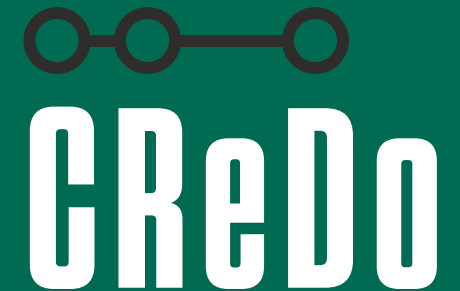


JOURNEY FROM DATA FOR THE PUBLIC GOOD TO CREDO

Sarah Hayes
Connected Places Catapult



WHAT IS A DIGITAL TWIN?

WHY DO I NEED ONE?



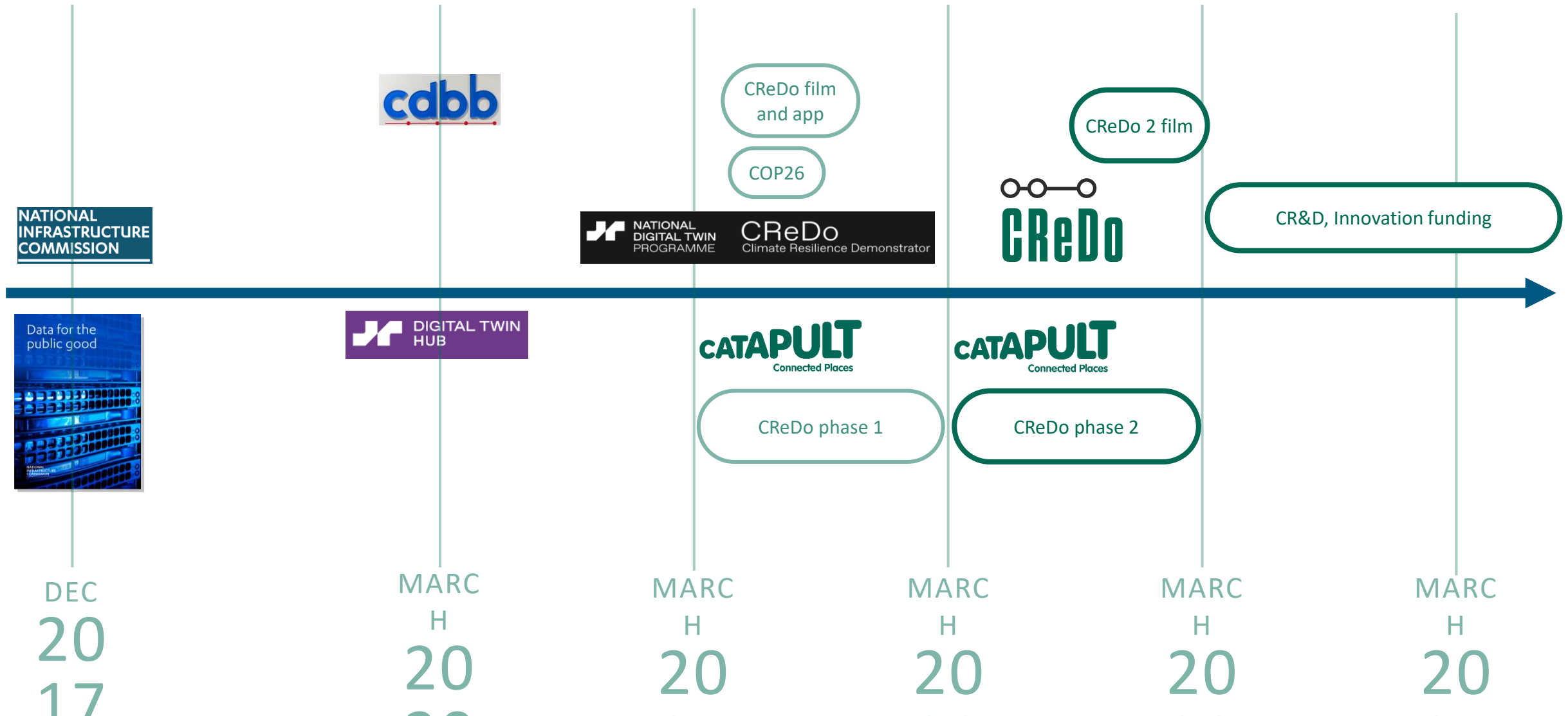
DATA FOR THE PUBLIC GOOD



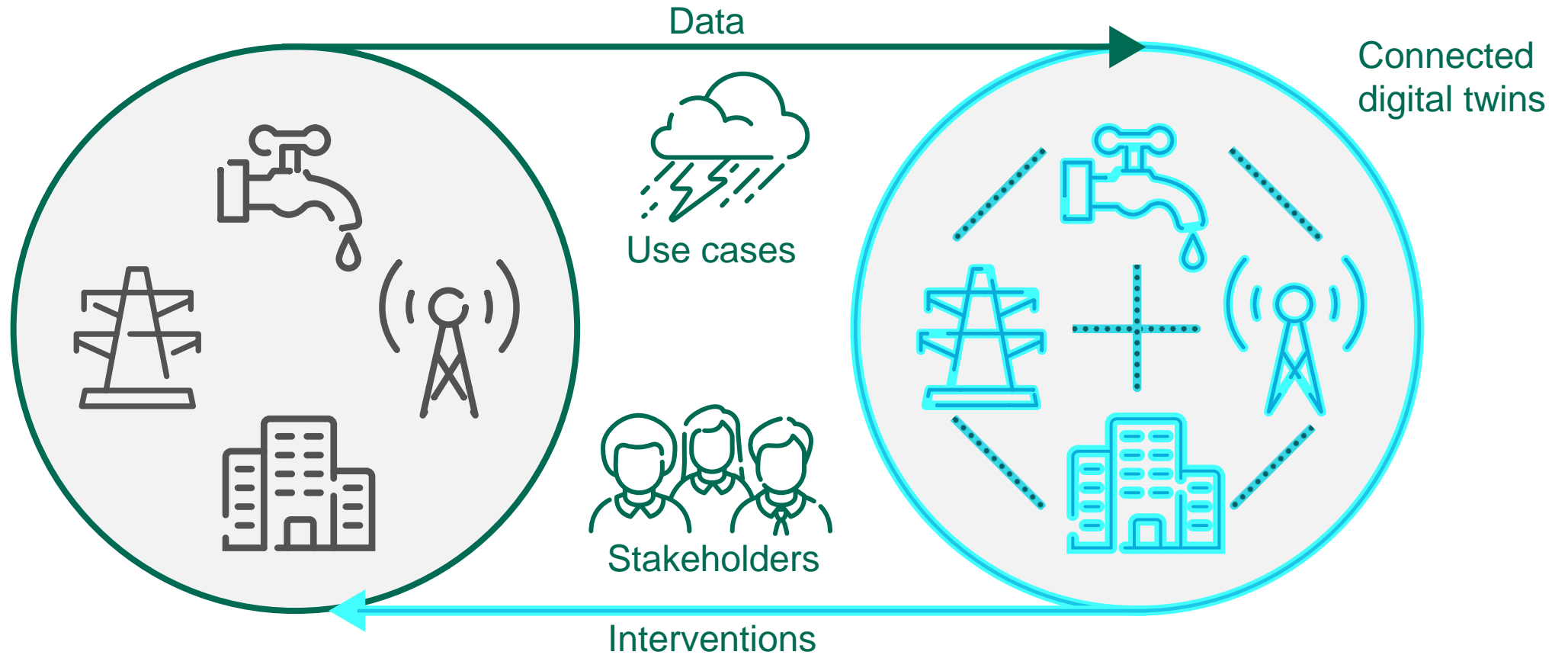
Recommendations:

- **Data sharing infrastructure**
- **Enable National Digital Twin as an ecosystem of connected digital twins that will deliver better outcomes from infrastructure and built environment**
- **Demonstrator project**

JOURNEY TOWARDS CREDO



WHAT IS A DIGITAL TWIN?



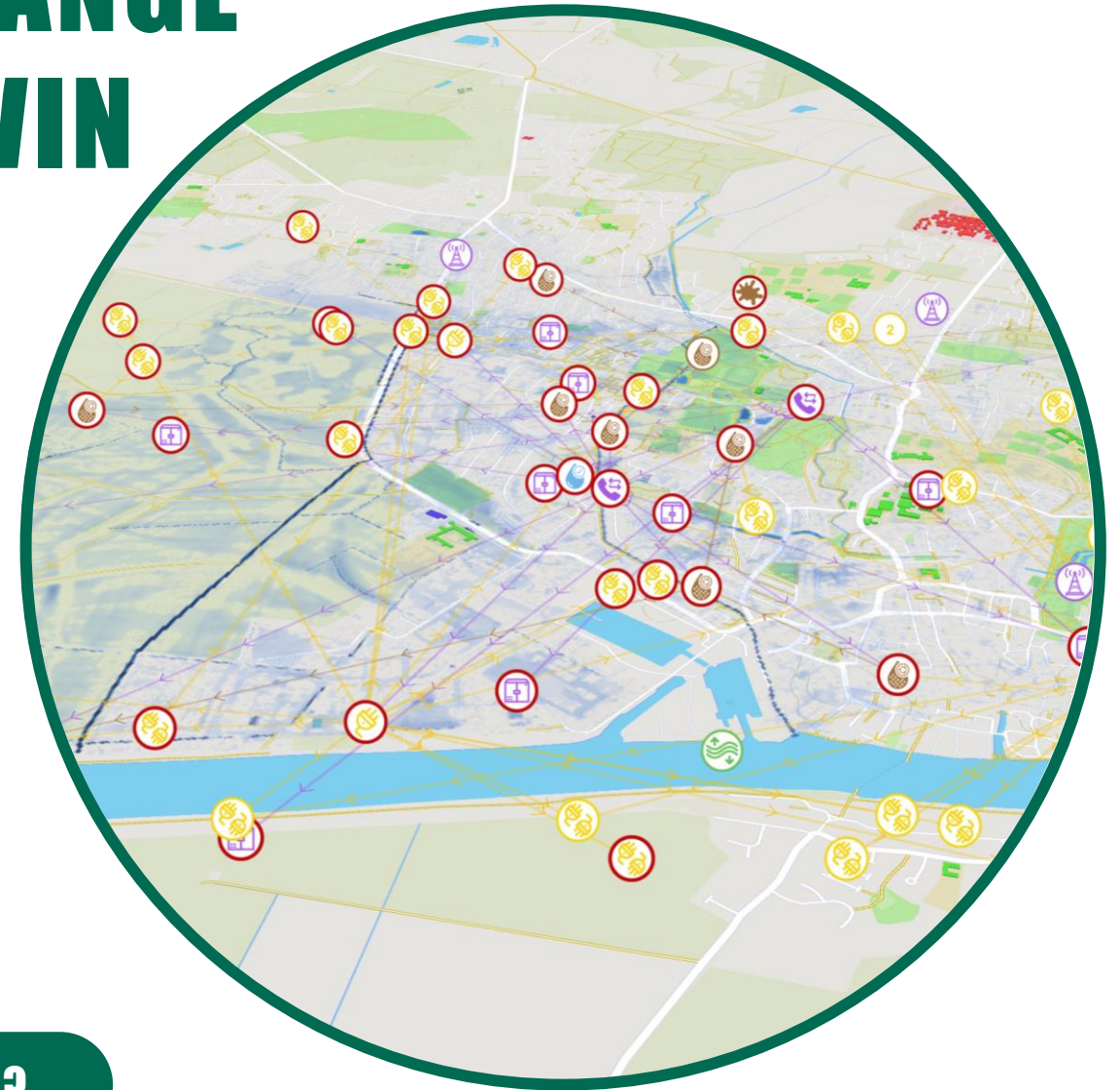
CReDo IS A CLIMATE CHANGE ADAPTATION DIGITAL TWIN

Bringing together data across energy, water and telecoms networks

- Anglian Water's water and sewerage assets,
- BT and Openreach's communication assets and
- UKPN's power network assets.

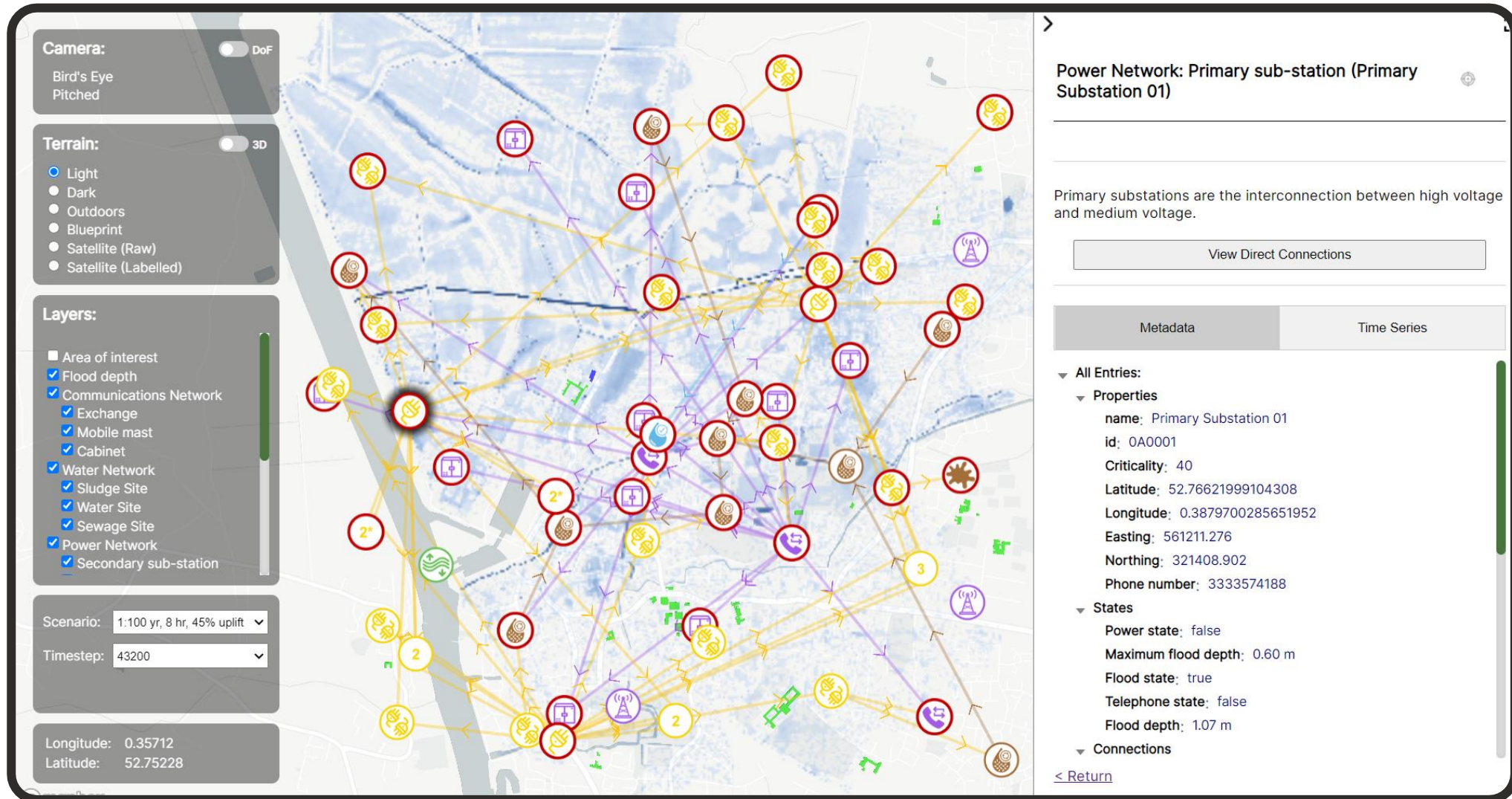
With flood data to understand...

- Infrastructure interdependencies
- Asset failure and system impact
- What can we do to prepare or respond?



HOW DO WE INCREASE SYSTEM RESILIENCE AND ADAPT?

VISUALISATION USING SYNTHETIC DATA



CReDo VISION

Connected Digital Twin

Working with a connected digital twin, we can see all of Sunford City's utility networks. This helps us understand how they depend on each other and the role they play together in serving the city.

Previously, we were hindered by not having a system level view. This time, we can increase the resilience of Sunford City as a whole.

Cross-sector collaboration on data and resilience initiatives can result in a more profound impact at a lower cost.

Once again, you only have the budget to make one of these interventions, but you are empowered by seeing the system as a whole.

Choose from:

OPTION A: Relocate Sideley's primary power substation

OPTION B: Increase flood protection on telecoms assets and install backup generators at clean water booster pumping stations

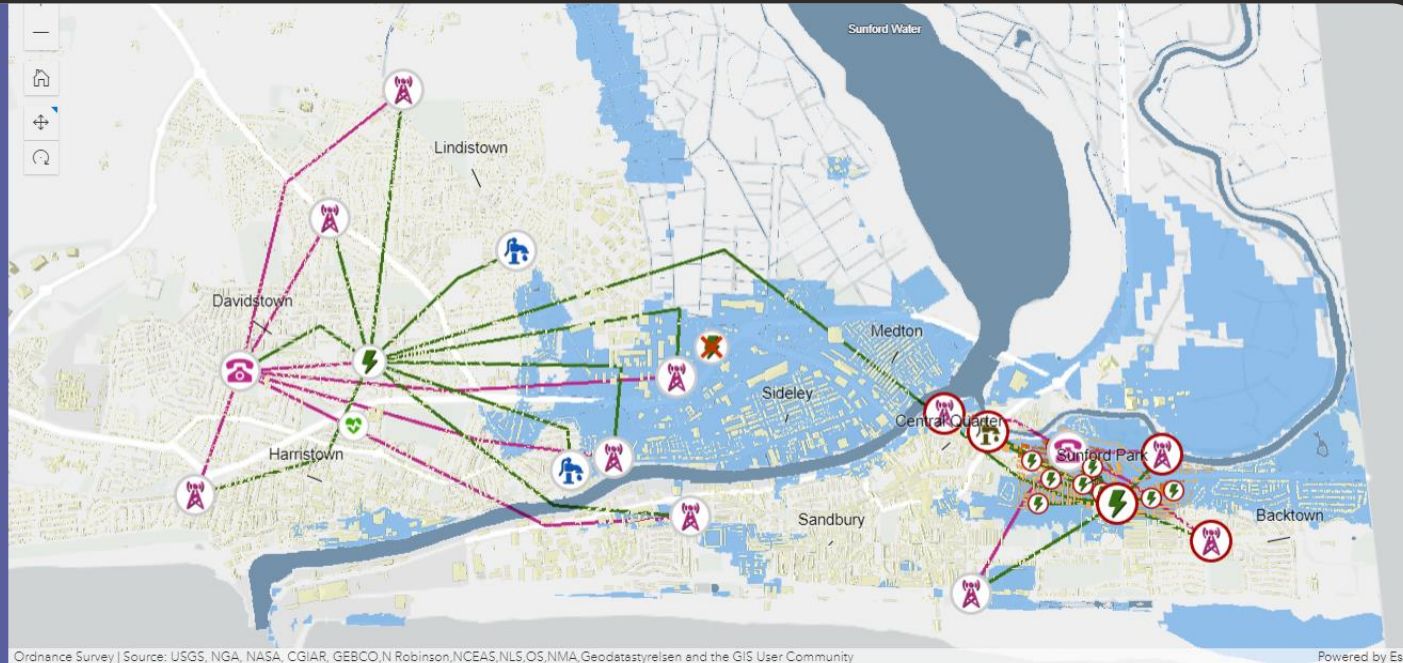
OPTION C: Harden Sunford Park's primary power substation and install automated re-zoning (re-routing) of clean water supply

Explore your options

OPTION A

OPTION B

OPTION C

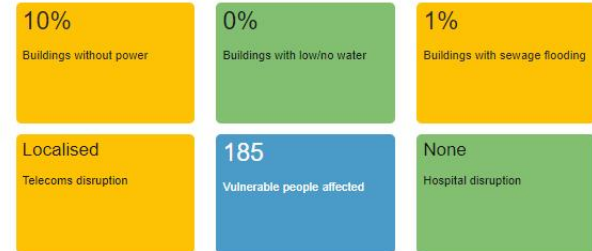


OPTION A: The relocated primary power substation is now more resilient to extreme floods more likely to occur in future climate change predictions

This is a high cost intervention (£££).

Our connected digital twin shows us that most of Sunford City's utility assets depend on power from the substation.

As such, this single change has a significant effect on reducing the impact of the storm across all utility services.

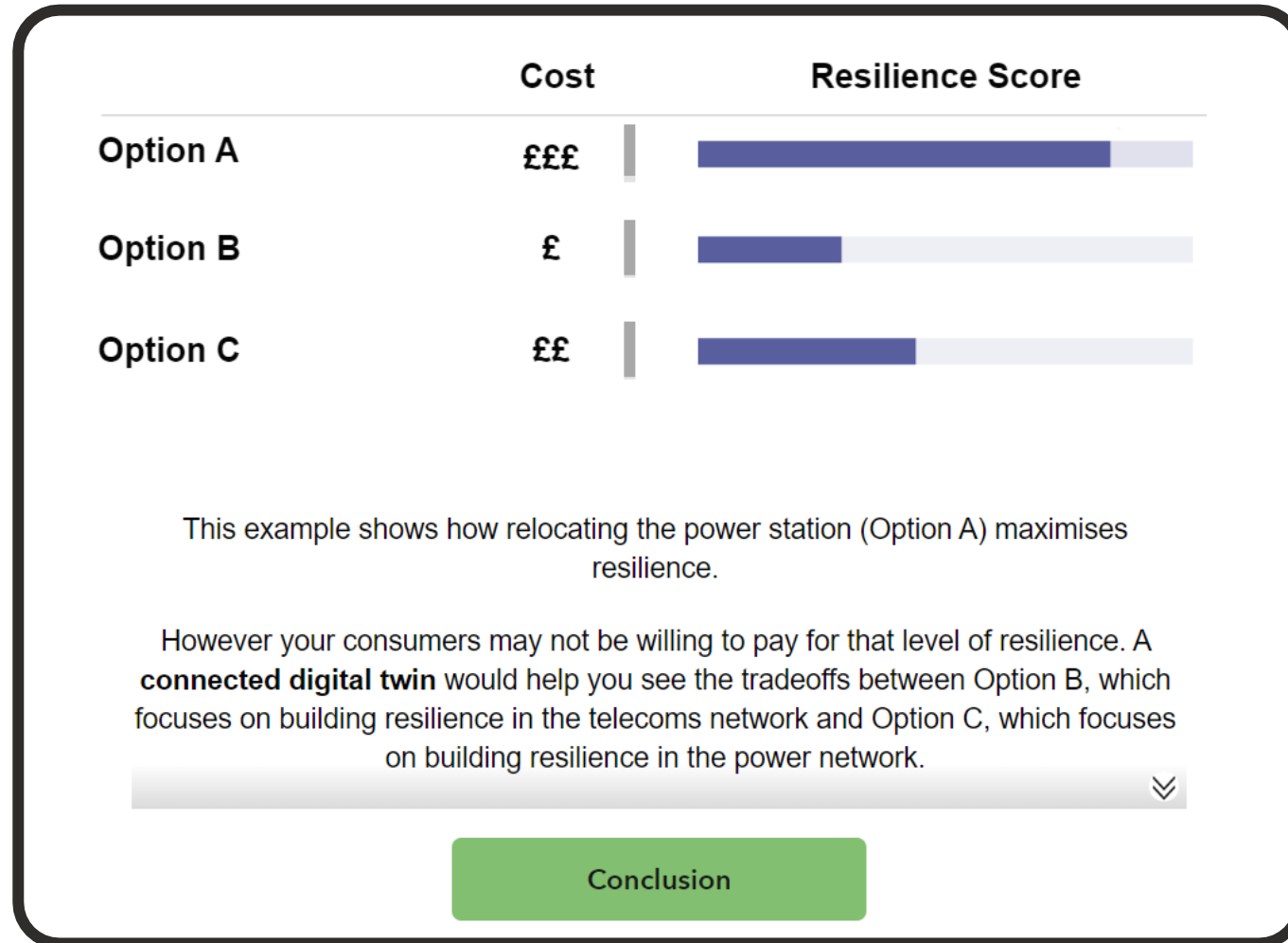


Resilience Score



View summary

Supporting decisions that drive actions



CReDo BENEFITS

Strategic Resilience Planning

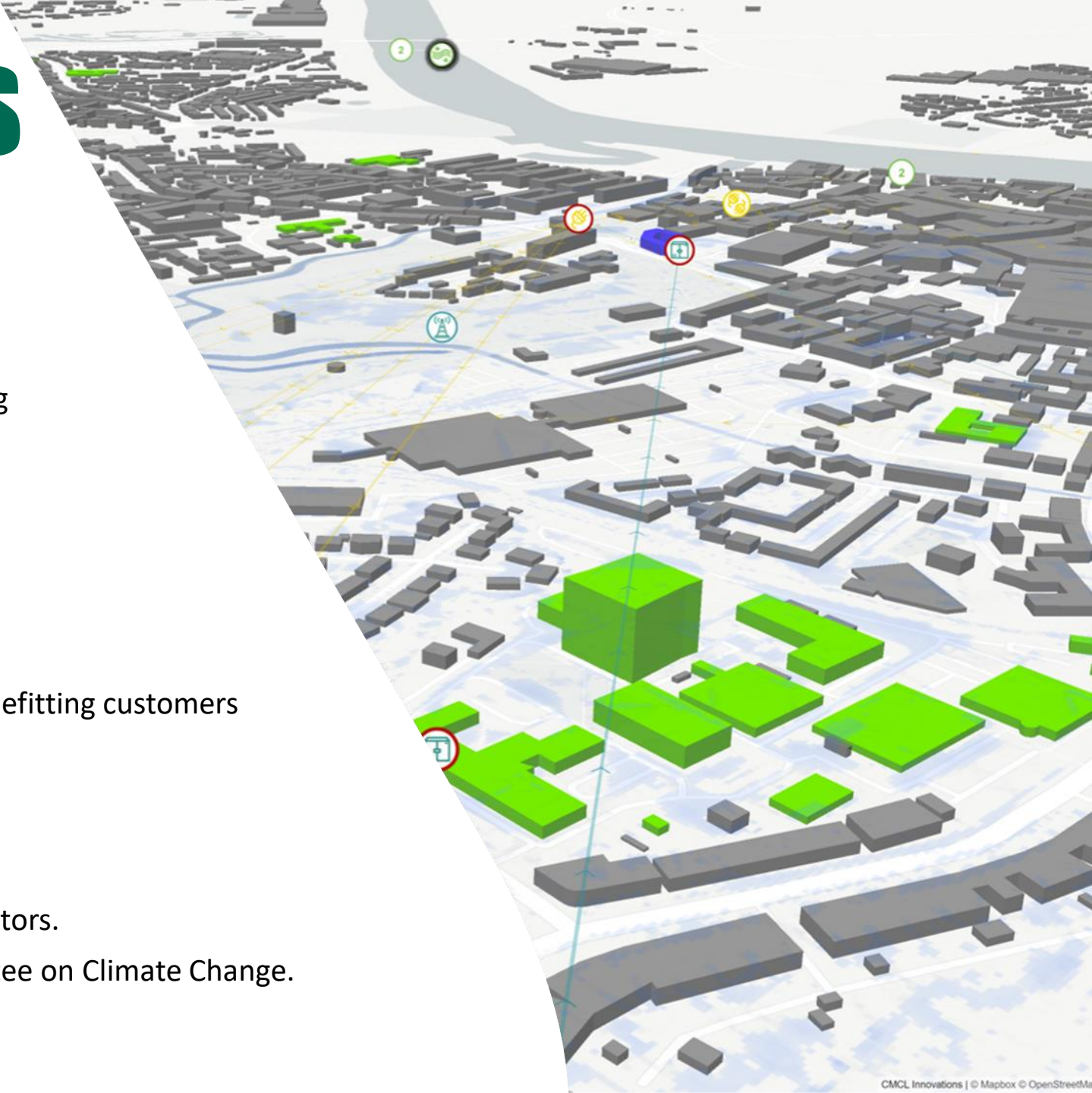
- More efficient and effective investment
- Fuller understanding of network interconnected risk including new insights from connected and cascading failure modes.
- Lower repair costs and regulatory penalties.

Benefits to Customers

- Improved network availability and quality of service.
- Lower overall costs from climate change impact, benefitting customers through reduced bills.

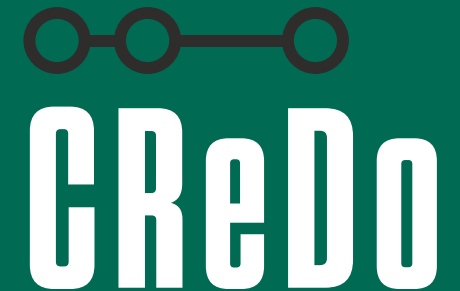
Wider Benefits

- Improved collaboration across private and public sectors.
- Progress on key adaptation priorities of the Committee on Climate Change.



HOW DO I DEVELOP A DIGITAL TWIN?

DATA SHARING ARCHITECTURES



COLLABORATIVE PROCESS

Delivered in partnership with:



Project partners

Acknowledging Phase 1 contributors

Centre for Digital Built Britain

Joint Centre for Excellence In Environmental Intelligence

Department for Business, Energy & Industrial Strategy

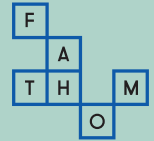
National Digital Twin Programme

Cambridge University

Crocodile Media

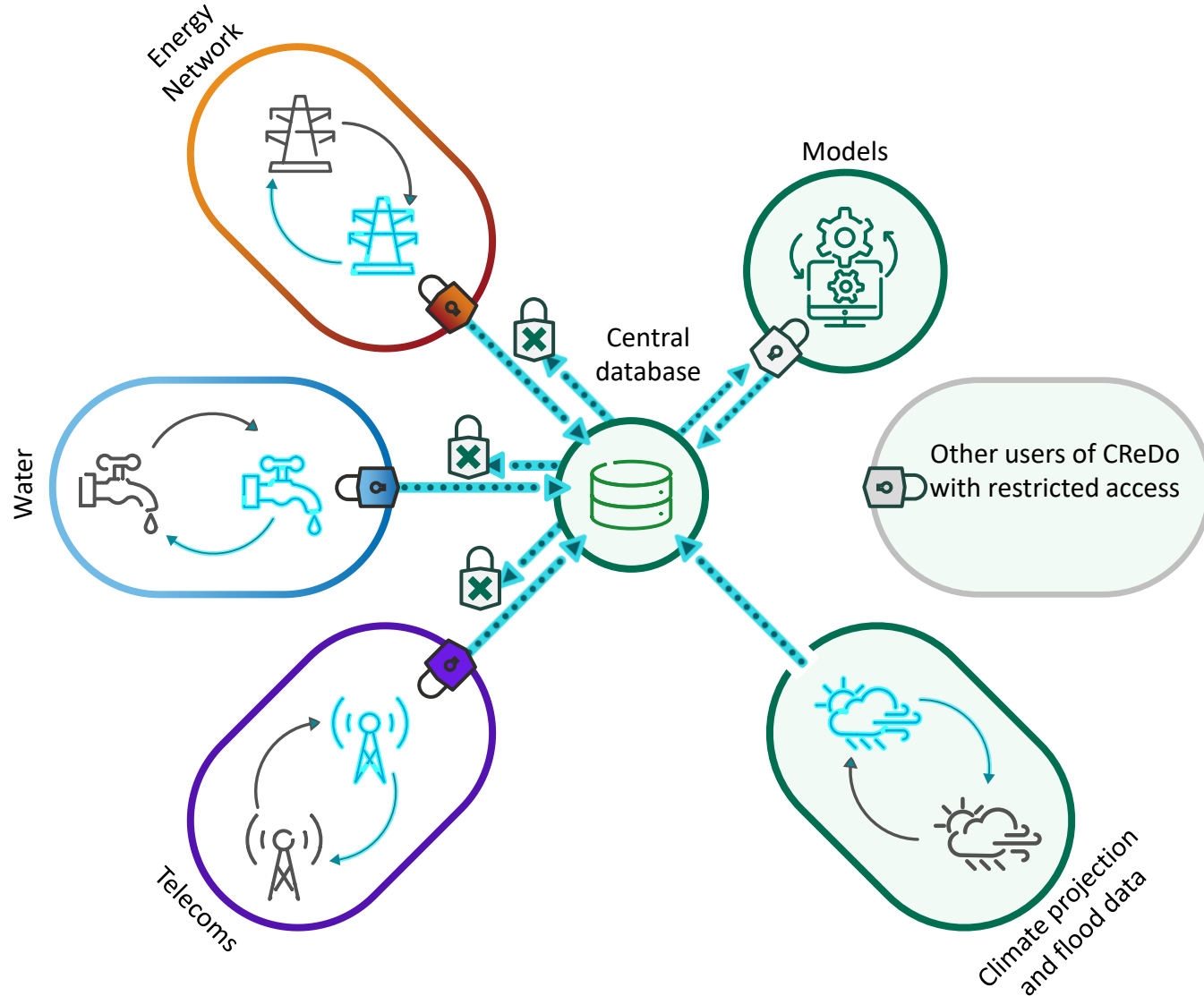
Mott MacDonald

ESRI UK



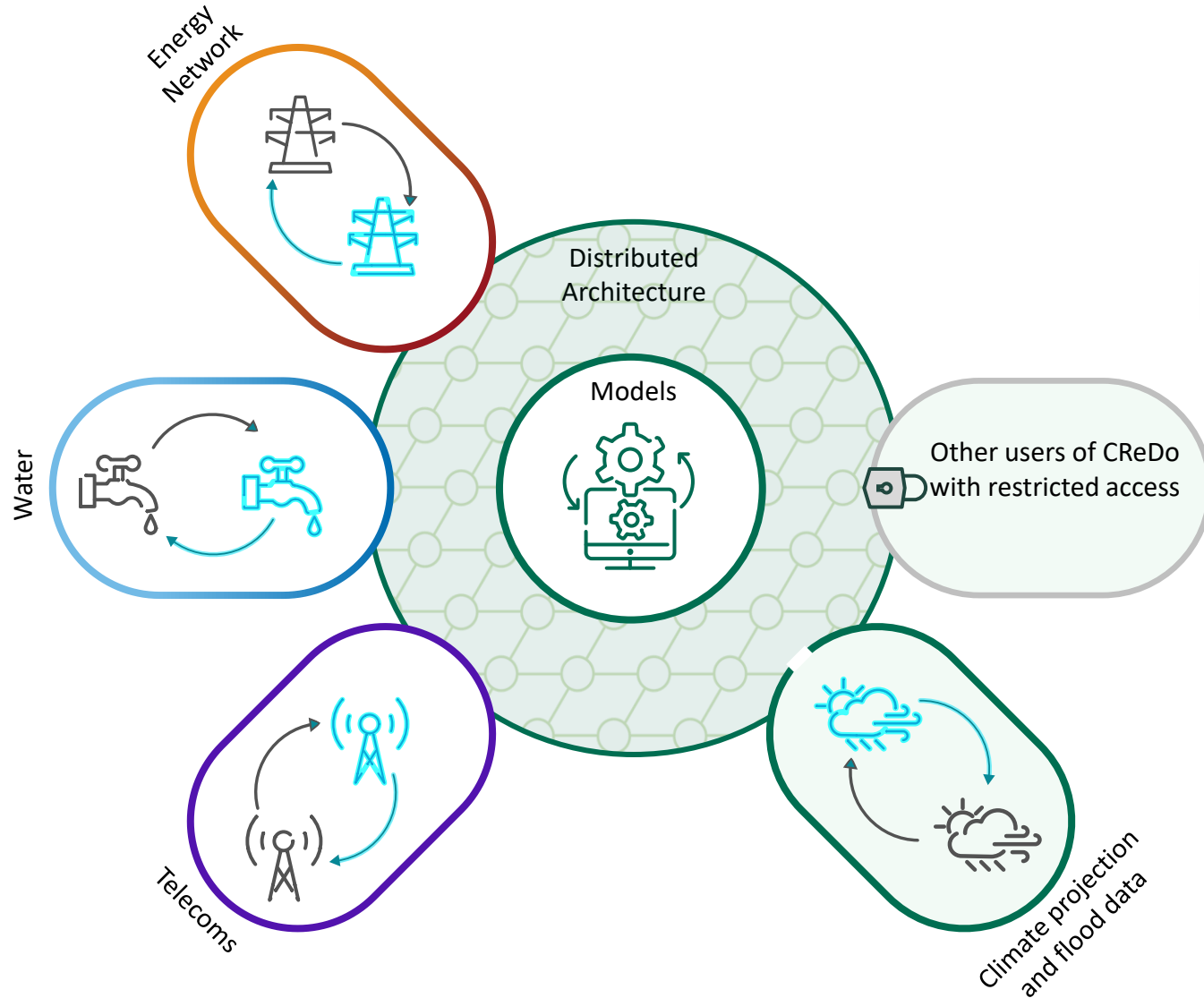
CReDo: PHASE 1

Centralised data sharing architecture

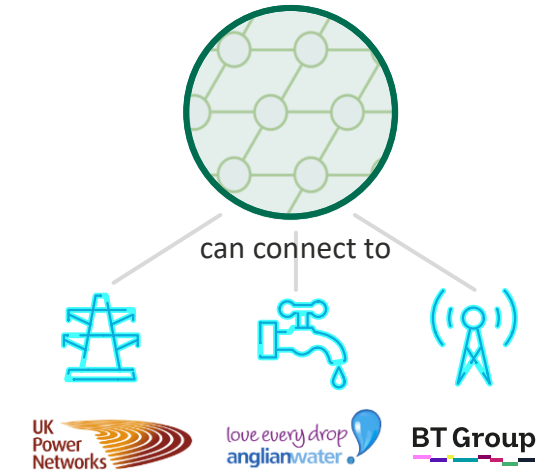


CReDo: PHASE 2

Distributed data sharing architecture

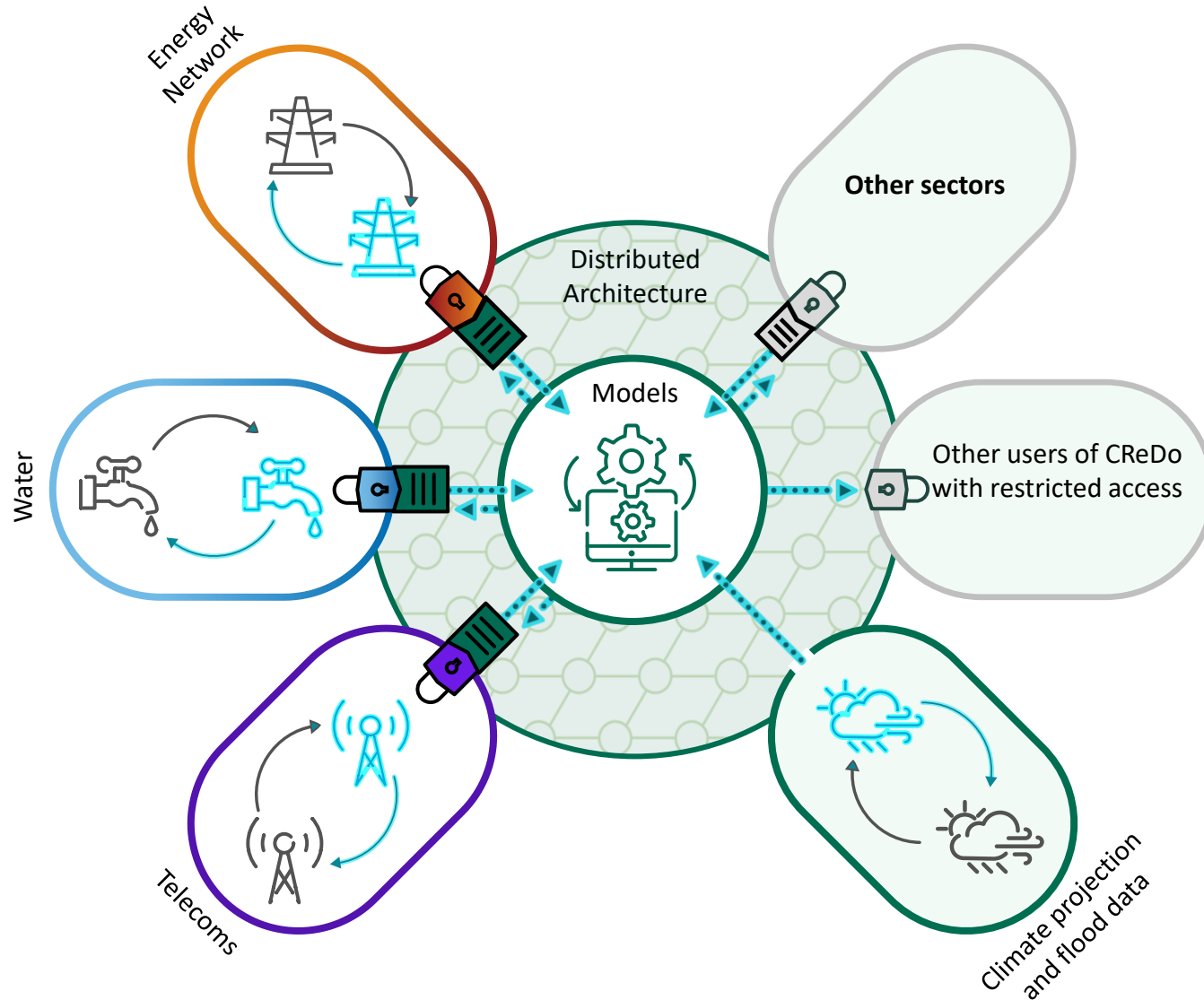


Distributed architecture

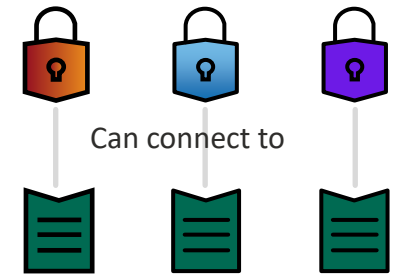


CReDo: PHASE 2 AND FUTURE USE CASES

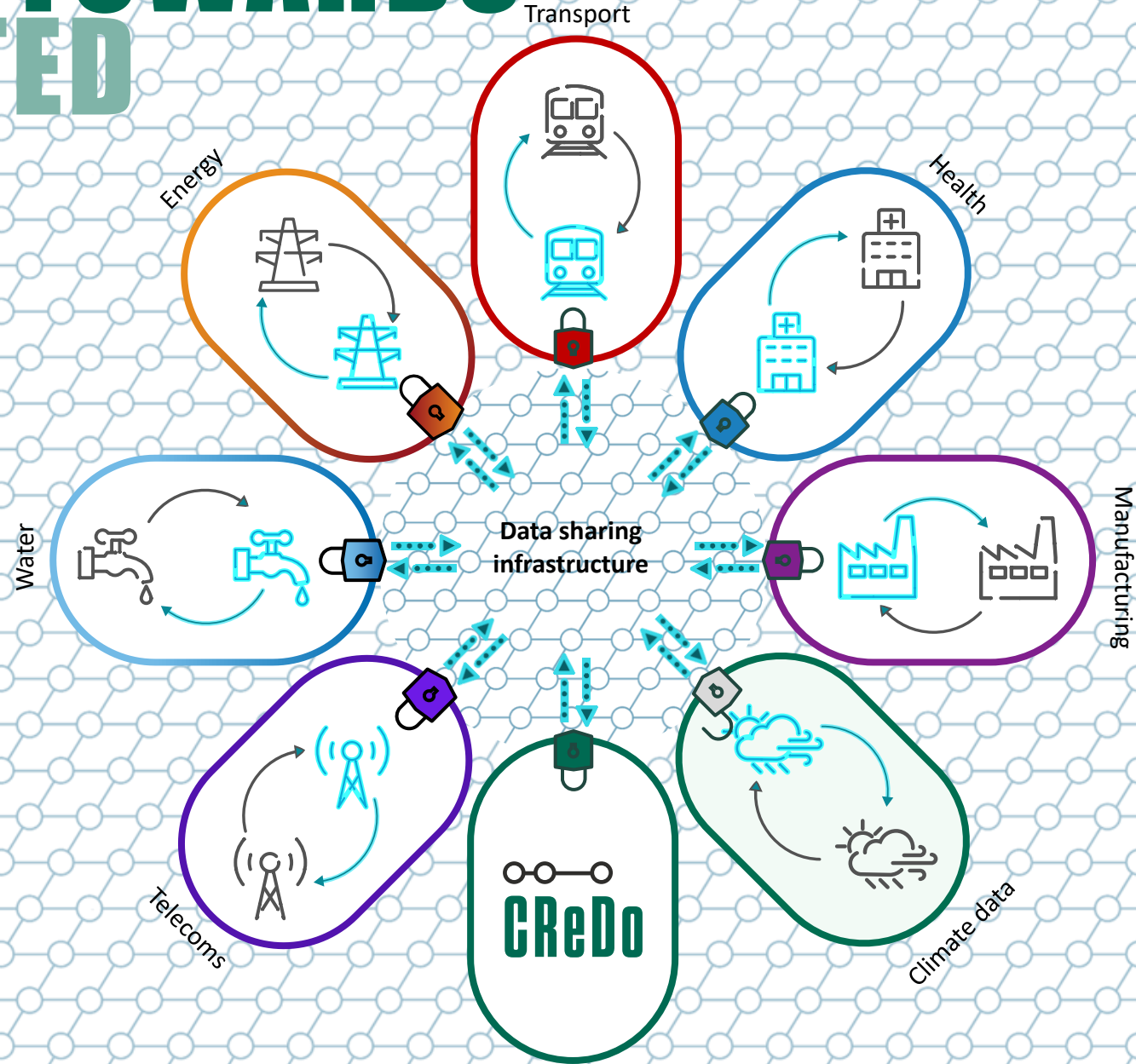
Distributed data sharing architecture



Access, security and quality protocols for CReDo



JOURNEY TOWARDS CONNECTED DIGITAL TWINNS



DATA SHARING INFRASTRUCTURE

A) Trust framework: governance and legal

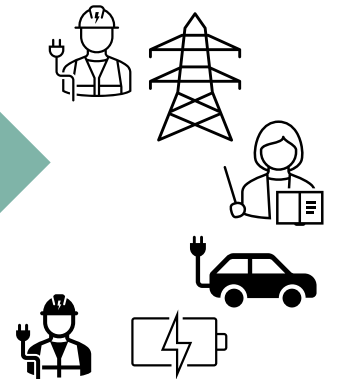
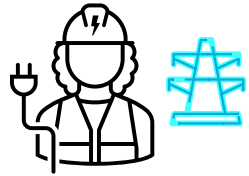
I'm willing to share

B) Data preparation and standardisation

I'm ready to share

C) Data sharing: distributed architecture

I'm sharing



DIGITALTWINHUB.CO.UK – SHARE PROGRESS

The screenshot shows the Digital Twin Hub website with a purple header. The navigation menu includes 'About Us', 'NDTP', 'Projects', 'Archive', 'Learn', 'Get Involved', 'Explore', and a search icon. There are 'Sign In' and 'Sign Up' buttons. The main content area is titled 'Climate Resilience Demonstrator' and features a sub-header 'Taking Action' with a call to action 'Get involved and help shape the future of the project'. Below this is a paragraph about the project's goal and a call to action for engagement. To the right, there is a 'CReDo in the news' section with a photo of a power line and a 'CReDo news page' button. At the bottom, there are three call-to-action cards for 'Infrastructure Owners and Operators', 'Regulators and Policy Makers', and 'Future Funders', each with a 'Get involved', 'Find out more', or 'Contact us' button. A fourth card for 'Interactive visualisation' includes a map and a 'Try the visualisation' button.

DIGITAL TWIN HUB About Us ▾ NDTP Projects ▾ Archive ▾ Learn ▾ Get Involved ▾ Explore ▾ Q Sign In ▾ Sign Up

Climate Resilience Demonstrator

CReDo - New phase CReDo In the news

Taking Action

Get involved and help shape the future of the project

CReDo is combining datasets from Anglian Water, BT and UK Power Networks into one system model to develop a cross-sector picture of extreme weather events. In bringing together data and insights across sectorial and organisational boundaries, the project shows how we can collaborate on a national network of connected digital twins to create resilient infrastructure.

The CReDo team would like to engage with asset owners, regulators, government and policy experts across all sectors who want to help in steering the direction of future phases of this exciting project.

Infrastructure Owners and Operators

The connected insights from CReDo become more powerful as new networks and data join the project. Can you share your data and unlock new resilience planning opportunities?

Get involved

Regulators and Policy Makers

We need your help to shape the future mechanisms that enable collaboration and facilitate cross-sector cross sector data sharing and strategic investments that enhance system resilience.

Find out more


Future Funders

The project's sustainability relies upon the market taking a bigger stake in CReDo's future to help apply the technology use cases. Are you interested in partnering in collaborative research and development and innovation funding activities?

Contact us

CReDo in the news


CReDo news across the Hub.



CReDo news page

Interactive visualisation

A demonstration of what CReDo has accomplished.



Try the visualisation

**THANK YOU
ANY QUESTIONS?**

