

# Advancing Human Genomics Data Sharing In Australia: Highlights From The Australian BioCommons

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1. Australian BioCommons

## What is the Human Genome Informatics Initiative?

The Human Genome Informatics Initiative aims to identify and adopt leading technology to maximise benefit from human genomics by:

1. **Removing barriers** between researchers, data and analysis resources
2. **Facilitating sharing** across data holdings for greater scale and analytical power
3. **Connecting and harmonising** national and international research efforts
4. Ensuring data is appropriately accessed within **ethical, legal and privacy standards**

We are working with a range of national and international research partners, infrastructure partners and cloud-based analytics platforms. This includes the **GA4GH**, the developers of Gen3 and the **ELIXIR** Federated Human Data Community among others.

This work will allow genomic data from thousands of Australians to be shared securely and responsibly on national and global scales, enabling comparison with many other genomes to ensure their full research value can be realised.

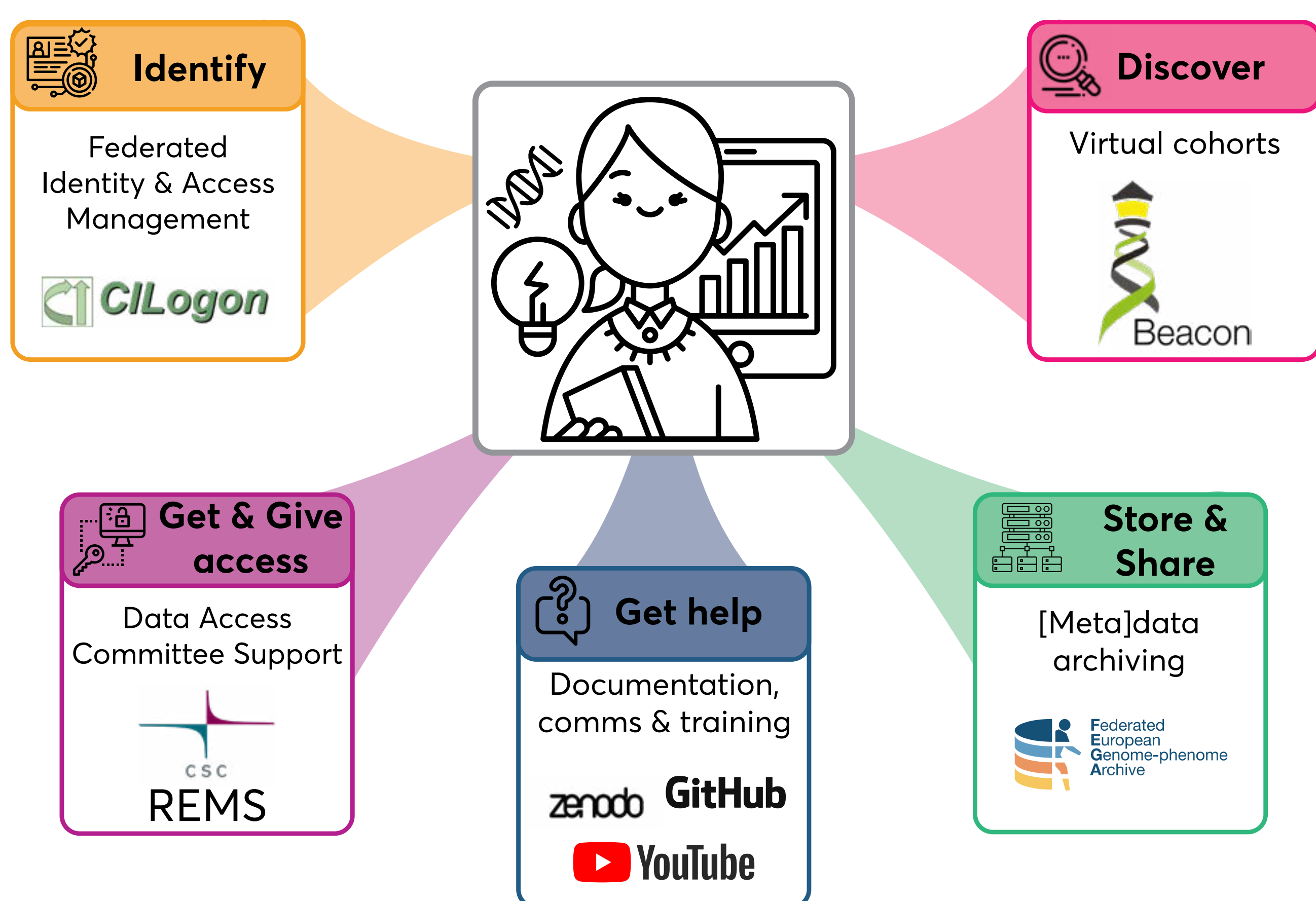
## What is the HGPP?

The Human Genomes Platform Project (HGPP) is a nationally funded initiative that aims to leverage best practice technologies and global standards to accelerate FAIR human genomics data sharing in Australia. Involving Australia's largest human genomic sequence generators, along with national computing infrastructure partners, the HGPP is breaking down silos and facilitating deployment of a services toolbox across Australian genomics research institutes.



## Technologies

Based on user requirement surveys, the below technologies were used for pilot implementations and user testing.



We sought to use tools that were **open source**, adhere to **global standards** and build upon what **already exists** in the space.

The **HGPP** received investment from the NCRIS-enabled ARDC infrastructure under investment identifier <https://doi.org/10.47486/PL032> as well as being funded through BioPlatforms Australia. Contributions are also made from each partner organisation: QIMR Berghofer Medical Research Institute, The University of Melbourne Centre for Cancer Research, Garvan Institute for Medical Research, ZERO Childhood Cancer & the Children's Cancer Institute, Australian Genomics, Melbourne Genomics Health Alliance, National Computational Infrastructure and the Australian Access Federation.

Icons from the **Noun Project**: search by Flatart, identified by Tippawan Sookruay, Data access by monkik, Help by Gregor Crenar, DNA by LAFS, Scientist by Amethyst Studio, Data Sharing by Vectors Point.

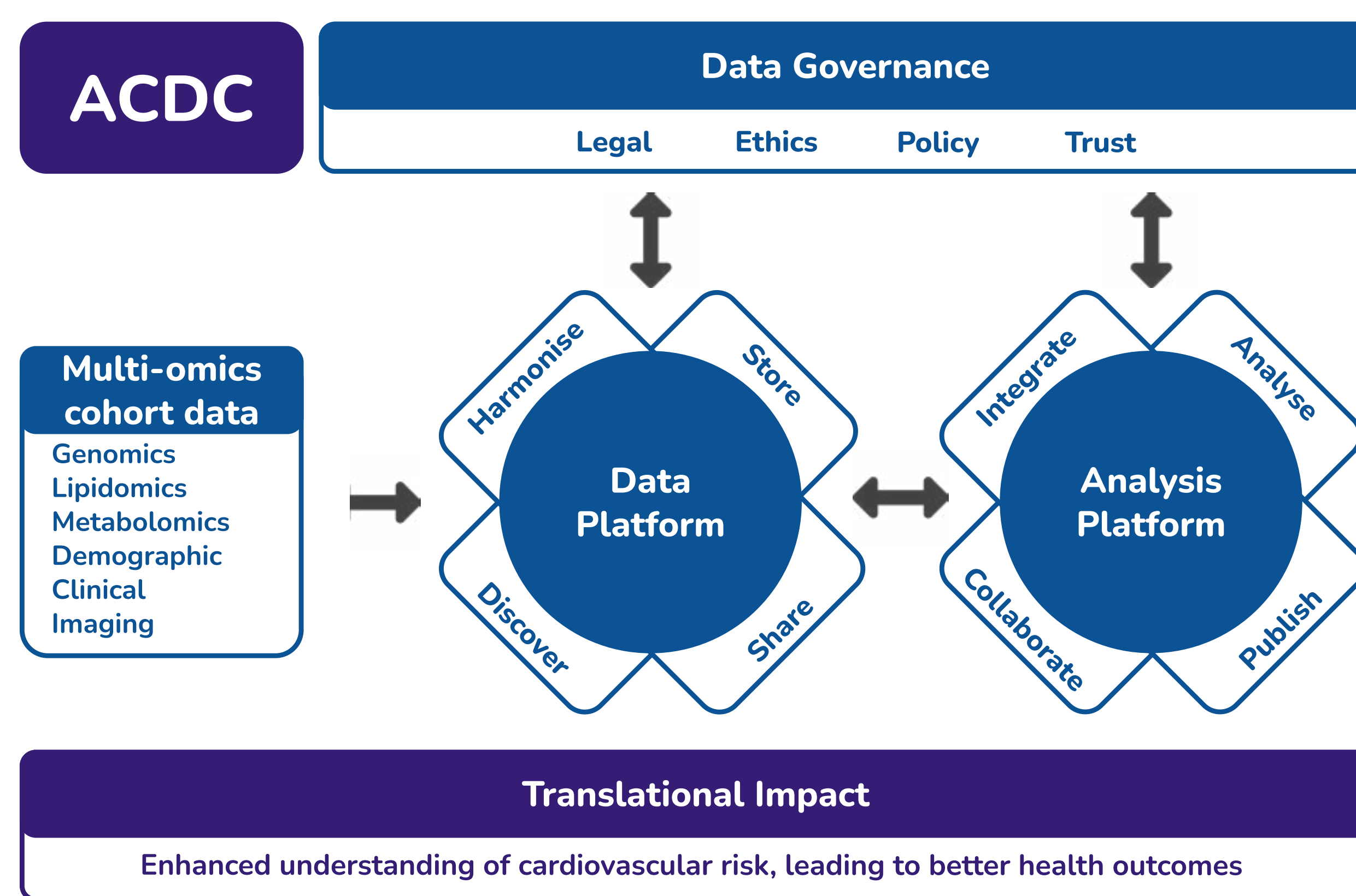


## What is the ACDC?

The Australian Cardiovascular disease Data Commons (ACDC) aims to bring together multi-omics data along with harmonised clinical, demographic and phenotypic metadata from 18 diverse cardiovascular disease cohorts. To date we have established a pilot data platform using Gen3, developed a customised data dictionary and loaded synthetic data. Once established and seeded with data, the ACDC will enable the identification of biomarkers and potential therapeutic targets through integration and reanalysis of existing datasets.

## Structure

The ACDC will be a comprehensive, secure, scalable, internationally integrated data infrastructure connected to global best practice analysis platforms. It will incorporate stringent data governance policies and practices that will balance the ethical, legal and social issues with the translational impacts of large-scale multiomics data integration.



<https://data.acdc.ozheart.org/>



The ACDC pilot project was made possible through contributions from all project partners including the Baker Institute, University of Sydney, NHMRC Clinical Trial Centre, the Australian Cardiovascular Alliance and the Australian BioCommons. The project will continue with support from an MRFF Critical Research Infrastructure Grant, BioPlatforms Australia and further in-kind contributions from project partners.