

ATTACHMENT A

**ERESEARCH COLLABORATION INFRASTRUCTURE
EDUCATION INVESTMENT FUND
INTERIM PROJECT PLAN**

ERESEARCH COLLABORATION INFRASTRUCTURE

EDUCATION INVESTMENT FUND (EIF)

INTERIM PROJECT PLAN

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1 Project Overview

This document is an Interim Project Plan. The University of Melbourne will undertake a broadly consultative planning activity and provide a Final Project Plan to DIISR by 31 March 2011.

1.1 Background and Context

The 2009 budget measure for Data Storage and Collaboration Infrastructure, contained two components as follows:

- \$47 million to:
 - provide core infrastructure and services that establish the national collaboration and data fabric managed by ARCS (\$35 million); and
 - further the aims originally set out in the National eResearch Architecture Taskforce (NeAT) process to create discipline specific infrastructure integrated with the national collaboration and data fabric (\$12 million); and
- \$50 million to be devoted to a data storage infrastructure to enhance regional data centre development and support retention and integration of nationally significant data assets into the national collaboration and data fabric.

The decision to implement these two main elements through separate funding agreements recognises the different objectives of the two projects and also enables different participants to be involved in each project.

The eResearch Collaboration Infrastructure Project will however take account of the development of the Research Data Storage Infrastructure in determining its own infrastructure arrangements.

The eResearch Collaboration Infrastructure component was intended to extend the provision of national scale interoperation and collaboration infrastructure for research, initially funded under the National Collaborative Research Infrastructure Strategy (NCRIS) Platforms for Collaboration (PfC) Investment Plan through the NCRIS PfC Interoperation and Collaboration Infrastructure component (PfC ICI).

The PfC ICI Component was described in the PfC Investment Plan (2007) as operating an extended “Australian National Grid”, working towards the vision:

‘Problem oriented’ virtual infrastructures are routinely constructed from sensor, instrument, compute, data and visualisation resources.’

Such virtual infrastructure includes on-demand, ubiquitous access to remote computers, digital repositories, scientific instruments and most recently sensor networks; virtual environments and on-line collaborative interaction; seamless resource sharing; cooperative working; and coordinated problem solving within dynamic virtual organisations.

The Strategic Roadmap for Australian Research Infrastructure (2008) recast these goals as “empowering researchers to work with each other and more easily share and access resources including global resources, and to more easily take advantage of web and video collaboration possibilities.” The Roadmap also envisaged that in addition to general eResearch infrastructure; discipline or project specific tools and services would also be needed to accelerate these integrative developments. Such problem or purpose focussed infrastructure would deploy tools, middleware and hardware to allow the easy capture, pre-processing and visualisation of data from shared facilities and instruments (e.g. telescopes, synchrotrons, microscopes and laboratory information management systems), and remote access to sensor networks or the easy integration of outputs from observational platforms.

1.2 Objectives of the Project

The primary objective of the Project is to enhance research collaboration and research outcomes by providing Information and Communication Technology (ICT) infrastructure that creates new information centric research capabilities and that significantly simplifies the combining of instruments, data, computing, and analysis applications and that enables the development of research workflows based on access to multiple resources.

The intention is to support the so-called “connected researcher” who at the desk-top or the bench-top has access to a full suite of digitally enabled data, analytic and modelling resources, specifically relevant to their research.

These objectives will be advanced through four programs of activities. These will provide for:

- A. The enhancement of *eResearch Tools*, to support the continuing development of research tools and services, to integrate those tools and services with NCRIS and Super Science funded infrastructure;
- B. The provision of leading exemplars of problem-oriented *Virtual Laboratories* created from sensor, instrument, compute, data and visualisation resources;
- C. The development of a national *Research Cloud* associated with the Research Data Storage Infrastructure and equipped with high priority tools and services; and
- D. A suite of *National Servers* that provide the core functions that enable advanced information services, enhanced collaboration and the improved inter-operation of research infrastructure.

Activities A and B are intended to be problem or discipline specific, requiring the Project to develop infrastructure relevant to the research coal face, while activities C and D are intended to be multipurpose and to therefore support a wide range of end user needs, and hence are appropriate to provide through more central capabilities.

A key goal in undertaking these activities will be to focus on deploying research infrastructure and services that are not otherwise available for researchers, and to extend the use of those capabilities to a wider cross-section of researchers more quickly than would otherwise occur.

1.3 Implementation principles

The Project must endeavour to establish, operate and provide access to Project infrastructure in accordance with the EIF principles, listed below:

- | | |
|--------------|--|
| Principle 1: | Projects should address national infrastructure priorities |
| Principle 2: | Projects should demonstrate high benefits and effective use of resources |
| Principle 3: | Projects should efficiently address infrastructure needs |
| Principle 4: | Projects should demonstrate they achieve established standards in implementation and management. |

The organisations participating in the Project must endeavour to establish, operate and/or provide access to the facilities in a manner which:

- takes into account the long-term strategic requirements of relevant research disciplines;
- enhances national and international collaboration in research;
- enhances research capability for relevant disciplines;
- provides for merit-based access to the facilities in accordance with the norms and expectations of the research community;

- has a strong emphasis on service provision to the research community; and
- has a strong emphasis on effective use of data and compute resources.

1.4 Context and Scope of the Project

1.4.1 Context

The Project aims to address requirements for greater access to research resources and more efficient systems to encourage collaboration that were identified in the Bradley and Cutler reports.

Therefore the Project focuses on infrastructure that enables researchers of merit, but who are not themselves ICT experts, to more easily access and combine advanced analysis and modelling systems, share data with colleagues around the world and collaborate in real time using high bandwidth networks, to support the next generation of research breakthroughs.

The Project also responds to the growing requirement to integrate eResearch capabilities within the research work environment specific to particular research projects by providing services that can integrate with and support enterprise services and desktop systems.

In addition the commercially funded evolution of technologies and services is changing the ICT landscape. Researchers should be able to take early advantage of the collaborative benefits available through social networking systems – with which they will often be very familiar in their general lives – and they should gain the benefits available from the cost reduction and innovation possible through cloud computing.

The activities of the Project reflect the reality that those commercial developments, for the first time, offer the potential to extend eResearch capabilities to a wider cross-section of researchers than previously possible.

Nevertheless, and despite the rate of commercial development, research activities continue to involve sensors, instruments, computing capabilities and data volumes that overwhelm the off-the-shelf capabilities of commercial offerings and services. In such cases it is often more cost effective for research activities to install and operate their own ICT infrastructure. As a result leading edge ICT investment is expected to continue as a vital component of world-class research activities. The rate of ICT development, however, demands a flexible and open engagement strategy for building and providing this infrastructure.

1.4.2 Scope

The Project will rely on the concomitant construction of the Super Science Research Data Storage Infrastructure, as it is expected that this Project's functions and capabilities will be more readily achieved by co-locating significant components of its infrastructure with the nodes of the Research Data Storage Infrastructure.

The rationale for this relationship between the projects is that collaboration fundamentally depends on the easy sharing of content, and the Research Data Storage Infrastructure will provide a foundational storage solution. Because that storage solution will operate with high reliability, it is likely to be more efficient to co-locate the Research Cloud and National Servers with it, than to develop separate high reliability sites. The co-location would also reduce network costs associated with moving large volumes of data for analysis and re-use.

The Project will undertake activities across the four key program areas that:

- assist the development of eResearch tools and their supporting infrastructure;
- accelerate the development of advanced virtual laboratory functionality; and

- provide data analysis capabilities commensurate with the importance, volume and complexity of the data to be held in the Research Data Storage Infrastructure.

The Project will be structured to ensure that:

- The role of institutions as beneficiaries is a vital component in the Project management and in its strategy-forming and decision-making processes.
- Services enabled by the Project’s infrastructure are tailored to meet the specific needs of different research contexts.
- Co-investors in the Project are provided with increased value-add to the researchers they support in return for their co-investment.
- The performance of the infrastructure is measured against improvements to research outcomes.
- Intellectual Property and other rights are managed in a way that permits the re-deployment of services developed in one application across other applications, and from one jurisdiction to another, whenever possible.

The scope of the Project will also account for the growing role of commercial providers. It is likely that component by component, and from time to time, commercial services will arise that can support or more effectively provide elements of the eResearch Collaboration Infrastructure functionality.

The Project will therefore ensure that investments are managed in a way that ensures commercial services and software tools are evaluated and adopted when appropriate over time.

1.5 Participating Organisations

Key participating organisations and their roles and responsibilities are described in the Table below.

A more complete list will be provided in the Final Project Plan and updated as necessary in subsequent Annual Business Plans.

Description	Organisation	Role and Responsibilities
Lead Agent	The University of Melbourne	<ul style="list-style-type: none"> • Signatory to the funding agreement with the Commonwealth • Direct recipient of EIF Funds • Responsibility for managing distribution of EIF funds through subcontracting arrangements • Responsible for meeting Commonwealth reporting and accountability requirements • Responsible for overall management of the Project • Establishes the Project Board • Appoints the Project Director and such support staff as agreed by the Project Board
Implementation Support	Project Director, support staff and committees	<ul style="list-style-type: none"> • Provide the on-going fine tuning, project management and sub-contracting and negotiation capacity required by the Project

The Project Infrastructure will be provided by the University of Melbourne and other organisations acting as Sub-Contractors.

- In the case of eResearch Tools, the Sub-Contractors are expected to be those organisations that agree to operate the tools or services developed and make them available for open research access.
- In the case of Virtual Laboratories, the Sub-Contractors are expected to be organisations that participate in the Virtual Laboratories and install, manage and operate necessary infrastructure within their own IT support arrangements.
- In the case of the Research Cloud, the University of Melbourne and other Sub-Contractors that agree to meet appropriate service level agreements and provide suitable operating support will operate the infrastructure.
- In the case of the National Servers program, one or two organisations willing to co-host and operate the required infrastructure in accordance with appropriate SLAs may be engaged as Sub-Contractors.

The University of Melbourne will seek agreement from DIISR that each Sub-Contractor is acceptable as required by Item H.2 of Schedule 1 of this Agreement, before the University of Melbourne enters into a contractual arrangement with them for the purposes of this Project. Sub-Contractors will be endorsed by the Project Board prior to the University of Melbourne seeking DIISR's agreement.

1.6 Funding arrangements

The total Commonwealth funding for the Project is \$47 million over four years: \$23 million in 2009-10 and \$12 million in each of 2011-12 and 2012-13. Funding is being provided from the Education Investment Fund (EIF), under the Nation-building Funds Act 2008, which has the authority to fund 'the creation and development of research infrastructure'.

Funding will be provided through this Funding Agreement, signed between the University of Melbourne and DIISR.

The Commonwealth funding is intended to support the development, deployment and commissioning of facilities and infrastructure by the Project, including agreed project management costs. The University of Melbourne and its Sub-Contractors must meet the associated operational costs of those facilities and infrastructure including the employment of appropriate staff to manage and sustain them.

Where specific project infrastructure, under the four agreed programs, is to be developed or delivered by the University of Melbourne, the approval processes will be the same as for any other party delivering project infrastructure, except that no sub-contract will be required.

1.7 Management and implementation arrangements

The University of Melbourne will have overall responsibility for the management and implementation of the Project in accordance with the reporting and accountability requirements outlined in this Agreement.

The Project will be managed through the following arrangements:

- The University of Melbourne will establish a Project Board as detailed in Section 5.2.
- The University of Melbourne will appoint Project Management staff initially as specified in section 5.3 and ultimately as revised in the Final Project Plan.
- Except where directed in this agreement, all activities of the Project will be appropriately authorised by the Project Board in accordance with its role as described in section 5.3.2.

- All activities of the Project will be implemented by the University of Melbourne or by sub-contract from the University of Melbourne.

The University of Melbourne will also establish such committees as are necessary to develop and operate priority and merit allocation systems in order to recommend projects to the Project Board and to assign significant components of the resulting collaboration and cloud resources to research activities. Such committees will have suitable membership drawn from the research sector and allocate resources using principles and processes consistent with the expectations of the sector.

The project management structure will centre on a Project Director. The Project Director will have such staff as he/she recommends and the Project Board agrees within the financial management requirements set out in Section 6.4.1.

Where relevant, the University of Melbourne may identify a Sub-Contractor for a Sub-Project involving multiple organisations. The Sub-Contractor of such Sub-Projects may be contracted to manage and report on the entire Sub-Project and all funding and infrastructure associated with that Sub-Project.

Each Sub-Contractor will be required to undertake an obligation to ensure that Project infrastructure produced in the relevant Sub-Project continues to operate for an agreed period determined case by case, but in all cases, extending to at least June 2014.

1.8 Program Size, Focus and relationship to NCRIS Activities

While the Australian Research Collaboration Service (ARCS) was established to undertake the activities of the PFC ICI Component, the Commonwealth's requirement for more robust sector governance, more open membership and more certain decision making powers has created a requirement for an alternative implementation strategy for this project.

The Project is therefore structured to ensure it can develop and install infrastructure for operation in enduring organizations, being the University of Melbourne and the Project Sub-Contractors, and ensure its sustained operation for agreed periods by directly engaging relevant entities.

Consequently, the success of the Project is not dependent on restructuring of ARCS.

Where infrastructure developed by ARCS is valued by the sector, as determined by the Project Board, the Project shall assist its transition from ARCS to other arrangements.

2 PROJECT INFRASTRUCTURE

The following component infrastructures will be further developed by the Project through sector consultation processes to confirm:

- The shape of the four programs;
- The budget allocation between them;
- The role of sector participants in the infrastructure; and
- The expected level of co-investment in each program.

The consultation will inform the Final Project Plan, to be provided to DIISR by 31 March 2011.

2.1 eResearch Tools (RT-Program)

The RT-Program aims to develop and improve selected research tools and services to:

- enhance their capabilities from a remote access, real-time interaction, or workflow perspective;
- enhance their support for collaborative work; or

- increase their functionality based on real-time and back-end access to other tools and services.

Each activity would be undertaken as a Sub-Project managed by a Sub-Contractor . The activities may add functionality and capability to tools and services operated by any suitable research or predominantly research serving entity. Consequently, limited funding and time constraints are appropriate.

It is expected that:

- Each Sub-Project would be executed over a 2 year period
- Each Sub-Project would be provided between \$500,000 and \$1 million as a contribution towards infrastructure development and commissioning.
- Sub-Project participants would agree to maintain and operate relevant software, middleware and hardware infrastructure at least through to June 2014
- The Sub-Project funding contribution would be no more than 50% of total costs

Sub-Projects in the RT-Program will be evaluated on a priority and merit basis and be dependant on co-investment from the Sub-Contractor and other relevant parties.

Sub-Projects would be formed by agreement between the University of Melbourne and a Sub-Contractor. For each project undertaken, the relevant Sub-Contractor would:

- Execute necessary agreements with other project participants
- Provide project management resources
- Be accountable to University of Melbourne for progress and delivery
- Provide University of Melbourne with necessary reports

2.2 Virtual Laboratories (VL-Program)

The VL-Program will construct a small number of leading research ‘collaboratories’ that demonstrate the research benefits of more broadly integrated research resources.

Unlike the development of specific eResearch Tools above, such virtual laboratories can be expected to access and connect resources of precinct or national extent and create new research practices by integrating across relevant instruments, data and compute resources. Each Virtual Laboratory Sub-Project will target a well-described significant research challenge.

The program will:

- develop criteria for selection of investments with the research community;
- identify priority opportunities and associated co-investors through an open EOI; and
- develop, install and commission the necessary purpose specific integrated infrastructure for each virtual laboratory, including any necessary multi-institutional ICT deployment or National Server components.

Activities in the VL-Program will be evaluated on a priority and merit basis and be dependant on co-investment in the infrastructure that supports the Virtual Laboratory from relevant interested parties.

It is expected that a priority for virtual laboratories will be to demonstrate the benefits of the super science investments in networking, supercomputing, data management, and the storage and collaboration infrastructure, as well as other significant research support capabilities.

It is anticipated that the Final Project Plan will provide that:

- An evaluation panel shall be established
- A targeted invitation for proposals shall be made to distributed resource sharing research activities, for the creation of Virtual Laboratories
- A short list of opportunities will be agreed with the Project Board
- A Sub-Contractor and project management personnel will be identified for each short listed opportunity, and a detailed VL Project Plan developed and costed
- The University of Melbourne will undertake to contract Sub-Contractors to implement those Sub-Projects approved by the Project Board, subject to its normal contractual processes and policy frameworks.

Due to the expected complexity of each such activity, it is likely that only two or three will be planned at any one time and the degree of resource commitment by the Virtual Laboratory participants will be critical to project outcomes.

2.3 Research Cloud (RC-Program)

The RC-Program will provide access to cloud capabilities for research purposes.

The intent is to establish a National ‘Research Apps’ Cloud that will allow researchers to develop, publish and access research enabling software tools; and operate those tools in secure and shared environments.

Therefore the program will provide access to cost efficient foundational data, compute and middleware service infrastructure with cloud characteristics of significant capacity. The program will also assist researchers develop install and commission problem and discipline specific cloud applications.

In the context of new national Research Data Storage Infrastructure, the program will investigate opportunities to co-locate cloud capabilities with the data storage capabilities. Co-location may involve the addition of relevant capabilities to selected nodes in the Research Data Storage Infrastructure including the:

- installation of substantial virtualised server support capabilities located at one or more national data stores for the use of the Project, including any necessary specialised storage and interconnects required; and
- provisioning of middleware to support on-demand scalable access to virtualised server, cluster and storage capabilities, and the user management of such capabilities, either by licence or as a service.

It may also involve the use of commercially available or supported cloud capability that can be accessed from Research Data Storage Infrastructure sites, delivered within those sites or that can be configured as an additional node of the Research Data Storage Infrastructure.

The program will also migrate prioritised already existing research applications, tools and services onto the Research Cloud, particularly including data integration and transformation, data analysis, image processing and visualisation tools that operate over research content held in the Research Cloud or on desktops or any accessible data stores.

Extension of the capability in the form of dedicated expansion will be offered on a cost–recovery basis.

The Final Project Plan will set out a decision process for the provision of infrastructure within the Research Cloud Program. , as outlined in Section 5.3.4.

2.4 National Servers (NS-Program)

The NS-Program will provide server support for essential eResearch servers to reliability standards appropriate to sector needs.

Servers may include:

- Information services such as the ANDS utilities, registries for the ALA, or packaging of the underlying storage capacity as a national drop box service, as examples
- Servers to publish data such as OpenDAP, THREDDS, GEONET, AVO etc
- Specific back-end servers, such as those required to support, a national file system, centralised grid services, AAF functionality, video mixing servers for desktop video conferencing etc
- Central servers required by Virtual Laboratories, and the on-line collaborative interaction and cooperative working of tools in the Research Cloud.

An expert panel will be established as described in Section 1.7 to evaluate the requirement for, and scale of, each server supported and recommend services to be supported to the Project Board.

A detailed plan entitled: National Servers Program Implementation Plan will be provided to DIISR on the date of this agreement.

3 RISK MANAGEMENT

A detailed Risk Management Strategy will be included in the Final Project Plan and will be reviewed annually through the Project Annual Business Plans.

The key risks to the Project's outcomes and the risk management strategies to be employed, can be grouped into three major categories:

- Financial including sustainability
- Suitability for Purpose
- Project management

Key risks in each area, and the related mitigation strategies, are detailed below:

Risk Area 1: Financial including sustainability		
	Risk	Mitigation
1.1	Potential for cost overruns	The Funding Agreement limits total EIF funding, and each Sub-Contract will limit EIF funding available to each Sub-Project
1.2	Limitations of EIF funds use limiting operational availability of invested infrastructure	EIF Funds will be contributed to Sub-Projects to cover part costs and limited in use to appropriate expenditure items. All other expenditure items will be the responsibility of Sub-Project participants.
1.3	Inability to attract key co-investors	Co-investment will be actively encouraged through the pursuit of open control and access policies operating the infrastructure. Co-investment will be encouraged by the availability of priority allocation of resources to nationally significant research endeavours, as agreed with co-investors.

1.4	Operational sustainability	<p>Project infrastructure will in all cases be implemented by organisations that commit to its operational support for the life of the Project.</p> <p>In the case of the Research Tools and Virtual Laboratory programs, the infrastructure will be operated by the Sub-Project participants and can be expected to operate for its useful lifetime.</p> <p>In the case of the Research Cloud and National Server Programs, further funding support will be required to sustain their continued operation for open research access.</p> <p>The Project will ensure that both these infrastructures operate through to June 2014.</p>
1.5	Future of Project initiatives	<p>The Project Board will work with stakeholders and Sub-Project participants to seek solutions to contribute to the sustainability of the Project initiatives, beyond the life of the Project.</p> <p>Significant industry interest in a leading edge technology demonstration will assist industry engagement.</p> <p>A successful Project is more likely to lead to a case for further funding and a growing interest in replication of the infrastructure so that industry can be expected to actively build the required relationships.</p>
1.6	Treatment of depreciation	<p>The Project will seek to secure arrangements where Project infrastructure can be integrated over the lifetime of the Project into the business operations of project participants.</p>

Risk Area 2: Suitability for Purpose		
	Risk	Mitigation
2.1	Infrastructure does not meet the requirements of researchers	<p>A significant portion of the infrastructure developed by the Project will be co-developed with researchers to provide functions that are a direct result of their research need.</p> <p>Significant sector consultation will drive Project-initiated infrastructure development to ensure large-scale demand determines Project priorities and the delivered functionality.</p> <p>The requirement for co-investment from researchers and research organisations is intended to constrain developments to functions regarded as valuable by the relevant communities.</p>
2.2	Research cloud is not sufficiently large to meet demand	<p>The Project Board will be able to advise on the balance of other Programs in relation to the Research Cloud.</p> <p>The Cloud will be implemented with institutions intending to self invest in cloud capabilities to maximise overall</p>

		capacity. Access policies to be developed to consider ways each approved use has sufficient capacity to achieve intended research outcomes.
2.3	Adequacy of access arrangements	The access policies and arrangements will be determined with sector consultation and modelled on those used by suppliers of existing, similar, successful infrastructures.

Risk Area 3: Project management		
	Risk	Mitigation
3.1	Adequacy of project leadership and management	Once appointed, it is intended that the Project Director shall be named in this Agreement at Item I of Schedule 1, in accordance with Clause 8 of this Agreement (Specified Personnel). The Project Director will be appointed with the agreement of the Project Board, the University of Melbourne and DIISR. Other key personnel will have relevant seniority and experience and work under the direction of the Project Director and to the policies of the University of Melbourne, The University of Melbourne will ensure its proven project management methodologies and policies are applied to the Project.
3.2	Delays in design and construction	Experienced and dedicated personnel will be deployed as needed to ensure sufficient attention and effort is available to progress the Project in a timely manner. Overall, the project will to the greatest extent possible deploy standardised and proven technologies.
3.3	Adequacy of sub-contracting arrangements	The University of Melbourne is a substantial organization with a long history in infrastructure development and deployment. It will undertake the Project using its well-established processes and contractual arrangements.

4 ACCESS AND PRICING

4.1 General Principles

A detailed Access and Pricing methodology will be provided in the Final Project Plan.

In general, the systems and services supported by the investments will be part funded by the Commonwealth and part funded by other participants.

The Commonwealth intends that its funding shall be provided as a contribution to Projects to be expended on appropriate items within a total Project budget.

It is an expectation of the Commonwealth that the operators of the resulting Project infrastructure shall make it available to research activities undertaken by publicly funded researchers.

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The Access and Pricing methodology should include criteria for research access that directs the project towards the needs of merit and priority assessed research activities.

The Final Project Plan may include a policy that allows for the recovery of operational costs or all costs, where the Project Board determines such is appropriate.

4.2 Information Management and Access

The Project will use the established project management methodology of the University of Melbourne to document project processes, decisions and deliverables, and keep records appropriate to enable scrutiny of its decisions and outcomes.

The use of this methodology will ensure that:

- There is a structured, consistent approach to managing the project (initiation, planning, execution, handover, review).
- There are tools and guides provided for the initiation, planning, execution, monitoring, control and completion of the project, to minimise project management effort and maximise effectiveness.

4.3 Intellectual Property

Intellectual property in the Project Material will be owned and managed on the basis set out in Clause 14 of this Agreement.

Otherwise, the Commonwealth intends that the University of Melbourne and its Sub-Contractors shall enable access to and dissemination of the intellectual property arising from the Project for the purpose of the Project.

A significant portion of the funds provided to the Project will be devolved to other agencies to perform Sub-Projects through sub-contracts from the University of Melbourne.

The intellectual property created in each Sub-Project is expected to remain with the Sub-Project participants, unless prohibited by the terms of software or other similar licence or otherwise by background intellectual property arrangements. The treatment of intellectual property in each Sub-Project shall be defined in the respective Sub-Project contract taking into account the requirements of that Sub-Project's participants.

The expectation is that Sub-Contractors will enable broad access and dissemination of the infrastructure they create, by use of Creative Commons or other open licence regimes.

The University of Melbourne will own all intellectual property created by the University of Melbourne in Sub-Projects undertaken by the University of Melbourne. Where contractors are involved in those activities, the relevant contract may assign ownership as agreed by the University of Melbourne.

Researchers using the infrastructure created in this project under open licence will be entitled to own the IP they create as a result.

As a principle, the University of Melbourne will use its best endeavours to maximise the extent to which intellectual property generated in the Project is appropriately accessible through the use of open content licence regimes such as Creative Commons.

4.4 Access Charges

A detailed Access Charging methodology will be provided in the Final Project Plan.

In general, the Project will ensure that merit and priority evaluation processes that are open and commensurate with sector expectations are used to allocate resources. Such an approach shall apply to the selection of Sub-Projects within the Research Tools and the Virtual Laboratories Programs, as well as the allocation of significant capacity in the Research Cloud and National Server Programs to research endeavours.

The Access Charging methodology may include the recovery of operational costs, where the Project Board determines such is appropriate.

The methodology should also provide for organisations to purchase a portion of the Research Cloud or National Server capability for their priority use at full cost recovery. In such cases, the cost to research community should be the annual cost of the facility in that year factored by the share made available. The cost of access to non-research and commercial users should take account the requirement for Competitive Neutrality and may take into account other market factors.

5 OWNERSHIP AND MANAGEMENT

5.1 Role of eResearch Collaboration Infrastructure in support of eResearch

The Project will engage with the research community by:

- Calling for ideas for new or enhanced research tools and services to be developed and then working with research communities and their supporting organizations to plan and build those tools and services; and
- Assisting researchers migrate research applications into the Research Cloud environment, from which other researchers can more easily share and use those applications.

The Project will engage with research institutions by:

- Calling for participants in leading edge examples of Virtual Laboratories and assisting institutions develop and install the required infrastructure to support new research methods.

The Project will advance research and research collaboration by supplying a Research Cloud capability co-located with Research Data Storage Infrastructure and:

- Allowing all researchers access to the remote data analysis capability it will support; and
- Allocating significant cloud resources to high priority research projects that can demonstrate research breakthroughs arising from large-scale data processing.

The Project will support other NCRIS and Super Science initiatives, and other research infrastructure operators, by providing robust server facilities. The result will be a significant increase in the reliability, availability and inter-operability of research supporting infrastructure across the sector.

5.2 Governance Framework

The Project governance framework will consist of:

- University of Melbourne as lead agent, as detailed in section 5.3.1
- A Project Board, as detailed in section 5.3.2.
- A Project Director to manage all aspects of the project, as detailed in section 5.3.3.
- Sufficient and suitable legal, office and administrative support for the Project Director.

5.3 Specific Roles

5.3.1 *The University of Melbourne*

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The University of Melbourne will:

- provide a high level of responsiveness to the Department in relation to the implementation of the project
- provide such reports as are defined in this agreement in a timely manner
- Appoint an Acting Project Director
- establish the Project governance and Project management mechanisms specified in this agreement in a timely manner, including Terms of Reference and Operating Procedures to be agreed with DIISR
- Seek DIISR's prior written agreement to the appointment of members of the Project Board and the Project Director.
- ensure the governance and management functions are diligent and effective
- support the Project Director
- engage and work with stakeholders in a transparent manner
- Comply with the requirements of this Agreement and use its best endeavours to carry out its role, to a high standard, with all due care, skill and judgment and in a manner that promotes the Objectives.

5.3.2 Project Board

The Project Board will comprise an Independent Chair, the Deputy Vice Chancellor (Research) University of Melbourne or nominee, a senior representative from the CSIRO, a senior representative from another Australian research intensive University and five other members.

The Project Director will attend Project Board meetings in an ex-officio capacity and will not vote.

The Board will:

- Provide strategic guidance to the University of Melbourne and to the Project Director.
- Monitor the overall strategic direction of the Project.
- Receive and approve Annual Reports and the Final Report on Project performance.
- Approve the Final Project Plan and Annual Business Plans, which include implementation milestones and budget allocations.
- Endorse merit and priority allocation processes adopted by the Project
- Endorse the appointment process and the appointment of the Project Director, noting that the nominated candidate must be found acceptable by the University of Melbourne.
- Advise and assist the University of Melbourne in the management of project risk.
- Oversee the communication plan and related activities of the Project.
- Provide other advice and input as required.

All Project Board members will be appointed for their outstanding abilities to guide the Project. They will be senior people able to take a broad, national, collaborative perspective and will include persons with previous experience in one or more of the following areas and will collectively cover all of the areas:

- Corporate governance
- Financial/business management;

- Research and development activities;
- Information and Communications Technologies;
- International and national activities providing eResearch infrastructure and services;
- Computational sciences; and
- Data intensive research

The appointment of the Project Board Chair and Project Board members will be for the period of the Project.

It is intended this Agreement will be varied to name the appointed Chair of the Project Board and the Project Director at Item I of Schedule 1, in accordance with Clause 8 of this Agreement (Specified Personnel).

Resolutions of the Project Board on significant risks to meeting objectives of the Project will be incorporated in Reports to the Government.

Where the University of Melbourne considers that a decision of the Project Board is contrary to the University's obligations under the Funding Agreement, and where this cannot be resolved within the established Terms of Reference and Procedures of the Project Board, the University shall convene a meeting with the DIISR Delegate to clarify the requirements of the Funding Agreement and resolve the issue.

5.3.3 Management structure

The Project management will comprise a small team employed by the University of Melbourne and be provided with office, administrative and IT support by the University of Melbourne.

The management team will initially comprise a Project Director, administration and contract support. The final composition of the management team will be agreed in the Final Project Plan.

The Project Director will:

- Support the Project Board in its role
- Undertake activities as required for the proper performance of the Project
- receive advice from the Project Board with regard to the overall strategic directions of the Project and management and performance of the CI infrastructure in accordance with this Funding Agreement and the longer-term national strategic goals outlined in this plan.
- Develop, propose and oversee activities that implement the objectives of the Project
- Manage such other staff as may be appointed for purposes of the Project by the University of Melbourne

5.3.4 Merit and Priority Allocation Processes

The Project is expected to establish merit and priority allocation processes that are suitable to each program of activity, with due regard to sector norms for such processes.

The details will be provided within the Final Project Plan, but in general these processes are expected to require the establishment of one or more sub-committees of the Project Board.

Such committees will have suitable membership drawn from the research sector and allocate resources using principles and processes consistent with the expectations of the sector.

5.3.5 Sub-Contractors

Project Sub-Contractors will be those organisations that agree to provide:

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- Supportive employment environments for the expertise required by the project
- The means by which:
 - Project outputs can be delivered and tailored;
 - Development work can be undertaken; and/or
 - Infrastructure components can be operated for required periods

Sub-Contractors will undertake activities defined in contracts with the University of Melbourne.

5.4 Project Goals and Evaluation

5.4.1 Goals

The Project aims to enhance research collaboration by enabling the seamless connectivity of research instruments, analysis systems and data resources, and by providing a national capability through which researchers can develop, publish and access research enabling software tools, and operate those tools in secure and shared environments.

The Project will:

- Provide Australian researchers with new ‘research cloud’ applications, data and server capabilities
- Develop an enhanced and more integrated set of data finding, mining and analysis tools
- Facilitate the development of intellectual capability relating to the use of virtualised cloud systems to support research

5.4.2 Evaluation

The performance indicators outlined below will be used to assess project progress in light of the required EIF principles (see section 1.3).

Provision of Research Infrastructure

- Value of new infrastructure by location
- Cost and description of facilities and equipment
- Cost of services provided compared with commercial equivalents

Quality of Research Infrastructure

- Capacity and service levels compared equivalent overseas infrastructure.
- Independent reviews

Quality of the intended services provided by the research infrastructure to meet the needs and demand of the targeted communities.

Collaborative Infrastructure Provision

- Extent and duration of collaborative agreements / relationships established for managing and developing research infrastructure
- Type of agreement and parties involved
- Extent and prospect of sustainability of the research infrastructure beyond the life of the Project.

Further detailed Key Performance Indicators will be confirmed in the Final Project Plan.

6 IMPLEMENTATION STRATEGY AND FINANCIAL INFORMATION

6.1 Implementation Strategy

The final program structure for the Project will be determined through consultation with the sector leading up to the Final Project Plan. This period is the Interim Implementation Period, during which time the Interim Project Plan takes effect. It is the period from execution of this agreement until the date the Final Project Plan is agreed to by DIISR.

The Final Project Plan will outline the full details of each Program, for the life of the overall Project, including milestones and resources and provide a revised budget for both EIF and participant contributions.

The Final Project Plan will also recommend such project supervision resources to be made available to the Project Director as are necessary to implement the plan, superseding section 5.3.3.

The Final Project Plan should also detail activities specifically to be undertaken in the 2011-2012 financial year.

6.2 Draft Final Project Plan

A draft of the Final Project Plan will be provided to DIISR by December 30 2010.

If possible, and to accelerate progress with the Project, that Draft Final Project Plan may contain recommendations for funded activities to commence prior to agreement on the Final Project Plan.

The DIISR Delegate will provide written advice regarding those activities that may commence before DIISR agreement to the Final Project Plan at his/her sole discretion.

6.3 Implementation Planning Milestones

Major Project Milestones		Projected Completion Date
1	Payment Milestone Report 1- for the National Servers Program Implementation Plan provided to DIISR	Date of this agreement
2	Acting Project Director appointed	30 July 2010
3	Project Board nominations agreed with DIISR	30 July 2010
4	Consultation Plan agreed with DIISR	30 August 2010
5	Project Board 1 st meeting	30 August 2010
6	CI Project EIF Annual Milestone Report 1	30 September 2010
7	Project Director appointed	31 October 2010
9	Initial National Server infrastructure commissioned	30 November 2010
10	Draft Final Project Plan and CI Project EIF Milestone Report 2	30 December 2010
12	Final Project Plan (including Milestone Report 3, and 2011-12 Implementation detail)	31 March 2011

6.4 Financial Projections

A summary of the Financial Projections for the eResearch Collaboration Infrastructure Project are given in the Tables below:

Summary of EIF contributions to the Project (GST exclusive) (Reference: Schedule 2, AA Funding – Clause 3 of this Agreement).

2009-10	2010-11	2011-12	2012-13	TOTAL
\$23 Million on acceptance by DIISR of a National Server Program Implementation Plan - Due: Date of this agreement	<nil>	\$12 Million on acceptance by DIISR of advice that all Sub-Contracts in the Research Tools and Virtual Laboratory Programs have been executed. - Due: 30 January 2012	\$12 Million on DIISR's acceptance of advice concerning the satisfactory commissioning of the first Cloud Core infrastructure. Due: 30 July 2012	\$47 M

The Budget for the full-term of the Project, including the co-investments needed to underpin the work will be provided in the Final Project Plan.

6.4.1 Source of Co-Investment and nature of expenditure

Confirmed co-investment details and processes for expenditure will be provided in the Final Project Plan and will be revised throughout the Project in subsequent Annual Business Plans.

Overall, the following general levels of co-investment are expected, noting that 'Other \$M' represents an estimated value of resources that could be expected to be committed to activities under the general direction of the Project Board. Those resources may be cash or in-kind resources described and reported by Sub-Contractors and are not to be construed as required cash co-investment or strict matching funding in the Project.

Program	EIF \$M	Other \$M	Notes
Project Administration	4.7	0	
eResearch Tools	12	>12	Other includes co-development and operating
Virtual Labs	12	>12	Other includes co-development and operating
Research Cloud	21	16	
Apps Migration	6	6	Expert resources assigned on a project basis
Environment	5	0	Licence fees + commissioning etc
Core	10	10	\$10 million EIF + \$10 million operating, at 1 or 2 sites
National Servers	2	4	Other includes development, management and operating
TOTAL	50	44	Total project > \$94 million

These estimates arise as follows.

- The eResearch Tools and Virtual Laboratory programs will call for proposals that will be evaluated in part by the demonstrated ability of sub-contractors to commit their own resources to the service developments and infrastructure support required by each activity.

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The Project funding will supply specific design, procurement, development and commissioning capabilities as well a requisite infrastructure to extend the functionality of tools and services or commission virtual laboratories.

- The Research Cloud program involves an Application Migration program, which will assign a core team to assist researchers and research communities migrate applications and install them onto the cloud. Those activities will require a commensurate investment in expertise by the client researchers to assist that process and undertake relevant testing and validation activities.
- For the cloud infrastructure itself the operating and support requirements over a five year period are expected to represent at least an equivalent expense to the infrastructure development and commissioning components.
- For National Servers, a very significant cost component of any service supported by the infrastructure will be the ongoing maintenance and the day-to-day management of each service. Those costs may be reported by the Project as in-kind contributions to the outcome.

6.5 Overall Timeline

The following Project timeline is indicative. A detailed timeline will be provided in the Final Project Plan.

	2010	2011-H1	2011-H2	2012-H1	2012-H2	2013-H1	2013-H2
MAJOR REPORTING TO DIISR	Payment M/stone Report #1 (National Servers) Draft Final Project Plan	Final Project Plan	Annual Rept #1	Payment M/stone Report 2 (sub-contracts)- \$12m Ann Bus Plan #1	Payment M/stoneReport #3 (Cloud Core) Annual Rept #2		Final Report
Project Administration							
	Consultation						
	Project Board, Project Director, contract/admin support team						
RT-Program							
		EOI, Project development					
		Sub-Contracts for implementation					
VL-Program							
		EOI, Project development					
		Sub-Contracts for implementation					
Research Cloud Program							
Apps Migration		Planning	Recruitment	Migration activities done by and RC Open Apps team			
Architecture Devl		Architecture, design, contracts					
Environment		Acquisition of middleware and apps support technologies, over time					
Core 1 (UoM)		Installation of first cloud site hardware, capacity expansion, over time					
Core 2 (Other)		Installation of second cloud site hardware, capacity expansion, over time					
National Servers							
	Establish					Refresh	
		Identify Services, Expand infrastructure, Migrate servers					

Project Administration	Sector Engagement	Tools/Services Development	Core Infrastructure
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