EOSC-ENTRUST

European Network of Trusted Research Environments

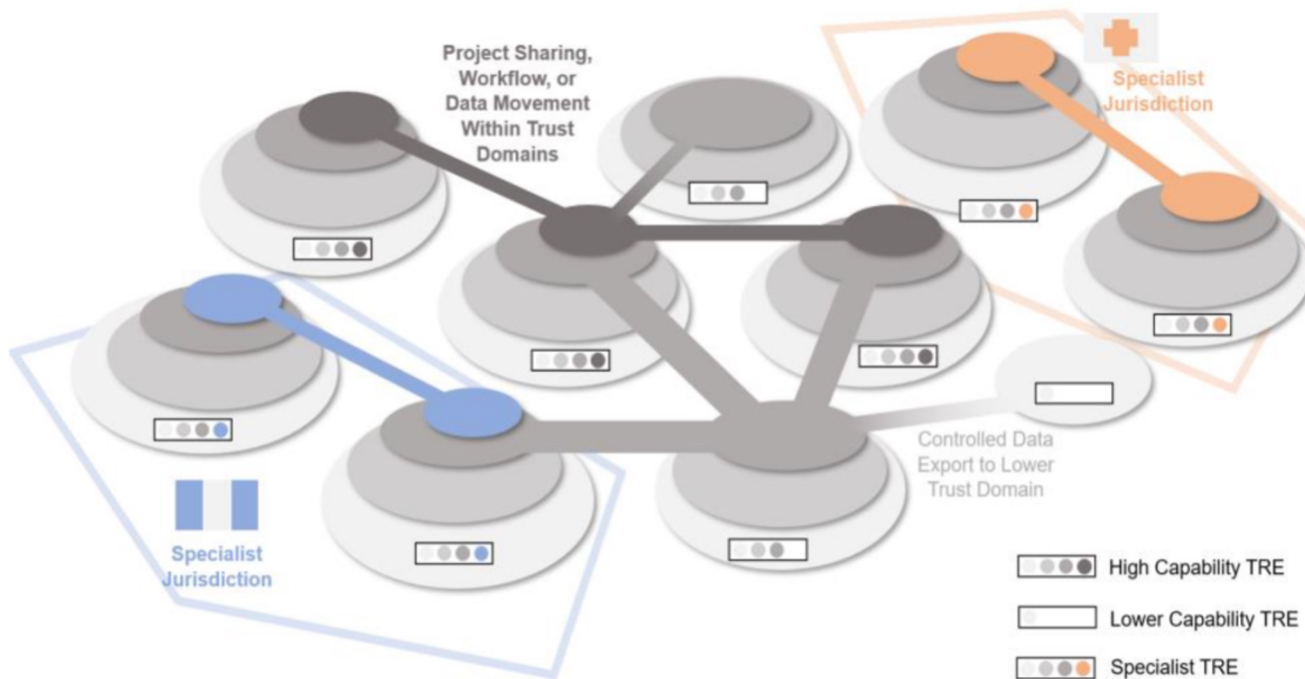# We have a problem 'Open Science' finds hard

We want to share and collaborate on research data, while respecting rights of data subjects, being in compliance with personal data and other regulation, and protecting the data from malicious actors.

The data is sensitive, high volume, complex to analyse, difficult to move…

Project Sharing, Workflow, or Data Movement Within Trust Domains

Specialist Jurisdiction

Controlled Data Export to Lower Trust Domain

Specialist Jurisdiction

▭○○○● High Capability TRE

▭ Lower Capability TRE

▭○○○○ Specialist TRE

We want to be able to move sensitive data - but only when it's safe to do so.

We can consider moving the workflows to the data - but have similar trust issues with the code.

Some types of export can be to lower capability environments, but this needs careful management.

The boundaries are not just technical, but also about legal jurisdiction and regulatory compliance.

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EOSC-ENTRUST - our project

The mission of EOSC-ENTRUST is

- to create a European network of trusted research environments for sensitive data

…and…

- to drive European interoperability by joint development of a common blueprint for federated data access and analysis.

Start date: 01 Mar 2024 (36 months)

EU contribution: € 4,218,809.75

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Objectives (1,2)

EOSC-ENTRUST aims to create a tightly knit network of nationally operated and governed TREs capable of supporting large-scale European research...

- **Objective 1:** Create a European network of Trusted Research Environments, linked to EOSC and EuroHPC, to enable transnational collaborative research on sensitive or restricted data.

- **Objective 2:** Trusted Research Environment providers implement, validate, and promote their capabilities through a European framework using common standards and shared legal, operational and technical language.

Objectives (3,4)

EOSC-ENTRUST aims to create a tightly knit network of nationally operated and governed TREs capable of supporting large-scale European research...

- **Objective 3:** National funders and governments understand the network of TRE capabilities serving their needs, and how TREs support their national priorities and their contributions to selected transnational programmes.

- **Objective 4:** The European Network of Trusted Research Environments (ENTRUST) is embedded in the European Open Science Cloud and the European Data Spaces and fosters an ecosystem of public, private and joint-venture providers of TRE services.

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Drivers

A portfolio of Multidisciplinary Drivers informs and validates the blueprint.

- Driver 1: Federated Human Genomics as a catalyst for European TRE provision

- Driver 2: Common standards to enable trans-national sharing of administrative/register and social science data

- Driver 3: Enabling secure transnational re-use of clinical research data in a legally and ethically compliant manner

- Driver 4: Public-Private interactions between TRE in health and environmental data

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Partners - as Drivers

Barcelona Supercomputing Center - Centro Nacional de Supercomputacion	**EMBL-EBI**	Sciensano	**University of Essex**
Bielefeld University	EUDAT Collaborative data infrastructure	**Sigma2 AS**	University of Ljubljana
BioData.pt	Finnish Institute for Health and Welfare (Terveyden ja hyvinvoinnin laitos)	**Stichting Health-RI**	University of Nottingham
Centre for Genomic Regulation (CRG)	**GESIS - Leibniz-Institut für Sozialwissenschaften**	SURF	**University of Oslo**
CESSDA ERIC	GRNET – National Infrastructures for Research and Technology	**Tárki Alapítvány**	University of Tartu
CSC – Tieteen tietotekniikan keskus Oy	**Health Data Research UK (HDR UK)**	The University of Manchester	Uppsala universitet
Danmarks Tekniske Universitet(DTU)	Luxembourg National Data Service (LNDS)	**Turku University of Applied Sciences (Turun ammattikorkeakoulu)**	Vlaams Instituut voor Biotechnologie (VIB)
ECRIN (European Clinical Research Infrastructure Network)	Masaryk University	**University of Bergen**	VSB - Technical University of Ostrava
ELIXIR	NTNU - Norwegian University of Science and Technology	**University of Dundee**	

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Providers

The EOSC-ENTRUST TRE Providers Forum will consolidate existing expertise and good practices - catalogue existing capabilities and evaluate and adopt the blueprint and technologies

- 16 representatives in the TRE Providers Forum

- expertise across Europe (including UK, NO)

- developments of TRE technology driven by national and institutional use

- significant national capital investment in many of the TRE services

Strong links to national and institutional context are critical: long-term sustainability requires that the TREs are embedded into local strategies and funding streams.

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Architecture & Technologies

Blueprint architecture for composable TREs - and beyond the state of the art in some foundational technologies:

- **Trusted research environment blueprint** - will gather the requirements and build a roadmap for a blueprint that enables an interoperable network of TRE services in Europe.
- **Trusted researcher identities and data authorisation** - will deal with the need of higher trust in the authentication and authorization in the TREs context.
- **RO-Crate and workflow processing** - the combination of RO-Crates and workflows provides the interoperability framework and execution approach for practical pan-TRE analysis.

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Architectural principles

Our aim is to have a blueprint and technologies which both represent and advance the state of the art.

A shared language familiar to the TRE community

- Safe Projects
- Safe Data
- Safe Settings
- Safe People
- Safe Outputs

A shared language in the EOSC context

- Legal Interoperability,
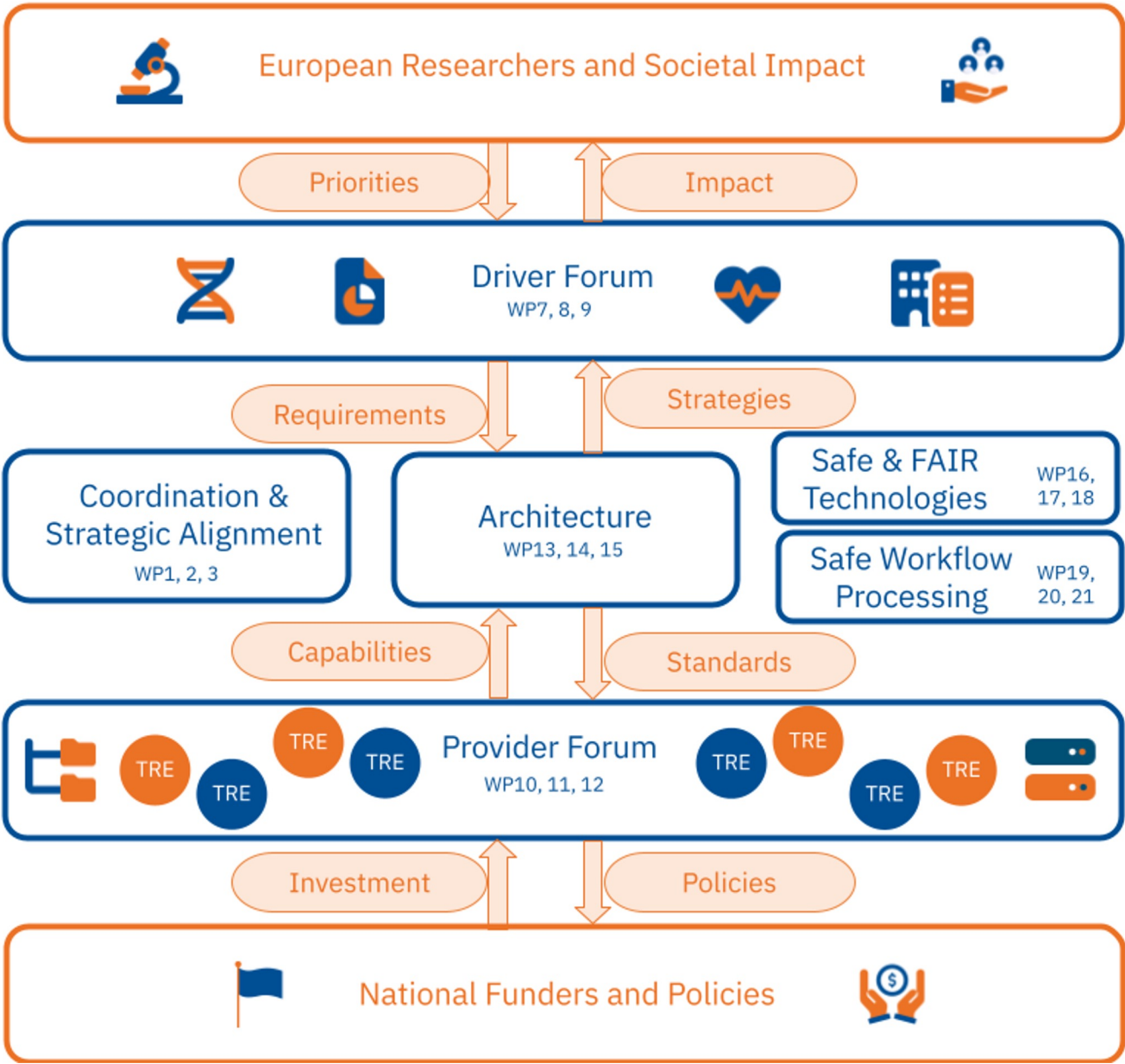- Organisational Interoperability,
- Semantic Interoperability and
- Technical Interoperability

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Ambition

We will take European research beyond the State of the Art…

- …in European collaboration: a European network of Trusted Research Environments (TREs) expands EOSC's access to resources and valuable data sets for research.

- …in European connectivity: delivering a Blueprint for connecting TREs into large-scale networks for federated data via a standard set of methods.

- …in FAIR data workflows: secure and reproducible cross-TRE analysis of sensitive data.

- …in European HPC: pilot inclusion of EuroHPC sites into the TRE network

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