

WASH Canada - Module 5

Open Science Tools - authoring and publishing workflows for collaborative scientific writing

Lars Schöbitz

lschoebitz@ethz.ch

Global Health Engineering - ETH Zurich

<https://larnsce.github.io/wash-canada/>

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Welcome! 🙌

<https://larnsce.github.io/wash-canada/>

Meet the lecturer

<https://larnsce.github.io/wash-canada/>

Lars Schöbitz (he/him)

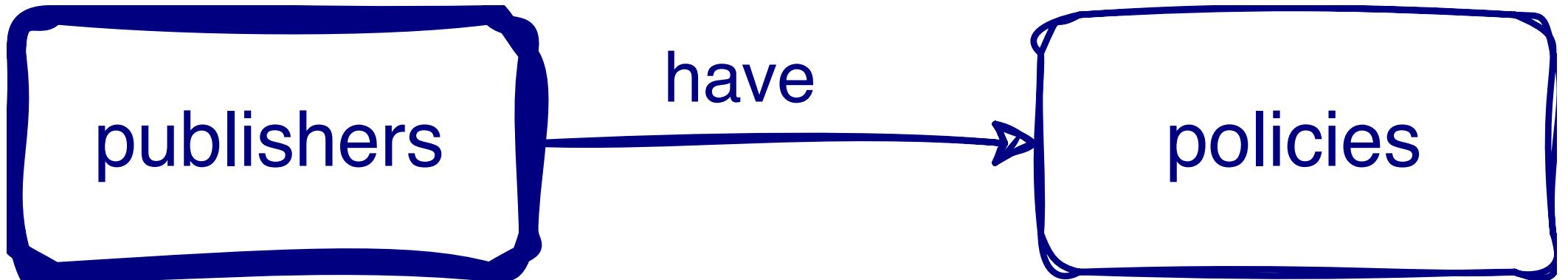


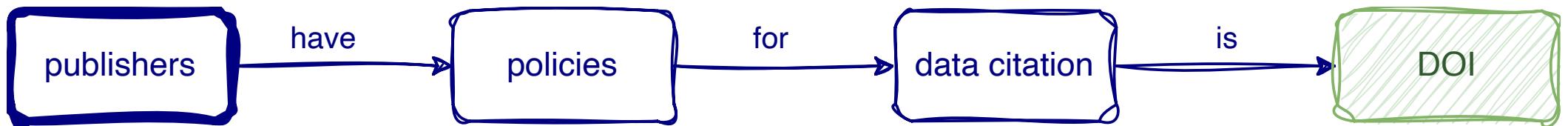
- Environmental Engineer
- Open Science Specialist at ETH Zurich
- Independent Instructor for Data Science with R

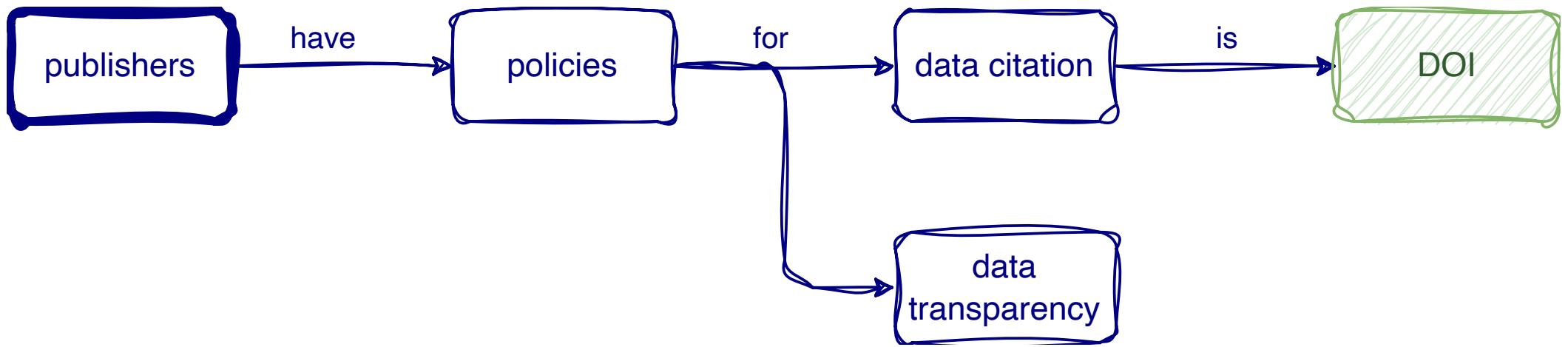
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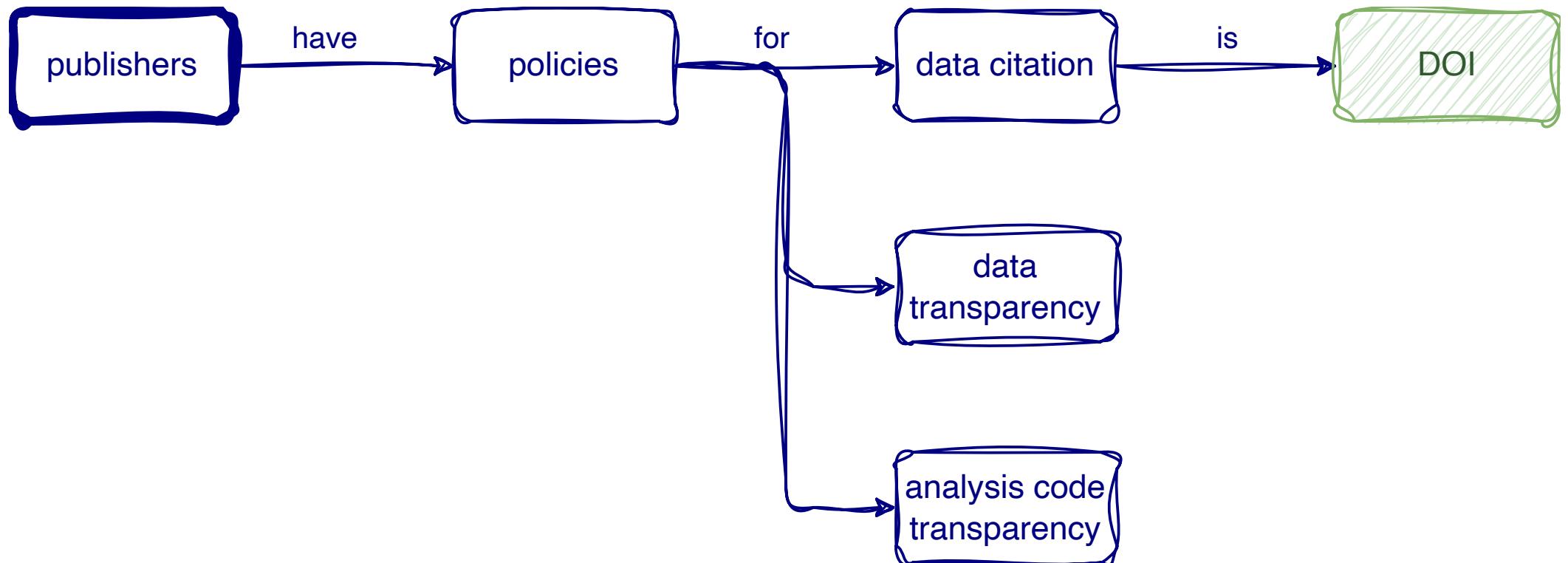
Why Open Science?

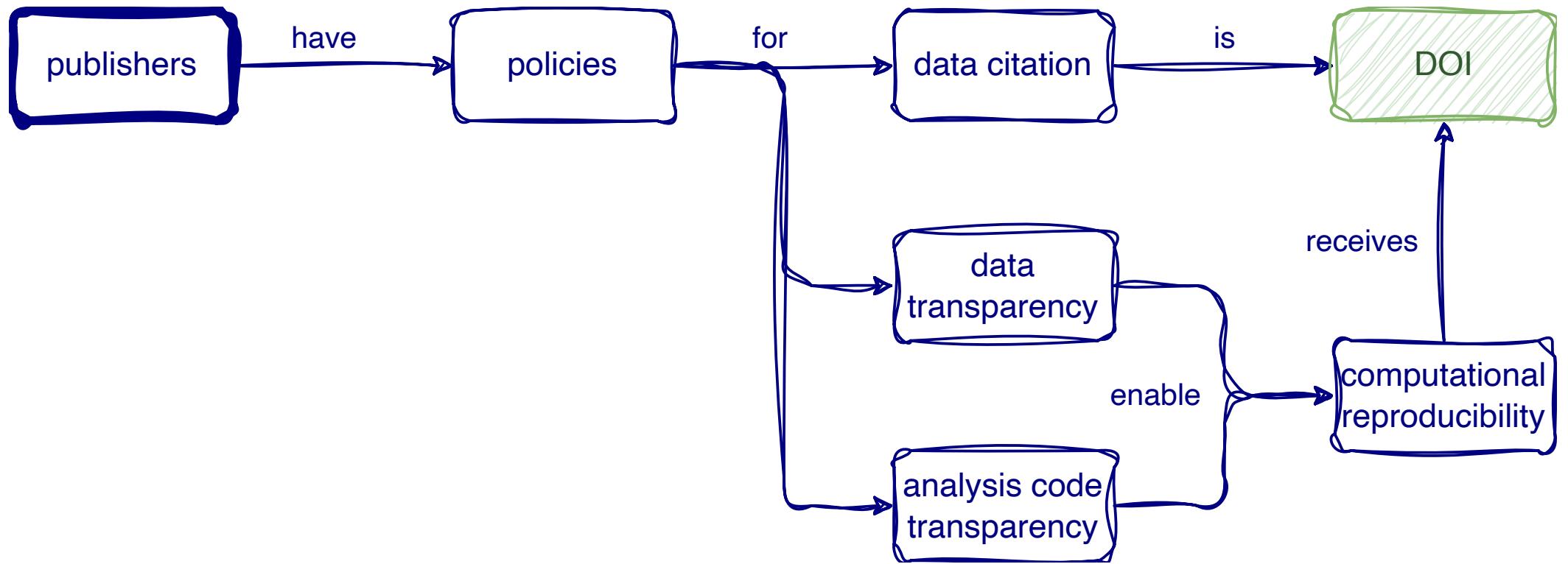
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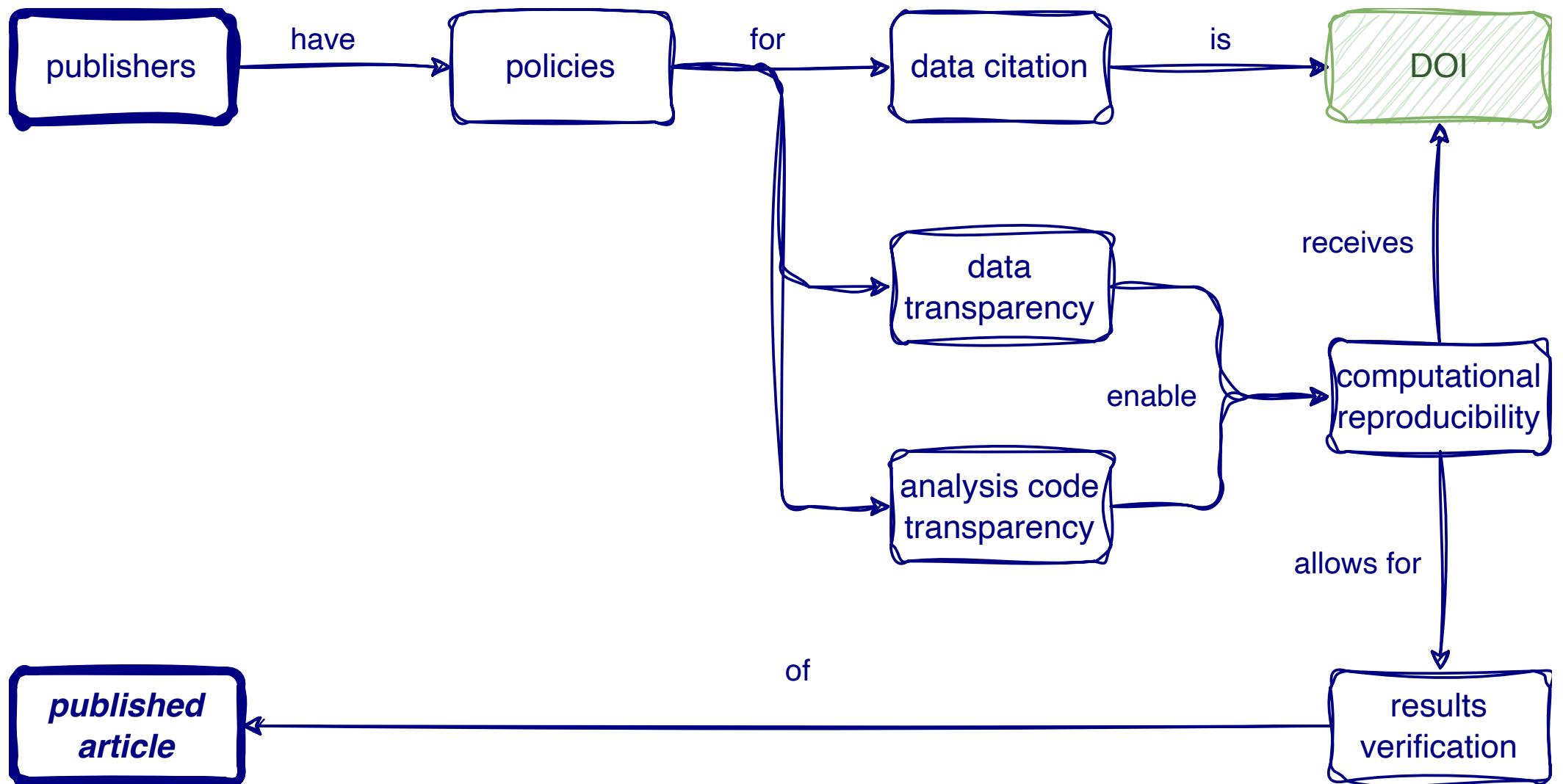


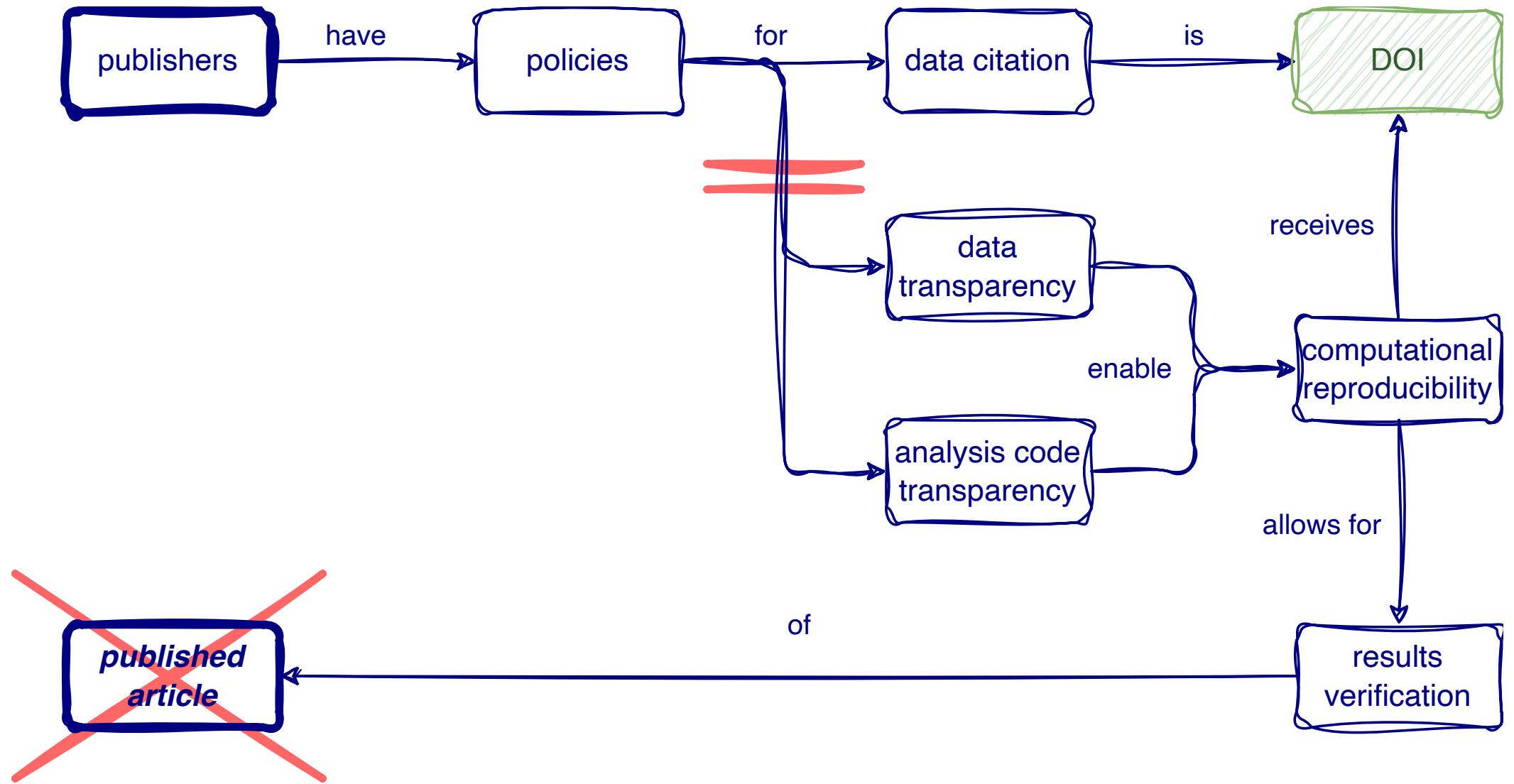










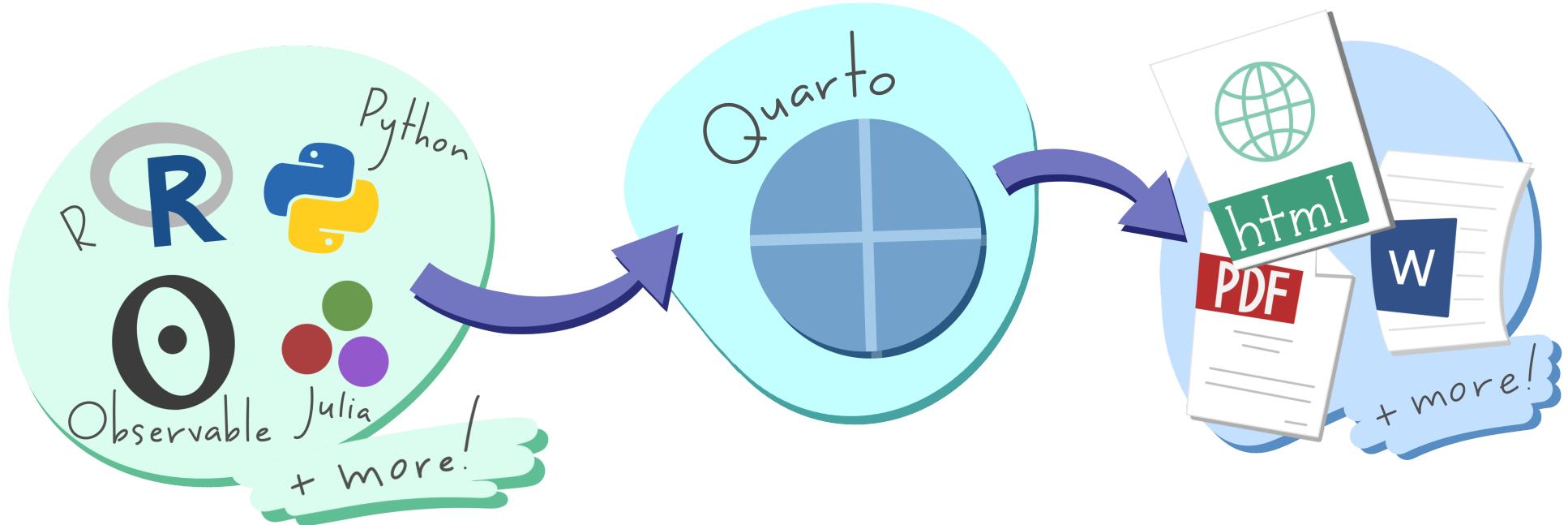


What is Quarto?

<https://larnsce.github.io/wash-canada/>

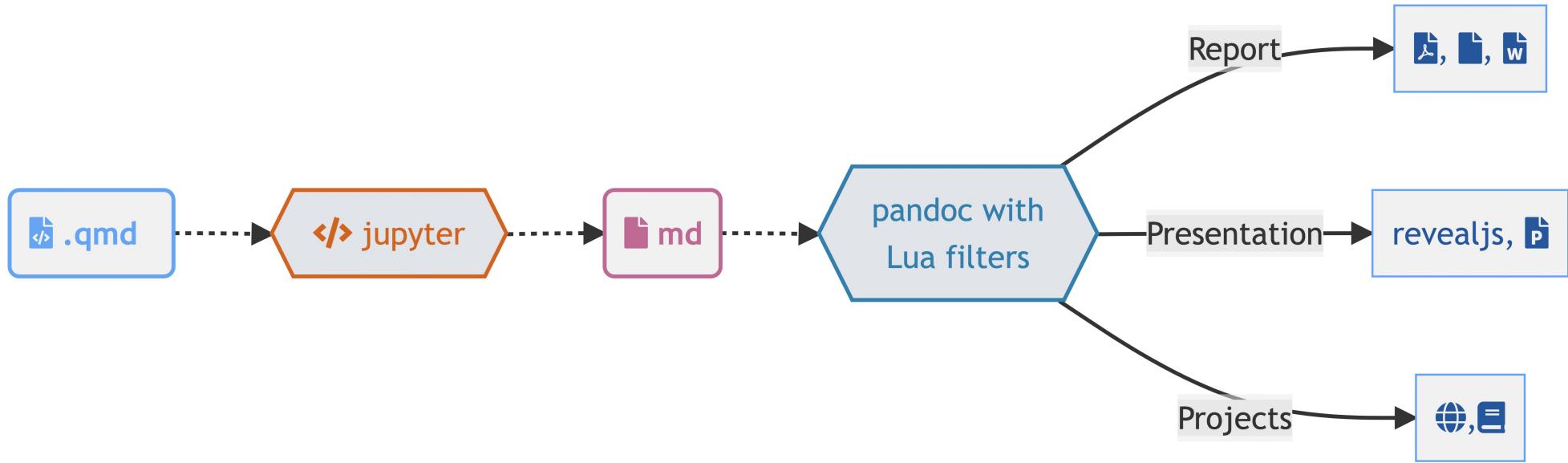
Quarto is a new, open-source, scientific and technical publishing system

the goal is to make the process of creating
and collaborating dramatically better



<https://larnsce.github.io/wash-canada/>

Quarto for literate programming



What is a `.qmd`?

A Quarto document i.e. a `.qmd` is a plain text file

Metadata (YAML)

```
1 format: html
2 engine: knitr
```

```
1 format: html
2 engine: jupyter
```

Code

```
1 ```{r}
2 library(dplyr)
3
4 mtcars |>
5   dplyr::group_by(cyl) |>
6   dplyr::summarize(mean = mean(mpg))
7 ````
```

```
1 ```{python}
2 from siuba import _, group_by, summarize
3 from siuba.data import mtcars
4 (mtcars
5   >> group_by(_.cyl)
6   >> summarize(avg_mpg = _.mpg.mean()))
7 )
8 ````
```

Text

```
1 # Heading 1
2 This is a sentence with some **bold text**, some *italic text* and an
3 ![image](image.png){fig-alt="Alt text for this image"}.
```

Quarto makes moving between formats straightforward

Document

```
lesson-1.qmd
```

```
1 title: "Lesson 1"  
2 format: html
```

Presentation

```
lesson-1.qmd
```

```
1 title: "Lesson 1"  
2 format: revealjs
```

Website

```
_quarto.yml
```

```
1 project:  
2   type: website  
3  
4 website:  
5 navbar:  
6   left:  
7     - lesson-1.qmd
```

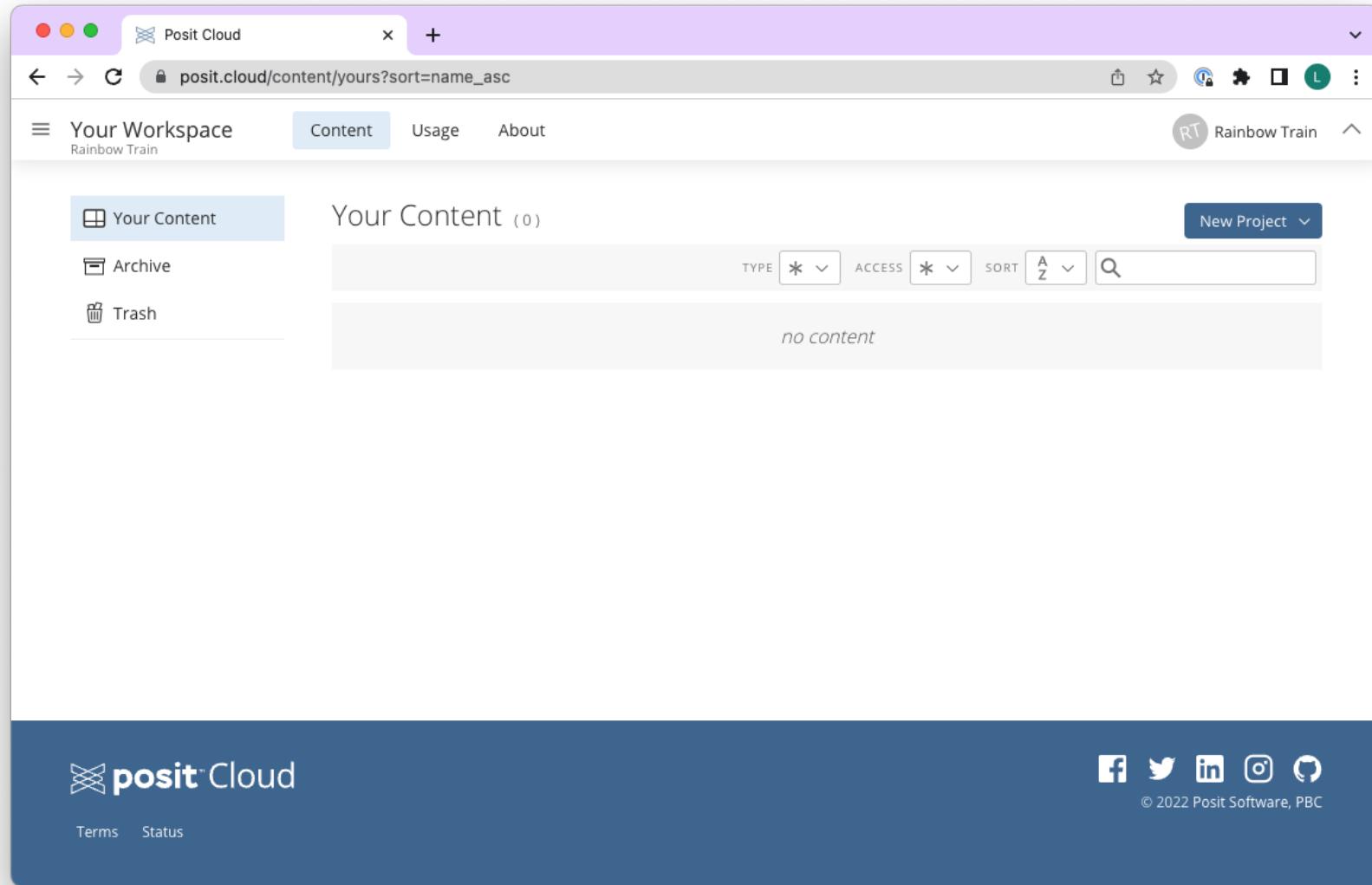
Comfort of your own workspace

The screenshot shows a Jupyter Notebook interface with the following components:

- Left Sidebar:** Includes icons for file operations, search, and help, along with sections for **OPEN EDITORS**, **QUARTO-WEB** (listing files like execution-options.qmd, julia.qmd, jupyter-kernels.qmd, ojs.qmd, palmer-penguins.csv, parameters.qmd, and python.qmd), **OUTLINE**, **TIMELINE**, and **QUARTO: HELP** (providing documentation for the plot function).
- Central Area:** A code editor window titled "python.qmd" showing Python code for a polar plot. The code imports numpy and matplotlib, generates radial data, and creates a polar plot with concentric circles.
- Right Area:** An "Interactive-1" shell window running Python 3.9.5. It displays the plot command and the resulting polar plot, which consists of three concentric blue circles centered at approximately (0.5, 0) in polar coordinates.
- Bottom Status Bar:** Shows "Simple" mode, line numbers (Ln 3, Col 1), file name (quarto-jupyterlab.ipynb), and a URL (https://larnsce.github.io/wash-canada/).
- Bottom Right Logo:** GHE GLOBAL HEALTH ENGINEERING logo.

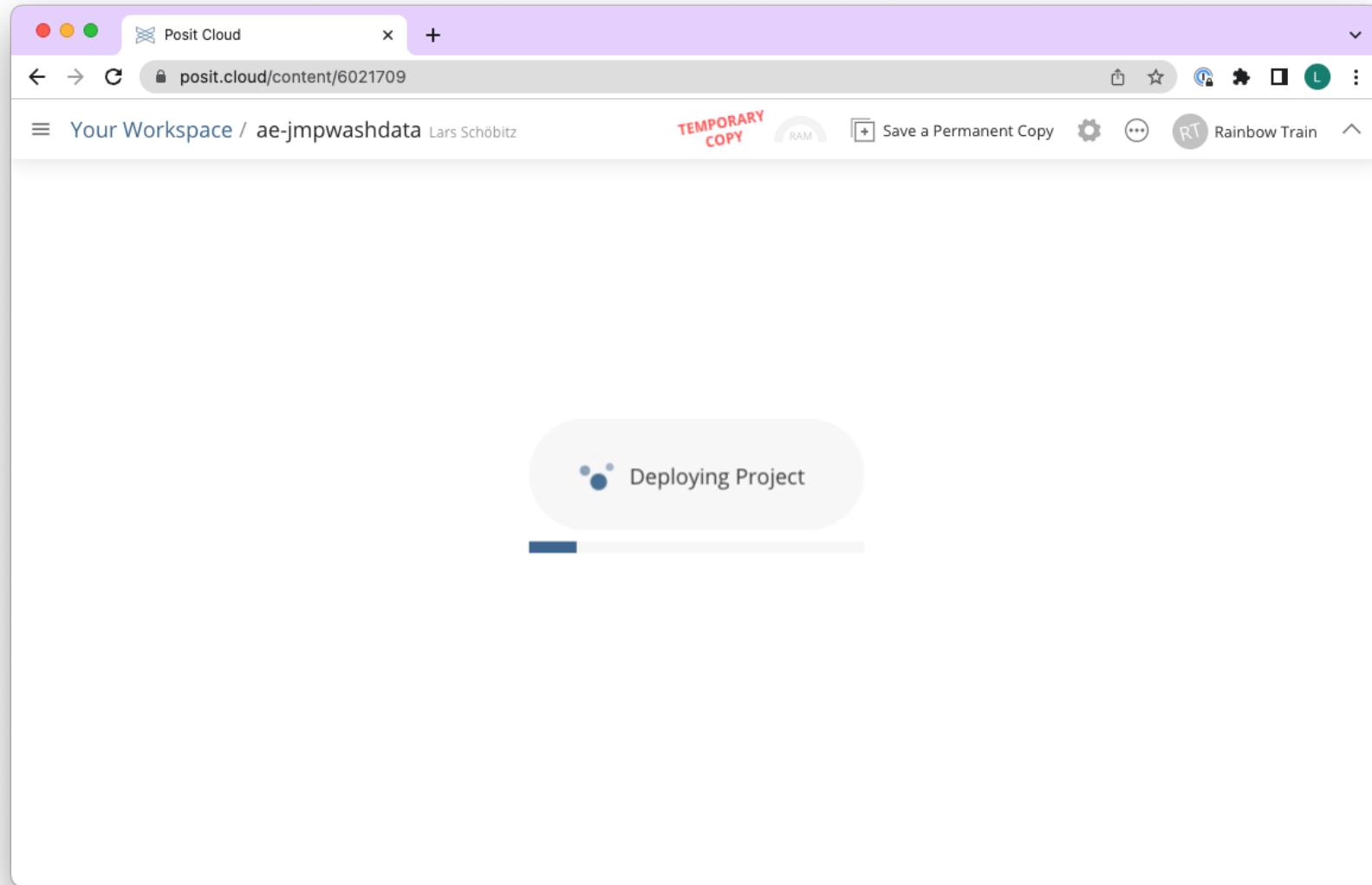
<https://larnsce.github.io/wash-canada/>

Posit Cloud & RStudio IDE



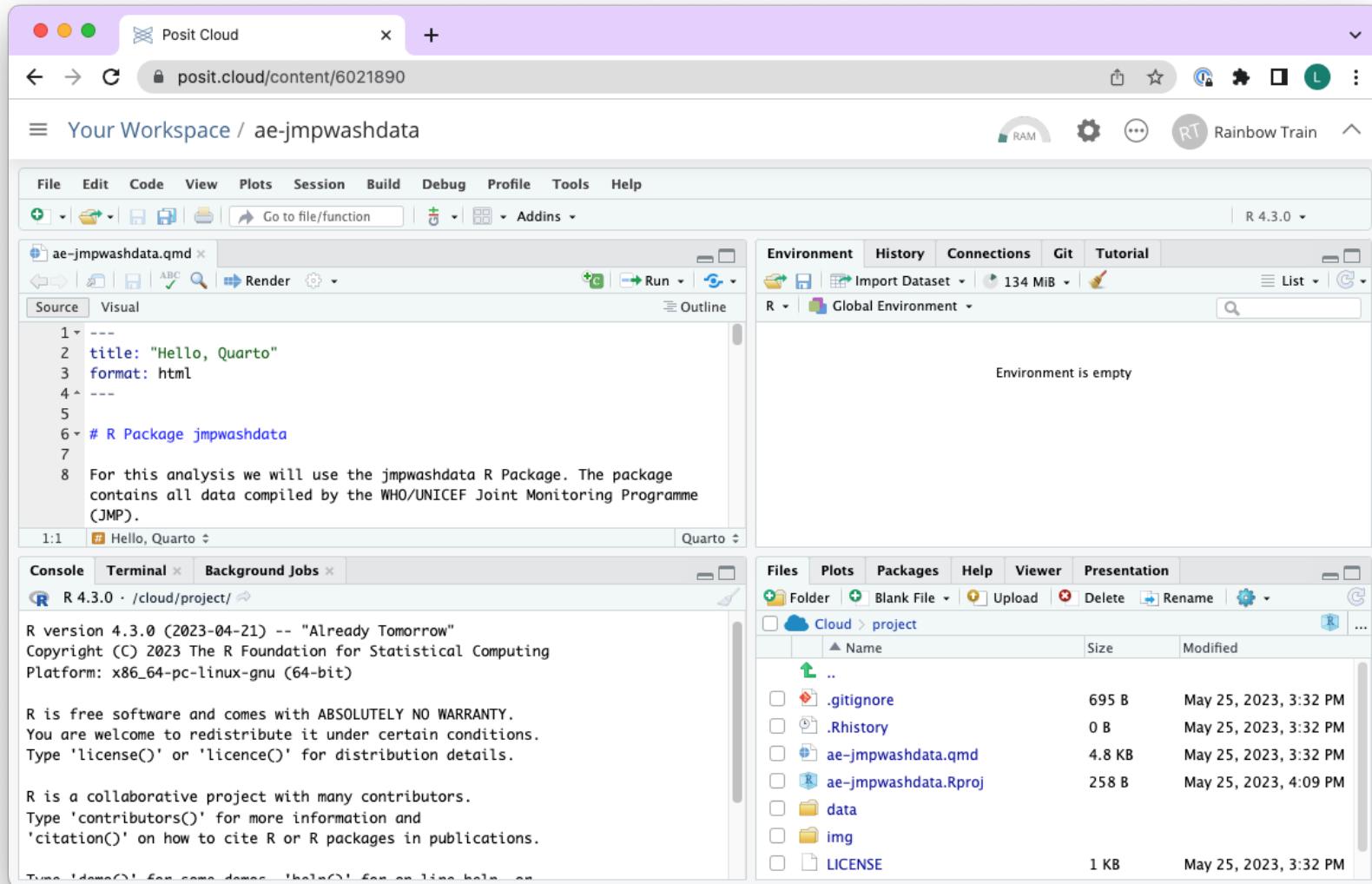
<https://larnsce.github.io/wash-canada/>

Posit Cloud & RStudio IDE



<https://larnsce.github.io/wash-canada/>

Posit Cloud & RStudio IDE



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Let's say hello to Quarto

<https://larnsce.github.io/wash-canada/>

Open this link

<https://posit.cloud/content/6021709>

<https://larnsce.github.io/wash-canada/>

More resources for Quarto

- Video: [Reproducible authoring with Quarto](#)
- Video: [Openscapes: Hello Quarto with NASA Openscapes, RLadies Santa Barbara, and JJ Allaire](#)
- Quarto documentation: quarto.org
- Quarto gallery: quarto.org/docs/gallery
- Quarto tip a day: rstd.io/quartotip

openwashdata

<https://larnsce.github.io/wash-canada/>

openwashdata

- Receive **credit** for work that is not a scientific paper
- Give **recognition** to those that support your work
- Tell **stories** with data that haven't yet been told
- Meet **people** that care about data and code being open and reusable

The Opportunity

<https://larnsce.github.io/wash-canada/>

Journal Articles

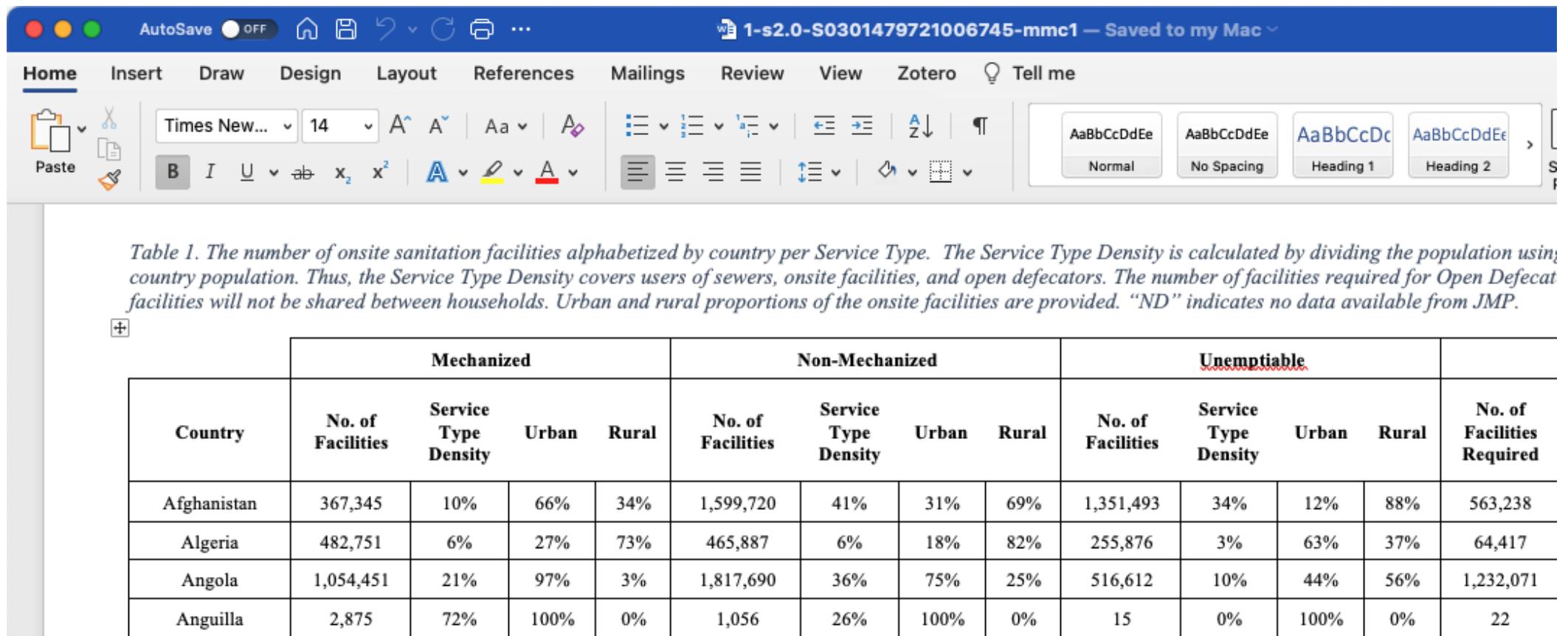
Appendix A. Supplementary data

The following is the supplementary data to this article:

 Download : Download Word document (152KB)

Multimedia component 1.

Journal Articles



The screenshot shows a Microsoft Word document window titled "1-s2.0-S0301479721006745-mmc1 — Saved to my Mac". The ribbon menu is visible at the top, showing Home, Insert, Draw, Design, Layout, References, Mailings, Review, View, Zotero, Tell me, and AutoSave (OFF). The main content area contains a table with data about onsite sanitation facilities.

Table 1. The number of onsite sanitation facilities alphabetized by country per Service Type. The Service Type Density is calculated by dividing the population using country population. Thus, the Service Type Density covers users of sewers, onsite facilities, and open defecators. The number of facilities required for Open Defecation facilities will not be shared between households. Urban and rural proportions of the onsite facilities are provided. "ND" indicates no data available from JMP.

Country	Mechanized				Non-Mechanized				Unemptiable				No. of Facilities Required
	No. of Facilities	Service Type Density	Urban	Rural	No. of Facilities	Service Type Density	Urban	Rural	No. of Facilities	Service Type Density	Urban	Rural	
Afghanistan	367,345	10%	66%	34%	1,599,720	41%	31%	69%	1,351,493	34%	12%	88%	563,238
Algeria	482,751	6%	27%	73%	465,887	6%	18%	82%	255,876	3%	63%	37%	64,417
Angola	1,054,451	21%	97%	3%	1,817,690	36%	75%	25%	516,612	10%	44%	56%	1,232,071
Anguilla	2,875	72%	100%	0%	1,056	26%	100%	0%	15	0%	100%	0%	22

The Journey

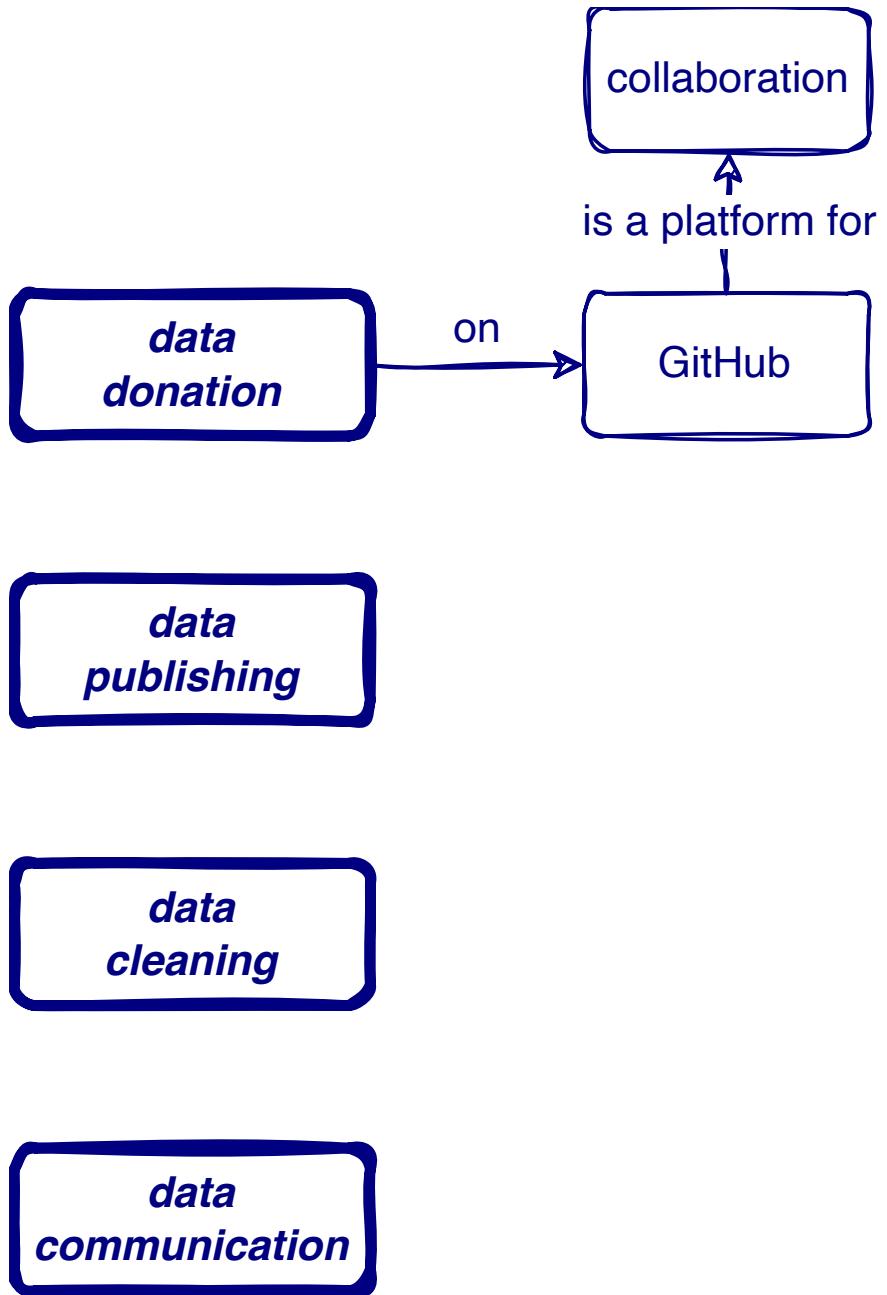
<https://larnsce.github.io/wash-canada/>

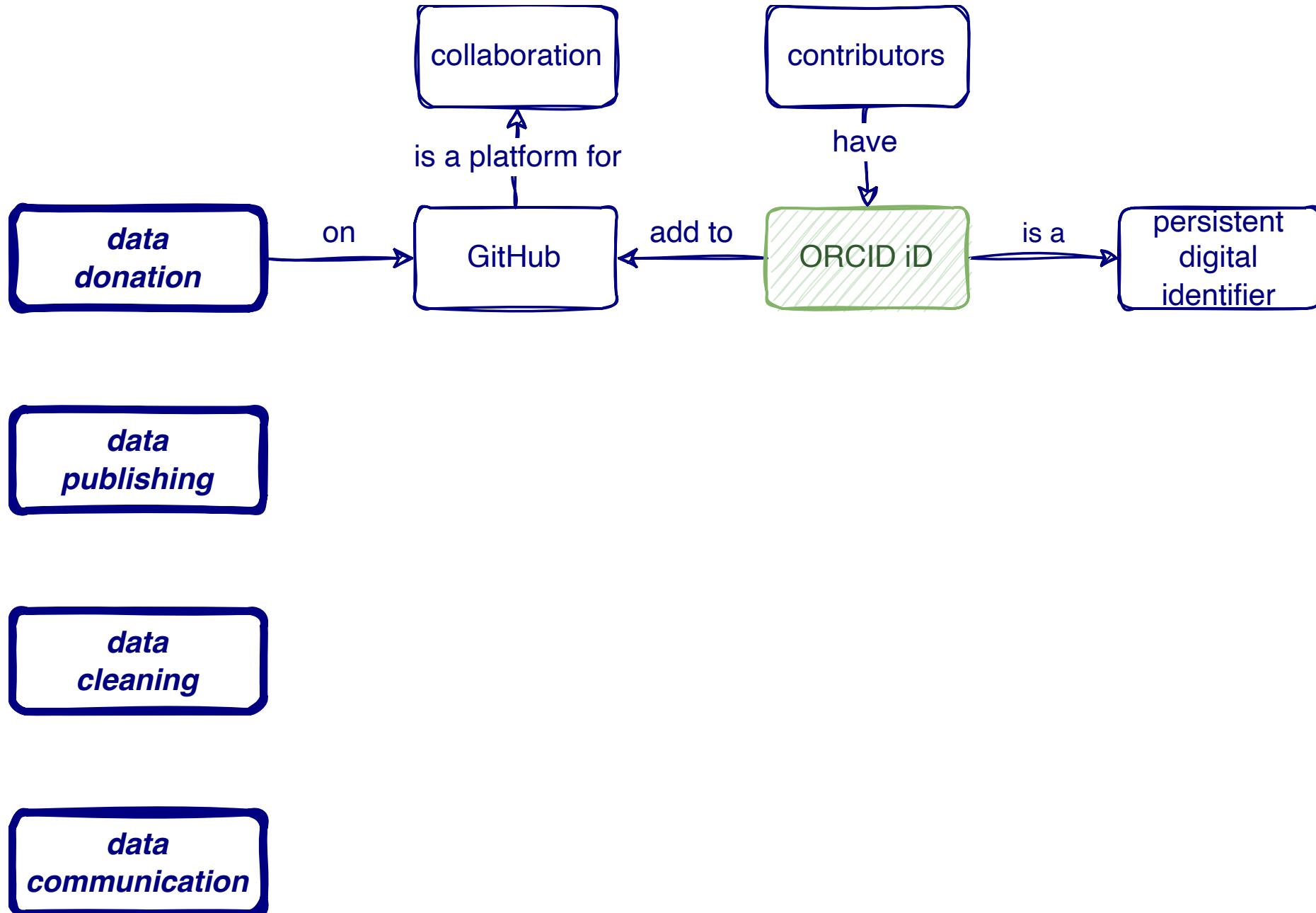
*data
donation*

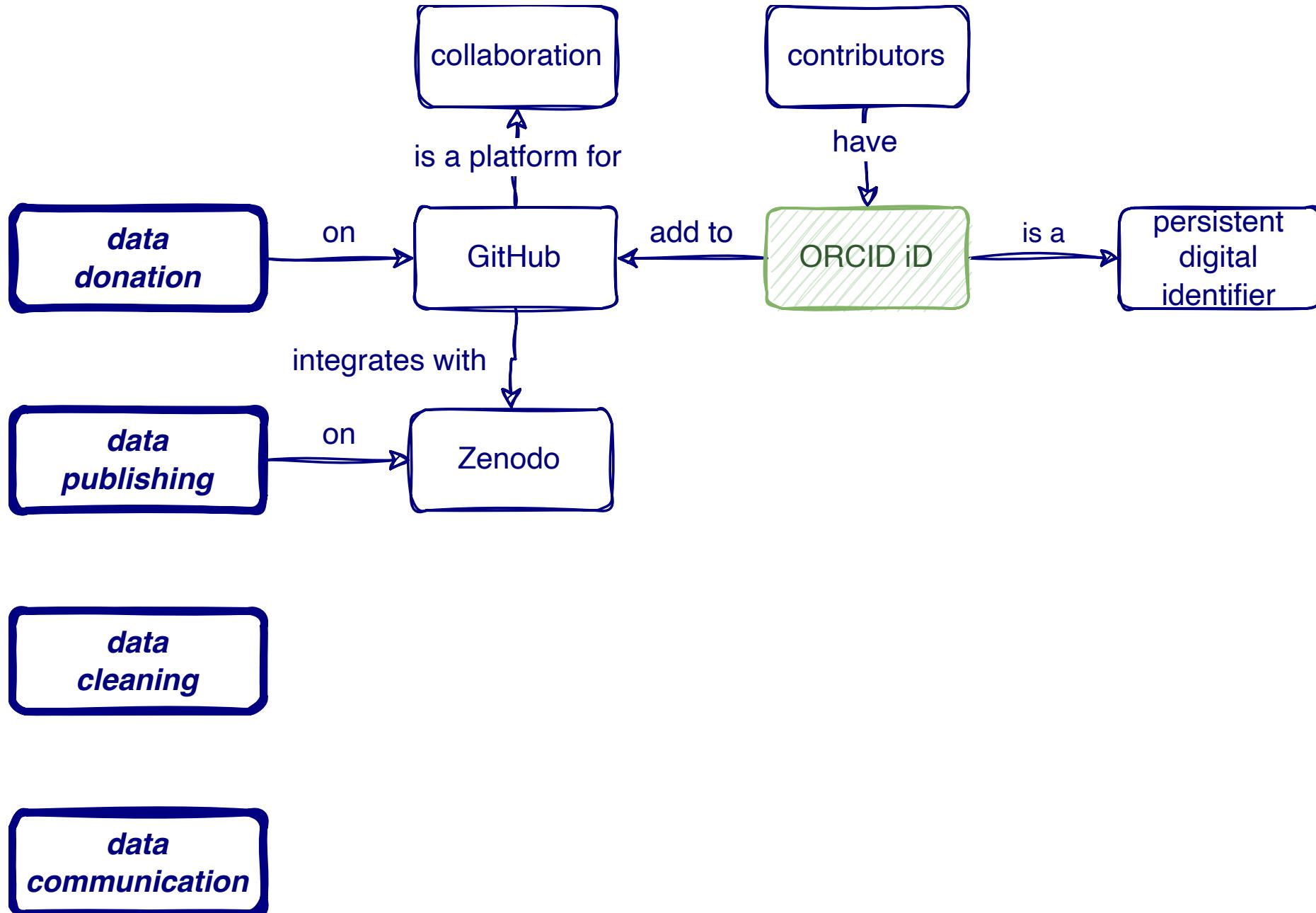
*data
publishing*

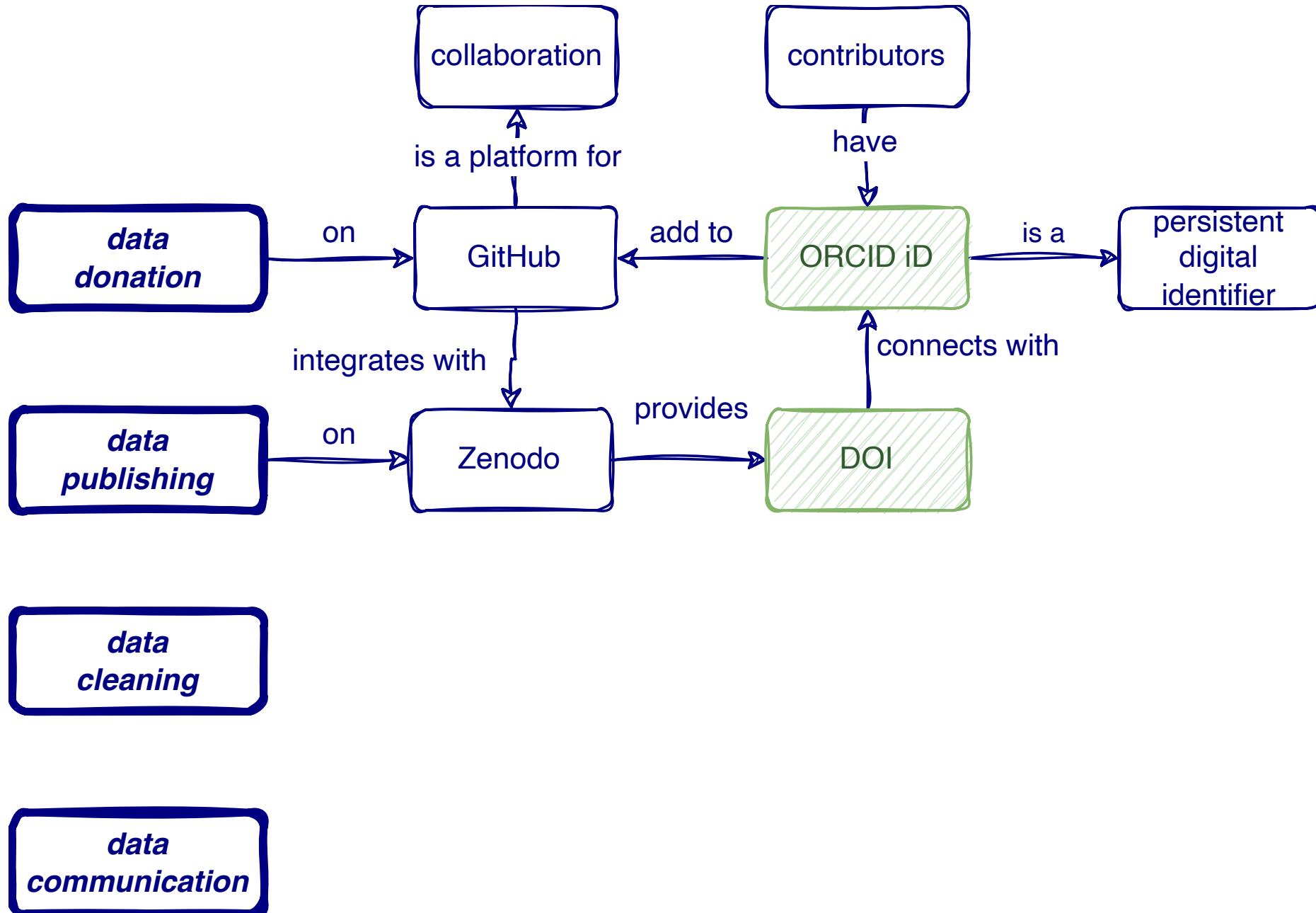
*data
cleaning*

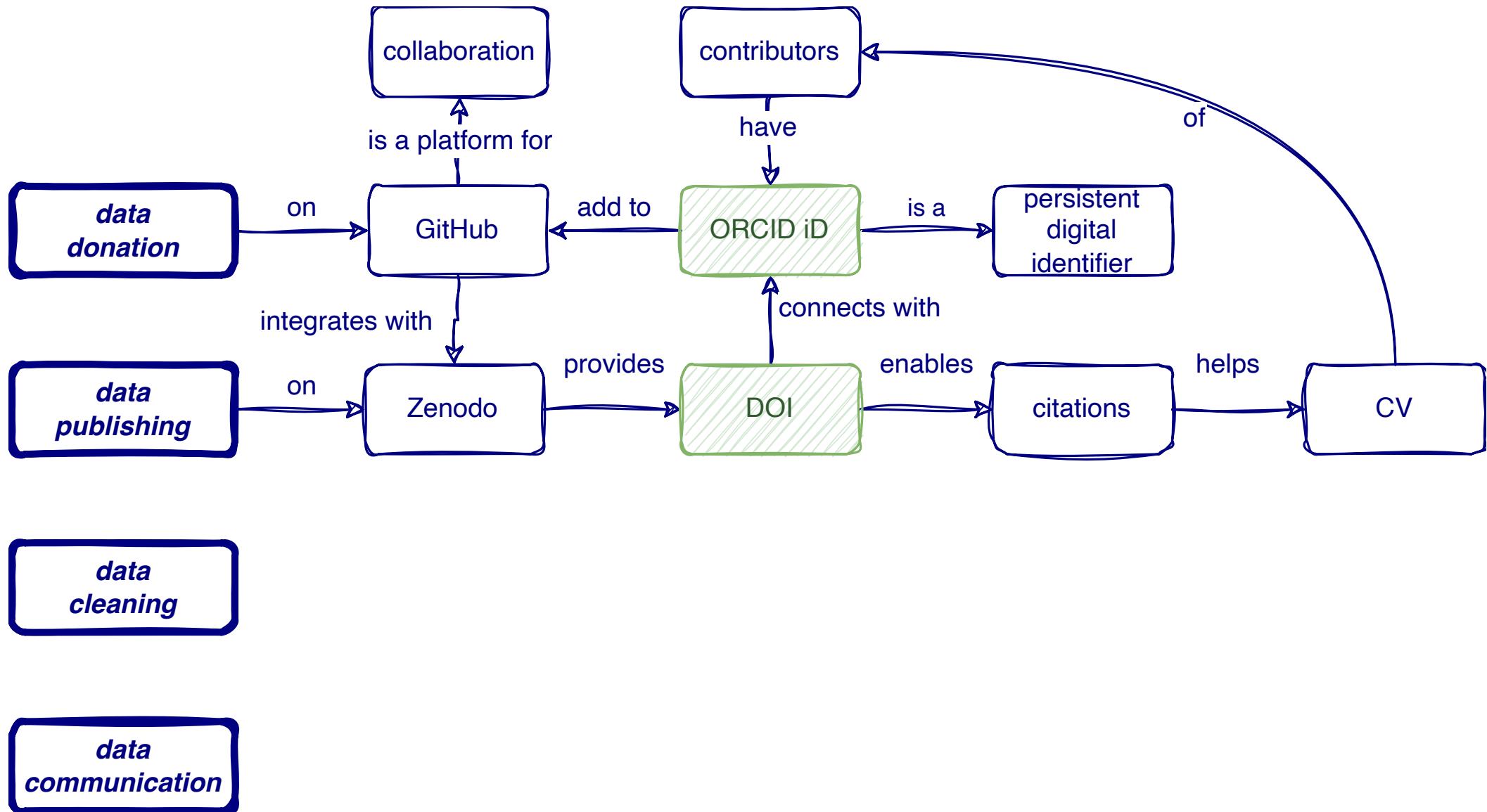
*data
communication*

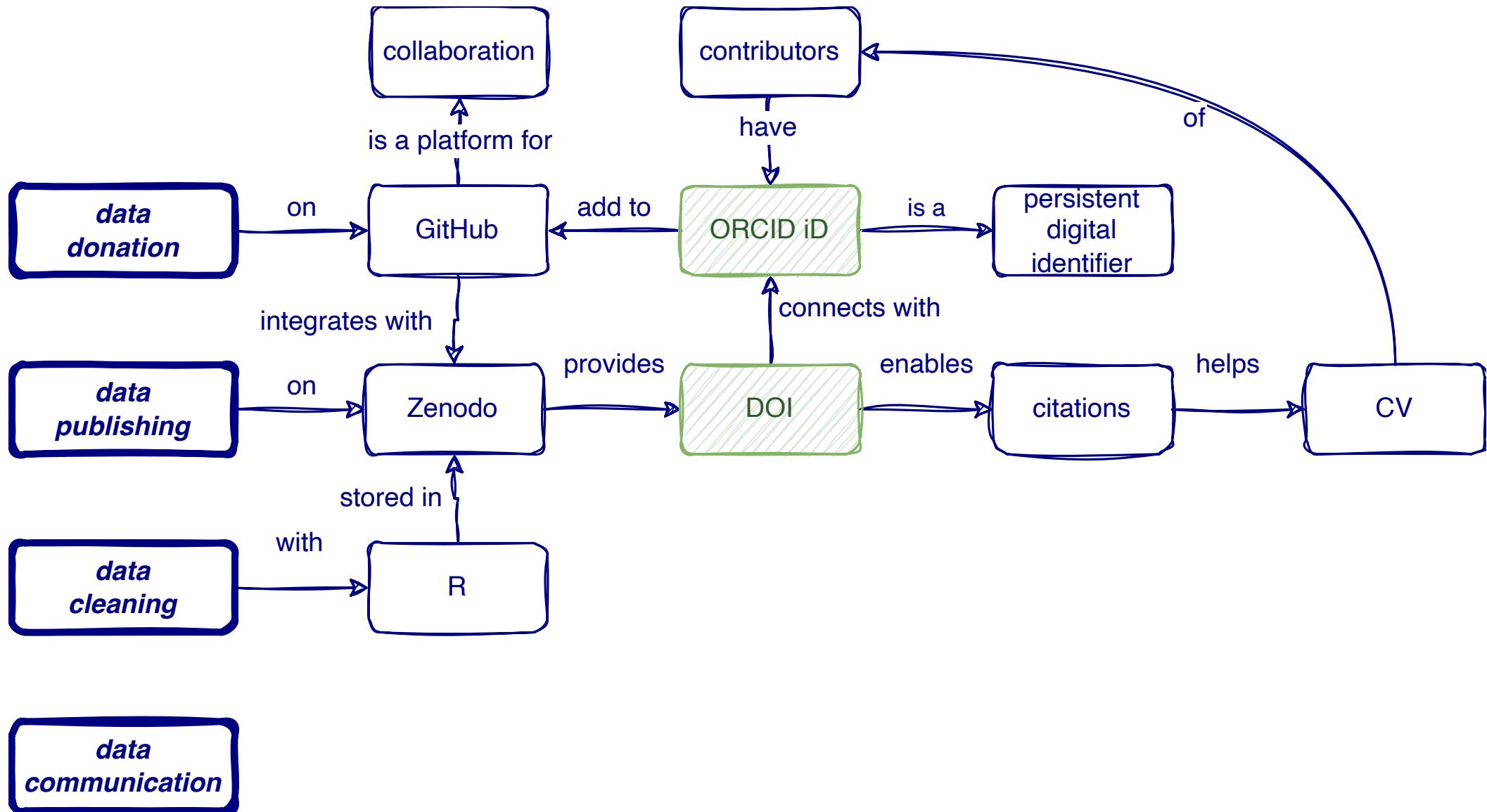


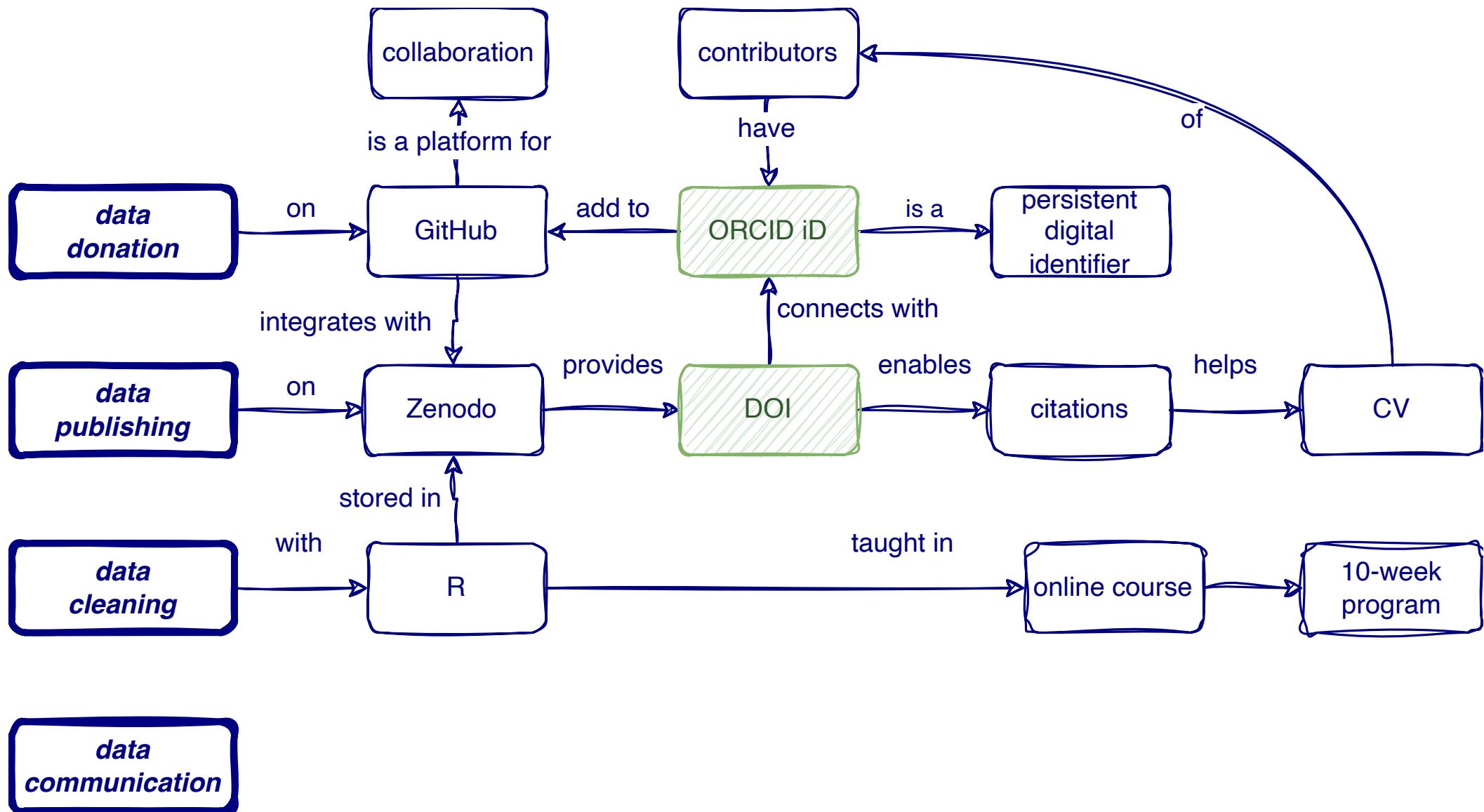


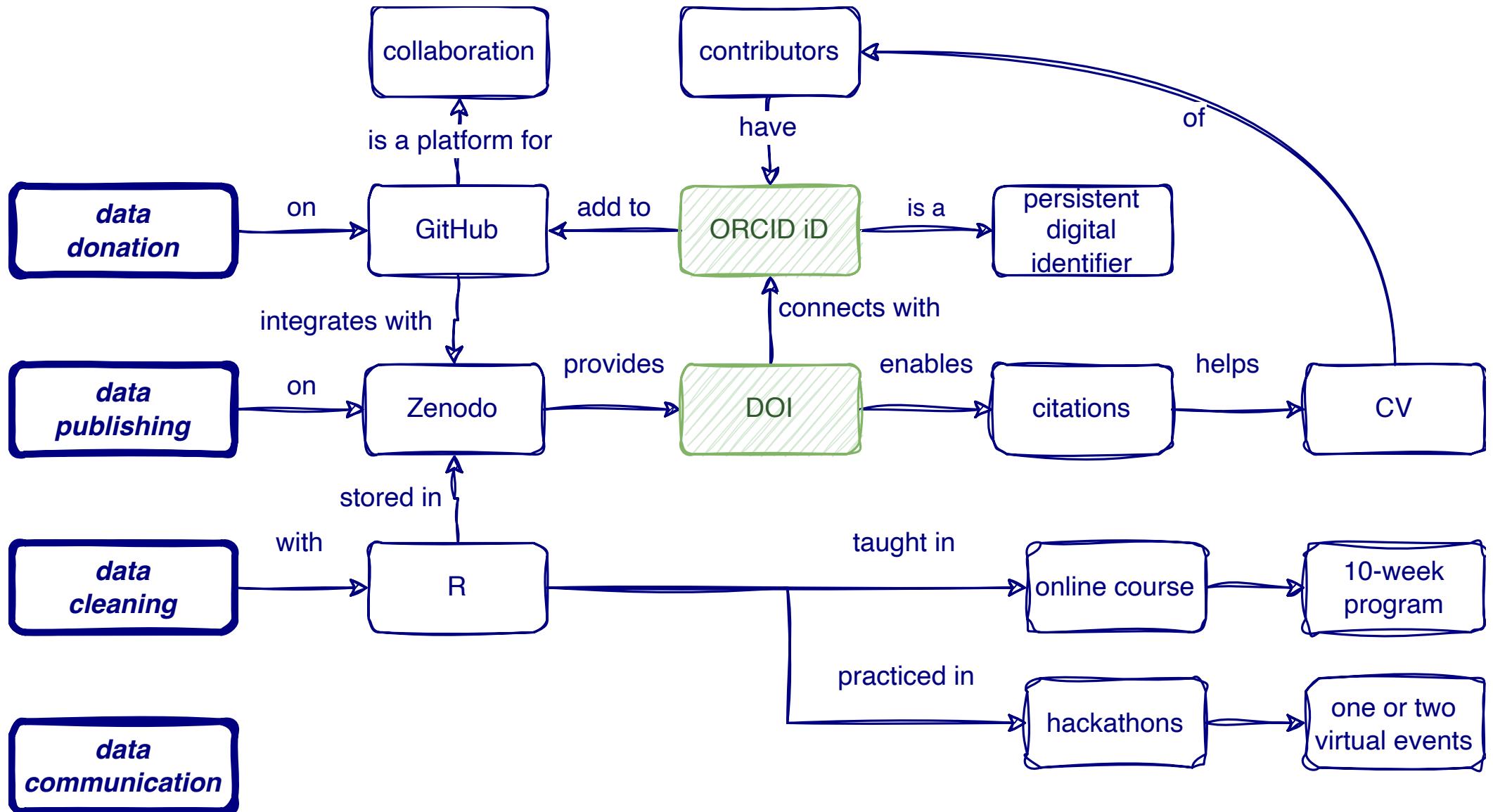


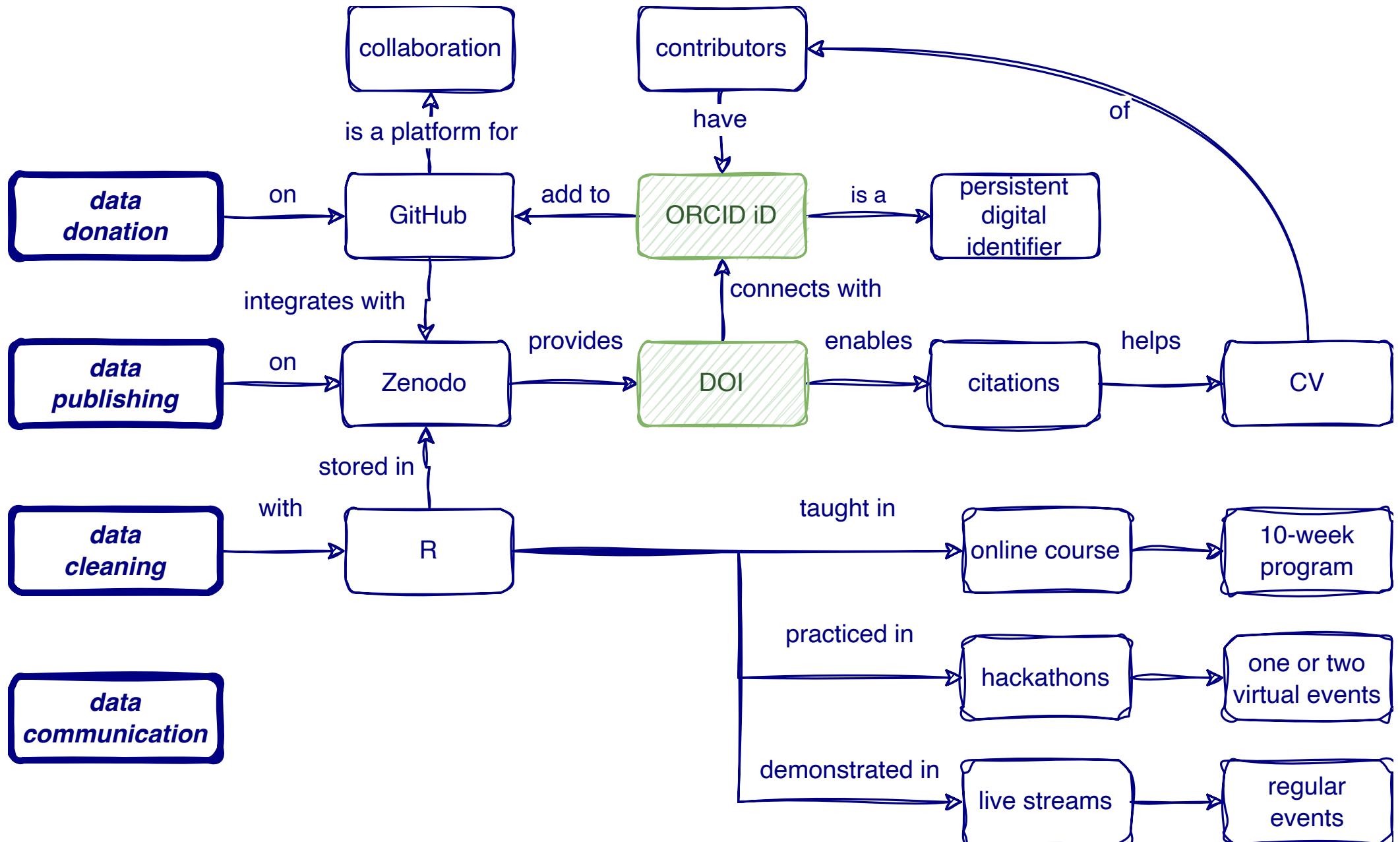


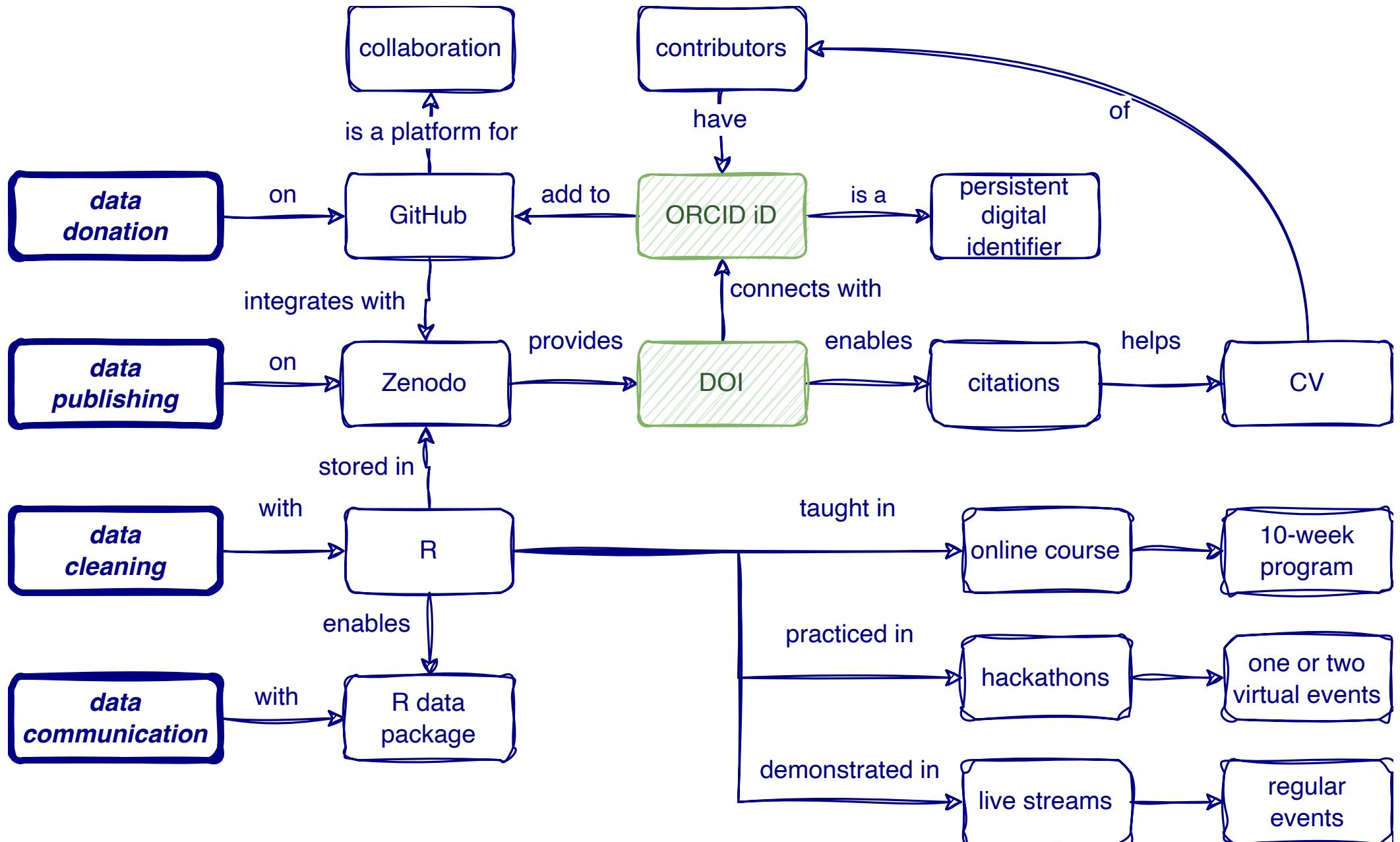


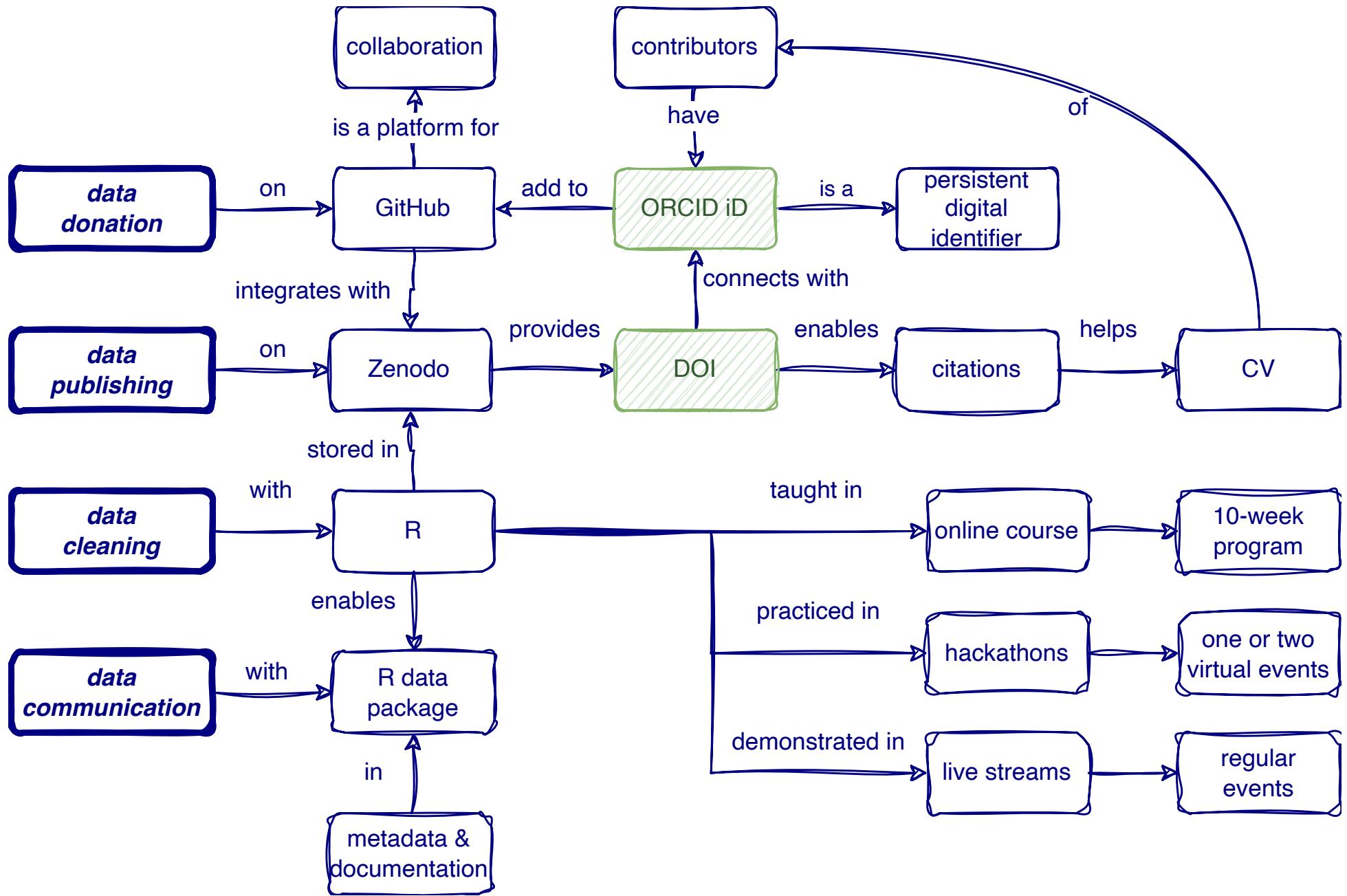


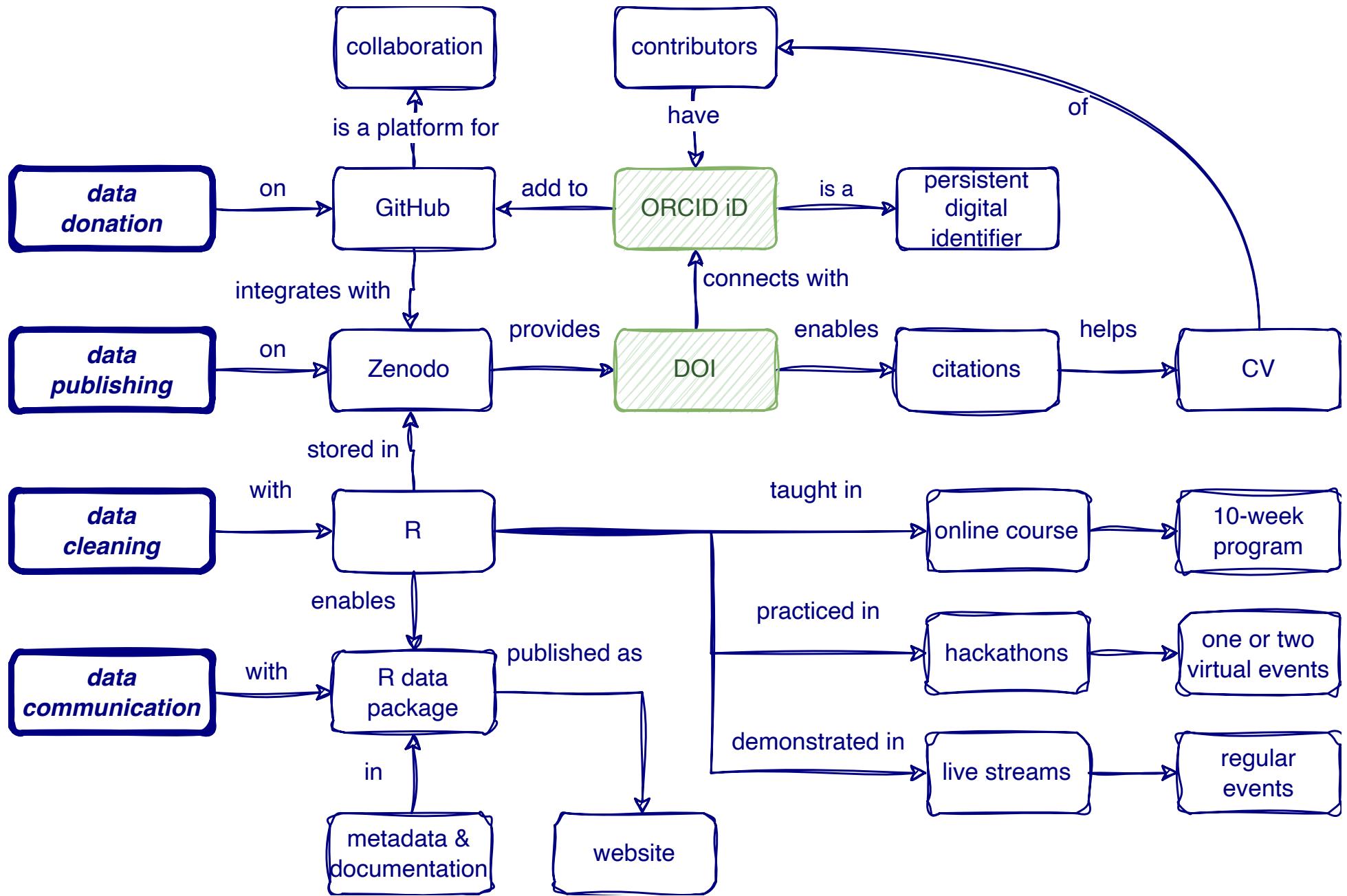


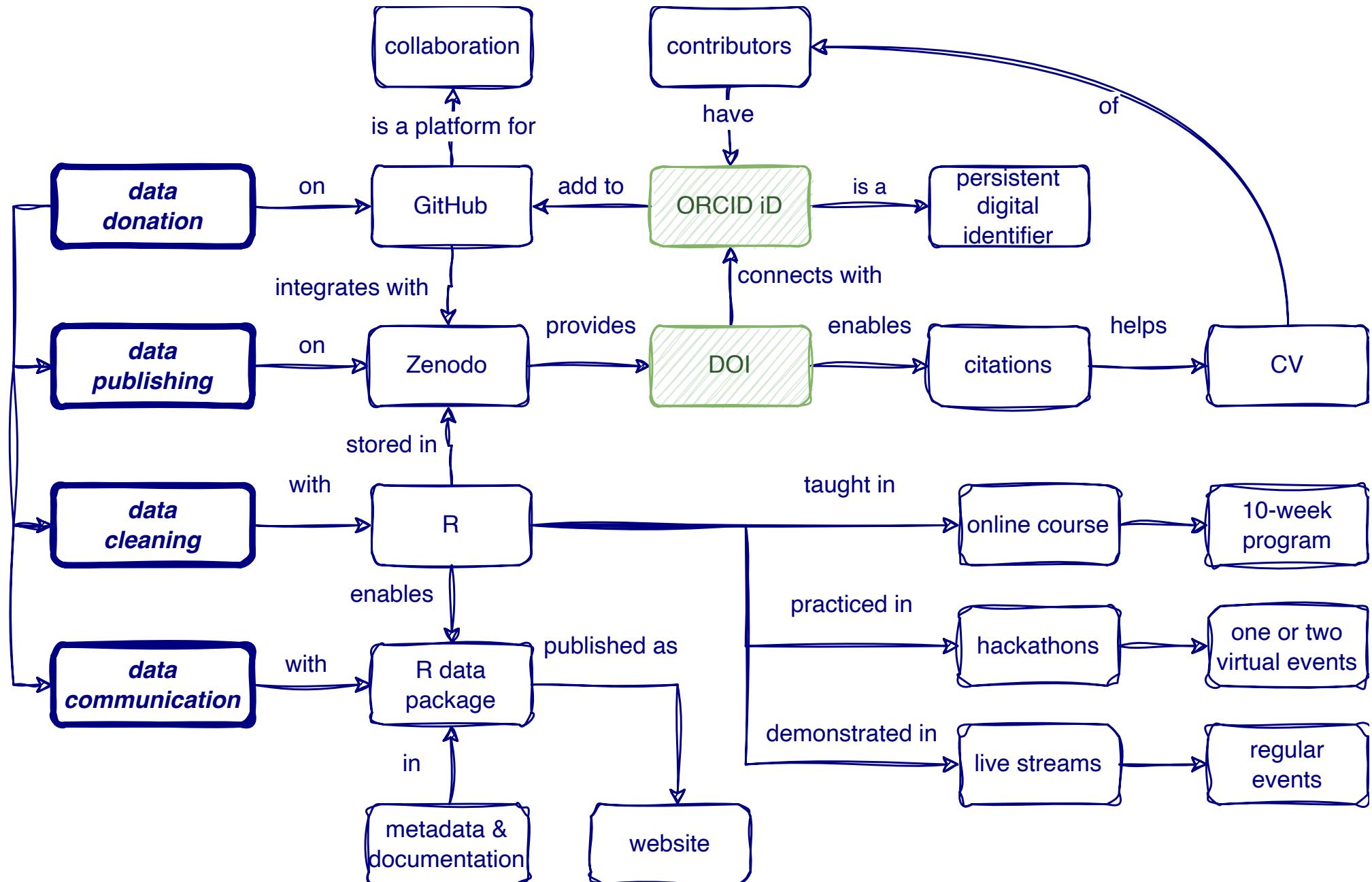












The Product

<https://larnsce.github.io/wash-canada/>

What does final look like?

The screenshot shows a web browser window with the title "Durban (South Africa) Plastic Waste" and the URL <https://global-health-engineering.github.io/durbanplasticwaste>. The page content is as follows:

durbanplasticwaste 0.1.0 Reference Articles ▾

durbanplasticwaste

Overview

This package combines data collected as part of an MSc. Thesis Project and an MSc. Semester Project conducted in Durban, South Africa. The projects were supported by the Global Health Engineering group at ETH Zurich, Switzerland.

Installation

You can install the development version of durbanplasticwaste from [GitHub](#) with:

```
# install.packages("devtools")
devtools::install_github("Global-Health-Engineering/durbanplasticwaste")
```

Alternatively, you can download the individual data sets as a CSV or XLSX file from the table below.

dataset	CSV	XLSX
litterboom_counts	Download CSV	Download XLSX

Projects

MSc. Thesis Project

Evaluating the potential of Extended Producer Responsibility returns for a small local waste collection company
The potential of Extended Producer Responsibility returns for a small local waste collection company in Durban, South Africa

License
[Full license](#)
[CC BY 4.0](#)

Citation
[Citing durbanplasticwaste](#)

Developers
Raúl Bergen
Author

Lars Schöbitz
Maintainer

Chiara Meyer-Piening
Author

Global Health Engineering
Funder

[More about authors...](#)

Dev status
DOI [10.5281/zenodo.7708756](#)

<https://larnsce.github.io/wash-canada/>

Engage

<https://larnsce.github.io/wash-canada/>

Our channels

One-way communication

- Website: openwashdata.org
- Newsletter:
buttondown.email/openwashdata

Two-way engagement

- Instant messaging: [Matrix](#) (e.g. with Element chat client)
- Submit data ideas:
github.com/openwashdata/data/issues
- Social media: probably none

Thanks! 🌻

<https://larnsce.github.io/wash-canada/>

Thanks

A large proportion of these slides are taken from [Mine Çetinkaya Rundel's “Hello Quarto” presentation](#) & [Thomas Mock's “Quarto for the Curious” presentation](#)

Project openwashdata is supported by the [Open Research Data Program of the ETH Board](#).

The slides were created via revealjs and Quarto:

<https://quarto.org/docs/presentations/revealjs/>

You can [view source code of slides on GitHub](#)

Or you can [download slides in PDF format](#)

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References

- Bergen, Raúl, Lars Schöbitz, Chiara Meyer-Piening, Boynton Lin, Elizabeth Tilley, Marc Kalina, Siphewe Rakgabale, First Name Last Name, and Global Health Engineering. 2023. “durbanplasticwaste: Durban (South Africa) Plastic Waste Data.” Zenodo. <https://doi.org/10.5281/zenodo.7708756>.
- Greene, Nicola, Sarah Hennessy, Tate W. Rogers, Jocelyn Tsai, and Francis L. de los Reyes III. 2021. “The Role of Emptying Services in Provision of Safely Managed Sanitation: A Classification and Quantification of the Needs of LMICs.” *Journal of Environmental Management* 290 (July): 112612. <https://doi.org/10.1016/j.jenvman.2021.112612>.

<https://larnsce.github.io/wash-canada/>