xTARDIS

Version 1.0
UniSA 2012

xTARDIS

Version 1

Contents

1. General description

xTARDIS is developed by the University of South Australia through funding provided by ANDS as a tool to capture, archive and share data and metadata collected from Ian Wark Research institute, University of South Australia (IWRI). xTARDIS is based on MyTARDIS[1],[2].

1.1. Primary benefit

Main aim of xTARDIS is to capture data and metadata from instruments. Current system is configured for Mastersizer 2000 (Malvern Instruments Ltd.) and PHI TRIFT V nanoToF Time-Of-Flight Secondary Ion Mass Spectrometer (Physical Electronics Inc.). Primary benefits offered by xTARDIS are:

- Safe and reliable storage of experiment data at IWRI
- Identification of datasets using a unique identifier
- Capturing and storing metadata describing the experiment, generating a standardized (RIF-CS) metadata description and feeding metadata into the ANDS
- Preventing duplication of experiments, starting point for re-using the data
- Fostering collaboration of researchers by publishing metadata and data (wherever applicable) on Australian National Data Service, as well as sharing metadata and data with authorized users

1.2. Overview

The system process begins with the generation of data from a supported machine (either the nanoTOF, or MasterSizer 2000). This data is transferred to a specific folder on the machine specific windows workstation that is monitored by a locally running daemon. Once new data is detected an in-house coded, very simple, daemon initiates functions on the xTARDIS server to create a new experiment record and transfers the raw data to the data store file system connected to the server. The user is then presented with a dialog requesting the meta-data associated with the experiment. Once this information has been entered, it is submitted to the server and recorded alongside the record details of the experiment.

The user then returns to their personal workstation and is able to access the web interface of the xTARDIS server. This interface allows to download the raw data, add any additional data relevant to the experiment (NB: any additional file can be added to the experiment – such as processed data, images, comments etc.), modify meta-data attributes, set access permissions to share the experiment with other researchers, set visibility parameters associated with the RDA database harvesting, and associate a DOI with the experiment data for inclusion in research papers.

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[1] Androulakis S, Schmidberger J, Bate MA, Degori R, Beitz A, Keong C, Cameron B, McGowan S, Porter CJ, Harrison A, Hunter J, Martin JL, Kobe B, Dobson RC, Parker MW, Whisstock JC, Gray J, Treloar A, Groenewegen D, Dickson N, Buckle AM. (2008) Federated repositories of X-ray diffraction images. Acta Crystallogr D Biol Crystallogr. Jul;64(Pt 7):810-4.

[2] http://tardis.edu.au/

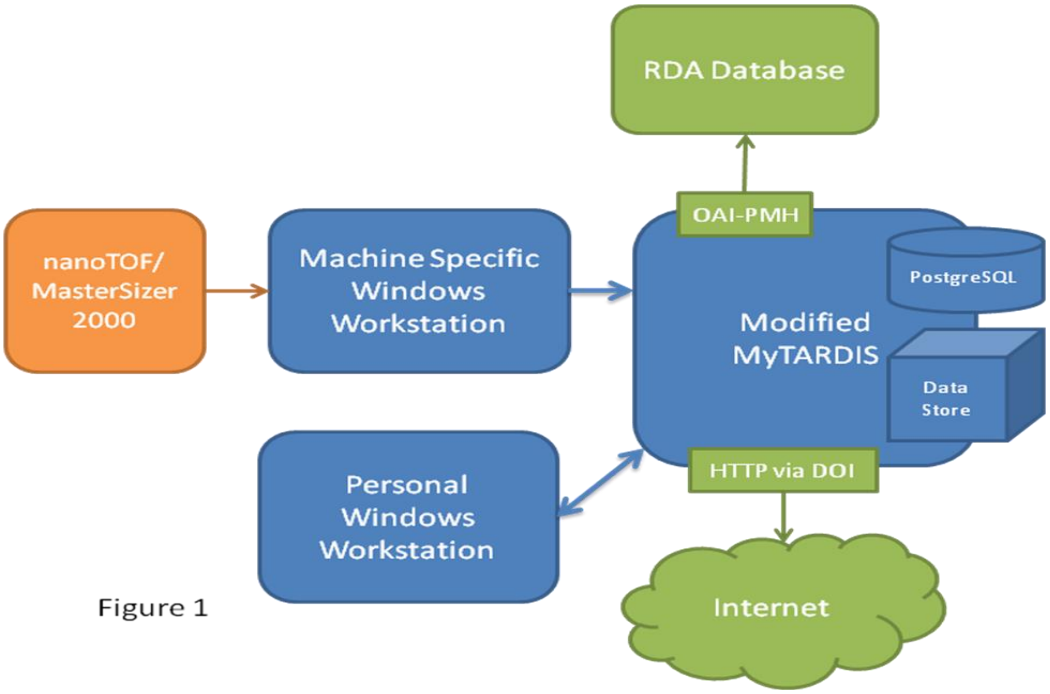
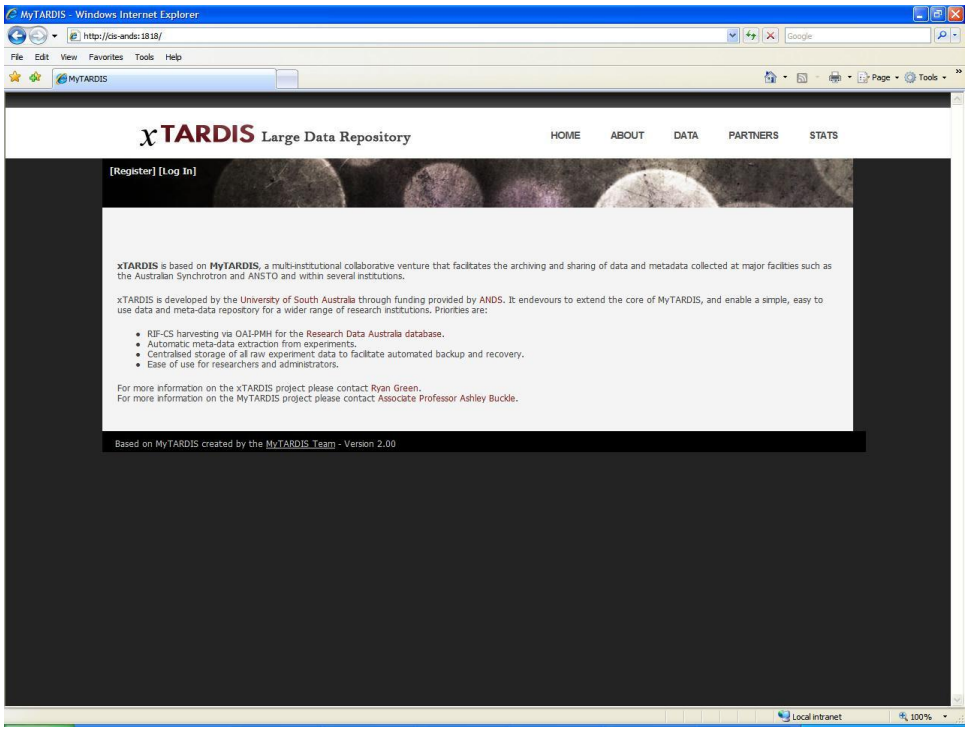

RDA Database
OAI-PMH
nanoTOF/
MasterSizer
2000
Machine Specific
Windows
Workstation
PostgreSQL
Modified
MyTARDIS
Data
Store
Personal
Windows
Workstation
HTTP via DOI
Internet

Figure 1

2. Use of xTARDIS

2.1. Start

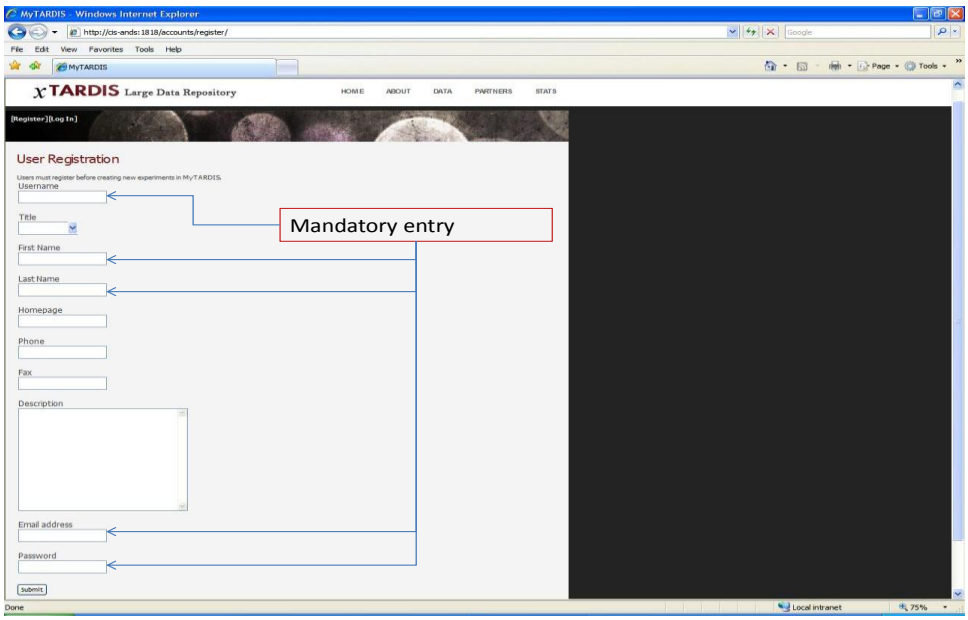
You enter the URL of xTARDIS in your browser (Firefox, Chrome, Internet Explorer). On the start of xTARDIS you will see the introductory screen.



Before you can start using the system, you need to be registered.

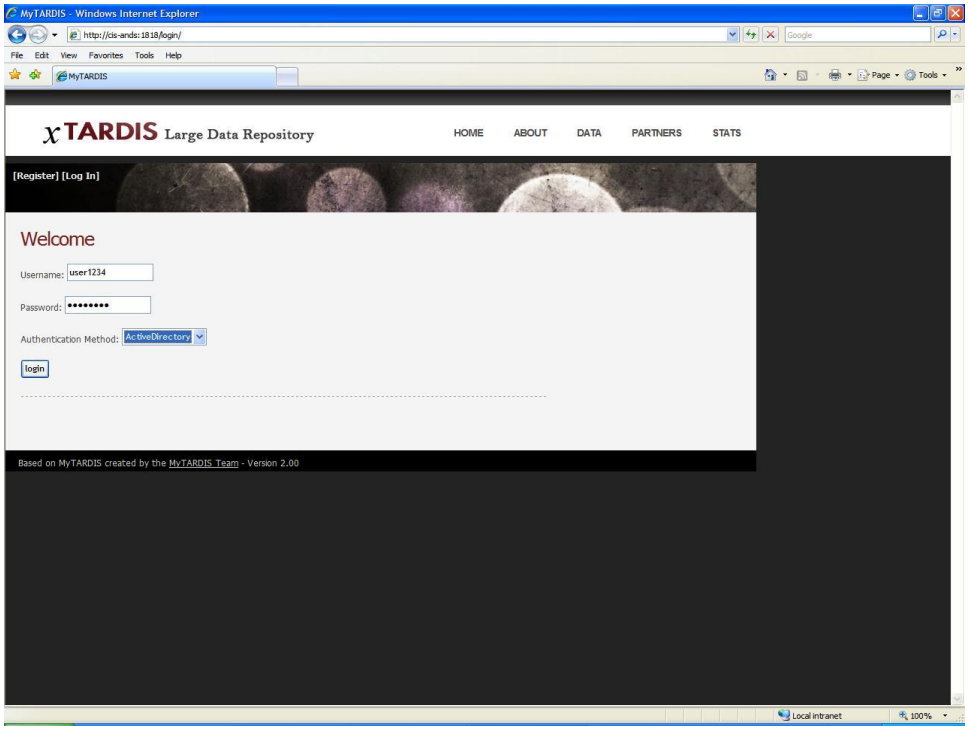
2.2. Register

New users need to register with the system. You do this by filling in the form. Some entries are optional, but we recommend you fill in all fields as this information will be later used in generation of the metadata – attribution of experiments to you and your team.



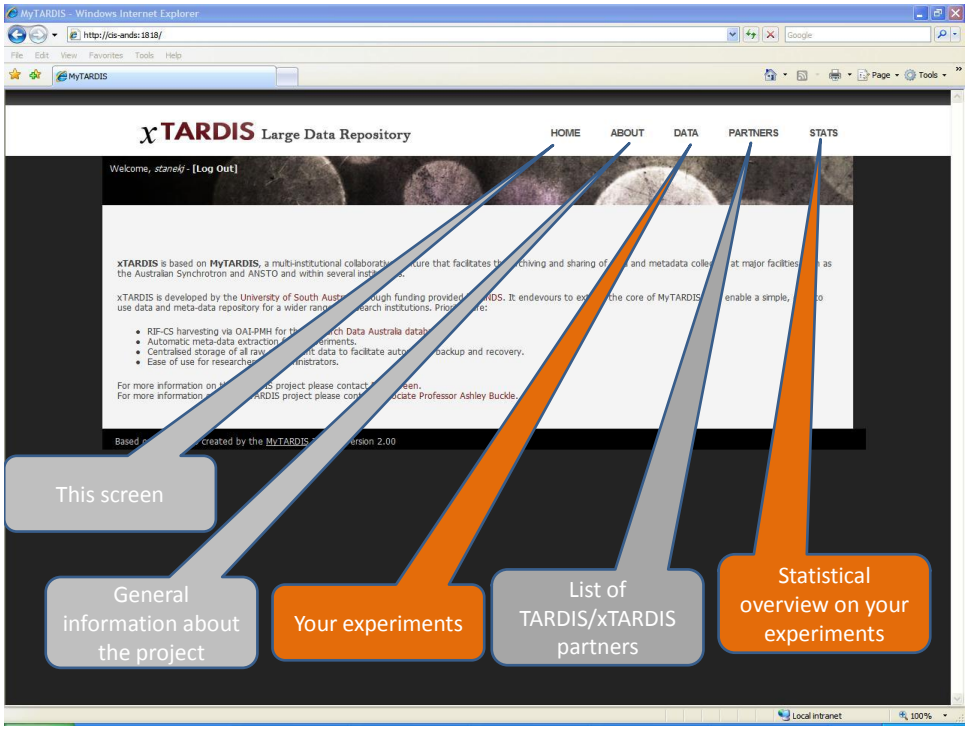
2.3. *Login*

Registered users log in – credentials consist of *username* and *password*. For UniSA staff members these are identical with their normal UniSA staff account – xTARDIS queries UniSA system for validity of the credentials entered.



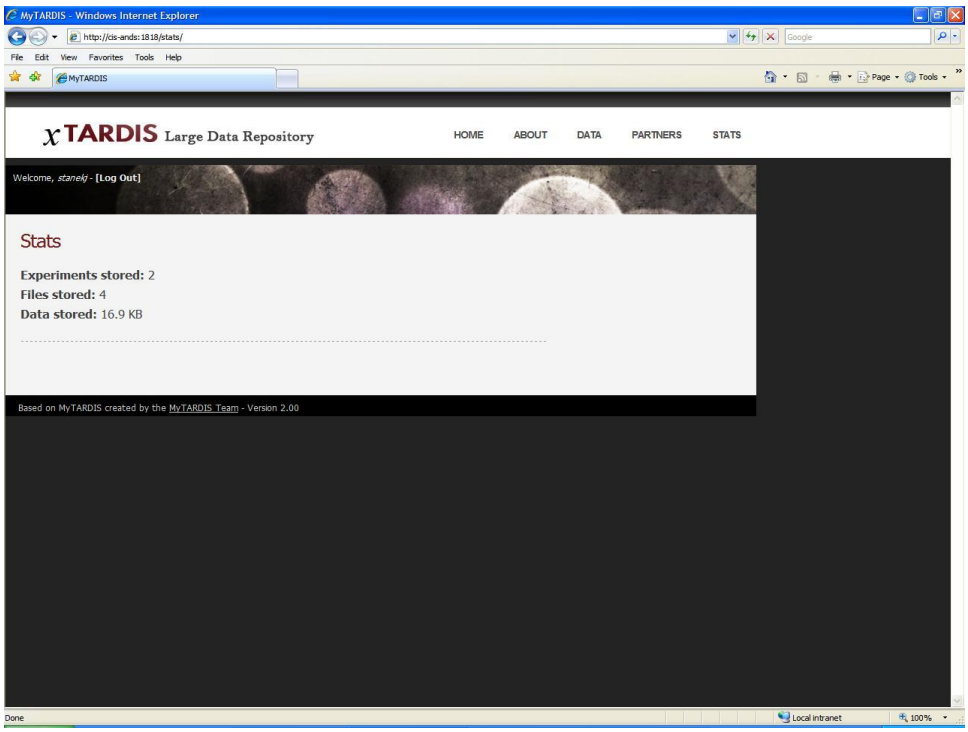
2.4. *Main menu*

On successful login the main menu will be shown.



2.5. Statistics

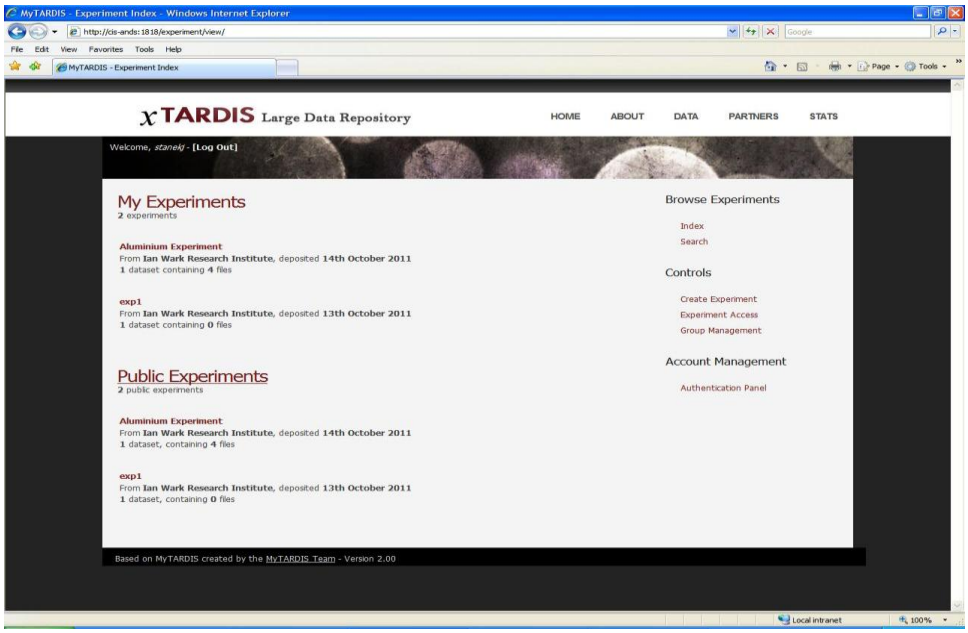
Click on **Stats** to get an overview of your experiments.



You obtain information on how many experiments you have stored, how many files this represents and the volume these files occupy on the system.

2.6. Data

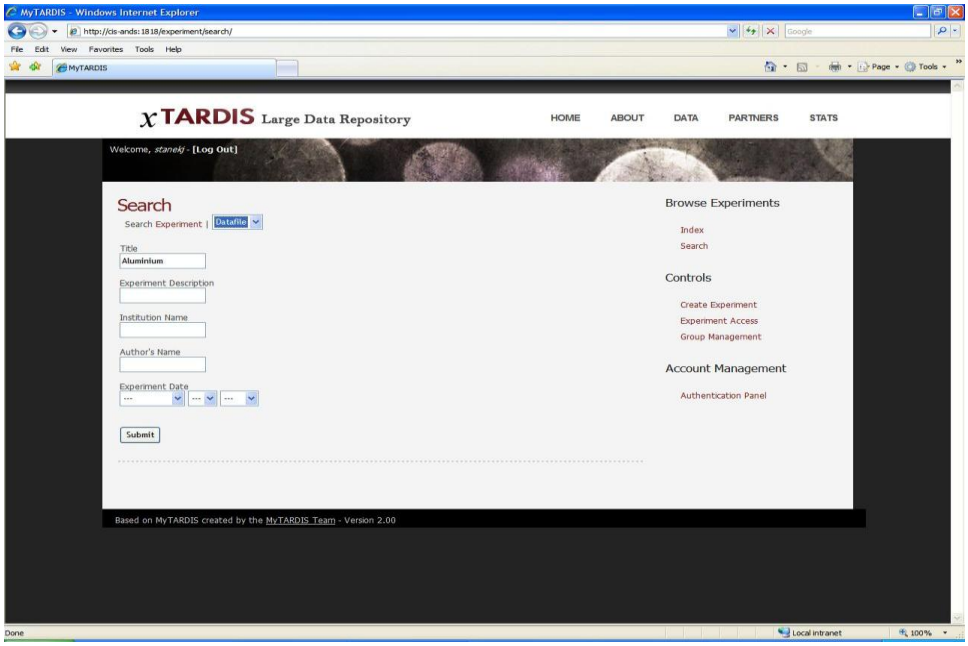
Selecting **Data** shows a quick overview of your experiments. Note, that xTARDIS discerns public and private experiments. Declaring an experiment to be private prevents the information about that experiment (metadata) to be exported to external repositories (e.g. ANDS).



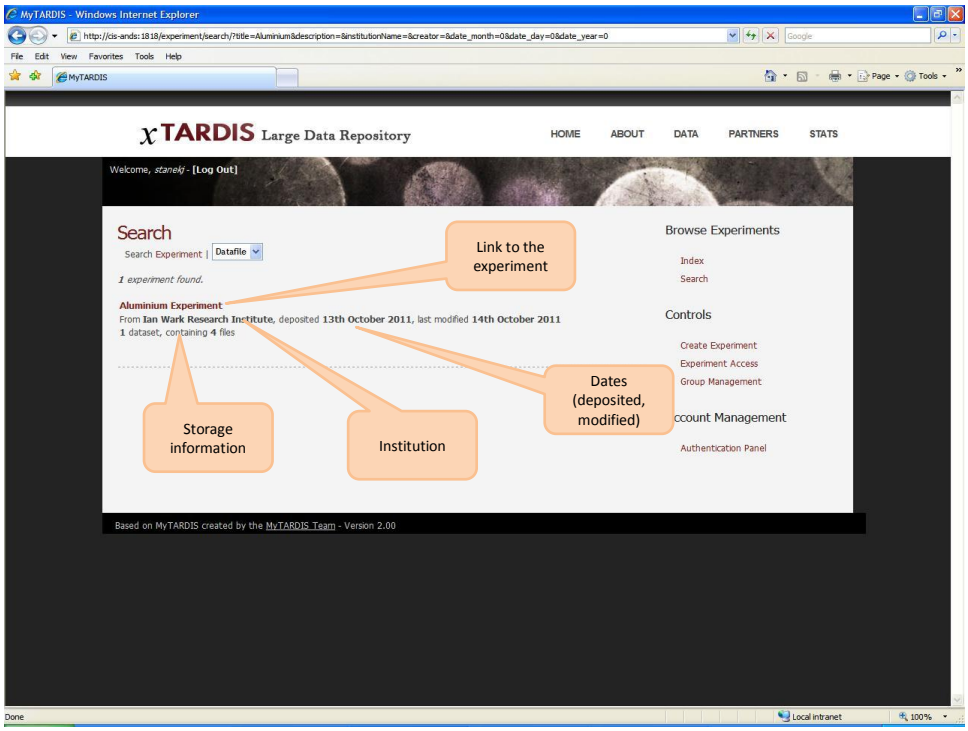
The links on the right hand side of the data screen allow to **search** for specific experiments, create new experiments, view and edit existing ones and manage accounts.

2.7. Search

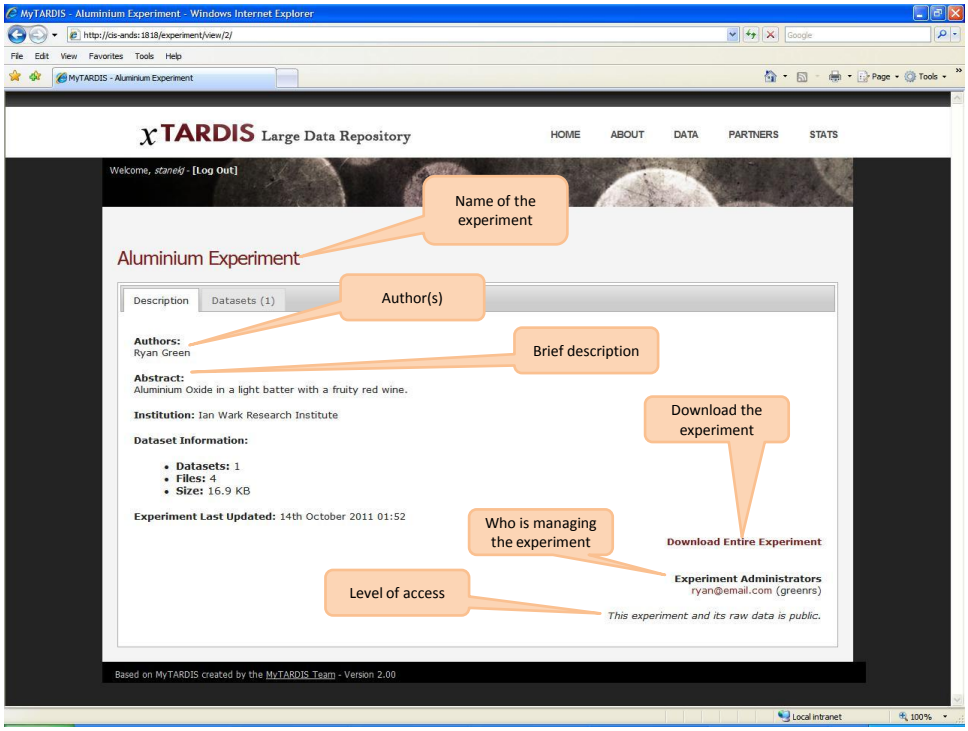
Clicking on **Search** allows to find an experiment from your portfolio.



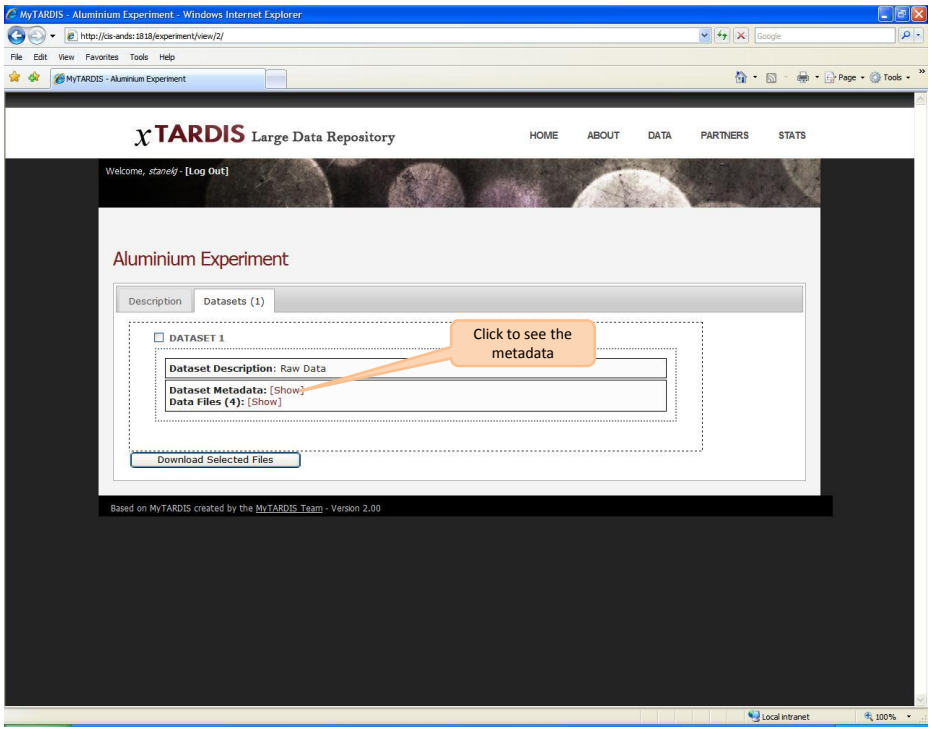
You can search for an experiment using **Title, Experiment description, Institution name, Author's name and/or date of the experiment.** Partial information is sufficient to start the search. xTARDIS will show a list of experiments matching the search criteria. E.g. entering "alum" into the title filed returns the following experiment:

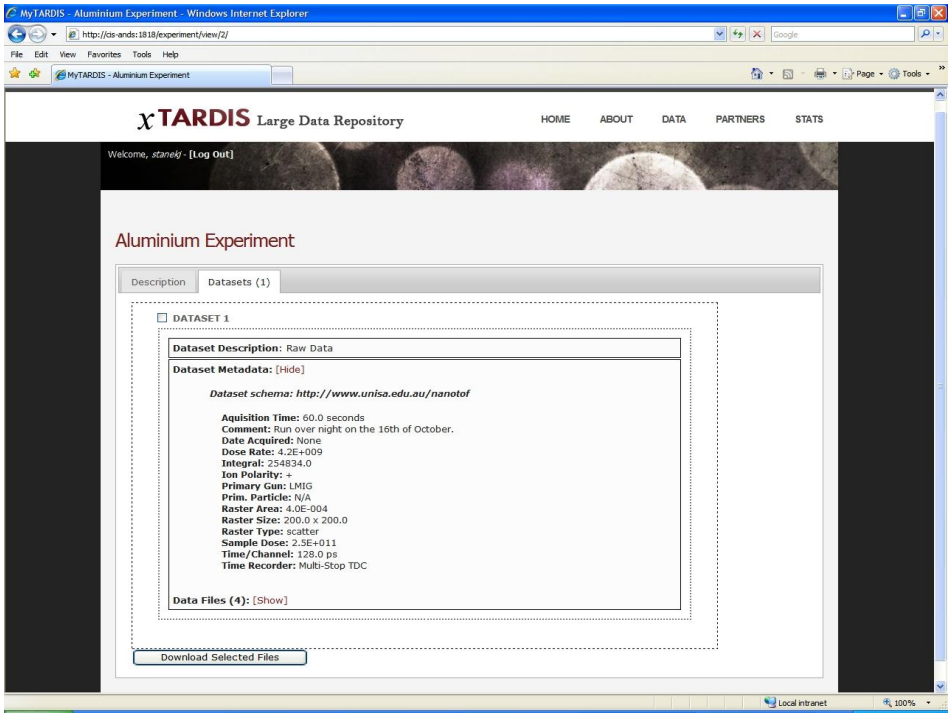


Following the link to the experiment you will be able to access the data, see who is managing the experiment (e.g. to seek more information, permissions to re-use the raw data etc.) and other information.

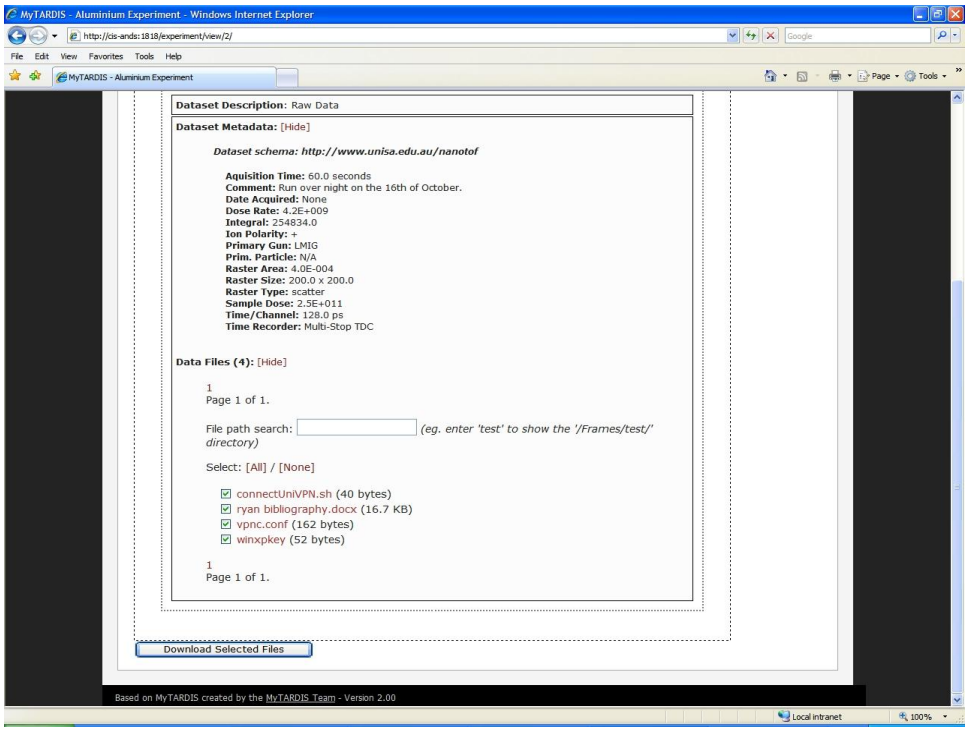


Dataset tab displays the metadata and allows to download specific files.



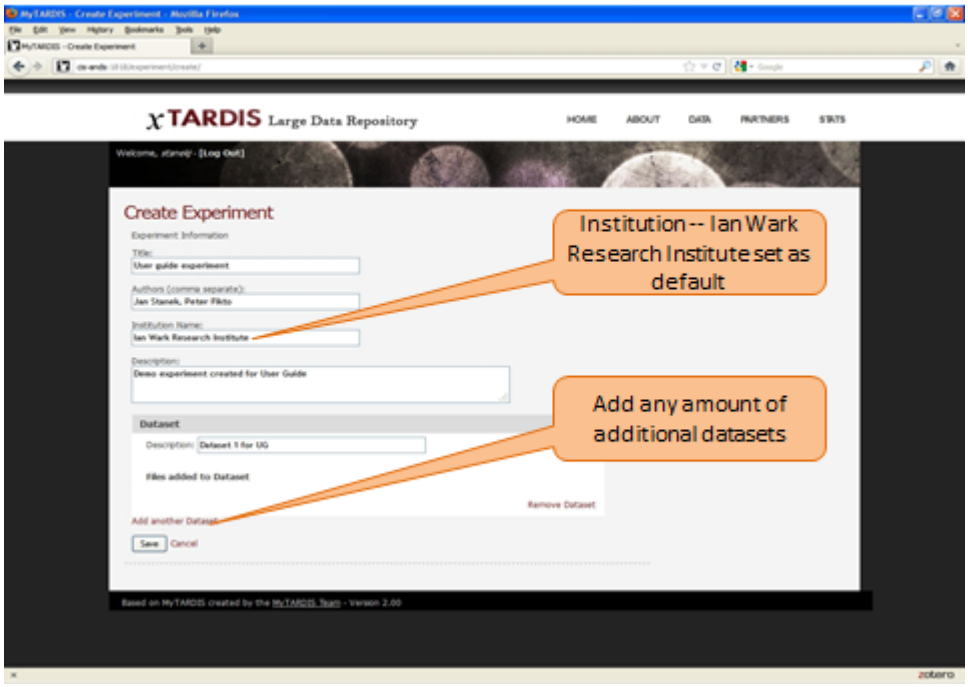


The files related to the experiment can be downloaded either as a set, or specifically selected by ticking the box next to the file name.



2.8. Create an experiment

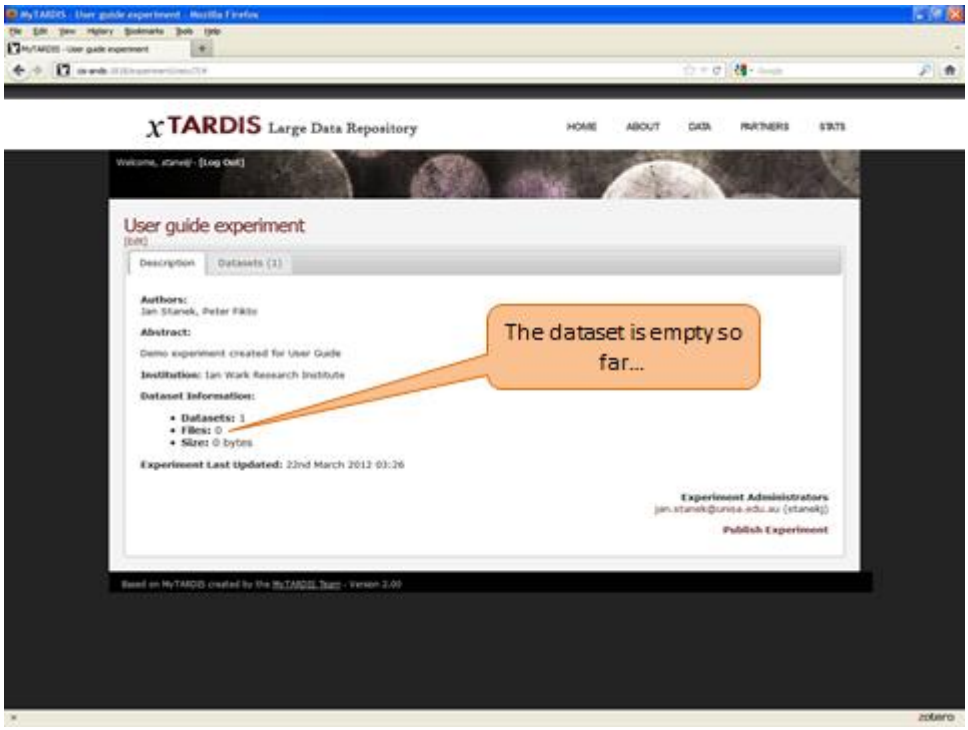
Clicking on the “create experiment” link will create an empty experiment.



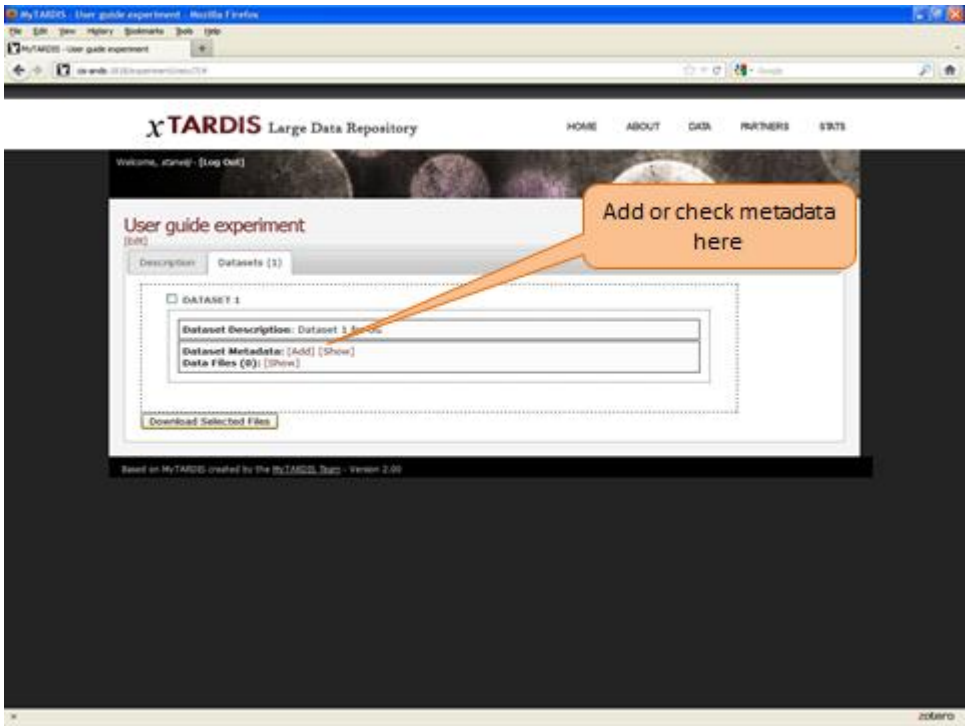
You need to enter Title and Authors of the experiment. Institution is set to Ian Wark Research Institute as default. Description of experiment is a free text entry – it can be seen as an abstract concisely describing the work done.

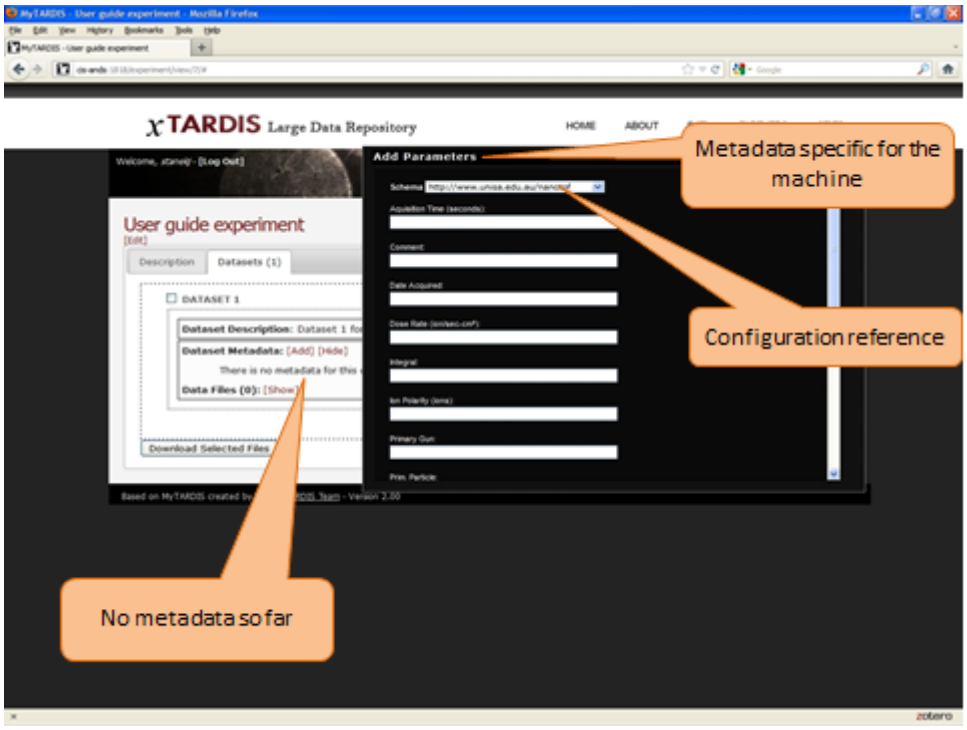
Your experiment can hold more than one set of data – you can use the "Add another dataset" to include as many datasets you need. Note, that you can add datasets at a later stage.

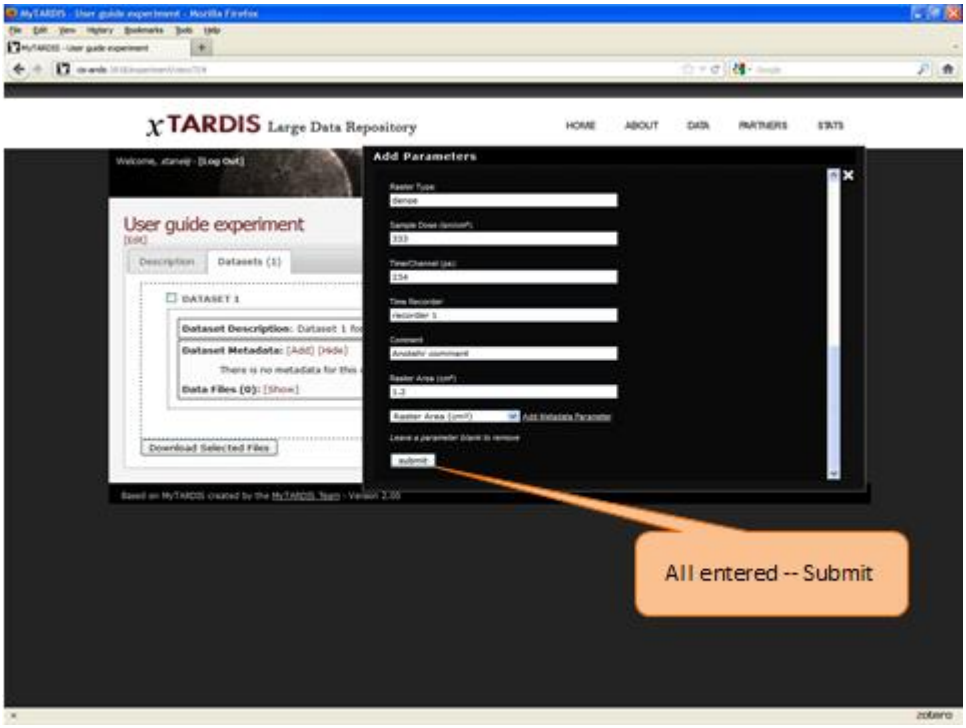
Once the information is entered and saved, you have an empty experiment.

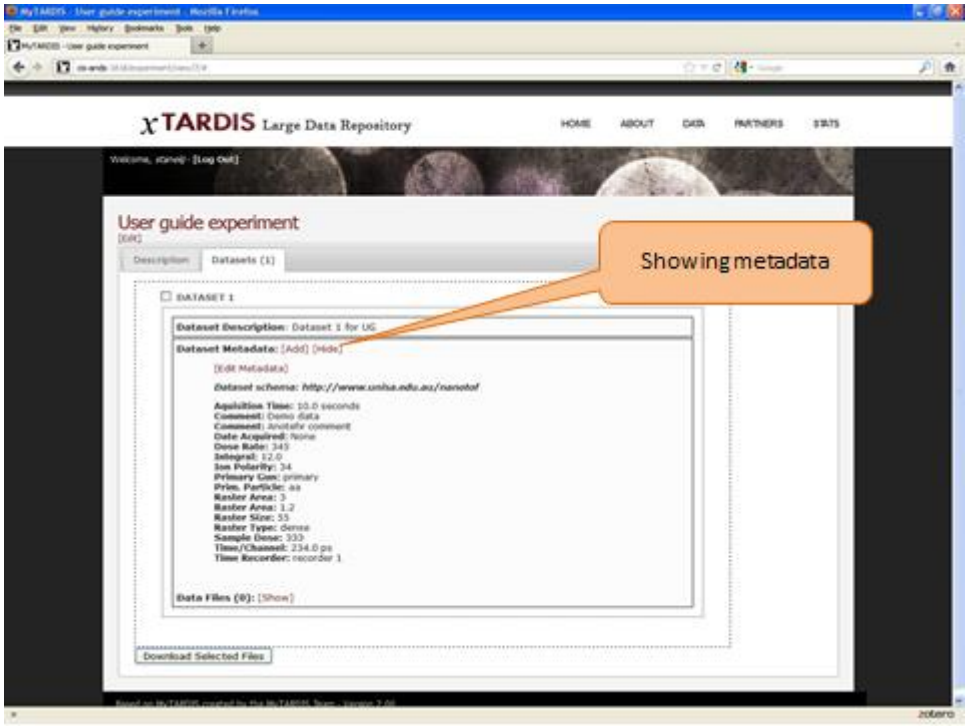


Selecting the dataset tab you can proceed to fill in your information. You can start either with entering metadata describing the dataset, or add files to the dataset.

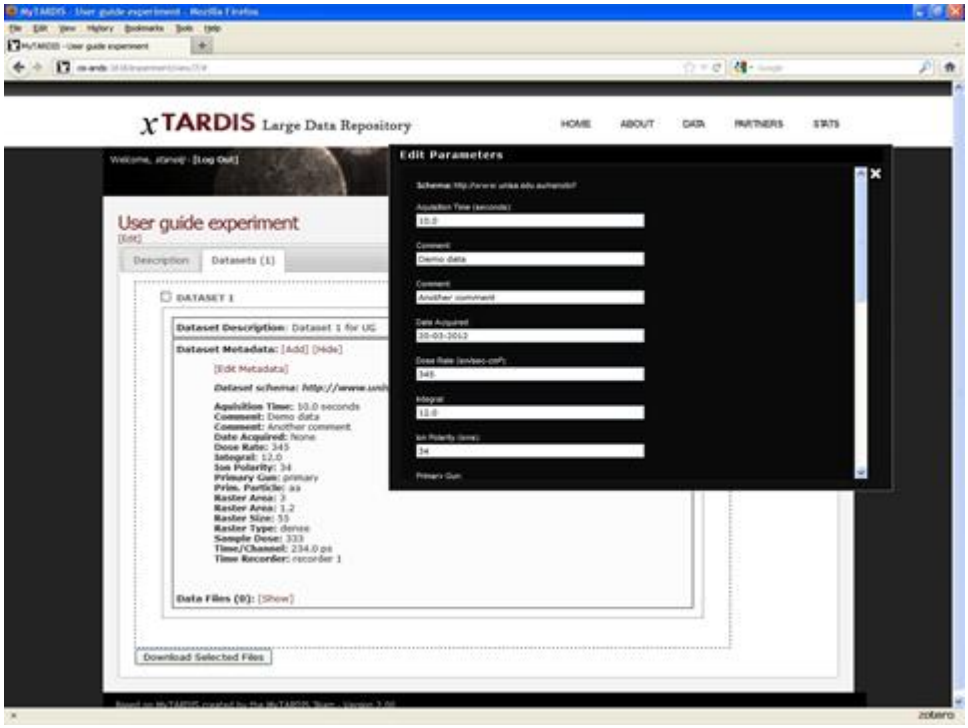




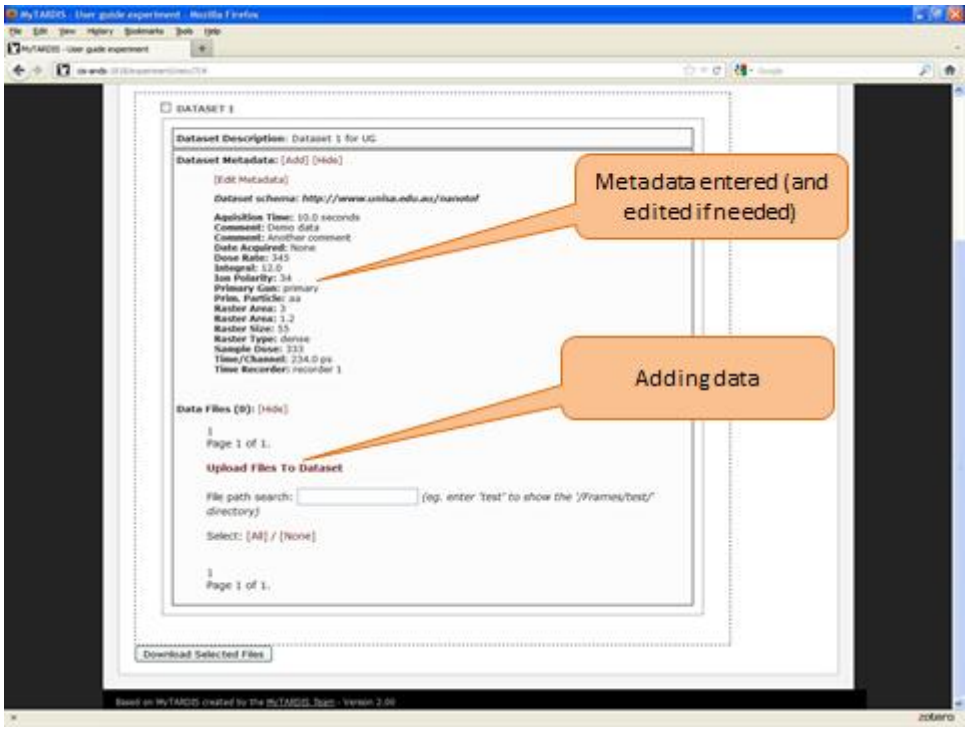




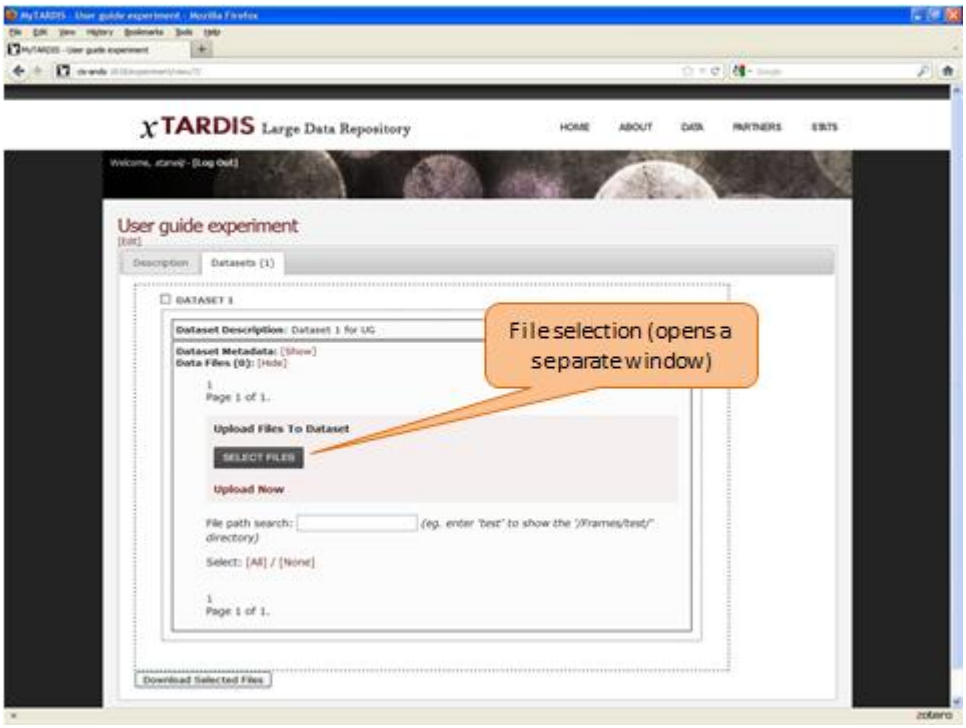
Once metadata is entered and submitted you can see the information. Editing metadata follows the same process as entry.



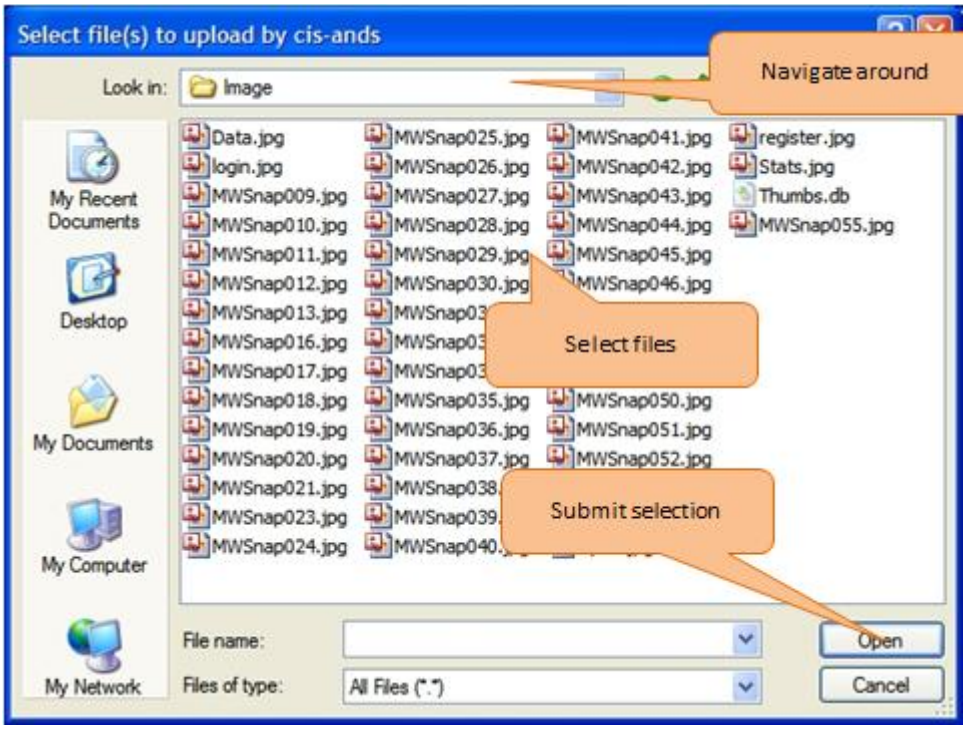
Adding data to your experiment is done by uploading all relevant files into the dataset.



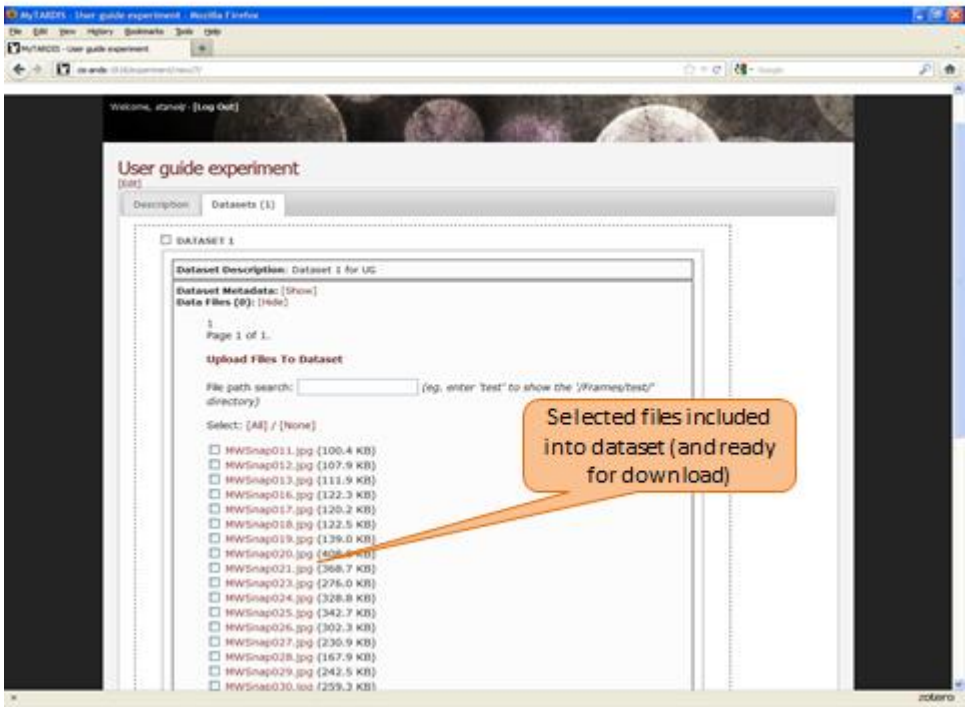
Click the “Upload Files To Dataset”, select the files and upload them.



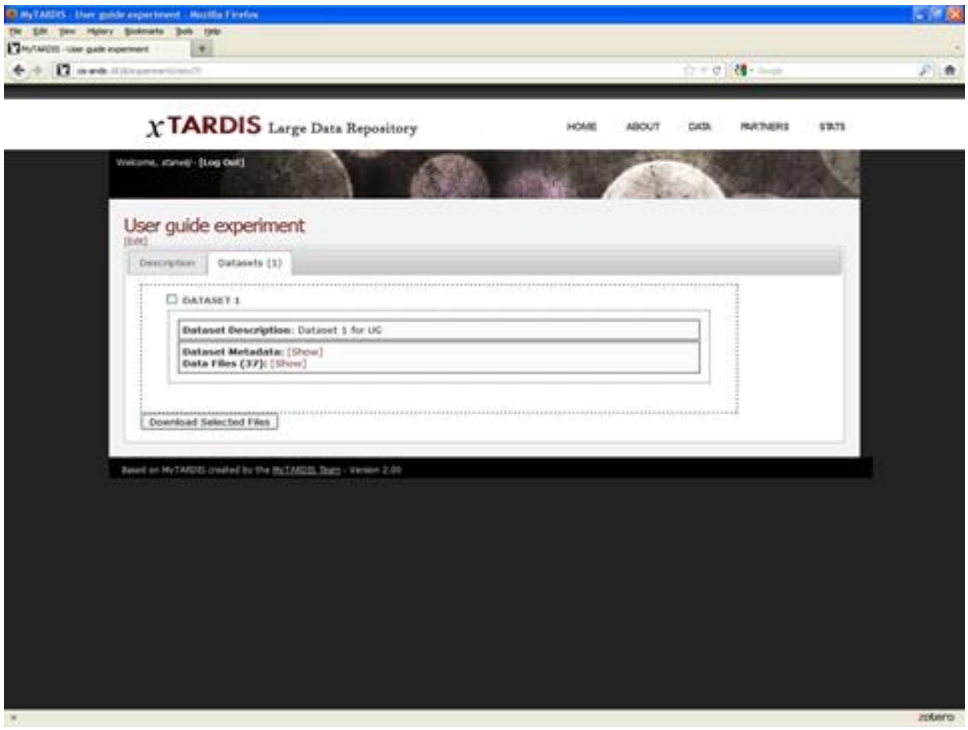
The process is using the usual operation system (Windows) selection window - you can upload any files from your computer.

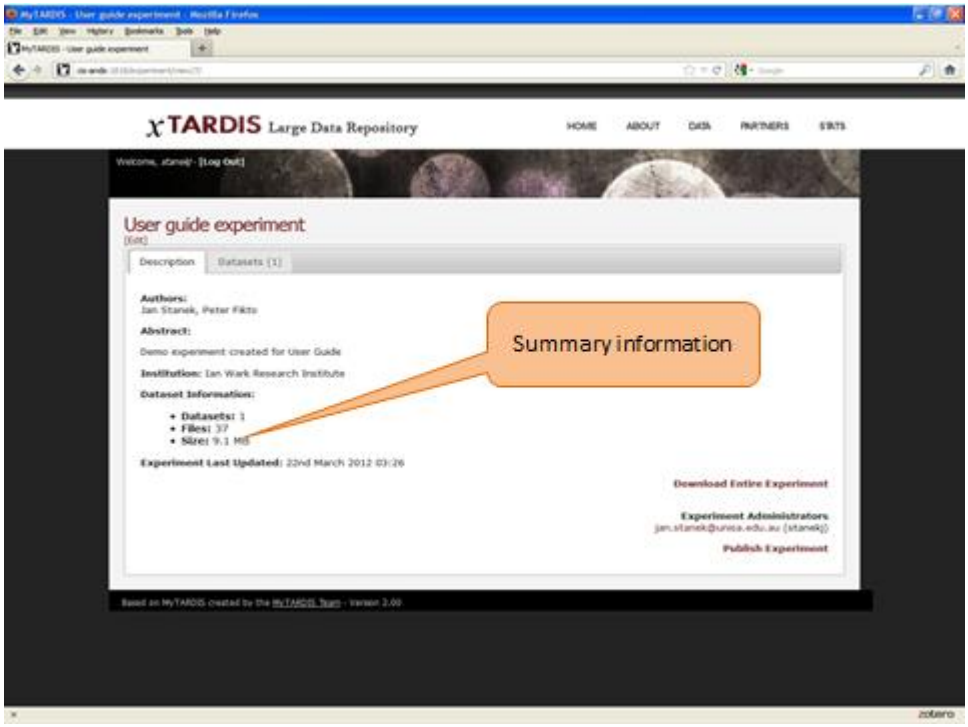


Submitting the selection activates upload. Once finished, you can see list of the files uploaded.



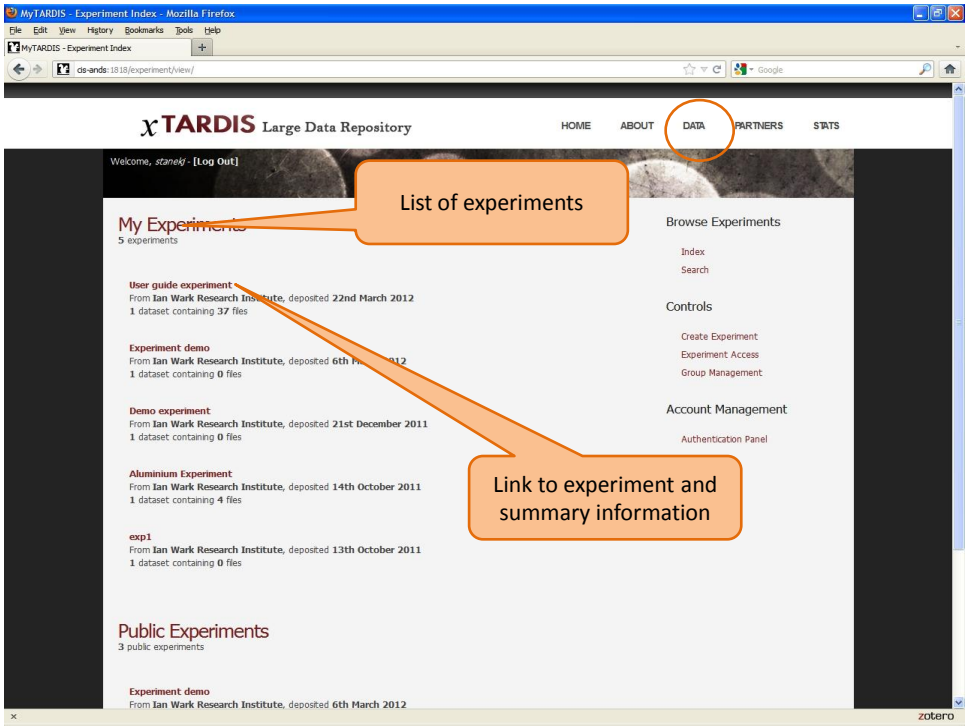
The summary of your experiment reflects the change too.



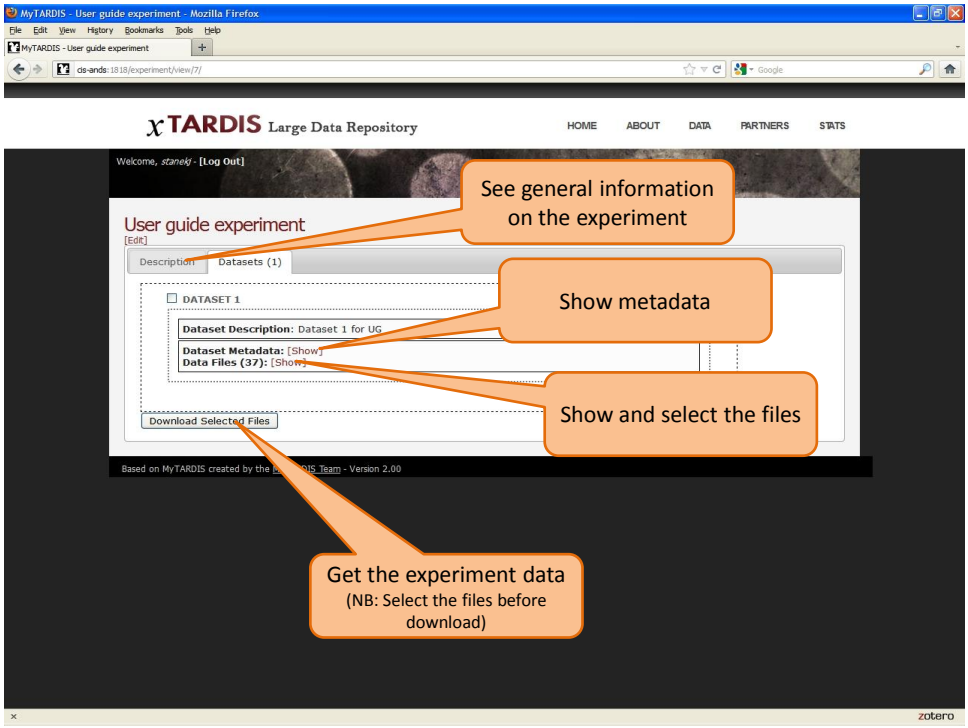


2.9. Access experiment

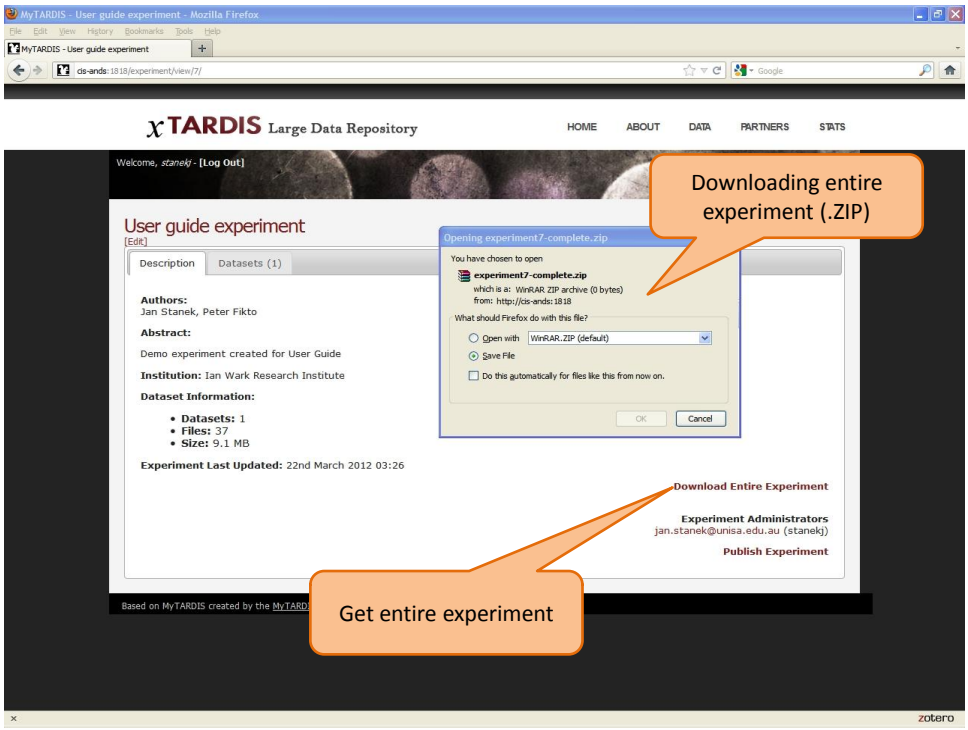
Existing experiments are accessed via "Data" tab. A list of experiments is shown. Clicking on the experiment name will give access to the information (metadata and data).



Once the experiment opens, you can see information related to the experiment, download data, edit experiment information, upload additional data etc. NB: You need to select files (Show→ select) for download before hitting the "Download selected files" button. If no files are selected, an error message is shown.



Another possibility is to download the whole experiment as an archive file (.ZIP). NB: mind the size of the dataset, some experiments can be very large.

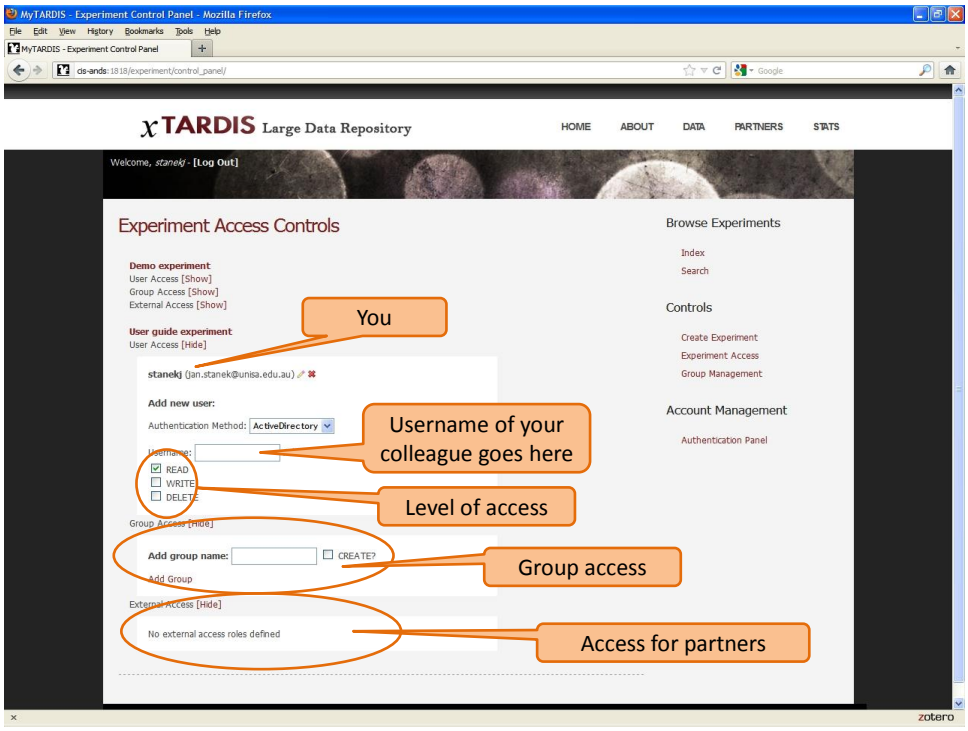


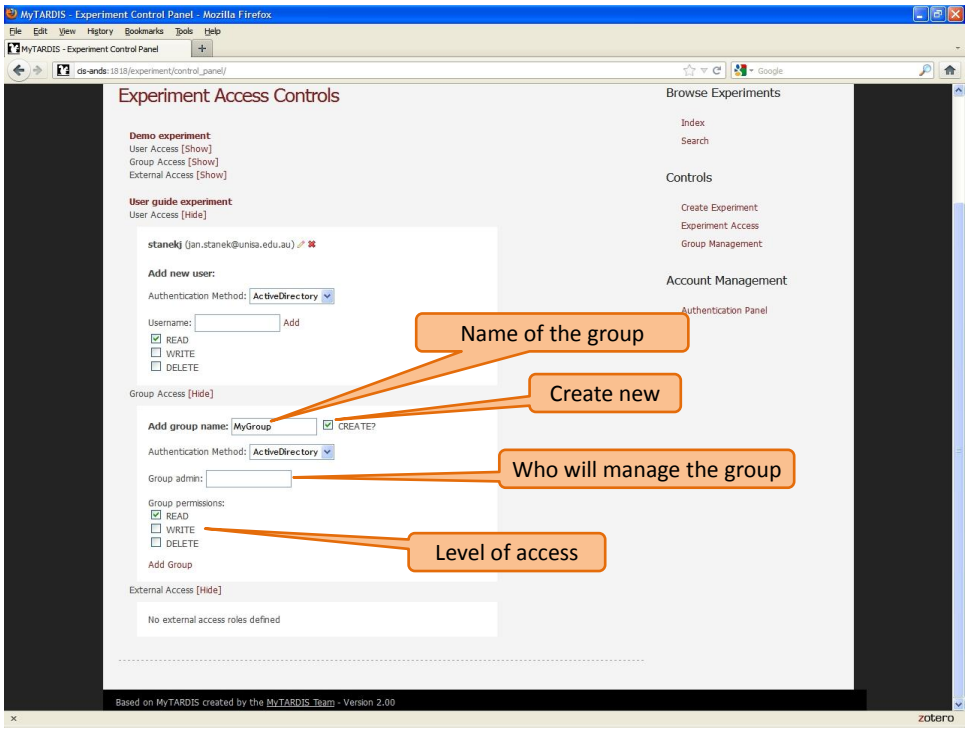
2.10. Manage access to experiment

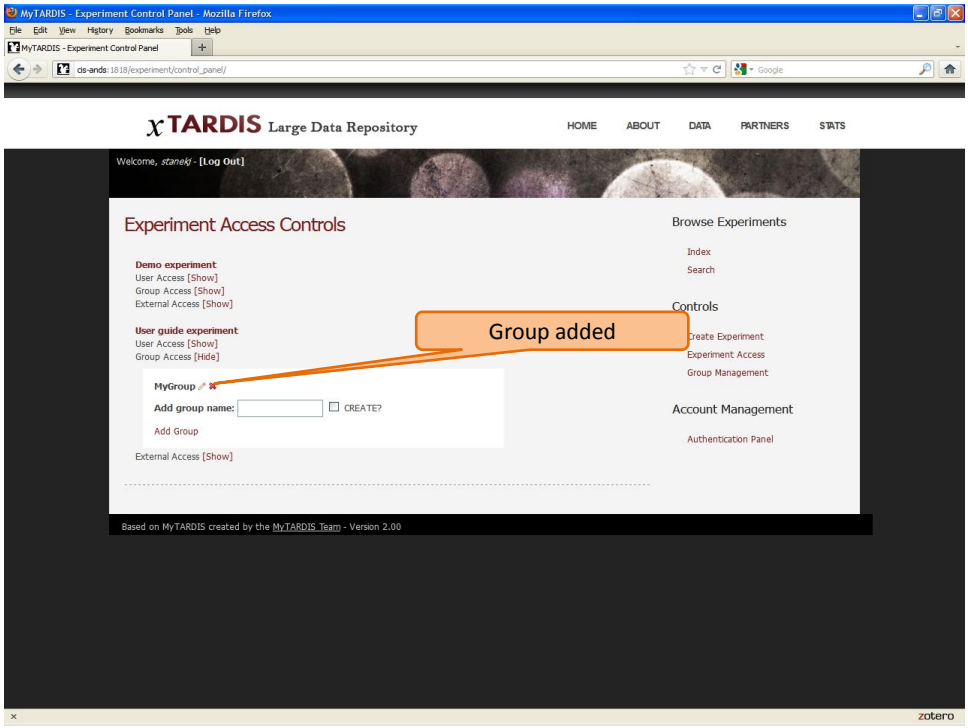
You can give access to colleagues to your experiment. Enter their username (this will be confirmed against Active Directory list) and the level of access you want to grant.

If your research team requires access to the experiment, you can form a group and enter the group name instead of adding individual colleagues.

If you do research with partners not listed in the Active Directory (i.e. external partners), you use “External access” to allow access to the experiment.





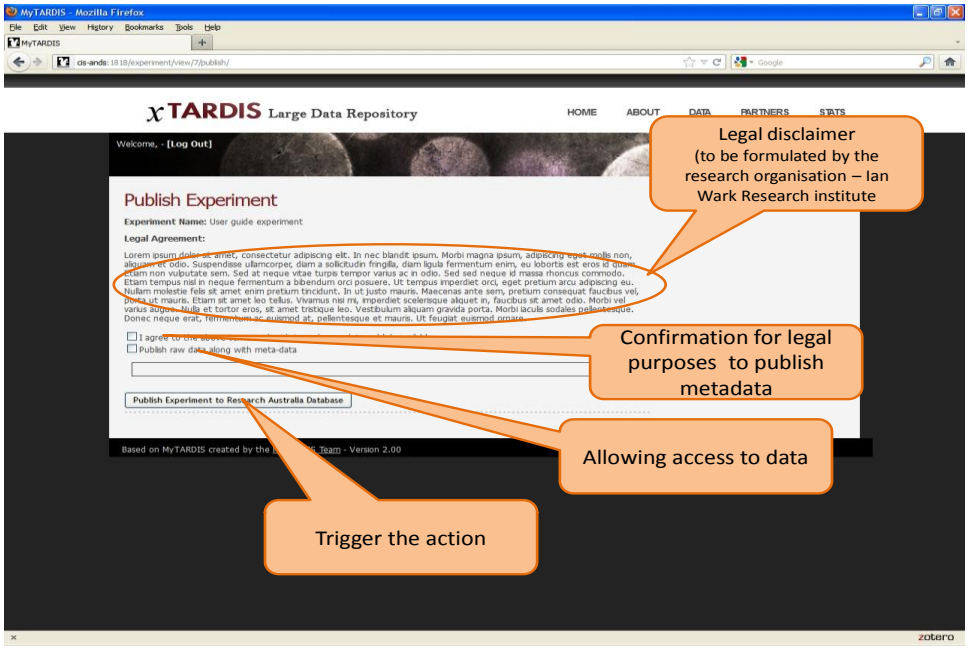


NB: Members of a group are granted access, so changes in group membership implicitly affect access rights of individuals to your experiment.

2.11. Publish experiment

You can make your experiment public. There are 3 levels of accessibility of experiments:

- Private (you do not publish the experiment) – neither description, metadata, nor datasets are accessible for public
- Metadata only – metadata on your experiment will be converted to appropriate format and uploaded to ANDS service. Datasets will not be accessible for public.
- Metadata and data – both metadata and datasets will be accessible for public.



3. Support

Installation guide is published at: http://code.google.com/p/mytardis/wiki/xtardis_installation

Source code for xTARDIS is published at:
http://code.google.com/p/mytardis/source/browse/#svn%2Fbranches%2Fxtardis

Visit these sites for updates and support.

Specific questions can be directed to:

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