Data Repository Documentation

Release 1.0

Data Repository support <helpdesk@surfsara.nl>

May 26, 2020

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Welcome to the user documentation of the Data Repository service provided by SURFsara. The information in this tutorial will help you get started with using the Data Repository, learn best practices and techniques for publishing your data and stay up-to-date with the service developments. We welcome your comments at helpdesk@surfsara.nl to help us improve the documentation.

CHAPTER 1

General

1.1 About the Data Repository

In this page you will find general information about the Data Repository, how it works and how to get access:

Contents

- *About the Data Repository*
  - *Introduction to Data Repository*
  - *For what data*

1.1.1 Introduction to Data Repository

Data Repository Service is a trusted digital repository that ensures long-term data preservation. The Data Repository provides an an online data publication platform service to share and publish research data. The aim of the service is to provide support for researcher to publish research data and to preserve published datasets for the long-term, thereby satisfying the requirements of publishers, financiers and (Dutch) science organisations regarding data publication. Furthermore, the user is complete freedom to decide on the structure of the published data, attached metadata schemas, community and access levels.

There is a direct connection between the data repository service and other SURFsara services such as the Data Archive. The data that you publish in the data repository will eventually end up on the data archive for long-term storage and preservation. The repository is tape-aware, that means that data can automatically be put offline when it is not required for a certain amount of time.

This document is the user guide for basic and advanced usage of the data repository service and also provide best practice in preparing your data and using the service.

1.1.2 For what data

The Data Repository service is suitable for publishing research data especially in the field of Big Data sciences. The repository imposes no limits on the data volume and number of files, but does have some guidelines on how to efficiently store your data for publication.

1.2 How to get access

On this page you will find general information about getting access to the Data Repository service.

Contents

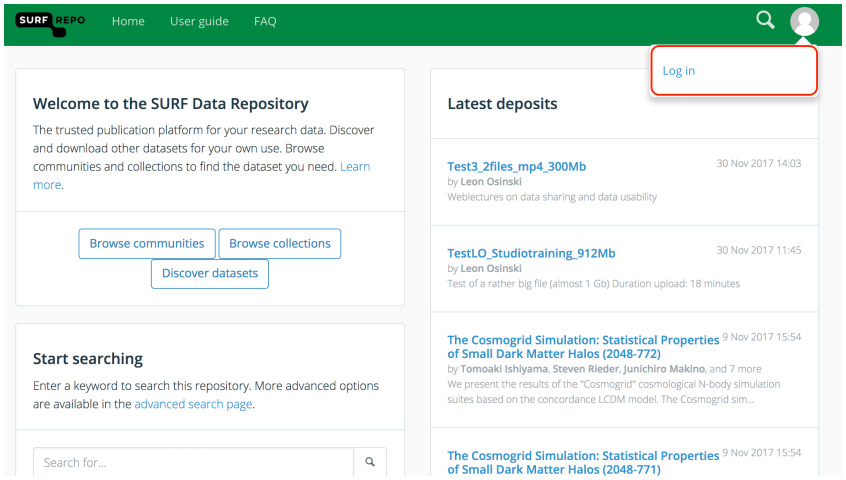
- *How to get access*
  - *General access*
  - *Obtain an account*

1.2.1 General access

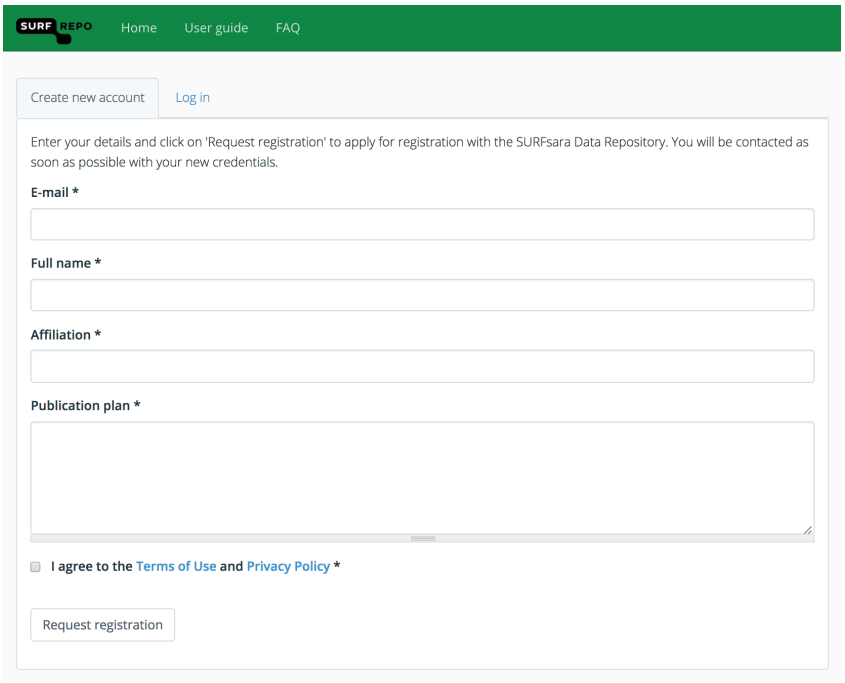
The repository provides access to mostly open access data which can be found and downloaded by anyone interested without requiring registration.

1.2.2 Obtain an account

To be able to administer publications and other objects in the repository service, you need to login as a registered user. To obtain user credentials you should first send a registration request via the Login page. Select 'Log in' from the top right menu under the avatar image.



Then click on **Request registration** tab. Enter your required information and agree to the **Terms of Use** and **Privacy policy** of the service. Then click on **Request registration** to apply for registration with the SURFsara Data Repository. You will be contacted as soon as possible by the SURFsara advisors. If your request is approved, your credentials will be sent to the email address you provided during the request.



An alternative is to send an email to helpdesk@surfsara.nl with a description of your request.

CHAPTER 2

Basic Usage

2.1 Basic Usage

This page provides information on the basic usage of the data repository, such as depositing, searching or downloading data. It also describes the online deposite workflow which are the steps that you take to deposit data into the Data Repository.

Contents

- *Basic Usage*
  - *Logging in*
  - *Homepage*
  - *Deposit landing page*
    - *Export Metadata*
  - *Collection landing page*
  - *Search and discover datasets*

2.1.1 Logging in

Login with your user credentials in the Login page of the Data Repository Service.

If you do not have access, go to *How to get access* page for more information.

2.1.2 Homepage

After you login to your account, you will be redirected to your homepage where you can quickly deposit data, find data to download or create collections of data.

Note:

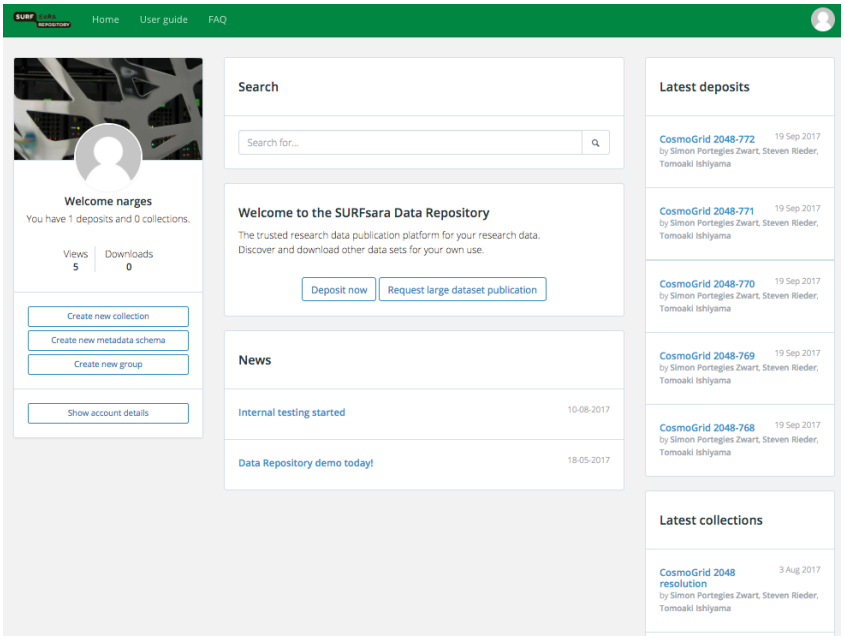
Deposit is an object containing one or more files and corresponding metadata

Collection is a bunch of deposits

On the right column you can see the latest deposits and collections that are uploaded on the data repository.

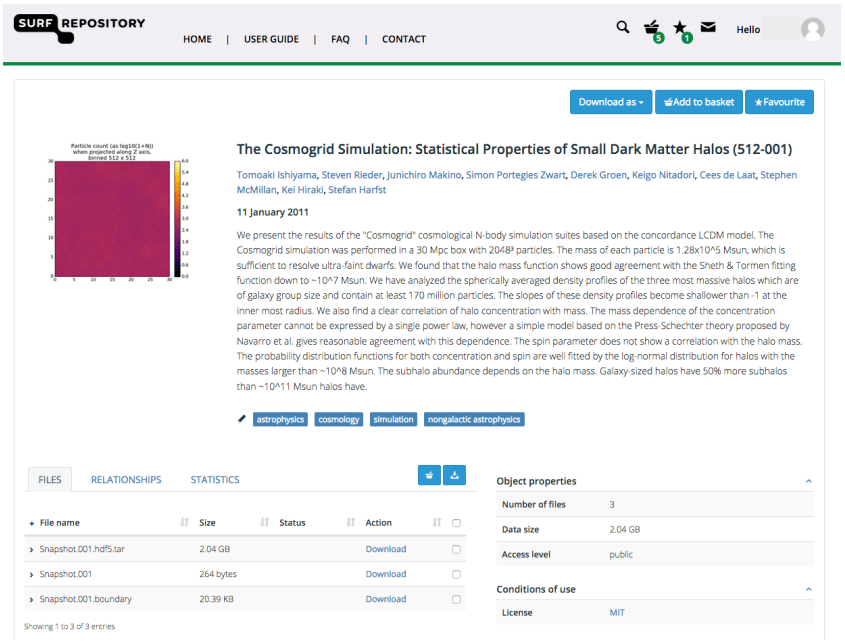
On the top left you see some statistics of your account such as the number of deposits and collections you have. "Show account detail" redirects you to your profile page.

On the buttom left column, the are shortcuts for defining new collections, metadata schemas and groups, explained more in the *Advanced usage*.



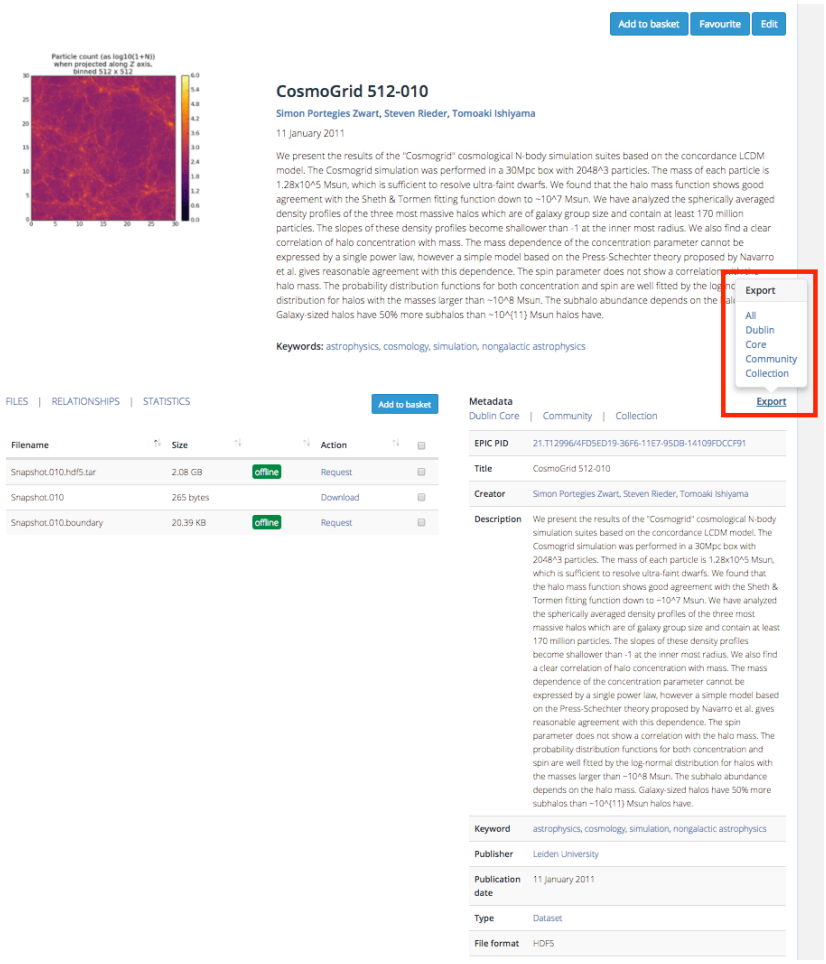
2.1.3 Deposit landing page

The landing page of a deposit is created after completion of the online deposit workflow. In the deposit landing page you can see the deposit's basic details, additional metadata and information about the status of the files contained in the deposit, for example if the data is currently online or offline and therefore needs to be staged.



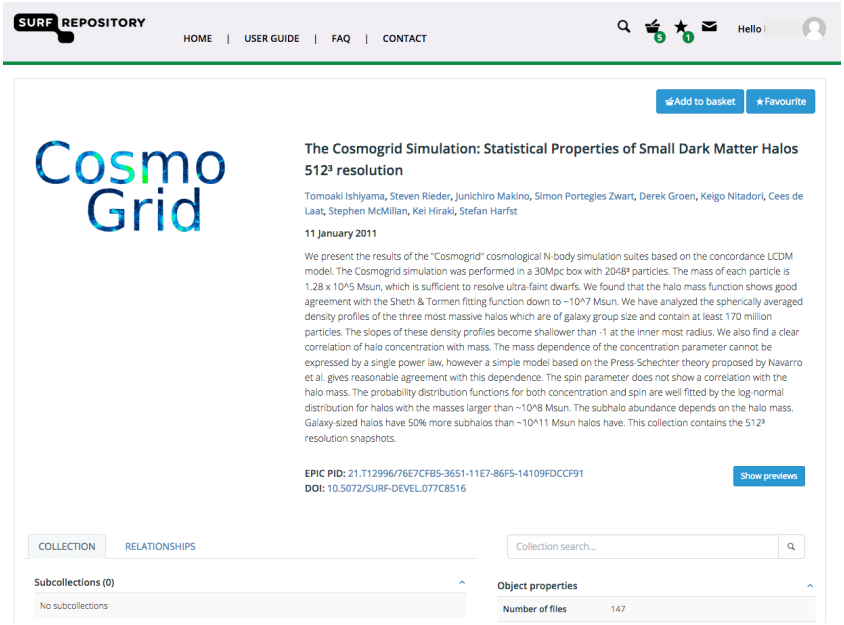
Export Metadata

To export metadata of an object go to the object's landing page and click on the export link on the top-right corner of the metadata panel. You can choose to export all the metadata or make a specific selection such as the default (Dublin Core) or community-specific metadata.



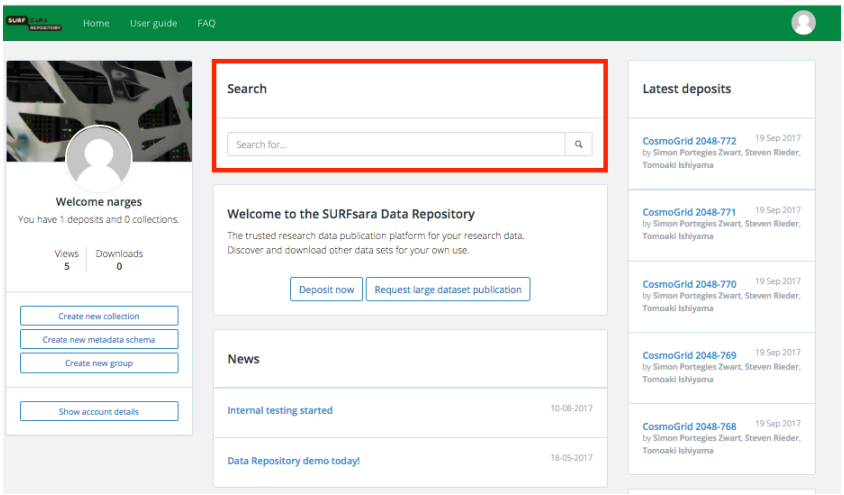
2.1.4 Collection landing page

A landing page of a collection is similar to those of a deposit. In the collection landing page the basic details of the collection are listed, as well as the member objects of that collection, which can be other collections or deposits.



2.1.5 Search and discover datasets

To search for data use the search functionality on the home page. The text entered can be part of a title, keyword, abstract or any other metadata. Both registered and unregistered users can search for data. Unregistered users can only search for data sets that are publicly accessible. You can also make search within specific communities, which means the search results will be limited to that community.



Advanced searches can be performed by clicking the Search button, then entering the additional search criteria on the page that is shown. You can set advanced search criteria to search for deposits, collections, schemas, communities or combinations of any of them. You can also order the search results by Title, Creator, Identifier, or Creation date.

Note: If you have the PID (Persistent Identifier) of the data you can directly search in the Handle Server and get the url to the location of the data.

2.2 Deposit

This page explains how to get your data into the data repository using the online deposit workflow.

Contents

- *Deposit*
  - *Deposit data*
    - *Prepare data*
    - *Deposit workflow*

2.2.1 Deposit data

Deposit is the act of uploading data to the Data Repository. Only registered users are permitted to deposit new records.

Prepare data

To prepare data for a deposit there are some best practices for the file format, file size, metadata, data documentation and organisation. For more information, visit the *Best Practices* page.

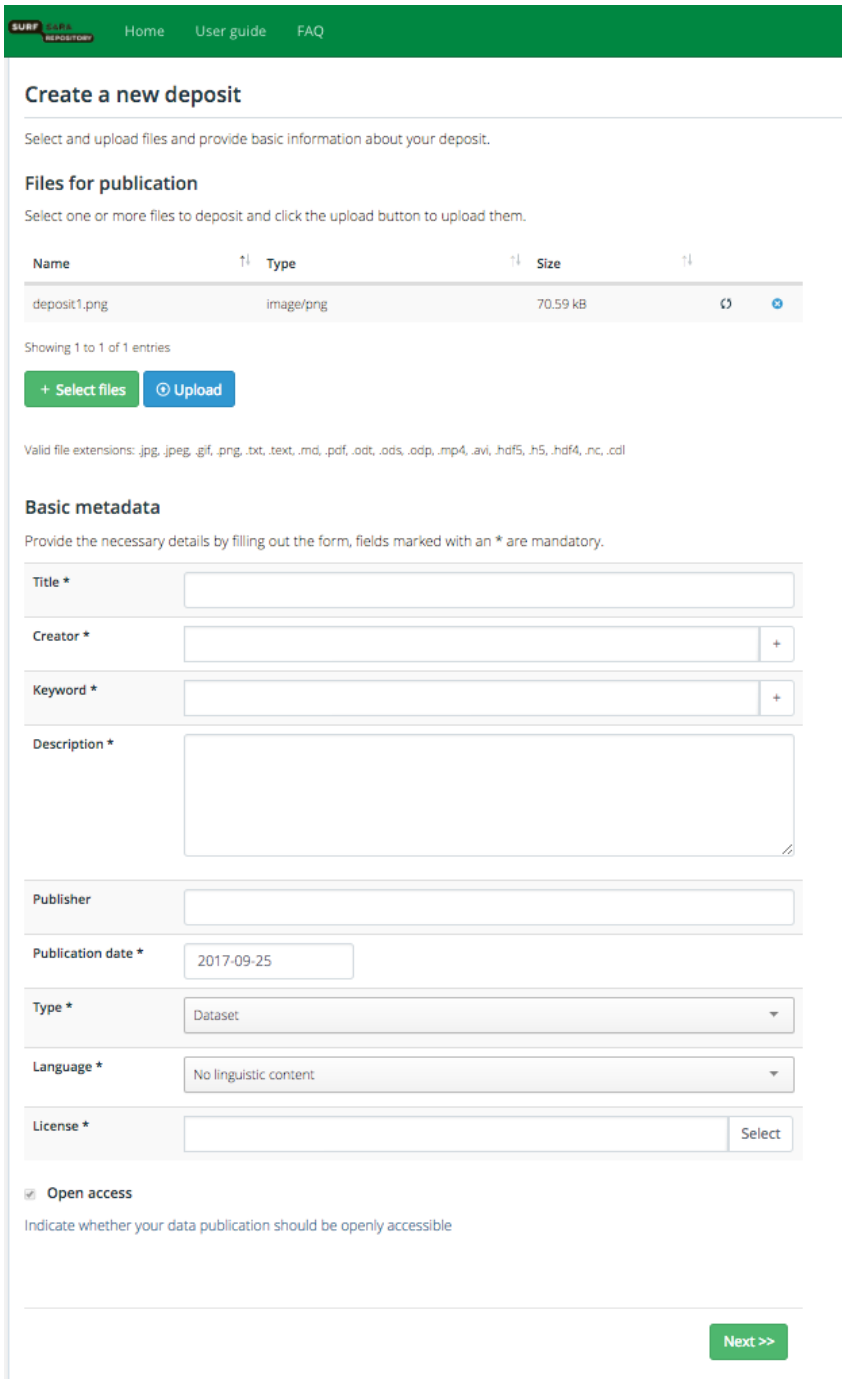
Deposit workflow

Clicking the deposit link in the main interface opens the first of a three stage process required to upload data. The steps are as follows:

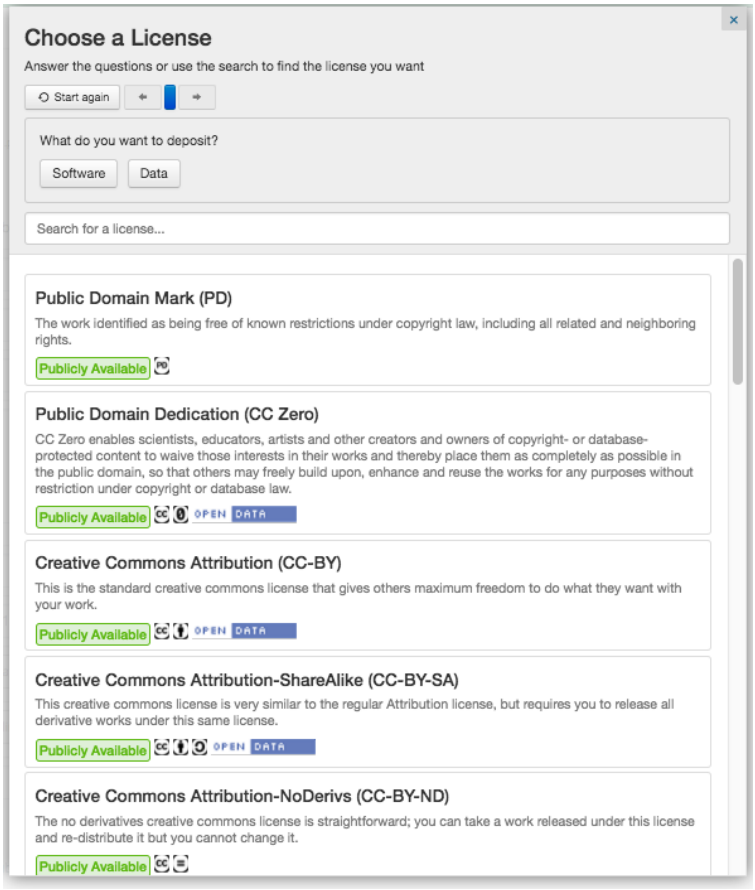
1. In the Create a new deposit page, select files to deposit and then click on Upload to upload the file.

Note: Make sure that you are uploading an acceptable file format. Valid file formats can be found on the File formats documentation page. If the data format you are trying to upload is not supported, you can always contact us for support.

Provide the basic metadata for your deposit such as the title, creator(s), keywords (for searching purposes) and description. The fields in the upper section are mandatory fields, while the optional fields are shown in the lower section.

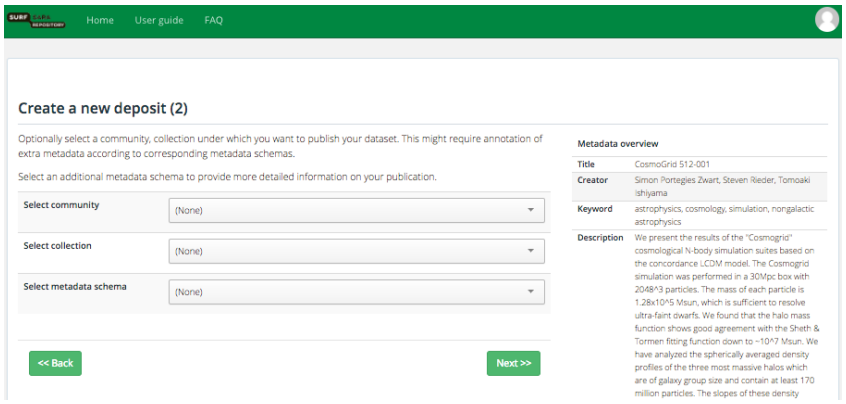


In this step you should also select the type of data and language of the data and a license for publication. The license can be selected through a built-in wizard. If you are not sure which license to choose, answer the questions on the top of the built-in wizard form to find the appropriate license.



Click 'Next >>' to go to the second step of the online deposit workflow.

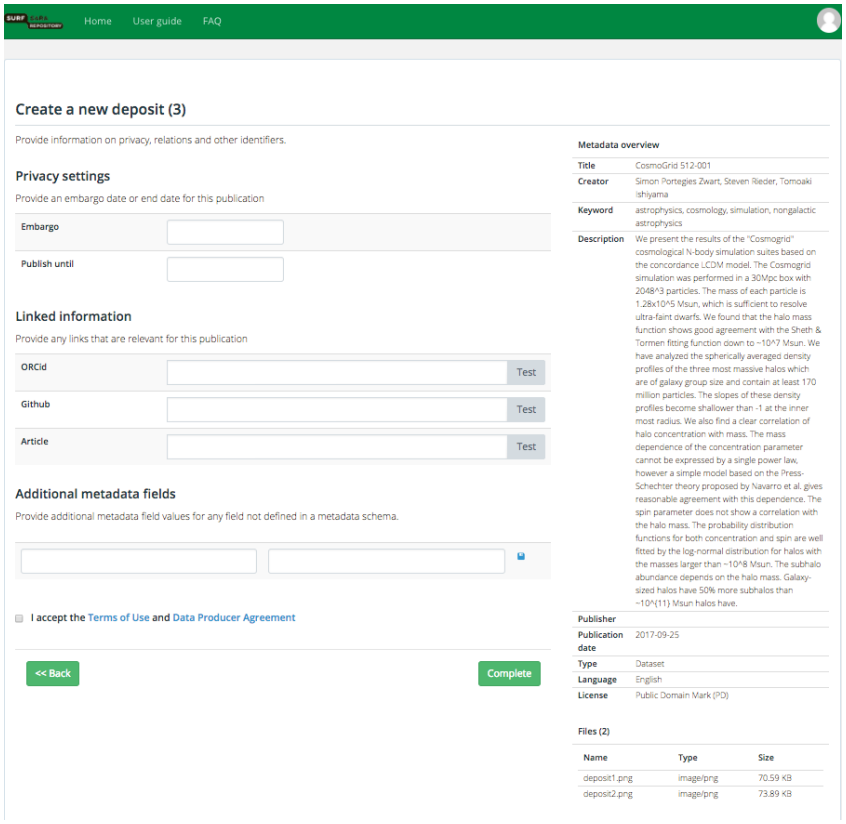
2. Next you can optionally select a community, collection and/or metadata schema. If you are a memeber of a community and you want to deposit data in that community, select the community name. The collection and metadata schema will be prepopulated based on which community you choose. If you are not member of any communities, you will see the collections and schemas defined by yourself. This step is optional and can be skipped. In the right you can the basic metadata you defined for the deposit.



Click 'Next >>' to go to the third and final step of the online deposit workflow.

3. In this final step you can fill in optional information such as the embargo data of your data. You can also specify links that are related to this publication. If you have any metadata that does not fit the basic or community metadata fields, you can add them here. For every field there needs to be a unique field name and a value.

Please carefully read the Terms of use and Data Producer Agreement before you agree by checking the checkbox before depositing data. In the end, click on the **Complete** button to finalize your deposit.



2.3 Downloads

This page provides information on downloading files from the Data Repository. There are two methods to get data out of the repository: download files directly from an object's landing page, or use the download script that allows downloads of multiple files or even complete deposits and collections selected in your basket or favourites.

Contents

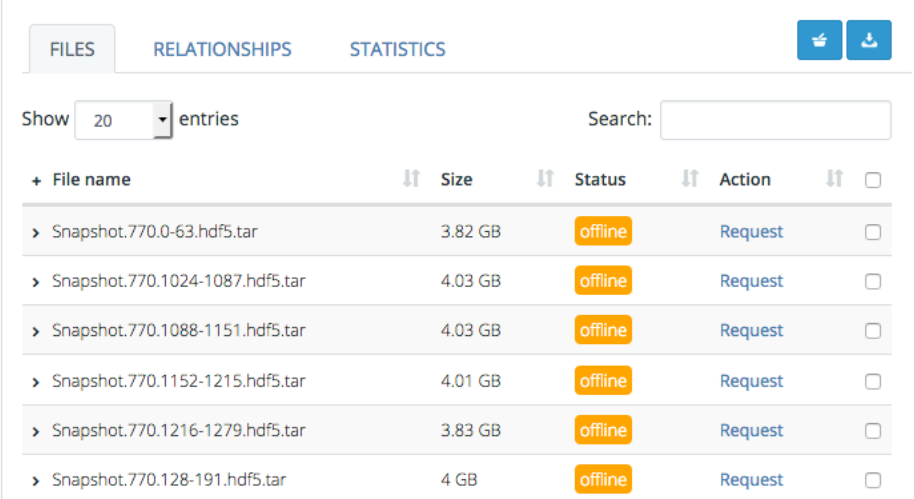
- *Downloads*
  - *Download files directly*
  - *Adding objects or files to your basket*
  - *Adding objects to your favourites*
  - *Download script*

2.3.1 Download files directly

To download files directly from the Data Repository you need to navigate to the landing page of the deposit you want to download the files from. Unregistered users can only download files of objects that are publically accessible. Files

of objects that are privately shared can only be downloaded by users that have explicit access to these objects. If an object's access level is set to registered, only registered and logged in users can access the files.

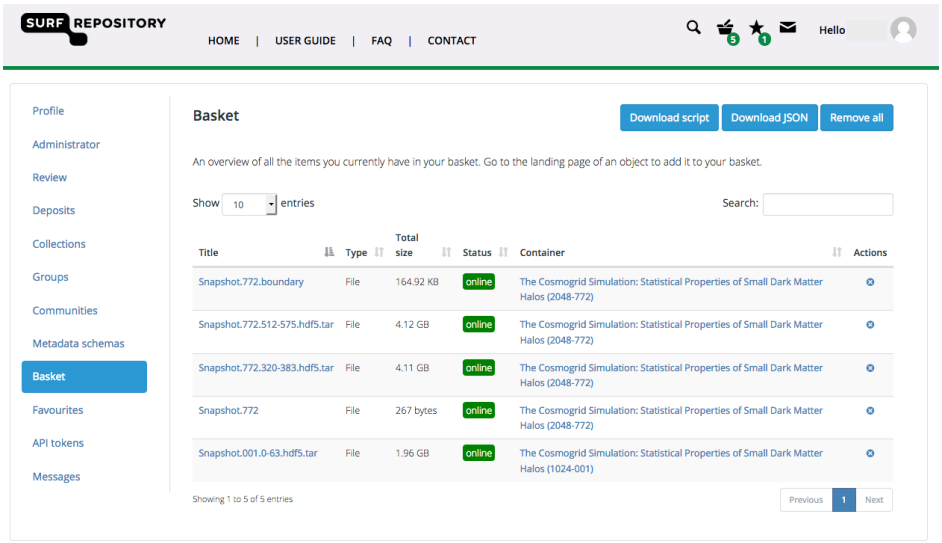
You can download single files by clicking on the **download** link next to the file name. If the status of the file is **offline**, it means it cannot be downloaded directly, but first needs to be staged. A request to stage the file can be made by clicking the **request** link.



2.3.2 Adding objects or files to your basket

To download several files at the same time, your can add objects or files to your basket. This can be done by clicking on the 'Add to basket' button in the top-right corner, or by selecting individual files in the files table and then clicking on the basket icon button directly above the table.

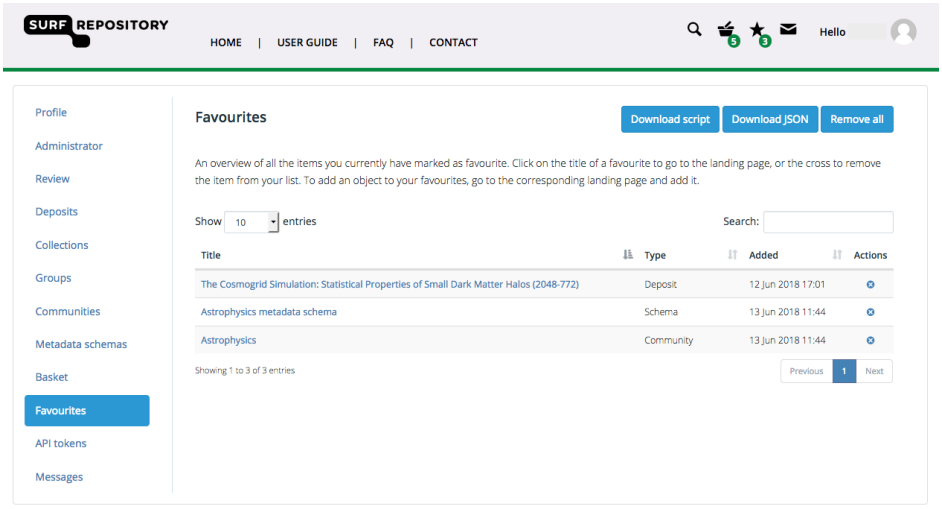
Once you have selected all the objects and/or files you want, you can download them all at once using the download script provided by the repository. Go to your account page and select the basket tab to download the script by clicking on the 'Download script' button.



2.3.3 Adding objects to your favourites

You can add any object to your favourites by clicking on the 'Favourite' button in the top-right corner of the landing page of an object. Go to the favourites tab in your account overview to see the list of favourited items.

You can download all downloadable objects directly using the download script. Click on the 'Download script' button on the same tab to download the script.

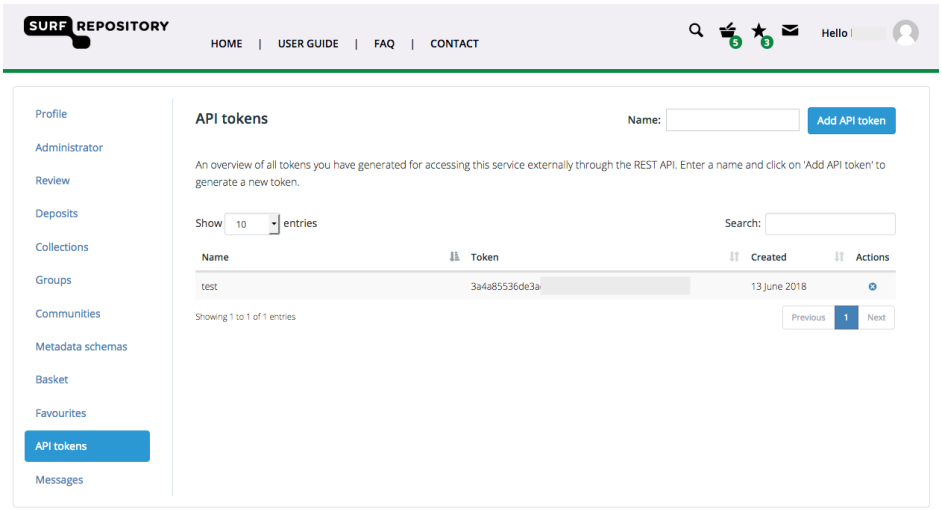


2.3.4 Download script

The download script as provided by the Data Repository service is a tool that automatically downloads all objects and files in your basket or favourites. It is written in Python and therefore needs to have the Python runtime installed. You can download Python from its [website](https://www.python.org/).

The script needs to be run using a terminal or command prompt (depending on the operating system you are using). If you are not familiar with the Linux or MacOS terminal, please refer to for example this [introductory tutorial](https://computers.tutsplus.com/tutorials/navigating-the-terminal-a-gentle-introduction–mac-3855) or for Windows, this [introduction to the Windows command prompt](https://www.bleepingcomputer.com/tutorials/windows-command-prompt-introduction/).

Before you can start downloading using the script, you need to create an API access token that allows authentication through the service API using the tool. Go to the API tokens tab in your account page and click 'Add API token' after filling in a unique name for the token.



Copy the randomly generated token to your clipboard and add it after the script name's statement in your terminal or command prompt. When executing the tool will automatically download all files contained in the selected objects.

CHAPTER 3

Advanced

3.1 Advanced Usage

This page provides information on the advanced usage of the data repository, such as Metadata schema definition, and community/group memberships. It also describes the online deposite workflow which is the steps that you take to deposit data on the Data Repository.

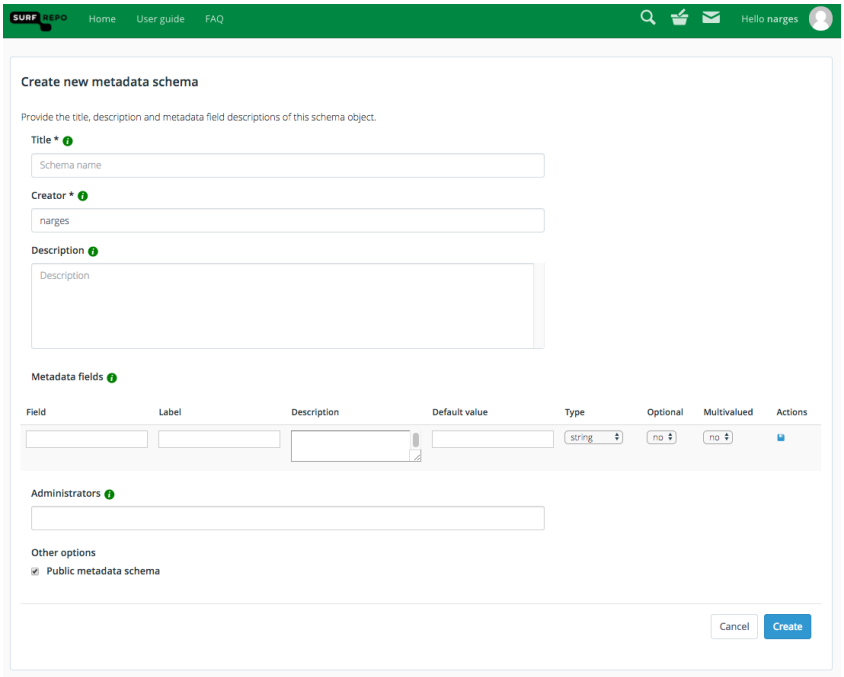
Contents

- *Advanced Usage*
  - *Metadata schema*
  - *Collections*
  - *Groups*
  - *Communities*
  - *API tokens*

3.1.1 Metadata schema

A metadata schema is a logical plan showing the relationships between metadata fields, normally through establishing rules for the use and management of metadata. Metadata schema makes sure that your deposit or collection has complete and understandable information attached to it. The first question to ask before making a metadata schema is: Is it necessary to create a new metadata schema? or are there already existing metadata schemas which can be adapted for use? We advice to reuse existing schemas. You can find here the **'best practices for defining your metadata schema'_**.

To define a metadata schema for your data, go to the profile tab of account overview page click on **Create new metadata schema** to go to the metadata schema creation form.

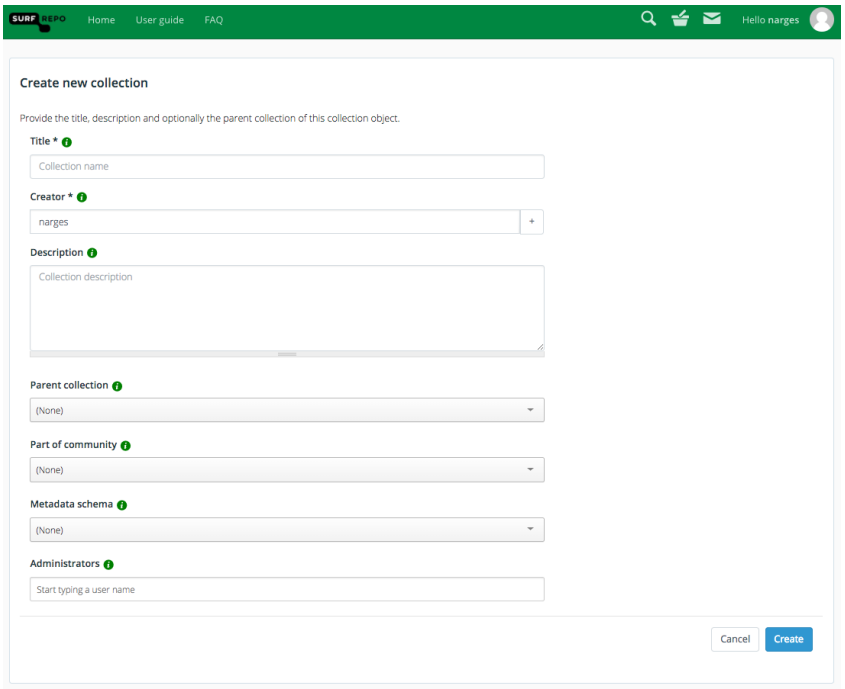


You need to provide a title, creator, and description for the metadata schema. Then add metadata fields to the schema. Metadata field contains information about the field such as description, default value, type and if the field is optional or not. To save the field click on the **Save** icon under **Actions**. In **Other options**, you can also specify if it is a public metadata schema. In the end hit **Create** button to finalise the creation of the metadata schema.

3.1.2 Collections

Collection is a useful way to bundle a large number of deposits. Collections itself can also be bundle in another collection. Any structure is possible.

To create a new collection, go to the profile tab of the account overview page and click on **Create new collection** to go to the collection creation form. Provide the title, creator, description and optionally the parent collection of this collection object. Then hit **Create** to save your collection. The new collection will now be available during the online deposit workflow.

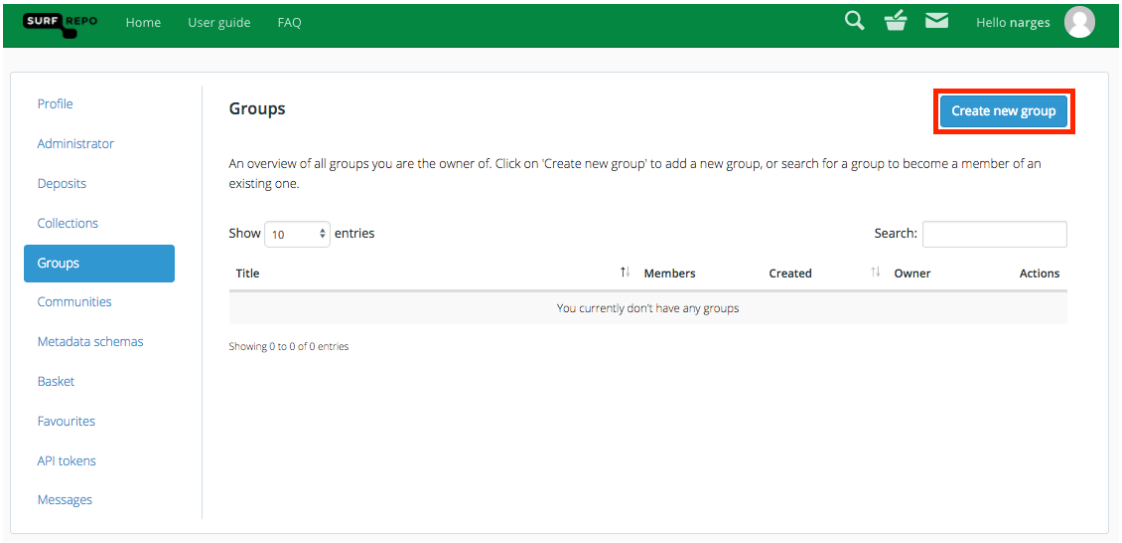


To see the list of your current collections, go to your account page and then choose the **Collection** tab on the left.

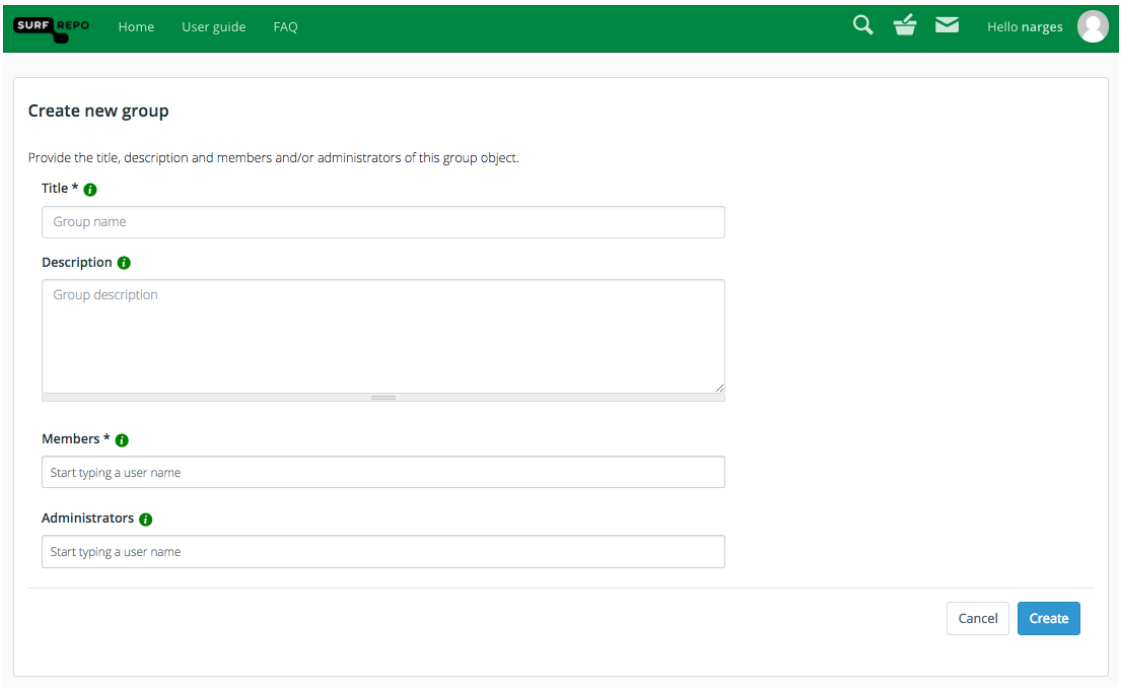
3.1.3 Groups

A group is a simple bundling of one or more users. They can be used to provide access or administrative privileges to a bunch of people using only a single relation.

To create a new group or to see the list of current groups are member of, go to your account page and then choose the **Groups** tab on the left.



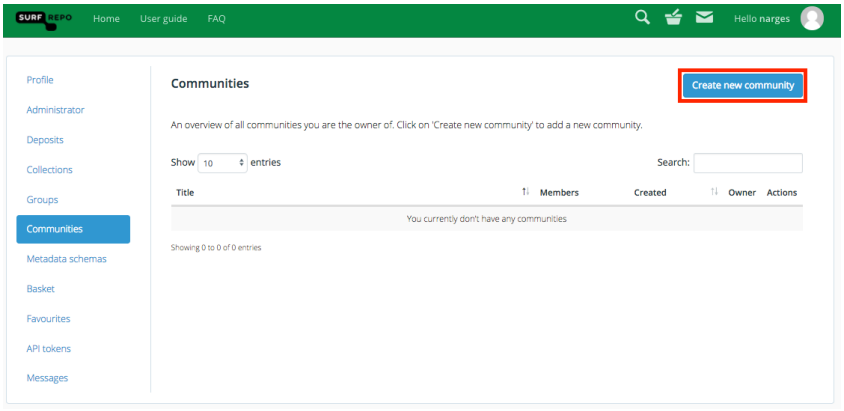
A new page will be open where you need to provide name and description for the group, invite other members to join the group, and assign admins to the group. After you enter the information, click on the **Create** button.



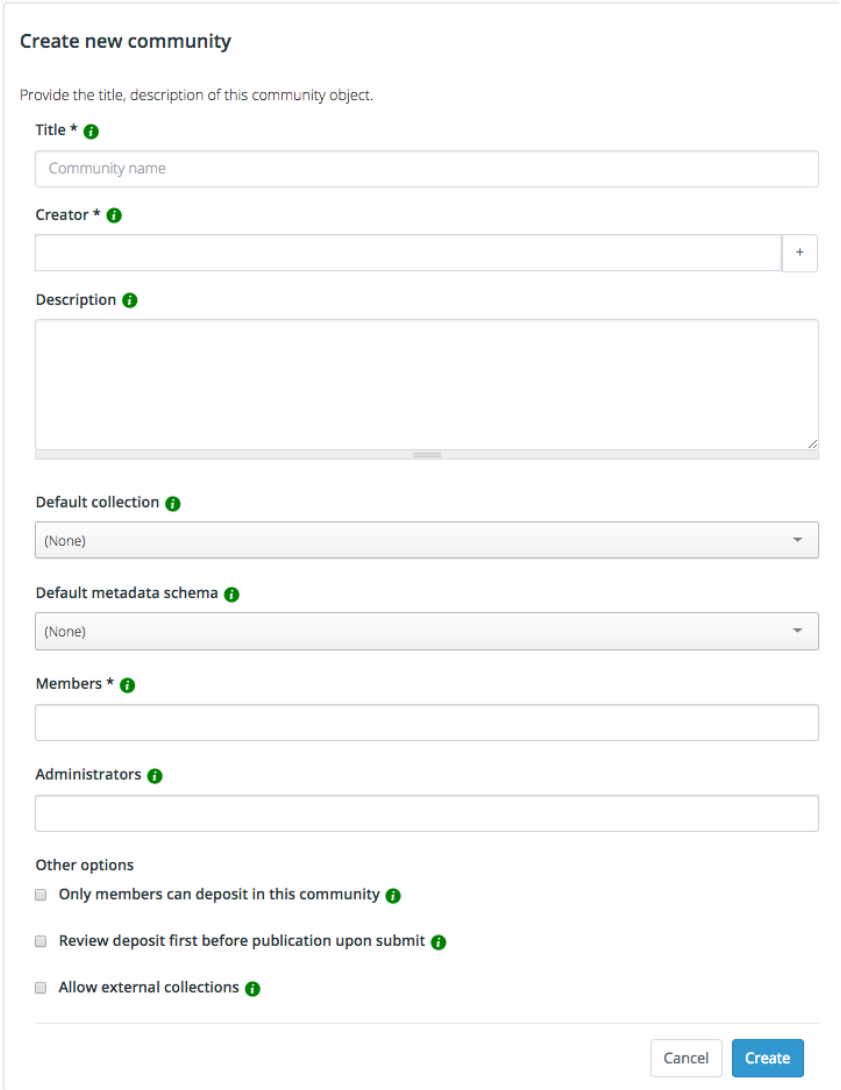
3.1.4 Communities

Communities bundle collections and deposits under a single entity. With a community, you can add policies to deposits that make sure publications are up to the standards of your community.

To create a new group or to see the list of current groups are member of, go to your account page and then choose the **Communities** tab on the left. You can also create the community from the profile tab of your account overview page click on **Create new community** to go to the community creation form.



A new page will be open where you need to provide more information about the new community you make such as the title, creator, and description. You should assign at least one member to the community. You can also choose who can be the administrators of the community. If you are a community administrator, you have special privileges regarding the reviewing of objects, and editing their metadata. More information such as description, default collection and default metadata schema can be defined for the community. In the end you can choose the policies you want to apply to the community. After you enter the information, click **Create** to make the community.

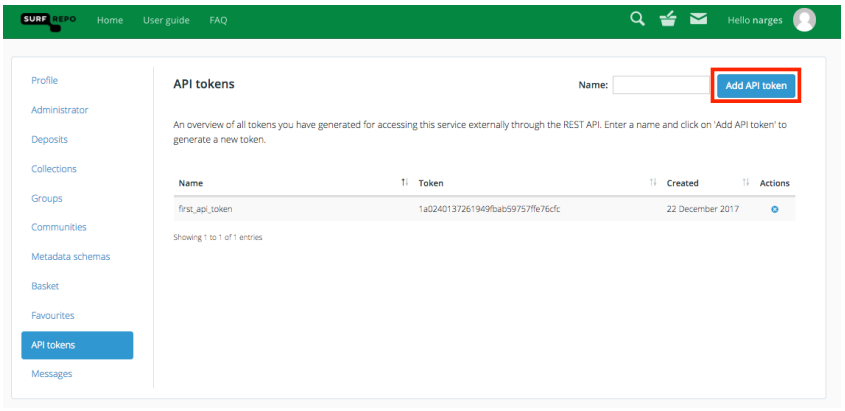


Your community is now created and will be available during the workflow of new deposits. It is also visible in the community tab of your account overview page

3.1.5 API tokens

Te HTTP REST API can be used for interacting with Data Repository via external services or applications, for example for integrating with other web-sites (research community portals) or for uploading or downloading large data sets that are not easily handled via a web browser.

Go to the **API tokens** on the left side of your account page to see an overview of all tokens you have generated for accessing this service externally through the REST API. To create a new API token, enter a name and click on **Add API token** to generate a new token.

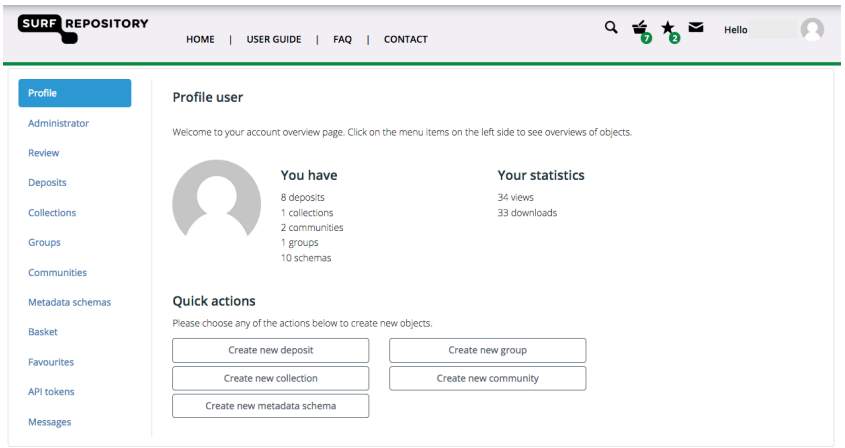


3.2 Account

The user account page provides an overview of all the objects you own, administer or are a member of. In this overview, tabular listings of these objects are shown in dedicated tabs.

3.2.1 Profile

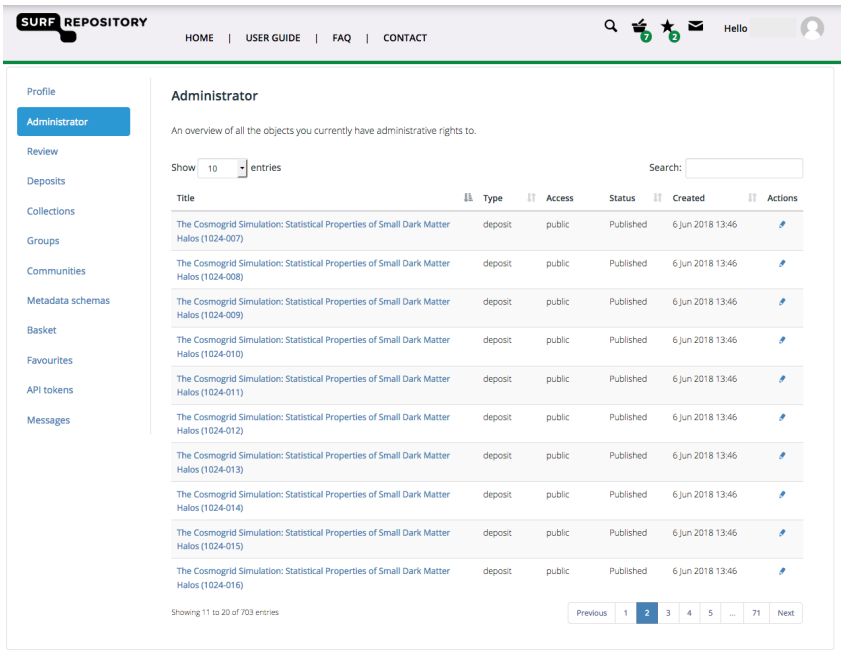
When you navigate to the account page, you will end up on the profile tab with on the left side a menu to show the other tabs.



The profile tab shows an overview of the number of objects you have per type, and some statistics about the views and downloads of these objects. The quick action buttons allow rapid creation of new objects.

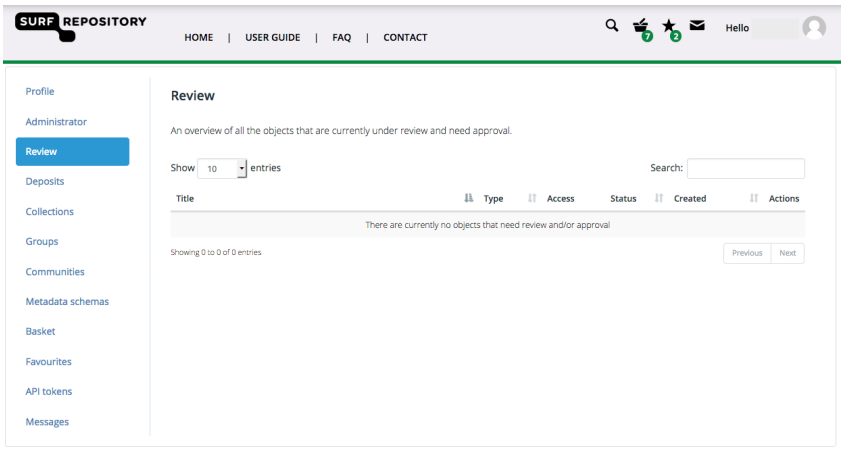
3.2.2 Administrator

The administrator tab shows a listing of all the objects you have administrative rights to, but not objects you actually own. The listing includes the type of the object, the access level and current publication status. Click on the edit icon under actions to edit the object.



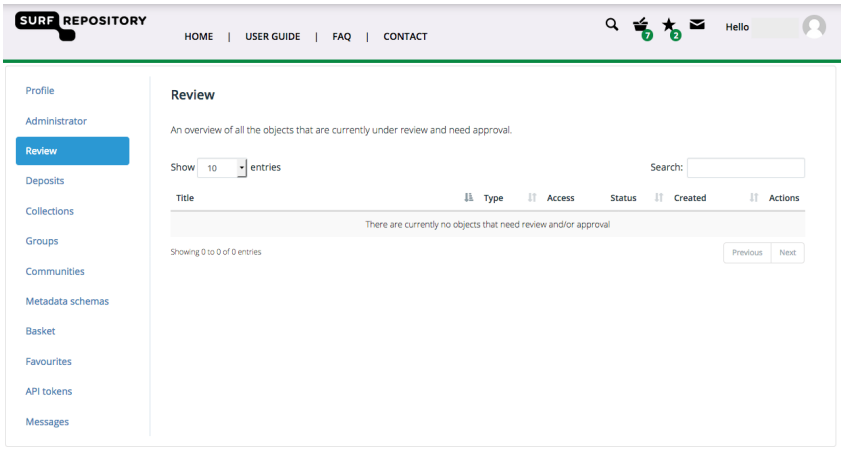
3.2.3 Review

The review tab shows a listing of all the objects that need review before they are actually published. The listing is similar to the listing of the administrator tab.



3.2.4 Deposits

The deposits tab shows a listing of all deposits that you own. Click on the title of a deposit to go to the landing page of that deposit.



3.3 Objects

This page provides general information about objects stored in the Data Repository.

Contents

- *Objects*
  - *Objects*
  - *Object-level access*

3.3.1 Objects

Digital objects are stored and maintained by the repository service using a dedicated object storage and definition system. The objects contain metadata defined in XML and in case of deposits also the references to files.

3.3.2 Object-level access

By default, an object is publicly accessible and therefore can be seen and downloaded by anyone interested. This includes all files and the metadata, except access statistics and configuration. To restrict access to an object, the owner or an administrator of the object can set the access levels. In the table below these restrictions are listed.

Access level	Per user	Description
Public	No	Object, including files and metadata, is open access and accessible to everyone, even anonymous users
Registered	No	Object is accessible only to registered users. Anonymous users can still see metadata, but cannot download files
Private	Yes	Object is only accessible to users specifically given access to it. Metadata is still open though.

If an object is set to private access, the owner or an administrator can select users that are allowed to access the object. All other users will receive an 'object not found' message.

CHAPTER 4

Best practices

4.1 Best Practices

This page provides information on best practices while using the repository.

Contents

- *Best Practices*
  - *Preparing data*

4.1.1 Preparing data

To prepare data for a deposit you need to consider the following points:

- **File formats** By default, the repository does not accept all file formats. This is to ensure future compatibility, understanding and support of published data by the repository itself, but also by other users. The repository distinguishes two kinds of formats: preferred and accepted formats.
  - **Preferred formats** are file formats of which SURFsara is confident that they will offer the best long-term guarantees in terms of usability, accessibility and sustainability. Depositing research data in preferred formats will always be accepted by SURFsara. Here is a list with SURFsara prefered formats .
  - **Acceptable formats** are file formats that are widely used in addition to the preferred formats, and which will be moderately to reasonably usable, accessible and robust in the long term. SURFsara favours the use of preferred formats, but acceptable formats will in most cases also be allowed. Here is a list with SURFsara acceptable formats .

  If you think your file format should be accepted by the repository, but is currently not on one of the lists, please contact us. A reason could be that a community uses a file format that is widely used within that community but not outside of it.

- **File size**
  - **Maximum file size**: 4 GB using the online deposit form

  The maximum deposit data volume is 10 GB and the maximum number of files that can be uploaded via the onlone deposite is 10 files. If you want to deposit larger volumes of data or larger number of files in a single deposit, please contact us.

- **Data documentation** Data documentation ensures that research data are understood and therefore used by current and future users (including the researcher). It is vital to store the data in a structured and consistent way with appropriate data documentation. The documentation can be a description explaining what the data is, what you can do with it and how it can be used. Even more technical documentation about the exact file format could be of use. Documentation can be provided in one of the accepted or preferred file formats.

- **Metadata** Metadata provides structured information about the data. Depending on the type of data, there are different types of metadata:
  - **Descriptive metadata** describes and identifies information resources (minimal metdata required to find a digital object). In includes elements such as title, abstract, author, and keywords
    - **Structural metadata** provides information about the internal structure of resources including page, section, chapter numbering, indexes, and realtions to other digital objects.
  - **Technical metadata** provides information on the technical aspects of the datasets such as data formats, hardware/software used, calibration, version, authentication, encryption.
  - **Administrative metadata** provides information on user rights and management of digital objects such as license, rights management, and access control.

  The repository will only ask for descriptive metadata during the deposit workflow, but it is highly recommended to add links to additional documentation or files containing metadata of any kind. Any other kinds of metadata are automatically added, though not always visible for the end-user.

- **Data organisation**

  If you want your research data to be easily traced and interpreted, the collection and deposit structure and the file names used for the data files should be logical and straightforward. Make sure to use the correct file extensions to avoid files being rejected or misinterpreted by other users. Its also a good practice to note the file naming and its meaning in a separate readme file.

  You can create collections and collections of other collections to structure your data. There is no limit on the number of deposits in a single collection.

- **Data anonymization** Before you upload the files you should check whether they contain privacy-sensitive information within the meaning of the regulations and guidelines in the General Data Protection Regulation (GDPR). If you give access to the data publicly or any other user, the data must be completely anonimyzed.

CHAPTER 5

Appendix

5.1 Appendix

This page provides several terms with their descriptions used in data publication.

5.1.1 Open data

Simply making data available – providing access – is often not enough to be allowed to reuse data. The data has to be available in a format and under a license that allows reuse.

A piece of data or content is open if anyone is free to use, reuse, and redistribute it — subject only, at most, to the requirement to attribute and/or share-alike. (see http://okfn.org/opendata/).

All publications made in the Data Repository include a license that specifies what a data consumer can or can't do with the data. By downloading data from the service, the user agrees to comply with these terms.

5.1.2 Data Provenance

Data provenance is providing a historical record of the data and its origins. It refers to the process of tracing and recording the origins of data and its movement between databases. (see http://db.cis.upenn.edu/DL/fsttcs.pdf).

5.1.3 Persistent identifiers

A unique and persistent code that is coupled to a digital object. With this code, the object can be identified even when the object is moved to a different location.

5.1.4 DOI

The digital object identifier (DOI) is a unique and stable (or persistent) identifier that ensures that a digital object can be permanently found by any researcher, regardless of changes in the URL where the object is found. A central registry ensures that the user of a DOI will be referred to its current location (http://www.datacite.org/).

All objects stored in the Data Repository will automatically receive a DOI upon publishing. See also 'Persistent identifiers'.

5.1.5 Certification

An archive holding the CoreTrustSeal certification complies with requirements ensuring that in the future, research data can still be processed in a high-quality and reliable manner (see).

The Data Repository will be certified with this certification to guarantee a researcher that its data publication is accessible now and in the future.

5.1.6 Linked data

A term used to describe a recommended best practice for exposing, sharing, and connecting pieces of data, information and knowledge on the Semantic Web using RDF. Linked data refers to data published on the web in such a way that it is machine-readable, that its meaning is explicitly defined, that it is linked to other external data sets, and that in turn it can be linked to from external data sets. (see http://linkeddata.org).

Need help?

Do you need help with the use of the Data Repository or this user documentation? We are more than willing to assist! Just contact us at helpdesk@surfsara.nl.