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DAFNI NEWSLETTER, MAY 2025

Dear {{ contact.FIRSTNAME }}

Welcome to the DAFNI May 2025 newsletter.

I am delighted to announce that we have published the DAFNI DINI report '*Data Infrastructure for National Infrastructure. A UK Research Data Cloud Pilot: Final Report*' which synthesises the huge amount of evidence from across the UK collected in the field of National Infrastructure Systems within the UK, with a focus on energy, water and transport. The DSIT-funded report contains potential impacts of sharing infrastructure data for research, and the barriers which can get in the way. It also considers some key technologies needed to build a data cloud, highlights from sponsored demonstrator use cases to illustrate the use of data in research practice, and provides recommendations for the future.

Book now for our webinar series which continues into June with Professor Richard Dawson discussing the Flood Infrastructure Resilience Model (FIRM) which simulates flooding and the human response to events. The pilot study was carried out in a seaside town in North Wales and has already demonstrated its usefulness in Nairobi, Kenya, an area prone to flash floods.

We are working closely with our 'Building a Secure and Resilient World' projects to share their project results and recommendations. Our Research Community Manager and Media Manager are working hard to interview all DAFNI research projects and produce case studies which will be showcased on our new website very soon.

DAFNI team members recently visited Delft University of Technology (TU Delft) for a technical workshop and to meet project partners in relation to the Urban Air project. This project is currently in its early phase and working closely with partners to understand technical requirements. The team at DAFNI and STFC Scientific Computing's Computational Engineering group are working on Horizon Europe's Urban Air project to develop an urban model across five European cities. For more information on the project please see here.

Our headline event, the 2025 DAFNI Conference, takes place on 11th September. We are pleased to share that Tash Buckley has joined as the fourth member of our Trusted Research panel. Tash is a PhD candidate at Royal Holloway University of London in the Centre for Doctoral Training, part of the Information Security Group. Tash has recently been asked for her cyber security expertise on the recent cyber security attacks in industry, if you are interested in reading the BBC News article, please see here. Secure your seat to join us!

Dr Brian Matthews, DAFNI Programme Lead

Book now
2025 DAFNI Annual Conference

Join us at The Edge at the University of Sheffield

Our fantastic line-up of speakers, includes our **two keynote speakers**, **Dr Juliet Mian**, Director of Arup's Climate Services and Sustainability portfolio, and **Dr Sarah Hayes**, Chair Data Sharing Working Group, Independent Consultant.

Tash Buckley has now joined our Trusted Research Panel as our fourth member. She 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.

Prices: £50, student £25.
Book via: https://web.cvent.com/event/f255b158-1692-49f3-9efd-a68e3c86eba1/summary

09:30 Arrival - Networking breakfast
09:30 Welcome
09:45 Keynote: Juliet Mian, ARUP
10:15 Update on DAFNI
10:35 Networking break
11:00 Invited speakers: Dr Richard Kirkham (SALIENT), Rachael Steller (Climate Change Committee), Professor Nicholas Vasilakos (CROSSEU)
12:00 Networking lunch, poster session and demonstrations
13:30 Keynote: Sarah Hayes, Chair Data Sharing Working Group
14:00 Oliver (Olly) Tones, DSIT
14:20 DAFNI-DINI project results and recommendations
14:50 Networking break
15:15 Trusted Research Panel: Emily Jefferson (Health Data Research UK), Jason Feehily, (University of Nottingham), David Batho (Jisc), Tash Buckley (Cranfield University)
16:05 Paul Hickey, Ofwat
16:30 Conference closing remarks - Dr Brian Matthews

25th June: Modelling the human response to flood events

Webinar 25 June 12-1pm
The FIRM model

Richard Dawson, Professor of Earth Systems Engineering at Newcastle University, will present his research on the FIRM (Flood Infrastructure Resilience Model) which simulates flooding and the human response to flood events. That human behaviour element, and the interactions between people and flooding, is the key distinguishing feature of FIRM.

FIRM can be used to explore flood events of different magnitude and test the effect of choices people make in response to extreme weather events, in order to model how people are likely to be exposed to dangerous depths and speeds of water.

FIRM is helping flood resilience forums, councils and policymakers implement improved before-the-flood measures such as better public education and warning systems, improved during-event people and traffic flows, and improved infrastructure resilience evacuation sites, in the UK and overseas.

Book now: https://web.cvent.com/event/e4880dbe-fd42-46f6-b4fc-ef9f2dce8d6a/summary

16th July: Modelling Aviation Resilience Scenarios (MARS)

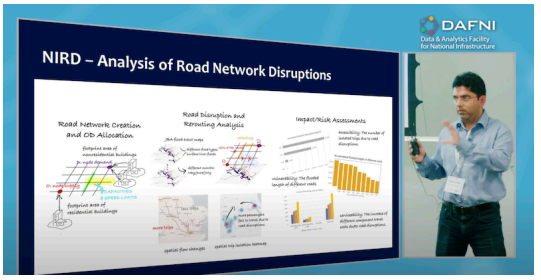
Webinar 16 July 12-1pm
Airport mass diversion events

Drs Fabian Steinmann and Desmond Bisandu will present their research from their project, MARS, which seeks to explore the resilience of the UK aviation system during mass diversion events. The value of this project has been highlighted in recent months during the total closure of Heathrow airport due to a fire at an electrical substation, resulting in an estimated 670 flights being affected.

Book now:
https://web.cvent.com/event/d91b26a4-786b-4e6b-a35d-3316b16f1e59/summary

News from our central team

Modelling road transport disruptions



A University of Oxford team has created a road transport flow model for flow allocation and disruption at Great Britain (GB) scale. The NIRD model (National Infrastructure Resilience Demonstrator) has around 12 million allocations of journeys around the road network of GB and the model is being stress tested with extreme hazard events.

NIRD is part of a UKRI/DEFRA “MACC Hub” (Maximising Adaptation of Climate Change) running from 2024-2027, where NIRD will use DAFNI to integrate their work with the OpenCLIM Project designed to support UK assessment of climate risks and adaptation. The road model will integrate future planet and building scenarios with OpenCLIM and examine how future hazards and transport could be affected.

Raghav Pant, Senior Research Associate, and **Yue Li**, Postdoctoral Research Associate, are also involved in the Horizon MIRACA project , examining multi hazards. This will involve expanding the UK road model from the UK to Europe.

Recently the NIRD team, led by **Professor Jim Hall**, won an Impact Acceleration Account (IAA) at Oxford University to work with the MHCLG on exploring the development of the national road model to understanding future planning and its impacts of road flow patterns.

Click here to read more about the NIRD project

View Raghav's presentation at the 2024 DAFNI Conference at: https://youtu.be/BTrlWwJmHAY?si=vUS2vhyEiCot0ueR

Digital Twins for UK power networks

A new digital platform called CReDO+ (Climate Resilience Decision Optimiser) is set to help safeguard power networks against the effects of climate change.

CReDO+ is one of three UK Power Networks projects that secured funding from the Strategic Innovation Fund, an Ofgem programme managed in partnership with Innovate UK, to start large-scale trials.

UK Power Networks is developing Credo+ with partners including STFC Scientific Computing's DAFNI platform and STFC Hartree.

For further information, visit:
https://www.ukpowernetworks.co.uk/news/digital-twins-aim-to-uncover-climate-crisis-impact-national-infrastructure

Partnership news

CGFI Hackathon, 10-11 June, Leeds

CGFI Hackathon 2025 - Global characteristics of tropical cyclones: climate risk analytics for the reinsurance industry

CGFI's 2025 Hackathon brings together researchers and practitioners to investigate questions related to climate model data, and especially tropical cyclones, of relevance for the reinsurance industry (companies who insure insurers).

One specific question of interest is what is the probability of landfalling hurricanes on the south-east coast of the US within the same tropical cyclone season as landfalling typhoons in Japan, which is of interest to reinsurers who need a global perspective on risk.

Using observations (including re-analysis), decadal and open-source stochastic datasets this will be investigated from a historical, counterfactual, and statistical perspective. In addition, the event will also explore whether probabilities of correlated events can be inferred for the next 5-10 years.

Discover more at: https://www.cgfi.ac.uk/leeds-innovation-hub/cgfi-hackathon-2025/

Professor Jim Hall elected Fellow of the Royal Society

Professor Jim Hall has been elected a Fellow of the Royal Society, one of the highest honours in science. The lifetime fellowship recognises Professor Hall's outstanding contributions to climate risk analysis, infrastructure resilience and sustainable systems around the world.

We are privileged to have Professor Hall as founder of DAFNI and Chair of the DAFNI Strategy Board.

Professor Hall FREng is Professor of Climate and Environmental Risks in the School of Geography and the Environment, a Senior Research Fellow in the Department of Engineering Science and Fellow of Linacre College. Professor Hall is a member of the Prime Minister's Council for Science and Technology and a member of the Expert Advisory Council of the National Infrastructure Service Transformation Authority (NISTA). He was a member of the UK Climate Change Committee from 2009 to 2019.

Read more at: https://royalsociety.org/people/jim-hall-37326/

Future plans for STORMS underground asset project

Recently members of the DAFNI team attended the STORMS (Strategies and Tools for Resilience of Buried Infrastructure to Meteorological Shocks) project end event and had the chance to learn more about the project and talk to key industry stakeholders.

Following on from the event, discussion has continued around the challenges of working with underground asset data. DSIT has recently funded work into the integration of underground asset data from over 600 organisations into a National Underground Asset Register (NUAR) National Underground Asset Register (NUAR) - GOV.UK

Designed to drive innovation and generate revenue whilst at the same time enabling cost savings by reducing disruption during underground asset maintenance, the data in NUAR is of interest to a wide community of DAFNI users.

The DAFNI programme is working closely with the STORMS project and other partners on future opportunities in Trusted Research.

DAFNI platform features and updates

The platform team has recently introduced a new process for making assets public on the DAFNI platform. Requests to publicise any datasets/models/workflows will now be sent to our dedicated data curation team to check the accompanying metadata is complete and correctly filled in. If any changes are required they will be in touch via email with guidance, and available for support if you have any queries.

The upgrade to the platform's web interface is going well, and continues to be the focus of the DAFNI development team.

Access our help

Please contact us directly for any assistance on info@dafni.ac.uk

DAFNI technical training

A great opportunity to get up to speed quickly on DAFNI and to ask our technical experts your burning questions. **Especially recommended for those developing a research proposal and are thinking of including DAFNI as the platform of choice for the research.**

Our regular technical training events (Wednesdays, 1:30pm-4:30pm) are available to book via Eventbrite (see weblink below) Next training dates:

- 2nd July 2025
- 27th August 2025

To attend the event you will need experience of entering code through a command line interface, for more information and to book, please visit: https://www.eventbrite.co.uk/o/dafni-31793198351

Apply for a DAFNI account

Join our community
If you would like to join the community of DAFNI users, please visit the DAFNI website for more information.

Current users of DAFNI
Get updated on the latest technical updates and features, visit: https://www.dafni.ac.uk/dafnilogin/

About DAFNI

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.

To find out more about DAFNI, visit: www.dafni.ac.uk

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