Marion Samler
DAFNI Partnership Manager
Scientific Computing, Science and Technology Facilities Council

Science and Technology Facilities Council

Engineering and Physical Sciences Research Council

UKCRIC

DAFNI

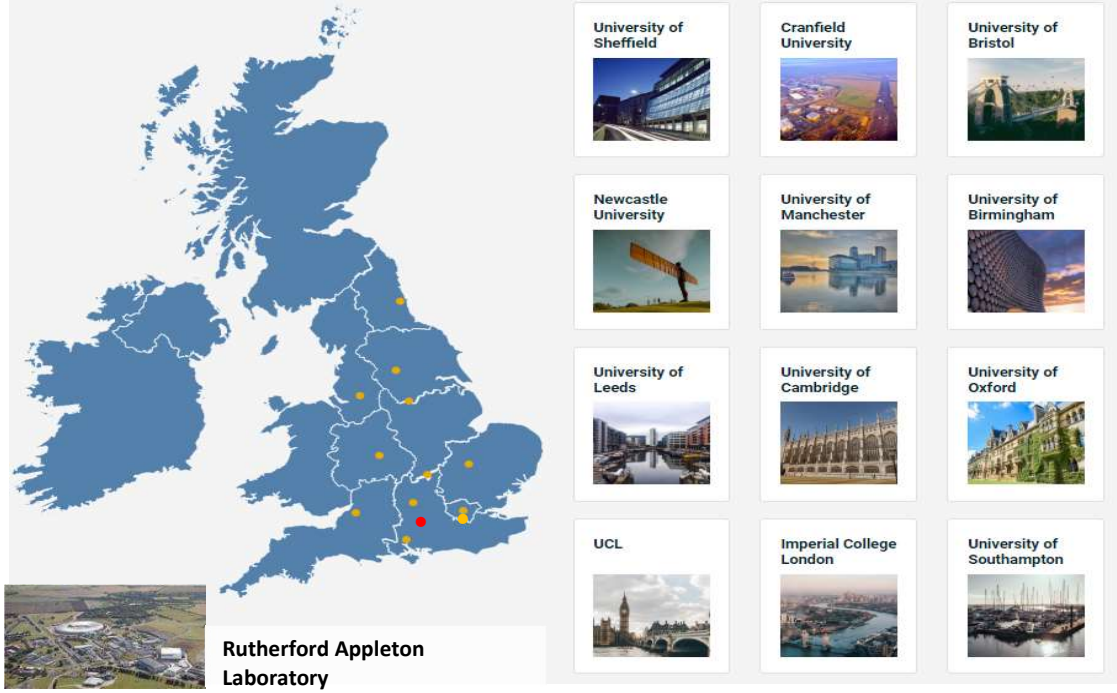
Data & Analytics Facility for National Infrastructure

Providing a computing platform to improve decision making for national infrastructure

UK's next generation platform to support research into infrastructure decisions: planning, investment, design and operation.

- £8M investment 2017-2021 under the UKCRIC programme
- A Partnership of 12 partner universities
  + STFC as development and hosting partner

Leading to Partnerships between Academia, Government, Industry



Rutherford Appleton Laboratory
Harwell Didcot, Oxfordshire

www.dafni.ac.uk

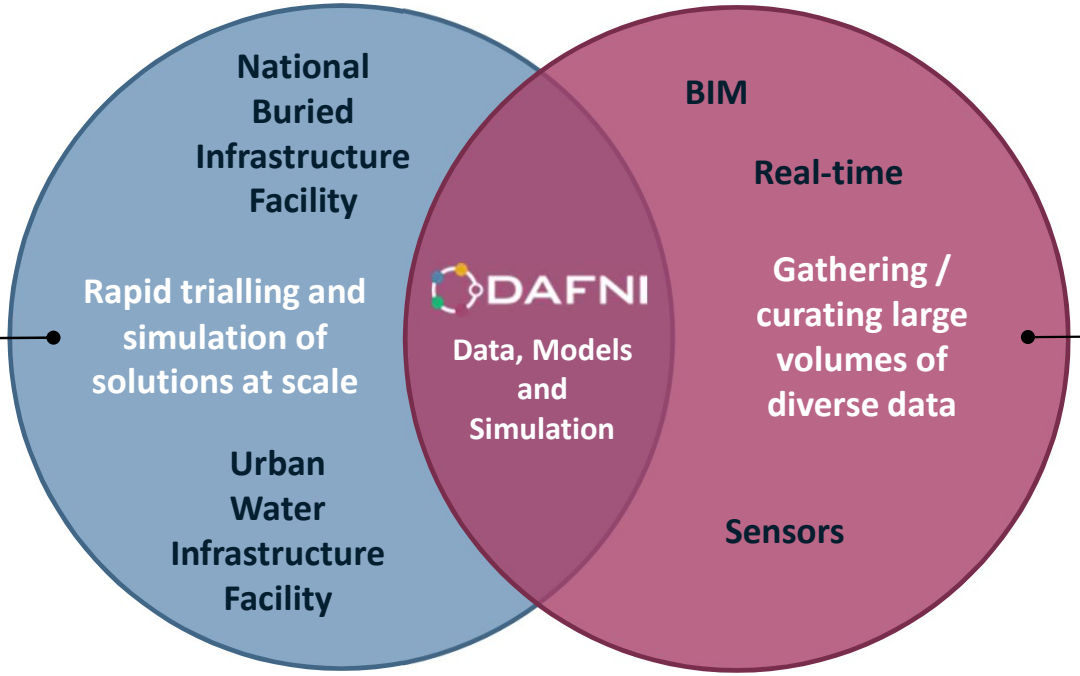
Science and Technology Facilities Council

Engineering and Physical Sciences Research Council

UKCRIC

DAFNI in UKCRIC

National Infrastructure Labs



Urban Observatories

DAFNI provides to the Infrastructure Research Community

- **A hybrid high-performance computing platform**
- **A secure repository for heterogeneous national infrastructure data and models.**
- **A collaborative platform to research and develop *multi-system models* of infrastructure assets and systems in *a managed environment***
- **A place to make data and models available for long-term accessibility - Place as a legacy**

UKRI Science and Technology Facilities Council
UKRI Engineering and Physical Sciences Research Council
UKCRIC

DAFNI

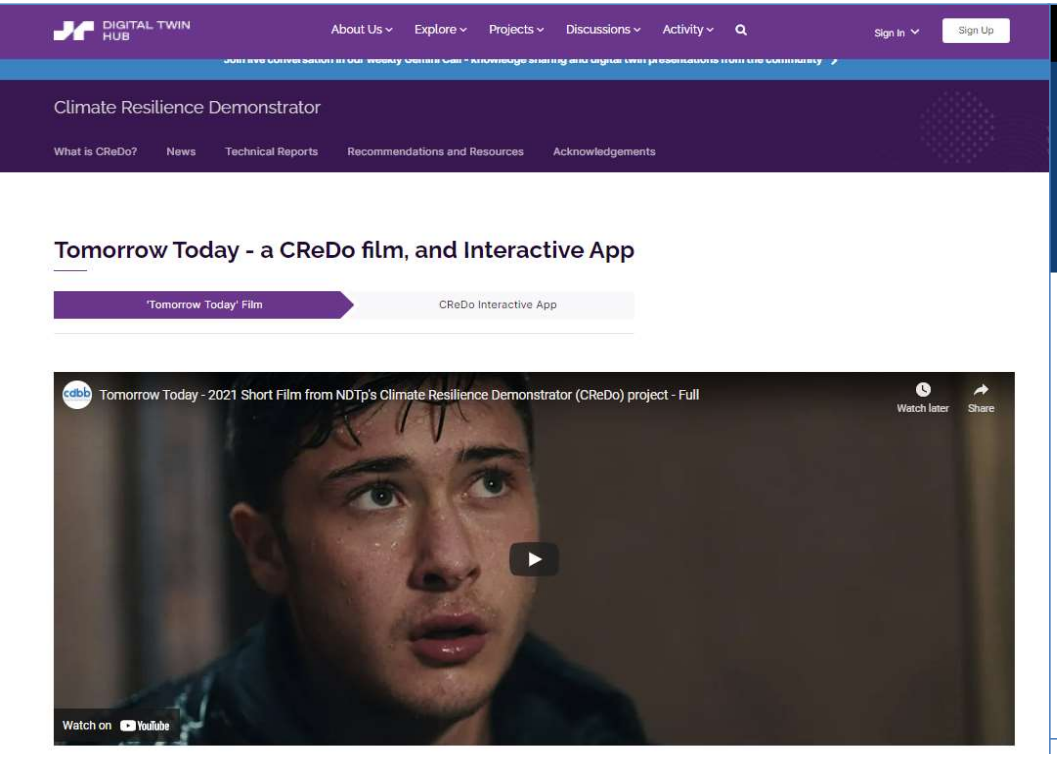
Example of Industry Use Case

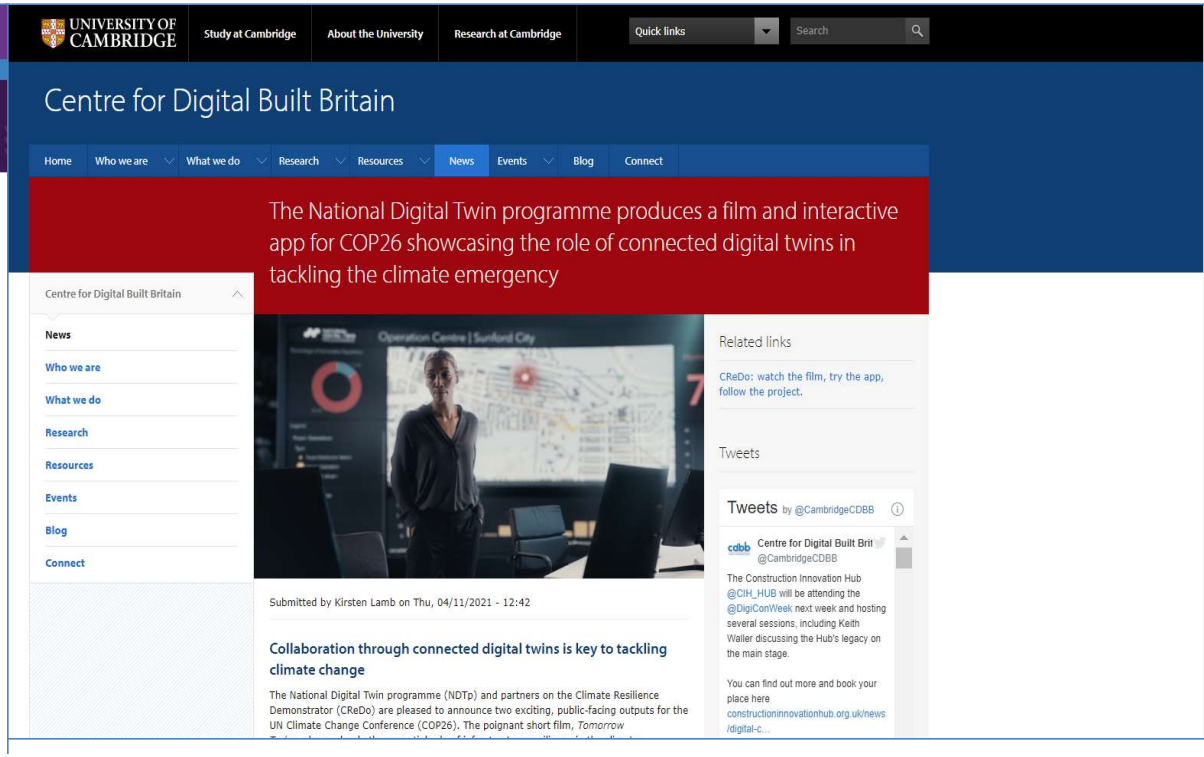
UKRI Science and Technology Facilities Council
UKRI Engineering and Physical Sciences Research Council
UKCRIC

CReDo (Climate Resilience Demonstrator)

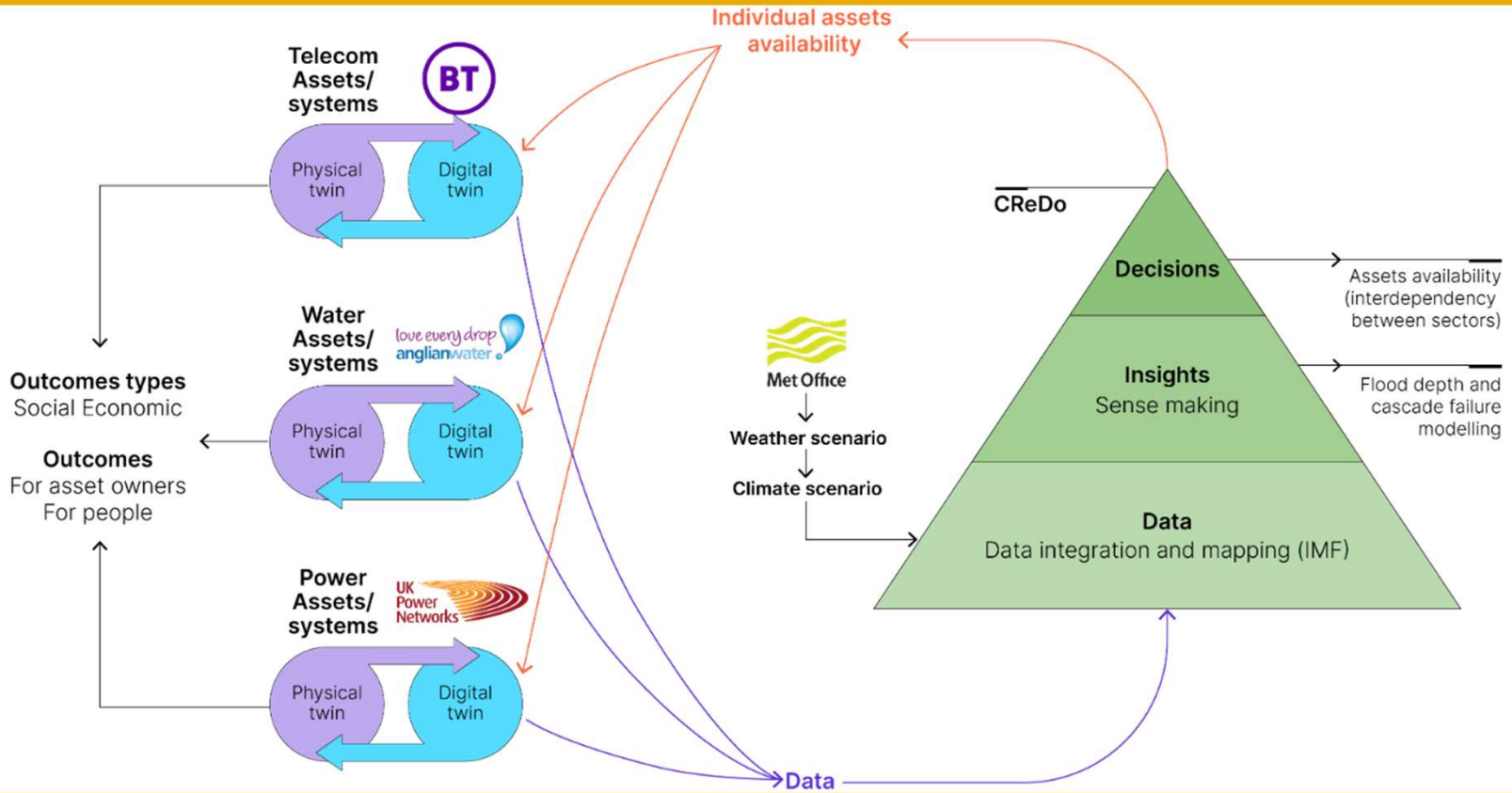
‘The National Digital Twin programme’s Climate Resilience Demonstrator (CReDo) is a pioneering climate change adaptation digital twin project that provides a practical example of how connected data can improve climate adaptation and resilience across a system of systems.’

https://digitaltwinhub.co.uk/credo/credo/





DAFNI



Science and Technology Facilities Council
Engineering and Physical Sciences Research Council
UKCRIC

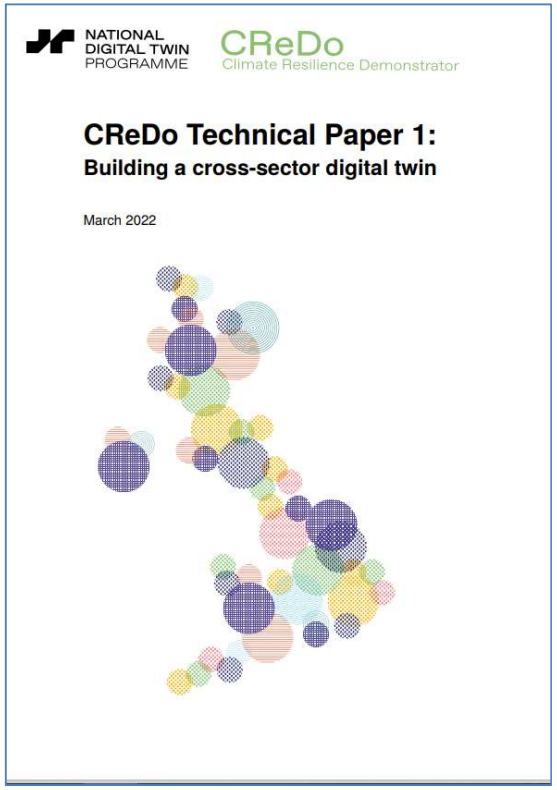
CReDo needs to securely combine datasets from multiple “Asset Owners”
Some of these datasets are very sensitive as they could be used by Bad People™ to attack our infrastructure

CReDo (Climate Resilience Demonstrator)

What were the benefits that DAFNI provided to CReDo?

- Secure Data Repository;
- Neutral Collaboration area;
- Advanced Tooling to support interlinking and scaling models;
- High end compute – run several simulations to look and compare with different scenarios;
- Bespoke visualisations presented the results to provide insights for the simulations;
- Legacy platform.

Science and Technology Facilities Council
Engineering and Physical Sciences Research Council
UKCRIC



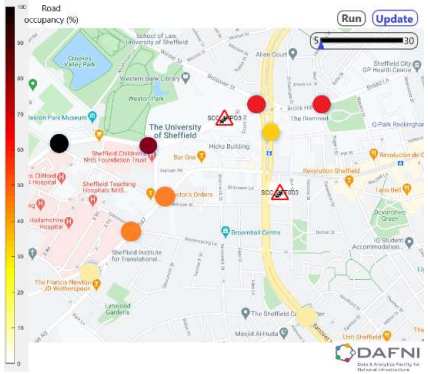
[CReDo technical report 2: Generating Flood Data - Public Resources - DT Hub Community (digitaltwinhub.co.uk)]

Science and Technology Facilities Council
Engineering and Physical Sciences Research Council
UKCRIC

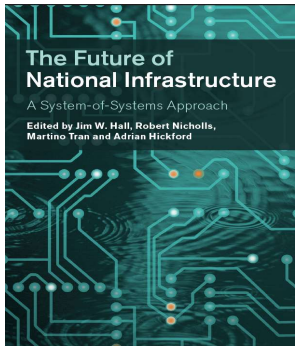
Projects DAFNI is involved in

OPEN CLIMATE IMPACT FRAMEWORK

Traffic Digital Twin in Sheffield



NISMOD has migrated to DAFNI



Digital Twin Urban Analytics - Towards A Flexible, Sustainable Urban Energy System

Green Finance: DAFNI part of a new £10M UK centre for climate and environmental risk for the financial industry.

www.dafni.ac.uk

UKRI Science and Technology Facilities Council

UKRI Engineering and Physical Sciences Research Council

UKCRIC

Thank You for listening

info@dafni.ac.uk

Marion Samler (marion.samler@stfc.ac.uk)

Science and Technology Facilities Council

Engineering and Physical Sciences Research Council

UKCRIC