



THE UNIVERSITY OF  
MELBOURNE

# Research Infrastructure for Sensitive Data Management

A New Secure Research Environment (SRE) at  
the University of Melbourne

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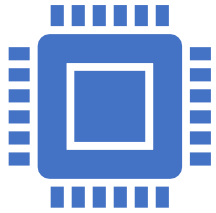
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eResearch 2023 Brisbane, Australia, 19 October 2023





# The SRE, an Overview



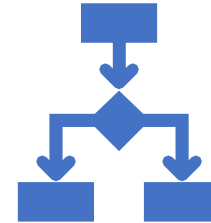
The SRE is a Trusted Research Environment (TRE) for storing and processing highly sensitive data.



On premises solution with localised storage. Leveraging pre-existing University capabilities



Built on recognised design and cybersecurity principles e.g., the Essential Eight Maturity Model and ISO 27001:2013



Project isolation: allowing secure collaboration within a project and shared storage.



Certified as ISO/IEC 27001 compliant in May 2023



# Sensitive Data Management at UoM

The University of Melbourne has addressed the risks presented by sensitive data research with two broad arms of activity:

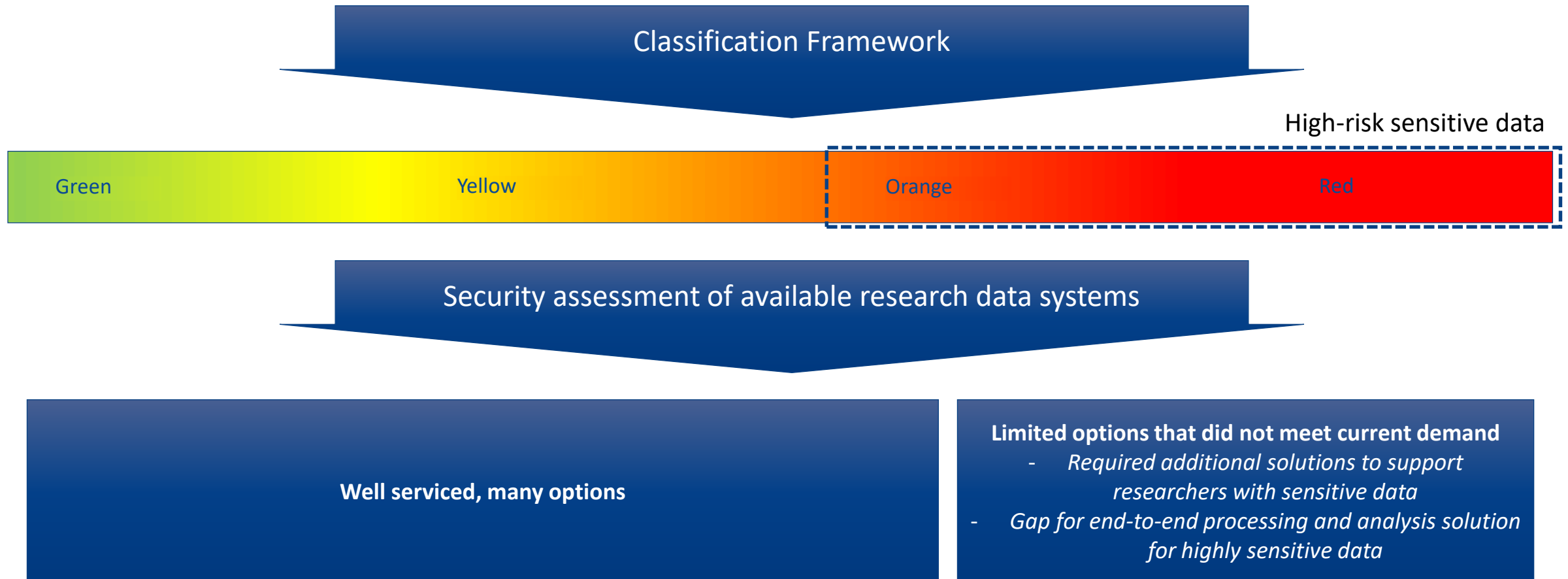
**1. Policy, process and people-based interventions** for example:

- Research Data Management Policy
- A new Research Data Classification Framework – four classification levels with associated guidance on practices and technology
- Engagement activities with Faculties

**2. Technological interventions**, such as:

- The security uplift of existing systems
- The implementation of new solutions for sensitive research data management

# Why a new Secure Research Environment?





# Implementation Process

1. **Environmental scan** of trusted research environments (TREs) available nationally
2. **Extensive requirements gathering** from researchers and service providers, including:
  - University-wide consultation survey
  - 40+ key stakeholder and researcher interviews
  - The establishment of an Academic Advisory Committee to oversee key decisions
3. **Assessment of available TREs** against requirements
  - Revealed that the available options were not well suited to the gathered requirements and University operational structures



# Implementation Process

- 3. Establishment of a Proof-of-Concept (PoC) environment** with live projects
  - Multiple requests for establishment of new projects validated demand
- 4. Development/delivery of the Secure Research Environment** in house
  - Building on principles and learnings of successful PoC
- 5. ISO/IEC 27001 Certification**



# What is the Secure Research Environment

The SRE:

- Is a **virtual desktop infrastructure (VDI)** with scalable resources based on a project's computational and storage requirements.
- Is suitable for the **processing, analysis and storage** of data sets that are classified as **Orange or Red**.
- Has **restricted** internet access, **isolated** projects and a **governed** data transfer process to ensure data leaving the system has been appropriately deidentified

| The SRE Default Provision |  |
|---------------------------|--|
| CPU                       | 8 core   |
| RAM                       | 64 GB  |
| Data Storage              | 1 TB   |
| Operating System          | Windows 2019 Server  |
| Software                  | SPSS, STATA, SAS, Tableau, Rstudio/R, Anaconda Python, Office365 |

# Governance Principles

1. Safe Projects - is the use of the data appropriate?
2. Safe People – create trust and require data to be used in an appropriate manner?
3. Safe Data – limit any disclosure risk in the data itself? Reducing the sensitivity of data
4. Safe Settings – Creating governance processes that limit unauthorised use?
5. Safe Outputs – ensure any outputs or statistical results are non-disclosive?



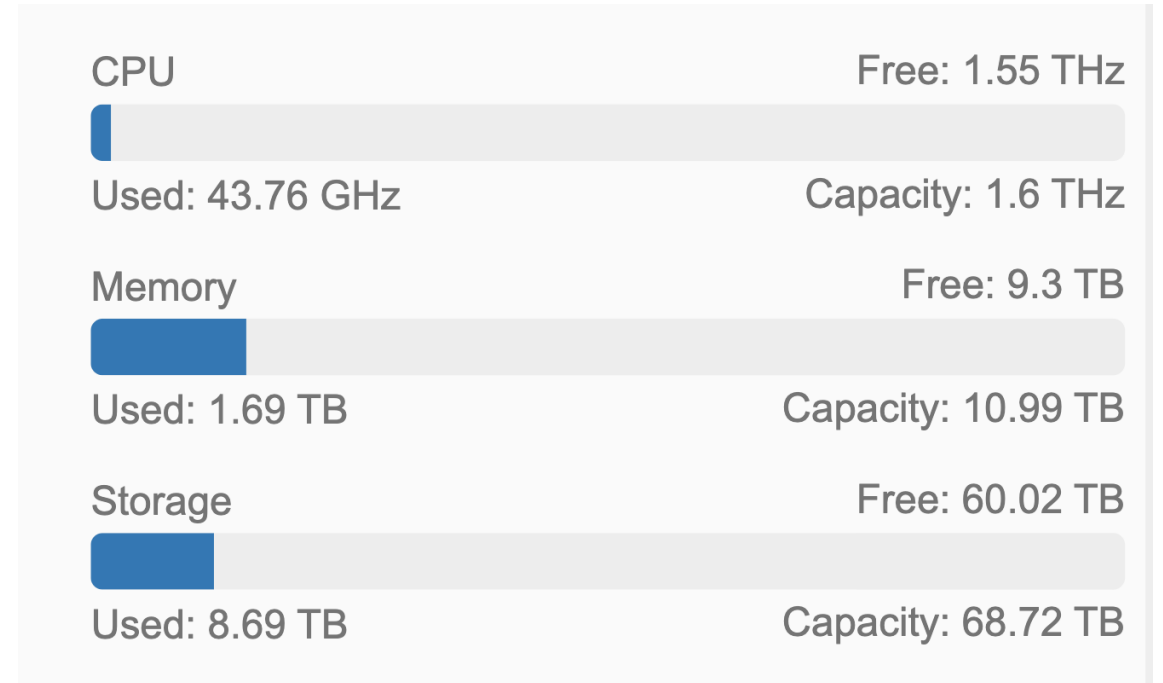


# SRE Infrastructure

## Software as a Service:

- Automated Provisions to on-premises servers
- **Standard Operating Model**
- Scalable/sustainable Projects
  - VDI Desktop (Citrix-based)
  - Secure Storage
  - Network Isolation

## Current Utilisation and Capacity



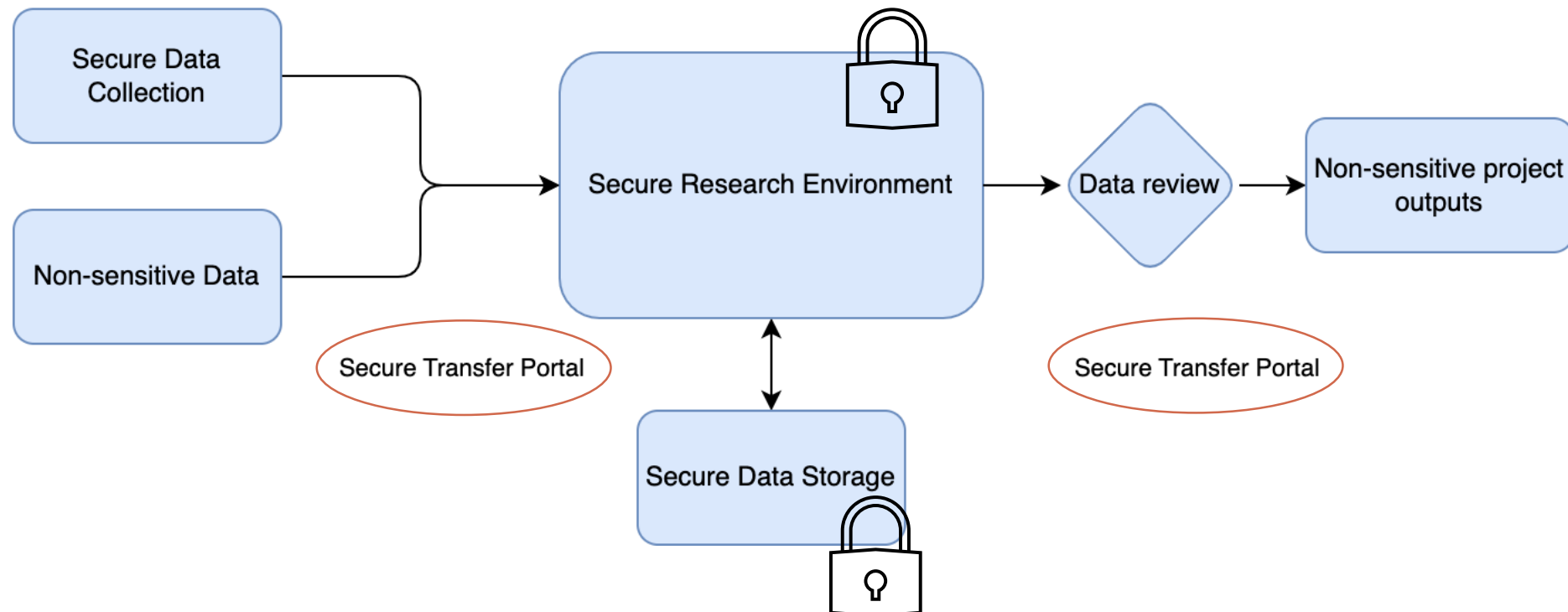
25 Projects with 180 Researchers  
(93 unique Researchers)  
Some users on multiple projects

# Secure Research Environment

## Upload Candidates

## Project

## Extraction





# Certification to Build Trust

## The SRE is now ISO 27001:2013 certified from May 2023

International standard for information security management systems

- “Conformity with ISO/IEC 27001 means that an organization [...] has put in place a system to manage risks related to the security of data [...] and that this system respects all the best practices and principles enshrined in this International Standard.” <https://www.iso.org/standard/27001>

Why target ISO Certification?

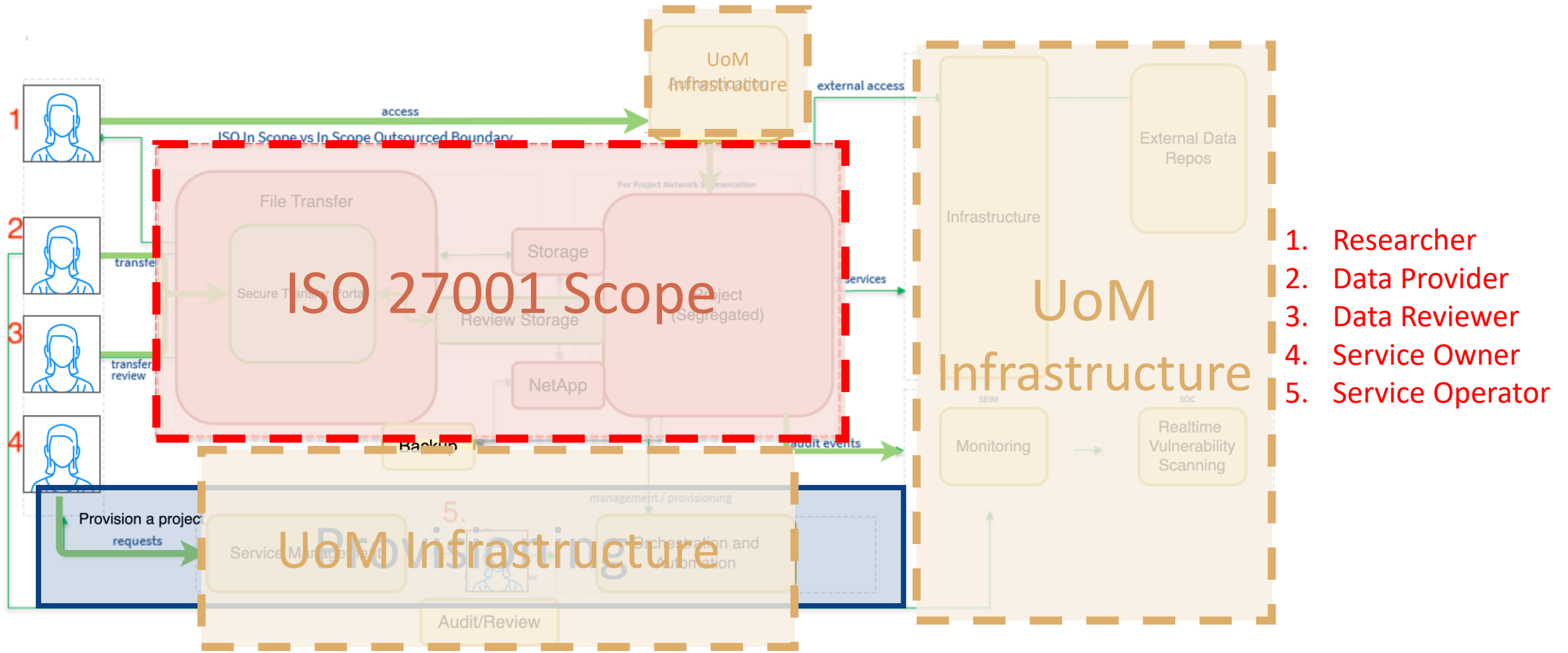
- To establish trust:
  - Between researchers and the University
  - Between data providers and the Secure Research Environment
  - Between research participants and researchers
- Certification is short-hand for that trust



# Certification to Build Trust

- The path to Certification broadly consists of 4 internal and external audits over the course of a year (with ongoing external surveillance audits).
- This process is supported by the development of an **Information Security Management System** with input from all areas of UoM Business Services.
- External penetration-testing and on-going monitoring required.
- A future goal is to aim toward the newly released ISO 27001:2022 standard which is more focussed on cloud-based solutions rather than on-prem.

# Infrastructure Overview





# Ways to use the SRE

Some identified use cases:

- Processing and analyses of personally identifiable data used in medical research etc.
- Secure sensitive research data storage – export of deidentified data.
- Data Providers who will only release data into a Trusted Research Environment.



# Future directions

- Supporting diverse workflows from researchers across all Faculties with UoM.
- Flexibility of research workflows while maintaining governance and protection.
  - Cultural change around security while ensuring efficiency/ease of research within a Standard Operating Model.
- Interoperability and transitioning of data between interinstitutional Trusted Research Environments.
- The ability and process to ingest data from a range of sources and formats.
- Integration within a National ecosystem of TREs.



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**Thank you**

