Scoping Net Zero Research Computing

Towards a UKRI roadmap to deliver carbon neutral digital research infrastructure by 2040 or sooner

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What we set out to do

The **UKRI Net Zero Digital Research Infrastructure Scoping project** is a large interdisciplinary project with three key objectives:

- Collect evidence to inform UKRI digital research infrastructure investment decisions.
- Provide recommendations for UKRI and their community with an outline roadmap for achieving carbon neutrality across all digital research infrastructure by 2040 or sooner.
- Enable UKRI to play a positive and leading role in the national and global transition to a sustainable economy.

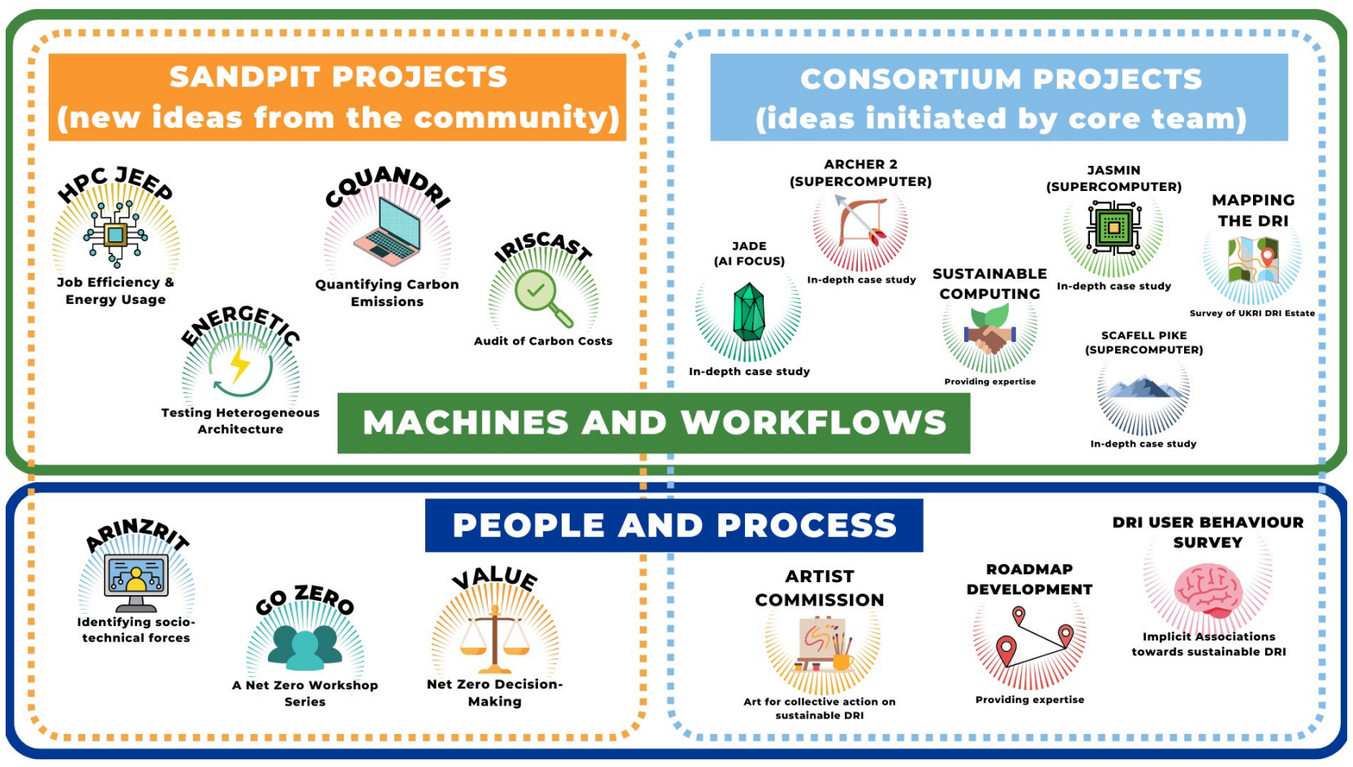
About

- £1.86 million project funded by United Kingdom Research and Innovation (UKRI), a non-departmental public body sponsored by the UK government Department for Science, Innovation and Technology
- Administered by the Natural Environment Research Council (NERC)
- Based within the Centre for Environmental Data Analysis (CEDA) and the National Centre for Atmospheric Science (NCAS)
- Project partners (~40 researchers) from 20 different institutions
- The 19 month project is due to finish in June 2023

Gathering evidence

Two broad subject areas:

- **machines and workflows** the hardware and software infrastructure that sits at the centre of the digital research infrastructure
- **people and process** the expert staff, the systems and institutions that frame their work, and the scientific user community delivering the UKRI programme of research and innovation.



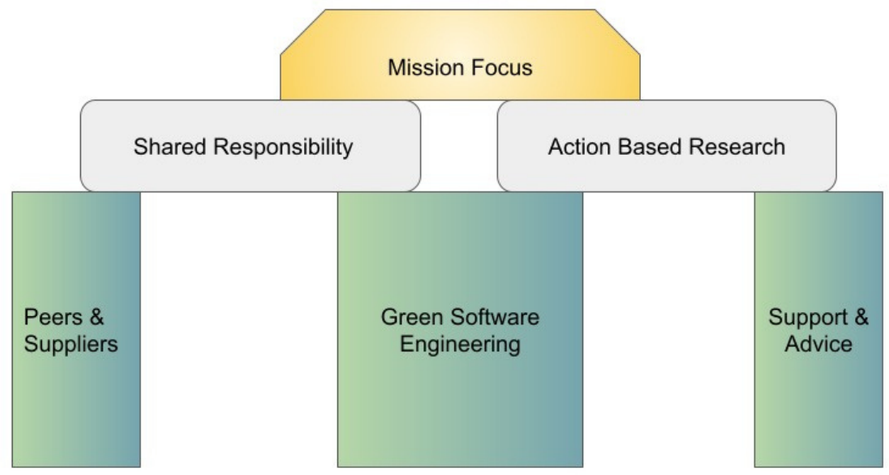
These projects have produced over 100 detailed recommendations

Project scope

Digital research infrastructure (DRI) ranges from high performance computers (HPCs) to university server rooms and everything in between.
The project scope covers UKRI owned and majority funded DRI, and the impacts associated with DRI research outputs and procurement.

Strategic recommendations

Six thematic recommendation areas:



Two key recommended actions:
Firstly a Net Zero DRI Delivery Service to provide support to decision makers, establish and disseminate best practice as it applies to the UKRI DRI, maintain community cohesion through meetings and communication activities, and maintain a map of the UKRI DRI and its carbon footprint.
Secondly a portfolio of projects which allow the community to develop and deploy Net Zero solutions, including the creation of a national resource of green software engineers.

Vision for 2040

A vision for UKRI DRI in 2040

- Facilities have a **five-star sustainability** status, with everything from the tea bags in the staff canteens to the racks of servers in the data centres covered by a comprehensive life-cycle analysis.
- **Virtual and augmented realities** transform our interactions with data and with each other, reshaping our notions of space and time and shattering existing barriers to understanding.
- Experts provide a **resource of digital excellence** supporting a transformed national economy.
- The UK DRI reputation for environmental excellence and its leading role in promoting productivity through **Open Science** policies and workflows attracts leading researchers from all over the world.

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