

# Describo and RO-Crate - the FAIR data research helpers

Dr Marco La Rosa<sup>1</sup>, Dr Peter Sefton<sup>2</sup>

1. *PARADISEC and The University of Melbourne*
2. *University of Technology Sydney*

## Problem

Research projects don't always involve work practices that describe the data generated so that it meets the FAIR principles.

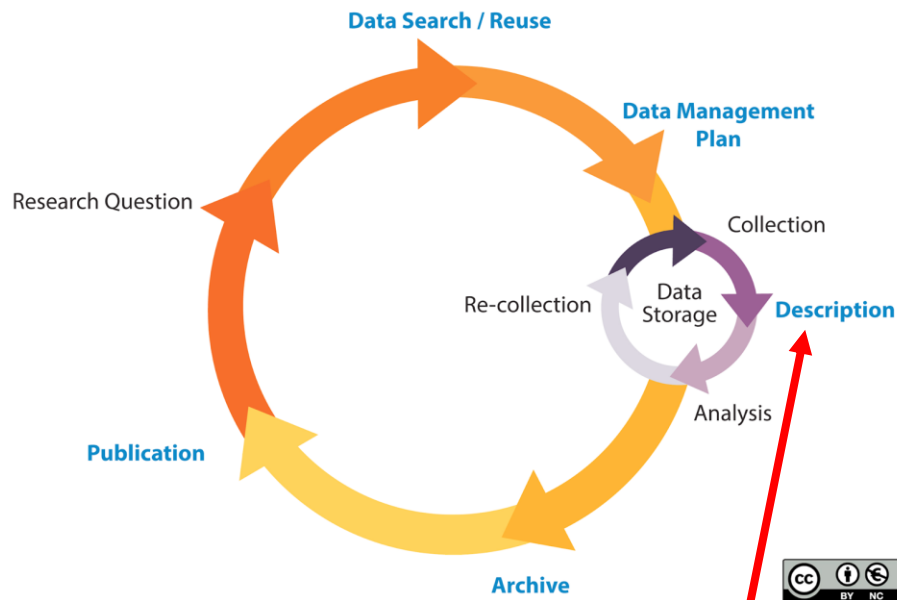
## Solution

Describe the data as it's being created using open standards and tools

→ use Describo

source: <https://guides.library.ucsc.edu/datamanagement/>

### The Research Data Management Lifecycle



Describo goes here

# What is Research Object Crate (RO-Crate)?

- Lightweight approach to packaging research data with metadata
- Community effort - 38 contributors from AU, EU and US.
- Can aggregate files and/or any URI-addressable content, with contextual information to aid decisions about re-use. (Who What When Where Why How).
- Uses Schema.org as the main ontology, with domain-specific extensions
- Has human readable summaries of datasets

→ *Sefton is an Editor of the specification: <http://www.researchobject.org/ro-crate/>*

## Sample dataset for RO-Crate v1.1

📄 📄 [Download all the metadata for Sample dataset for RO-Crate v1.1 in JSON-LD format](#)

📄 📄 [Download this dataset: Sample dataset for RO-Crate v1.1](#)

### Sample dataset for RO-Crate v1.1

@id	/
name <a href="#">[?]</a>	Sample dataset for RO-Crate v1.1
@type	Dataset
description <a href="#">[?]</a>	This is a simple dataset for demonstration purposes it contains just one image and a directory full of useless text files.
funder <a href="#">[?]</a>	<a href="#">Australian National Data Service</a> <a href="#">University of Technology Sydney</a> <a href="#">DataCrate Project</a>
datePublished <a href="#">[?]</a>	2017-06-29
author <a href="#">[?]</a>	<a href="#">Peter Sefton</a>

# Who is using it?




- Pacific and Regional Archive for Digital Sources in Endangered Cultures (PARADISEC). Demonstrator with > 16k items and > 500 collections exported as RO-Crates into OCFL @ <http://mod.paradisec.org.au/>
- University of Technology Sydney data repository
- [Galaxy](#)
- WorkflowHub: <https://about.workflowhub.eu/>
- CS3MESH4EOSC



# Describo

- Describo is a pair of tools for researchers and support staff to create spec-compliant RO-Crates w/:
  - a. Linked data for high-precision unambiguous metadata
  - b. Package level “who, what, where” metadata
  - c. Individual file-level metadata including provenance
- Describo exists as:
  - a. a desktop tool (electron application) for all major platforms: <https://uts-eresearch.github.io/describo/>
  - b. an online tool that integrates with Microsoft OneDrive: <https://github.com/UTS-eResearch/describo-online>
- Describo was developed as a proof of concept in two short sprints in 2020 (Desktop ~ 3 months and Online ~ 2 months). Both are viable release candidates.
- <https://arkisto-platform.github.io/assets/docs/Describo-WhitePaper.pdf>

# Describo Desktop - define and link entities


## Author

 Person 


John Public



This item is connected to:




@type: RootDataset → hasPart 





name: my crate



### Edit: Dataset - data



name   
data



description   




license   
 



hasPart   
  





 Dataset  another level





 File  DT1-214-A.mp3





 File  NT1-20003-002.jpg

 File  NT5-TokelauOf-CAT-PDSC\_ADMIN.xml


 File  NT5-TokelauOf-vid.mp4

author   
  


publisher   
  

funder   
  

[Show all available properties](#)

 save

This item is connected to:

@type: RootDataset → hasPart 

name: my crate

# Describo Desktop - define and document data

Root Dataset

Crate Contents

ContactPoint

Dataset

File

Organization

Person

Manage Content Describe Content

You must expand each subfolder to load the child nodes.  
If you don't you'll only get the folders.

The crate parts list has been updated.

Select all children

- data
  - DT1-214-A.mp3
  - NT1-20003-002.jpg
  - NT5-TokelauOf-CAT-PDSC\_ADMIN.xml
  - NT5-TokelauOf-vid.mp4
- another level
- small-images

Root Dataset

Crate Contents

ContactPoint

Dataset

File

Organization

Person

Manage Content Describe Content

Filter items

This filter supports simple regular expressions.

Type

- Dataset data
- Dataset another level
- File DT1-214-A.mp3
- File NT1-20003-002.jpg
- File NT5-TokelauOf-CAT-PDSC\_ADMIN.xml

File: data/NT1-20003-002.jpg

hide content done

name

NT1-20003-002.jpg

description

TaskArea

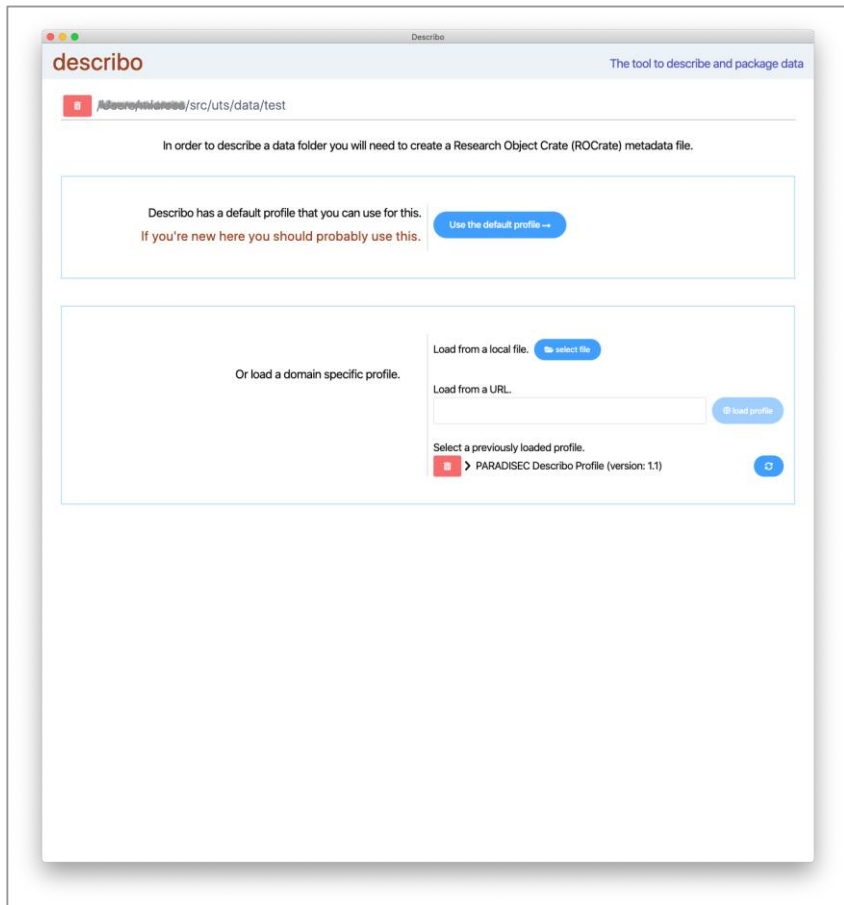
license

CreativeWork

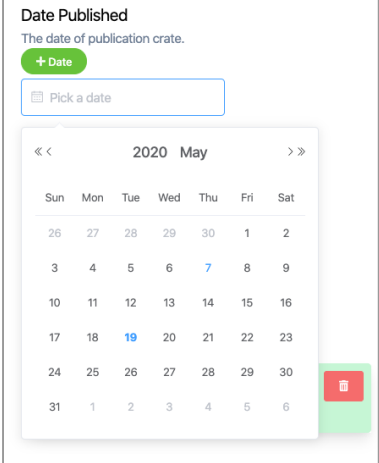
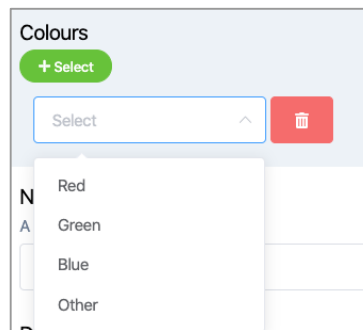
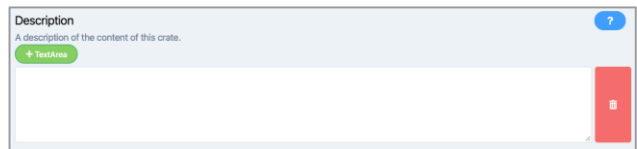
Show all available properties

Handwritten text on a document page.

# Describo Desktop - load custom data profiles



```
▼ metadata:  
  name: "PARADISEC Describo Profile"  
  version: 1.1  
▼ items:  
  ▼ Collection:  
    ▼ metadata:  
      about: "A profile to describe a PARADISEC collection."  
      allowAdditionalProperties: false  
    ▶ inputs: [...]  
  ▼ Item:  
    ▼ metadata:  
      about: "A profile to describe a PARADISEC item."  
      allowAdditionalProperties: false  
    ▶ inputs: [...]  
▼ typeDefinitions:  
  ▶ License: {...}  
  ▶ Language: {...}  
  ▶ enabledCoreTypes: [...]  
▼ dataPacks: [...]
```



# Describo Desktop - save / export

Crate

[inspect graph](#) [inspect root dataset](#) [inspect crate](#)

```
{
  "@context": "https://w3id.org/ro/crate/1.0/context",
  "@graph": [
    {
      "@id": "/ro-crate-metadata.jsonld",
      "@type": "CreativeWork",
      "about": {
        "@id": "./"
      },
      "identifier": "ro-crate-metadata.jsonld",
      "conformsTo": {
        "@id": "https://w3id.org/ro/crate/1.0"
      },
      "license": {
        "@id": "https://creativecommons.org/licenses/by-sa/3.0"
      }
    },
    {
      "@type": "Dataset",
      "name": "",
      "publisher": [
        {
          "@id": "https://ror.org/03f0f6041"
        }
      ],
      "contactPoint": {
        "@id": "#79082bdd-1db8-4c64-b141-1b6a80c170db"
      },
      "contentLanguages": [
        {
          "@id": "#3a9d3a13-cd7d-486d-82f4-ef0a95f437cf"
        }
      ],
      "hasPart": [
        {
          "@id": "data/"
        }
      ],
      "@id": "./"
    }
  ],
  "@id": "/"
}
```

## Export my RO-Crate

A crate can be exported as a plain Zip archive or a BagIt Bag.

[select folder](#)

Please select a location to save the export. You can't save the export to the same folder you're archiving or a subpath of it.

BagIt

Should a BagIt bag be created?

test-2020-05-19-15-05.ro-crate

The name of the archive that will be created.

Create Archive at /~~XXXXXXXXXX~~/src/uts/data

22%

[Stop Export](#)

# Describo Online - architecture: integrate or standalone service

Easily deployed via docker containers: UI, API and PostgreSQL database. Start one instance and scale to many users or start small instances for individual domains.

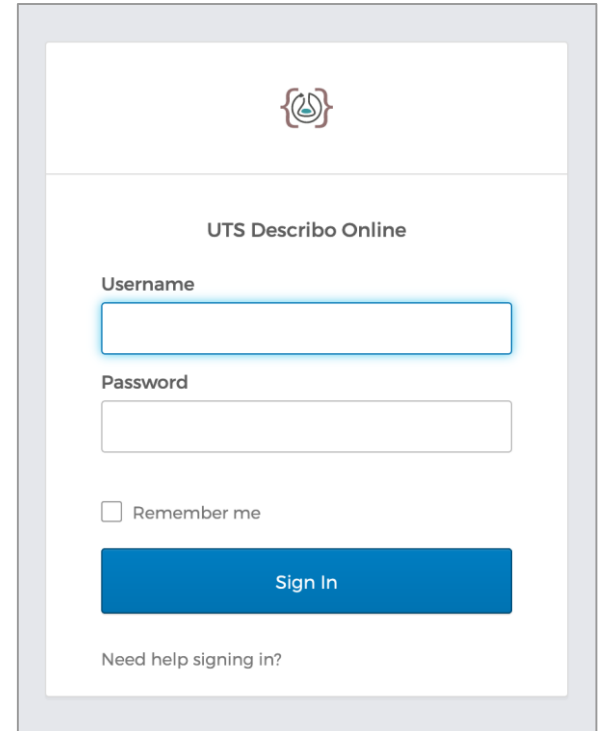
Architected for extensibility to other backends and data stores: S3, Dropbox, Google Drive, Openstack Swift, webdav, SFTP.

Operates on RO-Crate in database and synchronises back to target resource on change

Dynamically loads existing crates into DB and can associate crates on disk with in database entries to support multiple users operating on the data

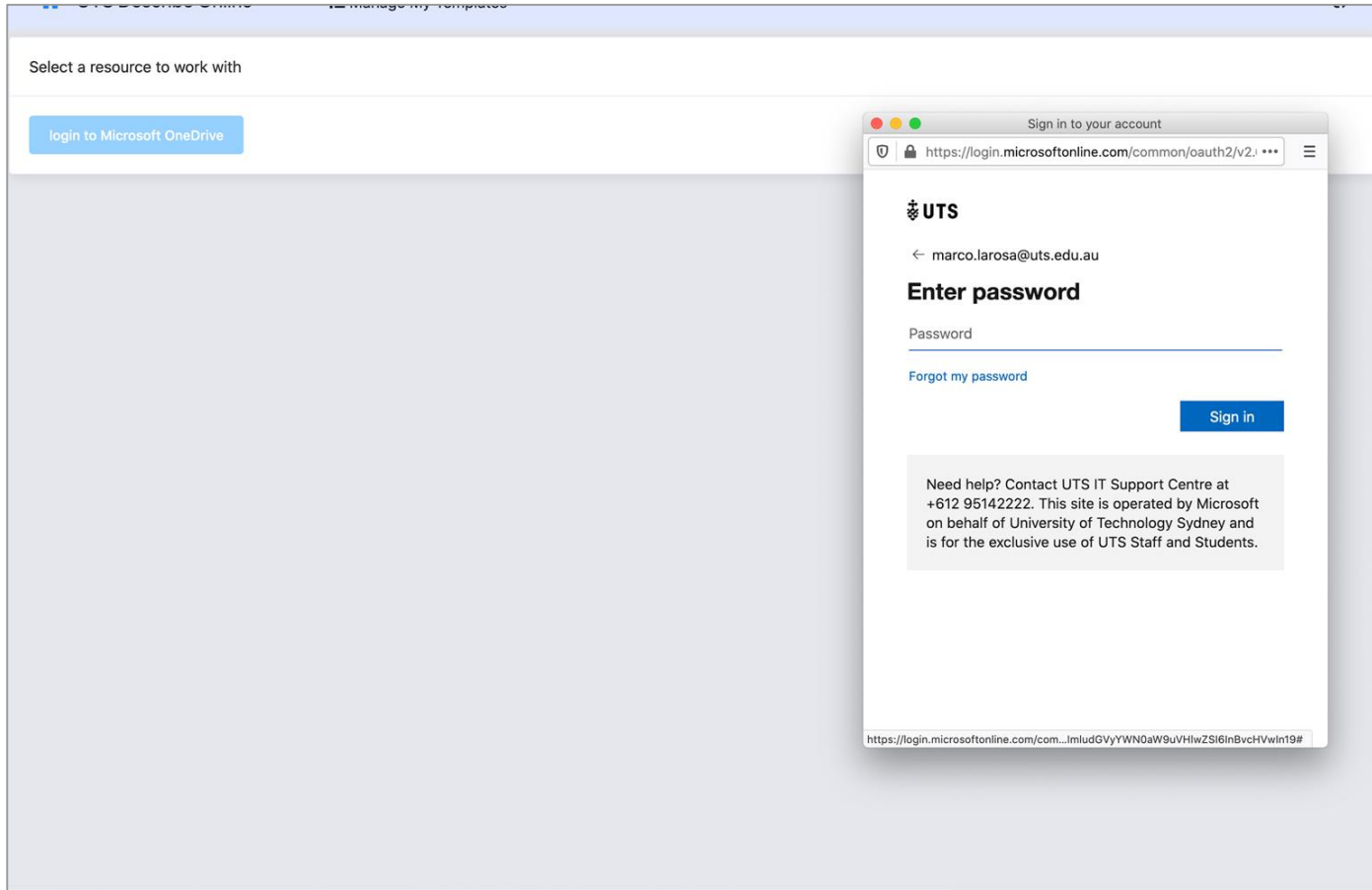
User management and authentication

- via okta.com (developer.okta.com) (free up to 1000 Monthly Active Users)
- or integrate into your own application.



The image shows a login page for 'UTS Describo Online'. At the top center is a logo consisting of a blue water drop inside a red square with rounded corners. Below the logo, the text 'UTS Describo Online' is centered. The page contains two input fields: 'Username' and 'Password'. The 'Username' field is currently selected with a blue border. Below the password field is a checkbox labeled 'Remember me'. At the bottom of the form is a blue button with the text 'Sign In'. Below the button, there is a link that says 'Need help signing in?'.

# Describo Online - works with folders in Microsoft OneDrive



# Describo Online - define and link entities

citation

?

Create and associate a new: [+ CreativeWork](#)

OR - Associate an existing 'CreativeWork': lookup by @id, @type, or name

ScholarlyArticle: This is an example publication with a dodgy DOI [✕](#)



Build the Collection | Manage Collection Data Files | Browse Collection Entities

Load Root Dataset | [</> Add Property](#) | [Save Entity as Template](#) | [Delete Entity](#)

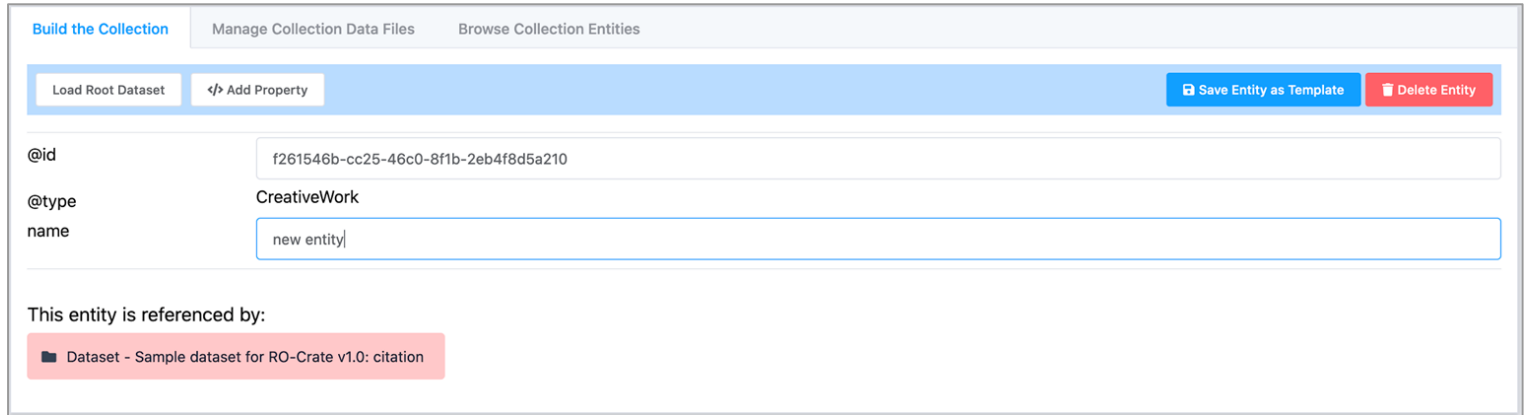
@id: f261546b-cc25-46c0-8f1b-2eb4f8d5a210

@type: CreativeWork

name: new entity

This entity is referenced by:

Dataset - Sample dataset for RO-Crate v1.0: citation



# Describo Online - manage crate entities

UTS Describo Online Manage My Templates

Selected Resource: onedrive:/Sefton sample crate 🗑️

Build the Collection Manage Collection Data Files Browse Collection Entities

Add an entity to this collection:

filter by name and @id Total 434 < 1 2 3 4 5 6 ... 44 >

@type	@id	Name	Connected	Actions
ContactPoint	mailto:peter.sefton@uts.edu.au	Contact Peter Sefton	✓	<span>✎</span> <span>🗑️</span>
CreateAction	#SepiaConversion	Converted dog picture to sepia	✗	<span>✎</span> <span>🗑️</span>
CreateAction	#Photo1	Took dog picture	✗	<span>✎</span> <span>🗑️</span>
CreativeWork	https://creativecommons.org/licenses/by-nc-sa/3.0/au/	Attribution-NonCommercial-ShareAlike 3.0 Australia (CC BY-NC-SA 3.0 AU)	✓	<span>✎</span> <span>🗑️</span>
DataDownload	#picsdistro		✓	<span>✎</span> <span>🗑️</span>
DataDownload	https://data.research.uts.edu.au/examples/ro-crate/examples/src/downloads/sample.zip		✓	<span>✎</span> <span>🗑️</span>
Dataset	pics/	Pictures	✓	<span>✎</span> <span>🗑️</span>

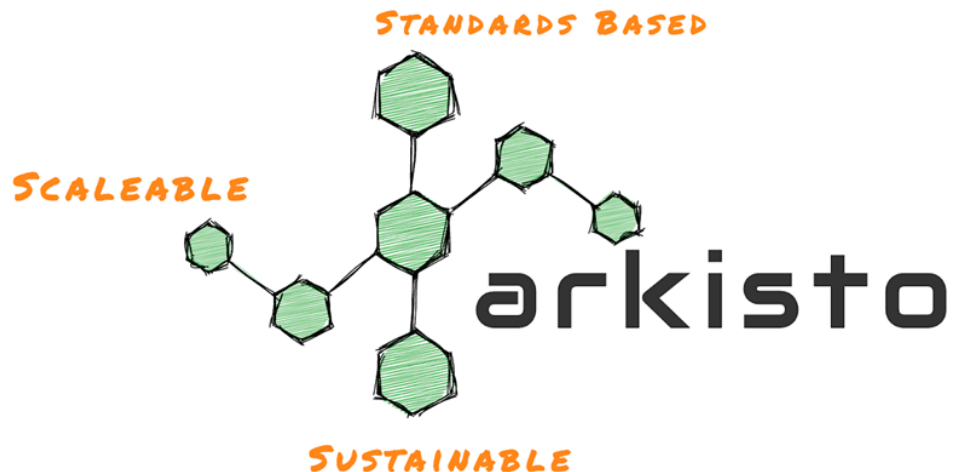
# Describo Online - MVP - next steps

- Develop other backend integrations
- Develop a UI for novice users - current UI = expert RO-Crate user
- Develop a UI to manage cultural collections
- Port capability to upload domain specific profiles from desktop

# Describo Desktop - next steps

- Port online entity rendering code from online - implementation cleaner than initial implementation in desktop
- Port novice user and cultural collections UI from online
- Port backend integrations from online

<https://arkisto-platform.github.io/>



A scaleable, standards based platform for sustainable data.