

INTERSECT



Annual
Report
09-10

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 nine 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, the University of New England, Southern Cross University, the University of Wollongong and the University of Western Sydney. 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). Intersect is also a member of the National Computational Infrastructure (NCI) and the Australian Access Federation (AAF).

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.

Representing



Funded by



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Message from the Chief Scientist

Intersect has continued its excellent work. It has brought together an excellent team and has taken on important projects which have put NSW on the map for eResearch. In particular, the Genomic Data Analysis project addresses the data management needs for the next-generation sequencing community. It is through projects such as this one that Intersect has linked research with organisations around the world. Congratulations to all involved!

Professor Mary O'Kane
NSW Chief Scientist and Scientific Engineer



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Intersect Membership



Governance, 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 Attila Brungs, Deputy Vice-Chancellor and Vice-President, Research, (UTS)
- Professor Mike Calford, Deputy Vice-Chancellor Research, (University of Newcastle)
- Mr Andrew Wells, University Librarian, (University of New South Wales)
- Professor James Dalziel, Director, Macquarie E-learning Centre of Excellence, (Macquarie University)
- Mr John Masters, Company Director, (Sirca)
- Professor Sally Redman, CEO, The Sax Institute, (Independent)
- Ms Gabrielle Upton, Former Deputy Chancellor UNSW, (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, Lowy Institute (Independent)
- Professor Sally Redman, Chief Executive Officer, Sax Institute (Independent)
- Emeritus Professor Sue Rowley (Independent)
- Dr Ian Gibson, CEO, (Intersect).

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

- Mr Andrew Wells, University Librarian, (Chair and Board Member)
- Dr Jim Richardson, Relationship Manager for eResearch, (University of Sydney)
- Mr Peter James, Infrastructure and Operations Director, (University of Technology, Sydney)
- Mr Stephen Williams, Business Manager, (Southern Cross University)
- Professor Jonathan Borwein, Laureate Professor, Director CARMA, (University of Newcastle)
- Professor Mark Johnson, Professor of Language Science in the Department of Computing, (Macquarie University)
- Mr Grahame Pearson, Manager, Research Development and Integrity, (University of New England)
- Professor Judy Raper, Deputy Vice-Chancellor (Research), (University of Wollongong)
- Professor Mark Hoffman, Head of School, Materials Science and Engineering/Associate Dean, Research, Faculty of Science, (University of New South Wales)
- Dr Ian Gibson, CEO, (Intersect and Board Member).

■ Providing oversight of the Intersect budget is the **Board Audit and Risk Management Committee:**

- Mr John Masters, (Chair and Board Member)
- Mr Garry McLennan, Chief Financial Officer, FlexiGroup Limited, (Independent)
- Ms Gabrielle Upton, Former Deputy Chancellor UNSW, (Independent).

■ Intersect's HPC resources are allocated by the **Resource Allocation Committee:**

- Professor Marc Wilkins, Ramaciotti Centre for Gene Function Analysis, (UNSW)
- Dr Jim Richardson, Relationship Manager for eResearch, ICT, (The University of Sydney)
- Associate Professor Tim Langtry, Mathematical Sciences, (University of Technology, Sydney)
- Professor Timothy Marchant, Dean of Research and Professor of Applied Mathematics, (University of Wollongong)
- Dr Craig O'Neill, Department of Earth and Planetary Sciences, (Macquarie University)
- Associate Professor Frans Henskens, Deputy Head of School, Assistant Dean, School of Electrical Engineering & Computer Science, (University of Newcastle)
- Professor Graham Leedham, Head of School, School of Science and Technology, (University of New England)
- Mr Mark Edwards, Centre of Plant Conservation Genetics, (Southern Cross University)
- Dr Markus Buchhorn, Director of Services, (Intersect)
- Dr Joachim Mai, HPC Support Specialist, (Intersect).



Chair's Report

**Emeritus Professor
Mark S. Wainwright AM**

Intersect has had another highly successful year and continues to grow in stature as the leading eResearch organisation of its type in Australia. It has grown its membership base and I believe it has delivered outstanding services to all of its members.

There have been a number of highlights over the past 12 months, including the official opening of Intersect's premises at 309 Kent Street, Sydney, by the NSW Minister for Science & Medical Research, the Honourable Jodi McKay. The Minister has continued to be a great supporter of Intersect and in February she launched our first Innovation Project for the Australian Schizophrenia Research Bank at the University of Newcastle. We thank her for her ongoing interest in the work of Intersect.

Professor Mary O'Kane, the NSW Chief Scientist and Engineer, has continued her wonderful support of Intersect over the past year. Mary plays a major role as a member of the Innovation Committee and her advice on research directions is invaluable. She also launched our second Innovation Project, the Genomics Data Analysis Project, at the University of New South Wales in June this year.

Intersect is most fortunate to have a very talented and hardworking Board and I thank them, along with external members of the sub-committees of the Board for their active work on behalf of Intersect over the past year.

Intersect has continued to attract very talented staff who work very closely with the staff of the member institutions to provide great outcomes in the eResearch space. The CEO, Dr Ian Gibson and Chris Mendes and Dr Markus Buchhorn have continued to show great leadership. We were sorry that Chris Mendes has recently moved from Intersect to Sirca, one of our members, where he will no doubt play a leading role as he did in establishing an outstanding engineering group at Intersect. We thank him for his excellent work at Intersect and wish him well in his new position.

Finally, I wish to thank all those who have contributed to another successful year for Intersect and look forward to the company having ever great success in the coming year.

Emeritus Prof. Mark S. Wainwright AM FTSE
Chair

CEO's Report

Dr Ian Gibson



Last year's annual report was Intersect's first and focussed on the company's establishment and its place in the Australian eResearch landscape. In this year's annual report the emphasis is on our achievements in our first year of full operation.

Possibly our biggest achievement this year is represented in the portfolio of eResearch projects we have delivered. About a dozen projects have been developed, and handed over to members. Our first Innovation Project for the Australian Schizophrenia Research Bank is enabling new research that would not otherwise have been possible. The Genomics Data Analysis project has been deployed at two members' sites already, and will be rolled out more broadly in the coming months. Thanks go to the Australian National Data Service (ANDS) who funded part of this project. AMMRF Technique Finder is the first major component we have delivered through the NeAT funding program.

We took the first major steps in our infrastructure strategic plan, signing up as a member of the National Computational Infrastructure, and deploying our first web services. Our team of eResearch Analysts located on site with members ensures that we stay attuned to the needs and requirements of members' research staff.

Intersect's constant emphasis is to provide value to its members. In the past twelve months we have welcomed The University of Wollongong and the University of Western Sydney as new members. Recognising the value and strength in a broad membership, we are actively seeking to sign up new members and have established the new category of Affiliate membership.

I would like to acknowledge the help of the NSW Government, which provided substantial financial assistance to Intersect as well as ongoing help in many areas. The funding of many of Intersect's activities is through programs of the Federal Department of Innovation, Industry, Science and Research. I would also like to thank Intersect's Board and Committees for their support, and encouragement through the year and in particular Intersect's Chairman, Professor Mark Wainwright for his assistance.

It is a tired but true cliché that the most important asset of an organisation is its staff. This is particularly true of Intersect and I would like to thank all the Intersect staff who have worked hard and long to deliver a big outcome for Intersect this year.

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

National Initiatives

Intersect as the NSW Peak eResearch Body

In the brief period of its existence, Intersect has demonstrated a capacity to represent the interests of its members at a national level and leveraged significant funding and a demonstrable value for its members.

Intersect is now seen at a federal level to be driving and co-ordinating the eResearch agenda in NSW. Indeed, Intersect is having significant impact on the national eResearch agenda through shaping technical and governance decisions.

Expanding Membership

Additional members strengthen Intersect's mandate in representing NSW universities. This past year we have welcomed the University of Wollongong and the University of Western Sydney as subscribing members of Intersect.

Significant advantages flow from a large membership:

- improved economies of scale in engineering, and overall company operations;
- greater opportunities for identifying and assisting research collaboration;
- greater opportunities for technology re-use;
- a stronger position as the peak eResearch body for NSW, with greater national influence; and
- improved robustness in the long term business model.

To these ends, we have introduced Affiliate Membership with a reduced membership fee. We offer Affiliate Membership to any organisations whose goals align with those of Intersect,

National Initiatives

Intersect operates within institutional, national and international frameworks to ensure that collaboration across institutional and geographical boundaries is optimised. Throughout the past year we have been directly involved in the design and planning of several of these national frameworks.

Research Data Storage

Intersect's consultations with researchers and university managers about their most pressing needs clearly point to effective storage and management of research data as a very high priority. Individual institutions are establishing initial storage infrastructure locally, but this approach does not yield a sharable infrastructure. Many researchers need to move data from their desktop and share it with colleagues at other institutions, and institutions want to ensure that research data is treated as an asset, for both its long-term reuse as well as the evidence for publications.

Intersect ran a consultation process to establish the demand for a state-wide coordinated storage infrastructure. This consultation included all of the universities of NSW and the ACT, involving their DVCs-Research, IT Directors, Librarians, Research Office Managers, and senior academics. It also included representatives of the

eResearch Requirements Survey

The online survey into eResearch requirements extended its reach to the University of Technology, Sydney, Southern Cross University and Charles Sturt University this past year.

Findings are consistent across the universities: the favoured technology for collaboration is still overwhelmingly email (94%), with face-to-face meetings running at 60%. More than 55% did not have an explicit research data management plan and 15% didn't know whether they had one. Asked where data is stored during a project, the overwhelming majority (82%) cited internal computer hard drives; with 57% nominating USB/flash drives. About 80% of respondents indicated that they themselves typically store their data after the end of a project. Less than 6% of respondents said that this is carried out by university or faculty services and less than 1% said that after the project their data is stored in national, state or disciplinary repositories.

Survey findings are available at:

<http://www.intersect.org.au/reports>

science agencies of the NSW Government, as well as various cultural organisations such as museums.

The consultation identified the following key needs:

- cost-effective, shared, aggregated facilities at a hub site, along with regional nodes at institutions to provide interfaces into campuses and to researcher desktops, along with the network infrastructure to connect them;
- shared governance and planning, with responsible management and operations;
- improved research data management practices; and
- plans for the long term, beyond the period of immediate capital investments.

Why eResearch?

- It enhances existing research processes, making them more efficient and effective;
- It enables new kinds of research processes and new research outcomes;
- Researchers shouldn't have to become IT experts to do their research, while a lot of research practice has moved towards IT for solutions;
- eResearch **research** opens avenues to different paradigms of research:
 - highly collaborative
 - highly distributed
 - data driven
 - virtual and remote

This process gained additional momentum through two major initiatives. The first was the Federal Government announcement of a \$50 million capital investment in research data storage infrastructure in the 2009 budget. The second was the establishment of the ANDS program that set out a vision for the Australian Research Data Commons, aligned with the Australian Code for the Responsible Conduct of Research. ANDS is now building the software infrastructure for the Commons, and the Federal Government is consulting with the sector on how best to spend their investment. Intersect has been working with both to provide advice on the needs of the NSW research community.

National Computational Infrastructure (NCI)

The universities of NSW received an Australian Research Council Linkage Infrastructure and Equipment Facilities grant in 2009 to upgrade NSW high-performance computing capacity. Intersect carried out an evaluation to identify the most cost-effective way to invest these funds, and it was decided to purchase a partner share in the peak facilities at NCI. Over the last year Intersect negotiated with NCI to purchase a 4.2% share of the facility for four years, upgrading to the same share of the next-generation petascale facility which will become available from 2012.

NCI provided early access for support staff to become familiar with the new system and for researchers to run tests measuring the performance of the system. Intersect is now working with NCI to align resource allocation processes, to allow researchers to apply for either or both systems at the same time, through the same interface.

The agreement with NCI also funds a position based in Sydney to assist NSW researchers to migrate their applications to NCI, and to encourage greater scaling of existing applications. Researchers with sufficiently large needs will be encouraged to apply for time through the national competitive NCI Merit Allocation Scheme.

High Performance Computing (HPC) resources

In addition to the NCI partner share, Intersect manages a state-level facility for NSW researchers. This facility McLaren is hosted by ac3 at the Global Switch Data Centre in Darling Harbour. It is a large-scale shared memory system (see HPC Facilities box below), a different architecture to NCI's distributed memory system. It is better suited to applications where access to large amounts of memory is a key performance requirement. The system is allocated flexibly to support a wider base of users including those just starting out with HPC or from smaller institutions.

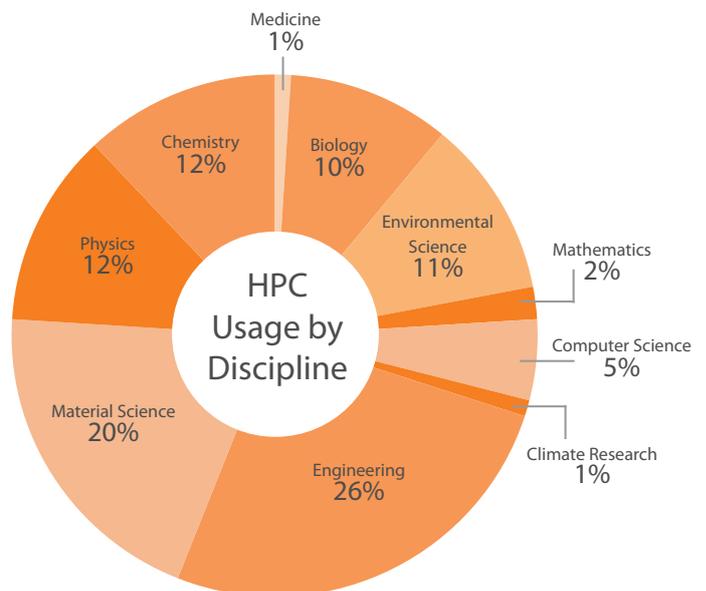
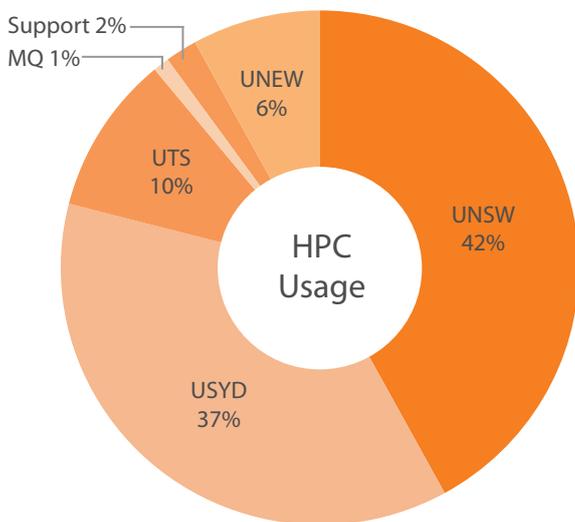
A Resource Allocation round was conducted in January 2010 by the Resource Allocation Committee, which consists of leading academics from member institutions. Allocations from Q4 2010 will be considered in step with NCI's Merit Allocation Scheme to ensure researchers have access to the most appropriate facility, while providing support for researchers to migrate and scale their applications from local facilities to McLaren and to NCI.

In 2009/10 the Intersect HPC resources were allocated as summarised in the pie-charts below, and our HPC support specialist provided in-depth support to 12 research groups.

HPC Facilities

Vayu is a Sun Constellation cluster with 1492 nodes, each containing 2 quad core Nehalem processors summing up to 11,936 cores with 37TB RAM and 800 TB disk space across the cluster. Commissioned in 2010.

McLaren is a shared memory SGI Altix 4700 with 128 dual-core CPUs with 1TB RAM and 12 TB disk space across the cluster. Commissioned in 2008.



Services

Research support: eRAs & other support	<p>Consulting and advice for researchers and for support staff across various eResearch areas: collaboration platforms, research data management, technologies, platforms, High Performance Computing. Also available via ANDS Capability Program.</p>	Engineering & operation	<p>Project scoping, planning and management</p> <ul style="list-style-type: none"> • Requirements gathering and analysis; • Solutions design, planning; • Scheduling, budgeting and resourcing; • Professional project management. 	
	<p>Requirements analysis/ solution sourcing</p> <ul style="list-style-type: none"> • Existing tools: support for identifying, selecting and using platforms, toolkits and standards; • Emerging tools: linking researchers with problems to groups who may be developing solutions; • Missing tools: identifying eResearch needs/gaps in research infrastructure. 		<p>Software development</p> <ul style="list-style-type: none"> • Software development: engineering, coding, and associated support; • User interface design; • Quality assurance; • Professional project management. 	
	<p>Support for strategic planning</p> <ul style="list-style-type: none"> • Support for institutional or discipline requirements gathering and analysis, to inform institutional, state and national planning frameworks; • Common infrastructure planning/ design: supporting cross-organisational common needs to source funding for infrastructure (e.g. HPC, storage, networking). 		<p>Operation of project infrastructure</p> <ul style="list-style-type: none"> • Ongoing support and / or hosting for the operation of projects, during and after a project; • Hardware sourcing. 	
	<p>eResearch outreach</p> <ul style="list-style-type: none"> • Building awareness of eResearch as a set of processes, and as a set of technologies. What does it improve, and what does it enable? 		Infrastructure platforms	<p>High performance computing</p> <ul style="list-style-type: none"> • Through specialised facilities, as well as compute time, access to specialist software, software porting, support and optimisation; • Access to three tiers of infrastructure: share of NCI peak facility; NSW shoulder facility; support for institutional facilities.
	<p>Community building</p> <ul style="list-style-type: none"> • Building eResearch culture within all disciplines and user groups, for awareness and support of common needs and useful tools; • Identifying opportunities for collaborative research across disciplines, institutions, organisations. 			<p>Data storage and management</p> <ul style="list-style-type: none"> • Storage of research data for short-term/high-speed access for analysis; • Support for data management, preservation and access, also via ANDS; • Access to three tiers of infrastructure: share of NCI peak facility; NSW shoulder facility; support for institutional facilities.
	<p>Building eResearch skills-base</p> <ul style="list-style-type: none"> • Building eResearch skills through recruitment, training and development as well as creating career paths beyond single research projects. 			<p>Collaboration technologies</p> <ul style="list-style-type: none"> • Connecting dispersed researchers so as to share and work; • Supporting real-time conferencing platforms; • Supporting web-based collaboration platforms including text, audio and video; • Other web based services such as wikis, task trackers etc.
<p>Provision of expert staff</p> <ul style="list-style-type: none"> • Providing ready access to skilled staff (e.g. developers, eResearch analysts, project managers) on a contract basis. 	<p>Authentication and authorisation services</p> <ul style="list-style-type: none"> • Support for integrating or developing authentication and authorisation services, to provide integrated access-control mechanisms. Major technologies being deployed are PKI and Shibboleth. 			

The Intersect services portfolio is an evolving catalogue. **New services** can be proposed from time to time by researchers and institutions. **Changes** or **retirement of services** may occur due to changes in demand, resourcing, functionality, market and institutional offerings, costs etc. All proposals are put to the Intersect eServices and Strategy (eSS) committee which considers costs and benefits, scalability and performance measures. Each service has associated metrics, and these are monitored and assessed over time.

The eResearch Analyst Engagement Model

Among the many ways we connect with our members, the method introduced by Intersect and now much adopted across the Australian eResearch sector is the eResearch Analyst engagement model. The eResearch Analysts (eRAs) are the primary interface between Intersect and its members.

Aims

An eResearch Analyst aims to solve researchers' eResearch problems, providing:

- direct advice and support for eResearch;
- access to Intersect's services and engineering portfolios;
- capacity to better understand their own eResearch needs; and
- access to and advocacy in the various national eResearch bodies (ARCS, ANDS, etc.)

eRAs are also the access point to Intersect's learning & development program, specialists in high performance computing (HPC) and collaboration tools, as well as eRAs at other member institutions.

Each founding and subscribing member has at least one dedicated eResearch Analyst on campus. We now have eight eResearch Analysts and are in the process of recruiting two more.

Discussions with the founding members have defined the overall role of the eResearch Analyst. eRAs work with member's IT, library and research offices to support use and growth of institutional services for researchers. Moreover the recruitment and activities of the eResearch Analyst are guided by the member as they see fit. Individual member engagement plans are currently being developed by each eRA for their institution.

How eRAs operate

The support provided by our eRAs varies widely. The team has in the last year facilitated proposals from members to the Australian National Data Service (ANDS), worth over \$4M in committed funding. These projects relate to the ANDS Data Capture and Seeding the Commons programs.

Much of eRA work involves user requirements analysis: working with researchers to elicit needs and convey that to the technical team at Intersect. Our University of Sydney eRA has undertaken user requirements analysis and technical feasibility studies on a range of work including the Breast Cancer Microscopy project and the Australian Microscopy & Microanalysis Research Facility project.

Intersect is helping the Centre for the Study of Choice (CenSoC), within UTS Faculty of Business by sourcing IT equipment, assisting in making purchasing decisions and with remote helpdesk support. This supplements the support already offered by the Faculty of Business IT and UTS central IT.

The eRAs assist researchers with HPC support: helping new users set up, advising on hardware investments.

eRAs can help configure software, or find someone who can: our UNSW eRA helped set up the data processing pipeline on the Ramaciotti Centre's Illumina Gene Sequencer. At UTS the Intersect

eRA set up a wiki for the eResearch Committee to ease internal communications, a wiki for the Decision Laboratory to assist in requirements gathering, and a Moodle instance for the Centre for Research in Learning and Change to evaluate as a possible technical solution for their Virtual Research Environment.

The ultimate goal for eResearch Analysts is to foster the widespread adoption of eResearch practices at NSW universities, and through this to improve the quality and quantity of research. On a day-to-day basis, this often translates to one of several activities. The activities range through the following means of solving problems:

- interactive engagement with a small group of researchers;
- broadcast engagement, such as attending, delivering or organising seminars;
- collaborative engagement with research groups from multiple universities or faculties, and who have common needs;
- external response co-ordination, especially responding to calls for participation from national eResearch bodies such as ARCS, ANDS and the AAF;
- project based activities, identifying potential projects and shepherding them from requirements gathering through to delivery;
- advocacy on behalf of researchers, by surveying the eResearch needs of researchers for presentation to institutional services such as ICT and the library; and
- advocacy on the university's behalf to state and national programs, such as DIISR's Super Science data storage program.

Intersect's team of eResearch Analysts come from a range of research backgrounds, with considerable project experience as business analysts, project managers and software engineers. They work as a team, regularly comparing notes with each other and sharing their knowledge to provide a value and capability beyond the capacity of any single eResearch Analyst.

For more on our eResearch Analysts, see <http://www.intersect.org.au/intersect-team>



Intersect Projects

Intersect undertakes a range of projects to develop and deploy eResearch tools and infrastructure, with the ultimate goal of improving the quality and quantity of research in NSW. Intersect members are entitled and encouraged to use and adapt Intersect intellectual property including project work. A part of Intersect's value lies in the re-use of project outcomes.

The Intersect portfolio of projects ranges broadly across research disciplines and consists of both large and small projects. These projects are variously funded:

- by members on a fee-for-service basis;
- by national bodies such as the Australian National Data Service and the Australian Research Collaboration Service; and
- as part of the Innovation program, a member service, (see right).

Intersect also undertakes projects for non-members where a value for members is apparent.

Among our recent projects are the following. If you are interested in using any of these projects, email enquiries@intersect.org.au

Genomic Data Analysis

This project centralises the effort of several major institutions in the scoping and development work necessary to make effective use of gene sequencing instruments, as well as ensuring centralised computational and data storage facilities are used effectively in this research. A component of the project enables data to be optionally included in the Australian Research Data Commons and was funded by the Australian National Data Service. The system includes the following key features: a repository for results and metadata based on Fedora Commons, full user and group management, grouping of results and users into projects, the ability to confer result ownership, the ability to create derived results and to relate them to the original experiment, and the ability to export results to the ANDS Australian Research Data Commons. One of the key benefits of the project is that it is designed for easy deployment at other, new sites.

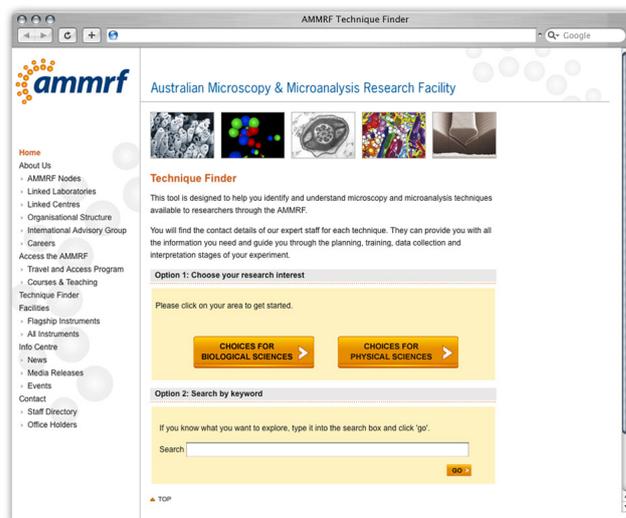
See <http://www.intersect.org.au/genomic-data-analysis-project>
Available now. * **Innovation project.**

Innovation projects

Intersect undertakes "Innovation Projects" seen as having strategic importance to our members. The kinds of projects we look for have the following characteristics:

- promising to deliver great research impact;
- meeting NSW and national research priorities;
- reusability: the value of the technology can benefit many different research groups;
- member benefit - fair distribution of our project resources amongst members;
- project value and impact:
 - high profile NSW research groups to improve collaborative scope;
 - enabling an emerging research area;
 - enabling NSW research to build linkages and collaboration with other disciplines.

The Innovation Selection Process is set out in detail online at <http://www.intersect.org.au/innovation-projects>



towards research outcomes

"One important aspect of our work with Intersect has been to develop pipelines for the analysis of genomics data on the NSW and national supercomputers. These pipelines have already allowed us, in collaboration with Prof. Hazel Mitchell, to assemble and annotate the genomes of two isolates of bacteria recently isolated from patients with Crohn's disease. We have also, in collaboration with Dr. Michal Janitz, been able to analyse changes in the messenger RNA processing in the brains of individuals affected by Alzheimer's. We look forward to using the combination of next-generation DNA sequencing and the Genomic Data Analysis pipelines in many medically important investigations."

Professor Marc Wilkins
Ramaciotti Centre for Gene Function Analysis



An overview of recently completed projects

“ We can now store massive amounts of genomic data, share it with our colleagues and analyse it in a seamless manner. This fundamental infrastructure underpins genomic research. Without it, we just can't do the work.”

Professor Marc Wilkins
Ramaciotti Centre for Gene Function Analysis

AMMRF: Platforms for Collaboration

The Platforms for Collaboration Project at the Australian Microscopy and Microanalysis Research Facility (AMMRF) addresses data management needs for the data-intensive imaging community and provides a tool for users to access services. The users of the AMMRF also need to easily and reliably transfer experimental data from the facility to remote data storage or data repositories, while automating capture and storage of associated metadata, and be able to publish or share data with colleagues.

To meet these needs, the AMMRF-PfC project has as its deliverables:

- a web based Technique Finder that enables users to find the most appropriate technique to assist their research and obtain information regarding access, and
- a Data Management System that will support data and metadata capture (with associated metadata catalogue) from instruments, data transfer between nodes and to federated data repositories.

This project is partly funded by Platforms for Collaboration. See <http://www.intersect.org.au/ammrf-platforms-collaboration> Technique Finder available now, Data Management System available late 2010.

Breast Cancer Microscopy

To assist in the prevention and better treatments for breast cancer patients, Intersect is developing a system for improved capture, management and discovery of microscope image files. The system will also allow suitable non-identified versions of the images to be made available more broadly to researchers and discoverable in the Australian Research Data Commons. This project was partly funded by the Australian National Data Service.

See <http://www.intersect.org.au/breast-cancer-microscopy> Available July 2010.

“ We are now able to share with other researchers over 23,000 video clips on health coverage in news and current affairs programs dating from 2005. This is a globally unique collection that will be invaluable to media researchers. The Intersect staff are wonderful communicators and once they started working with us, the job was rapidly completed.”

Professor Simon Chapman
School of Public Health, University of Sydney on Health News



“The AMMRF offers a complete user experience involving the stages of project registration, planning and training followed by data gathering, analysis, management and publication. Intersect is enabling improvement of the user experience through the development of tools that enable researchers to identify, access and apply appropriate microscopy techniques quickly.”

Professor Simon Ringer, Executive Director
Australian Microscopy & Microanalysis Research Facility

Health News: accessing health clips

The Australian Health News Research Collaboration (AHNRC) has recorded over 23,000 health and medical related video clips from free-to-air Sydney television channels since May 2005. The Health News project provides a more convenient method of accessing videos via the Internet. Health News provides streaming and download access to the AHNRC videos for approved researchers within and outside the University of Sydney. See <http://www.intersect.org.au/health-news>

Available August.

Entrée: serving DNA and Herbarium Data

The Entrée project is bringing together information from several important collections of plant specimens, as well as the collections' records, observations, field notes and research. The project is part of two larger projects which will then make this wealth of biodiversity information freely accessible online via the Atlas of Living Australia and Australia's Virtual Herbarium.

See <http://www.intersect.org.au/entree>

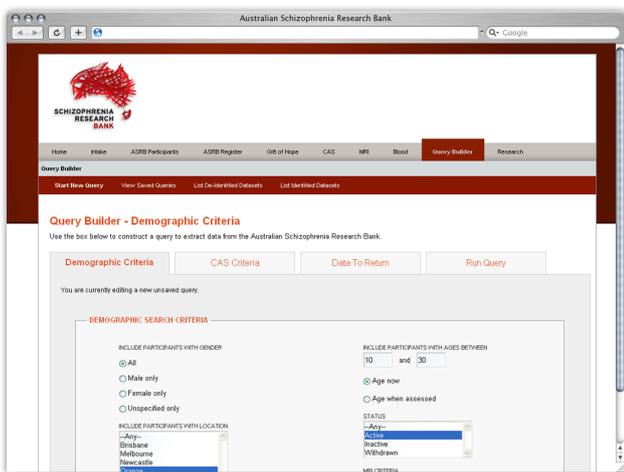
* **Innovation project.** Available August 2010.

Intersect Projects

The Australian Schizophrenia Research Bank (ASRB)

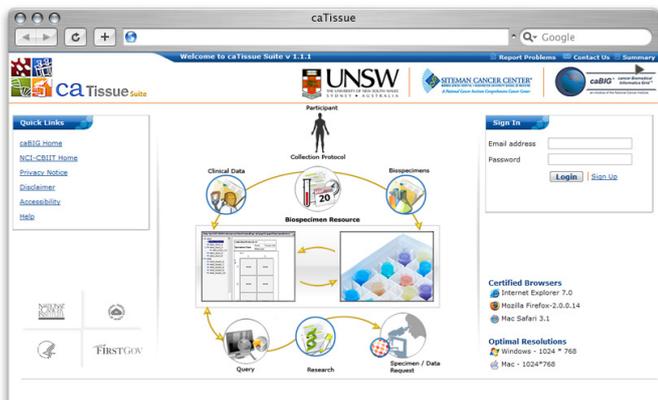
The Australian Schizophrenia Research Bank web portal replaces several existing repositories of information previously used by the ASRB, and provides a secure environment for the collection and storage of this information. The Intersect team has built web based tools to enable authorised researchers to search, filter and browse the ASRB database. The ASRB is now the central resource for the entry, upload and download of information for the ASRB participants: clinical assessments, MRI scans, and the management of genetic (blood) samples. The Clinical Assessment System laptop software enables officers to assess participants in the field and upload the assessment to the ASRB web portal later. The project effectively nationalises schizophrenia research. It was delivered in November 2009.

See <http://www.intersect.org.au/australian-schizophrenia-research-bank> * **Innovation project**. Available now.



caTissue Suite

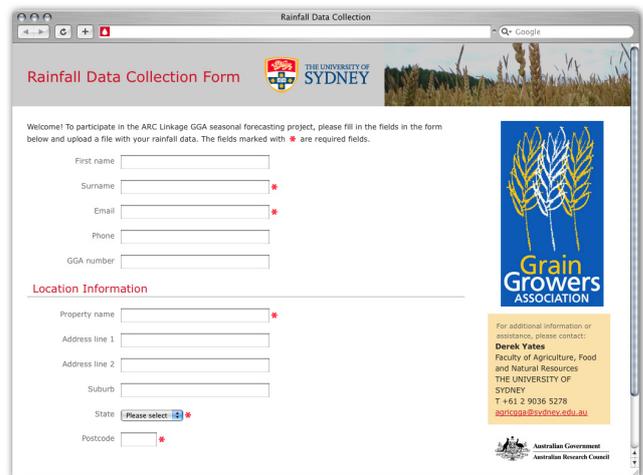
Recognising the potential usefulness of caBIG and particularly caTissue to health informatics in NSW, Intersect localised the components of the application. caTissue is part of the caBIG Suite, developed to keep track of, to mine and visualise biospecimens and related annotations from geographically dispersed repositories. caTissue has been deployed at UNSW's Lowy Biorepository, see <http://www.intersect.org.au/catissue>. Available now.



Playground

The Sydney Playground Research Project has the potential to provide prevention and early stage intervention for two of the biggest social ills facing young children in Australia: obesity and mental ill health. Further, it has the potential to revolutionise school playgrounds and the policies governing play throughout Australia. Intersect is providing an online database which enables storage of a wide range of media and allows collaborative access to the data for the cross-institutional collaborators.

See <http://www.intersect.org.au/playground> Available October.



Rainfall

The Rainfall Data Collection web form developed by Intersect will enable grain farmers to upload rainfall data files collected on their farms. The Grain Growers Association FSTC research project will combine this farm weather data with existing data from the Bureau of Meteorology and elsewhere, to develop a new type of very local seasonal climate predictor to be delivered to many thousands of grain farmers.

See <http://www.intersect.org.au/rainfall>

AustLII

AustLII, the Australasian Legal Information Institute, is Australia's online free-access resource for Australian legal information. Intersect is assisting AustLII by providing skilled development staff on a consulting basis. Intersect staff are working on developing comprehensive and up-to-date databases of legal material, including legislation, case law, and community legal materials.

See <http://www.intersect.org.au/austlii>

“ Intersect has provided AustLII with the technical capacity to carry out a range of short, medium and long-term projects with great flexibility. We have appreciated the ability to find staff with a range of technical skill sets quickly. We look forward to a mutually beneficial relationship on an ongoing basis.

Phillip Chung
Executive Director, AustLII

An overview of Intersect projects

towards research outcomes

"The Schizophrenia Research Institute is undertaking an ambitious research program to develop a specialist medical research resource dedicated to collecting, storing and distributing to Australian scientists data and genetic samples provided by volunteers with schizophrenia. This resource is called the Australian Schizophrenia Research Bank (ASRB). The technology provided by Intersect is enabling us to develop a secure, commercial grade database system to house this valuable and highly confidential data set."

Dr Carmel Loughland
Australian Schizophrenia Research Bank Manager

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, schedules and test results. Intersect delivered the user interface design for the project, including easily navigable and intuitive screen designs.

See <http://www.intersect.org.au/healthyme>

History of Aboriginal Sydney

'Guringai History' is the first stage of a five-year project on the history of Aboriginal Sydney supported by the Australian Research Council and the Department of History, University of Sydney. Intersect assisted in phase 1 of the project, helping establish a website that will deliver historical content to school audiences and the public.

See <http://www.intersect.org.au/history-aboriginal-sydney>

Why use Intersect for project work?

Intersect was established to provide ongoing eResearch services that were previously absent.

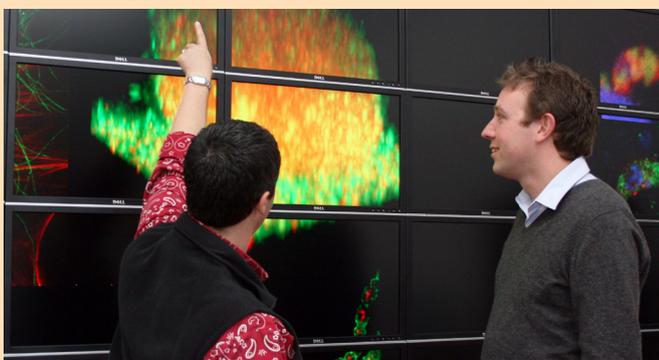
We have:

- a critical mass of expertise in requirements gathering and elicitation, architectural design, user interface design, engineering, project management and quality assurance;
- broad ranging experience in delivering quality IT projects and services;
- a company culture of engineering excellence;
- an engineering division with 15 permanent staff enabling rapid deployment and ongoing support;
- a focus on and understanding of research needs;
- eResearch analysts on the ground to support project development;
- access to PFC services;
- easy formal arrangements - as part of Intersect membership there's no need for additional contracts.

Engineering economies of scale

Intersect can provide a value and capability that individual research groups may find difficult to achieve internally, by:

- using optimised software and systems engineering and project management processes;
- tracking and identifying IT trends and their application to eResearch;
- finding existing or adaptable solutions from a wide range of research disciplines and industries, avoiding re-inventing the wheel;
- building a portfolio of technologies that can be rapidly deployed to solve problems;
- giving members rights to use, adapt and otherwise maximise the intellectual property (including source code) of work undertaken by Intersect for their own purposes;
- delivering savings on development ('build once, use often') that can be spent on project specific elements or research;
- providing economic, robust and reliable solutions quickly.



eResearch Analyst to UTS, Luc Small, and Dr Lynne Turnbull with outputs from the optical microscopes at the UTS Microbial Imaging Facility, including high-resolution imagery from one of only two commercial DeltaVision OMX 3D-SIM™ units in the world.

Profile of an eResearch Analyst:

Luc Small, UTS

As Intersect's on-campus representative at the University of Technology, Sydney, Luc Small works with researchers in determining their research-specific ICT needs; provides direct advice and support for eResearch; facilitates access to Intersect's services and engineering portfolios; engages constructively with institutional bodies such as the IT Division and the Research and Innovation Office; and acts as a conduit to the various national eResearch bodies (ARCS, ANDS, etc.).

Prior to commencing at Intersect, Luc worked both locally and internationally as a programmer, technical writer, and software architect. He holds a BSc majoring in Computer Science and a BA majoring in Philosophy; his PhD dissertation in Philosophy (ANU) is currently under examination.

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
AHNRC	Australian Health News Research Collaboration
AMMRF	Australian Microscopy and Microanalysis Research Facility
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
caBIG	The cancer Biomedical Informatics Grid
CARMA	Computer-Assisted Research Mathematics and its Applications
CenSoC	Centre for the Study of Choice
DIISR	Department of Innovation, Industry, Science and Research
DVCR	Deputy Vice-Chancellor, (Research)
EIF	Education Investment Fund
eRA	eResearch Analyst
eSAS	Intersect's eStrategy and Services Committee
GGA FSTC	Grain Growers Association, Fuzzy Spatial Climate (modelling)
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



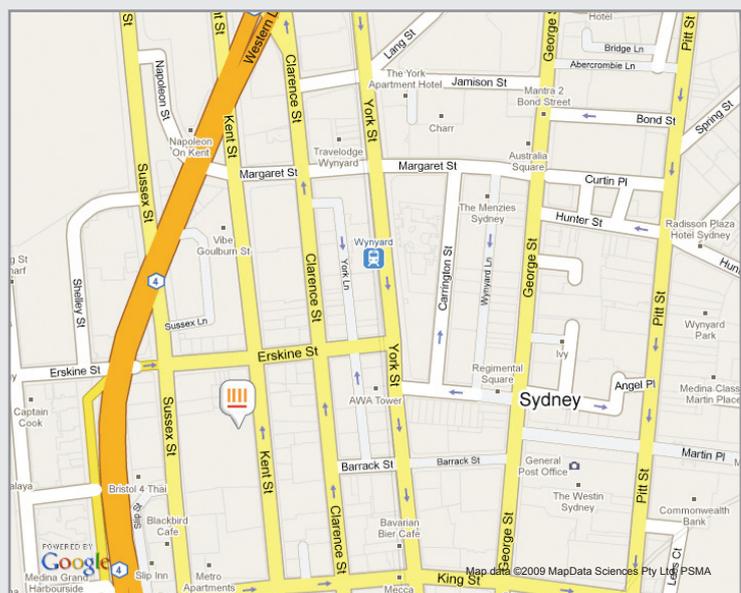
Left to right: Prof Marc Wilkins of the Ramaciotti Centre for Gene Function Analysis talks about the Genomic Data Management project; UNSW eResearch Analyst Dr Clare Sloggett in the field; the NSW Minister for Science and Medical Research, Hon. Jodi McKay MP launches the Australian Schizophrenia Research Bank project.



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