

INTERSECT



Annual Report

08 - 09



About Intersect

Intersect is owned by its members and was created to provide eResearch services and solutions. Intersect was established in late 2008 and currently has seven university members: the University of Sydney, the University of New South Wales (UNSW), Macquarie University, the University of Technology, Sydney (UTS), the University of Newcastle, Southern Cross University and the University of New England. The NSW Government's Office for Scientific and Medical Research funded Intersect's establishment with a \$2.8M grant.

Intersect provides support for the State's researchers. Intersect also works in the national context as the NSW member of the Australian Research Collaboration Service (ARCS), and by collaborating with the Australian National Data Service (ANDS), the National Computational Infrastructure (NCI) and Australia's Academic and Research Network, (AARNet).

Intersect provides:

- **Services:** ICT requirements analysis for research; project coordination; collaborative tools; high performance computing support; and infrastructure planning;
- **Engineering:** project management; software development; infrastructure.

Intersect Mission

To work with NSW universities and others to increase the quality, efficiency and visibility of NSW based research through the provision of advanced and specialised ICT services and solutions, enabling:

- improved management of research data;
- new methods for collaboration;
- new research methodologies.

Intersect Purpose

Developing a coordinated approach to eResearch is critical to maintaining NSW's status as Australia's leading research state. To position NSW to compete favourably in the increasingly globalised, online world of research, Intersect's goals are to:

- deliver professional quality projects and services to its member institutions;
- raise awareness and stimulate the uptake of eResearch technologies at NSW universities and public and private sector research agencies;
- address eResearch skills shortages through the provision of training, professional development and career enhancement opportunities.

What is eResearch?

The term 'eResearch' is used to refer to the application of advanced information and communication technologies to the practice of research. It aims to enhance existing research processes, making them more efficient and effective, and it enables new kinds of research processes.

Message from the Chief Scientist

I would like to congratulate Emeritus Professor Mark Wainwright, his Board, Dr Ian Gibson, CEO and his team on a superb first year with Intersect Australia Ltd. I am delighted to see how Intersect has built an excellent framework to support and encourage eResearch in the State. eResearch is fundamental to ensuring globally connected research and is perfect for Australia with its large geographical distances between research centres within Australia and overseas.

Professor Mary O’Kane
NSW Chief Scientist and Scientific Engineer



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Chair's Report

Emeritus Professor Mark S. Wainwright AM

I am extremely proud of what Intersect and its staff have achieved in a very short time. Only a year ago NSW was well behind many of the other states in the eResearch domain. Now NSW is considered the leader in this space, coordinating its eResearch issues, requirements and opportunities with great effectiveness.

Intersect owes much to Dr Michael Briers, CEO of Sirca, whose vision and hard work established Intersect with the founding partners, the NSW Government, the University of Sydney, UNSW, the University of Newcastle, Macquarie University and UTS, with the support of the Federal Government. Mike also did a wonderful job as the interim CEO. Since those early days, Intersect has also welcomed Southern Cross University and the University of New England as new members.

Although Intersect was officially established in June 2008, it took on a life of its own with the appointment of Dr Ian Gibson as CEO in November 2008. Ian has done a wonderful job since that time, growing the company from 3.5 staff to 35. He has recruited two outstanding people to be members of his leadership team, with Chris Mendes appointed Director of Engineering in March 2009 and Dr Markus Buchhorn joining as Director of Services in May 2009. I commend Ian and the wonderful team he has recruited for establishing the company in a very short period.

I am grateful to Sirca for allowing Intersect to share office space in Clarence Street until Intersect finally moved to its new home in Kent Street on August 20, and I look forward to an official opening of the premises by the NSW Minister for Science and Medical Research, the Honorable Jodi McKay

later this year. I thank her and the NSW Government for its support. I also thank the NSW Chief Scientist, Professor Mary O'Kane, for her outstanding support.

I particularly wish to thank all the staff of Intersect for their outstanding efforts, which have made the company so successful in such a short time. I also give special thanks to the Directors of Intersect and the external committee members who have given so generously of their time to assist Ian and his team throughout the year.

Emeritus Prof. Mark S. Wainwright AM
Chair



CEO's Report

Dr Ian Gibson

It is with pleasure that we bring you the first annual report for Intersect Australia Ltd.

Intersect was brought into existence by its founding members to provide eResearch services and solutions for its members, and to be the peak eResearch body for NSW. Intersect was established through the vision and hard work of many who consider a capability in eResearch to be a critical element of the future of research in Australia.

The NSW Government, through the Office of Scientific and Medical Research has played a critical role in establishing Intersect and has recognised the importance of eResearch through a \$2.8M grant to Intersect to help its establishment.

Intersect's founding members have agreed to fund an initial four year period. They do this because they recognise the use of specialised ICT is critical in maintaining leadership in their fields of research. We will work hard to establish the value of Intersect and to clearly demonstrate a return on their investment during this period.

It is fair to say that the term eResearch is not well defined, and is yet to be widely used or understood by Australian researchers. Our initial survey work suggests that Intersect and other eResearch organisations have a degree of work ahead in building our credibility.

In our first year of operation, Intersect has ramped up to just about full operating capacity with a staff of 35. This number is projected to reach approximately 45 in the next twelve months. We are working to build an elite organisation with the highest professional engineering and service standards, drawing on experts with academic and commercial backgrounds.

Intersect is a new organisation in a rapidly changing landscape. I would like to thank all those who, through hard work and vision, helped set up the organisation. I'd like to join Mark in thanking Mike Briers, the CEO of Sirca and interim CEO of Intersect, who put in a huge effort pulling it all together. I join Mark in thanking the NSW Government through the Department

of State and Regional Development, the Federal Department of Industry, Innovation, Science and Research and all Intersect's members. I appreciate the leadership and patience expressed in their investments.

In particular I thank Intersect's staff for their dedication and hard work during this establishment year. Thanks also to Mark Wainwright for his support and assistance.

If you believe that Intersect may be able to help you in any way please do not hesitate to contact me or any of our staff. As a new organisation, we are to some extent feeling our way. If you think we could do something differently, or better then I would be very happy to hear from you.

Dr Ian Gibson, CEO
ian.gibson@intersect.org.au

Membership, Boards & Committees

Intersect Australia Ltd was formally established on 25 June 2008 as a not-for-profit company limited by guarantee, established by its founding members to provide eResearch services and solutions.

■ Intersect's **Board of Directors** are:

- Emeritus Professor Mark Wainwright AM (Chair)
- Professor Sue Rowley, Deputy Vice-Chancellor (Research), (University of Technology, Sydney)
- Professor James Dalziel, Director, Macquarie E-learning Centre of Excellence, (Macquarie University)
- Mr John Shipp, University Librarian, (University of Sydney)
- Mr John Masters, Partner, PricewaterhouseCoopers, (Sirca)
- Professor Pat Michie/ Professor Mike Calford, Pro & Deputy Vice-Chancellor (Research), (University of Newcastle)
- Professor Sally Redman, CEO, The Sax Institute, (Independent)
- Mr Warwick Watkins, Director General, Department of Lands, (NSW Government)
- Dr Ian Gibson, CEO, (Intersect).

■ Providing advice and guidance to the Board on project related issues is the **Innovation Committee**:

- Emeritus Professor Mark Wainwright AM (Chair and Board Member)
- Professor Mary O'Kane, NSW Chief Scientist and Scientific Engineer, (NSW Government)
- Dr Malcolm Cook, Program Director - East Asia, The Lowy Institute, (Independent)
- Dr Ian Gibson, CEO, (Intersect).

■ Providing advice and guidance to the Board on service related issues is the **eServices and Strategy Committee**:

- Mr John Shipp (Chair and Board Member)
- Dr Jim Richardson, Relationship Manager for eResearch, (University of Sydney)
- Mr Andrew Wells, University Librarian, (University of New South Wales)
- Mr Peter James, Infrastructure and Operations Director, (University of Technology, Sydney)
- Professor Pat Michie, Pro Vice-Chancellor (Research), (University of Newcastle)
- Mr Stephen Williams, Business Manager, (Southern Cross University)
- Professor Jonathan Borwein, Laureate Professor, Director, CARMA, (University of Newcastle)
- Professor Jim Piper, Deputy Vice-Chancellor (Research), (Macquarie University)
- Mr Grahame Pearson, Manager, Research Development and Integrity, (University of New England)

■ Overseeing the company's financial reporting and compliance is the **Board Audit and Risk Management Committee**:

- Mr John Masters, Partner, PricewaterhouseCoopers, (Chair and Board Member)
- Mr Garry McLennan, Chief Financial Officer, FlexiGroup Limited, (Independent)

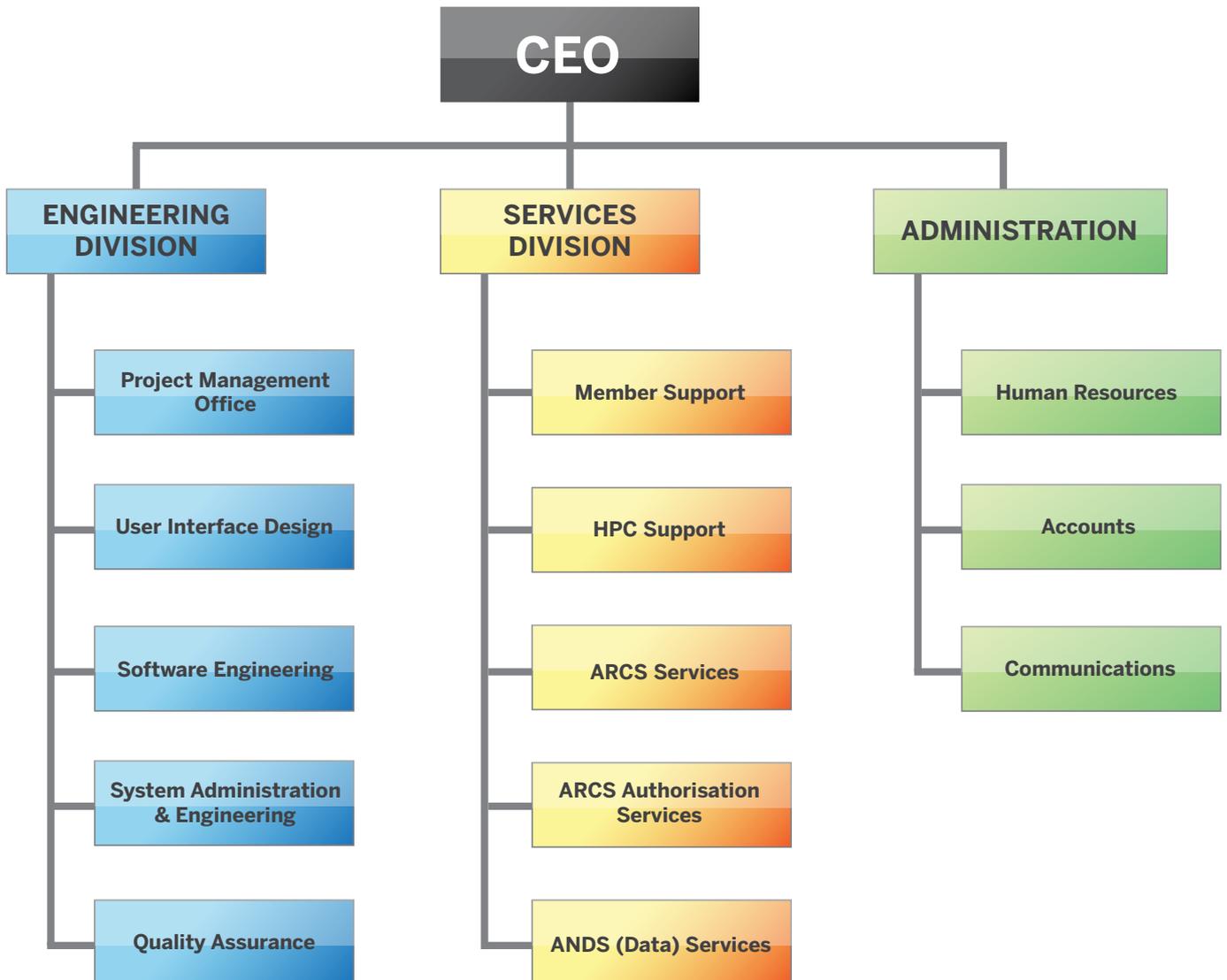
Intersect Membership



The University of Sydney



Intersect Structure & Organisation



Key People



Christopher Mendes
Director of Engineering

Intersect's Engineering team is responsible for delivery of eResearch software and infrastructure development projects. Projects range from small tailoring and customisation projects up to large scale customised web enabled database solutions. Chris is also responsible for facilitating the Innovation Committee's project selection process.



Dr Markus Buchhorn
Director of Services

Markus manages and coordinates the delivery of Intersect's services. The portfolio includes not only technical services such as infrastructure support, development and operation, but also human services such as requirements gathering, skills development, outreach and help desk services.

Intersect Services

Intersect provides a range of services for its members and to the wider research community. Services are delivered through institutional frameworks as far as possible, such as IT departments, libraries and research offices; by Intersect itself; with support from national programs including ANDS, ARCS, NCI and AARNet.

Services fall into three broad areas:

Direct services that support researchers:

- Awareness, outreach, advocacy (marketing) of eResearch;
- Support for community building (at technology and discipline levels);
- Support during project:
 - scoping: requirements analysis, planning, scheduling, budgeting;
 - development: engineering, software development, hardware sourcing;
 - operation: support for the project's information infrastructure.

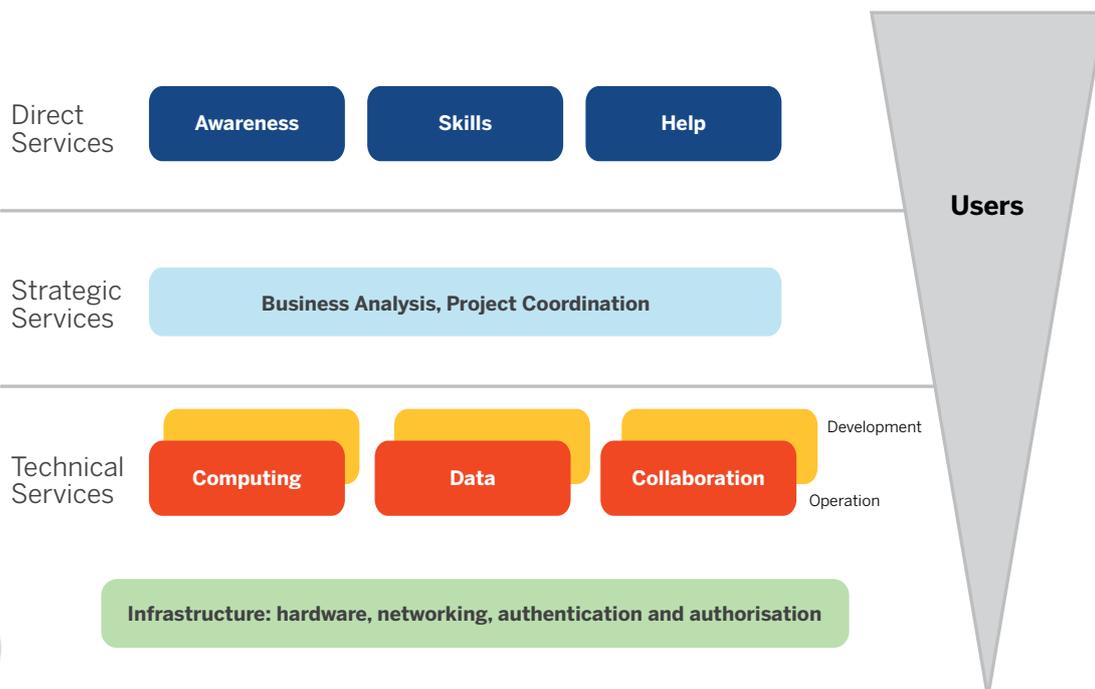
- Skills development for researchers and support staff;
- Helpdesk services in collaboration with member institutions.

Strategic services that support the 'business' of eResearch:

- Requirements analysis;
- Making new or existing tools more robust, user-friendly and better supported;
- Enhancing the community's skills-base, including finding appropriate people, growing and developing their skills, and offering career paths beyond research projects;
- Building links between researchers with problems and those who may be developing solutions;
- Supporting research into eResearch techniques and technologies;
- Assisting with funding applications.
- eResearch Analysts are based on each member's (main) campus and can be contacted via eRA@intersect.org.au.

Technical services based on software and hardware infrastructure:

- High-performance computing infrastructure;
- Data management, preservation and access;
- Collaboration technologies, connecting researchers with their collaborators in rich information-enabled environments;
- Authentication and authorisation services, to provide integrated access-control mechanisms;
- Connectivity support to optimise solutions for connecting disparate sites into the national eResearch infrastructure.
- Researchers can contact hpc_support@intersect.org.au for HPC matters.



Intersect's Services map broadly into three areas: direct, strategic and technical services.



Research Requirements Survey

As part of planning our services, an online survey into eResearch requirements was developed by University of Sydney and Intersect, and run in 2008/9.

The Universities of Sydney, UNSW, Newcastle and New England participated in the first round of the survey.

Survey outcomes overall point to a significant interest in eResearch, but a lack of awareness and minimal engagement between eResearch service providers and researchers. Less than half of the researchers who responded to the survey had heard the term 'eResearch' before the survey. Nevertheless more than 70% stated that eResearch is important or very important for future progress in their research fields. The survey is running at other NSW universities in October 2009.

Support on campus

The model by which we engage with our members' research staff is through a presence on each campus. Central to this are Intersect's eResearch Analysts, whose job is to be known to everyone, and to build a picture of local eResearch needs. We encourage everyone to get to know their local eResearch Analyst and use their services where possible.

Intersect also has an HPC specialist, three ARCS service-support staff (on collaboration, data and systems services), and another four for ARCS authorisation services. There are also various support staff and senior academics at the institutions who help support the community's use of Intersect services. These include the campus coordinators and merit

allocation committee for HPC facilities, eResearch support staff on campuses, as well as the team at ac3 who host our high-end infrastructure.

High Performance Computing resource allocation round

Our HPC facilities at ac3 currently consist of two clusters, Barossa and McLaren.

In the most recent resource allocation, time on Barossa was oversubscribed by 20 per cent and McLaren by 60 per cent. This is further confirmation that NSW universities' access to appropriate capacity is limited.

2009 LIEF Grant to replace Barossa

The Intersect consortium was awarded an Australian Research Council Linkage Infrastructure and Equipment Facilities grant in 2009 for a high performance computing cluster to replace Barossa.

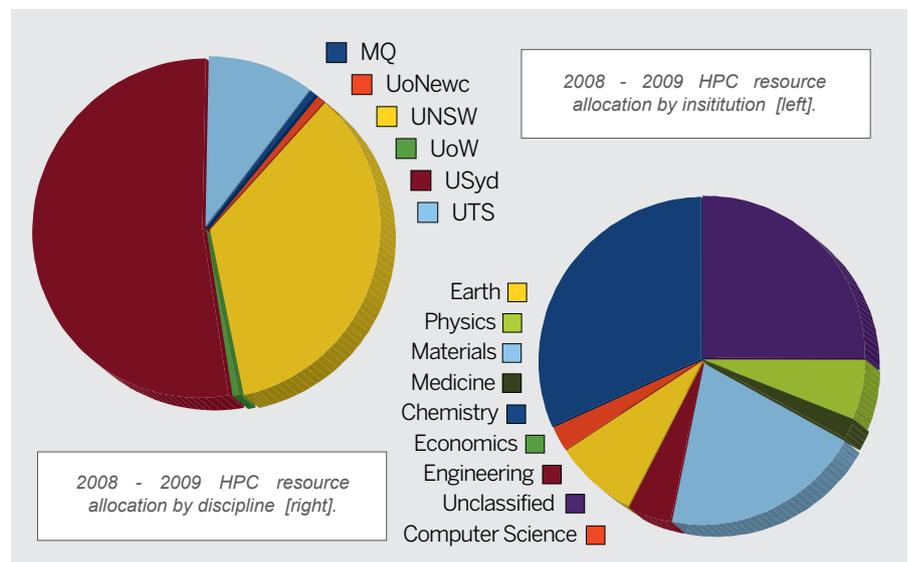
Intersect will invest in the National Computational Infrastructure (NCI) in Canberra, and purchase a share of the computational resource for use by Intersect's members. Intersect becomes a formal partner in NCI in late 2009, and once this takes effect, members will have a portfolio of options available to them for HPC resources, ranging from locally managed mid-tier systems through to top-tier, highly supported national facilities.

LIEF application for 2010

The growing need for large scale infrastructure for storing, managing and sharing research data spurred a further LIEF application for the 2010 funding round. The proposal for a NSW eResearch Data Store (NeRDS) was led by UNSW's Prof Marc Wilkins and coordinated by Intersect, with solid contributions from all Intersect members plus UWS.

HPC Facilities (2008 - 2009)

- **Barossa** is a Linux Beowulf cluster with 152 dual 3GHz Pentium 4 nodes, supplied by Dell. Commissioned in 2003 and decommissioned in October 2009.
- **McLaren** is a shared memory SGI Altix 4700 with 128 Dual-Core CPUs, 1TB RAM and 12 TB disk space. Commissioned in 2008.



Intersect Projects

The Engineering Division is now fully operational and has started a number of projects during 2009, including:

The Australian Schizophrenia Research Bank (ASRB)

The first of Intersect's Innovation projects, the Australian Schizophrenia Research Bank (ASRB) project, supports the Schizophrenia Research Institute. The ASRB web portal will replace several existing repositories of information currently used by the ASRB, and provide a secure environment for the collection and storage of this information. It will have fine grained and flexible security, allowing the ASRB to enable online access to their information for researchers in a controlled manner. This will make the ASRB repository a

valuable research resource. It will be the central resource for the entry, upload and download of ASRB participants' clinical assessments, Magnetic Resonance Imaging brain scans, and genetic (blood) samples.

The Clinical Assessment System laptop software will enable officers to assess participants in the field and upload the information to the ASRB web portal later.

The ASRB project will be delivered in early November.

DataMINX

The DataMINX project (Data Management for Microscopy, Imaging, Neutron and X-ray Facilities) will assist users of microscopy, neutron and X-ray

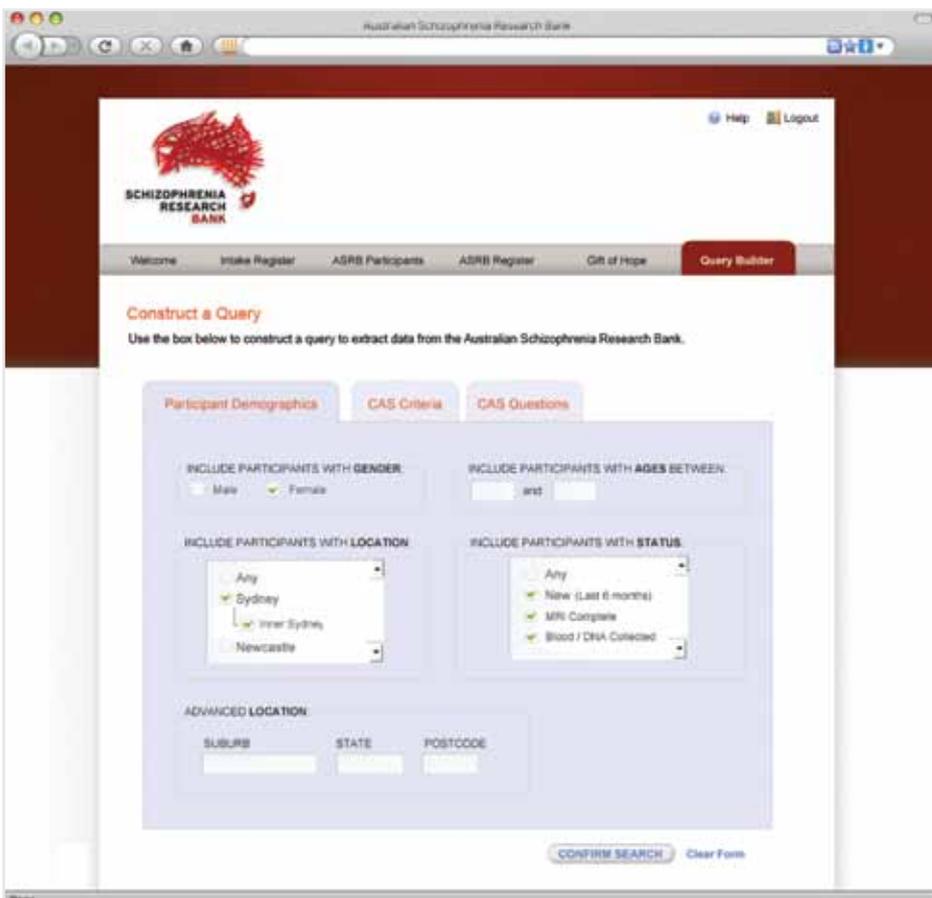
"Intersect is not only helping the ASRB to develop expert IT capacity, but is creating a secure commercial grade system that will revolutionise the way schizophrenia research data is collected, stored and disseminated in Australia."

Dr Carmel Loughland
ASRB Manager

instruments by providing solutions for collection, discovery, access and management of experimental data and metadata from various instruments.

The team has been automating the annotation of data directly from instruments using data from external information systems, relieving researchers of any additional burden related to this task. The architecture was defined and is being implemented, based on a schema known as the Scientific Metadata Model 2. For data lifting, two solutions have been explored, one developed by the Victorian eResearch Strategic Initiative (VeRSI), and a new development, Data Transfer Service in collaboration with OMII-UK. We are also working on implementing a single sign-on across services in co-ordination with the AAF and stakeholders.

As a National eResearch Architecture Taskforce (NeAT) supported project for the National Collaborative Research Infrastructure Strategy (NCRIS) 5.3 characterisation community, project collaborators include ARCS, ANDS, VeRSI and the UK Science and Technology Facilities Council.



A screenshot of the ASRB project shows the construction of a detailed search query.

Sirca data extraction tool

Intersect is working with Sirca on a project to assist the company develop a text tagging and data extraction tool which facilitates extraction of financial and corporate information from PDF and text documents.

AustLII

Intersect is assisting AustLII by providing skilled development staff on a consulting basis. AustLII, the Australasian Legal Information Institute, is Australia's online free-access resource for Australian legal information, and is a joint facility of the UTS and UNSW faculties of Law. Intersect staff are working on developing comprehensive and up-to-date databases of Victorian legal material, including legislation, case law, and community legal materials. Victoria is being used as the pilot jurisdiction and this project will influence how AustLII delivers legal material from all jurisdictions. The first of the new Victorian resources will go live in December 2009.

“Intersect was able to provide us with specialised user interaction design skills at a critical moment in the development of the Healthy.me consumer ehealth research platform. It was a highly effective way to access system design skills for a short sharp burst, and Intersect filled the gap for us beautifully.”

Professor Enrico Coiera
Director of the Centre for Health Informatics
University of New South Wales



The Healthy.me homepage indicates four ways to help people keep track of their personal health 'journeys'. Intersect delivered the user interface design for the project.

Healthy.Me

An initiative of the UNSW Centre for Health Informatics, this project is building a consumer health portal to hold data such as medications and dosages, appointments and test results. A user-centric approach was adopted so that Healthy.me users can input test results and monitor their progress over time. Intersect provided a user interface designer and delivered an easily navigable and intuitive interface.

Engineering Staff

Staff growth closely matched project growth in our first year of operation. Currently the division consists of:

- eight full time software engineers;
- two project managers;
- two system administrators;
- one user interface designer;
- the Director of Engineering and
- a software developer for the ARCS Authorisation team, based at Macquarie University.



The Way Ahead

eResearch Infrastructure

A strategically important task in the year ahead will be to co-ordinate the establishment of a state-wide eResearch infrastructure to cater for researchers needs into the mid- to long-range future. This will include a petabyte-scale research data store, a multi-tier HPC service, the associated software systems, as well as support services for researchers to make effective use of them.

A three-tier model is being developed for both HPC and data storage. This means that researchers can access systems to meet the scale of the research challenge. They will range from local institutional-level infrastructure, with local and Intersect support as appropriate, through state-level infrastructure managed by Intersect, up to national scale infrastructure that provide economies of scale not achievable by individual institutions.

Once our partnership with NCI takes effect, our members will have a portfolio of HPC options available to them, ranging from local small-scale systems, our McLaren cluster hosted at ac3, to our share in the top-tier, highly supported national facility at NCI.

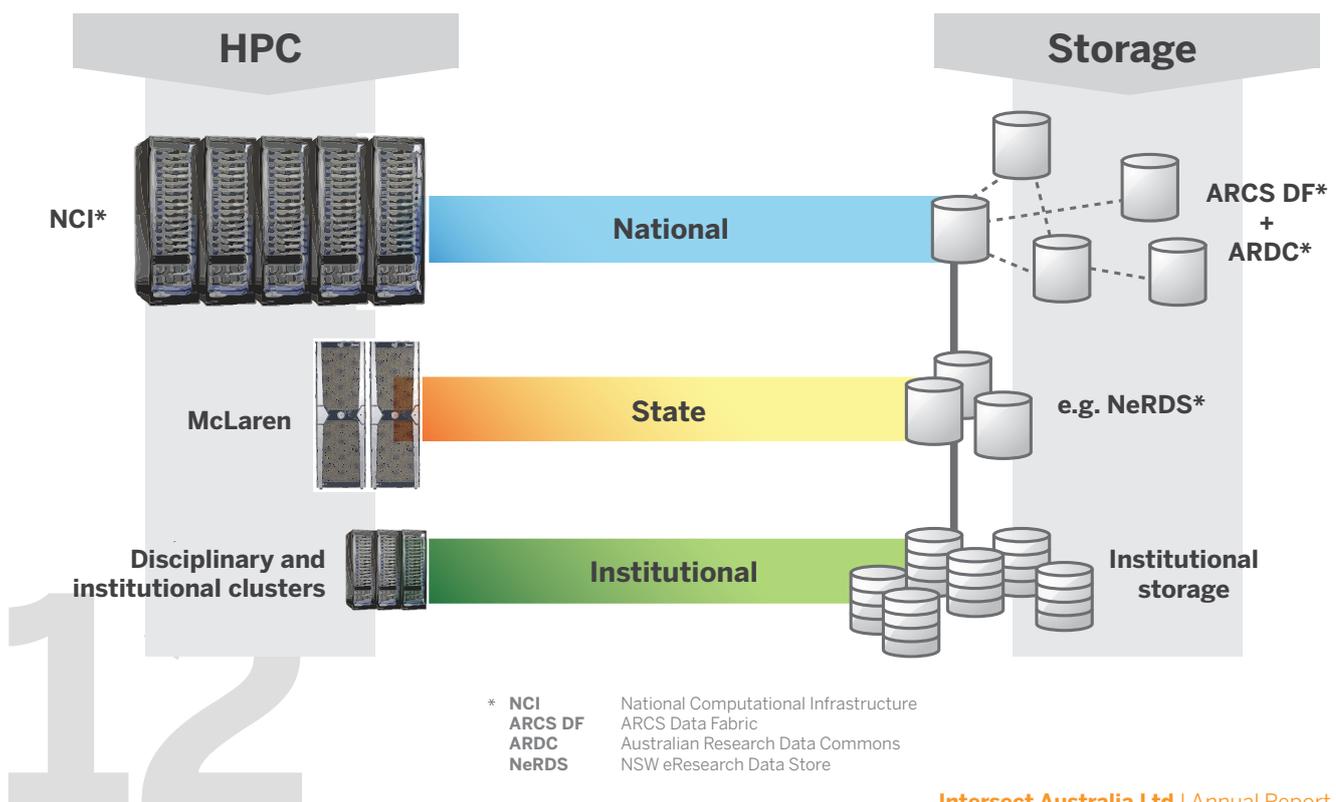
The overwhelming need for secure, backed up and accessible storage facilities will be addressed. The proposed NSW eResearch Data Store (NeRDS) will provide significant economies of scale in design, installation and cost compared to building and maintaining separate platforms at each institution. NeRDS will be scoped to enable institutions to implement strategic research data management plans with a level of certainty and to accommodate future storage requirements rapidly with minimal incremental costs. Moreover, it will enable researchers to spend more time on research and less time on IT management.

Intersect will work through the requirements gathering, architectural design, deployment and commission within the next twelve months.

Growing membership

Intersect is primarily focused on providing services to its members. In order to provide long term stability, and to subsidise the company's activities for the benefit of its members, Intersect is looking to grow its membership base. Our constitution allows for three types of membership: founding, subscribing and affiliate members, each entitled to a range of services. We will be considering what affiliate membership can provide to non-university research institutions in NSW. It is envisaged that affiliate membership be offered to organisations and agencies with a close alignment to the goals of the company and its members.

3 Tier Research Infrastructure



* NCI National Computational Infrastructure
 ARCS DF ARCS Data Fabric
 ARDC Australian Research Data Commons
 NeRDS NSW eResearch Data Store

Innovation Projects Strategy

Intersect undertakes Innovation Projects as a part of the services provided to our member institutions.

The Innovation Committee and the Board of directors have approved an Innovation Project selection process.

The selection process aims to select projects:

- that are aligned with NSW's research priorities
- of significance to the NSW research community
- which meet Intersect's strategic goals
- to develop re-usable technologies
- to develop 'package-able' solutions which become services in future
- to provide a fair and equitable distribution of project services to Intersect's members.

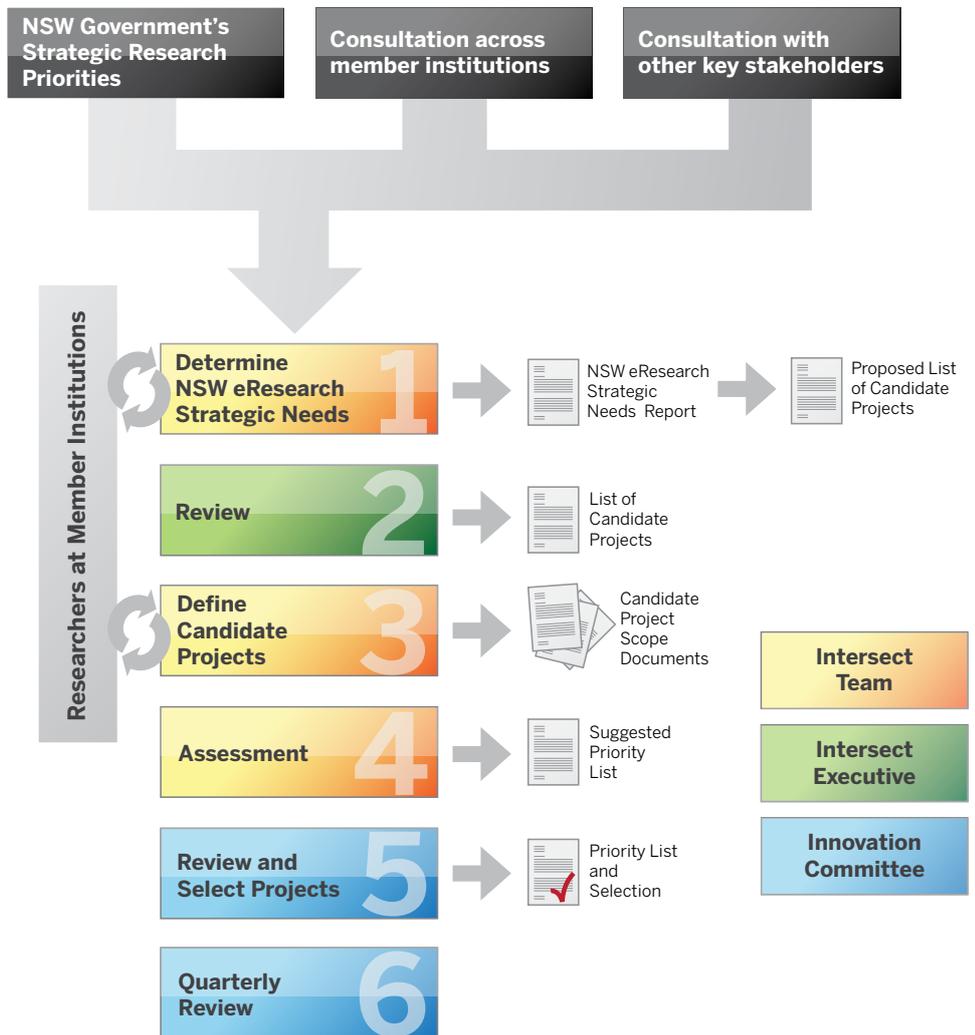
An overview of the process can be seen in the diagram to the right.

In 2009, the first innovation project selected was the database and web portal for the Australian Schizophrenia Research Bank. The second project selected is the 'Genomic Data Project'.

About the Genomic Data Project

Many research institutions around NSW are purchasing next generation DNA sequencing instruments and need to store, curate, access and analyse the immense amount of data generated.

The new DNA sequencing equipment currently has the capability to generate over 2 billion base pairs worth of sequence data per day (based on the Illumina GAII sequencer). This is predicted to rise to the order of 10 billion base pairs per day by the end of



The Innovation Project Selection Process

2009. This new equipment shifts the bottleneck away from the generation of DNA data and onto the ongoing data processing, data management and data access to ensure that the information is readily available to support research. This project proposal addresses that need.

At present, each institution is solving issues associated with sequence data management largely on its own. There is an opportunity to centralise the

effort of several major institutions in the scoping and development work necessary to make effective use of gene sequencing instruments, as well as to ensure centralised computational and data storage facilities can be used effectively in this research. This will benefit many institutes and disciplines across NSW.

Financial Report

Profit & Loss Budget vs. Actual Consolidated July 2008 through June 2009

	Jul '08 - Jun 09	Budget	\$ Over Budget
Income			
Funding Income	2,441,220.03	3,271,250.00	-830,029.97
Commercial Research & Other rev	40,000.00	0.00	40,000.00
Membership Fee Income	1,850,000.00	2,175,000.00	-325,000.00
Other Income	124,374.47	150,000.00	-25,625.53
Total Income	4,455,594.50	5,596,250.00	-1,140,655.50
Gross Profit	4,455,594.50	5,596,250.00	-1,140,655.50
Expense			
Personnel Costs	2,393,775.11	3,556,995.79	-1,163,220.68
Research Expenses	0.00	40,000.00	-40,000.00
Premises Costs	48,333.96	91,645.00	-43,311.04
Office Expenses	10,138.07	16,000.00	-5,861.93
Communications Costs	6,113.78	22,000.00	-15,886.22
Equipment Expenses	615,877.69	707,239.25	-91,361.56
Insurance	25,720.04	47,500.00	-21,779.96
Other Expenses	87,295.96	285,000.00	-197,704.04
Other Operating Expenses	130,278.00	100,000.00	30,278.00
9999 - Suspense	0.00		
Total Expense	3,317,532.61	4,866,380.04	-1,548,847.43
Net Income	1,138,061.89	729,869.96	408,191.93

Glossary of Acronyms

AAF	Australian Access Federation
ac3	Australian Centre for Advanced Computing and Communications
AeRIC	Australian eResearch Infrastructure Council
AARNet	Australia's Academic and Research Network
ANDS	Australian National Data Service
ANSTO	Australian National Science and Technology Organisation
ARC	Australian Research Council
ARCS	Australian Research Collaboration Service
ASRB	Australian Schizophrenia Research Bank
AustLII	Australasian Legal Information Institute
DSRD	Department of State and Regional Development (NSW)
DVCR	Deputy Vice-Chancellor, (Research)
EIF	Education Investment Fund
eSAS	Intersect's eStrategy and Services Committee
HPC	High Performance Computing
ITS	Information Technology Services
LIEF	Linkage Infrastructure, Equipment and Facilities
MARCS	Member of ARCS
NCI	National Computational Infrastructure
NCRIS	National Collaborative Research Infrastructure Strategy
NeAT	National eResearch Architecture Taskforce
OSMR	Office of Science and Medical Research
PfC	Platforms for Collaboration
VeRSI	Victorian eResearch Strategic Initiative

A complete list of terms and acronyms can be found on the Intersect website at:

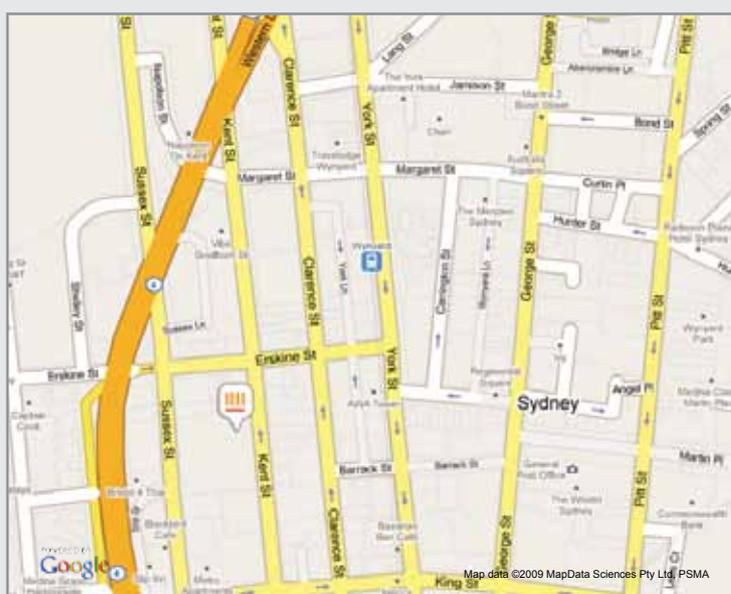
www.intersect.org.au/glossary-terms



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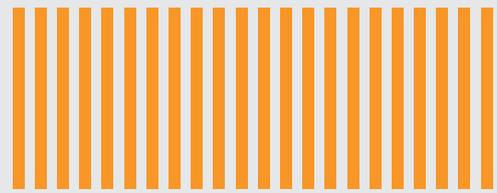


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Intersect Membership



The University of Sydney



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