ol style="list-style-type: none"> <li>1. Phonemic accuracy</li> <li>2. Stress patterns</li> <li>3. Intonation patterns</li> <li>4. Syllable length.</li> </ol> <p>Available as a mobile app, it uses simple but effective visualisation, animation and gaming techniques to engage and motivate the learner. Protalk2 will be available for specific languages e.g. Spanish and Mandarin to enable speakers of those languages to focus on the issues of most importance to them.</p>			

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<b>Marketmine Limited (lead)</b> University of Southampton	DADO - Data Analytics Driven by Ontologies	£476,873	£321,439
<b>Project description - provided by applicants</b>			
<p>DADO will bring advanced artificial intelligence to Q-mine, a pioneering online educational assessment platform. For the first time, learners, teachers and publishers will be able to visualise and interpret educational data at both large scale and fine detail. Using visual interaction tools, they will be able to explore their own educational attainment in real time, and compare it to thousands of others, even when those others have not taken the same tests.</p> <p>The DADO engine will power adaptive tests, course and lesson planning, progress monitoring and a host of other features that will have a significant impact on the education and skills market.</p>			

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<b>Microlise Group Ltd (lead)</b> University of Nottingham	VEDAT (Value Enhancement for Data from Assets & Transactions)	£499,263	£359,318
<b>Project description - provided by applicants</b>			
<p>This proposal aims to "provide tools that enable intelligent, predictive modelling capabilities, including the integration and analysis of heterogeneous data types". Uniquely we will seek to bring together disparate data that is currently unconnected to create a platform allowing not only high value benefits to be derived by isolated data community members but also collectively by the disparate data owner communities as a whole.</p> <p>The approaches planned for Data Exploration during this project, will culminate in novel approaches and techniques, and tools with applications across other challenged sectors that suffer "Data Silo" blackholes, across financial, engineering, biotech/informatics, and other complex disparate data environments.</p>			

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<b>MORI Limited, t/a Ipsos MORI (lead)</b> CASM Consulting LLP Demos; University of Sussex	In the Hands of the Analyst: Unlocking the value of social media for professional market research	£298,659	£200,022
<b>Project description - provided by applicants</b>			
<p>This project is a collaboration between Ipsos MORI, Demos, University of Sussex and CASM Consulting LLP.</p> <p>The objective of this project is to unlock the full attitudinal value of the new datasets created by the explosion of social media use. To do this, the project will build the first integrated system – both technology and method – that allows these new datasets to be analyzed in a way that reflects the values and principles of conventional attitudinal research.</p> <p>This will allow very large amounts of new data to be credibly analyzed to produce trustworthy insight capable of informing important decisions across both the private and public sector. The project aims to apply this new capability as the first ‘full service’ solution that connects social media with other social data, social media research with social science, and commercialize it as a range of market-differentiated products representing a transformative step forwards in the sector.</p>			

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NPL Management Limited (lead) Numerical Algorithms Group Limited	Exploratory Data Analysis Tools for Chemical Microscopy	£499,698	£269,833
<b>Project description - provided by applicants</b>			
<p>Spectral microscopy is a rapidly growing field critical with applications in pharmaceutical development, biomedical diagnostics and forensics.</p> <p>This project aims to develop reliable, validated, high speed data analysis tools for exploration and analysis of multi-mode spectral microscopy data. Spectral microscopy is used for label-free detection of molecular compounds within the micro and nano-scale structures of cells, tissues and materials. It encompasses a wide range of techniques such as Raman Microscopy and Mass Spectrometry Imaging and is of increasing importance in biomedical research.</p> <p>Applications are found in pharmaceutical development, disease detection, biomaterials design, forensic analysis, and characterization of nano-structured materials. Analysis of the very large hyperspectral image stacks acquired by these instruments is computationally challenging. Accurate interpretation often depends on combining multiple complementary imaging modes.</p> <p>The tools developed in the project will allow non-ICT experts to combine multiple types of imaging data and efficiently explore these data sets to create novel insights.</p>			

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Orbitil Limited (lead) WARWICK BUSINESS SCHOOL	quantOrb	£392,413	£271,005
<b>Project description - provided by applicants</b>			
<p>The project applies the learning and knowledge from complex, high-velocity financial markets to the difficult physical world of fabless semiconductor engineering. The goal is to assist executive teams to make better project selections by underpinning qualitative understanding with proven quantitative techniques based on the science of data held both within and outside their organisations.</p>			

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<b>Placr Limited (lead)</b> City University Digital MR RailEasy	FareViz	£472,572	£320,184
<b>Project description - provided by applicants</b>			
<p>The Fareviz project aims to build innovative new digital services around a data warehouse of newly opened rail fares from RSP (part of the Association of Train operating companies).</p> <p>The project will offer analytics and visualisations around the 1.25bn possible rail fares as defined over permitted routes, with discount options and by different operators. This will enable government, regulators and travellers to benefit from an increased understanding of the highly complex and politically sensitive fares system through a new fares API designed for use by third parties in apps and services. The fare service will offer ticket fulfilment with social media feedback so that we can explore the use of the site to identify further services of interest to users</p>			

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<b>QPC Holdings Limited (lead)</b> Butterfly Projects Limited Daden Limited High Performance Computing Wales Swansea University	Visualising Customer Journeys Through the Call Centre Landscape	£496,090	£334,104
<b>Project description - provided by applicants</b>			
<p>A shift has occurred in the market where Company Boards now recognise that the Contact Centre (Call Centre) is not just a 'cost centre' but a strategic 'profit centre' as the main customer interface to the company where customers are retained, won or lost.</p> <p>Therefore customer experience is now seen as a key differentiator within organisations in order to maximise the customer relationship over the long-term.</p> <p>QPC's MIG solution is world leading, creating unique structured data that tracks every facet of the customer journey and details of their transaction, unlocking new invaluable insights that uncover significant optimisation opportunities in addition to improving customer experience.</p> <p>This industrial research project aims to remove the dependency for an organisation to find specific data analyst skills to identify and uncover the value in the data. This will be achieved through the identification of patterns to drive innovative predictive modelling/analytics/alerting capability. In turn supporting the development of novel 2D and 3D visualisations to enable easy exploration and identification of operational and customer experience issues in a generic manner for different customer needs.</p>			

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<b>Remote Sensing Applications Consultants Limited (lead)</b> University of Portsmouth	Crowdsourcing Landscape Change	£291,923	£200,041
<b>Project description - provided by applicants</b>			
<p>Local authorities such as Hampshire County Council (HCC) have huge archives of aerial photography and satellite image data that contain an abundance of information relating to changes in the landscape. However, because of the volume and complexity of the data and the lack of resources and political will, their value is not being fully realised.</p> <p>Crowdsourcing Landscape Change will develop an innovative crowdsourcing solution for the analysis of such datasets by the general public via an online platform. Guided by the requirements of HCC, RSAC Ltd will apply its expertise in land cover change mapping to the adaptation of crowdsourcing technology pioneered by UoP for the development of a pre-commercial service demonstrator aimed at creating new insight from Earth Observation data by mapping relevant landscape changes between image dates. Such a service would be of interest for the improvement of environmental management and protection processes in many local authorities, and the service also has potential as a sustainable business proposition in a range of other markets where large quantities of Earth Observation data are collected and stored.</p>			

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<b>Ridgeway Kite Software Limited (lead)</b> Nvidia Development UK Limited	Incorporating Multiple Realisations into a new HPC Reservoir Simulator	£300,000	£150,000
<b>Project description - provided by applicants</b>			
<p>This project will provide a superior reservoir simulation software program, demonstrating the benefits of a new massively parallel computing architecture, to enable better management of sub-surface reservoirs.</p> <p>The innovation in this project is to bring multiple realisation capability (MR) into a new HPC reservoir simulator. This innovation will empower Reservoir Engineers to be more productive, enabling them to understand the uncertainty in the models as well as offering history matching and forecasting optimisation options.</p> <p>Today's work practices are hampered by the need to have a controlling application, access to simulator licenses, appropriate hardware and limited time. Adding MR capability into the simulator will lead to improved models, capable of better predictions, whilst reducing the total cost of hardware and software ownership.</p> <p>This project brings together leading edge hardware, software development and reservoir engineering experts to provide a step change in capability of the simulation tools to enable engineers to formulate development plans to optimise field production.</p>			

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<b>Sentric Music Limited (lead)</b> Imperial College London	Data Exploration and Predictive Analytics for Music Publishing	£468,853	£328,862
<b>Project description - provided by applicants</b>			
<p>Our project is to create tools for predictive modelling and data visualisation for use in the music publishing industry. These tools and algorithms that will enable predictive modelling based on data drawn from a wide variety of sources, including song registrations, royalty reports, streaming media, social media, and crowdsourced reviews.</p> <p>We plan to use these tools to identify artists (or their individual tracks) that have the potential to achieve widespread popularity, identify instances where royalties may be underreported, and to determine whether an artist's royalty streams are sufficiently stable so as to allow us to advance funds against them.</p> <p>We also plan to deliver the benefits of this project into our users' hands by providing them with predictive analytics tools delivered online and via mobile apps. These tools will provide them with data visualisation capabilities and allow them to query our database in ways that may yield valuable insights regarding their own songs and musical industry careers and help them think strategically about the creation and exploitation of their songs and other musical works.</p>			

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<b>Tata Steel UK Limited (lead)</b> Knowledge Now Limited University of Sheffield	Sustained Process Excellence through Embedding of Analytics and Knowledge Management into Process Chains	£441,118	£287,922
<b>Project description - provided by applicants</b>			
<p>Data is big and getting bigger! Big in the sense of size, i.e. in 'Volume, Variety and Velocity', but also in the anticipated business value to be realised if these data can be harnessed, tamed and made to earn their keep. Realisation of this value is a big challenge however, calling upon scarce skills of the 'data scientist' which are as much routed in psychology and project management as in data analytics. This is especially the case when the end product quality variable of concern is potentially influenced by any contributory cause from several steps in a process chain, where expert knowledge tends to be fragmented.</p> <p>This project aims to produce a comprehensive tool box supporting project design, management and longer term deployment of process chain data analytics, embedding 'through process knowledge' via a collaborative project framework. The objective is to reduce reliance on ICT specialists and support a collaborative approach. The life cycle of this framework will start as a template for project definition and management, but will provide an organic deployable knowledge system, incorporating predictive analytics, to monitor and oversee ongoing production process in the future.</p>			

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<b>Thales UK Limited (lead)</b> High Performance Computing Wales University of Surrey	POLARBEAR - Pattern Of Life ANPR Behaviour Extraction Analysis and Recognition	£499,267	£329,453
<b>Project description - provided by applicants</b>			
<p>The organised nature of some crimes including drug trafficking and terrorism can be difficult to identify. One approach is to identify offenders travelling in 'convoy'. UK police forces have been using ANPR (automatic number plate recognition) data collected by traffic cameras to perform convoy analysis; however, this is typically done manually with prior information of one known vehicle.</p> <p>This project aims to develop a distributed processing system for large-scale ANPR convoy analysis and other criminal behaviours that currently go undetected. Our solution will enable criminal investigations to be more effective, accurate and resource-efficient. By applying automated data mining techniques to ANPR data, our solution will enable criminal investigations to focus on medium and high priority issues such organised crime as opposed to minor traffic infringements, and thus can help to justify the growing use of ANPR to the public at large.</p>			