

# Revealing the value of open data



Hartree Centre  
Science & Technology Facilities Council



The big data analytics capabilities of the Hartree Centre and its partner IBM are enabling Democrata to help construction firms predict the presence of archaeological remains.

## Challenge

Construction and archaeology are both, literally, ground-breaking businesses. But they can come into conflict when building projects unexpectedly hit hidden objects or structures that must be identified, recorded and excavated – resulting in frustrating delays, spiralling costs, expensive overruns and perhaps complete cancellation of a project. Data analytics start-up Democrata came up with an ambitious and appropriately ground-breaking answer: to develop a model that predicted where in the UK ancient remains were likely to be located, based on the swathes of open data about previous finds, settlement patterns and landscape characteristics held by government, universities and organisations such as English Heritage, Ordnance Survey and the Land Registry.

## Solution

Turning concept into reality demanded world-class capabilities in bringing together and analysing big, highly diverse datasets, and in producing an agile but robust model with real commercial potential. After taking part in a competition aiming to stimulate commercial exploitation of open data, Democrata won access to use advanced supercomputing and visualisation capabilities provided by the Hartree Centre and IBM (including IBM's cutting-edge software and BigInsights infrastructure at the centre) to prove their concept. This involved standardising, combining and mining data, digging deep into historic documents for relevant information, and using the data to create sophisticated predictive algorithms. A UK-wide predictive 'layer' was produced comprising 200 million individual points – one for every 50m across the country.

## Benefits

The resulting model is a customisable tool that reveals where construction firms are likely to encounter archaeological disruption, enabling alternative construction sites to be found or disruption to be factored into plans, schedules and budgets. With the average cost of archaeological work relating to major infrastructure projects amounting to 1-3% of expenditure – equivalent to tens of millions of pounds in some cases – the potential benefits in terms of better margins and sharpened competitive edge are substantial. The model could also help archaeologists decide where to conduct excavations, while wider environmental impact assessment processes will benefit from improved ability to predict risk when planning major projects.

*"In the context of our mission to democratise data and make it usable, our ability to harness Hartree's computing platform, plus IBM software and skills, equipped us to achieve proof of concept in the shortest possible time and to produce a prototype we can use to enthuse and inspire people with our vision."*

– Geoff Roberts, CEO, Democrata

## Work with us

We collaborate with industrial clients and research partners on projects that create insights and value using high performance computing, big data analytics, simulation and modelling.

By combining our world-class facilities with access to our specialists and computational scientists, we can enable your organisation to produce better outcomes, products and services more quickly and cost-effectively than through conventional R&D workflows.

With our partners we are developing the next generation of supercomputing architectures and software, combining existing best practice with innovation to deliver faster, cooler and more sustainable solutions capable of meeting the challenges of data intensive computing.

## For more information:

- +44 (0)1925 603708
- hartreecomms@stfc.ac.uk
- @hartreecentre
- /company/stfc-hartree-centre