DARE UK

TREvolution and TRE Adopters Launch

13th March 2025

UK Research and Innovation

HDRUK Health Data Research UK

ADRUK Data-driven change

Housekeeping

Toilets

Fire Drill

WIFI – Nottingham Venues

Refreshments

Photography and videography

Online participants

DARE UK

DARE UK Programme Overview

UK Research and Innovation

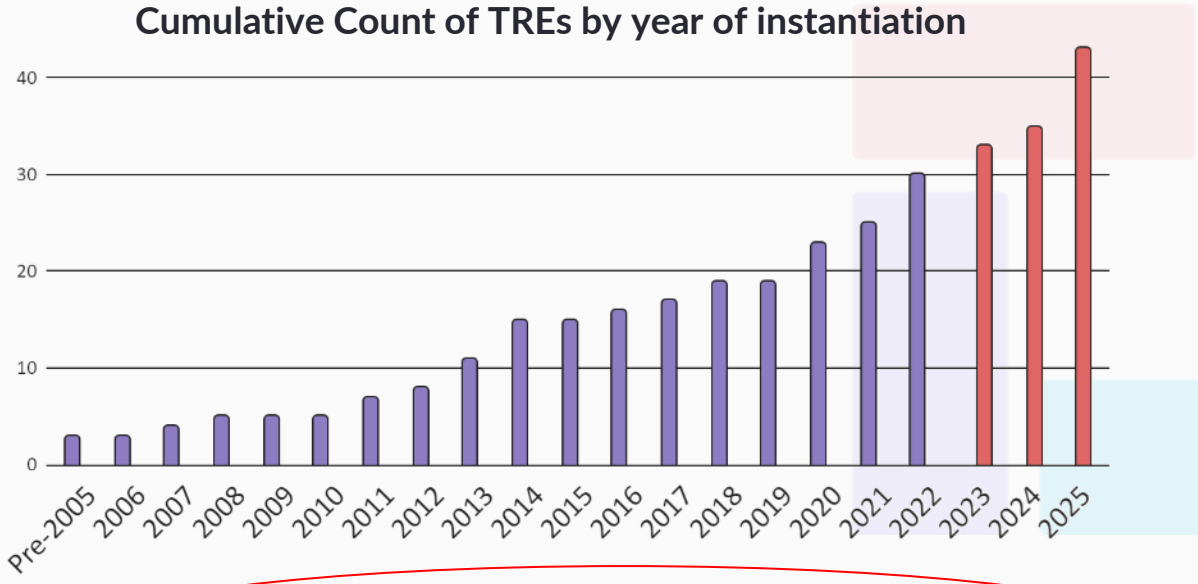
HDRUK Health Data Research UK

ADRUK Data-driven change

A paradigm shift for sensitive data access

DARE UK

Data Distribution ⇨ **Data access**



Tiny fraction of research computing infrastructures

Shift to Trusted Research Environment (TRE) access is a positive change

Key challenges:

- Costly to setup and run – less funds for direct research
- Data access processes are complicated and take too long
- Lack of interoperability - researchers must learn different environments and processes
- Environments do not meet the needs of all types of research e.g AI
- Multi-TRE projects do not happen routinely (federation)

UK Research and Innovation · HDRUK Health Data Research UK · ADRUK Data-driven change

DARE UK

Sensitive data: affecting people, communities, and populations…

Data linkage: safely connecting sensitive data to benefit people, communities and populations…

Vision

For all research and innovation to benefit from seamless, secure use of diverse sensitive data, at a pace, efficiency and scale approaching that of the open data ecosystem, that revolutionises research productivity and accelerates research to deliver public good

Mission

To put the UK at the forefront of sensitive data research and innovation by assembling the tools, technologies and standards needed to streamline secure data linkage and use

DARE UK

Phase 1:
Design & Dialogue

July ’21 – March ‘24

£7.5m

Phase 2:
Build, Test & Establish

August ’24 – March ‘27

£18.2m

Phase 3:
Deliver, Optimise & Federate

TBC

DARE UK

Phase 1: Design & Dialogue

July ’21 – March ‘24

£7.5m

- Two landscape reviews
  - Initial review
  - Infrastructure review
- Two portfolios of funded projects
  - 9x Sprint Exemplars
  - 5x Driver Projects
- Phase 1 recommendations report
- UK-wide public dialogue
- Community building initiatives
- Early draft of a federated architecture blueprint

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Underpins Phase 2

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Phase 2: Build, Test & Establish

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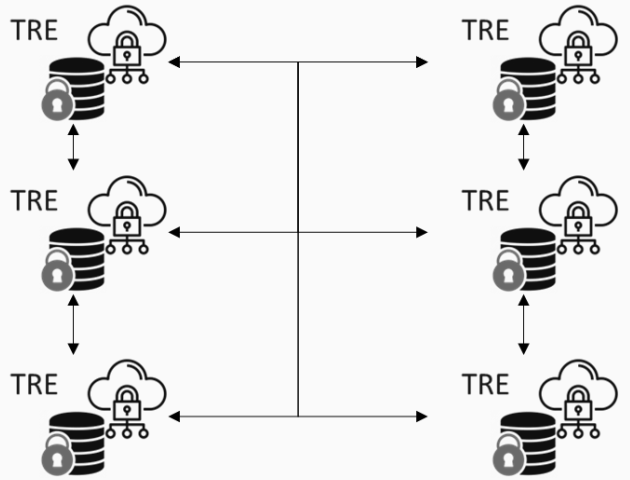
Intra-TRE Capabilities

&

Inter-TRE Capabilities



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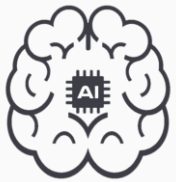
Federated Analysis

Output checking



AI / ML

Standards

Partners

Build | Dev

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TREvolution
A DARE UK PROJECT

K8TRE

TREFX v2

Director

Rabbitverse

SATRE

SACRO

Mission

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TREs / SDEs

Test | Configure | Adopt

Partners

Build | Develop

Mission

To put the UK at the forefront of sensitive data research and innovation by assembling the tools, technologies and standards needed to streamline secure data linkage and use

DARE UK
EARLY ADOPTERS

FOCUS-5

SOAR

FRIDGE

PANORAMA

SAFER

VISTA

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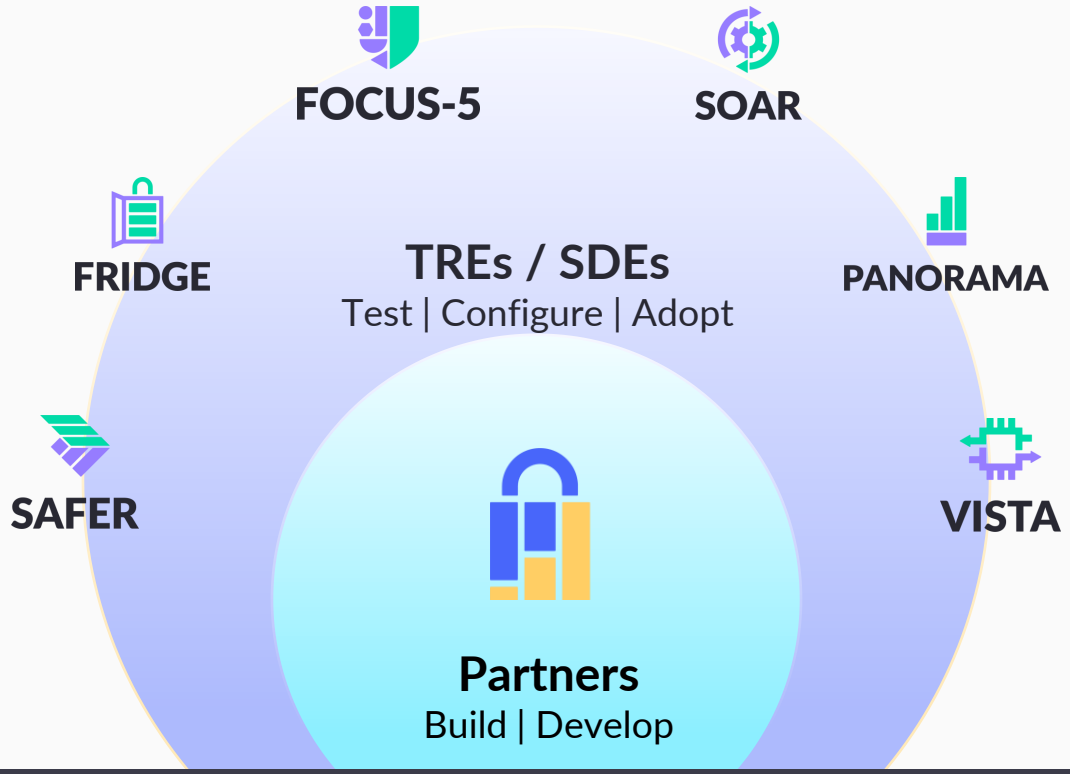
DARE UK
EARLY ADOPTERS



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DARE UK
RESEARCH EXEMPLARS

Geographic

Economic

Social

Climate &
Environment

Commercial

Care & social

Health

Consumer

Lifestyle

Justice

Researchers

Do science | Deliver impact

TREs / SDEs

Test | Configure | Adopt

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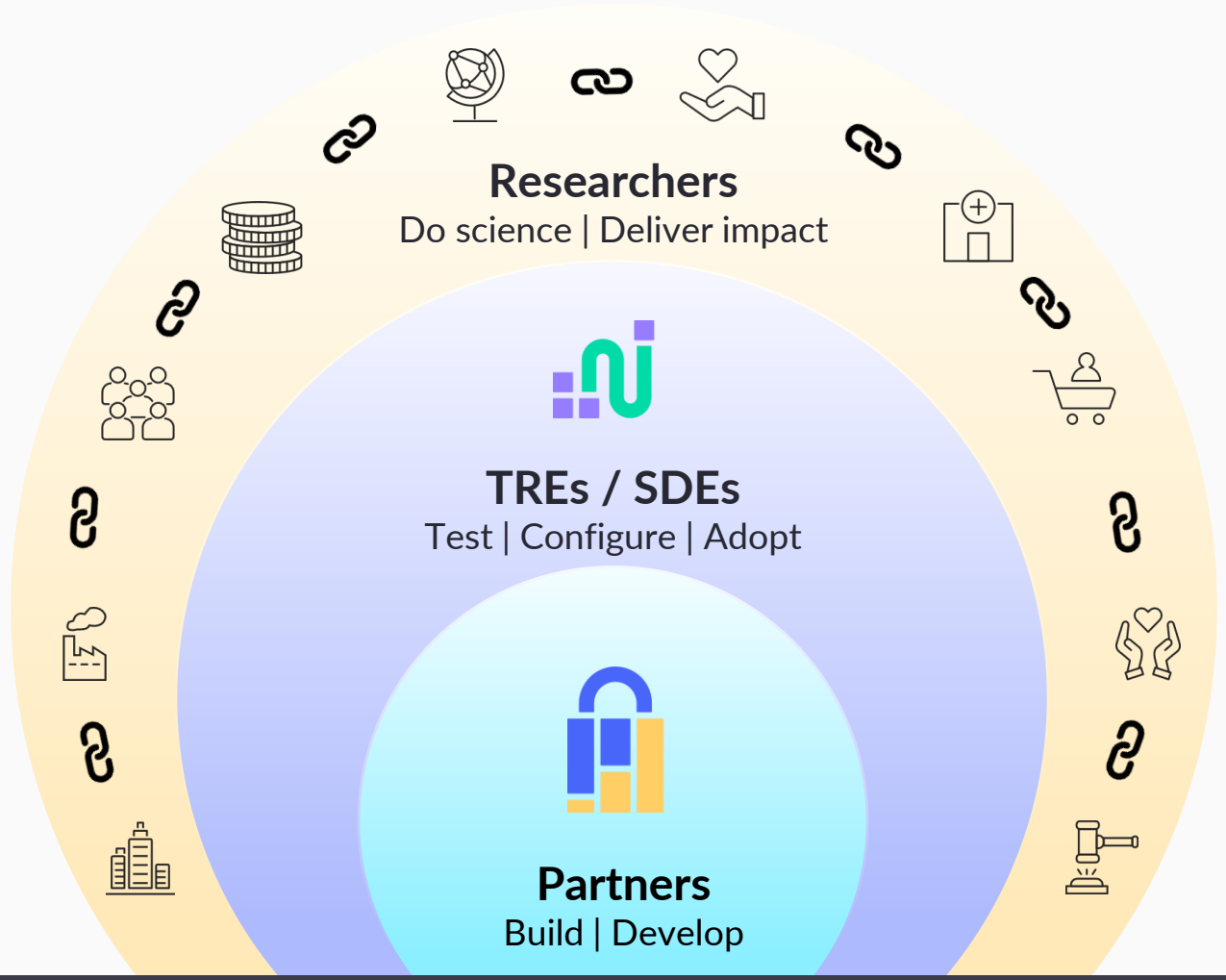

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Community

Sharing | Best practice | Open science

Researchers

Do science | Deliver impact

TREs / SDEs

Test | Configure | Adopt

Partners

Build | Develop

SA TRE

SDC-REBOOT COMMUNITY

PEDRI

Safe Data Access Professionals

ISDFPN
INTERNATIONAL SECURE DATA FACILITY PROFESSIONALS NETWORK

BESTIES
Best Practice for Research Images

DARE UK COMMUNITY GROUPS

UK TRE
Community Management and Engagement IG

AI Risk Evaluation Community Group

UK Synthetic Data Community Group

UK TRE
Information Governance Interest Group

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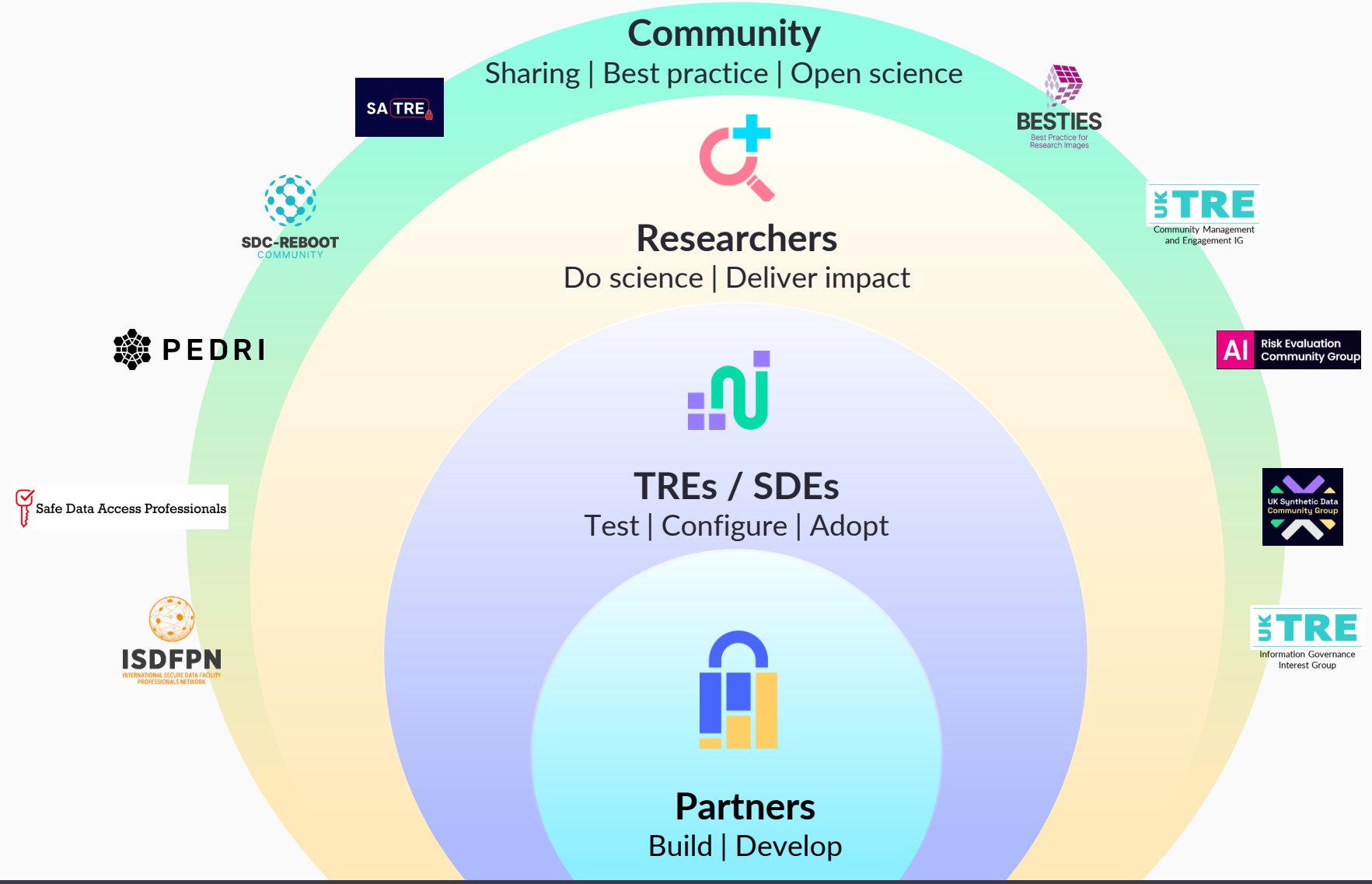
DARE UK COMMUNITY GROUPS



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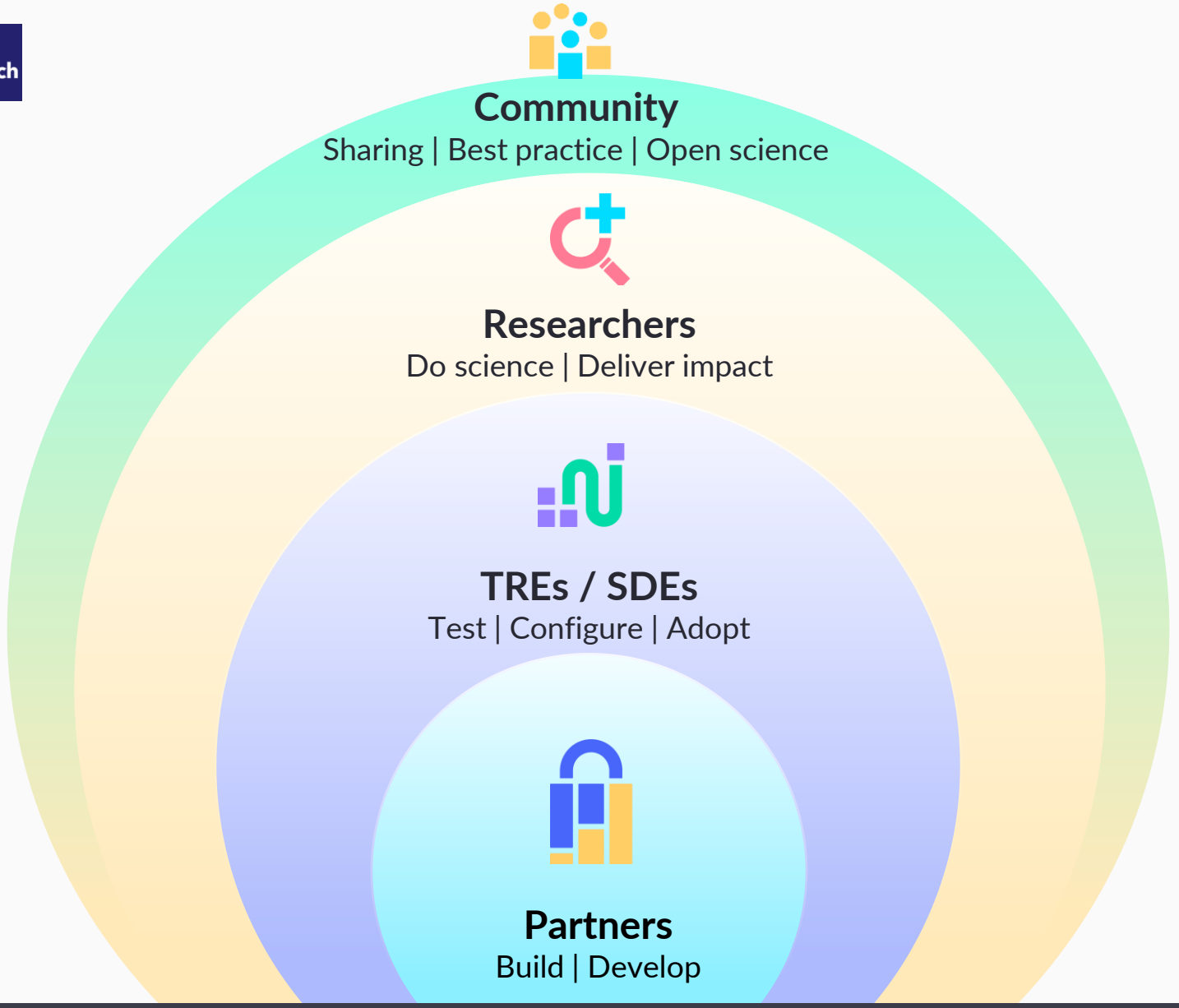

Smart Data Research UK

Dementias Platform UK

DARE UK

ADR UK

UKRI Future Data Services

+ Our Future Health

DSH Digital Solutions Hub

BR-UK

UKRI Science and Technology Facilities Council
Hartree Centre

BioFAiR

HDRUK
Health Data Research UK

UK Longitudinal Linkage Collaboration

PRUK

DAFNI
Data & Analytics Facility for National Infrastructure

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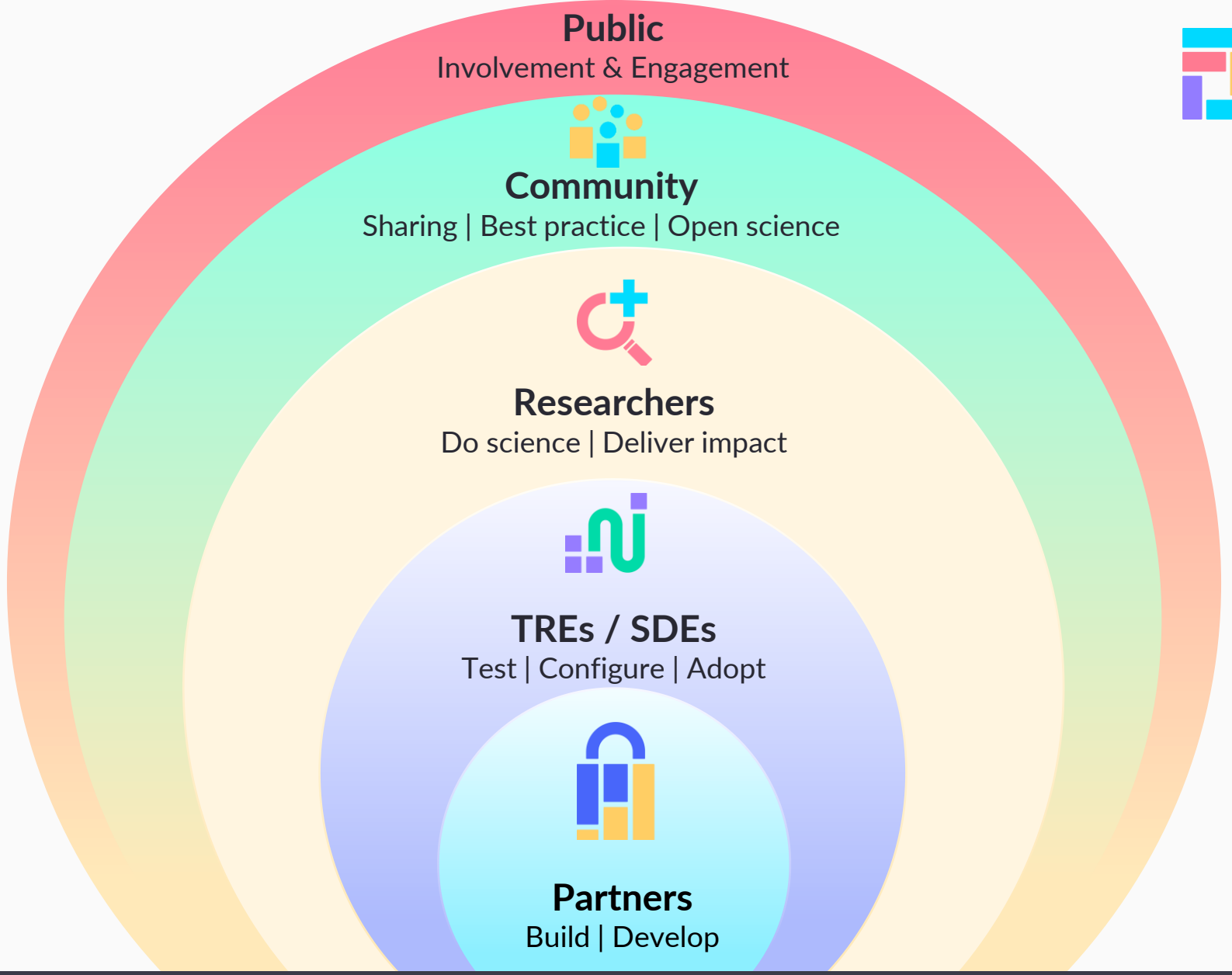

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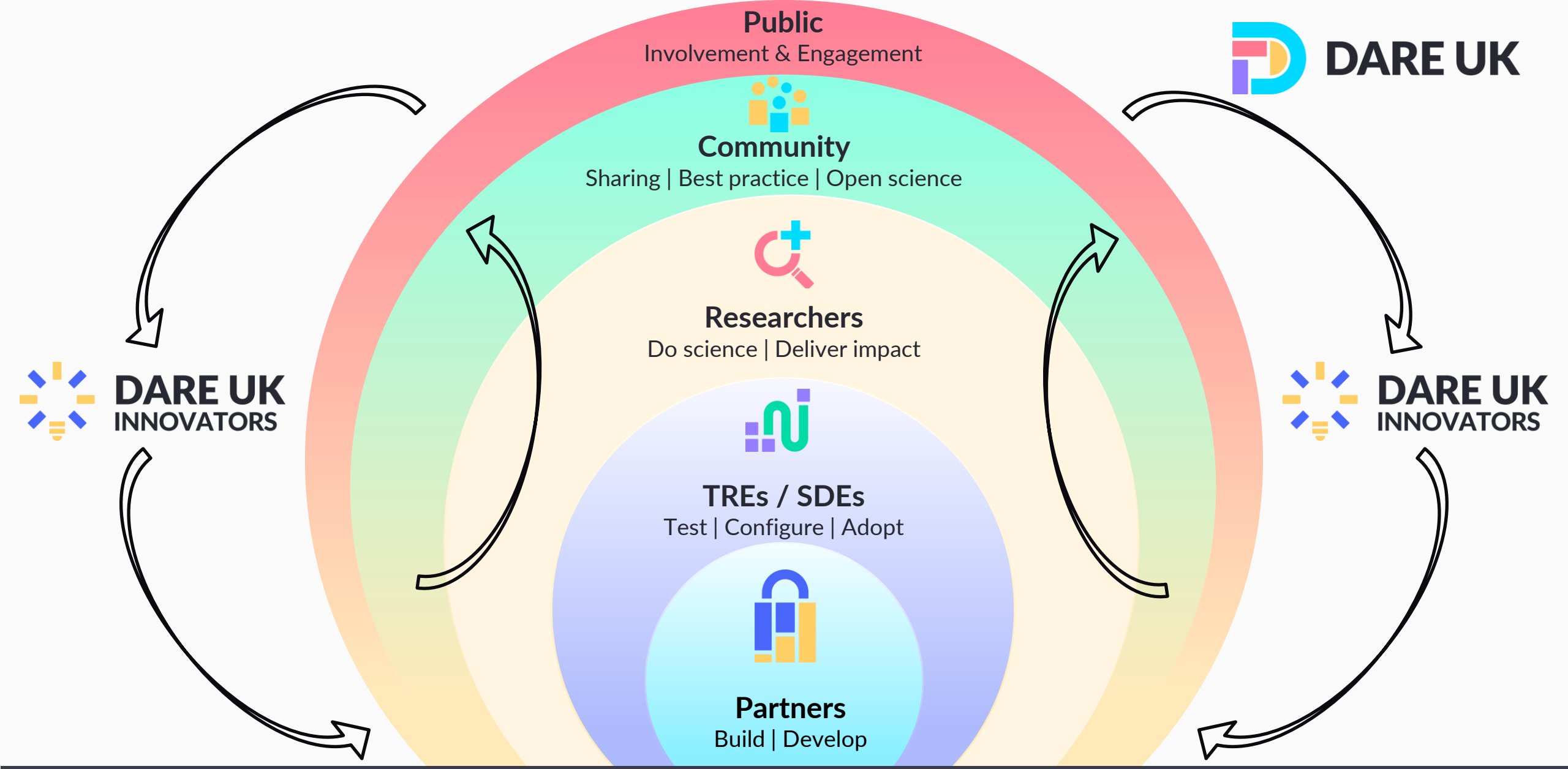

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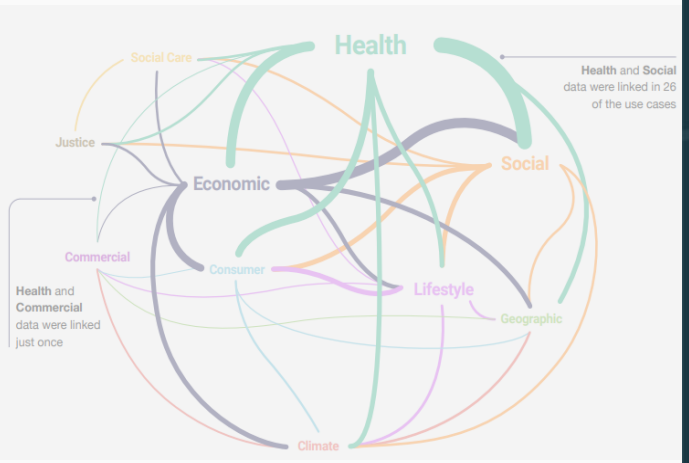
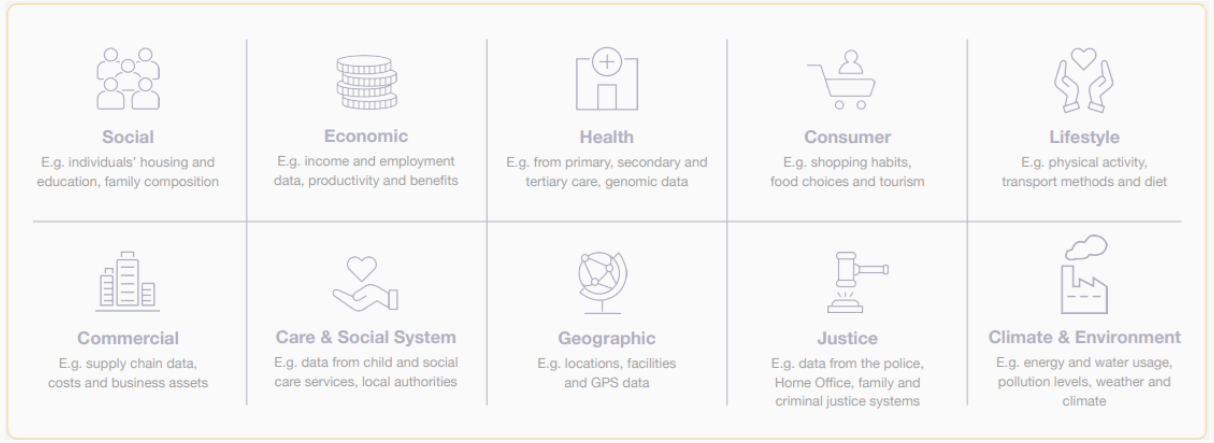
The opportunity is significant



Potential economic benefits of addressing just 10 of the challenges estimated at:

£319.11bn (+/£79.14bn) to 2050



Link to full report

Gavin Starks, Icebreaker One, 2025.

- Collaborate on interoperability standards
- Enable AI research using sensitive data
- Establish a federated UK-wide research data ecosystem
- Enable research supporting a Government missions

DARE UK

DARE UK PROGRAMME TEAM

EMILY JEFFERSON
Interim Director

FERGUS MCDONALD
Deputy Director

ROB BAXTER
Technical Lead

WESTLEY IGBO
Senior Communications and Engagement Manager

MICHELLE AMUGI
Programme Manager

BALINT STEWART
Programme Manager

KATIE PORTER
Project Coordinator

UK Research and Innovation

HDRUK Health Data Research UK

ADRUK Data-driven change

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Introducing TREvolution

UK Research and Innovation

HDRUK Health Data Research UK

ADRUK Data-driven change

Our three challenges

Possible

Technology development is rapidly changing what is possible.

Industry and research organisations drive the art of the possible

Not everything that is possible is acceptable and/or useful

Acceptable

Opinions from the public are vital to include in the design of technology solutions.

Policy and governance usually follows public opinion.

Not everything that is acceptable is possible and/or useful

Useful

Researchers seek to undertake leading research programmes.

They adopt tools that are usable and help them in their research.

Not everything that is useful is acceptable and/or possible

The acceptability drive

Moving from data sharing to data access

An increasing adoption of this policy across sectors

The catch

The usefulness of this approach to researchers is less clear.

It does bring greater assurance of process but can result in data silos being developed.

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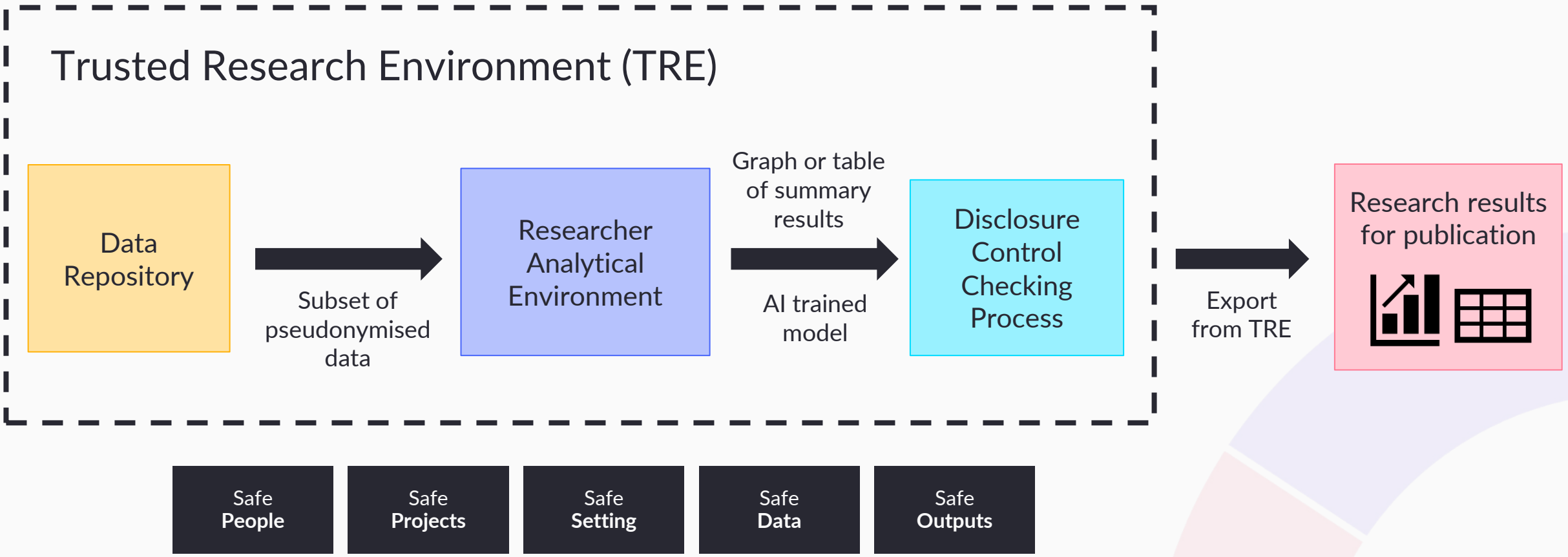
What is a TRE?


Trusted Research Environment (TRE)
Data Repository
Subset of pseudonymised data
Researcher Analytical Environment
Graph or table of summary results
AI trained model
Disclosure Control Checking Process
Export from TRE
Research results for publication
Safe People
Safe Projects
Safe Setting
Safe Data
Safe Outputs

What do we mean by federation?

A scenario where data exists in more than one environment.

Each environment has its own jurisdiction and decision-making capability for the use of that data

Therefore, federation is when data and decision making is not in one location.

What is the most useful approach?

The **most useful approach** would be to have all data required, in a single location, where the tools and resources exist to analyse the data.

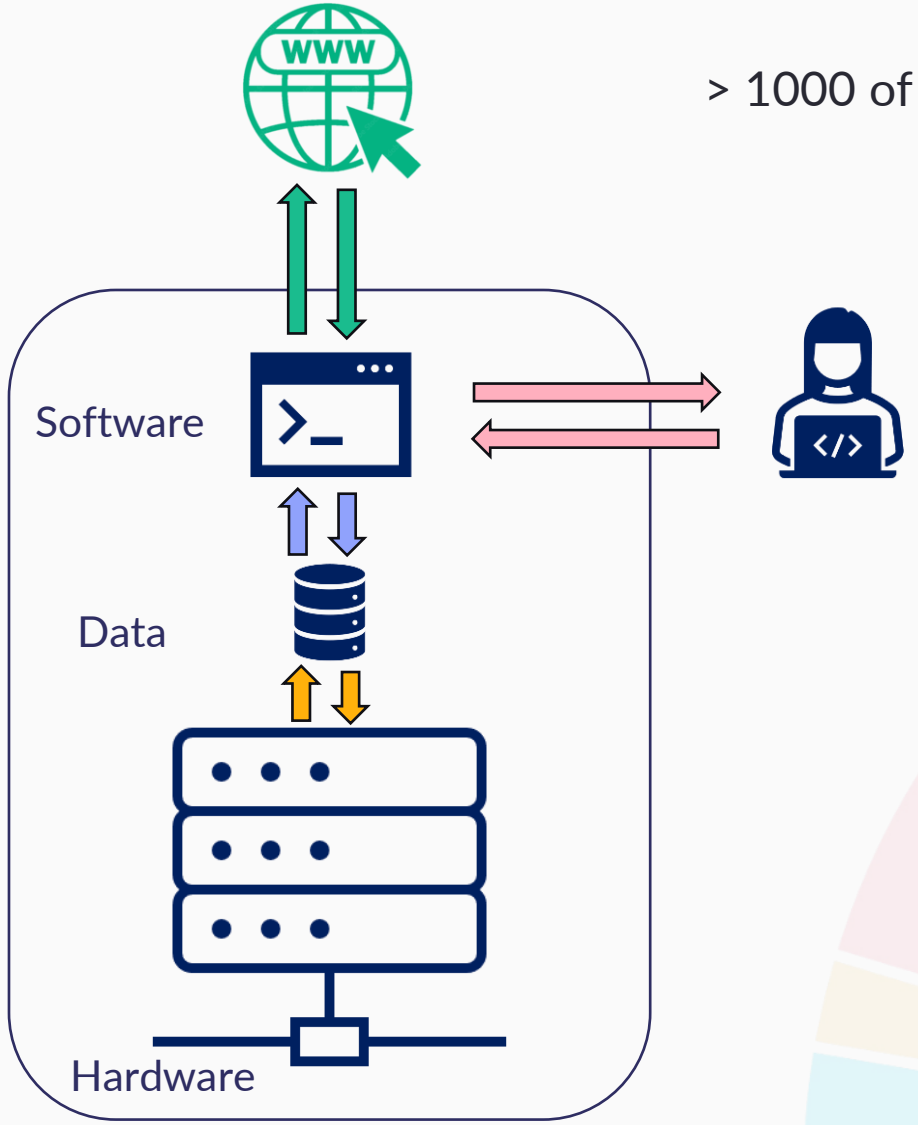
Within the UK it is usually **technically possible** to have data all in a single location.

But we live and operate in a federated eco-system:

- Data is stored across the four nations
- Data is usually stored in domain-based environments
- Compute is not always where the data resides

Research Computing Environments for non-sensitive data

- Open access the internet
  - Import and export data
  - Access collaborative tools, pipelines, data
- Install software



> 1000 of these across the UK

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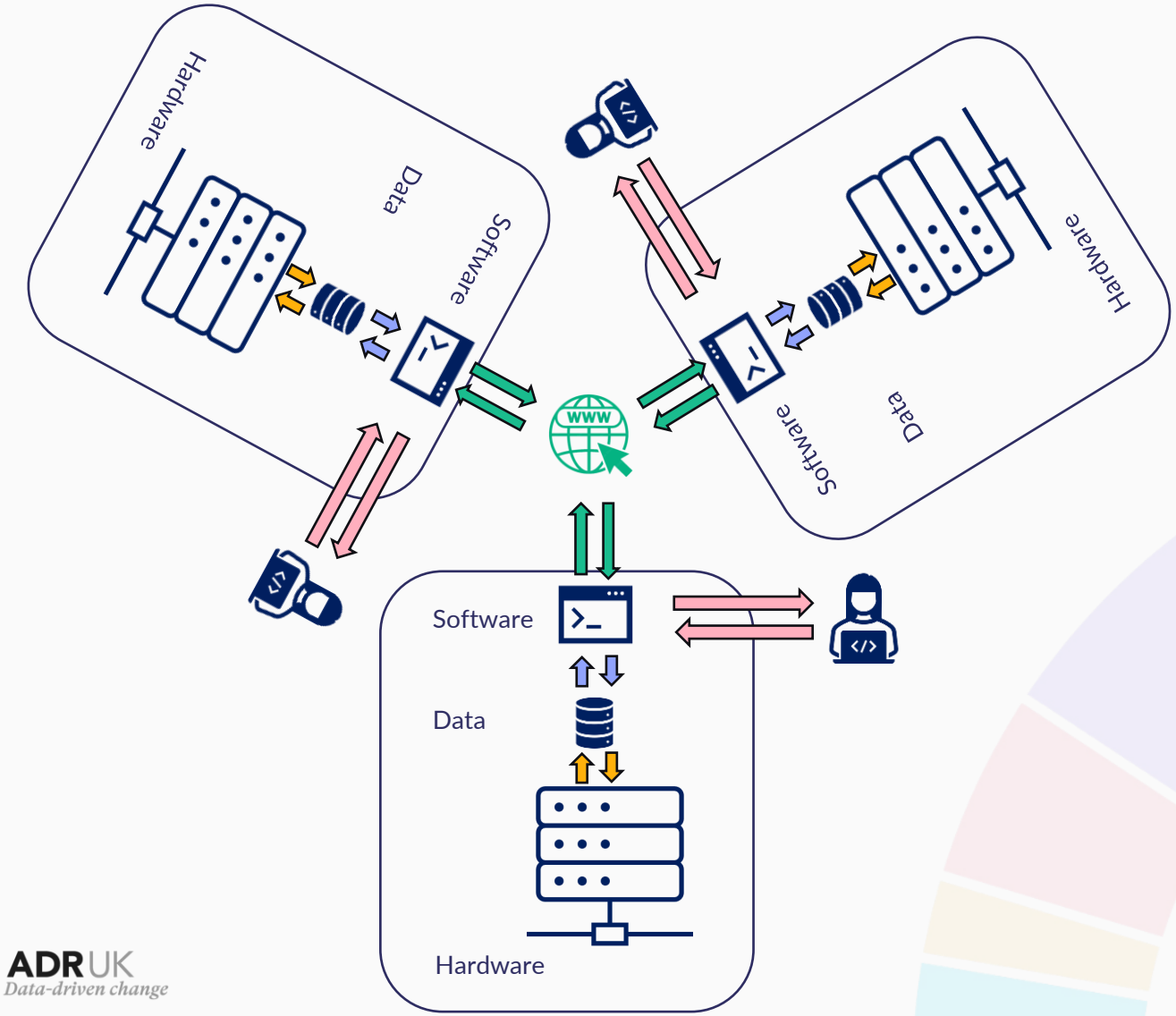
Research Computing Environments for non-sensitive data

Relatively easy to:

- share data, tools, pipelines and analysis
- remotely access compute power/data from another organisation
- run federated projects



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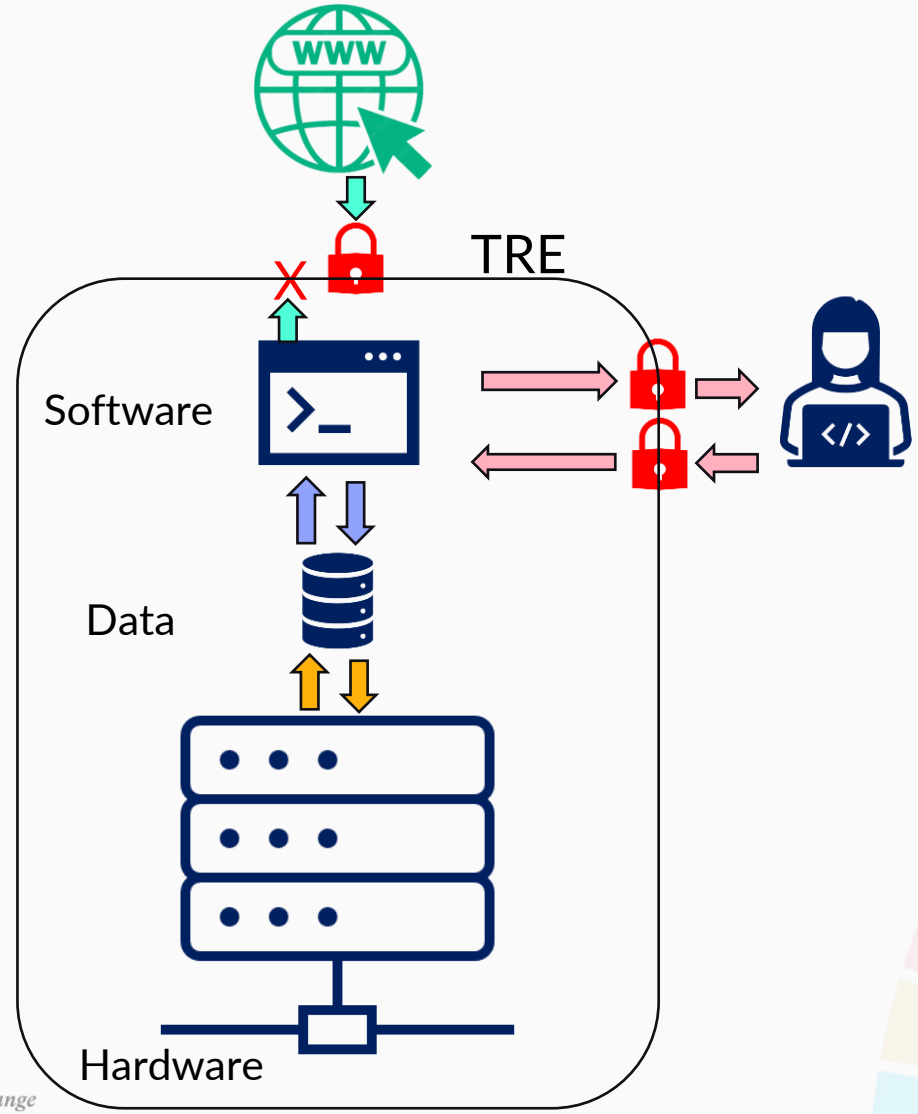
Trusted Research Environments – “Safe Setting and Safe Output”

- TREs stop open access to the internet and control anything that comes in or out using airlocks
- This can break some federated tools
- Innovative engineering is required



The pain in the system

In order to do analyses across multiple environments, Razia has to do the heavy lifting and understand all the major components.

In order to support researchers, Trish is being asked to install multiple tools and platforms that have different mechanisms for authentication, technologies and governance approaches

In order to support research in sensitive data, Harriet must act more like a TRE, considering security implications and tool requirements

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Unlocking NHS data for research: how to improve the regional Secure Data Environment network

February 2025

DARE UK

"achieving full federation of datasets across the regional SDE network is likely to be difficult in the short to medium term. Despite this, **common data standards and enabling architecture should be put in place now** to realise this ambitious goal in the future. "

"In addition, nearly 80 per cent of companies rated highly the need for **direct access to anonymised individual patient-level data**. This suggests that service models where users cannot directly access non-aggregated patient data to carry out their analyses will not meet the needs of most companies. "

https://www.abpi.org.uk/publications/unlocking-nhs-data-for-research-how-to-improve-the-regional-secure-data-environment-network/

Team TREvolution

- Co-led from the Universities of Dundee, Manchester, Nottingham, Swansea and West of England

- with:
  - NHS Scotland
  - Lancashire Teaching Hospital
  - Durham University
  - Lancaster University
  - Nottingham University Hospitals NHS Trust
  - University College London
  - University of Queensland
  - University of Basel
  - University of Cape Town

Focusing on a few challenges

- Importing other data
- Exporting data
- Access to a single environment
- Direct access to data

Movement of data

Current approach

Movement of data goes against the general concept of a TRE – data access not data sharing

Significant volumes of data sit outside a TRE – establishing a TRE is a significant ask (cost and process)

Disclosure control applied at each TRE can make research in rare populations hard

Future approach

Framework and technical approach to allow data movement between TREs whilst maintaining an air gap and disclosure control.

Provide mechanisms for data controllers to dynamically connect their data to a TRE for the purpose of an approved project.

Quantify the risk thresholds and comfort levels of each TRE, apply disclosure control at the right time for the project

Access to a single environment

Current approach

There is no single access point. Researchers have to navigate each TRE individually.

Each environment has varying support for analytical tools and compute

Multiple governance applications and processes to be approved access.

Future approach

A single ‘front door’ TRE that allows a researcher access to a network of TREs.

The front door TRE provides a single and standardised environment.

Quantify the risk thresholds and comfort levels of each TRE, apply disclosure control at the right time for the project

Direct access to data

Current approach

Default method in TREs.

Not the default approach for most federated tools

Currently a conflict between acceptability vs usability

Future approach

Providing a technical solution that can replicate the default method, even when data is from multiple TREs

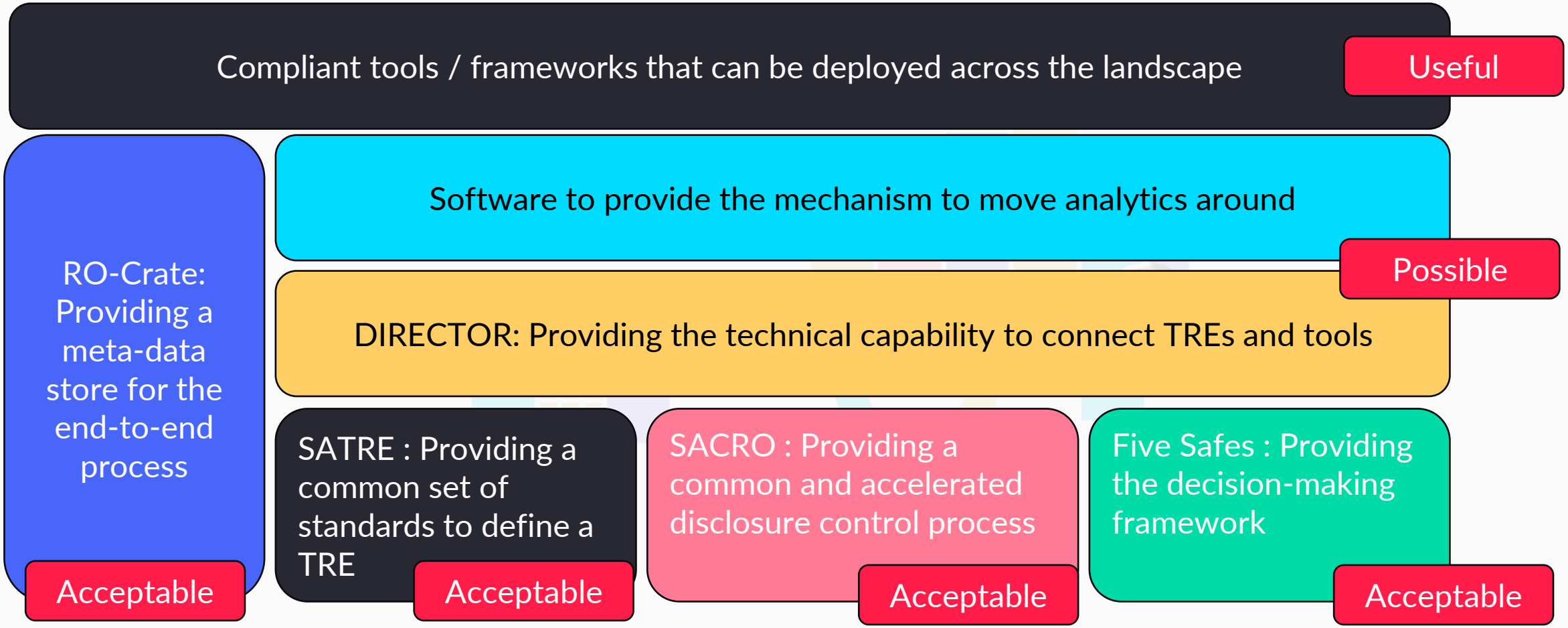
Providing the most appropriate access for the stage of the research programme

Establishing the equilibrium

Standards as a mechanism to provide acceptability

- Moving from single, isolated entities to a network of inter-connected and interoperable TREs
- Standards are required to ensure interoperability and provide the acceptability of an approach
- Until recent DARE investments there were no community and cross domain standards to define a TRE
- There are federated analysis systems and standards in the open data community
- There are meta data frameworks available in other domains
- The Five Safes provides a cross-domain governance framework

The parts that build TREvolution



The desired state

Razia is able to *select the analytics* to run, *select the data* required across TREs, and chose the *level of compute* to use from a tool or platform of her choice.

In order to achieve this goal, **digital transformation** is required that is sympathetic to current governance. Must allow Trish to **secure data** *and* utilise existing high **compute** so others don't replicate what Harriet already has available.

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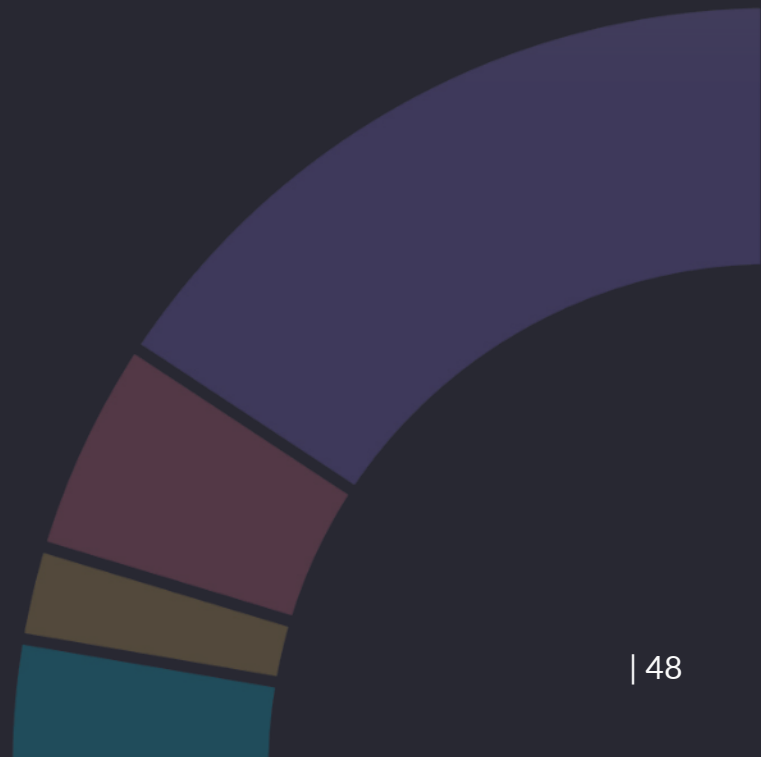
Thank you - Questions



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EARLY ADOPTERS

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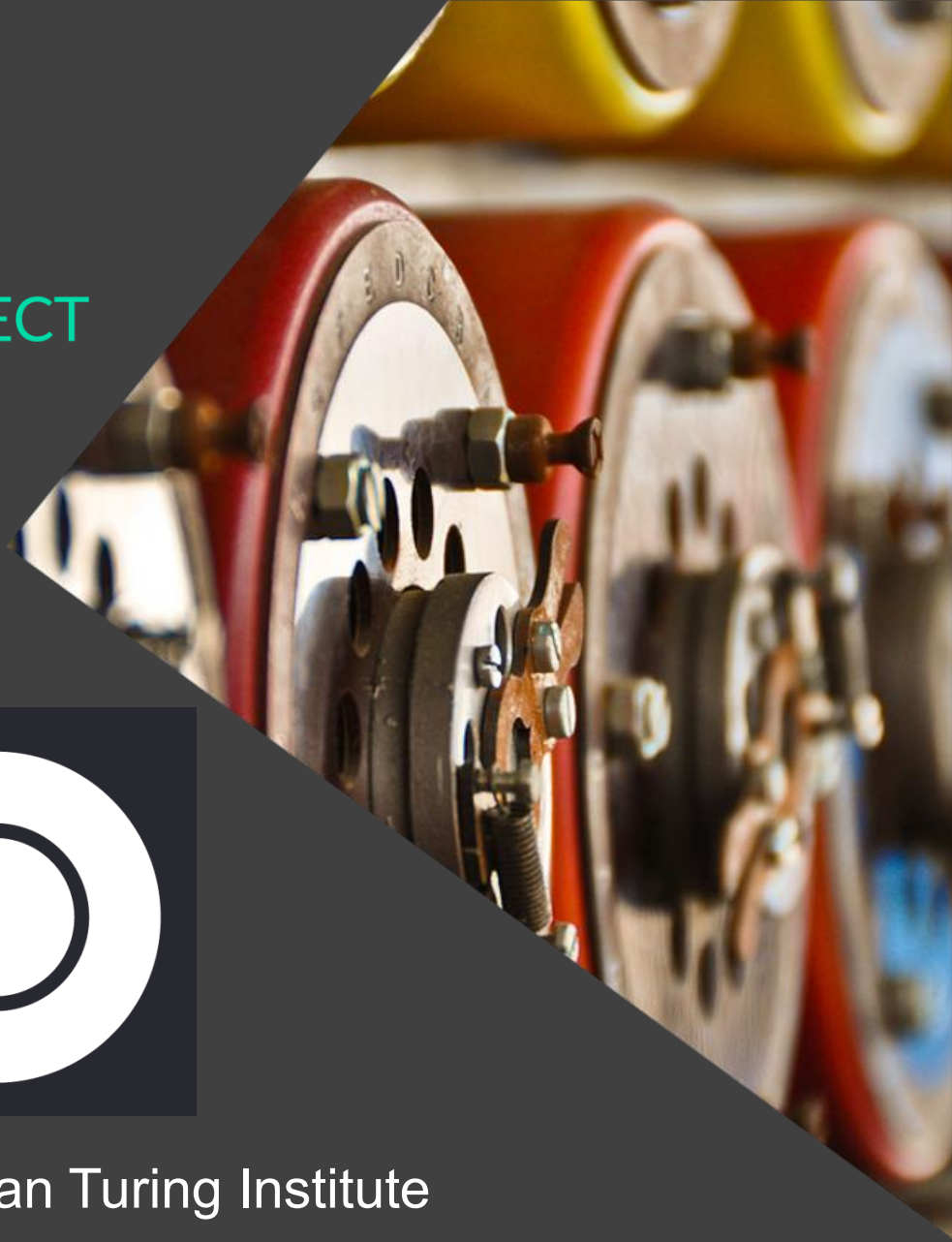
The Alan Turing Institute

FRIDGE
A DARE UK PROJECT



FRIDGE: Federated Research Infrastructure by Data Governance Extension

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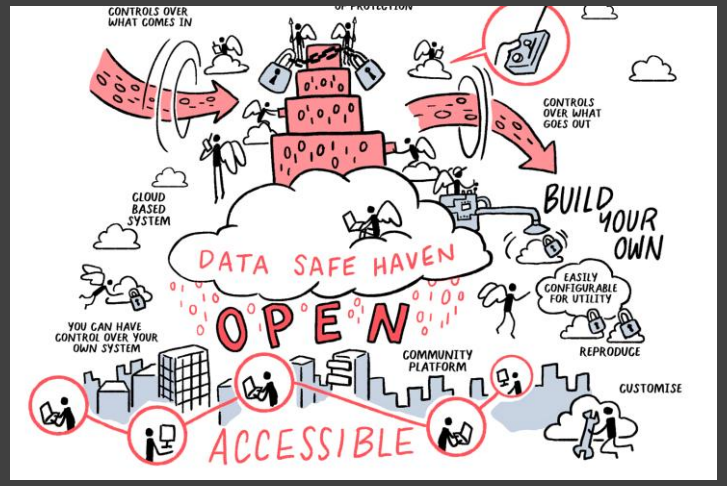
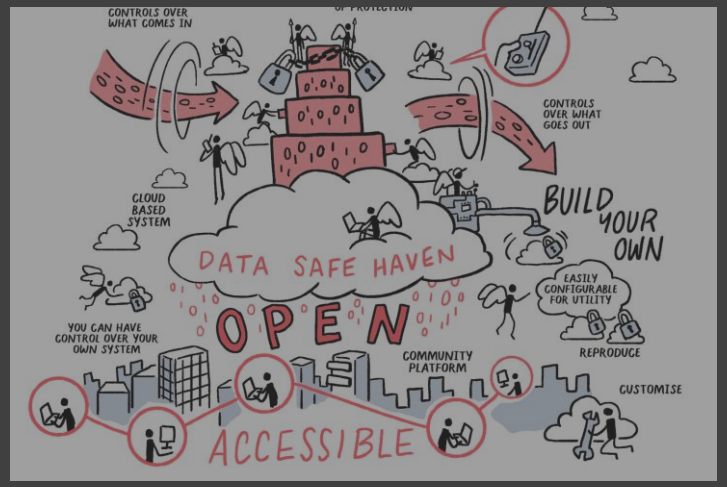
Martin O'Reilly | Director of Research Engineering, The Alan Turing Institute

13 March 2025 | DARE UK Transformational Programme launch event



Turing Data Safe Haven

Image credits: Scriberia, created for The Turing Way, Turing, DARE UK



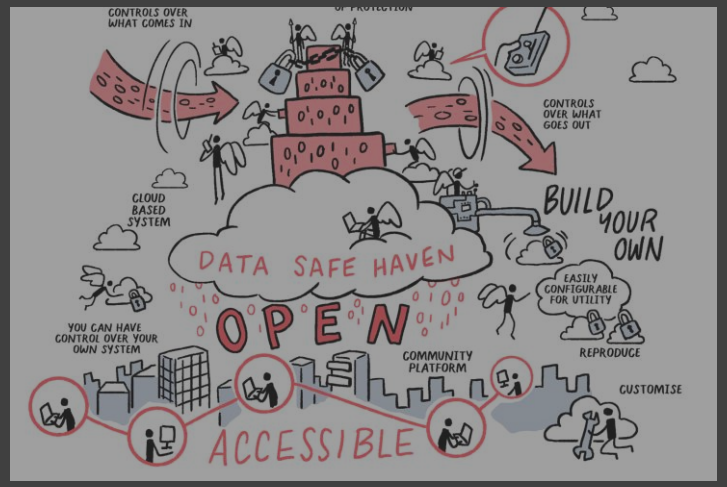
Turing Data Safe Haven

UK TRE

trusted research environment

UK TRE Community

Image credits: Scriberia, created for The Turing Way, Turing, DARE UK



Turing Data Safe Haven

UK TRE

trusted research environment

UK TRE Community

FRIDGE

FRIDGE HPC TRE

Image credits: Scriberia, created for The Turing Way, Turing, DARE UK

What is FRIDGE?

- A Trusted Research Environment capability for High Performance Compute clusters…

What is FRIDGE?

- A Trusted Research Environment capability for High Performance Compute clusters…
- …supporting the extension of a client organisation's information governance model to the HPC cluster

What is FRIDGE?

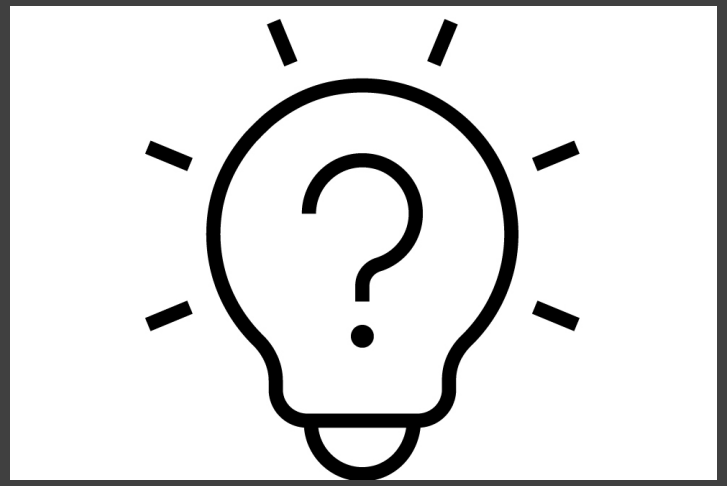
The Alan Turing Institute

UCL

DARE UK

University of BRISTOL

UNIVERSITY OF CAMBRIDGE



Why FRIDGE?

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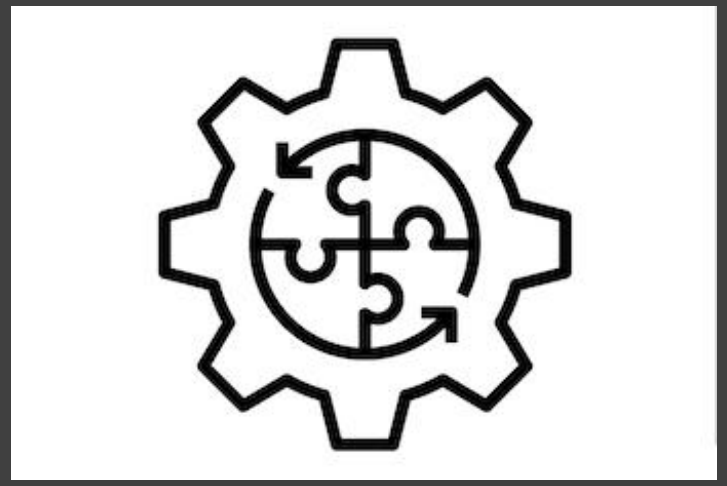
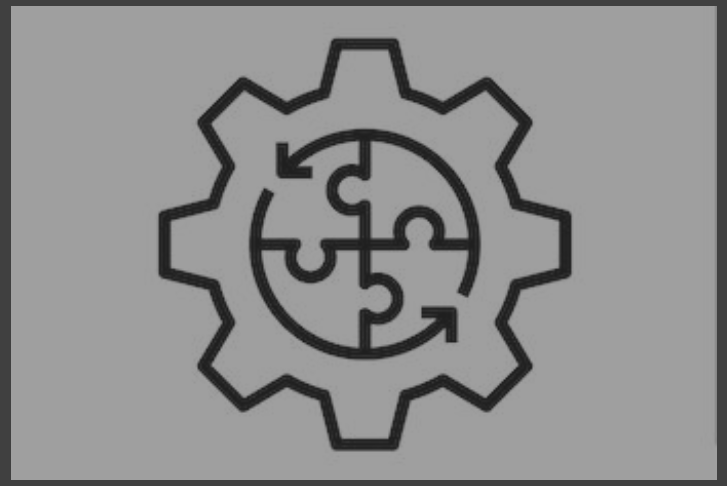


How FRIDGE works

Why FRIDGE?



How FRIDGE works

Working together

Why is FRIDGE needed?

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- HPC clusters generally don’t support TRE level isolation between projects and their data

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- TREs generally don’t include large scale HPC capabilities

Why is FRIDGE needed?

- HPC clusters generally don’t support TRE level isolation between projects and their data
- TREs generally don’t include large scale HPC capabilities
- Very difficult to establish trust between systems at different organisations, even if both are TREs

How FRIDGE works

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- Put information governance problem front and centre

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- Extend client organisation's information governance model to HPC cluster

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- Extend client organisation’s information governance model to HPC cluster
- Adapt shared responsibility model used for TREs deployed in public cloud

How FRIDGE works

- API for client organisation to configure a strongly isolated HPC system segment as a TRE tenancy

How FRIDGE works

- API for client organisation to configure a strongly isolated HPC system segment as a TRE tenancy
- TRE tenancy supports a common infrastructure layer (Kubernetes-compatible container service)

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- Code to reproducibly deploy TRE components

How FRIDGE works

- API for client organisation to configure a strongly isolated HPC system segment as a TRE tenancy
- TRE tenancy supports a common infrastructure layer (Kubernetes-compatible container service)
- Code to reproducibly deploy TRE components
- Standardised shared responsibility TRE tenancy hosting agreement, leveraging existing standards

How FRIDGE works

- Deploy a standalone TRE into the HPC TRE tenancy

How FRIDGE works

- Deploy a standalone TRE into the HPC TRE tenancy, or
- Extend an existing TRE with a satellite segment deployed into the HPC TRE tenancy

What is success for FRIDGE?

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- Deployment of real-world sensitive dataset to a third-party HPC cluster for real-world research

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- Turing project and researchers working on Bristol and Cambridge managed HPC clusters (AIRR) under Turing information governance control

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- Deployment of real-world sensitive dataset to a third-party HPC cluster for real-world research
- Turing project and researchers working on Bristol and Cambridge managed HPC clusters (AIRR) under Turing information governance control
- Providing tools and processes that are easily adopted and adapted by others to do the same

Working together with TREvolution

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- **SATRE:** Will ensure our solution is SATRE compliant as the standard evolves

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- **Federation:** Satellite TRE model is a Compute and Execution Node

Working together with TREvolution

- **SATRE:** Will ensure our solution is SATRE compliant as the standard evolves
- **Reference implementation:** FRIDGE will align on design principles + common infrastructure layer
- **Federation:** Satellite TRE model is a Compute and Execution Node
- Disclosure control for AI models + outputs

Working together with TREvolution

- Public Involvement and Engagement

Working together with TREvolution

- Public Involvement and Engagement
  - Integrate with TREvolution PIE theme

Working together with TREvolution

- Public Involvement and Engagement
  - Integrate with TREvolution PIE theme
  - Extending trust / control across organisations

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  - Integrate with TREvolution PIE theme
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  - Research with AI/ML models

Working together with TREvolution

- Public Involvement and Engagement
  - Integrate with TREvolution PIE theme
  - Extending trust / control across organisations
  - Research with AI/ML models
  - Research at large scale

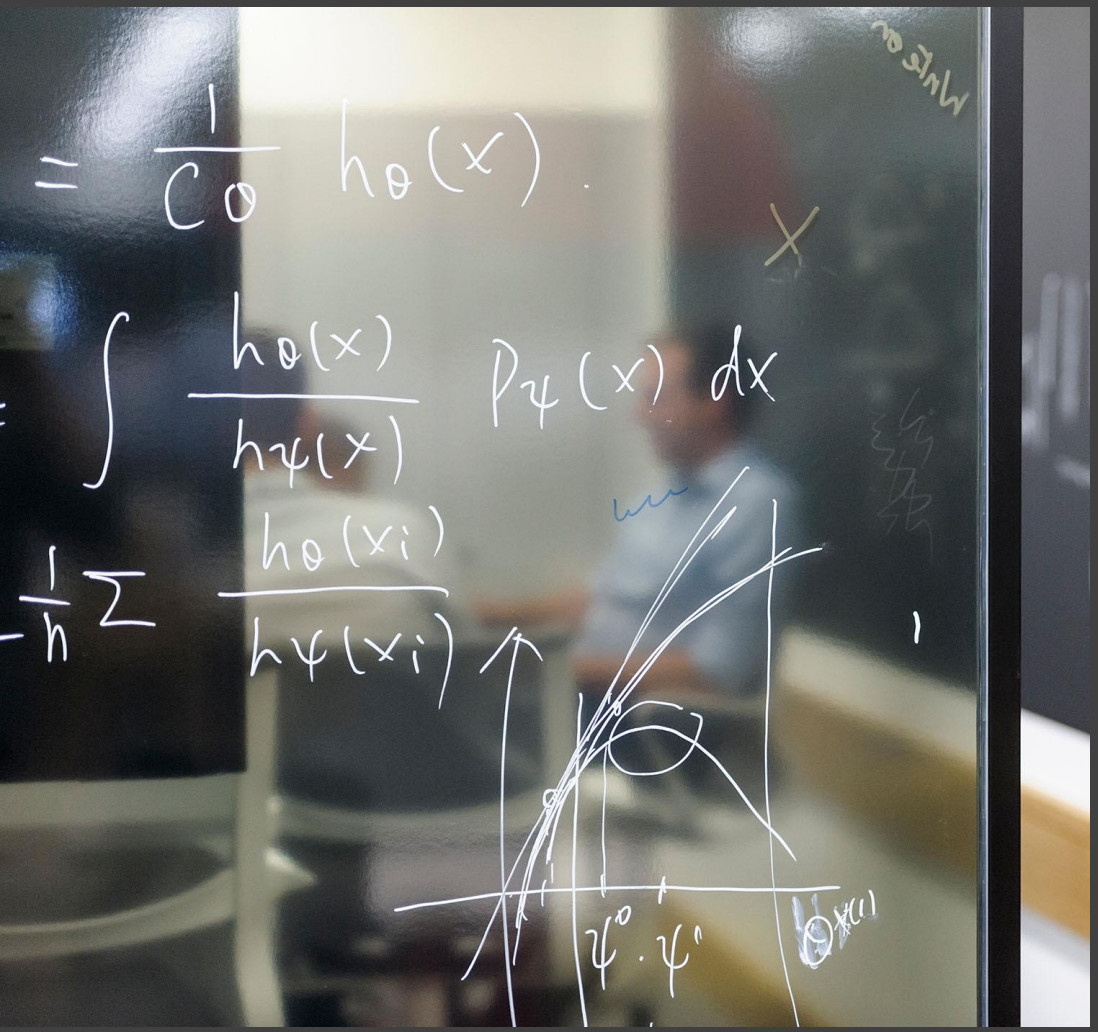
Working together with the wider community

Working together with the wider community

- **Data providers / TRE administrators**: What would make you comfortable extending your existing information governance to a HPC TRE tenancy?

Working together with the wider community

- **Data providers / TRE administrators**: What would make you comfortable extending your existing information governance to a HPC TRE tenancy?
- **HPC administrators:** Can you support the TRE tenancy model and how would you do so?



Questions?

moreilly@turing.ac.uk | @martinoreilly.bsky.social | https://turing.ac.uk/research-engineering

FOCUS-5
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Federating Operations and Collaborations Using 5-Safes

Prof. Becca Wilson
PI DataShield
University of Liverpool

Prof. Vishnu V Chandrabalan
Director & CCIO, Lancashire and South Cumbria Secure Data Environment
Consultant Surgeon, Lancashire Teaching Hospitals NHS Foundation Trust
TREvolution Early Adopters Meeting, Nottingham

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Project Overview

- **Test, evaluate and adapt** the Five Safes Research Object Crate Profile (5SROC) in an SDE-DataSHIELD federated context. **Opportunity to feedback (good, bad and ugly) into TREvolution**
- WP1: SDE Data Workflows
  - Lead: Vishnu. Contributors: University of Liverpool (UoL), Wessex
- WP 2: DataSHIELD Analysis of 5SROC
  - Lead: Becca, Olly. Contributors: DataSHIELD community, UK SDE & TRE stakeholders
- WP3: PPIE and Stakeholder Consultation
  - Lead: Dale. Contributors: stakeholder group, whole team

Deliverables and Impact

- **WP1: SDE Data Workflows**
- Utilise the 5SROC Profile to ensure operational viability for use in SDEs and compatibility with DataSHIELD
- Deploy and evaluate 5SROC enabled data orchestration framework (Cr8tor) across multiple SDE/TRE environments (i.e. Wessex SDE, NWSDE, LSCSDE)
- Establish an adoption roadmap for wider SDE adoption
- *WP will facilitate SDE risk mitigation and auditing aligned with relevant standards, demonstrates internal SDE data flows and governance compatible with federated analysis frameworks*
- **WP2: DataSHIELD Analysis of 5SROCs**
- Pilot a working implementation of DataSHIELD 5SROCs-supported federated analysis in a range of representative infrastructures: a lightweight stand-alone deployment, international deployment (OBiBa server), cross region SDE data analysis (LSC & Wessex SDEs)
- DataSHIELD release with 5SROCs integrated into core layers
- Roadmap for 5SROCs implementation adaptable for other federated analysis tools
- *WP will streamline DataSHIELD integration into SDEs/TREs adopting DARE UK standards. Make available information relevant to compatibility with SDE governance requirements*

Deliverables & Impact

WP3: PPIE and Stakeholder Consultation

Existing DARE UK public resources relating to federated analysis use language at UG level, OpenSAFELY uses PG level

- Supporting and Orientating Public members into technical programmes could be supported by well designed resources, that use more accessible language, as well as formats that support understanding such as animation and storytelling. This can also help engagement with data controllers, IG and other staff groups too.
- There is a need to link the use of privacy preserving technologies and others directly to patient and public benefits along **health**, **discovery** and **trust** building lines

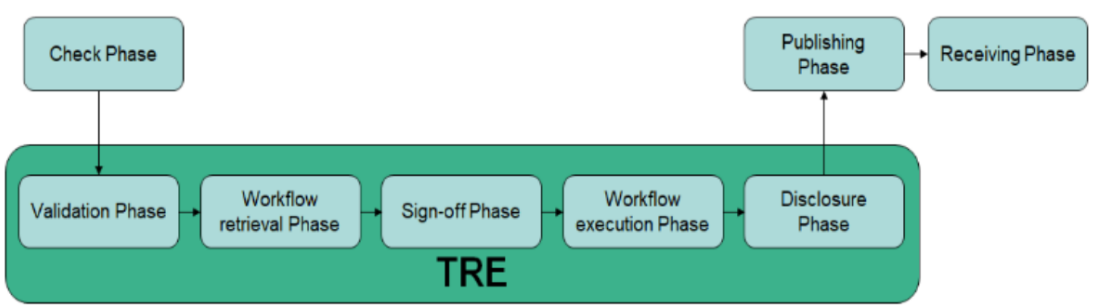
We will co-produce resources with simpler language and imagery for public and domain understanding of the **spectrum of federated health data contexts and the role of privacy preserving technologies** - moving emphasis away from **data sharing to data access**.

WP will deliver infographics / animations and defined terms useable for the public. Supporting domain understanding across DataSHIELD, SDE projects and TREvolution (DARE UK Phase 2)

In addition we are ready to work across TREvolution and **build upon work already done** there and in the NHS SDE PPIE space. Supporting the development of project agnostic principles important in the wider health data space and of public concern. Explainable Automation, particular around Statistical Disclosure Controls and “Safe Impacts” supporting the public’s desire to be more cognisant of the benefits of research, the impacts in their lives and promoting knowledge sharing and implementation to maximise on this.

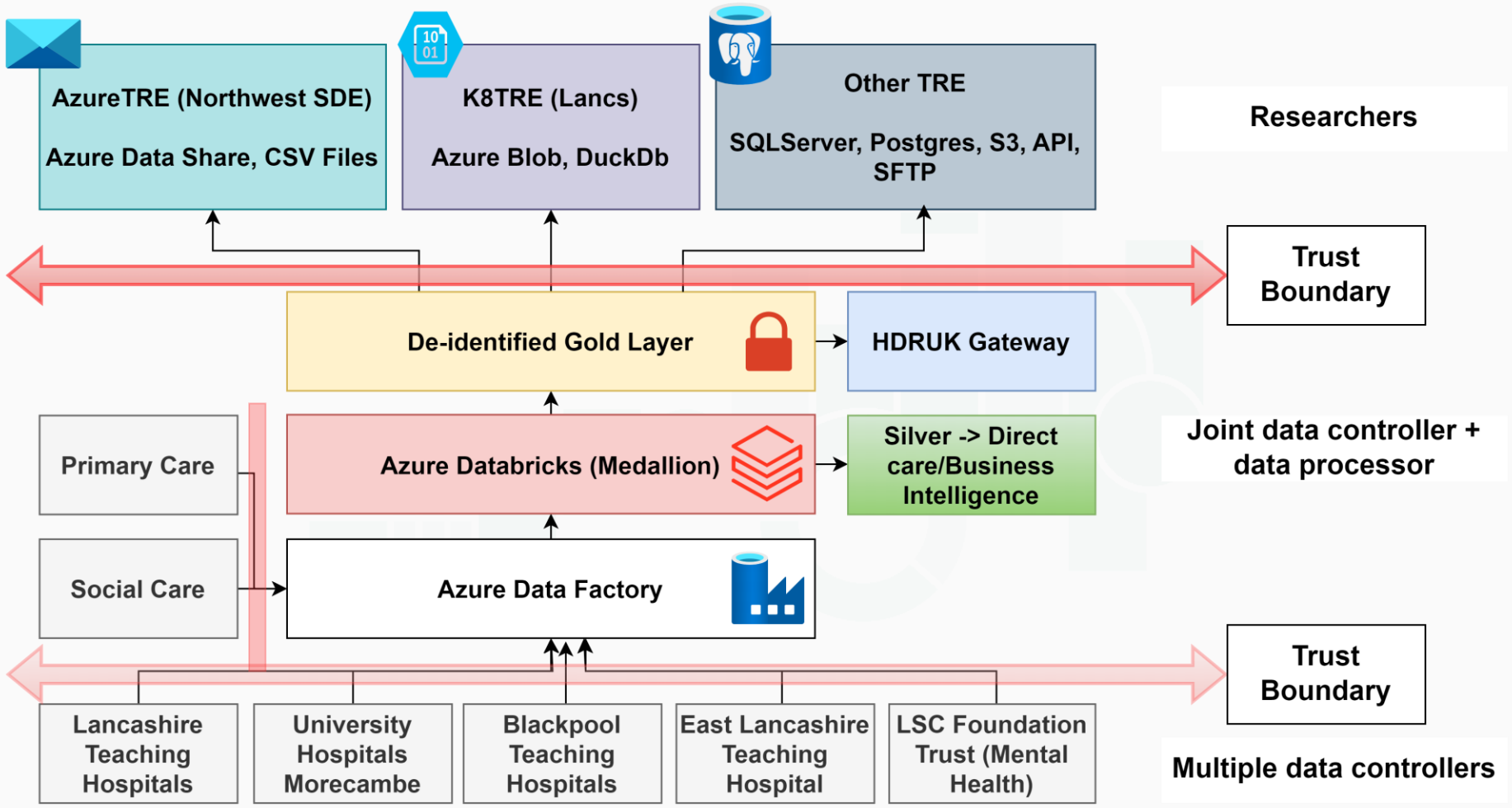
WP1: Metadata-driven Data Provisioning

- The Five Safes RO-Crate is a specialised profile of RO-Crate, whereby ***encapsulated elements and metadata provide the necessary context*** for evaluating the ***safety and appropriateness*** of both data access and analysis.



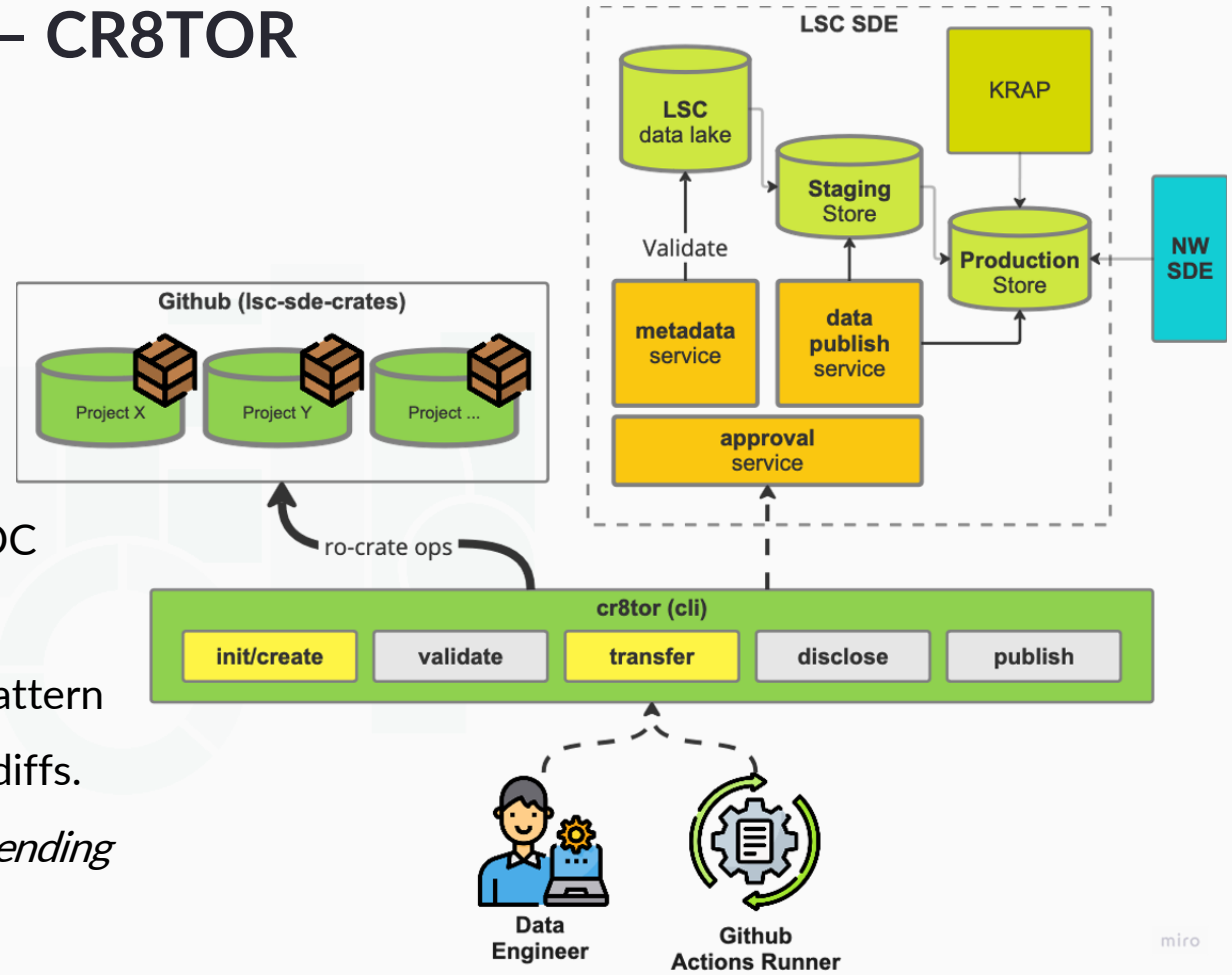
3.1.2.	You should keep records of data handling decisions.	Decisions that are made as part of the process discussed above should be recorded and made available for inspection by all stakeholders.	Recommended
3.1.4.	You must have a data ingress process which enforces information governance rules/processes.	The data ingress process needs to ensure that information governance is correctly followed. In particular, it should require that an ingress request has been approved by all required parties.	Mandatory

Lancashire and South Cumbria (part of NWSDE)



WP1: Metadata-driven Data Provisioning – CR8TOR

- ***cr8tor*** – A CLI to create, validate and publish 5sROC
  - extends *rocrate* python library
- A set of microservices on K8TRE
- A set of reusable GitHub actions
- A pattern for who/what triggers GH actions to move 5sROC through phases
- Follows ***instrument*** (cr8tor) + ***agent*** (GH action + human) pattern
- Complete audit trail of who did what and when with easy diffs.
- *Bonus: RO-Crate contents publishable as a static website (extending ro-crate-preview.html)*



WP2: DataShield integration with 5sROC and K8TRE

- Work with DataSHIELD deployment stakeholders to investigate where in the distributed analysis workflow 5SF **relevant information can be captured**.
- **Test, validate and adapt 5SROCs with additional templates required for the distributed federated analysis context**.
- Fully **integrate 5SROCs methodology** into the core layers in DataSHIELD.
- **Pilot a working implementation** of DataSHIELD 5SROCs-supported federated analysis in a range of representative infrastructures: a lightweight stand-alone deployment, an international deployment (OBiBa server), cross region SDE data analysis (LSC & Wessex SDEs)
  - K8TRE deployment – DataShield Helm Chart + integration into *"App of Apps pattern"*
  - WP1 (cr8tor) provisions project-specific data into Opal (DataShield's "database server")

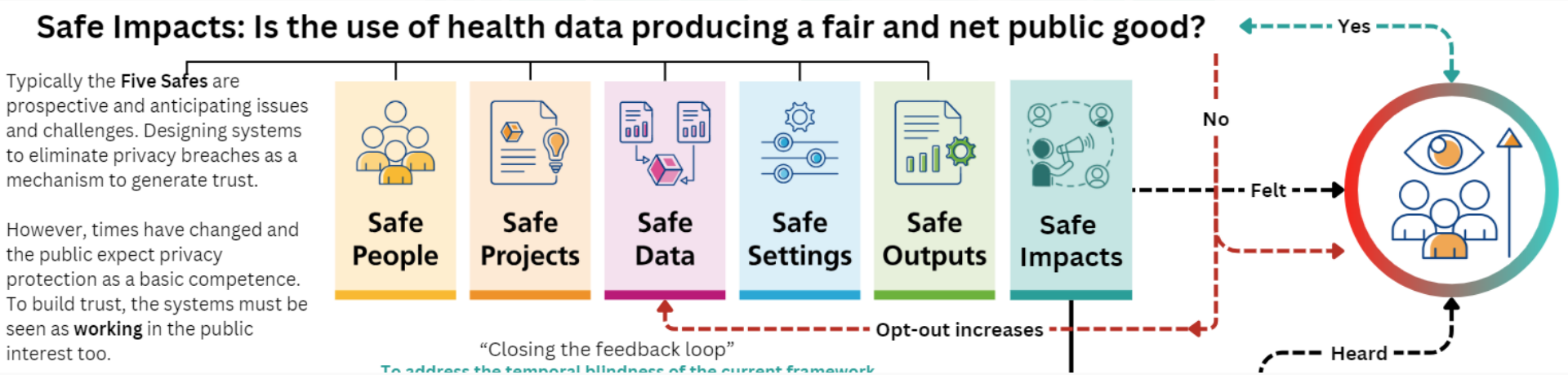
WP3: On the subject of language…

Security and privacy are a expected and well encapsulated by the Five Safes.

The public are keen to feel and understand tangible benefits promised however. An increasingly important part of the **trust building journey.**

Engagement work done in the LSC SDE programme and beyond, reading the literature, speaking with other PPIE professional and our public advisors has resulted in us considering the limits of the current framework itself.

We look forward to exploring the boundaries with you all!



Timeline

WP	Milestone/Deliverable	2025 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2026 Jan	Feb	Mar
1	Recruitment															
	Jan workshop in Liverpool, infrastructure and 5SROCs deep dive															
	Implement, test, evaluate 5SROC in LSC & Wessex SDEs															
	Develop adapted SDE 5SROC profile, feedback to TREvolution															
	Deploy and test SDE 5SROC profile in LSC/Wessex SDEs															
	Evaluate DataSHIELD federated analysis under 5SROCs standard															
	Develop roadmap for SDE 5SROC adoption embedded with WP3 outputs															
2	Recruitment															
	Map DataSHIELD workflow to five safes concepts, iterate with WP1															
	Adaptations to DataSHIELD softwares to output 5SROCs															
	Install DataSHIELD in LSC and Wessex SDEs															
	Update DataSHIELD demos, training and documentation to include 5SROC															
	Implement new 5SROC profile in DataSHIELD, feedback to TREvolution															
	DataSHIELD conference - present to international community															
	Implement and evaluate updated 5SROCs DataSHIELD in LSC/Wessex															
	DataSHIELD release with 5SROCs integrated into core layers															
	Roadmap for 5SROCs adoption by third party tools															
	Support DataSHIELD 5SROCs with existing deployers and interested SDEs															
3	Recruitment															
	Establish stakeholder group															
	Develop shared understanding of key concepts, feedback to TREvolution															
	Wider testing of shared concepts collaborating with TREvolution															
	Produce multi-format materials for use in WP1 and WP2 and beyond															

Day 4 Update

- Day Zero is easy, Day One is harder, Day Two is hardest
- If we are to get to Day Two, sustainability should be a key focus
- “Community” as a product rather than Technology as a product
- And more….Michelle wanted these slides right now!

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Semi-automated Output Assessment and Review

Rosie Rapado
Senior Statistical Support Officer
Research Services and Data Access
Office for National Statistics

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SRS Overview

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The SRS in numbers

Provides accredited researchers with secure access to unpublished, de-identified data for research in the public good.

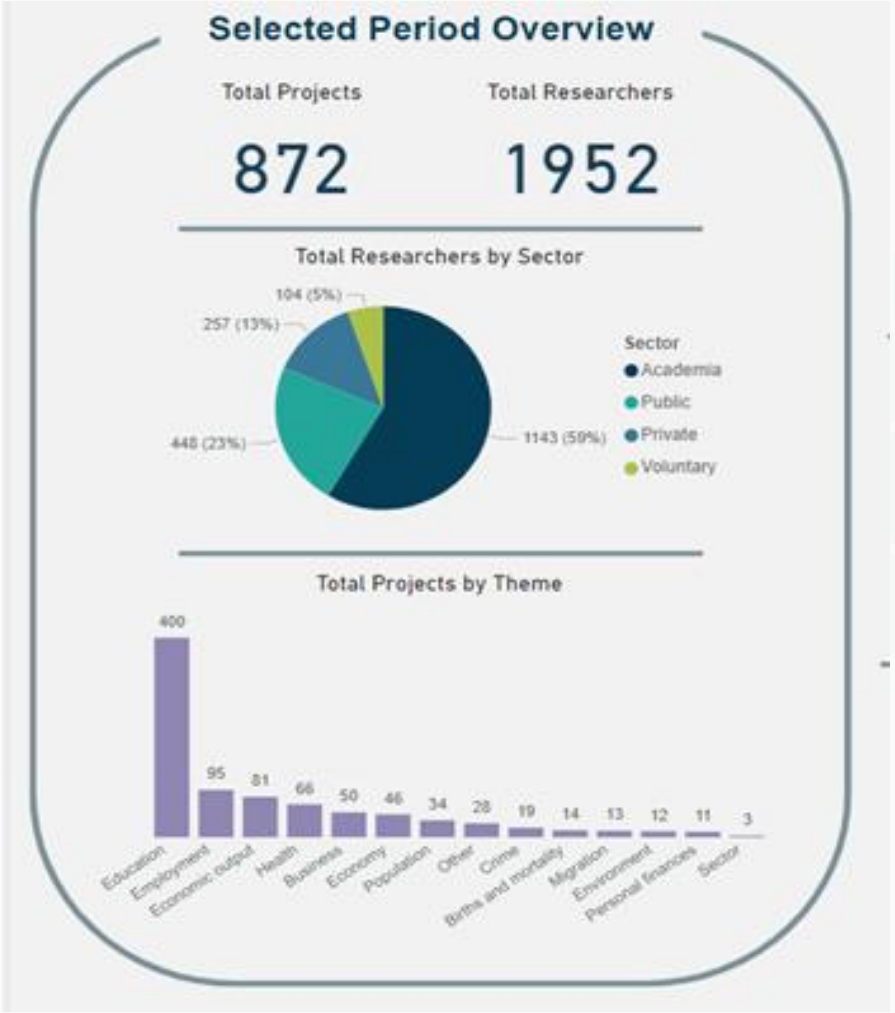
5,000
accredited researchers

140
accessible datasets

800
live research projects

2,000
Outputs cleared annually

The SRS in numbers



The Five Safes

Underpinning all we do is the Five Safes Framework.

Integral to these Safes is protecting the data of individuals and bodies corporate.

These protections are fundamental to our obligations under the Digital Economy Act (DEA) in order to be an accredited Trusted Research Environment (TRE).

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Project Overview

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Project Overview

All outputs from the SRS are currently checked by two independent manual checkers

This can be time consuming, and costly.

The project will seek to ascertain whether one of these checkers can be removed, and a new model of output checking established.

To note: In order to maintain DEA accreditation, all outputs will be checked by two manual checkers and the automated tool for the duration of the project.

Feasibility Phase

Check tool complies with relevant policies

Assess operability of tool

Ensure sufficient support in place to help triage queries

Operational Integration Phase

Review processes and procedures that would need to change

Assess the quality of the tool in picking out statistical disclosure control (SDC) related issues on a range of topics

Seek researcher cohort to trial in live environment

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Collaborations

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Collaborations

Integrated Data Service

Keen to strike up partnerships

Others can support our work by volunteering to be part of the researcher cohort who utilise the tool

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VISTA

Viable Implementation of SATRE, SACRO and Tools for AI

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The VISTA team

VISTA
A DARE UK PROJECT

Keiran Raine
Technical lead

Eleanor Hall
Operational lead

Magali Ruffier
Data lead

Laura Clarke
Delivery manager

UK Research and Innovation
HDRUK Health Data Research UK
ADRUK Data-driven change

Contact: eoe-sde@healthinnonvationeast.co.uk

East of England SDE

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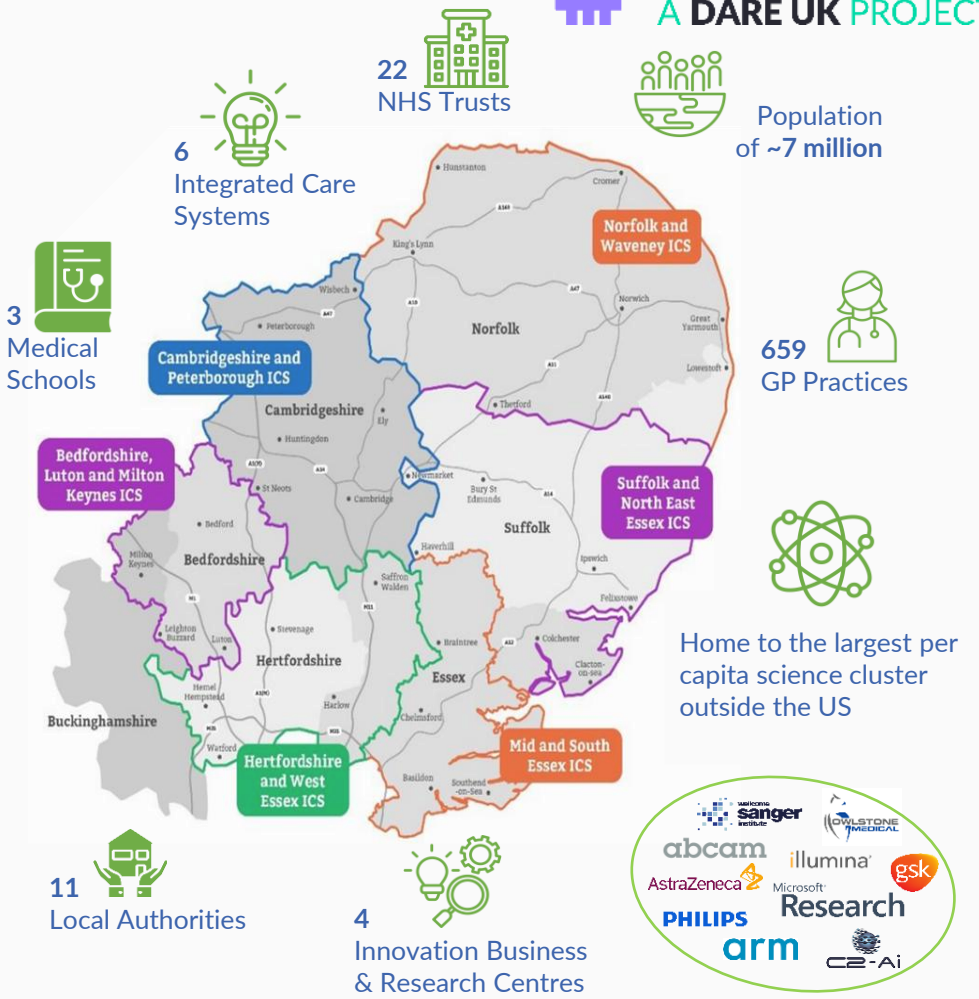
A regional data infrastructure asset

- Funded by the Data for R&D programme
- Network of 11 regional SDEs enabling access to de-identified NHS data for research purposes
- Technical platform now live
- Initial use cases focusing on structured secondary care data
- Hosted by Cambridge University Hospitals
- Underpinned by "**Five Safes**" principles



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Where are we now?

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Platform

Conforms to Standard Architecture for Trusted Research Environments (SATRE) reference architecture

Current features:

- Access via **Virtual Desktop Interface**
- Linux OS
- Browser (no external internet access)
- **Jupyter** notebooks
- **R & Python**
- Libre Office
- Git
- Airlock

SACRO Tools for the Semi-Automatic Checking of Research Outputs

Beta testers onboarded
Data ingest from sites tested
ISO27001 Accreditation

Certificate No.464582024

Governance

Favourable opinion from:

- NHS Research Ethics Committee (**REC**) for ethical opinion
- Confidentiality Advisory group (**CAG**) for Section 251 approval

Data Access Committee co-designed with public engagement

Data use register added to website

Data Access Request forms prepared

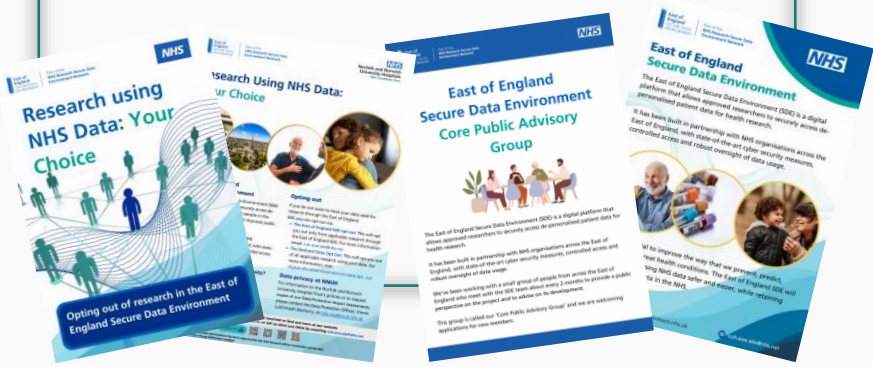
Public engagement

Substantial **patient & public involvement** to date through a core group of participants and a series of community workshops run by Healthwatch.

Active social media accounts.

Engagement with regional Comms leads.

Public materials developed ready for wider communications roll-out.



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EoE SDE research environment

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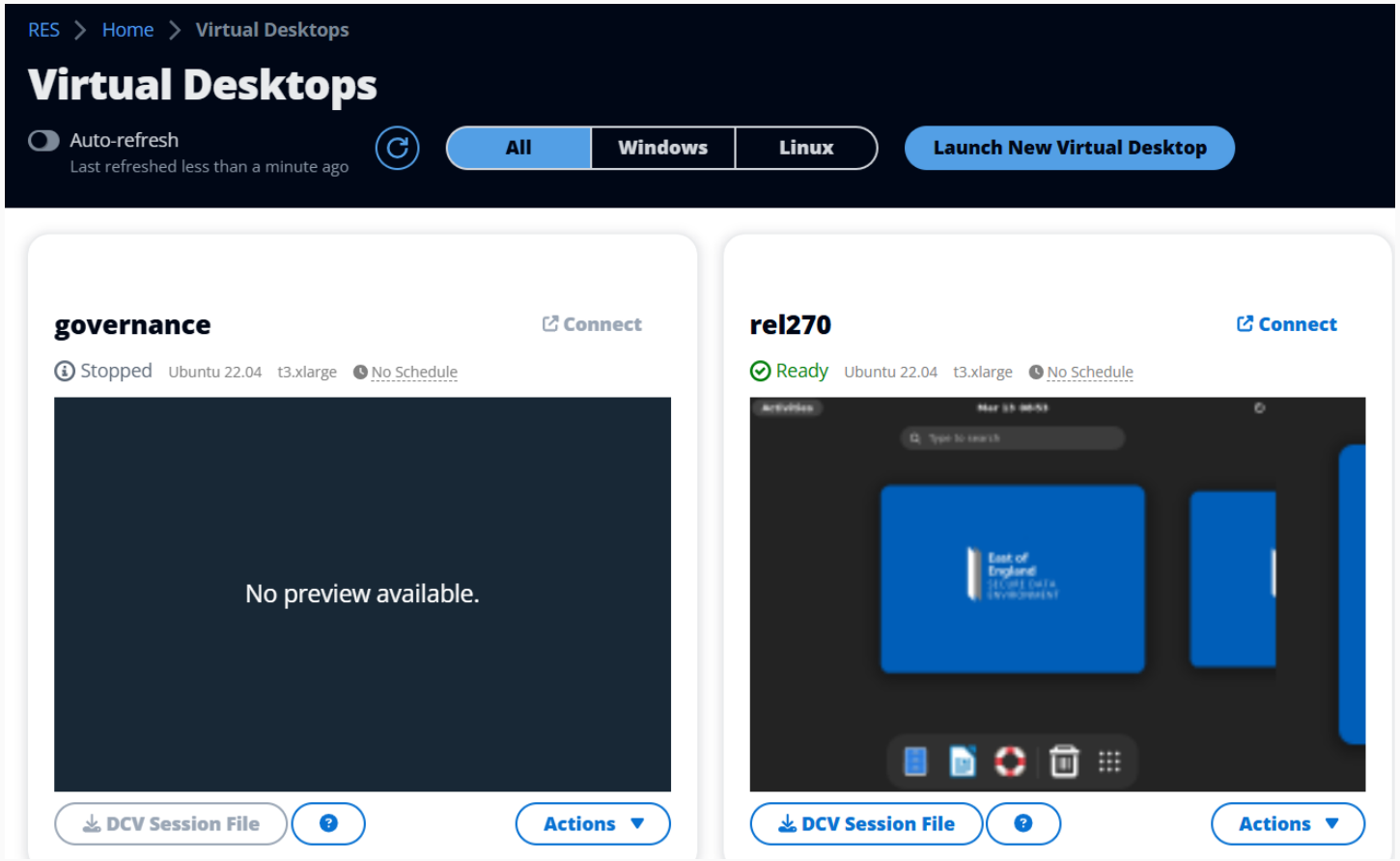

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EoE SDE high level infrastructure

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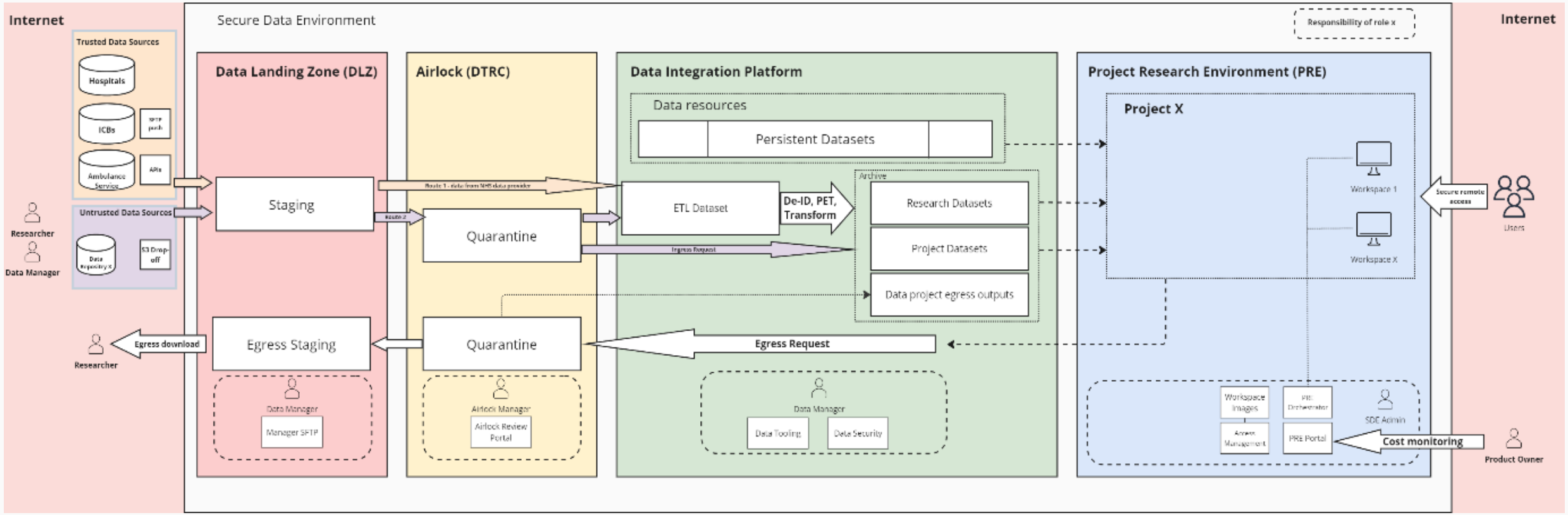

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EoE SDE data flow

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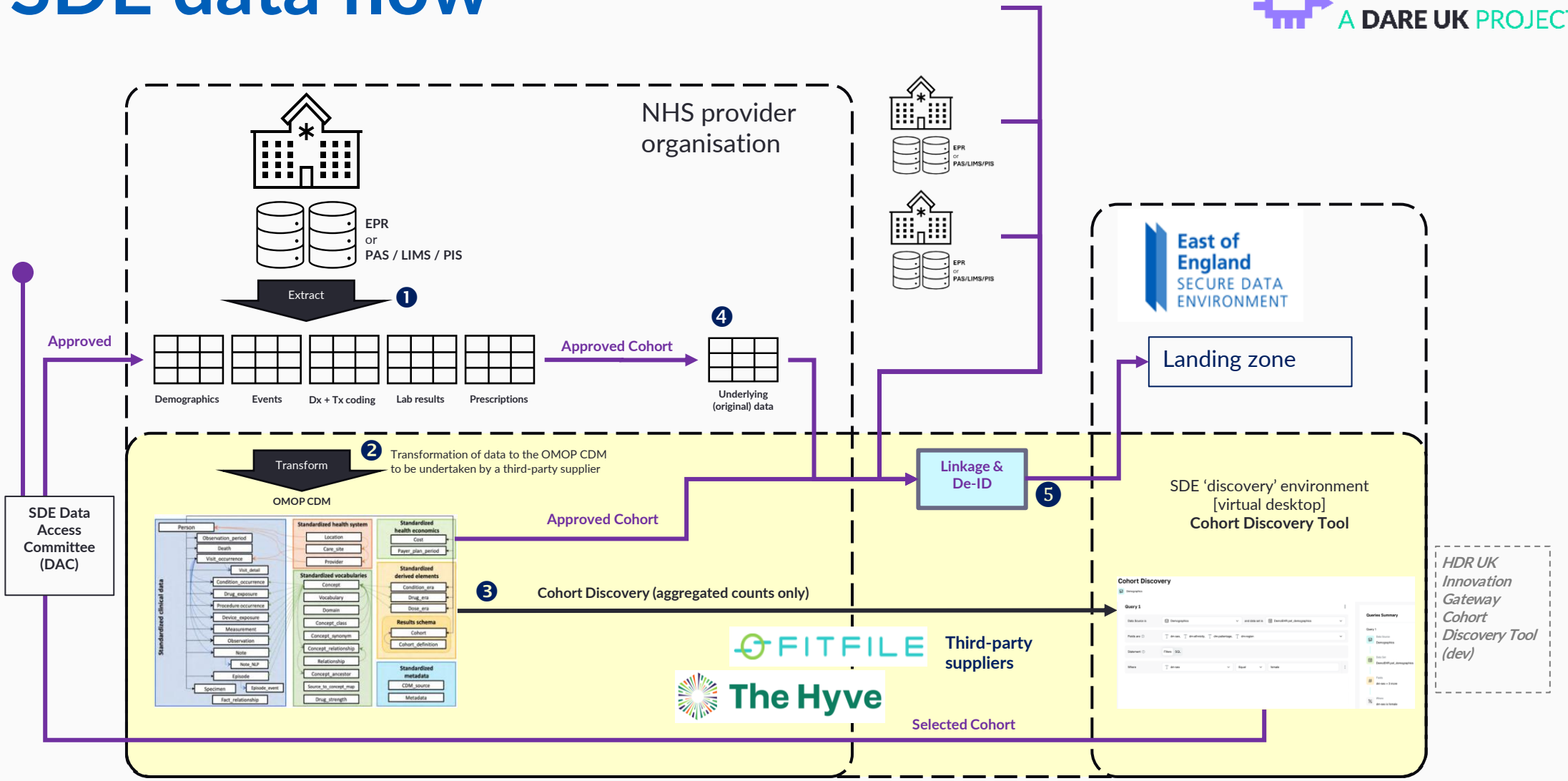

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TREvolution capabilities

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- **SACRO** – **Safe** and **efficient** research output egress
- **SACRO-AI** – Ability to **train** and **safely egress AI models**
- **SATRE** – Supporting the **SATRE** theme **go further, faster**

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SACRO

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Policy development – setting expectations across adopters

Testing with different output formats (via use cases)

Documentation and Training feedback from researchers, Airlock Managers & IG managers

Improving efficiency in Airlock process

Operationalising SACRO for scale – enable servicing of 100s of projects

Acceptability with data providers and patient and public

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SACRO AI

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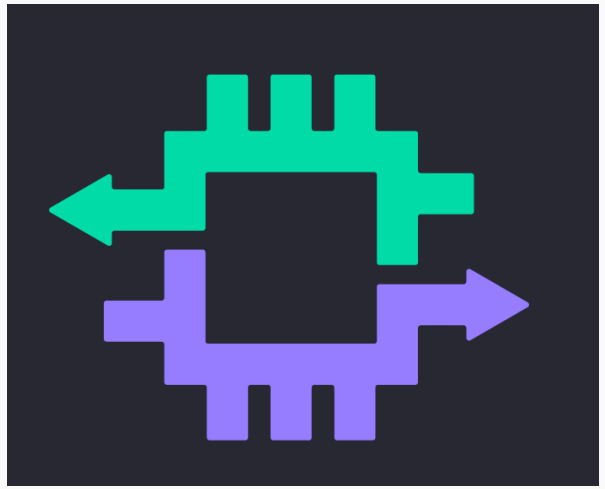
Develop local risk assessment template

Co-develop rapid risk assessment tool



Reviewing and adjusting SDE architecture

Time and cost implications assessed

Enabling research that is currently unsupported

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SATRE

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Engage with DAREUK community

Document learnings from SDE build

East of England SECURE DATA ENVIRONMENT

Provide input and evaluations for SATRE next phase

Provide gold standard benchmark of a SATRE implementation

Accreditation alignment matrix

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PPIE

PPIE is embedded throughout the SDE Programme

VISTA will:

- Work with existing SDE Core Public Advisory group
- Understand concerns and increase awareness about:
  - Semi-automated checking of research outputs
  - How to safely train and egress AI models in the SDE
  - Expand from & align with existing SACRO PPIE activities


East of England SECURE DATA ENVIRONMENT
Part of the NHS Research Secure Data Environment Network
NHS Norfolk and Norwich University Hospitals NHS Foundation Trust

Research Using NHS Data:
Your Choice

The East of England Secure Data Environment

The East of England Secure Data Environment (SDE) allows approved researchers to securely access de-personalised patient records from people in the East of England to do research that improves public health.

It has been built in partnership with NHS organisations across the East of England, with state-of-the-art cybersecurity measures, controlled access and robust oversight of data usage.

Opting out

If you do not want to have your data used for research through the East of England SDE you can opt out via:

- The East of England SDE opt out: This will opt you out only from applicable research through the East of England SDE. For more information email: cuh.eoe.sde@nhs.net
- The National Data Opt Out: This will opt you out of all applicable research using your data. For more information, visit: digital.nhs.uk/services/national-data-opt- out

How will the SDE benefit patients?

Research is vital to improve the way that we prevent, predict, diagnose and treat health conditions. The East of England SDE will make research using NHS data safer and easier, while retaining control of that data in the NHS.

Data privacy at NNUH

For information on the Norfolk and Norwich University Hospital Trust's policies or to request copies of our Data Protection Impact Assessments, please contact the Data Protection Officer, Vimmi Lutchmeah-Beeharry, at info.gov@nnuh.nhs.uk.

Get in touch Questions or Comments? You can get involved or find out more at our website eoe-securedataenvironment.nhs.uk or tell us what you think by emailing cuh.eoe.sde@nhs.net

Follow Us

The East of England Secure Data Environment has been approved by the XXX Research Ethics Committee and the HRA Confidentiality Advisory Group (Reference number)

Questions?

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Contact: eoe-sde@healthinnonvationeast.co.uk

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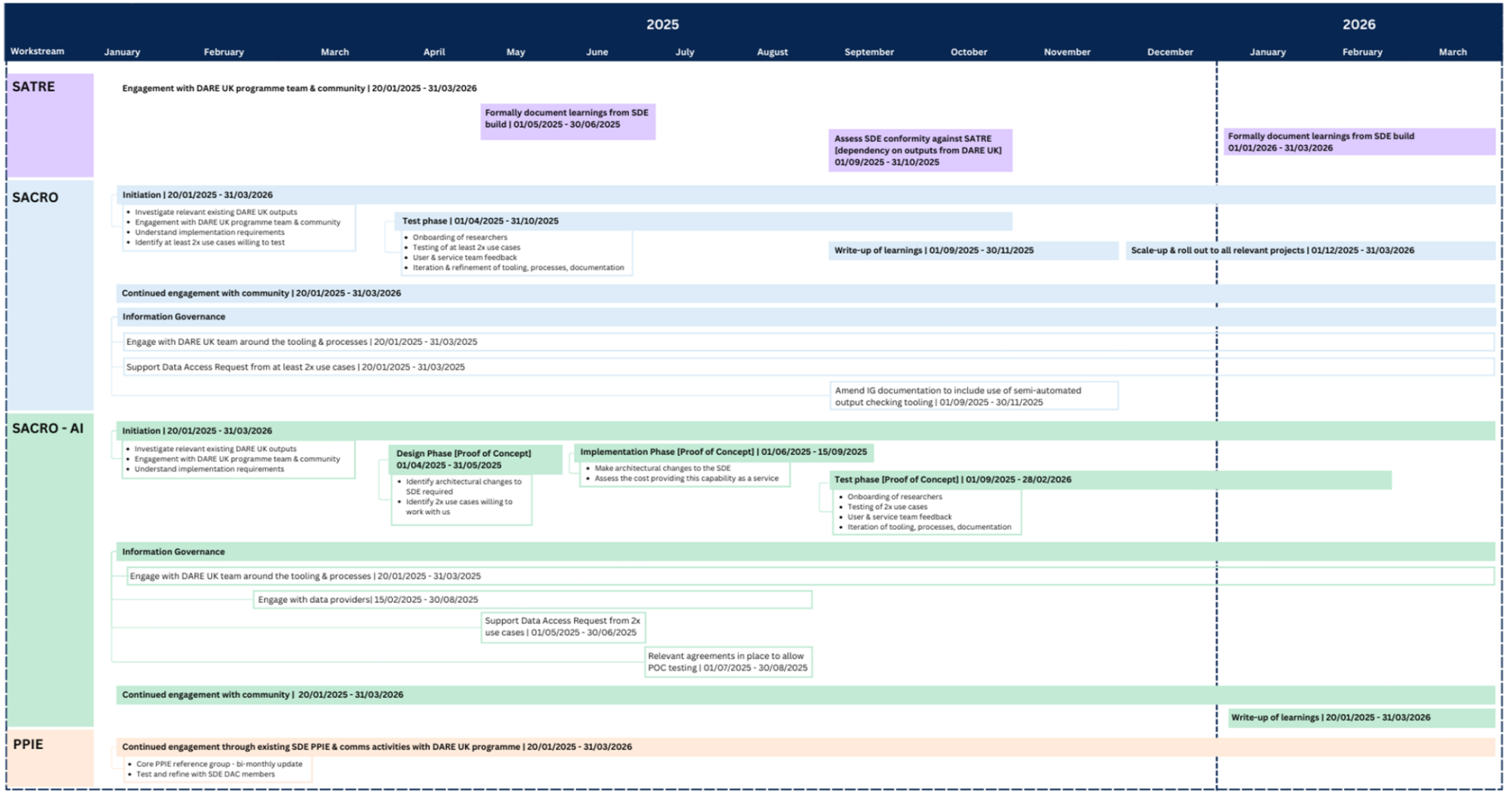
High level Gantt chart



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Pan-North Data Research Advancements for Multi-domain Access and Analysis

Katherine O'Sullivan, University of Sheffield and Yorkshire & Humber SDE
Phil Waywell, Yorkshire & Humber SDE
Alan Bagnall, Newcastle upon Tyne NHS Trust and NENC SDE
Helen Duckworth, Arden & GEM Commissioning Unit and NW SDE

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The Project and Partnership

- Collaboration between NHS and university SDEs covering more than 15 million people across diverse regions in the North of England:
  - Yorkshire & Humber NHS Secure Data Environment
  - University of Sheffield Secure Data Services
  - North East North Cumbria NHS Secure Data Environment
  - North West NHS Secure Data Environment

- Using TREvolution capabilities to create a cross-sector Northern Data Library, making federated making federated research faster, safer, and more consistent within and across TREs and SDEs.

TREvolution Capability 1: SATRE

- Undertake SATRE (and SATRE-SDE) assessments of our independent environments
- Evaluate our equivalency to provide areas for improvement
- Improve the process, gaps and/or improvements to the framework leading to SATRE v2.0
- Equivalency exercise will lead to a shared pan-North Information Governance framework enabling federation across our environments

TREvolution Capability 2: TRE-FX

- Assess the feasibility of implementing federated querying across the infrastructure of the participating SDEs (Rabbitverse)
- Work with regional and local IG specialists and PPPIE teams to identify key risks associated with federated querying and metadata management, testing risk mitigation solutions
- Feasibility assessment will determine whether it is possible to enable federated querying between our existing software solutions and the requirements for that
- Pilot the implementation of federated querying across our pan-North Group with synthetic data in the first instance

TREvolution Capability 3: SACRO

- Pilot of a federated output checking solution across the infrastructure of the participating SDEs
- Collate and provide a prioritisation mechanism to help the SACRO researchers develop solutions for unsupported output types to aid in developing the breadth and depth of the tool's coverage
- Test SACRO-ML and build capability of semi-automated output checking of AI/ML models
- Work with regional and local IG specialists and PPPIE on the potential use as a 'set of eyes' in the 'four eyes principle' of output checking
- Contribute to the SDC-REBOOT community will be how organisations work together to establish the thresholds for 'safe data' release in a consistent manner, particularly in the context of federated querying
- Feasibility assessments on federated analysis and AI/ML model research output checking in SDEs, evaluating technical, governance, and operational aspects.

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Public, Patient and Professional Information and Engagement

- Engage with existing robust PPPIE groups across our pan-North region to test and evaluate our approaches to federation
- Citizens' Jurys in March 2025 to test the public's acceptance of federation across the North
- Work with the TREvolution team to co-design, co-produce and co-deliver PPPIE across the North of England to ensure that public are involved in all aspects of our Transformational Programme as well as the core TREvolution Programme
- A report capturing insights from patient, public, and professional engagement activities, ensuring solutions meet public benefit criteria.

Opportunities to support across projects

- Anyone else doing the same? Let's talk!
- Sharing resources, feasibility, testing
- Create cross-project Communities of Practice?

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TRE Adopters SAFER

SAFER

SAIL Advancing Federated Exploration and Readiness

March 2025

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The Team

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Ashley Akbari
Professor Population Data Science Research
Head of SAIL UDSS team

SAIL Databank
Swansea University

Cynthia McNerney
Head of Data Acquisition
& Provisioning

SAIL Databank

Sharon Heys
Head of Legislation &
Due Diligence

SAIL Databank

Claire Newman
Public Engagement
Lead SAFER

SAIL Databank

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What is SAIL Databank?

- The **S**ecure **A**nonymised **I**nformation **L**inkage (SAIL) Databank.
- The national Trusted Research Environment (TRE) for Wales.
- SAIL has been in operation for over 15 years.
- Contains billions of individual-level (and residential-level) linkable records across health, administrative and wider data sources.
- Operating a mature governance and compliance model.
- Pioneering innovative technical solutions in partnership with the Secure eResearch Platform (SeRP).

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SAIL DATABANK

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What was the driver to getting involved?

- We view federation as exciting and innovative
- Making the role of the researcher easier - undertake work at scale
- Pre-cursor - SAIL has been involved in "manual federation" projects during COVID that contributed toward the 1st 65-million person analysis and output in relation to COVID vaccine uptake and safety
- Operating TREs/SDEs is complex, dynamic, and "ever-changing" environment whilst federation presents challenges - we believe the potential gains are huge and worth pursuing

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- SAFER draws upon the skills of the professionals working with the SAIL Databank in Swansea University.
- SAFER will review the governance and compliance challenges of early adoption of federated analytics within the SAIL TRE.
- Seeks to explore TRE's governance processes and application process for federated analytics.
- How to create a seamless processes from the perspective of the researcher.
- How to ensure compliance and adherence to the law and to ensure the public and key stakeholders are engaged.

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Which TREvolution capabilities is SAFER working with?

How the TREvolution technologies (TRE-FX and TELEPORT) will operate in association with existing / future governance models and application processes to produce a protocol for delivering federated analytics that can be applied in SAIL and across TREs/SDEs.

How TREvolution tools (SATRE and SACRO) will affect and improve existing governance and compliance models, policies and processes.

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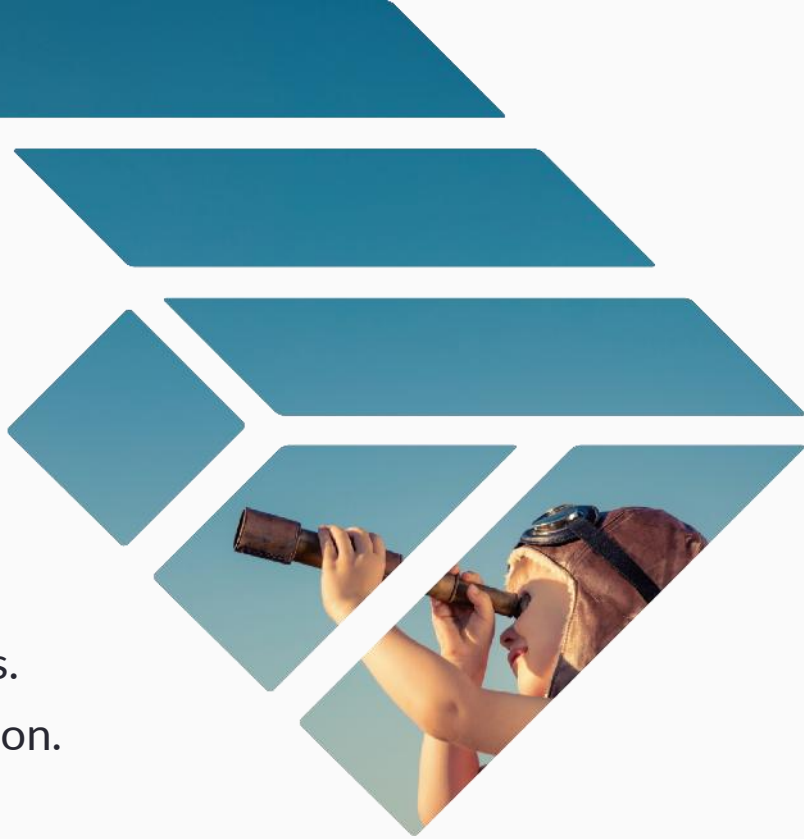

Scope of SAFER

- How to operationalise federated analytics within a mature TRE.
- Development of a governance and compliance protocol for federated analysis.
- Ensuring public and stakeholder trust in federated analysis through consultation.
- Legislation review UK-wide and associated policies and processes.
- Creation of template documents, data sharing agreements and data access agreements specific to data federation.
- Full approvals and applications review to create seamless federation at an operational level, including opportunities for disclosure control improvement.
- Timetabling approvals where multiple data sources are required.
- Review of all certifications and security accreditations in light of federation.

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Public Engagement Plans – Public Data for Public Good

We will undertake two initial parallel consultation exercises through the course of the project.

Firstly:
SAIL's public advisory panel, the **Consumer Panel**: discuss proposals and planned consultations, seek views of acceptability and risks, feed into wider project deliverables and form part of the final report.
SAIL's information governance review panel (**IGRP**): to introduce federation and planned consultations.
Series of **open consultation and engagement activities** through in-person/hybrid events and meetings.

Secondly:
Data Providers: wider consultation including **Welsh Government, Public Health Wales and Digital Health & Care Wales,** acceptability of federated analytics model(s), governance and legal compliance questions/challenges.

Leading to:
Researchers, the **ICO/Policymakers** and wider **National TREs and SDEs.**

Engagement Activities

- **Acceptability of Federation Model -** what is it? and how it differs from the current model(s)?

- **Governance & Compliance -** include all major legislation and guidance for UK jurisdictions.

- **Security & Accreditation -** review of compliance issues relating to security certification and accreditations to assess whether federation poses any risk to existing, long standing certifications and whether any potential changes may be required to scope.

- **Legal Changes –** review the legal basis and direct and indirect impacts of federation, and changes to existing SAIL policies and processes that federation may/will require to operationalise.

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How Others Can Support Our Work?

- We will engage with TREvolution on ongoing updates towards any changes or amendments to integrate into ongoing delivery.
- Collaboration when testing out and exploring our solutions.
- Discussion with the wider group in terms of security and compliance standards and accreditations with the wider DARE UK community.
- Consultation with all adopters around our proposed solutions – opportunities for shared learning and operational implementation.
- Aim to avoid duplication. SAFER will be looking for synergies with other adopters to make sure our external messaging agrees.

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Any Questions?

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