Digital Tools for Reproducible Research

Materials https://bolibaugh.github.io/DigitalTools/ https://osf.io/jrxyw/

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Research increasingly reliant on computational and data skills...

“Some other time”

Too many options

Inefficient to learn on your own

Shaming?

Thanks to Rochelle Terman for the motivation.

Research increasingly reliant on computational and data skills...

"Some other time"

Reproducible workflows (including code) save time once set up

"Too many options"

Learn the logic now, specialise later

Inefficient to learn on your own

True -- do it here

Shaming? Everyone started somewhere; very few are experts

Week 5 Reproducible research 15 May 2019

Week 6 Preregistration 22 May 2019

Week 8 Open data 5 June 2019

Week 9 Reproducible analyses, power analysis and simulation 12 June 2019

Week 10 Writing a reproducible manuscript 19 June 2019

Thanks to Rochelle Terman for the motivation.

01 Reproducible Research

Today

Getting to grips with OSF & RStudio

Set up an OSF project for the sessions to come

*Try out the base R console, and the RStudio IDE

**If you know OSF & can quickly set up your project*

Tasks

1. Create an account
2. Create a new project
3. Add components
4. Add files
5. Add collaborators
6. Share your project
7. Keep track of changes

By the end of the today, you should have an OSF account with a project structured for the upcoming sessions.

If you are short on time and do not want to create the project manually, you can template the Demo Digital Tools project.

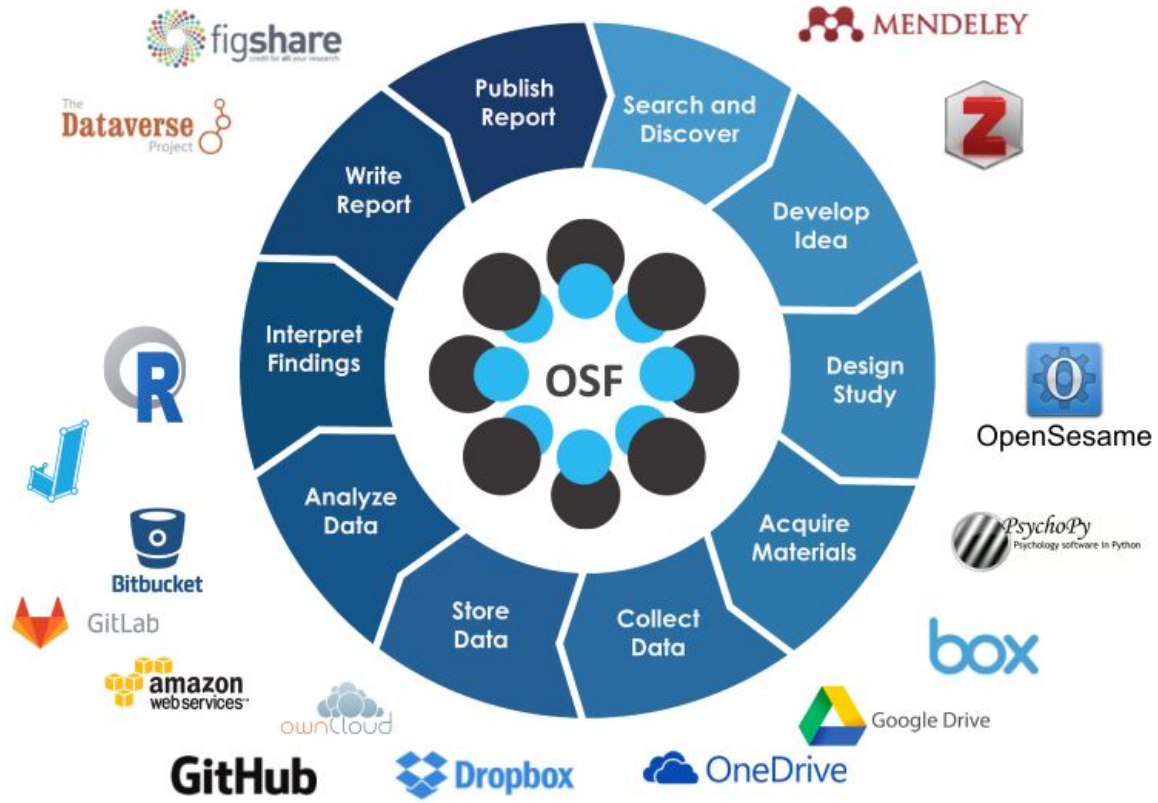
OSF

Free, open source research management and collaboration tool

Captures & manages the ‘workflow’ of a project

Facilitates reproducible research & open science by documenting:

- ➔ Designs
- ➔ Materials
- ➔ Analyses
- ➔ Datasets
- ➔ Manuscripts



https://cos.io/our-products/osf/

What is on OSF?

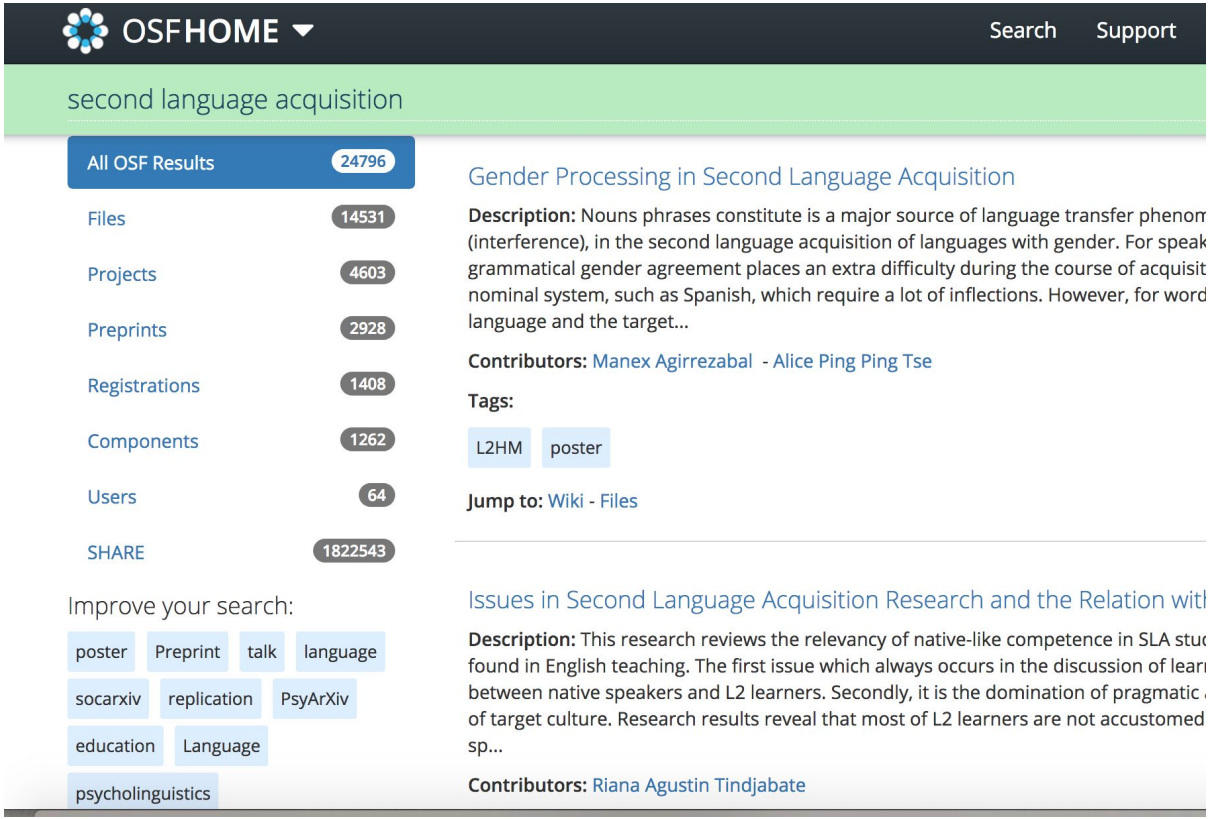
Visit https://osf.io/

Enter a search term relevant to your research in the search tab

Click on a project to explore it

Return to search results and select only registrations; choose one to explore

Return to search results and select preprints; choose one to explore



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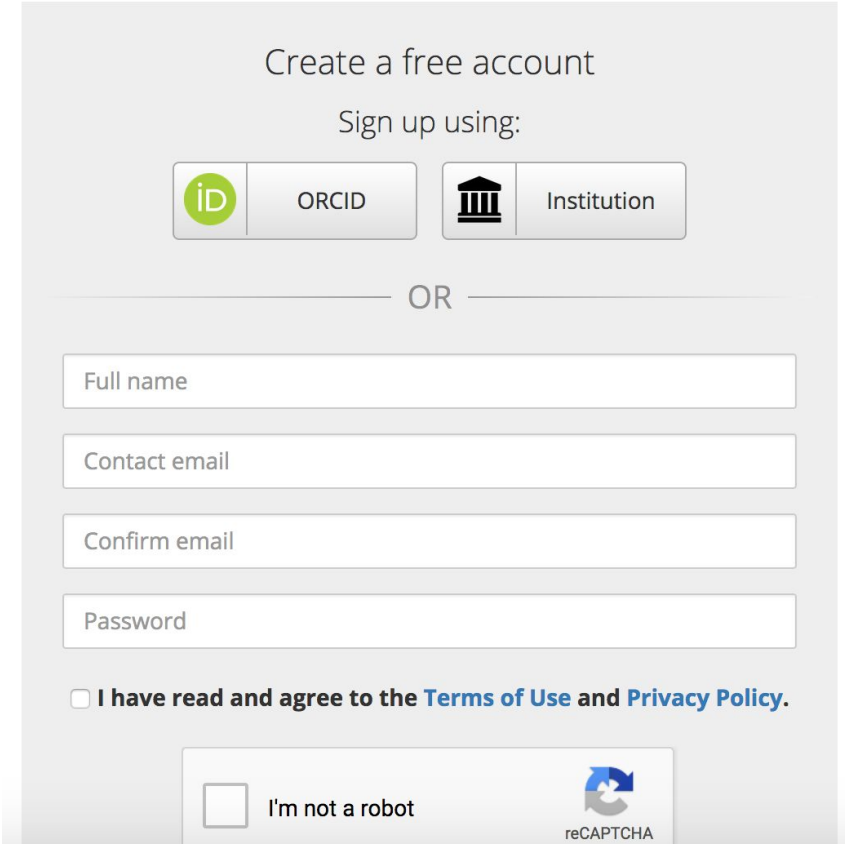
Creating an account

Visit https://osf.io/register/

provide an e-mail address and password *or*

log in through your existing ORCiD account

**no institutional York accounts atm*



If you already have an OSF account, log in, and go to our project page:

https://osf.io/jrxyw/

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Creating a new project

When you log into OSF, you will be brought to your Project Dashboard

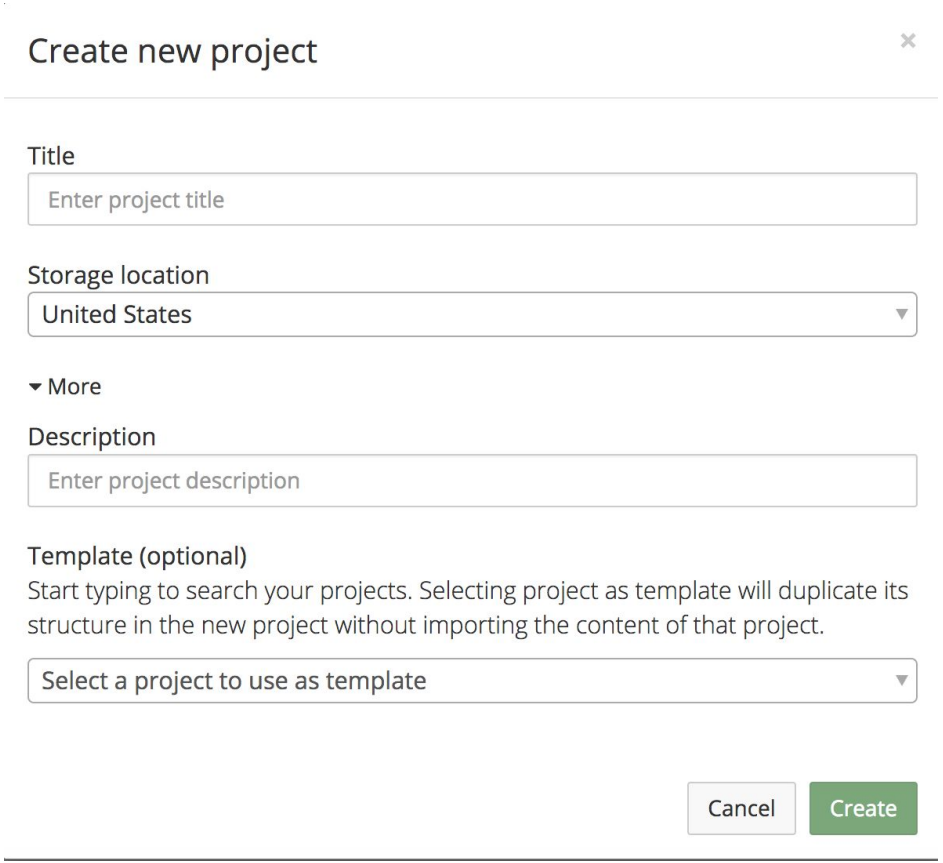
Click on *Create a new project*

Call it **Digital Tools demo project***

Chose Storage (for GDPR, DE best) -- NB you won't be able to change this later

You can copy the structure of existing projects by selecting them as template (see here for more)

***if you have a research project in mind for the brownbags, call it by that name**



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Adding components

Components are subsections of your project that have desirable properties: unique URLs, individual access permissions, unique DOIs

Click *Add Component*

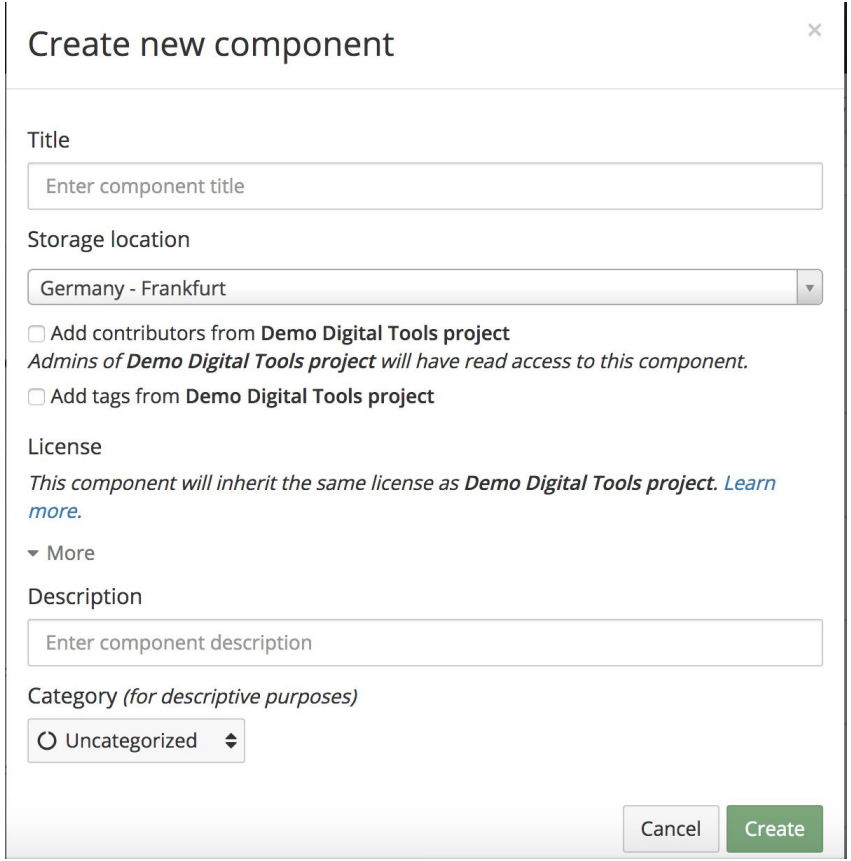
Call it *Materials*

Chose *Storage* (Frankfurt)

Choose *Category*: Methods & measures

Add at least 3 more: *Data, Analyses, Manuscripts*

If doing experimental work, you may copy the Digital Tools Demo structure.



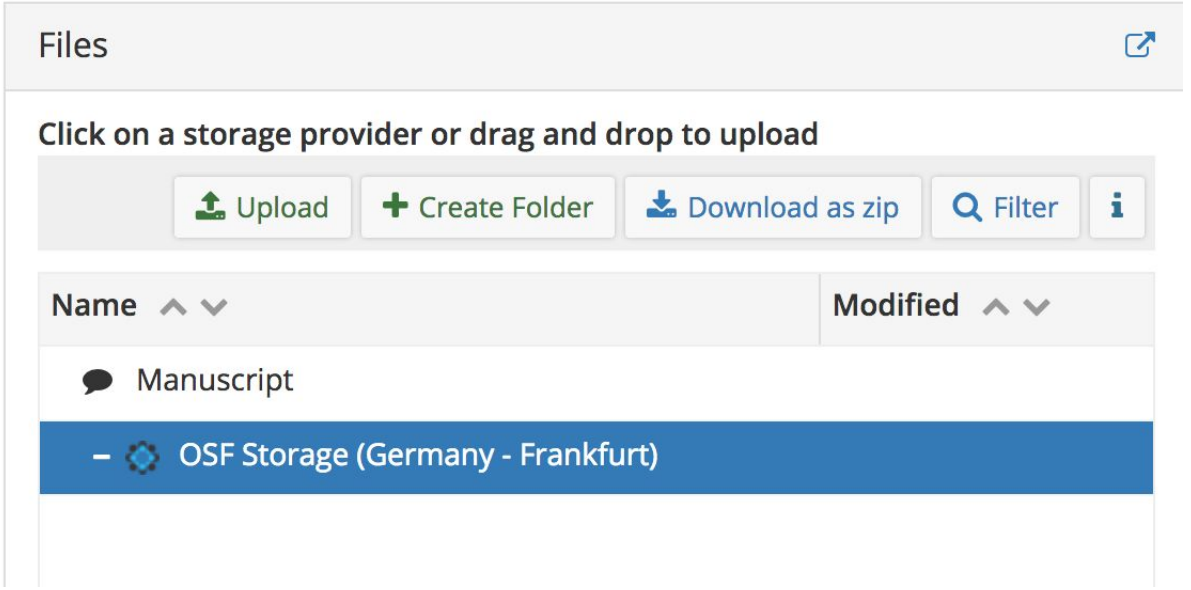
Adding files

Add folders and files to components (folders inherit all properties of component)

Create a word document, and save it with a meaningful title.

Add it to your manuscript component.

Either: (1) drag file from your computer to the “OSF Storage” icon underneath the component, or (2) click on the “OSF Storage” item and use the “Upload” button



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Adding collaborators

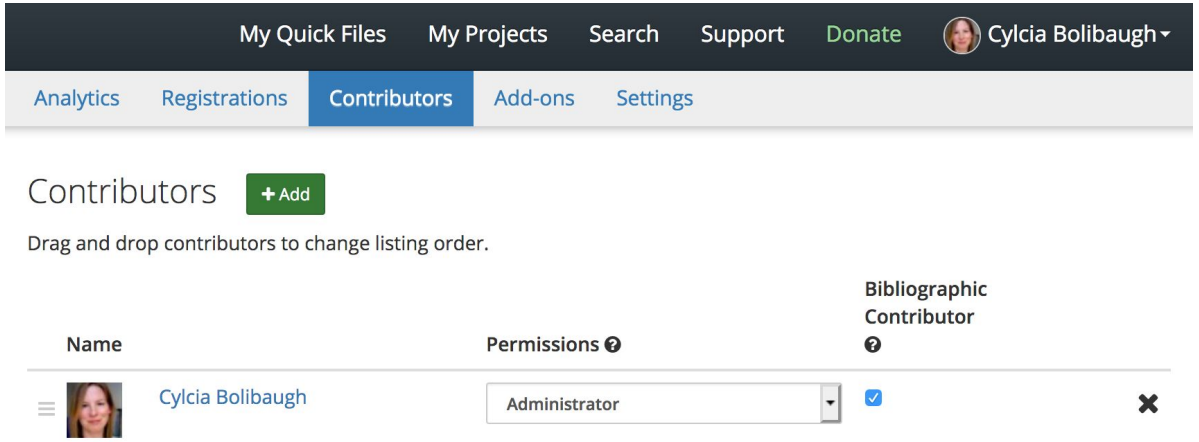
Add contributors to your projects

Click on the “Contributors” tab, and “Add” to search for OSF accounts to add as contributors

Select level of permission

Search for one of your neighbours and add them

You can also add “unregistered” collaborators (those w/o an OSF account). They will get an email notification that they’ve been added to a project



Click on ? to find out about Bibliographic Contributors -- you may want to add a contributor for administrative purposes (e.g. in case the main administrator leaves the project) who does not appear in citations

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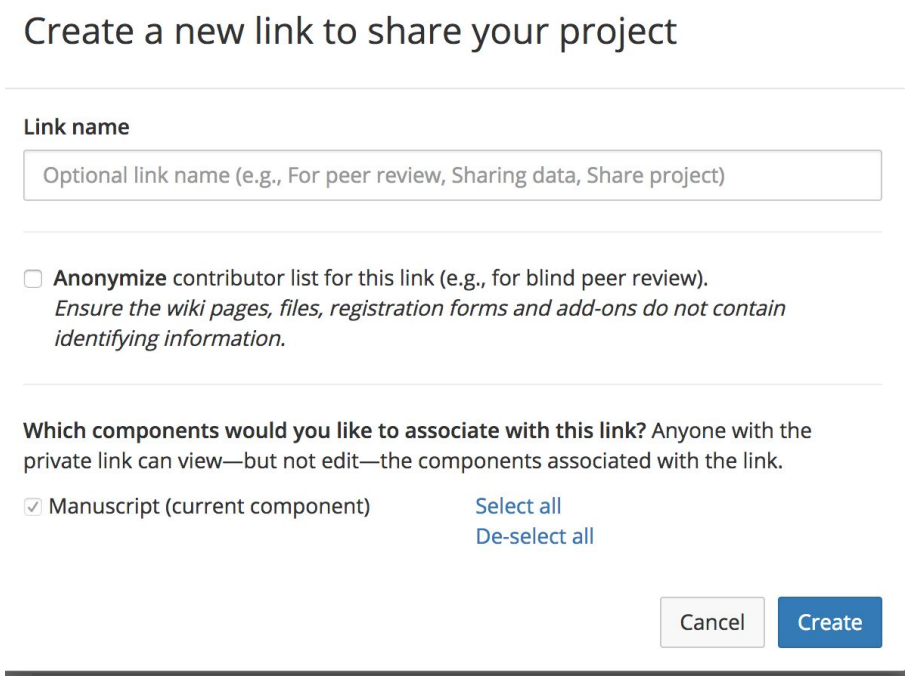
Sharing your project

Different options for sharing

1. Make your project **public**:
   can be read by anyone and is indexed by major search engines. Each project, component, and file receives URL, citation and DOI
   ***Click on Make Public box**, & choose components to make public*

2. Share **parts** of your project **privately** (e.g. with reviewers)
   Click "..." on project, and click "Add" under "View-only links", then give a name to link and select components



Generate a view only link for your manuscript and email it to someone sitting near you.

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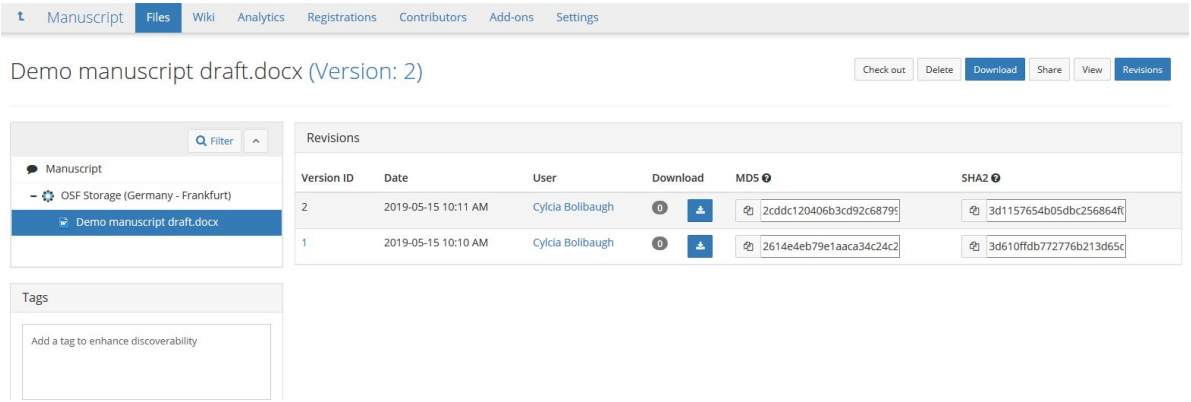
Keeping track of changes

OSF has built in version control

Click on a file to gain access to all file-related OSF actions.

You can edit plain text files like the R scripts directly through OSF via the “Edit” button on the file view page

For all other file types, inc. audio, video, word processor., edit locally and then re-upload the new version to the same location, using the same file name.



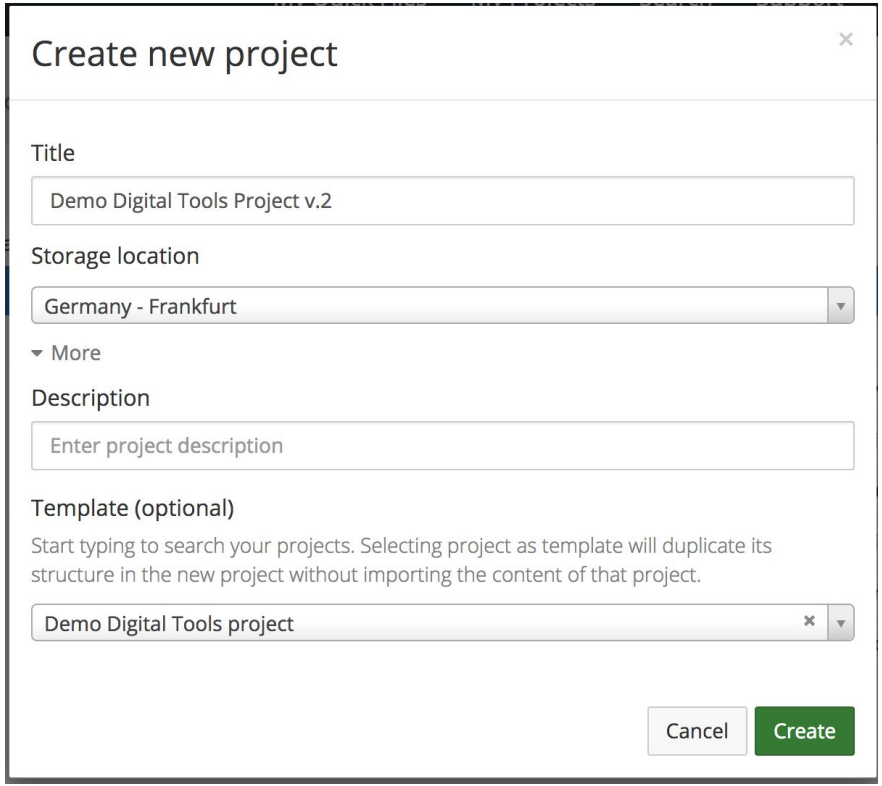
Edit the word document you uploaded to the manuscript component by adding some content. Save locally, and reupload to see what happens.

Templating a project

You may wish to copy the structure of an existing project rather than create it from scratch

Create a new project and search for the project you wish to copy in the Template box

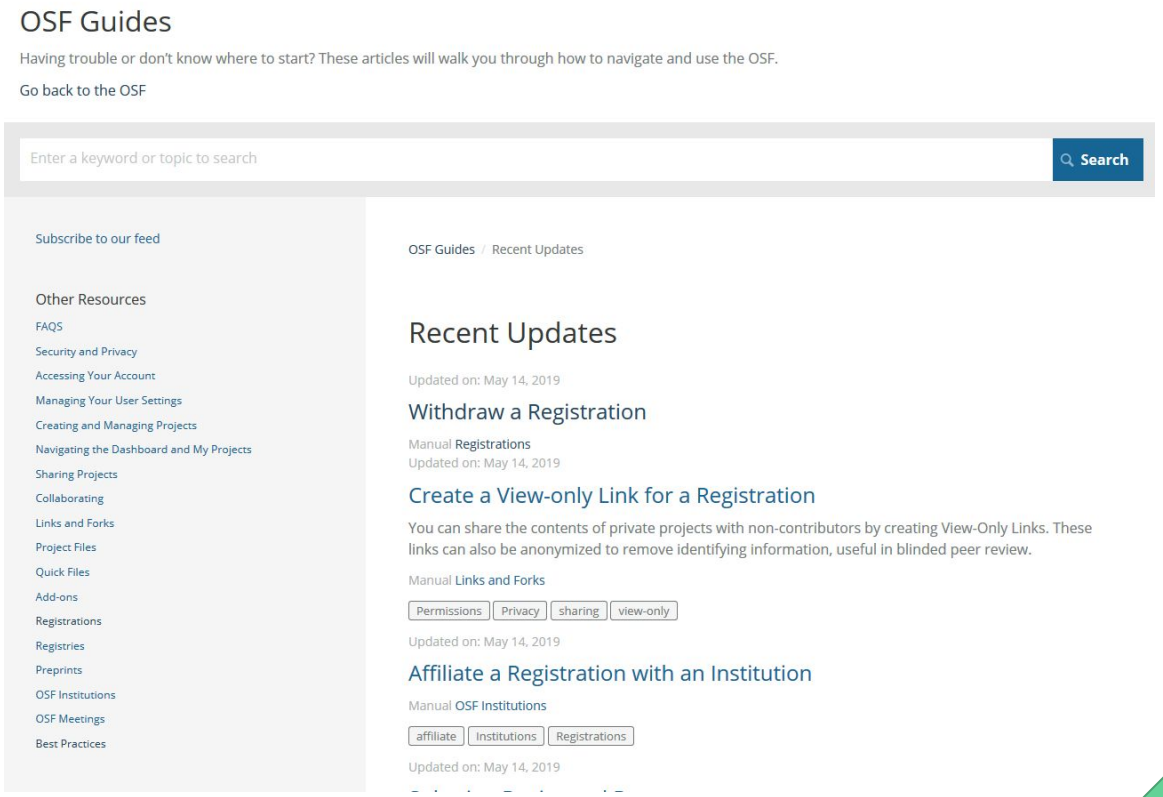
You may wish to template the demo project here: https://osf.io/jrxyw/



Resources

OSF guides

Sullivan, I., DeHaven, A., & Mellor, D. (2019). Open and reproducible research on Open Science Framework. *Current Protocols Essential Laboratory Techniques*, e32. doi: 10.1002/cpet.32



R console and RStudio IDE

If you already familiar with OSF, set up a project to use for the rest of the sessions, and then work through Section 1 in the following tutorial:

https://psyteachr.github.io/msc-data-skills/intro.htm

Follow-up

Preparation for Week 6

Select either: (1) one of your own (completed or planned) empirical research studies, or (2) an empirical paper that interests you.

Read/familiarise yourself sufficiently with the study so that you can pre-register a new study/replication in the next session.