

# Strategic Plan 2022-2025

Computational Sciences Initiative (CSI)

19 July 2022



**Computational  
Sciences  
Initiative**

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# 1 Introduction

The Doherty Institute is internationally renowned for cutting-edge studies in infection and immunity, spanning Discovery Research, Clinical and Health Services, and Public Health.

In recent years, the generation of immense data sets at the Doherty Institute has unveiled a need for sophisticated computational methods and expertise to maximise discoveries from these unique data sets. This led to the inception of a new Computational Sciences Initiative (CSI).

A generous donation from the J & M Wright Foundation enabled the CSI to be born in late 2021. After consultation with numerous stakeholders internal and external to the Doherty Institute, followed by strategic planning workshops, the CSI Strategic Plan was developed. This plan maps out the strategy and priorities underpinning CSI activities for the next 5 years.

The CSI seeks to build multidisciplinary teams to drive the analysis of the Doherty Institute's complex data sets to maximise discoveries. This aims to transform our understanding of infection and immunity, and ability to diagnose, treat and prevent infectious diseases, leading to better health outcomes.

The CSI will build expertise and a community of practice in computational sciences focused on infection and immunity. The CSI has three overlapping themes: Discovery Research, Clinical and Health Systems, and Public Health. Both within and across the three themes, multidisciplinary teams of computational scientists and infection and immunity specialists, will collaborate to achieve this vision.

## CSI Vision

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*To improve health globally by harnessing the power of complex data sets to revolutionise our understanding of infection and immunity*

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## CSI Mission

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*To build multidisciplinary teams to collaborate and unleash the potential of complex data sets to better understand infection and immunity for improved health outcomes*

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## 2 Five year strategy



Develop a talent pool of computational scientists to drive discovery



Build internal analysis capabilities and advance the use of new technologies



Advance analyses with internal and external partners



Educate and collaborate in multidisciplinary teams to address data needs over project lifecycle



Establish data governance and data sharing mechanisms



Build CSI identity, profile and recognition

### Year one outcomes

**Strategic Planning:** Consulted key stakeholders and instituted CSI plan

**Capability:** Established CSI collaborative platform, leveraging new and existing capabilities, to advance Doherty data analysis

**Workforce:** Established a skilled and resourced team for collaborative analyses of complex data sets

**Policy:** Developed transparent processes and procedures for data sharing and governance

**Workforce development:** Established an outline for a training program in computational sciences, including postgraduate students

**Identity and Profile:** Raised internal awareness of CSI purpose and role, and built a community of practice

### Year three outcomes

**Strategic Planning:** Reviewed CSI activities and implemented changes

**Integration:** Promoted CSI purpose, model and achievements in seminars and integrated CSI in all Doherty areas

**Workforce:** Increased new funding streams and integrated workforce number

**Innovation:** Implemented new collaborations and technologies. Founded a catalogue of Doherty data sets potentially used for new projects

**Capability:** Trained Doherty personnel in data sharing, governance, analysis and interpretation via sharing policies, holding workshops and meetings

**Workforce development:** Enlisted students into training program

**Identity and Profile:** Built CSI profile in precinct by presenting successful projects and multi-institute events

### Year five outcomes

**Strategic Planning:** Reviewed and developed new CSI strategy to drive excellence for the next 5 years

**Outreach:** Ensured ongoing outreach of CSI with all Doherty areas via seminars and targeted meetings

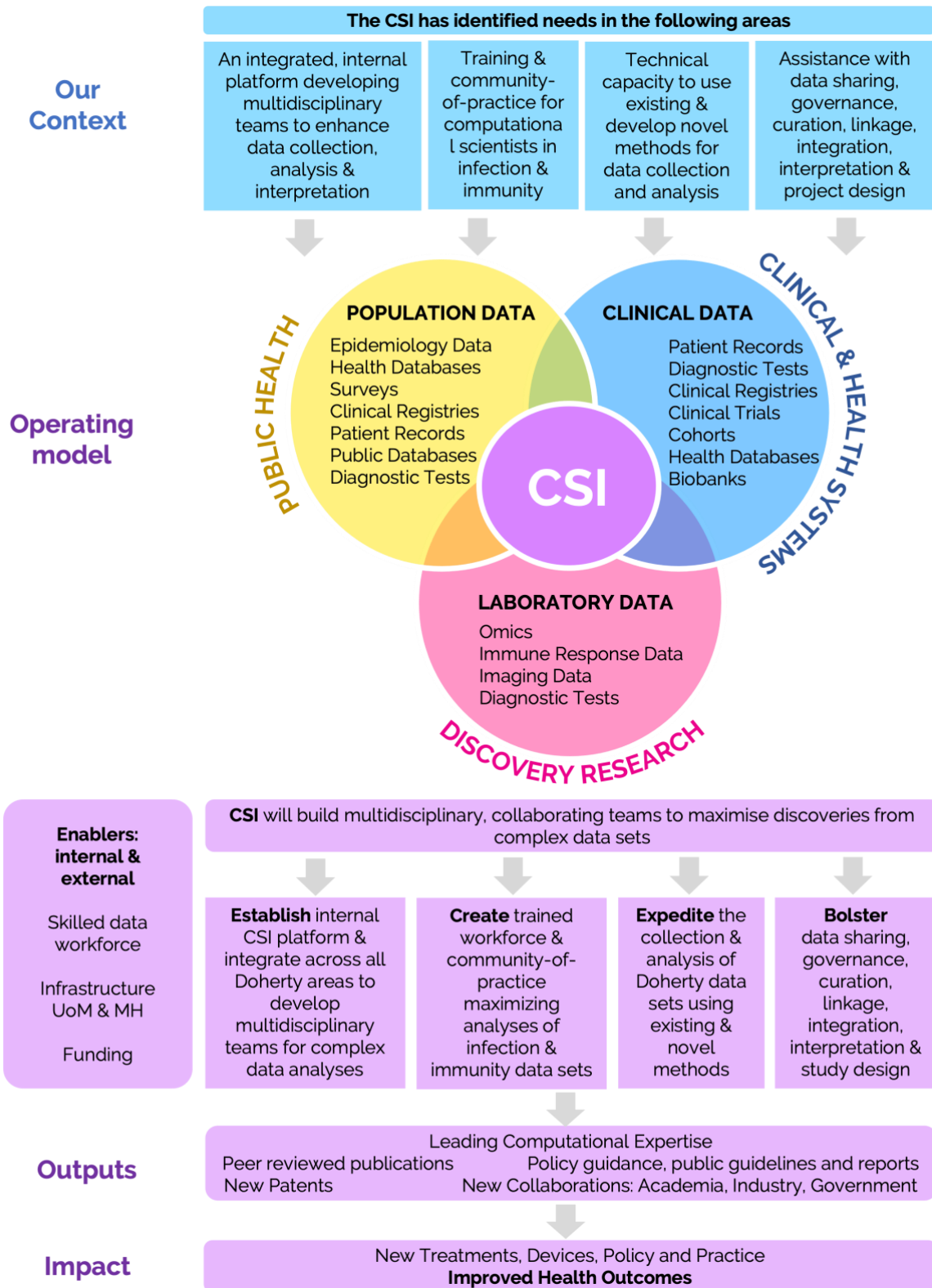
**Sustainability:** Secured CSI self-sustainability through new and enhanced funding streams

**Innovation:** Upskilled in new technologies, collaborations, education and training of scientists to fortify CSI 's innovative reputation

**Workforce development:** Expanded graduate researcher numbers in training program

**Identity and Profile:** Forged CSI profile nationally and globally via research outputs, external collaborations and events

# 3 Impact



## 4 Priorities

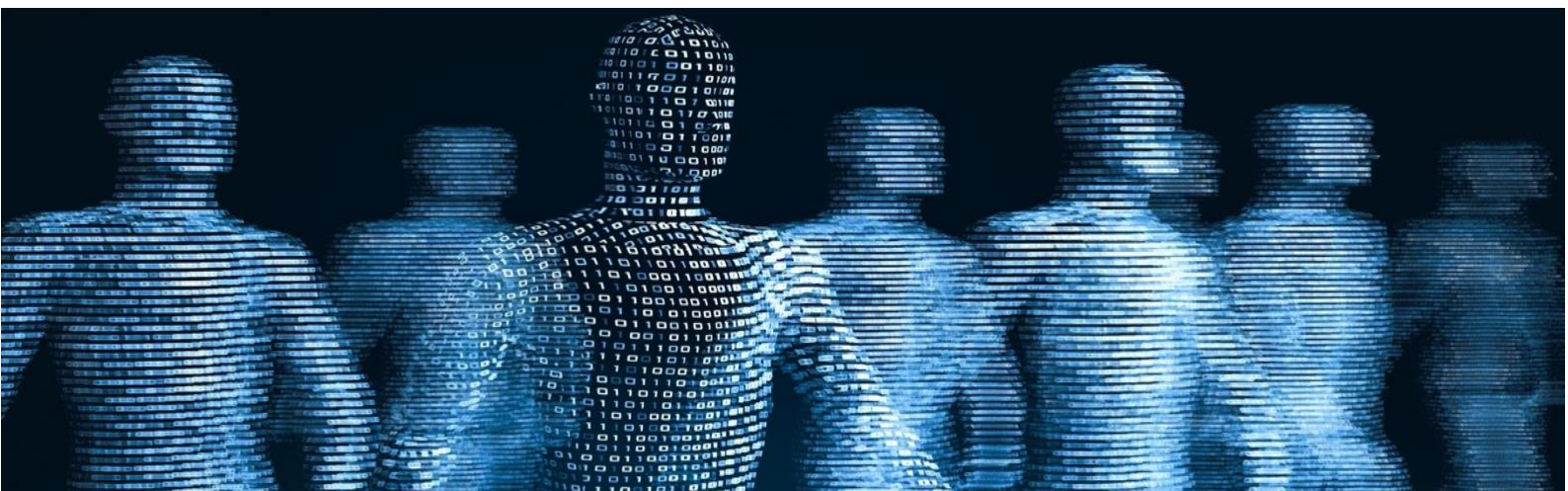
### 4.1 Workforce capabilities and expertise

#### Actions

- Secure funding to recruit and retain a computational workforce via grants, university, philanthropic, industry and government partnerships.
- Upskill the computational workforce and build their careers via mentoring, training and development opportunities.
- Integrate computational expertise into research teams throughout the project lifecycle: design, implementation, data analysis, interpretation, translation and storage.
- Build technical expertise, guidelines and support staff in existing and new priority areas eg. data sharing/management/curation/linkage/integration, bioinformatics, single cell and spatial multiomics, health informatics, machine learning/AI, new technologies.
- Build a community-of-practice in computational sciences in infection and immunity.
- Establish CSI as a central platform to drive these activities.

#### Measures

- Established the business model.
- Secured funding via subscriptions, fee-for-service, grants, philanthropy, industry, government.
- Recruited against funding and staff assisted in priority areas eg. data curation/linkage/integration, bioinformatics, multiomics, machine learning/AI, new technologies.
- Number of:
  - publications, authorship position and their citations, presentations.
  - policy and public health guidelines/reports published annually.
  - grant applications and successes.
- Established student recruitment plan, projects and annual student numbers increased.
- Delivered annual undergraduate /postgraduate guest lectures to develop workforce.
- A community-of-practice email list and Slack channel established.
- Annual computational seminar series and symposium.



## 4.2 Enhance integration and establish new partnerships

### Actions

- Map existing computational platforms internal and external to the Doherty Institute.
- Integrate existing Doherty computational platforms into the CSI via website presence, project engagement, providing expertise on data needs eg. management, agreements.
- Drive new partnerships with external platforms/partners to facilitate Doherty data analyses.
- Ongoing outreach and integration of CSI into all Doherty Institute areas.

### Measures

- List of computational platforms internal and external to the Doherty Institute developed.
- Integrated Doherty computational platforms into CSI websites, project enquiries and projects.
- Increased external partnerships and assisted with relevant Doherty projects.
- Annual CSI seminar to Doherty Institute and leadership meetings in all institute areas.

## 4.3 Build collaborative approaches for data generation, curation, analysis and interpretation

### Actions

- Upskill non-computational stakeholders about data technologies and analyses via seminars and training workshops.
- Build multidisciplinary, collaborating teams to drive project design, funding applications, data generation, curation, analysis and interpretation.
- Integrate CSI into all Doherty Institute areas to drive collaborations.
- Drive collaboration with internal and external platforms/partners to assist data analyses.
- Spark new projects that use the Doherty Institute's unique data sets.

### Measures

- Data sharing: workgroup formed, mechanisms and guidelines developed.
- Annual seminars / training workshops about new data technologies and analyses.
- Number of:
  - new project collaborations with CSI, internal and external partners.
  - publications, authorship position and their citations, presentations.
  - policy and public health guidelines/reports published annually.
  - grant applications and successes.
- Annual CSI seminar to Doherty Institute and leadership meetings in all institute areas.
- Formed project idea workgroup for Doherty data sets. Number of resulting grants.

## 4.4 Build CSI identify, profile and recognition

### Actions

- Establish CSI identity as an integral part of the Doherty Institute by engaging stakeholders in strategic planning and ongoing CSI outreach with all institute areas.
- Build CSI's internal profile by assisting core Doherty projects, developing an online profile, and delivering seminars, workshops and symposiums.
- Drive CSI local, national and global recognition via external presentations, publications, delivering multi-institute events, annual reports, and engaging scientists, facilities, industry and government.

### Measures

- Engaged Doherty and external computational stakeholders: individually, in workshops.
- Established CSI Strategic Plan.
- Launched CSI and increased outreach to Doherty Institute by seminars and leadership meetings.
- Assisted with relevant core Doherty projects.
- Annual seminars, workshops and symposiums locally and with multiple institutes.
- Internal and external websites established, and social media posts increased.
- CSI annual reports.
- Number of:
  - publications, authorship position and citations, external presentations.
  - new external stakeholders (scientists, facilities, industry, government).





## 4.5 Scale CSI into a sustainable platform

### Actions

- Drive CSI collaborations and grant applications to fund salaries for sustainability.
- Encourage methods development with precinct collaborators for extra support avenues and ensure continual development and implementation of cutting-edge methods.
- Execute fee-for-service work to increase funds for a sustainable platform.
- Engage industry, philanthropy and government to explore funding opportunities for positions, technologies or grant seed funding to aid sustainability.
- Build computational careers via mentoring, training, and development opportunities to create an expert sustainable workforce.

### Measures

- Number of collaborations with multidisciplinary teams and successful grants increased.
- Sustainable funding secured from subscriptions, fee-for-service, grant applications, philanthropy, industry and government sources.
- Recruited staff against funding, developed skills in priority areas and sustained.
- Built staff careers via mentorship, training in new areas, annual conferences, presentations, grant applications and student supervision. Staff promotion over time.

