Virtual Laboratory and Research Tools User Support Enhancement Project (VLRT)

Grant Application

Virtual Laboratory or Research Tool: *Cloud-based Bioinformatics Tools*

Prepared by: *Travis Endersby, Systems Development Manager, UWA*

Date: *16/02/2015*

Approved Date:

Virtual Laboratory or Research Tool Name	Cloud-based Bioinformatics Tools (aka "The Ark" throughout this document)
Virtual Laboratory or Research Tool contact person and details	Travis Endersby, Software Development Manager, Centre for Genetic Origins of Health and Disease (GOHaD), UWA. Travis.endersby@uwa.edu.au 0404 55 63 12
Virtual Laboratory or Research Tool Host Institution	Centre for Genetic Origins of Health and Disease (GOHaD), University of Western Australia

Table 1.

Preamble

The Virtual Laboratories User Support Enhancement project[1] is a NeCTAR NCRIS 2013 funded project managed by the Queensland Cyber Infrastructure Foundation. It aims to improve user support maturity of Virtual Laboratories and Research Tools by providing grants to approved Virtual Laboratories and Research Tools to enhance their user support processes, materials and practices. In particular the project will:

- enhance Tier 0 documentation;
- enhance marketing, engagement and training collateral;
- create or enhance support and incident management capacity including Tier 1 material and knowledge base articles;
- develop shared support services such as fall-over help desk,cloud based ticketing systems, community support tools, maturity models, and communication and incident management frameworks to provide cost efficient Tier 1 support.

Grants provided are of the value:

- $22,000 for Virtual Laboratories;
- $13,000 for Research Tools.

Grants will be open on the 27 March 2015.

Grants applications close 1700 AEST 17th April 2015.

Please submit completed application in PDF format to h.holewa@qcif.edu.au

For more information on the Virtual Laboratories User Support Enhancement project please contact:

Hamish Holewa, Queensland Cyber Infrastructure Foundation, h.holewa@qcif.edu.au, mob: 0400 027 653.

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1. Intended items of work

Provide a brief description of intended items of work to be completed using this grant.

The Cloud-based Bioinformatics Tools have proved valuable for all users thus far and use has extended from 20+ Australian institutions and research groups to several continents. One of the largest hurdles has been training of potential users.

I would proposed creation of;

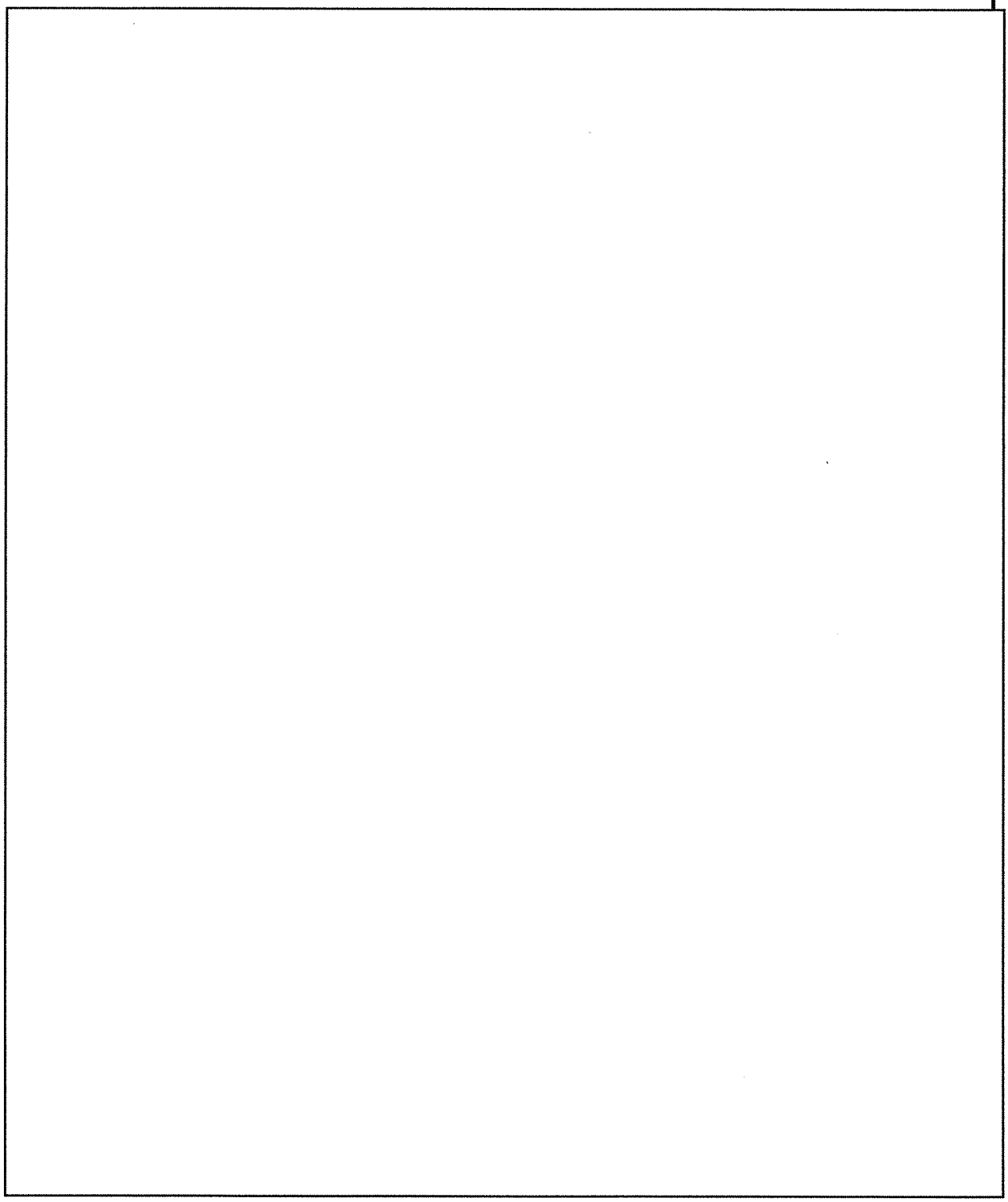
- Tier 0 documents. These will be in the form of word document converted to pdf and html formats and made available online in all places that someone could possibly use, seek support or express interest in The Ark.
These must include step-by-step instructions, with pictures of each step and/or component on screen, including likely alternative flows (for example, error handling).
Sections needing to be documented most urgently include;
  - User and study management (admin level activities) (6-7 documents/sections)
  - Individual (in-context) Subject Management (11-12 documents)
  - all uploaders (>10 new documents needed)
  - Dataset/Phenotypic administrative functions (4-5 documents)
  - LIMS administration functions (7-8 documents)
  - Reporting and Data Extraction. (2-3 documents)
  - Work tracking (4-5 documents)
  - Disease and Gene Module (2-3 documents)

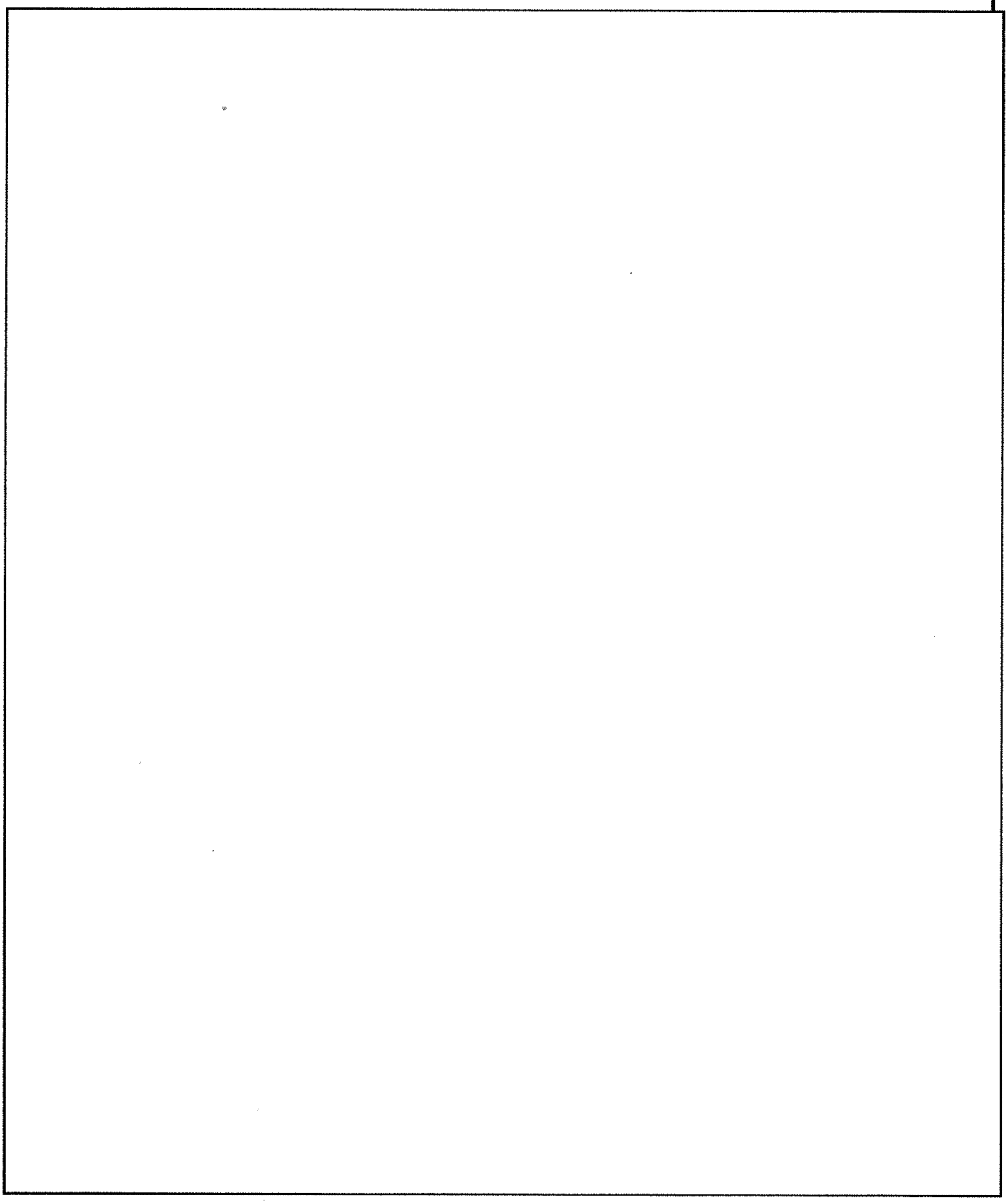
For each of these end user documents, we intend to create videos of these flows, placed online which serves in marketing and engagement, whilst creating an easy form of learning for certain people.

In a more Tier 1 role, we should also document some of the tools in our Admin module for the Ark Super User (more technical) role. This would be a 7-8 documents/sections.

All instances of the application will then direct themselves to help pages, the application itself will have a help option to see all of the documentation and context specific help documents will be linked within the application

All of this work must then be tied with reciprocal links to our JIRA system for support, institutional web sites and code sites/repositories.





For Research Tools only:

Please provide evidence:

- that your tool is provided as a web-service;
- that your tool is not attached to, or a subset of a Virtual Laboratory project;
- of the total number of users;
- of substantial cross-institutional uptake;
- of your tools operational consistency including uptime and availability.

Provide evidence in writing below. Tables or figures are to be attached as appendices to the application. User numbers, number of institutions using and uptime and availability can be reported in tables.

- that your tool is provided as a web-service;

It depends how we are using the term web-service. This is a web based application for medical research throughout Australia and the world. Below is a production instance and demonstration instance of the web application respectively.

http://prod.the-ark.org.au

http://live.the-ark.org.au:8080/ark/login?1

If code forms further proof, go to code.google.com
https://code.google.com/p/ark-informatics/

- that your tool is not attached to, or a subset of a Virtual Laboratory project;

I can confirm our project has no correlation whatsoever with Virtual Laboratory projects. I am not sure how to prove this. Please let me know how I can help with this 0404 55 63 12.

- of the total number of users;

Our western Australian managed instance has 55 users managing 68 individual studies data. This instance manages 64,866 subjects/patients and 129,003 biospecimens.

Our instance on the east coast (Uni Melbourne) contains 50 research users, 1 major study – lifepool, with *several* sub-studies, 51,614 subjects and more than 13,000 biospecimens. We have users that have taken up our open source software to manage their data also, but are not under our management in Australia, Africa, Asia and Europe.

- of substantial cross-institutional uptake;

The following groups are amongst the many using the software;

Lifepool (http://www.lifepool.org)

Contacts; Lisa Devereux, Peter MacCallum Cancer Centre or Professor John Hopper
The University of Melbourne School of Population Health

At GOHaD several of our International projects using The Ark.

WA DNA Bank maintain many Local, National and International studies.

Seoul National University (Korea) have deployed their own instance (in order to meet certain rules for their data storage) of our software, with the combined help of University of WA and Melbourne groups. http://www.useoul.edu

We have a group at Sydney Brenner Institute for Molecular Bioscience at The University of Witwatersrand, Johannesburg, South Africa who are using The Ark software in their own managed instance. Freedom Mukomana has been our point of contact there. Unfortunately, we are not adequately funded to provide as much supported to enable the proliferation of our software as we would like.

We have also had groups from within Europe contact us regarding support for the software, but I do not have a current grasp as to their use of the software.

This software is also intended to be the primary data storage and at the base of the analysis of data for a $1,200,000.00 cross-institutional collaborative Cancer Council grant between researchers based out of UWA, Curtin, Uni Melbourne, with international contributors. http://www.news.uwa.edu.au/201405166682/cancer-council-wa/cancer-council-wa-capacity-building-and-collaboration-grant-12-m-awar

- of your tools operational consistency including uptime and availability.

We have only ever had ONE instance of The Ark shared instance managed by our Western Australian team being unavailable for users without our intentional intervention (we have had about 10 software upgrades over the weekend, with approximately 5 minutes down time on average), and that was after an NSP incident in which our servers had been reset. I am not aware of any downtime for the University of Melbourne team. Attached to this document I have provided a letter from Doctor Tegan McNab from the WA DNA Bank professing to the

uptime of the server.

2. Detailed Approach

Successful applicants will need to demonstrate how this grant will be used to reach User Support Level 2[2] for their Virtual Laboratory or Research Tool. User Support Level 2 is defined as:

- Public website provides research specific overview of service
- Information such as publication citation of software/ engagement/ ethics and grant application resource material
- A UI/UX review your service
- Training material and guides
- Ticket and incident management framework in operation.

Please provide a detailed description of how this grant will be utilised to meet User Support Level 2. If your Virtual Laboratory or Research Tool already meets base requirements, please provide details on how funding will be used to enhance user support processes or infrastructure for your Virtual Laboratory or Research Tool. .

Provide details specific to the following bullet points - Max 2 pages
(If you intend to enhance existing user support processes or infrastructure please indicate below)

- Public website provides research specific overview of service;

We currently have a very minimal web presence.
http://www.gohad.uwa.edu.au/enabling-resources/study-manager-and-lims-the-ark contains information on the ark. Where we can get the greatest enhancement of information to our potential and current uses is through the presentation of the newly collected help documentation on this page (and pages linked from here).
We have already purchases a domain the-ark.org.au, which we could direct to this page or use for a new web presence.

- Information such as publication citation of software/ engagement/ ethics and grant application resource material;

Further, we will make available our licensing agreements and provide guidance for any future projects that may wish to use our service and/or software created. I also see the value in listing current users (who agree to share this information)

- A UI/UX review of your service;

We have already been through the process of reviewing our UI/UX with both groups working closely with us, and those who have tried to utilize our software without support. Following feedback from untrained users, the key elements of our UI/UX design which need to work on is simply the provision of adequate templates for uploading data. We

[2] https://drive.google.com/open?id=0B6NwddtWB68_NDVHUV95N0RnWWs&authuser=1
http://usersupport.aero.edu.au/wp-content/uploads/2014/07/AeRO-Maturity-Streams-Table-v1.3.pdf

already have this work listed in our JIRA system but it has not been able to have it's cost justified until right now. But I would certainly see the value of this work in (a) saving time and money supporting poorly uploaded data and users being unable to upload their data (b) creating a better user experience, saving time for our users and potential users.

- Availability Training material and guides;

As listed in section one, we would intend to greatly enhance training material and guides. We have a very large application, which some of our regular users don't even know the full scope of, given their own processes haven't required the use of all tools yet (something we admit as a current shortcoming, despite our success in many regards to uptake)

These will be in the form of word document converted to pdf and html formats and made available online.

These must include step-by-step instructions, with pictures (screen-shots) of each step and/or component on screen, including likely alternative flows (for example, error handling).
Sections needing to be documented most urgently include;

- User and study management (admin level activities) (6-7 documents/sections)
- Individual (in-context) Subject Management (11-12 documents)
- All uploaders (>10 new documents needed)
- Dataset/Phenotypic administrative functions (4-5 documents)
- LIMS administration functions (7-8 documents)
- Reporting and Data Extraction. (2-3 documents)
- Work tracking (4-5 documents)
- Disease and Gene Module (2-3 documents)

In a more Tier 1 role, we should also document some of the tools in our Admin module for the Ark Super User (more technical) role. This would be a 7-8 documents/sections.

All instances of the application will then direct themselves to help pages, the application itself will have a help option to see all of the documentation and context specific help documents will be linked within the application

All of this work must then be tied with reciprocal links to our JIRA system for support, institutional web sites and code sites/repositories.

- An operating ticket and incident management framework.

We currently use Atlassian for a JIRA/incident tracking and planning tool. We have no intentions to expand this capability at this point, other than to ensure that we educate users about it's presence and the value of using it to make sure support is maintained at a high level.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3. Additional Scope

In the event of additional funding, please indicate additional activities that could be undertaken.

Create Video versions of all help documents created. Have voice-overs applied to provide a professional trust-enhancing image of the project/services. These will also serve a great purpose in marketing, in addition to the improved support.

We also have an inherent issue in the use of a java applet that we need to address support issues with. We can aim to get that applet signed to decrease support issues which range from repeated warnings to an inability to print in the application or alternatively provide documentation on how to deal with the situation and java permissions for printing biospecimen labels from the application.

Most of our heavy users have asked for improved or expanded uploader functionality, operations are often performed on 100s or 1000s of samples, often by automated robots, this data would take days or weeks to manually enter via the website. We have provided support by manually uploading this data with SQL statements. If we could enable this with uploaders that validate data for errors we could save users a lot of time and direct support to keeping the software as efficient and bug free as possible.

If the funds were available for a tour of interested universities and institutions, staff and UWA and University of Melbourne would be interested to market (and educate others about) the services and software that has been created

Further to the documentation creation listed so far, we need to document how to deal with foreign character sets and internationalization. This will involve a Tier 0 document for end users and a technical document for anyone that may wish to set up their own instance for international character sets. We have created the technical capability for acceptance of these foreign char sets, but listing of how to deal with things from a user perspective dealing with programs like Excel and text editors and how they might affect UTF-8 charsets is something that could afford to be documented.

While documenting all uploaders, the project would be well served to improve templates descriptions and examples during this process to minimize the support needed and to minimalize the troubleshooting required by end-users.

4. Deliverables

Please list all Deliverables. If Deliverables are intended to enhance existing user support, process and infrastructure please reference current implementation (attach screen shots if necessary) if available.

User Support Item to be enhanced (Deliverable)	Deliverable Date	Current Implementation	Final Implementation *(on project completion)*
User and study management (admin level activities) (6-7 documents/sections)	05/04/2015		Document(s) to be created and completed in MS Word. After looking at it we will figure out if this belongs as 6-7 documents or more or less, but broken down into sections.
Individual (in-context) Subject Management (11-12 documents)	20/04/2015		As above
All uploaders (>10 new documents needed)	20/04/2015		As above
Dataset/Phenotypic administrative functions (4-5 documents)	22/04/2015		As above
LIMS administration functions (7-8 documents)	24/05/2015		As above
Reporting and Data Exctraction. (2-3 documents)	26/05/2015		As above
Work tracking (4-5 documents)	28/05/2015		As above
Disease and Gene Module (2-3 documents)	01/05/2015		As above
Administrative documentation (7-8 documents)	08/05/2015		As above
Convert all documents to pdf and HTML.	15/05/2015		All documents should be easily converted to pdf for universal acceptance/availability. HTML conversion using a simple inbuilt tool may suffice if formatting works with inherent tools used at UWA for web

			development. If not, they can be recreated from a WSIWYG web development tool.
Create links and description of all documents throughout support web site. Also add details and links to google-code site (host of our code repository) and the Atlassian JIRA site.	22/05/2015		All documents must be available through any web presence that discusses "The Ark" software/services.
Create links and descriptions of all document in context specific "pages" in the web application itself.	31/05/2015		Availability of actual context specific help documents will be placed in the application itself, this will require redeployment, it will be initially in The Western Australian Managed instance, and propagated (via code repository) through all other instances when they perform their next code update/build.

Table 2.

All deliverables must be completed before the 31st of May 2015.

4. Shared user support services

Virtual Laboratories and Research Tools will be able to utilise shared support services, which will be delivered through the Work Package 6 User Support for NeCTAR Services project.[3]. These shared support services include:

- Access to a cloud based ITSM[4] system to assist in queries and ticketing;
- Access to a Tier 1 distributed help desk.

Please indicate if you intend to utilise:

Yes/ No	Shared support service
No	Cloud based ITSM system to assist in queries and ticketing
No	Tier 1 distributed help desk

Table 3.

Virtual Laboratories and Research Tools intending to utilise the cloud based ITSM system should ensure this is stated in Section 2: Detailed Approach.

Virtual Laboratories and Research Tools intending to utilise the Tier 1 distributed help desk will need to provide support details to Tier 1 distributed help desk operators. A template will be provided which will need to be completed before access can be provided.

More information regarding the intended shared user support services can be found in Section 1.2 of the Virtual Laboratories User Support Enhancement project.

FYI: Our user support and feature requests are currently serviced via Atlassian JIRA system. We have no intention to change that situation as a part of this application, though we do welcome any input on our processes, of course, as we are always looking to improve our services and support.
https://the-ark.atlassian.net/secure/Dashboard.jspa

[3] https://drive.google.com/open?id=1skw9-6fKK-gEGXsErNnU_i_lf9_NdVXVhyjcZKAdkvo&authuser=1

[4] For the purpose of this document ITSM system refers specifically ticket management, service catalogue and user support systems and practices.

5. Grant Budget

Using the table below, please provide a breakdown of how the grant will be used within the following categories. If a category is not applicable please list "Not Applicable."

Category	Who	Costs
Management and governance	Travis Endersby, Systems Development Manager	$460 per day including on costs. 2 Days $920.00
Salaries and on costs for technical staff	Travis Endersby, Systems Development Manager (and software lead)	$460 per day including on costs. 26.26 days. $12080. This work may be delegated to lower cost employees, if availale) but would take at least the same cost through decreased systems knowledge. Any costs to provide these services which occurs beyond the scope of this document will be met in-kind by The Centre for Genetic Origins of Health and Disease (GOHaD).
Infrastructure Maintenance		Not applicable (costs will be met by the Center)
Consumables		Not applicable (costs will be met by the Center)
Other agreed expenses related to operating infrastructure		Not applicable (costs will be met by the Center)

Table 4.

6. Milestone Payments

Payment of the VLRT grant will be paid in two Milestones:

Milestone 1: $11,000 for Virtual Laboratories and $6,500 for Research Tools on approval of User Support Application by the Virtual Laboratory User Support Representative Committee.

Milestone 2: $11,000 for Virtual Laboratories and $6,500 for Research Tools on provision of evidence to the Virtual Laboratory User Support Representative Committee that the Virtual Laboratory or Research Tool has met the deliverables stated in Sections 2 and 3 of the application. Virtual Laboratories and Research Tools will be required to provide documentation showing changes, processes implemented and/or materials developed through the VLRT grant.

7. Approved Applications

Applicants will be assessed by the Virtual Laboratory User Support Representative Committee.

QCIF will enter into a Subcontract Agreement with the successful applicant via their Host Institution. The approved VLRT Application will form a Schedule to the Subcontract Agreement and execution of this agreement will trigger the first Milestone Payment.

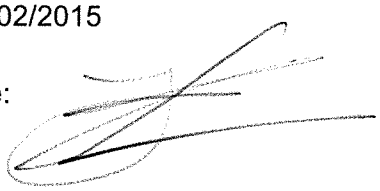
I am authorised by my Host Institution to submit this application

Name and Position:

Travis Endersby,
System Development Manager,
Centre for the Genetic Origins of Health and Disease (GOHaD),
UWA.
Travis.endersby@uwa.edu.au

Date: 17/02/2015

Signature:



THE UNIVERSITY OF WESTERN AUSTRALIA
Achieving International Excellence

Centre for Genetic Origins of Health and Disease
T +61 8 9224 0321
E tegan.mcnab@uwa.edu.au
http://www.gohad.uwa.edu.au/
CRICOS Provider Code: 00126G

17 April 2015

To whom it may concern,

As manager of The WA DNA Bank, and the primary user of The Ark, I can confirm that I have had far greater than 98% availability of the service. My team uses The Ark on a daily basis for the management of biological samples associated with the 20+ studies that we oversee.

Kind Regards,

Tegan McNab
Manager, WA DNA Bank