188.475 - Digital Preservation - SS18 - Lab 1.2

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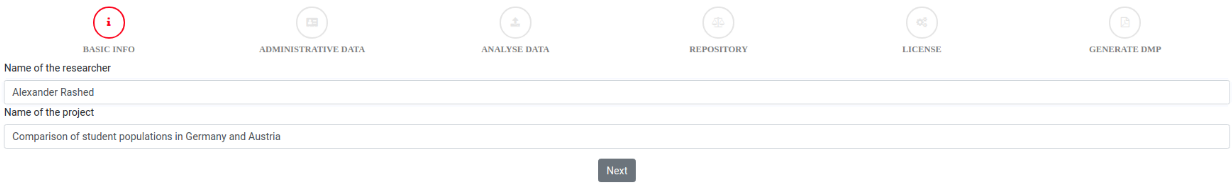
Description

This frontend application allows to easily create a human-readable as well as a machine-actionable data management plan. It is completely client-side (no data is sent to any server). The application is realized as an Angular 5 application. Docker is used for producing a docker container suitable for running on multiple OS. The program is written in Typescript, various plugins have been used for different purposes (e.g. creating a pdf).

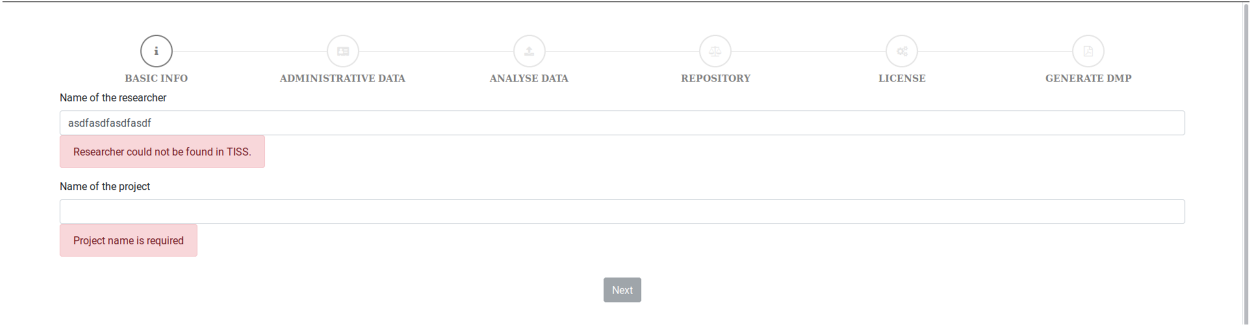
Workflow

1. The user enters his name and the name of the project.



Name of the researcher
Alexander Rashed
Name of the project
Comparison of student populations in Germany and Austria

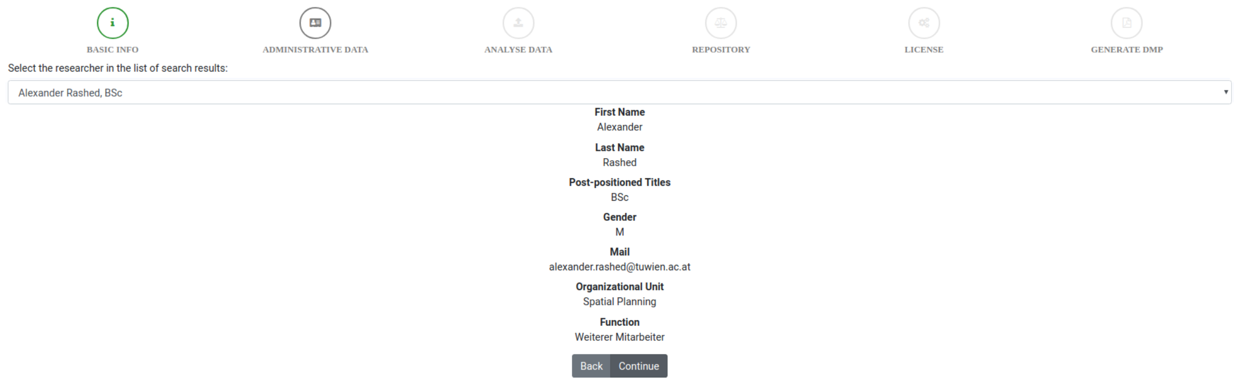
Both data is mandatory and the researcher has to be found in TISS.



Name of the researcher
asdfasdfasdfasdf
Researcher could not be found in TISS.
Name of the project

Project name is required

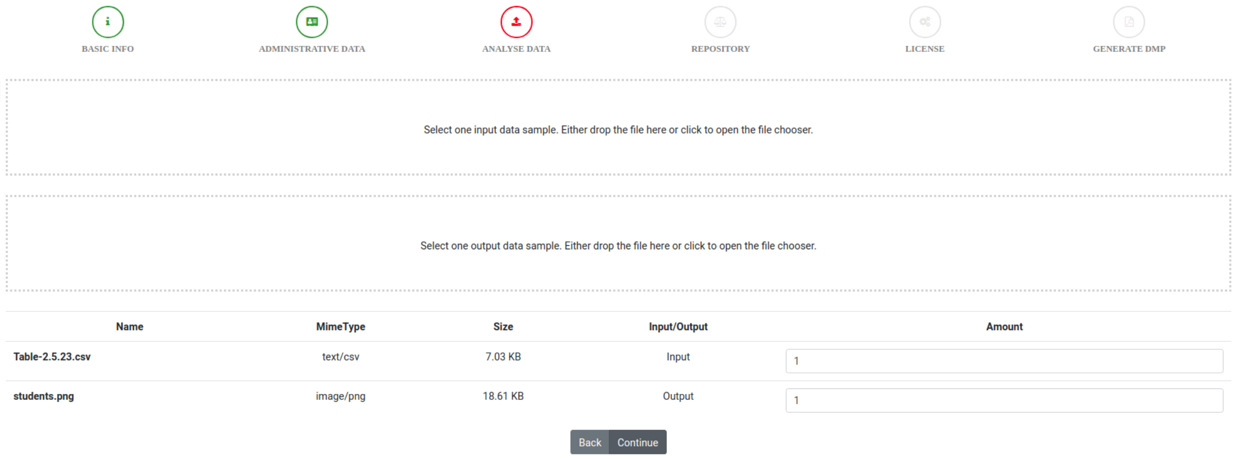
2. Afterwards the researcher has to be selected (as there can be several search results returned by the TISS API).



Select the researcher in the list of search results:
Alexander Rashed, BSc

First Name
Alexander
Last Name
Rashed
Post-positioned Titles
BSc
Gender
M
Mail
alexander.rashed@tuwien.ac.at
Organizational Unit
Spatial Planning
Function
Weiterer Mitarbeiter

3. Now the reference data is selected. Two areas are displayed to drop and input and an output file. When a drop area is clicked, the filechooser opens.



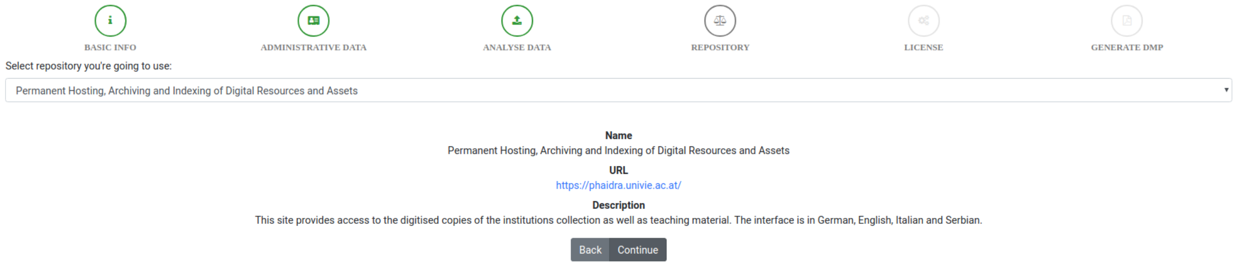
Select one input data sample. Either drop the file here or click to open the file chooser.

Select one output data sample. Either drop the file here or click to open the file chooser.

Name	MimeType	Size	Input/Output	Amount
Table-2.5.23.csv	text/csv	7.03 KB	Input	1
students.png	image/png	18.61 KB	Output	1

The mime-type detection first checks for magic numbers (using the [file-type javascript library]). As lots of file formats do not have any magic numbers, we use a fallback mechanism checking the file extensions (using the [mime-types javascript library]).

4. The previously selected reference output as well as the location of the user are used to find suiting repositories. The user's location is handed over by the browser (the user has to agree), otherwise the default (Austria) is used.



Select repository you're going to use:

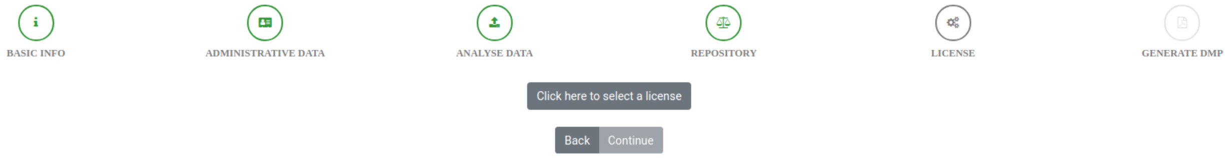
Permanent Hosting, Archiving and Indexing of Digital Resources and Assets

Name
Permanent Hosting, Archiving and Indexing of Digital Resources and Assets

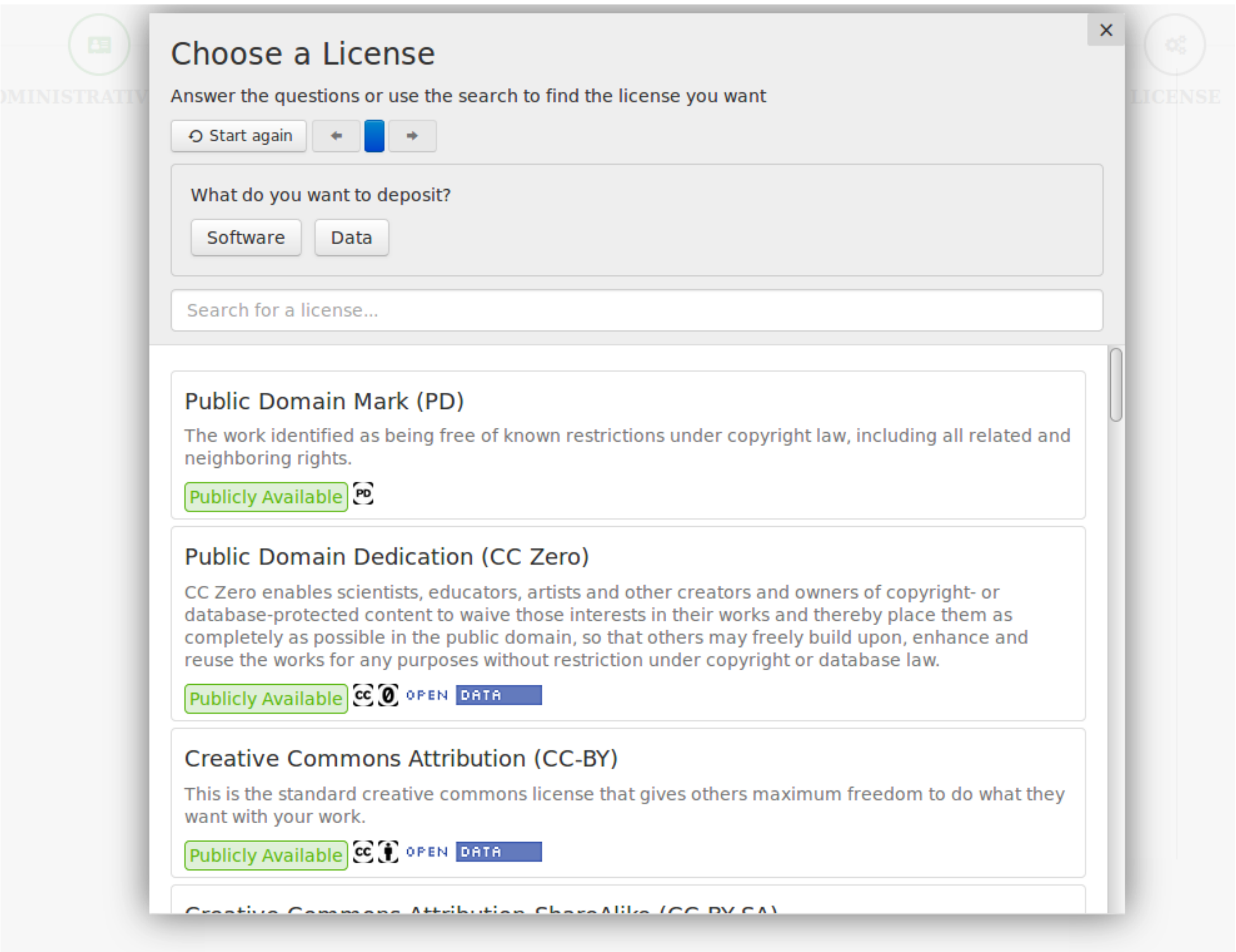
URL
https://phaidra.univie.ac.at/

Description
This site provides access to the digitised copies of the institutions collection as well as teaching material. The interface is in German, English, Italian and Serbian.

5. The next step is the license selector. The user clicks on the button to open the filechooser.



Afterwards the license selector opens and the user doubleclicks on one of the displayed licenses or clicks through the selection process. In this process the tool asks the user various questions regarding the data or software the license is picked for and determines a suitable license based on the answers of the user.



Choose a License

Answer the questions or use the search to find the license you want

What do you want to deposit?

Public Domain Mark (PD)

The work identified as being free of known restrictions under copyright law, including all related and neighboring rights.

Public Domain Dedication (CC Zero)

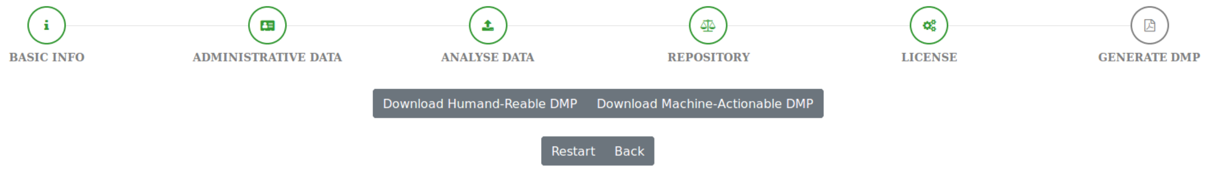
CC Zero enables scientists, educators, artists and other creators and owners of copyright- or database-protected content to waive those interests in their works and thereby place them as completely as possible in the public domain, so that others may freely build upon, enhance and reuse the works for any purposes without restriction under copyright or database law.

Creative Commons Attribution (CC-BY)

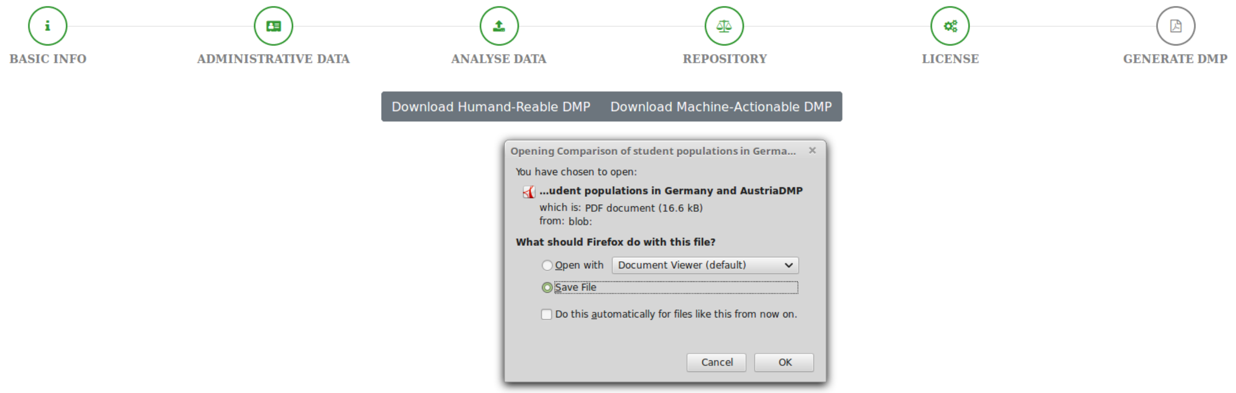
This is the standard creative commons license that gives others maximum freedom to do what they want with your work.

Creative Commons Attribution ShareAlike (CC-BY-SA)

6. The last step does not take any additional input from the user, but offers both the machine-readable and the human-readable dmp as downloads.



When the user clicks on one of the download buttons, the download gets started.



Opening Comparison of student populations in Germa...

You have chosen to open:

...udent populations in Germany and AustriaDMP

which is: PDF document (16.6 kB)
from: blob:

What should Firefox do with this file?

○ Open with Document Viewer (default)

● Save File

□ Do this automatically for files like this from now on.

OpenDOAR

The API referenced in the description is deprecated and will be discontinued in May 2018. Therefore the new API (which is currently in beta) was used. When calling the API, we restrict the country to match the user's country. We are mapping the mime-types to OpenDOAR repository types (as described below), but the new API does not provide the possibility to filter for specific repository types (also the documentation is basically non-existent). Therefore we have to filter the result (to only contain repositories of the correct type) on the client side. The new API also has a bug, such that the result has to be limited to 30 results (otherwise the API returns an internal error - 500). The missing server-side repository-type filtering in combination with the enforced result limit can cause that there are less than 3 remaining repositories left to choose from.

JSON-LD

For the creation of the machine-readable DMP five vocabularies have been used:

- The Dublin Core elements (http://purl.org/dc/elements/1.1/)
- The Dublin Core Metadata terms (http://purl.org/dc/terms/).
- Friend of a Friend (FOAF) (http://xmlns.com/foaf/0.1/)
- The Preservation Metadata: Implementation Strategies (PREMIS) (http://www.loc.gov/premis/rdf/v1#)

  Suitable fields have been introduced by us to ensure a better clarity and structure of the document. FOAF, DC, DCTERMS and PREMIS have been chosen because they are widespread and accepted vocabularies for their respective fields.

Mime-Type Mapping

- `application/pdf` - `journal_articles`, `unpub_reports_and_working_papers`, `conference_and_workshop_papers`, `theses_and_dissertations`
- `application/vnd.amazon.ebook` - `books_chapters_and_sections`
- `application/epub+zip` - `books_chapters_and_sections`
- `application/json` - `datasets`
- `text/csv` - `datasets`
- `application/x-7z-compressed` - `datasets`
- `application/zip` - `datasets`
- `application/x-bzip` - `datasets`
- `application/x-bzip2` - `datasets`
- `application/x-tar` - `datasets`
- `application/x-rar-compressed` - `datasets`
- `image/gif` - `multimedia_and_audio_visual`
- `image/x-icon` - `multimedia_and_audio_visual`
- `image/jpeg` - `multimedia_and_audio_visual`
- `image/png` - `multimedia_and_audio_visual`
- `image/svg+xml` - `multimedia_and_audio_visual`
- `image/tiff` - `multimedia_and_audio_visual`
- `image/webp` - `multimedia_and_audio_visual`
- `video/x-msvideo` - `multimedia_and_audio_visual`
- `video/mpeg` - `multimedia_and_audio_visual`
- `video/ogg` - `multimedia_and_audio_visual`
- `video/webm` - `multimedia_and_audio_visual`
- `video/3gpp` - `multimedia_and_audio_visual`
- `video/3gpp2` - `multimedia_and_audio_visual`

- `application/ogg` - `multimedia_and_audio_visual`
- `audio/ogg` - `multimedia_and_audio_visual`
- `application/octet-stream` - `software`
- `application/javascript` - `software`
- `application/ecmascript` - `software`
- `application/java-archive` - `software`
- `application/typescript` - `software`
- `application/x-sh` - `software`
- `application/x-csh` - `software`

Possible Improvements

- As soon as the new OpenDOAR API supports defining a filter on the repository-type, this should be used (and the client side filtering should be removed).
- As soon as the new OpenDOAR API allows not setting the `limit` filter, it should be removed.
- The mime-type detection could also implement `shebang` parsing (f.e. `!/bin/env python`) or some kind of programming language syntax-detection.
- Add even more mime-type to repository-type mappings.

Discussion

The difference between manually and automatically generated DMP:

The generated DMP has a lot less information in it. The information that is in it is on the other hand a lot more precise, identifiable and machine-actionable. The manually created DMP needs a human to interpret the sections of the DMP and the given answers. Since most answers are free-text-fields in the manual DMP or follow only a very rudimentary structure/schema, it is highly unlikely that a machine can sucessfully interpret the data. In the generated DMP, especially the JSON-LD, this is easily possible.

Which DMP sections can be automated and which will be always completed manually:

It is fairly easy to automatically generate the sections of the DMP where there is a limit on the possible answers. E. g. if a given author must be at the TU, it is easily possible to automatically get the data associated with a name/orcID, etc.. For questions where there is no natural limit one can of course limit the options available to the DMP-author, e.g. only allowing the author to choose between a few different, predetermined options. This is however a trade-off between greater capacity for automation and fewer flexibility for authors, researchers, etc. to adapt the DMP to their respective conditions. If open-ended questions (e.g. "What is the long-term preservation plan for the dataset?") are kept in the DMP, it is impossible to automatically create and process these fields.

Source Code

The code of the application and all other material can be found in the following GitHub-Repository: https://github.com/alexrashed/tu-dpue-lab2-ss18

Execute

If you don't want to use the docker setup, follow these steps to start a local development server:

```
npm install
npm start # don't use ng serve (as this does not automatically configure the API proxy
configuration)
```

Docker

- Build the image:

  ```
  docker build --tag dpue .
  ```

- Execute the script (and mount the folder where you want to store the results at `/usr/src/app/output`):

  ```
  docker run --rm -p80:80 dpue
  ```

- Go to localhost.

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