

Innovation and ethics in public sector data

Perspectives from UKAuthority AI & Data4Good 2022



AI & Data4Good 2022

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1. A framework for opening doors

New doors are opening for the UK public sector in its use of data, with advances in the linking and sharing of datasets, breaking new ground in data science and early progress in the application of artificial intelligence. There is a growing appreciation of the value of data throughout organisations, with people other than the data specialists showing the curiosity to come up with ideas.

But there is also a need for clear guidelines in data protection and a strong ethical framework to underpin the progress: a key element in using data for the public good is doing it in a way that maintains public trust. This can sometimes create difficulties for public sector bodies, and they need to find the right balance in which ambition and ideas can evolve without breaking that trust.

This was an underlying theme to the recent UK Authority AI & Data4Good virtual conference, supported by Alteryx, Agilisys and Hitachi Solutions, which brought together a number of data and AI leaders in the public and third sectors to explain initiatives and discuss key issues.

2. A new landscape of data governance and ethics

The need for new frameworks for data protection and ethics was emphasised by the provocative title of the presentation 'What do we do when AI and data science gets up to no good?' by Dr Susheel Varma, head of AI and

data science at the Information Commissioner's Office. He pointed out that efforts involving the use of personal data fall within the scope of the UK General Data Protection Regulation (GDPR) and Data Protection Act (DPA), and that some important questions have to be asked:

- Have you done a data protection impact assessment?
- Is personal data being used fairly, lawfully and transparently?
- Do people understand how their data is being used?
- How is data being kept secure?

He made the points that prevention of problems is always better than a cure, that the ICO can provide plenty of guidance and toolkits, along with an auditing framework for deployments of AI and a governance accountability framework for its risk areas.

"The key thing to remember is this is not about risk elimination," he said. "We can never be 100% sure, but we can have risk minimisation, mitigation and measures in place to be able to mitigate and revert, with recourse mechanisms for individuals."

It is no surprise that the concerns are often at their most intense around the use of data in health and social care as this often intrudes into the most sensitive areas of people's lives. Dawn Monaghan, interim director of IG policy and ethics at **NHS England**, said this is often seen as a blocker but that it can be overcome through two factors in a deployment. One is privacy by design, which works best through a collaboration between the partners involved rather than a tickbox approach. The other is to

focus on problem solving, risk management and judgement calls, then making this work within the legal framework rather than beginning with a focus on the latter.

She also emphasised three key features to keep in mind when approaching a project: be ready to demonstrate the benefits from the starting point; remember that transparency is always key to success as people need to understand what is being done and why; and understand the pitfalls.

Another NHS perspective came from Brhmie Balam, head of AI research and ethics in the **NHS AI Lab**, who referred to its initiative to produce evidence based policy recommendations and guidance on ethical assurance in health and social care. She pointed out that data in the health service can be difficult to access, processes are not consistent and there are reservations as to how the data is used, and a way of dealing with this is to “have more diverse voices in the room” when working towards the guidance. The team has been running workshops to feed into draft principles on the stewardship of data and is aiming to create a stakeholder network for the long term. The NHS AI Lab has also been involved with the Sciencewise public engagement programme in running workshops on data stewardship models.

There is also a perspective that many people have higher expectations of data ethics than is provided by the law. Jay Saggar, data projects manager at the **London Office for Technology and Innovation (LOTI)**, referred to this as an issue for local government, along with the need for councils to preserve their reputations and prevent poor outcomes in new applications of data.

The organisation is supporting its member boroughs by providing policy and thought leadership on relevant issues, and implementing

a set of recommendations to improve their maturity levels. This is underpinned by 16 recommendations for building data ethics capabilities of which Saggar emphasised three: formalise a strategy or policy; create an ethics flow process for data projects; and invest in data ethics skills training for specialists, organisational leaders and service managers.

“At LOTI we believe data ethics should be an essential part of the design of any data project,” Saggar said.

This prompted a question during the discussion of whether there should be a nationally central source of leadership on data ethics, to which Saggar replied that LOTI would be pleased to see others adopt its model, but that the dynamics vary between sectors. The appropriate approach would more likely be to identify overarching principles for public services but provide the flexibility for them to be adapted to different sectors.

Avon and Somerset Police has also been among the leaders in finding the balance between innovation and data ethics. Its head of performance and insight Jonathan Dowe and Kate Hemstock, principal consultant for data and insights at Agilisys, explained how they have worked together in the development of its strategy and ethical framework.

The force has guard rails for compliance and ethics that include an auditable analytics tool, an ethics committee to set standards, clear product development guidelines, and the application of frameworks such as ALGOCARE (advisory, lawful, granularity, ownership, challengeable, accuracy, responsible, explainable), which is approved by the National Police Chiefs Council.

“It’s a collection of key areas that we need to ask ourselves about internally when working with personal information and doing algorithmic work,” Dowey said.

A key step is that every time Avon and Somerset Police develops a new product using personal information it is subject to a data protection impact assessment, and examined by a scrutiny panel to ensure it is within the ethical guard rails.

Dowey said all this is part of the underlying aim of the force’s approach in using data to produce better outcomes in areas such as risk management, demand management and a range of processes.

3. Further key steps

A handful of other important issues were highlighted for the execution of data projects, all of which are likely to have a value in data science and AI deployments.

Several speakers reiterated the need for an outcomes focused approach that identifies the public good issue then the key data in a project, and works out how best to use it with the legal and ethical frameworks. This should be followed up by ensuring the data can be delivered in a user-friendly way to anybody who needs it. For some projects this may be confined to data scientists or analysts, but for many it will be just as important to make it comprehensible to service teams and interested members of the public. This is achievable in many instances through the use of common tools such as Power BI documents and simple spreadsheets, and the point was made that the most widely used tool in data science is Excel, although the development of dashboards often provides a big step forward in supporting the non-specialists. There is also a

view that low code technology can be a big asset in enabling more people to prepare and analyse data, setting it in a format that works for them.

The argument was made for the use of unique property reference numbers (UPRNs), which can provide a robust linking mechanism for any data initiative in which location is an important factor. As well identifying an addressable location they can support data protection by identifying a household rather than an individual.

It is also important for organisations to pay attention to the constant evolution of data and digital technology, ensuring their understanding keeps pace with changes and that they are looking for the most up-to-date sources of data.

4. Initiatives central and local

The conference included presentations on a number of initiatives, throwing a spotlight on how to make progress at national and local levels, and extending into the third sector.

The efforts of the Spatial Data Unit in the **Department for Levelling Up, Housing and Communities (DLUHC)** to support the levelling up campaign were outlined by chief data officer Tom Smith. He explained the importance of good data at local level to track trajectories and understand the impact of various programmes, which is leading the unit to bring together data on disparities between and within regions on issues such as gross weekly pay, healthy life expectancy, proportions of the population aged under 16 and over 64. It has highlighted how there can be sharp differences between neighbouring areas, that disparities can be inter-generational, and they are large by international

standards. This is all building a picture that goes down to local level, which will be available to analysts in central and local government.

There are also efforts to build the data capability across DLUHC, including building a data group within policy departments. Smith said this involves “getting out of our technical boxes and talk to policy makers, ministers, special advisers and others and thinking how can we help them”.

News of a quartet of proof of concept AI projects to improve the management of risk in the nuclear industry was shared by Carl Dalby, risk specialist for the **Nuclear Decommissioning Authority (NDA)**. These cover: using AI to recognise patterns and exposure to risk; financial risk forecasting with a probabilistic model; the development of a ‘risk assistant’ using AI to deliver a real time analysis of meetings to help better understand risk and optimise resources; and Risk Live, which involves using AI to connect group strategic risks (GSRs) information with global events in real time to deliver a ‘living risk’ picture.

Dalby added that he regards AI as ‘augmented intelligence’ rather than ‘artificial intelligence’, and that it provides the potential for big advances in managing data that can vastly improve risk management.

Efforts by the **National Trust** to keep track of and reduce carbon emissions on its estate were described by the organisation’s business intelligence product manager Oliver Janson. It identified an array of carbon sources in its preservation of the countryside and management of farmland in England, Wales and Northern Ireland. These include food production, waste production, energy consumption, travel by its staff and visitors, its usage of land and enteric fermentation – the release of stomach gas – from livestock farming. All this was used to establish a

baseline for the carbon impact, combine its own data systems with external datasets, and assign different weights of carbon for different areas of its business.

This enabled it to produce an annual report but the organisation wanted to refresh the data regularly so it could respond to emerging concerns or trends, so turned to low code data analytics software company Alteryx, using its Analytics Gallery cloud platform to pull the disparate data sources into a single view with a daily workflow scheduled to produce a wide range of reports without any manual intervention. The workflow incorporates key points where the data is being pulled in, manipulated, joined to other sources then summed up or placed in groups.

“It brings all data sources into a single carbon reporting view, with an output into different formats, the key one being our instance of Tableau Server, to produce carbon reports that multiple users can pull out for insights as they do their jobs,” Janson said.

A perspective from a national charity was provided by Dr Sam Prodger, head of data operations and applications at the **Royal National Lifeboat Institute**, who explained how the launch of a smartphone app in 2017 has supported its volunteers’ use of its pager and enriched its sources of data, and how its development of a data analytics capability has helped it become more clever in its deployment of lifeboats. It is now looking at factors such as response times and the tracking of search and rescue equipment across beaches.

Local government projects have included **Dorset Council’s** development of a predictive analytics model on the local impact of the cost of living crisis. Its principal research analyst Peter Jackson said the model has been built

on Microsoft Power BI and using data from a number of sources. These include Office of Budget Responsibility figures on inflation and wage inflation, data from Experian on household discretionary income – the amount left after taxation and paying for necessities – and those from government on issues such as benefits payments and the energy price cap.

It has produced a dashboard that is being used to estimate how assumptions about the fuel cap will affect households in Dorset. The council is also able to drill into the data at a geographic level to identify the areas that would be worst hit, and to show how these could change over time, and has begun to incorporate sentiment analysis from posts on Twitter to build its understanding of the focus of local concerns.

There has also been impressive progress at the **South London Partnership (SLP)** of five councils in the area, harnessing data from its trial of internet of things (IoT) technology in support of service improvements throughout the boroughs. Bradley Coupar, smart places project manager for Sutton Council, described some of the achievements, emphasising a core point that the real value comes not from pulling together as much data as possible, but asking questions and using the right data to produce desired outcomes.

Hitachi Solutions built the data platform for the programme. It is based on Microsoft Azure and integrates with several data sources, including Breathe London and EMSOL for air quality, Enovation and Tunstall for telecare and health, Vivacity for traffic and iDefigo for visual monitoring and security. SLP is able to triangulate the data for different use cases and provide insights to support interventions and preventative measures and work towards better outcomes.

“It’s a fantastic example of using data to get change at the right time to protect citizens and help our local authority colleagues in delivering services,” Coupar said.

Tom Day, local government client director for Hitachi Solutions, added that it not necessarily a limiting factor to begin with “systems, spreadsheets, sticky plasters in place that are not necessarily joined up”, but that gradually bringing them onto a platform can be a big part of a successful data strategy.

Another council breaking new ground is **Bradford** which, in a partnership with the local university, has developed the Virtual Bradford digital twin. Adrian Walker, the council’s T-projects manager, and Professor Andrew Wilson, the university’ chair in forensic and archaeological sciences, described how it has used a combination of data captured from ground and air along with mobile mapping, terrestrial laser scanning, structured motion photogrammetry – a combination of images from different ground based cameras and airborne drones – data from the Global Navigation Satellite System, spatial data and virtual reality imaging.

The digital twin was given a soft launch in September 2022, initially covering the city centre, with the council beginning to use it for key planning decisions. The combination of airborne and ground data is proving to be important in helping to understand historical architecture in the area covered.

5. The right mindset

The event conveyed plenty of cause for optimism through such projects, but also made clear that they come with a lot of complexities and the teams behind them need to work closely with senior leaders and colleagues in service teams to make a real difference. The ideas behind new uses of data and AI only have value when they lead to better outcomes.

A couple of key points emerged from the event as important in approaching the issues. Tom Smith of DLUHC said there is scope for a lot of people in an organisation to make a contribution, not just the data scientists. Anyone with curiosity, a basic understanding of the data and its gaps, and a grasp of basic tools such as Excel can begin to explore, make connections and share ideas about how to use it in new ways. This can be encouraged by fostering a strong data culture, encouraging as many people as possible to build their data literacy and providing tools that they find easy to use. This can instill the drive for data innovation into the mindset of an organisation.

The other goes back to the need for an ethical approach to preserve public trust, which in turn places innovation on a more solid footing. Several speakers emphasised the issue, with Jonathan Dowe summing it up as a need for “a strong balance between innovation and ambition with the right checks and balances to make sure it is safe, appropriate and proportionate”.

No doubt new technology and sources of data will produce new opportunities and new ethical issues to deal with, but the conference showed there are plenty of people in the public sector with the right mindset to take these on.

6. DAY ONE - Wednesday, 12th October

Wednesday 12th October, 11:00 - 12:45

Helen Olsen Bedford
Publisher
UKAuthority

Dr Susheel Varma
Head of AI & Data Science
ICO

Tom Smith
Chief Data Officer
Department of Levelling Up Housing & Communities

Oliver Janson
Business Intelligence Product Manager
National Trust

Carl Dalby
Risk Specialist,
Nuclear Decommissioning Authority

Peter Jackson
Principal Research Analyst
Dorset Council

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00:00:41: What do we do when AI and Data Science gets up to no good? - Dr Susheel Varma, Head of AI & Data Science, ICO

This session covers a brief overview of data privacy and protection regulatory landscape in the UK, some of our high impact case studies, our practical toolkits and highlight some of the challenges of governing the use potential use of AI & Data4Good ([Download slides](#))

00:12:12: Levelling-up and the Spatial Data Unit - Tom Smith, Chief Data Officer, Department for Levelling Up, Housing and Communities

An overview of the work of the Spatial Data Unit Data and how it supports the Government's levelling up agenda by transforming the way the it gathers, stores and manipulates subnational data so that it underpins transparent and open policy making, and delivery decisions

00:27:58: From Food Miles to Gassy Cows: how Alteryx is used for Carbon Reporting at the National Trust - Oliver Janson, Business Intelligence Product Manager, National Trust

An overview of how Alteryx helps tie together multiple disparate data sources toto provide staff with a dynamic, granular view of carbon emissions ([Download slides](#))

00:39:28: Risk Innovation with AI - Carl Dalby, Risk Specialist, Nuclear Decommissioning Authority

A high level session on how the NDA is innovating with AI in the risk management function ([Download slides](#))

00:59:14: Cost of Living Predictive Data analysis for Dorset - Peter Jackson, Principal Research Analyst, Dorset Council

The session looks at how the council have used bespoke customer insight data for Dorset that details likely discretionary spend by different household groups across the county. This data has been incorporated into a Power BI dashboard with additional economic data to illustrate issues and areas of concern for their senior leadership tam; political leaders and third sector. The dashboard allows them to track the impact of Government decisions, inflation, wage increases and energy announcements over time to deliver a model of how this may affect residents ([Download slides](#))

1:10:35: Q&A and panel discussion - all speakers

7. DAY TWO - Thursday, 13th October

Thursday 13th October, 11:00 - 12:45



Helen Olsen Bedford
Publisher
UKAuthority

Dawn Monaghan
Interim Director of IG Policy, Ethics and Head of Profession, NHSE&I

Jonathan Dowey
Head of Performance and Insight
Avon and Somerset Police

Kate Hemstock
Principal Consultant
Data & Insight, Agilisys

Bradley Coupar
Smart Places Project Manager
Sutton Council

Tom Day
Local Government Client Director
Hitachi Solutions

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00:40: Bridging the Gap - Dawn Monaghan, Interim Director of IG Policy, Ethics and Head of Profession, NHSE

IG Principles are the same no matter what objectives you are trying to achieve, but it is the application of those principles into clear and understandable solutions which will enable the introduction of new ideas and techniques

14:23: Data Ethics: Asking 'should we?' not 'could we?' - Kate Hemstock, Principal Consultant: Data & Insight, Agilisys and Jonathan Dowey, Head of Performance and Insight, Avon and Somerset Police

This session starts by exploring the true meaning of data ethics and how it differs from information governance, and discuss the implications of getting it wrong, using some recent high-profile examples. It will also consider the relevance of data ethics for decisions on service design and delivery. Then we discover how Avon & Somerset Police has become a national leader in the use of data and insight, what data ethics means for the organisation and how it is central to ensuring the right outcomes for the force and its communities. Finally, they share the emerging framework ideas that will empower better ethical decisions, drive transparency across public services and give citizens confidence that data is being used in the right way ([Download slides](#))

45:52: Systems, spreadsheets and sticky plasters - Tom Day, Local Government Client Director, Hitachi Solutions and Bradley Coupar, Smart Places Project Manager, Sutton Council

When it comes to data, Hitachi Solutions has worked with a wide range of public sector's customers in varying areas of use. Never has the appetite been so strong to get data under control, the way it's secured, used, change organisational practices and better support members of the public and businesses. One thing that is common however, is this is a huge challenge to overcome irrespective of sector ([Download slides](#))

1:18:00: Q&A and panel discussion - all speakers

8. DAY THREE - Friday, 14th October

Friday 14th October, 11:00 - 12:45

Helen Olsen Bedford
Publisher
UKAuthority

Adrian Walker
T-Projects Manager
Bradford City Council

Prof. Andrew Wilson
Chair in Forensic & Archaeological Sciences
Bradford University

Dr Sam Prodger
Head of Data Operations and Applications
RNLI

Brhmie Balaram
Head of Research & Ethics
NHS AI Lab

Jay Saggar
Data Projects Manager
LOTI

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00:55: Virtual Bradford: Data4Good - Professor Andrew Wilson, chair in Forensic & Archaeological Sciences, University of Bradford and Adrian Walker, T-Projects Manager, City of Bradford Metropolitan District Council

Prof Andrew Wilson provides an update on Virtual Bradford - free to use virtual model of the city providing accurate levels of detail of the built environment for various priority uses for the council, including urban/ civic planning; traffic management; support to the modelling of air quality, flood risk and noise pollution; contribute to disaster management planning; and to highlight the heritage of the city to enhance education, tourism and in fostering civic pride. Its use is only limited by your imagination! ([Download slides](#))

20:00: Unlocking the Power of Data at the RNLI - Dr Sam Prodger, Head of Data Operations and Applications, RNLI

Sam Prodger touches upon the data journey of the RNLI from days where data was a siloed asset that was not considered to current date, where its one of our key functions to supporting its volunteers and amazing crew to save lives at sea ([Download slides](#))

39:30: Embedding participatory approaches to AI ethics in healthcare - Brhmie Balaram, Head of AI Research & Ethics, NHS AI Lab

Brhmie Balaram discusses the ethics of AI in healthcare and how do we use it that for the public good ([Download slides](#))

56:20: No Data without Data Ethics - Jay Saggar, Programme Manager: Data, Loti

Why if you're using data you should be doing data ethics and if you're not, how you can start to build your capabilities ([Download slides](#))

1:18:10: Q&A and panel discussion - all speakers

11. Event Partners

Agilisys

Accelerating digital technology adoption in policing and criminal justice. With over 20 years of experience, we work in partnership with the public sector including law enforcement and criminal justice to increase efficiency, improve public services and help build trust in the digital era. We help service leaders to identify digital technology that will positively transform their organisation to meet future service demand. By working in partnership, we help organisations navigate complex decisions and safely implement technology to enable strategic outcomes; unlocking the potential of digital to transform the services that improve the lives of our citizens. [Learn more.](#)

Alteryx

Alteryx provides 'Analytics for All'. The Alteryx Analytics Automation Platform delivers no-code & code-friendly, end-to-end automation of analytics, machine learning, and data science processes that accelerate digital transformation. [Learn more](#)

Hitachi Solutions

One of Microsoft's Strategic Gold Partners, Hitachi Solutions has built a strong reputation within Public Sector supporting organisations' delivery of tactical operational projects to large scale transformation programmes and in recognition of this awarded Microsoft's Public Sector Partner of the Year in 2019/2020. Our technical capability and wealth of deep sector knowledge has put us at the front of many ground-breaking projects never more so than during the pandemic where our solutions are used by over 25 organisations, 5,000 users, supporting 5,000,000 residents and businesses across the UK. Our technical consultancy skills and expertise covers, Low code application development, Robotic Process Automation, Case Management Solutions & CRM, Data & Analytics, Financial management systems & HR, Artificial Intelligence and Internet of Things. [Learn more](#)

12. UKAuthority Events

Support from our event partners enables UKAuthority to produce free events for the public sector to share success stories, best practice and experience

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UKAuthority

This briefing note has been researched, written and published by [Mark Say & Helen Olsen Bedford](#), UKAuthority.

UKAuthority champions the use of digital, data and technology (DDaT) by central and local government, police, fire, health and housing, to improve services for the public they serve.

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