

DAFNI CONFERENCE 2025

THE EDGE . SHEFFIELD . 11 SEPTEMBER 2025

BRIDGING THE GAP

BETWEEN ACADEMIA, GOVERNMENT AND INDUSTRY



DAFNI

Data & Analytics Facility
for National Infrastructure



Professor Mathew Williams

Chief Scientific Adviser for Environment, Natural Resources and Agriculture at the Scottish Government

“ Professor Mathew Williams, spoke at a DAFNI Roadshow in Glasgow in autumn 2024 and said,

DAFNI can help us to bring together key datasets and metadata needed for decision making; drill down to capture adaptation resilience; move beyond research Digital Twins to drive Digital Twins that engage with decision makers; empower decision makers to use tools and be confident using them; and connect more broadly to natural resource decision making such as preparing for drought and flood planning with infrastructure adaptations.

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Audience participation is welcomed throughout various points in the programme.

Welcome

Welcome to the DAFNI Conference 2025! I am pleased to welcome you all to this year's conference venue located at the University of Sheffield, an apt location given our recent collaborations with the university, working with Dr Giuliano Punzo on harnessing quasi real-time data for improved transport outcomes and Professor Daniel Coca.

Our theme today is 'Bridging the Gap between Government, Academia and Industry' and it is vitally important that we keep abreast of the latest plans and developments. I am delighted to welcome our keynote speakers, who have a great breadth of expertise across our sub-themes of climate resilience, security and trusted research. Dr Juliet Mian and Sarah Hayes will bring insight and experience from their respective roles as Global Resilience Skills Leader at ARUP and Chair of the Data Sharing Working Group and Independent Consultant.

Our invited speakers are Oliver Tones from the Department for Science, Innovation and Technology will be showcasing research data access pilots, Holger Kessler will be presenting on the journey to NUAR and Paul Hickey from Ofwat and Jonny Wilson from the Environment Agency will be talking about national water resources modelling.

Further to last year's conference theme on 'Building A Secure and Resilient World', we will also be hearing from Dr Richard Kirkham, University of Manchester on SALIENT's Research and Coordination Hub, Rachael Steller and Karina Rodriguez, Climate Change Committee on assessing the resilience of UK

infrastructure and Professor Nicholas Vasilakos, University of East Anglia on insights from our CrossEU project on climate extremes and income equality.

Our DAFNI-DINI (Data Infrastructure for National Infrastructure) showcase earlier this year highlighted the ever-increasing need for Trusted Research Environments and I am very pleased to welcome the members of our Trusted Research panel, Emily Jefferson from Health Data Research, Jason Feehily from the University of Nottingham, David Batho from Jisc, Tash Buckley from Cranfield University and Kathryn Dally from UK Research Integrity Office. Their combined knowledge and expertise will give depth and understanding to what is necessary for us to drive forward and push the DAFNI platform to be the best it can be.

There will also be the opportunity today to learn more about the outcomes of our 'Building and Secure and Resilient World' and Sandpit projects via our poster session, alongside networking and demonstrations.

DAFNI continues to develop and thrive, underpinned by the continuous dedication of our team and their unwavering commitment to computing excellence, in partnership with our wonderful user community. Today reflects the achievements of the past year and the body of research that addresses the increasingly complex scientific challenges that we face today.

I hope you have an enjoyable and informative day.

Brian



**Dr Brian
Matthews**
DAFNI Leader

Dr Brian Matthews has over 30 years of experience in R&D development in computing, with a focus on tools, methods and standards for managing accessing research data from scientific experiments.

He took a leading role in the development of the data management infrastructure that supports the ISIS Neutron and Diamond Light Sources, and has worked extensively on European programmes on data infrastructures.

Brian leads the DAFNI team, developing data and modelling infrastructure to support research into national infrastructure, and is Co-Investigator on projects extending its use including #OpenCLIM and the UK Centre for Greening Finance and Investment initiative.

He is Co-Investigator and Technical Lead on the Physical Sciences Data Infrastructure (PSDI) Service, one of EPSRC's National Research Facilities.

DAFNI Strategy Board



Professor Asaad Faramarzi
University of Birmingham



Professor Liz Varga
University College London



Professor Daniel Coca
Newcastle University



Professor Michael Batty
University College London



Dr Giuliano Punzo
University of Sheffield



Professor Nik Lomax
University of Leeds



Professor Jim Hall
Oxford University



Professor Phil James
Newcastle University



Dr Juan Bicarregui
STFC



Professor Stephen Hallett
University of Cranfield



Professor Julien Harou
University of Manchester



Professor Theo Tryfonas
University of Bristol



DAFNI Team



Dr Brian Matthews
DAFNI Programme Lead



Aaron Larkins
Software Engineer



Akhil Dubakunta
Software Engineer



Akhil Maganti
Scientific Computing Graduate



Alison Oliver
Research Community Manager



Archit Mantry
Project Co-Ordinator



Bethan Perkins
Group DAFNI Lead



Catherine Dhanjal
DAFNI Media Manager



Earl Talavera
Scientific Computing Graduate



Elizabeth Mamtsits
Research Software Engineer



Jack Haydock
Software Developer



Jens Jensen
CReDO Security Architect



Katie Cartmell
Project Delivery Manager



Karen Van Haltren
Data Curation Officer



Kyle Stevenson
User Liaison



Lewis Sampson
Research Software Engineer



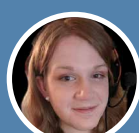
Lizzie Salmon
Scientific Computing Graduate



Lyndsey Harding
Programme Support Officer



Marion Samler
Business Development Manager



Rose Dickinson
Senior Software Engineer / Technical Lead



Saiful Khan
Senior Data Scientist



Sarah Byrne
Senior Software Engineer / Product Owner



Dr Server Kasap
DevOps Engineer



Teagan Zoldoske
Data Curation Officer



Tom Kirkham
Science Lead

The background of the entire page is a solid blue color. Overlaid on this background is a complex, abstract geometric pattern. This pattern consists of numerous thin, light-blue lines that intersect to form a network of various-sized triangles and polygons. Scattered throughout this network are several solid, medium-blue circles of varying sizes. Some circles are positioned at the vertices where multiple lines intersect, while others are placed at isolated points. The overall effect is a modern, technical, and interconnected visual theme.

Conference Chairs



CHAIR (Morning)

Giuliano Punzo

Director of Sheffield Urban Flows Observatory

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Giuliano Punzo obtained an MEng in Aerospace Engineering at the University of Naples before getting his PhD in swarm engineering at the University of Strathclyde, Glasgow. With a core focus on distributed systems, Giuliano moved from aerospace to infrastructure and socio-technical

systems, using modelling techniques in the areas of network science, control theory and game theory. Dr Punzo is a Lecturer at the University of Sheffield, director of the Sheffield Urban Flows Observatory, where he also leads the transport theme, and member of the DAFNI Strategy Board.



CHAIR (Afternoon)

Tom Kirkham

DAFNI Science Lead

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My background is in distributed computing having worked in academic and industry roles since completing my PhD in 2008. My interests are in widening access to advanced computing infrastructure with an interest in data and model security, standardisation and reuse.

I have recently joined the DAFNI team rejoining STFC from Innovate UK where I was the Innovation Lead for Future Telecoms working with Industry and academia to deliver a 70m GBP UKRI investment funded by DSIT. I am keen to use my skills and experience to support the current and future development of the DAFNI community.



Conference Programme

Morning Programme

Chair: Giuliano Punzo, Director of Sheffield Urban Flows Observatory

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- 09:00 — ● **Arrival and breakfast networking**
 - 09:30 — ● **Welcome and introduction**
 - 09:45 — ● **Keynote presentation - Making good choices**
Juliet Mian, Arup
 - 10:15 — ● **DAFNI – Technical update**
Sarah Byrne, DAFNI Senior Software Engineer
 - 10:35 — ● **Networking break**
 - 11:00 — ● **SALIENT: Building a Secure and Resilient World: Research and Coordination Hub**
Dr Richard Kirkham, University of Manchester
 - 11:20 — ● **Assessing the resilience of infrastructure in the UK**
Rachael Steller and Karina Rodriguez Villafuerte, Climate Change Committee
 - 11:40 — ● **Climate Extremes and Income Inequality: First Glimpses of Econometric Evidence and Policy Insights from the CROSSEU Project**
Nicholas Vasilakos, University of East Anglia
 - 12:00 — ● **Networking lunch, poster session and demonstrations**

Afternoon Programme

Chair: Tom Kirkham, DAFNI Science Lead, STFC

- 13:30** — **Keynote presentation - Do it once and share it many times**
Sarah Hayes, Chair Data Sharing Working Group,
Independent Consultant
- 14:00** — **Learning to Fly: Research Data Access Pilots**
Oliver (Olly) Tones, Department for Science, Innovation
and Technology
- 14:20** — **DINI Project results and recommendations**
Catherine Jones and Elizabeth Newbold
- 14:40** — **Networking break**
- 15:05** — **Trusted Research Panel**
David Batho, JISC
Tash Buckley, Cranfield University
Kathryn Dally, UK Research Integrity Office (UKRIO)
Emily Jefferson, CTO Health Data Research UK, and Interim Director of DARE UK
Jason Feehily, University of Nottingham
- 15.55** — **From hackathon to legislation – the journey of NUAR**
Holger Kessler, AtkinsRéalis
- 16.15** — **National Water Resources Quality Modelling: From research to delivery**
Jonny Wilson, Environment Agency
- 16.35** — **Conference closing remarks**
Tom Kirkham, Science Lead, DAFNI
- 16.45** — **Close of Conference**



Keynote Speakers



Dr Juliet Mian

Director of Arup's Climate Services and Sustainability



Making good choices

This keynote will invite the audience to reflect on 'choices' as we plan, deliver, manage and operate the UK's infrastructure assets and networks. Safe, sustainable and resilient infrastructure is critical to enabling growth, enhancing wellbeing, and protecting lives and livelihoods. As we strive to make the best decisions for the future, we come up hard against the realities

of budget constrained, deep uncertainties and the knowledge that past choices have had permanent, significant impacts on our planet, from climate change to species extinction. If 'do nothing' is not an option, how can academics, engineers, decision-makers and communities work together towards collective positive future outcomes?

Dr Juliet Mian

Juliet is an Arup Fellow, a Director of Arup's Climate Services and Sustainability portfolio and global leader of Resilience skills. She specialises in assessment and enhancement of the resilience of infrastructure systems to climate change and other shocks and stresses. She brings over 25 years' experience on a broad range of infrastructure projects both in the UK and internationally to helping clients on their resilience journeys – from understanding risk, to delivering adaptation actions ranging from policy updates to major capital projects.

She is Technical Director for a major Climate Adaptation Plan for a Middle East transportation owner and operator, and has been the Environment Agency Fens 2100+, leading an innovative system level approach towards adaptation decision making in a complex multi-stakeholder landscape. She was Director for the National Grid Climate Change Risk Assessment. She has developed leading reports including the Network Rail Weather Resilience and Climate Change Analysis. Internally at Arup, Juliet is leading their 'Future Climates' initiative to ensure that climate change is accounted for in all projects not only those that have a resilience and adaptation lens.



Dr Sarah Hayes

Chair Data Sharing Working Group,
Independent Consultant

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Do it once and share it many times

This is the motto for the Digital Twin Hub Data Sharing Working Group. This Group consists of representatives across industry, academia and government and meets weekly to discuss challenges and solutions to sharing data across sectors. This keynote will cover how academia and industry are

working together to share learnings and to progress the development of data sharing infrastructure to kickstart economic growth and to support the path to clean power. Find out how we can collaborate more to share data in a safe and secure way to improve the efficiency and resilience of infrastructure.

Dr Sarah Hayes

Sarah is Chair Data Sharing Working Group, Independent Consultant. She is a data and digitalisation expert and has worked across energy, ICT, water and transport sectors over the last 25 years. She was the lead author of Data for the public good, a report about the need to share infrastructure data, which was published by the UK's National Infrastructure Commission (NIC) in December 2017.

Sarah works as an independent consultant and has been involved in CReDo, the Climate Resilience Demonstrator project from its launch. Sarah chairs a weekly Data Sharing Working Group, comprising thought leaders and practitioners across the data sharing space, who discuss different data sharing initiatives and the requirements to advance the development of data sharing infrastructure.

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Invited Speakers (morning)



Dr Richard Kirkham,

Principal investigator on Building
a Secure And Resilient World,
University of Manchester

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SALIENT

Building a Secure And Resilient World: Research and Coordination Hub

Led by Dr Richard Kirkham from the Thomas Ashton Institute for Risk and Regulatory Research, SALIENT is a research hub dedicated to enhancing the UK's societal and economic resilience. It employs a human-centred systems-thinking approach to strengthen national resilience. The hub unites diverse stakeholders and organises funding calls

to address various challenges, ensuring a secure future for the UK. By integrating diverse research disciplines, SALIENT develops innovative solutions for contemporary security issues, representing a significant step towards safeguarding the nation's stability and prosperity.

Professor Richard Kirkham

Richard is the Principal investigator on Building a Secure And Resilient World: Research and Coordination Hub (SALIENT), a Reader in Civil Engineering at UoM, Deputy Director of the Thomas Ashton Institute for Risk and Regulatory Research, and member of the senior leadership team in the Manchester Urban Institute. Richard's research on government major project delivery has attracted

funding from ESRC and he provides expert advice to government on aspects of risk management in the context of major projects. He is also leading the Cabinet Office Science and Engineering Network workstream on 'knowledge transfer' having successfully completed an ESRC funded secondment into the Cabinet Office in 2016.



Rachael Steller,
Climate Change
Committee

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**Karina Rodriguez
Villafuerte,**
Climate Change
Committee

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Assessing the resilience of infrastructure in the UK

Rachael and Karina will present the findings regarding infrastructure in the CCC's latest Adaptation Progress Report, and invite attendees to share their views

regarding the upcoming Fourth Climate Change Risk Assessment in an interactive session.

Rachael Steller

Rachael is the Resilient Infrastructure Lead at the Climate Change Committee (CCC). She leads the team's analysis of the energy, ICT, water, transport, and waste sectors for Adaptation Progress Reports and the Fourth Climate Change Risk Assessment

Karina Rodriguez Villafuerte

Karina Rodriguez is a Resilient Infrastructure Analyst at the Climate Change Committee (CCC). She supports the team's analysis of the energy and ICT sectors for the Fourth Climate Change Risk Assessment.



Professor Nicholas Vasilakos,
University of East Anglia

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CROSSEU

Climate Extremes and Income Inequality: First Glimpses of Econometric Evidence and Policy Insights from the CROSSEU Project

This talk introduces the Horizon Europe CROSSEU project, which investigates the socio-economic impacts of climate change across sectors and regions. Drawing on new findings from Vasilakos et al. (2025), a CROSSEU working paper that uses World Bank economic data for 145 countries and high-resolution climate data from Tyndall UEA, the talk explores the impact of different types of extreme weather events on within-country

income distribution and inequality. By modelling the interaction between the frequency and intensity of such events (including heatwaves, coldwaves, icing days, hot days, and others), we find consistently regressive impacts on income distribution. The results underscore the need for climate adaptation policies that also address deep-rooted social and economic inequalities

Professor Nicholas Vasilakos

Professor Nicholas Vasilakos is a Professor of Sustainable Business Economics and Public Policy at the University of East Anglia. His research explores the nexus of social justice, net zero and sustainable development. His work has been cited by major governmental and intergovernmental organisations, including the US Treasury, the World Bank, the United Nations, and the OECD. Nicholas has published extensively in leading economics and policy journals and was awarded the 2012 Campbell-Watkins Energy Journal Best Paper Award by the International Association of Energy

Economics. Over his career, Nicholas has secured more than €20 million in research funding, with approximately half of it raised in the last ten years as both Principal Investigator and Co-Investigator. His current research on climate impacts is supported by the European Commission through CROSSEU (and SECLI-FIRM before it). Beyond academia, Nicholas has extensive experience collaborating with industry and government bodies to support evidence-based strategies and drive long-term sustainability initiatives at the regional and national levels.



Trusted Research Panel (afternoon)



David Batho

Director of Security
Jisc

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David is Director of Security at Jisc, responsible for protecting the education sector from cyber-attacks. Involved in a substantial number of major cyber incidents in the sector over recent years, David is passionate about educating and improving the sector at all levels. With experience as a penetration tester and head of IT for several years in the education sector, David believes that cyber security is everyone's responsibility, and all have a role to play in protecting their organisations.



Tash Buckley,
Lecturer
Cranfield University

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Tash Buckley is a Lecturer at Cranfield University and a former Research Analyst at the Royal United Services Institute. Her research areas include trusted research and disruptive and emerging technologies at the intersection of national security and policy. Tash's PhD research at Royal Holloway University of London, focuses on the transition from cyber security to cyber power within strategy and policy in the UK.



Kathryn Dally,
Director of Programmes
UK Research Integrity Office (UKRIO)

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Kathryn Dally has recently joined the UK Research Integrity Office as Director of Programmes. Her role is focused on coordinating and delivering UKRIO's growing portfolio of projects and initiatives, in collaboration with key stakeholders. Prior to this, for many years she worked at the University of Oxford as Research Integrity and Policy lead, and Head of the Research Ethics and Integrity Team, overseeing the University's research ethics committees, the development of integrity-related policy and acting as the University's principal research integrity adviser. She has been a member of various national and international networks (such as the Russell Group Research Integrity Forum and the League of European Research Universities' Research Integrity Policy Group).



Jason Feehily

Trusted Research team

University of Nottingham

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Jason is Head of the Trusted Research team at the University of Nottingham. He has responsibility for the implementation and management of the Trusted Research guidance from NPSA and UKRI at the University. Trusted Research checks are conducted on all new international research and knowledge exchange projects. Strategic projects, which include specific technology themes and infrastructure development, are also reviewed by the team.



Emily Jefferson

Chief Technology Officer

Health Data Research UK

and Interim Director of DARE UK

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Professor Emily Jefferson became the Chief Technology Officer (CTO) of Health Data Research in November 2022. She leads on the development and delivery of technology services to enable the provision of consistent and meaningful research access to health data, e.g. the Health Data Research Gateway. Emily has also been Interim Director of DARE UK, since January 2024.



Invited Speakers (afternoon)



Oliver Tones,

Head of Data Sharing and Technology,
Department for Science, Innovation and Technology

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DSIT

Learning to Fly: Research Data Access Pilots

Olly will present and discuss the findings from the UKRI and DSIT “Research Data Cloud” pilots which ran between 2023 and March this year. Long before talk of a National Data Library surfaced, UKRI and DSIT worked together to tackle some of the known barriers around creating and sharing data across the research ecosystem. In partnership with the UKRI

Digital Research Infrastructure programme, funding was awarded to 4 pilots each of which focused on an aspect of breaking down silos, bringing together discipline adjacent data, improving adoption of the FAIR principles, and standardising approaches to accessing sensitive data.

Oliver (Olly) Tones

Oliver Tones is Head of Data Sharing and Technology in the Department for Science, Innovation and Technology, where he leads policy teams on Data Licensing and Valuation and Researcher Access to Data. An experienced civil servant, his focus has always been on improving public services whether through Digital Trade, Frontier Technologies, or Data

Access policy. He has a keen interest in ensuring public services deliver effectively for citizens and this zeal is now focused on improving public sector data access for the benefit of the economy and society, harnessing the opportunities which increased data access can bring to the UK.



Catherine Jones,
Energy Data
Centre Lead

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Elizabeth Newbold,
Open Science
Theme Lead

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DINI Project results and recommendations

Catherine Jones

Catherine Jones leads the Energy Data Centre within the Energy Research Unit, Technology Department, UKRI/STFC. She has a wide experience in providing information systems and services to the academic community, both within and external to STFC, using her software engineering and information management expertise to deliver effective services to user communities. Her work interests are the digital curation of software & data, demonstrating FAIR-ness of research data and linking research outputs (data, publications and software).

Elizabeth Newbold

Elizabeth Newbold is the Open Science Theme Lead at the Science and Technology Facilities Council (UKRI-STFC). The Open Science Theme includes activities related to data stewardship, open repositories and library services supporting open sciences practices and research at STFC. She has a background in scientific information with a focus on open access, FAIR and open data. Elizabeth is currently a member of the pan-UKRI research data policy working group that is developing a new research data policy for sharing and managing research data arising from UKRI-funded research. She has contributed to European Union funded projects in the areas of FAIR data, is a contributor to the Physical Sciences Data Infrastructure and was a member of the project team that delivered the research data cloud pilot project "Digital Infrastructure for National Infrastructure Exploring Challenges and Opportunities in Data Sharing".



Holger Kessler,

Senior Stakeholder Manager, Utility Solutions -
Infrastructure UK & Ireland at AtkinsRéalis

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From hackathon to legislation - the journey of NUAR

Lessons learnt from the past 6 years in government, academia and industry

Holger is an experienced professional with over 25 years of working in geoscience, environment and infrastructure. He has a strong background in research and government programs, emphasising collaboration, digital transformation and data sharing. Notably, he contributed to the National

Underground Asset Register at the Geospatial Commission. His expertise spans project management, team leadership, policy development and strategic stakeholder engagement, both in the UK and internationally.

Holger Kessler

As a trained geographer, soil scientist, and chartered geologist, Holger is known for his dynamic approach to forming inclusive teams and communities focused on innovation and change. He advocates for the use of geospatial data and digital transformation to address societal issues and the effects of climate

change. Holger's career includes significant time at the British Geological Survey and a leadership role in The Future of the Subsurface Foresight Project at the Government Office for Science before moving to AtkinsRealis in 2024.



Jonny Wilson,

National Water Resources Modelling Lead,
Environment Agency



National Water Quality Modelling From research to delivery

As with many parts of the world, the cumulative impacts of climate change, economic growth and the needs of our environment are challenging England's future water availability. The Environment Agency has evaluated our nation's need in the recent "National Framework for Water Resources (v2) – 17th June 2025. Unchecked this concludes there will be a deficit of around 5,000 million litres per day by 2050 (over 1/3 of current daily public water supplies). The report also sets out our intent to meet this need whilst also protecting and improving the environment. This entails ambition both on demand, driving down leaks from our water distribution networks and encouraging

water efficiency in homes and businesses, but also increasing sources of supply. Action on the supply side includes a ~£50 billion programme of 28 major new infrastructure schemes including 10 reservoirs, 9 long distance transfers 8 water recycling schemes and 2 desalination plants.

The Environment Agency, Ofwat and Drinking Water Inspectorate have worked with academia to develop national modelling tools. These tools have helped build the evidence base of future water need as well as optimise the investment plans to meet this challenge. This talk will explore this collaboration and how research can help shape policy and operational decision-making.

Jonny Wilson

Jonny is the National Water Resources Modelling Lead at the Environment Agency, where he oversees a technical team responsible for establishing in-house modelling capabilities to support regulatory decision making. He is passionate about the use of data and novel modelling tools to understand strategic water needs for England and identify solutions that balance competing goals, such as minimising cost,

increasing supply system resilience and protecting the environment. Jonny joined the Environment Agency in 2018, after building a decade of experience creating and applying models for subsurface decision-making as a product owner in a leading hydrocarbon consultancy firm, as well as developing inverse prediction models during his research degree in geophysics at the University of Cambridge.

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DAFNI Team Speakers



Sarah Byrne,
Senior Software Engineer



Sarah Byrne is a Senior Software Engineer and the technical Product Owner of the DAFNI platform. She leads the technical team on product direction, guiding the development of the platform's capabilities to continue to meet the needs of the community. Sarah also provides some technical

leadership, having recently led a security review and update of the platform's backend services, as well as previously overseeing the transition of the platform onto an updated hardware cluster. She has been a member of the DAFNI team for over 3 years, having joined as a Graduate in 2022.



Mini case studies of DAFNI projects

Higher quality research predictions. **USARIS (Uncertainty quantification and Sensitivity Analysis for Resilient Infrastructure Systems)**. The USARIS project has developed a toolkit to allow researchers and analysts to improve understanding of uncertainty in infrastructure models. Government and industry in the infrastructure sector can use this toolkit to put model results into context and to use model predictions in a more appropriate and responsible way.

The UK's airports are underprepared for the mass diversion protocols required during complete airport closure. The **MARS (Flight Diversion Modelling for the UK Aviation System)** project models 35 biggest airports in the UK, plus an algorithm to simulate diversion options, with a view to helping the aviation network to move to minimise the (currently severe) ripple effects of a major airport closure due to catastrophic IT failure, drone activity, fires and other unexpected reasons for closure. It is acting as a central and innovative tool around which industry can have a targeted discussion about mitigation strategies; it supports and simulates airline and airport contingency plans.

There are millions of kilometres of buried infrastructure in the UK, including water and gas pipelines, electricity and telecoms cables, and sewer structures. **STORMS (Strategies and Tools for Resilience of Buried Infrastructure to Meteorological Shocks)** is researching adaptation models for safe underground structures and presents graded risks for failure of pipes in soil at risk from increasing weather extremes caused by climate change. The project's innovative modelling approaches shows significant potential for influencing national policy, such as the Climate Change Risk Assessment (CCRA4).

New weather extremes and energy demand. **BRINES (Building Risk-Informed redundancy for Net-zero Energy Systems)**, seeks to answer the challenging question of whether our present and future energy systems are prepared for more extreme weather driven by climate change, coupled with changing electricity generation methods. It models how to ensure resilience in the energy system during these weather-driven periods of stress on the networks now, as we head towards Net Zero in 2030, and as far ahead as 2080.

Planning for water shortages. The **Pywr-WREW (Water Resource Model for England and Wales)**, focusing on the impacts of drought on water supplies in a national water supply model and helping decision makers better manage future climate risks to the national water supply network. The new Pywr-WREW model will offer a more transparent, open source tool than the commercially-licensed WREW, making stakeholder engagement, model evaluations and result disseminations easier for all.

Introduction to DAFNI

DAFNI is a computing platform which aims to support advanced research into national infrastructure, including transport, water, and energy and city scale modelling. The DAFNI platform supports research that aims to provide the UK with a world-leading infrastructure system that is more integrated, efficient, powerful, reliable, resilient and affordable. It is enabling the community to conduct research that is able to generate new insights at a higher level of detail and accuracy than ever before.

DAFNI was originally funded by an £8 million EPSRC investment in the UK Collaboratorium for Research in Infrastructure and Cities (UKCRIC) and a £1.2m grant under EPSRC's Resource Only Strategic Equipment. Its aim has been to become the national platform to satisfy the computational needs in support of data analysis, infrastructure modelling and visualisation, and encourage whole-system thinking for the UK's infrastructure research needs.

In March 2023 UKRI awarded £4m to STFC Scientific Computing to establish a national Centre of Excellence for Resilient Infrastructure Analysis, and move the Data & Analytics Facility for National Infrastructure (DAFNI) into its new phase.



If you would like to get involved in DAFNI, please contact
Katie Cartmell, Delivery Manager: katie.cartmell@stfc.ac.uk

Contact us on: info@dafni.ac.uk

Keep up to date with latest news and sign up for our DAFNI Mailing list at:

www.dafni.ac.uk



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