

openwashdata

a community effort to bring open data practices to the WASH sector

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openwashdata

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

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

AutoSave OFF Home Insert Draw Design Layout References Mailings Review View Zotero Tell me

Times New... 14 A A Aa Aa Aa Aa B I U ab x x A A Aa Bb Cc Dd Ee S

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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 |

PDF reports



Treatment technologies in practice

On-the-ground experiences of faecal sludge
and wastewater treatment

SNV **UTS** Institute for
Sustainable
Futures

PDF reports

Table 2. Influent and effluent qualities of wastewater treated at Duri Kosambi FSTP plant in 2019, as compared to effluent standards

| Parameter | Inlet | Outlet |
|---|----------------------|---------------------|
| pH | 6, 45-7, 88 pH | 7, 12-7, 61 pH |
| Total suspended solids, TSS | 340-8933, 33 mg/L | 22, 5-84, 29 mg/L |
| Biochemical oxygen demand, BOD ₅ | 106, 38-646, 82 mg/L | 2, 76-69, 79 mg/L |
| Chemical oxygen demand, COD | 687, 9-2780, 37 mg/L | 41, 25-127, 67 mg/L |
| Total organic matter, KMnO ₄ | 108, 04-568, 72 mg/L | 54, 21-150, 50 mg/L |
| Ammonia, NH ₃ -N | 108, 75-239, 25 mg/L | 0, 45-29, 81 mg/L |
| Methylene blue active surfactant, MBAS | 0, 74-2, 69 mg/L | 0, 13-0, 78 mg/L |

PDF reports + Dropbox

Physiochemical properties

Addendum of data

| <u>General information</u> | |
|---------------------------------|--|
| Type of data | Composition |
| Place of experimentation | Pollution Research Group, University of KwaZulu-Natal (South Africa) |
| Dates of the experiments | 2018-2019 |
| <u>Feedstock</u> | |
| Type of faecal material | Faecal sludge from anaerobic baffled reactor (ABR) from a decentralised wastewater treatment plant (DEWAT) |
| Location of collection | Durban, South Africa |
| Age before collection | Unknown |
| Moisture content | ~ 90%wt |

PDF reports + Dropbox

The screenshot shows a web browser displaying a PDF document from a Dropbox link. The PDF contains two main tables for moisture content and two for drying temperature, along with some descriptive text.

Moisture content [%]

| | Sample | Water Activity [aw] |
|------|----------------|---------------------|
| 0.00 | a | 0.3909 |
| | b | 0.2353 |
| | c | 0.1898 |
| | Average | 0.2720 |
| | STDev | 0.1055 |
| 5.00 | a | 0.3687 |
| | b | 0.3812 |
| | c | 0.3750 |
| | average | 0.3750 |
| | STDev | 0.0088 |

Drying temperature [C]

| | Sample | Water Activity [aw] |
|-----|----------------|---------------------|
| 50 | a | 0.4833 |
| | b | 0.4804 |
| | c | 0.4895 |
| | average | 0.4844 |
| | STDev | 0.0046 |
| 105 | a | 0.4479 |
| | b | 0.4014 |
| | c | 0.4209 |
| | average | 0.4234 |
| | STDev | 0.0234 |

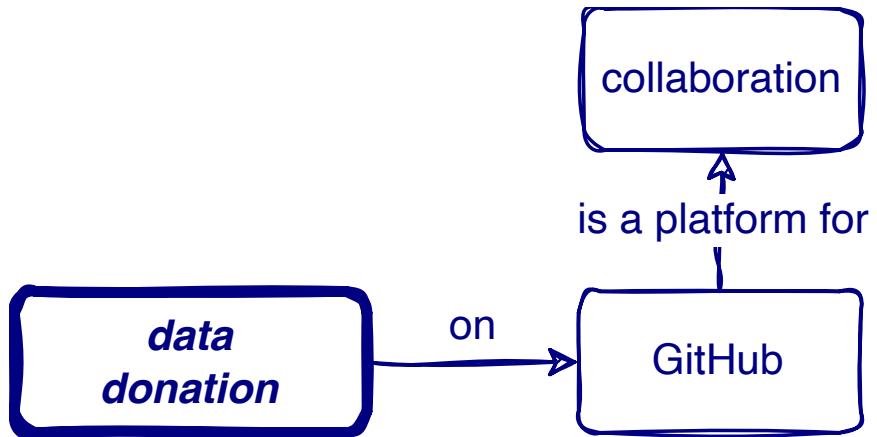
The Journey

*data
donation*

*data
publishing*

*data
cleaning*

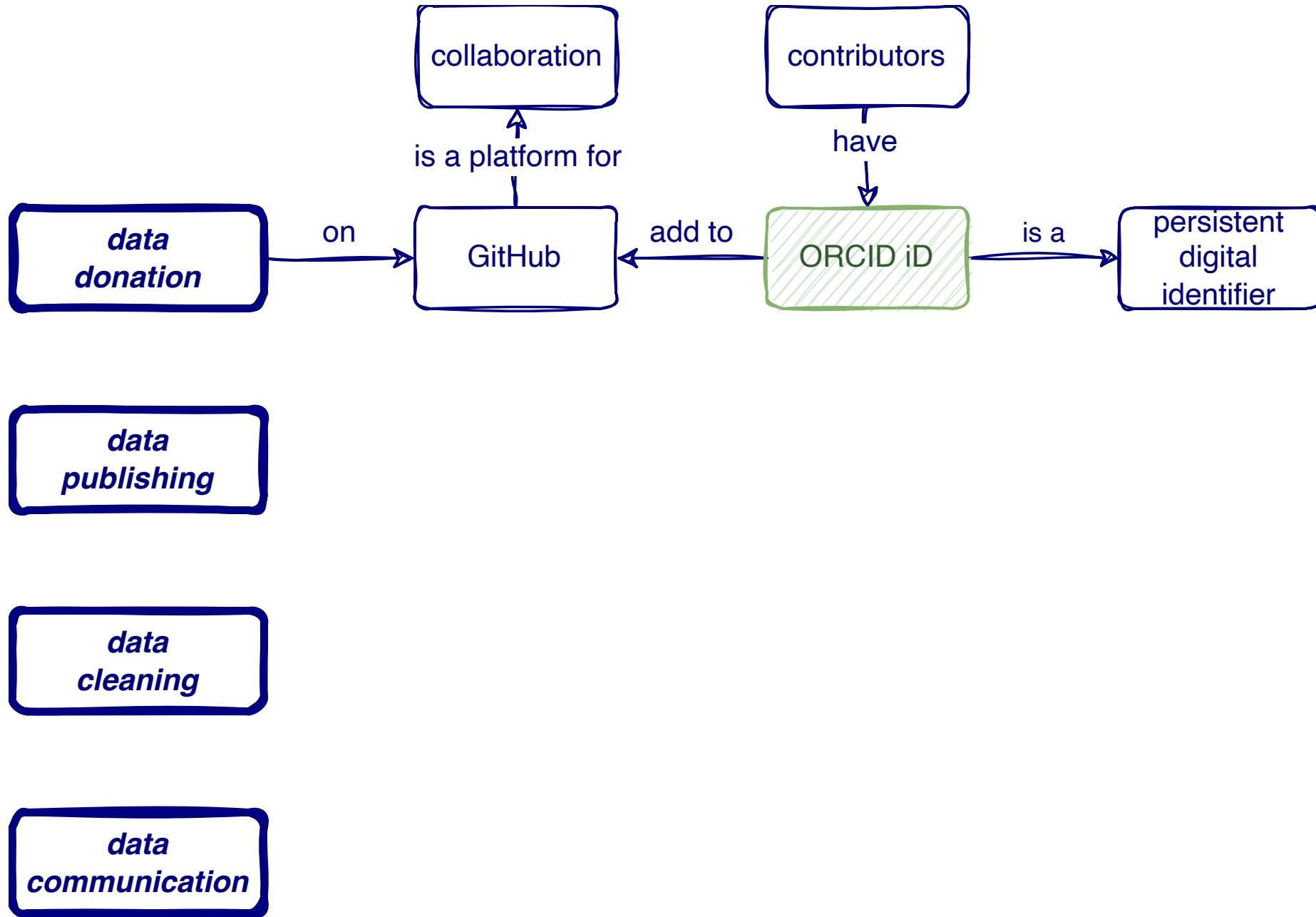
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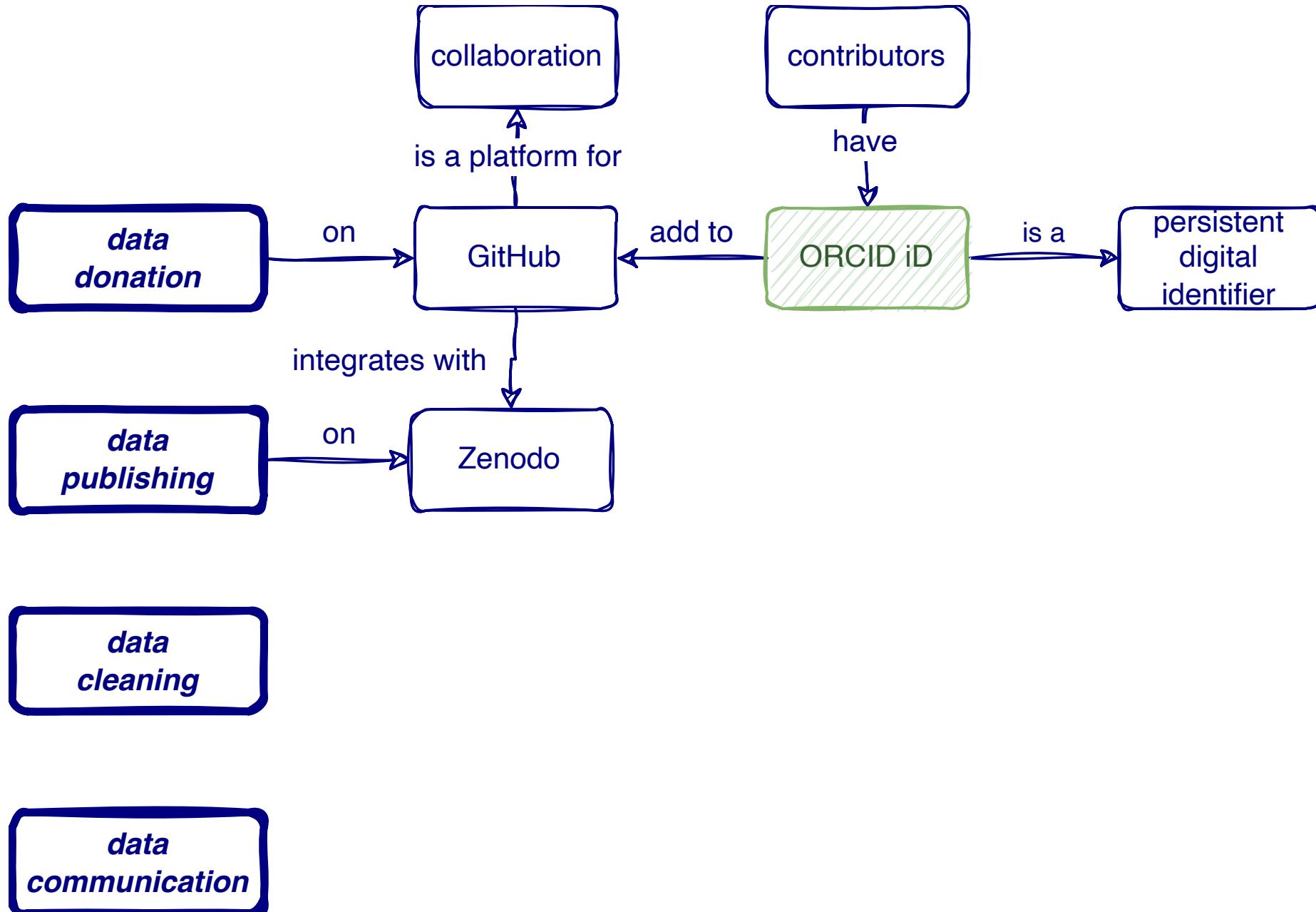


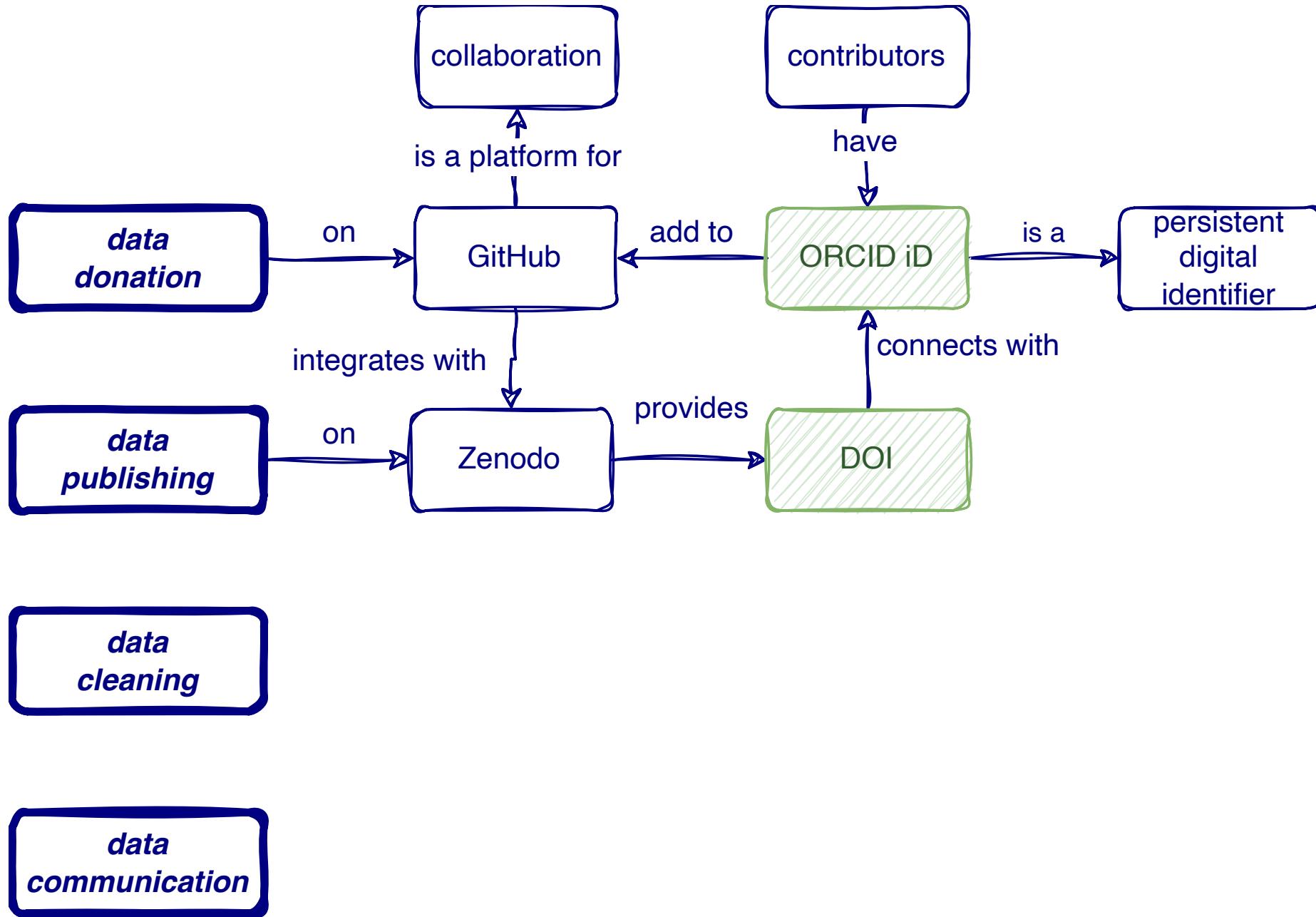
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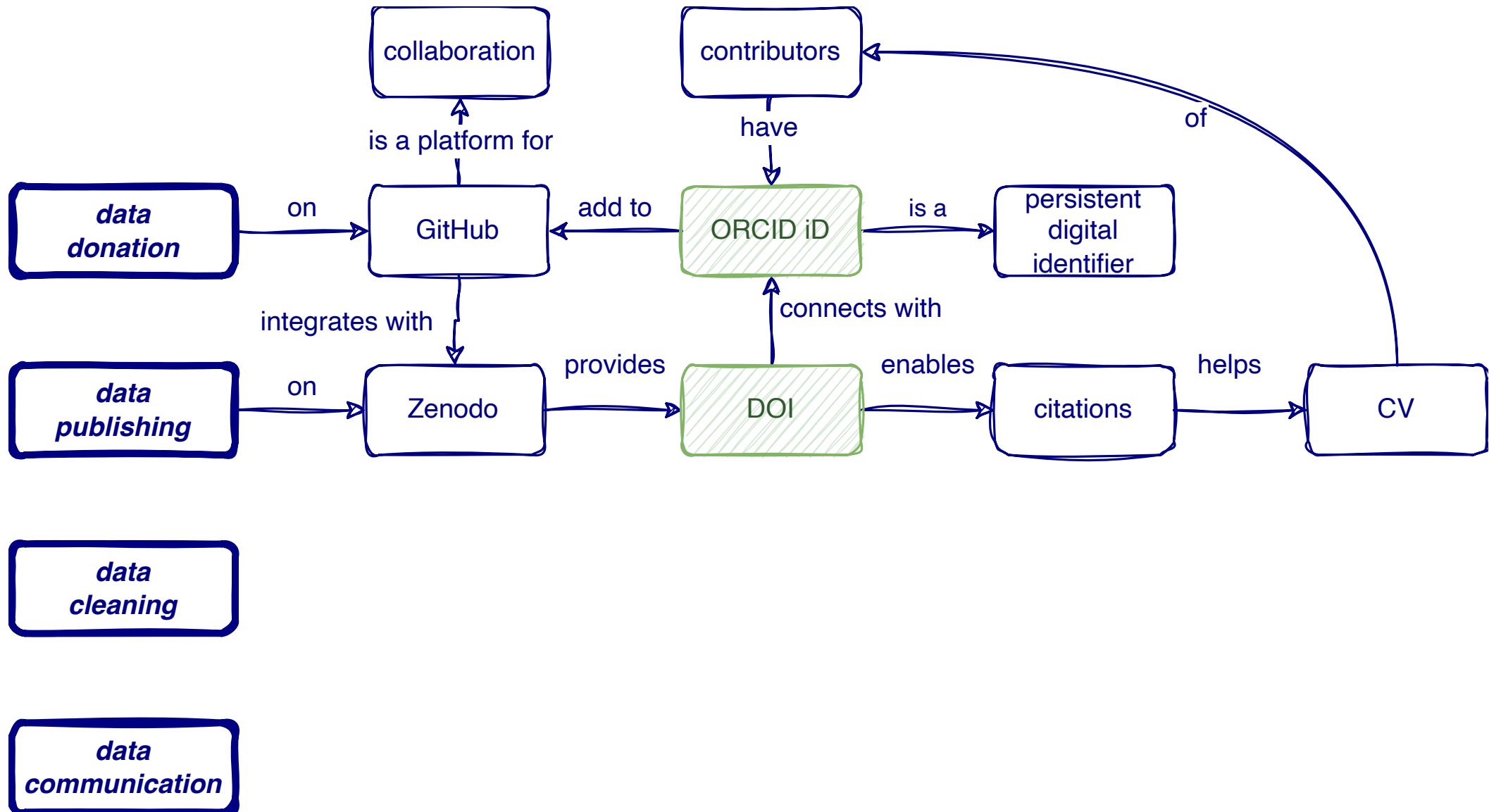
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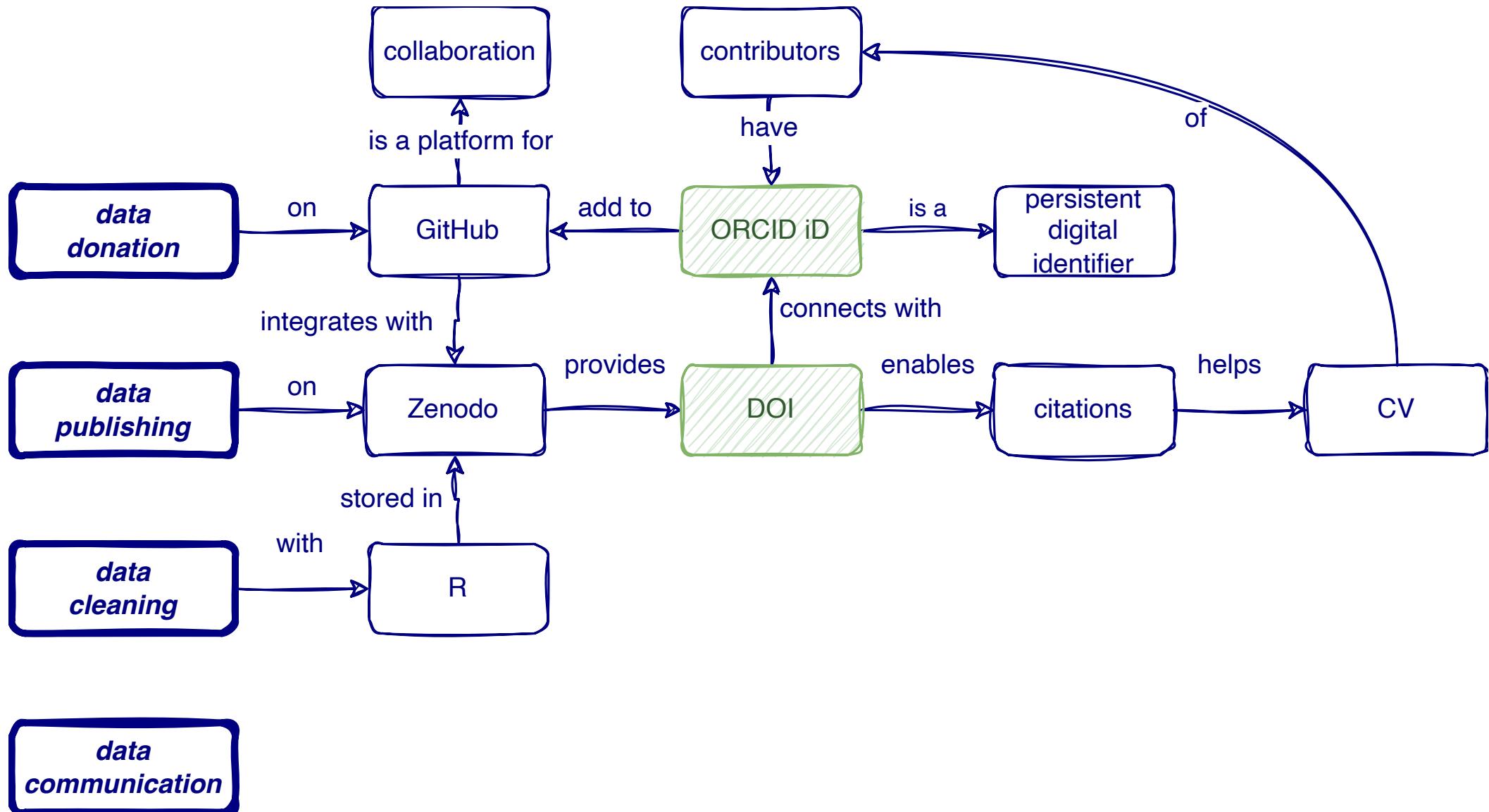
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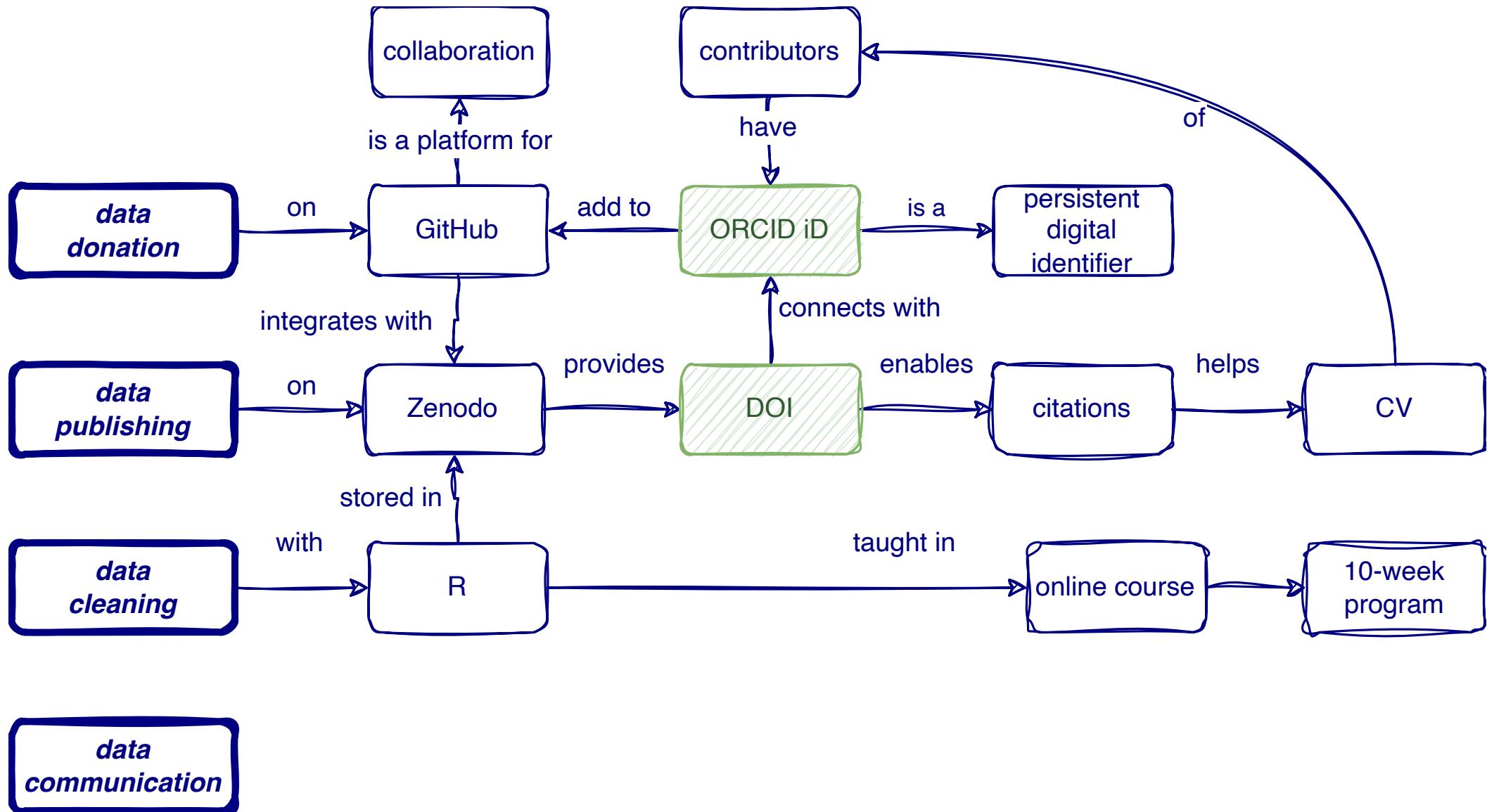


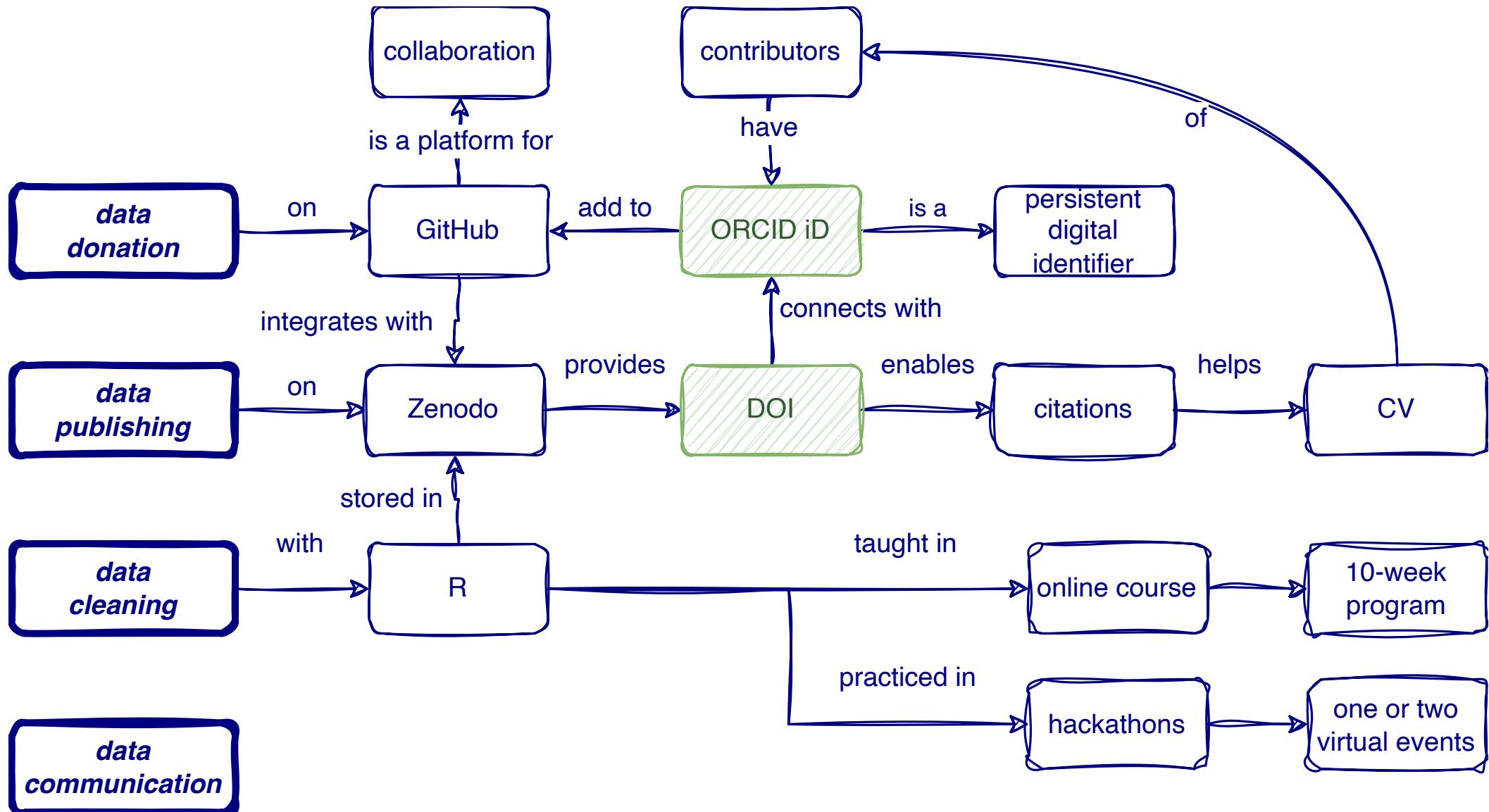


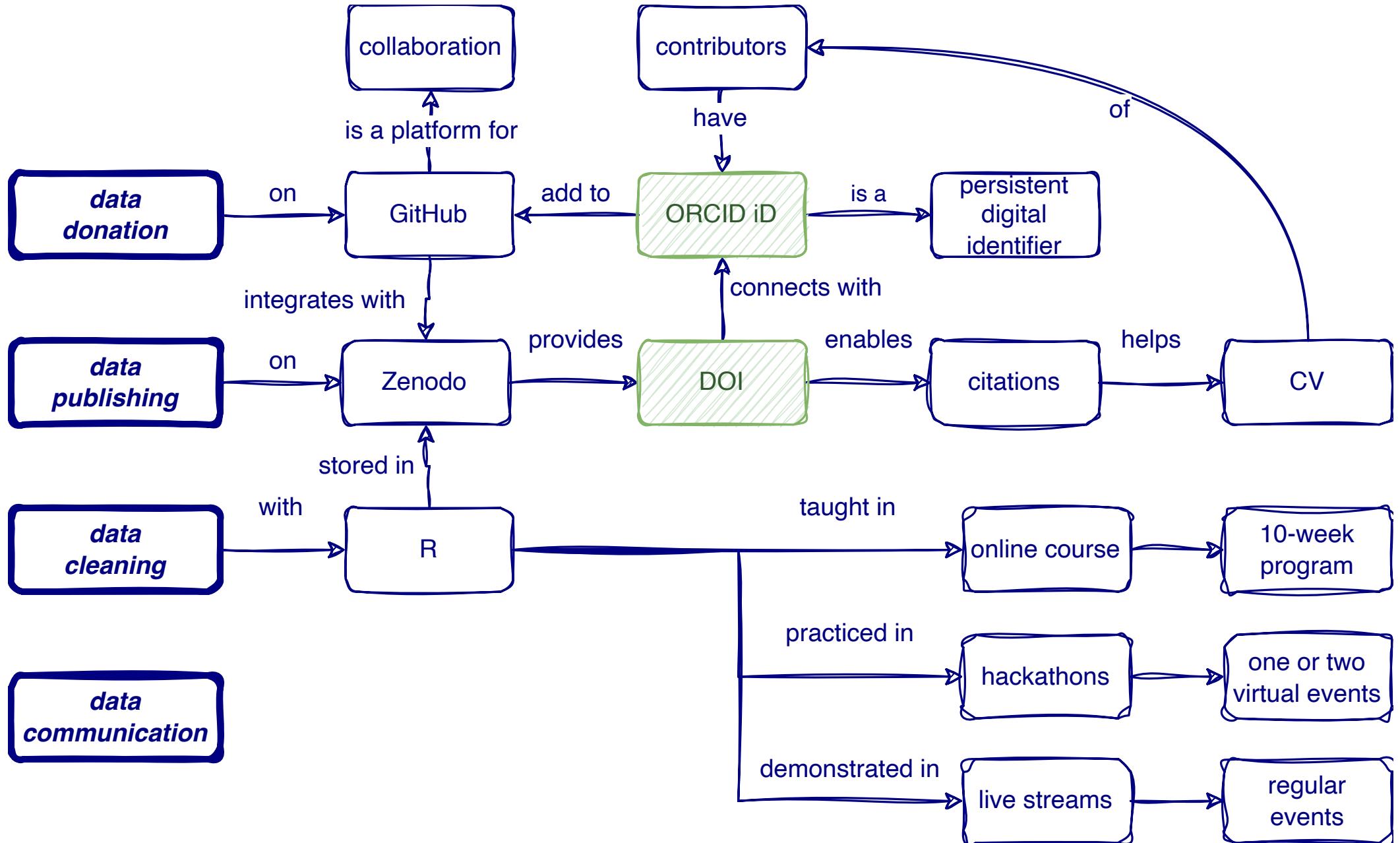


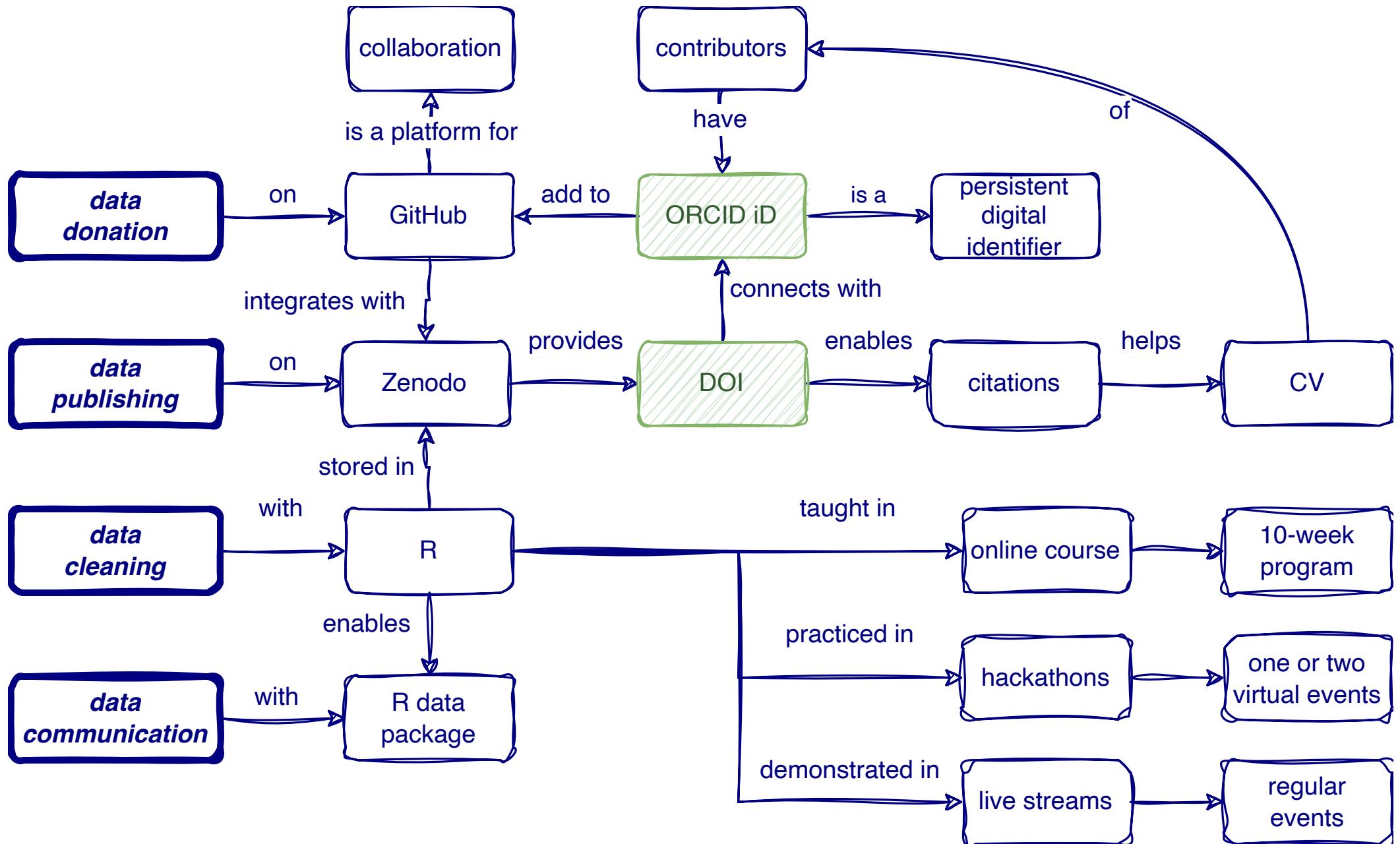


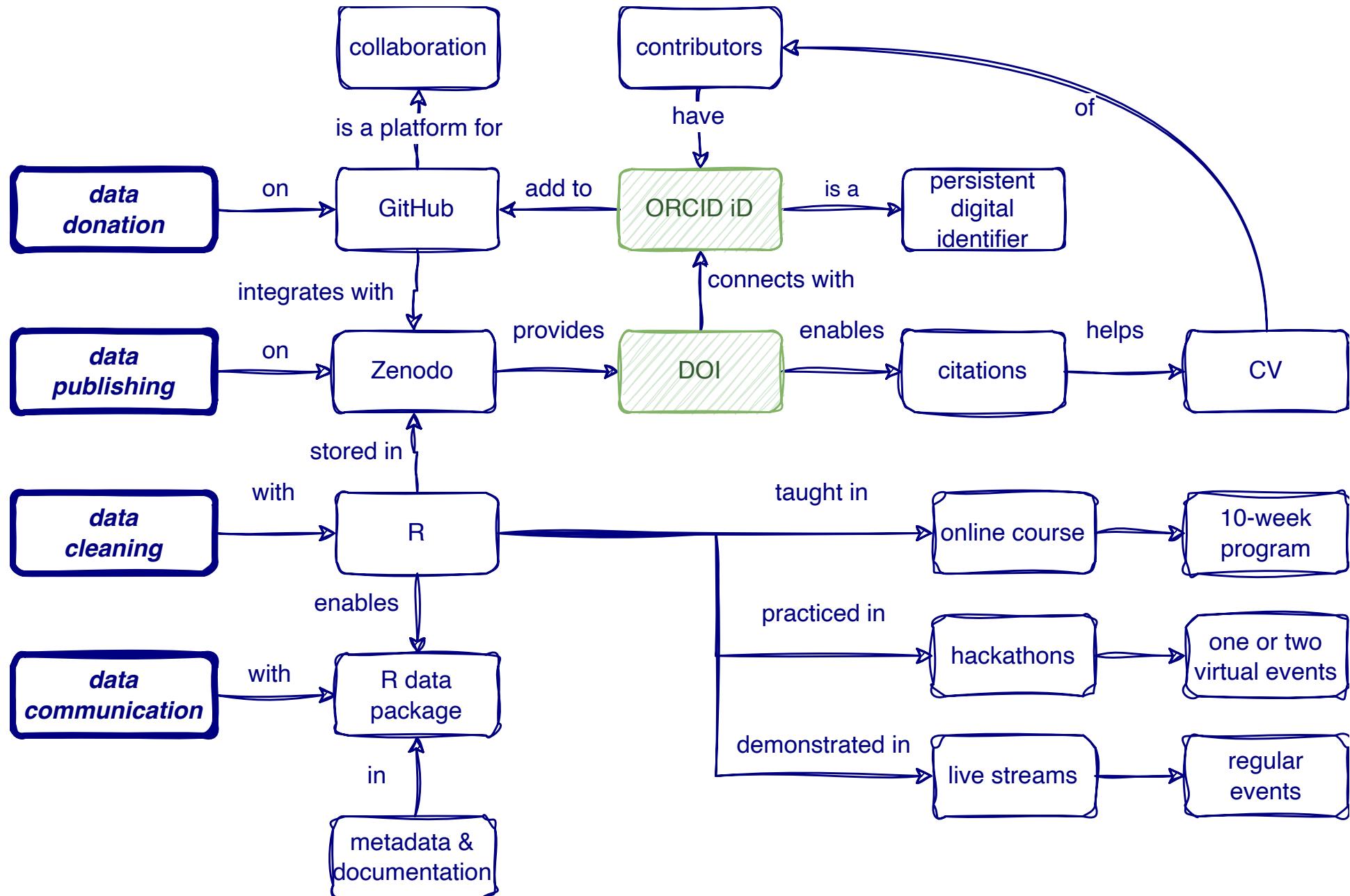


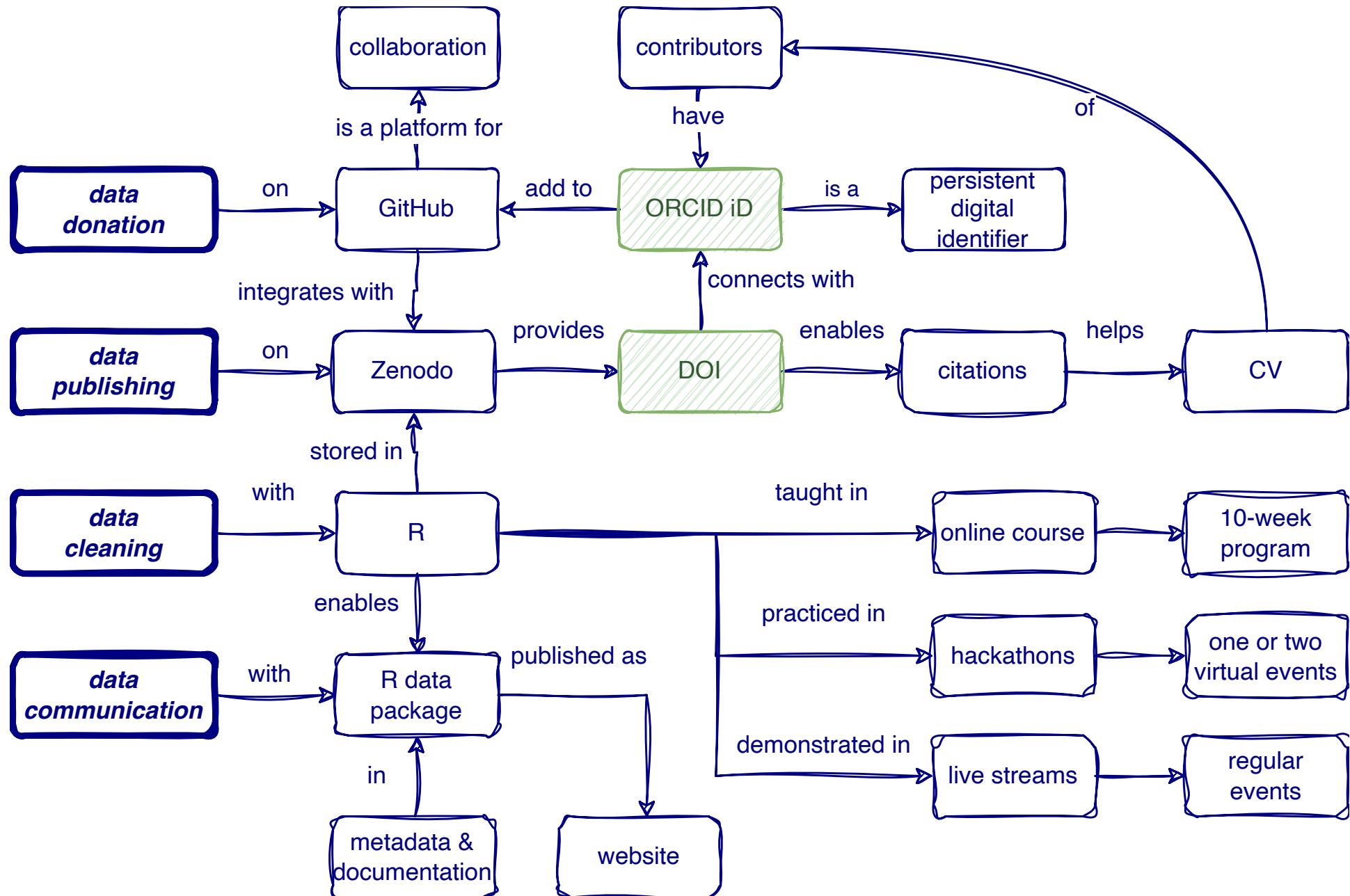


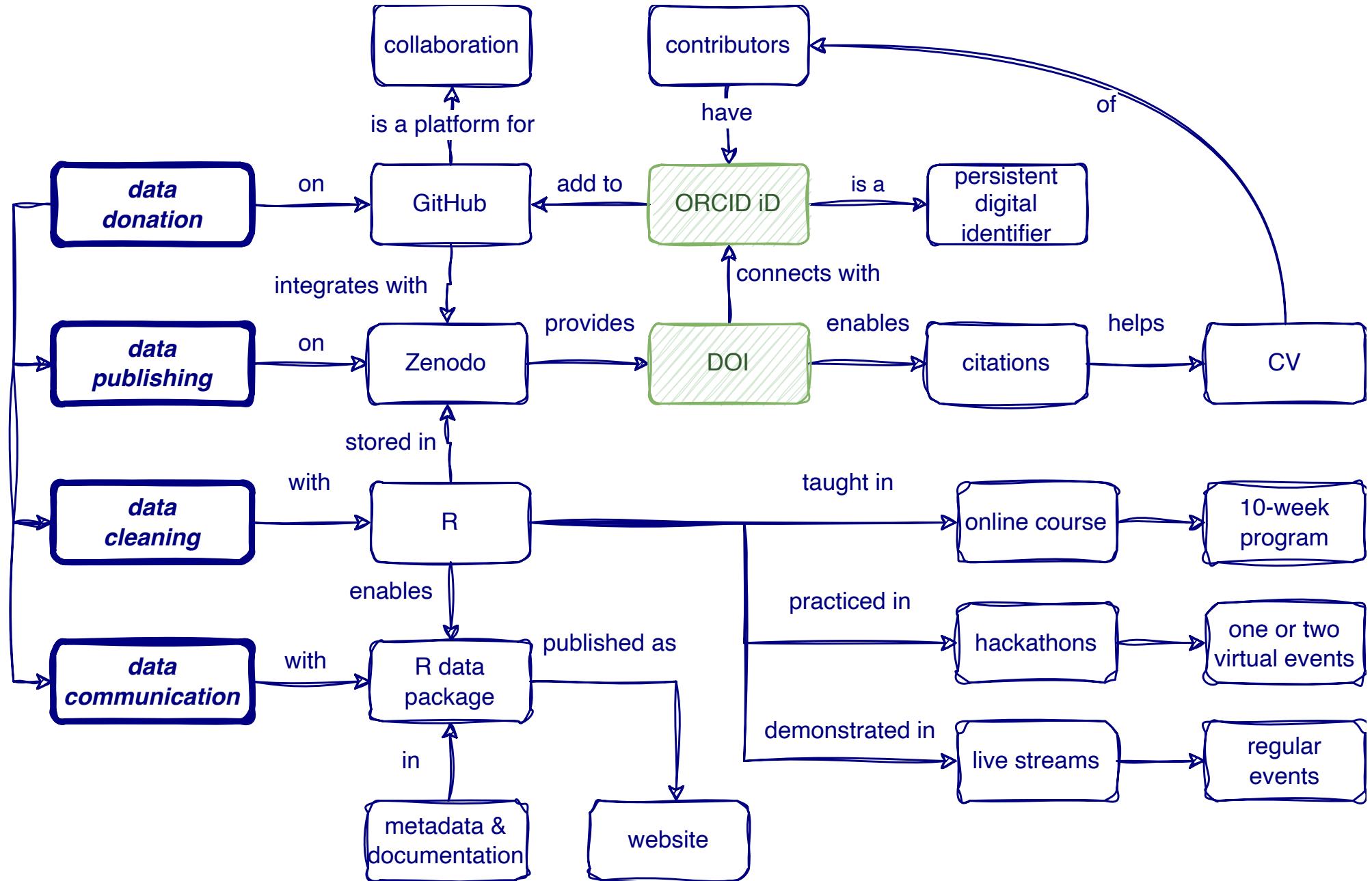












The Product

What does final look like?

The screenshot shows a web browser window with the title bar "Durban (South Africa) Plastic Waste X". The address bar displays the URL <https://global-health-engineering.github.io/durbanplasticwaste>. The page content is for the "durbanplasticwaste" package version 0.1.0. The main navigation menu includes "Reference" and "Articles".

durbanplasticwaste

Overview

This packages 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
MSc. Thesis Project - Evaluating the potential of Extended Producer Responsibility returns for a small local waste collection company in Durban, South Africa

License

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Citation

[Citing durbanplasticwaste](#)

Developers

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Funder

[More about authors...](#)

Dev status

DOI [10.5281/zenodo.7708756](https://doi.org/10.5281/zenodo.7708756)

Engage

Our channels

One-way communication

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

Two-way engagement

- Instant messaging **TBD**: Slack, Discord, Matrix
- Submit ideas:
github.com/openwashdata/data/issues
- Social media **TBD**: Twitter or Mastodon

Events

- **Live coding stream:** Twitch (regular)
- **Hackathon:** Online platform (one or two)
- **Workshop:** (Online) conferences (one or two)
- **Online course:** 10-weeks (one or two)

For whom?

Learner personas

| persona | in brief | domain knowledge | programming knowledge | contribution motivation |
|---------|--|------------------|-----------------------|-------------------------|
| Palesa | Pit emptying business owner that is tired of others asking her for her business data. | competent | novice | low |
| Yua | PhD student that wants to use her programming expertise to support the community. | novice | expert | high |
| Mandla | Master's student who wants to learn how to use R for data analysis and git version control. | competent | competent | high |
| Asim | Senior Researcher with a few years left to retirement who wants to share his career's worth of data with as little effort as possible. | expert | novice | low |

Goals

Goals (by August 2024)

- **Newsletter:** 500 subscribers
- **Website:** 30 daily visits
- **Data:** 50 R data packages
- to be defined

Thanks! ☺

Thanks



This project was 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, Siphiwe Rakgabale, First Name Last Name, and Global Health Engineering. 2023. *durbanplasticwaste: Durban (South Africa) Plastic Waste Data* (version v0.1.0). 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>.
- Mupinga, Ratidzaishe T, Tanaka M Chatema, Savanna R Perumal, Eva Mary, et al. 2021. “Addendum of Data Related to Drying of Faecal Sludge from on-Site Sanitation Facilities and Fresh Faeces.” *Gates Open Res* 4 (188): 188.
- Soeters, S, P Mukheibir, and J Willetts. 2021. “Treatment Technologies in Practice: On-the-Ground Experiences of Faecal Sludge and Wastewater Treatment.”

