



# Aridhia Digital Research Environment (DRE)

2023

# Introduction to Aridhia

Who we are

# Aridhia DRE – Who We Are and What We Do



The leading platform for trusted data sharing and collaboration networks



Global Networks



Pharma



Research Hospitals

- Aridhia helps clinical and life sciences pioneers in Research Hospitals, Universities, Pharmaceutical Companies & Global Medical Networks who want to advance their medical research and improve outcomes **more quickly**.
- We do this by providing a safe, secure **digital research environment** for projects of any size or scale; local or global. This is built to enable greater collaboration, knowledge sharing and access to the potential of machine learning.
- Unlike systems built in-house, Aridhia's platform is ready to go and delivers **rapid impact**. It's customizable and flexes based on how much or how little you need it to do.
- We understand the special considerations in healthcare research across global jurisdictions and help you maintain **patient privacy and data provenance** with continued investment in security and quality certifications.

# What is the DRE?

Aridhia DRE platform

# A Next-generation Research Environment

with Security and Privacy *locked in!*



Rich **metadata catalog** with advanced searching and support for FAIR data principles



Configurable and orchestrated **data governance** that automatically connects metadata searches with data requests and controlled delivery



Private, airlocked, and data-agnostic **collaboration workspaces** with scalable infrastructure in an audited, regulatory-grade environment



**Built-in analytics** tools to easily explore data and build and share a cohort without writing code



Access to your favourite software packages or bring your own tooling and use private, localised git repos to support your **modeling tools development and sharing**



# Encompassing the Full Data Lifecycle



FAIR



COVID-19 Drug Effectiveness Results (Demo)

Author: Aridhia Example  
Contact Email: info@aridhia.com  
Publisher: Aridhia Informatics  
License: Open Data Commons  
DOI: https://10.1109/COVID.2020.153  
Keywords: simulated, COVID-19, Remdesivir, Clinical Trial  
Resources: data.json (7.17 kB)

Request access

1 Choose Select data  
2 Project Add details  
3 Destination Add details  
4 About

Report generation demo

NAME SURNAME  
Arithia Informatics Ltd. Edinburgh  
name.surname@aridhia.com

Alcohol and Diabetes

Bar Chart

Sex	Age Years	Family History of Dementia
Male	45	1
Female	40	1

Additional Access (Name, Title, and Email)

ordinal	salgpo	rando	time_to_recovery			
2	5	Patients Re	Remdesivir	4	FALSE	9
1	5	Patients Re	Placebo	1	TRUE	5
2	5	Patients Re	Remdesivir	5	FALSE	5
2	6	Patients Re	Remdesivir	8	FALSE	5
2	5	Patients Re	Placebo	2	TRUE	5
2	5	Patients Re	Remdesivir	7	FALSE	5
2	6	Patients Re	Remdesivir	2	TRUE	14
2	6	Patients Re	Remdesivir	9	FALSE	5
1	4	Patients Re	Placebo	1	TRUE	5
1	5	Patients Re	Remdesivir	5	FALSE	5
2	5	Patients Re	Placebo	2	TRUE	8
0	5	Patients Re	Placebo	2	TRUE	7
2	5	Patients Re	Placebo	2	TRUE	8
2	5	Patients Re	Placebo	7	FALSE	5
2	5	Patients Re	Placebo	2	TRUE	13
8	5	Patients Re	Remdesivir	7	FALSE	5
2	5	Patients Re	Remdesivir	1	TRUE	6
2	5	Patients Re	Placebo	5	FALSE	5
2	7	Patients No	Placebo	9	FALSE	5
2	5	Patients Re	Placebo	7	FALSE	5
2	5	Patients Re	Placebo	2	TRUE	10
2	5	Patients Re	Placebo	2	TRUE	12
2	7	Patients No	Placebo	1	TRUE	5
2	5	Patients Re	Placebo	7	FALSE	5
2	7	Patients No	Remdesivir	4	FALSE	5

# FAIR Data Services

Findable, Accessible, Interoperable and Reproducible

**FAIR**

- **Standardized Dataset Definition and Vocabularies**
  - DCAT based catalogue, fully extendable
  - Structured dictionary definitions, with ontology links
  - Auto apply Data Object Identifiers (DOI)
- **Explore and Search**
  - Browse available datasets or search with free text, keywords, and catalogue-based filters
- **Cohort Builder – Build & Select the Data You Need**
  - Understand the data without access to record level detail
  - Request subsets of large datasets relevant to a study
  - Reduce compute framework
  - Re-use cohorts for faster time to results
- **Data Access Requests – GDPR Control of Data**
  - Data owners always in control of where and how data is used
  - Automate data access approvals – remove friction
  - Understand 'valuable' datasets – most requested, most used
- **Configurable Data Delivery Pipeline**
  - Determine optimal data delivery for performance, federation, and cost
  - Included data delivery receipt with attribution
- **Full Audit Trail**
  - All data requests, data and admin activity
  - GDPR or project specific compliance on use of data

# Workspaces

## Secure, Collaborative Research Environment



- **Inbound/Outbound Airlock Control**
  - Workspace managers always in control of what enters and leaves a workspace
- **Control Workspace Membership and Feature Access**
  - Invite, suspend, re-activate and remove users
- **Full Audit Trail**
  - Project activity logged for governance and compliance
- **Built-in Data Table Editing and Analytics**
  - 20+ biomedical stats packages – quick start, easy use
  - R code generated for advanced development
- **Full R Interactive Development Environment**
  - Develop, re-use, share code reducing time to results
- **Secure Git Repositories**
  - Collaborative development and versioning
  - Real-time review with collaborative partners
- **Drop-in R Shiny Support**
  - Aridhia library: <https://aridhia.shinyapps.io/menu/>
  - Genome viewer, table *t*-test, VCF Analyser
  - Build no-code Shiny apps and develop analytics library
  - Enable re-use and encourage best practice
- **Built in Containerized Apps**
  - RStudio, Jupyter Notebook, OHIF viewer
  - Run tools with or without virtual machines
- **Bring Your Own Apps, Code, and Algorithms**
  - Custom app support for containerized software
  - Deploy privately or share with other workspace teams
- **Access to Further Compute Services**
  - Linux and Windows virtual machines
  - Data Science tools pre-deployed reducing time to start
  - Azure ML, Cromwell, and other advanced services



# Is the **DRE** Secure?

## Trust the Aridhia Security Record



*Leave platform certifications to us...  
and you're already done!*

### **ISO27001**

- ISO/IEC 27001 information security management

### **ISO27701**

- ISO/IEC 27701 GDPR privacy information management

### **HITRUST Certification**

- HITRUST brings together several compliance frameworks such as HIPAA, NIST, and ISO into the Common Security Framework (CSF)

### **NHS Digital Security and Protection Toolkit**

- National Data Guardian's 10 data security standards

### **OWASP**

- Security by design - OWASP best practice framework



# Why Build from Scratch?



## PROVEN GLOBAL REACH

- GDPR, HIPAA, and proven track record with governmental health and regulatory agency experience
- UK, Europe, Australia, USA, Brazil, S Africa, India, Hong Kong, Uganda... over 90 countries so far and the list is growing

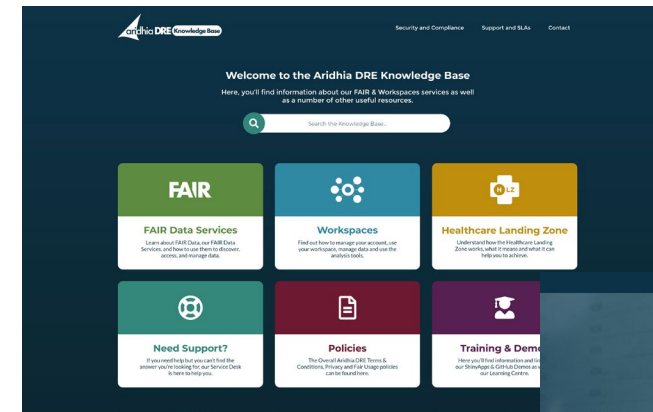
## LEARN FROM OUR EXPERIENCE

- 950+ Workspaces, 9,614 Datasets within FAIR
- Learning portal and dedicated Knowledge Base
- Dedicated platform support teams

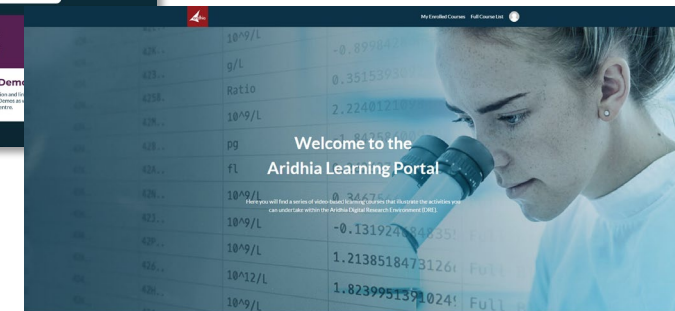
## DON'T REINVENT THE WHEEL

- No DevOps team required with built-in administration tools
- Take advantage of ready-made R Shiny apps and create visualizations without writing a line of code
- Modify our apps for a head start or develop your own to complement what already exists
- Continuous enhancement and platform development based upon broad customer feedback
- Ongoing maintenance and accreditations handled: let your team focus on the science

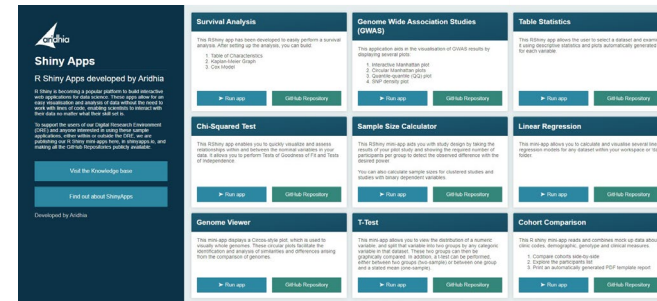
## Knowledge Base



## Learning Portal



## R Shiny Apps



# Examples of Impact



## International Covid-19 Data Alliance

- Global COVID-19 trusted data sharing network of federated data and analytical tooling
- Gates Foundation, Minderoo Foundation, Wellcome Trust funded network



## Alzheimer's Disease Data Initiative

- Global Alzheimer's research network for trusted data sharing and analytics for researchers
- Gates Ventures, NIH, MRC, Wellcome Trust, Alzheimer's Association funded network



## Rare Disease Cures Accelerator-Data and Analytics Platform (RDCA-DAP®)

- FDA funded program to accelerate rare disease research and drug development
- Platform connecting clinicians, pharma, researchers, patient advocates, and regulatory groups



## Great Ormond Street

- UK's leading paediatric research hospital
- Hospital wide deployment of DRE benefitting research and clinical outcomes



## The Royal Marsden

- UK's leading cancer research hospital
- Enabling data analytics and AI development using real-world cancer data



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