

# Managing Teams and Tasks using GitLab/GitHub

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1. Motivation
2. Definitions
3. Project Structure and Organization
4. Strategies



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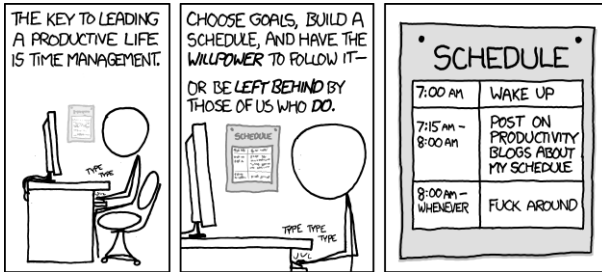


**Figure:** xkcd <https://xkcd.com/874/> (accessed 07.01.2025): Randall Munroe. Creative Commons Attribution-NonCommercial 2.5 License <https://creativecommons.org/licenses/by-nc/2.5/>.



**Figure:** Comic xkcd <https://xkcd.com/1579/> (accessed 07.01.2025): Randall Munroe. Creative Commons Attribution-NonCommercial 2.5 License <https://creativecommons.org/licenses/by-nc/2.5/>.

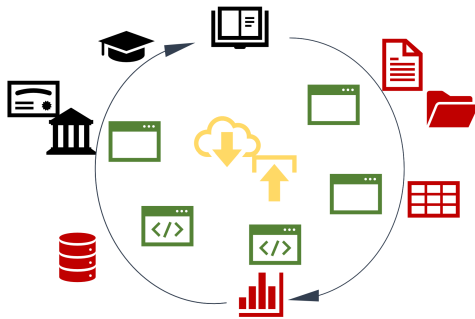


**Figure:** Common components. Green: application, research software | red: data | yellow: access/availability | black: organisations, qualifications; corresponding with research data (Cox and Tam 2018) and life cycle software (Katz et al. 2019, cf. introduction)



# Today: Working environment



- ▶ research data, research software
- ▶ tasks and teams
- ▶ strategies for organising teams and tasks

→ Somewhere between Liz' talk on *Seven Steps Towards Reproducible (Computational) Research* (27th of May) and Alexander's and Stephan's talk on *Software Discovery, Publication and Citation* (19th of June)



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# What do we need to consider for organising tasks and teams?



*Is the data ready for pos tagging?*

*I just write the code for adding pos tags to the data*

*Is all data pos tagged?*

*Did somebody checked the data?*

*Did somebody checked the code?*

...



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# Which tools can we consider for organising teams and tasks?



- ▶ issues
- ▶ assignee
- ▶ label
- ▶ milestone
- ▶ board
- ▶ wiki
- ▶ burn down/up chart
- ▶ branch
- ▶ tagging
- ▶ due / deadline
- ▶ ...

→ I would like to invite you to a short survey :-)



# Which tools can we consider for organising teams and tasks?



# Which tools can we consider for organising teams and tasks?



## Idea for today

We combine aspects of project management with features integrated in gitLab/gitHub.



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# Which tools can we consider for organising teams and tasks?



## User Story

As a team member\*, I would like to define which feature I use for which managing task to explicitly organise my collaborative work.

\* with team member I include also individual working conditions, as we need to communicate with our future me about what we did and what we are planning to do (self collaboration). :-)



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## *Project Management Practice*

*The praxis that ensures, that all projects of an organisation will be successfully implemented.*

(Translation by Carolin Odebrecht Ebel 2021, p. 495)

→ Our context: research questions/tasks that we would like to answer/address.



*A project manager is someone skilled in managing task and people, but not necessarily knowledgeable or passionate about the domain.*

(McGreal and Jocham 2018, p. 4)

→ Usually, we do not have a project manager in our team.

→ A missing profile in the team, does not mean that the task of organising and communicating about the organisation needs not to be done.



- ▶ Projects are unique tasks in their objective, which are limited in terms of time and resources.
- ▶ *management*: Leadership, administration, and organization
- Involves **practices** and **people**

→ What activities/methods are used by whom for which components in the project to successfully lead, manage, and organize the project so that the research questions can be answered?



„By digital research data, we mean all digitally available data that are generated during the research process or are its result. The research process encompasses the entire cycle from the generation of research data, for example through an experiment in the natural sciences, a documented observation in cultural studies, or an empirical study in the social sciences, to the processing and analysis, and finally to the publication and archiving of research data.“

(Translation by Carolin Odebrecht, Kindling and Schirmbacher 2013, p. 130)



“Research data management is an explicit process covering the creation and stewardship of research materials to enable their use for as long as they retain value.” Source: Whyte, A. and Rans, J. this glossary,

<http://www.dcc.ac.uk/digital-curation/glossary#R>  
(accessed 11.04.2023.)



“Research Software includes source code files, algorithms, scripts, computational workflows and executables that were created during the research process or for a research purpose. Software components (e.g., operating systems, libraries, dependencies, packages, scripts, etc.) that are used for research but were not created during or with a clear research intent should be considered software in research and not Research Software. This differentiation may vary between disciplines. The minimal requirement for achieving computational reproducibility is that all the computational components (Research Software, software used in research, documentation and hardware) used during the research are identified, described, and made accessible to the extent that is possible.” (Gruenpeter et al. 2021, p. 16)



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## *Governance*

*The means by which an organization is led and managed.*

(Translation by Carolin Odebrecht Ebel 2021, p. 486)

→ Auch Forschungsprojekte sind in Organisationen (Universitäten, Fakultäten, Verbünden) eingebunden. Daher ist es wichtig, deren Rahmenbedingungen im Projektmanagement zu berücksichtigen.



*Data Governance is a system of decision rights and accountability for information-related processes, executed according to agreed-upon models which describe who can take what actions with what information, and when, under what circumstances, using what methods.*

(Data Government Institute 2024)

→ in academic contexts, e.g.:

- ▶ research data policies
- ▶ open access policies
- ▶ guidelines of good scientific practices



**Findable:** Metadaten/Daten sollten sowohl für Menschen als auch für Computer leicht zu finden sein.

**Accessible:** Die Nutzenden müssen wissen, wie auf Daten zugegriffen werden kann, möglicherweise einschl. Authentifizierung und Autorisierung.

**Interoperable:** Daten müssen mit Anwendungen oder Arbeitsabläufen zur Analyse, Speicherung und Verarbeitung zusammenarbeiten.

**Reuseable:** Das Ziel von FAIR ist es, die Wiederverwendung von Daten zu optimieren.



FINDABLE



ACCESSIBLE



INTEROPERABLE



REUSABLE

**Figure:** FAIR.  
Abbildung basiert auf  
Biernacka et al. 2019.

Vgl. Wilkinson et al. 2016  
und <https://www.go-fair.org/fair-principles/>, besucht am  
03.02.2023.



**F** *Software, and its associated metadata, is easy for both humans and machines to find. [...]*

**A:** *Software, and its metadata, is retrievable via standardized protocols. [...]*

**I:** *Software interoperates with other software by exchanging data and/or metadata, and/or through interaction via application programming interfaces (APIs), described through standards. [...]*

**R:** *Software is both usable (can be executed) and reusable (can be understood, modified, built upon, or incorporated into other software).*

[Hervorhebung von CO geändert](Chue Hong et al. [2021](#), p. 5),  
vgl. auch Barker et al. ([2022](#)).



*The stakeholders specify what the system to be developed should do, how it should look, in short, what requirements it should meet.*

(Translation by Carolin Odebrecht, Pohl and Rupp 2021, p. 20)

- Research questions address a desideratum.
- Who is involved in the project with which tasks/responsibilities?
- The stakeholders themselves can be project members.



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- ▶ Roles are defined by the tasks a project member fulfills
  - ▶ Various role definitions possible
  - ▶ Fundamentally: Project management, project leadership, project member
- This understanding of roles is often not comprehensively integrated or practiced in research projects.
- Research projects often work with subject-specific roles



In digital research projects, for example:

- ▶ Domain expert (from the field, e.g., literary scholar, linguist, philologist, historian)
- ▶ DH expert
- ▶ Software engineer
- ▶ Coordination

→ Overlapping areas of expertise may be possible or necessary

→ Not always all areas of expertise present in the project team  
(possibly anchored in collaborations)



## Typical challenges:

- ▶ Explicitly defining and living up to role understandings.
- ▶ A scientific employee is not a "project role."
- ▶ A student assistant is not a "project role."
- ▶ Different cultures of responsibility and tasks between applicants as project leaders.



# Triangle of Project Management

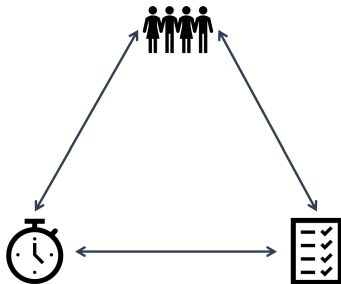


**Figure:** Classical Project Management: Projects are defined by three components: Tasks/Activities/Personnel/Skilled Workers/Resources/Time.



- ▶ three components: tasks, experts/resources, time
- How do you assess the degrees of freedom for the design a) in project planning and b) in project implementation regarding these three components?



- Funding volume from funders
- fixed job profiles
- no/rare subsequent adjustments over time and resources
- Therefore, planning and implementing goals through milestones and task scheduling as well as monitoring are essential for research projects!

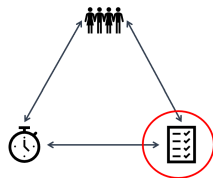


**Figure:** Tasks are typical levers in research projects.

- ▶ Goal: desired outcome of the project
- ▶ Milestone: point in time at which a clearly defined result is achieved
- ▶ Task: period during which activities occur to achieve a milestone
- ▶ Phase: Contains several tasks
- ▶ Epic: requirements that are subdivided into several user stories
- ▶ User Story: software requirement in the form of a user story (action from the user's perspective)

→ The art is to break down project goals and plans into manageable units.



# Goal – Minimum Viable Product



*A product with only the necessary functions to satisfy first («early») customers and provide feedback for future product development.*

(Ebel 2021, p. 491).

- Test the entire workflow early on in digital projects.
- Reduces project risk.
- Agile development



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usually addressing

- ▶ Research data (Kindling and Schirmbacher 2013, p. 130), research data management (Whyte and Rans 2024), research data management plan (Leendertse et al. 2019)
- ▶ research software (Gruenpeter et al. 2021), research software management (Chue Hong et al. 2021), research software plan (Grossmann et al. 2024)

→ Leading to FAIR Data (Wilkinson et al. 2016) and FAIR Software (<empty citation>)



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Communication (is key :-)) with the team about the focus of organisation

- ▶ features, bugs
- ▶ workflow steps
- ▶ progress
- ▶ priorities
- ▶ time
- ▶ ...



# Task Organization – Eisenhower Matrix

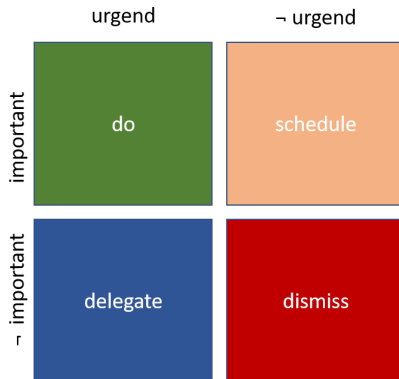
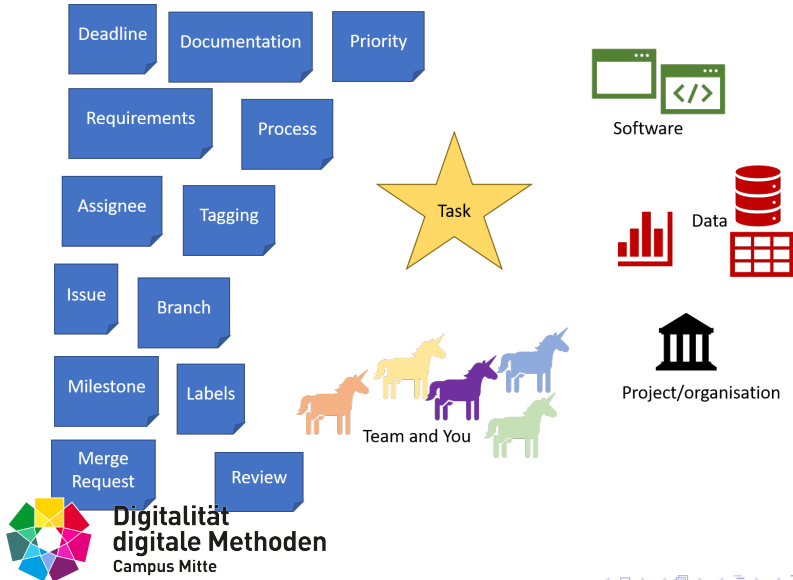


Figure: Eisenhower Matrix. The prioritization can also be done by e.g., using categories such as *must have*, *good to have*, or *nice to have*.



# Components



## Processing of keywords (n-grams)

 Open  Issue created 1 month ago by **Henrik Schönemann**

Example (and following example slides) Henrik Schönemann and Elisabetta Mori (HU Berlin), developer Data Literacy Course Map at IC Digitality and digital Methods at Campus Mitte. [https://izd2m.hu-berlin.de/content\\_de/students/students.html](https://izd2m.hu-berlin.de/content_de/students/students.html).



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Issue *Processing of keywords (n-grams)* + [issue description].

Assignee (me)

- ▶ Which aspects are explicitly organised by this issue? Which not?



Issue *Processing of keywords (n-grams)* + [issue description].

Assignee (me) + Due 01/04/025

- ▶ Which aspects are explicitly organised by this issue? Which not?



Issue *Processing of keywords (n-grams)* + [issue description].

Assignee (me) + Due 01/04/025 + highly important

- ▶ Which aspects are explicitly organised by this issue? Which not?



Issue *Processing of keywords (n-grams)* + [issue description].  
Assignee (me) + Due 01/04/025 + highly important + Milestone  
*preliminary results*

- ▶ Which aspects are explicitly organised by this issue? Which not?



Issue *Processing of keywords (n-grams)* + [issue description].  
Assignee (me) + Due 01/04/025 + highly important + Milestone  
*preliminary results* + label *planned*

- ▶ Which aspects are explicitly organised by this issue? Which not?



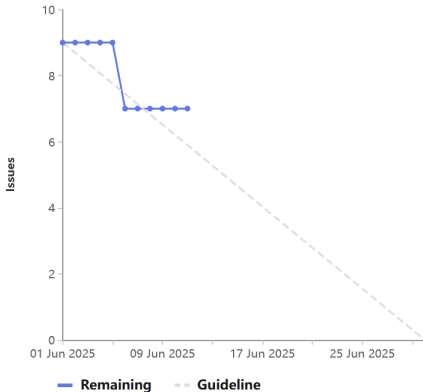
Issue *Processing of keywords (n-grams)* + [issue description].  
Assignee (me) + Due 01/04/025 + highly important + Milestone  
*preliminary results* + label *planned* + Burn down Chart for a Milestone

- ▶ Which aspects are explicitly organised by this issue? Which not?

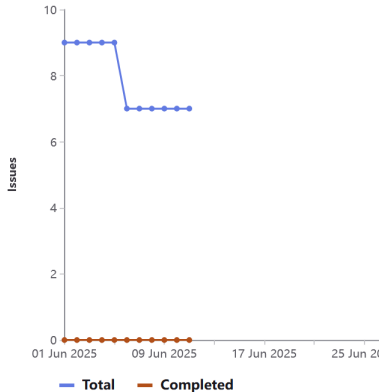


# Example – Burndown chart

## Burndown chart



## Burnup chart



Issues 7 Merge requests 0 Participants 3 Labels 10



Unstarted Issues (open and unassigned) 0

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Ongoing Issues (open and assigned) 7

Processing of keywords (n-grams)

#65 priority high project data-processing  
workflow planned

Completed Issues (closed)

Issue *Processing of keywords (n-grams)* + [issue description].  
Assignee (me) + Due 01/04/025 + highly important + Milestone  
*preliminary results* + label *planned* + Burn down Chart for a Mile  
stone + workflow progress board

- ▶ Which aspects are explicitly organised by this issue? Which not?



# Example – Workflow

workflow planned 16 0 + ⚙

dealing with language mismatch title vs. description

priority high project bug

#63 Usability & Wor...

XML schema issue

priority high project bug

#48 Preliminary Res...

Processing of keywords (n-grams)

workflow in-progress 5 0 + ⚙

Moodle: basic info (header)

priority high project usability

#67

Moodle: Branding

priority high project usability

#66

Export+Import Moodle

priority high project data-processing

workflow in-review

Publication code o...

priority low project

#40 Preliminar

Publication of proje

priority low project

#41



# Example – Workflow



project **bug** 2 0 + ⚙

dealing with language mismatch title vs. description

priority **high** workflow planned

#63 Usability & Wor...

XML schema issue

priority **high** workflow planned

#48 Preliminary Res...

project **data-processing** 2 0 + ⚙

Processing of keywords (n-grams)

priority **high** workflow planned

#65 Preliminary Res...

Export+Import Moodle

priority **high** workflow in-progress

#53 Preliminary Res...

project **modeling**

Mapping to RDM

priority **high** workflow planned

#52 Usability & Wor...

lemmatize keywords

priority **high** workflow in-progress

#64 Preliminary Res...



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- ▶ labels for Workflows (step 1, step 2, step 3)
- ▶ labels for priority (high, medium, low)
- ▶ labels for Teams (Team documentation, Team XXX)
- ▶ labels for issue classification (bug, feature, documentation)



# Which tools can we consider for organising teams and tasks?



## User Story

As a team member\*, I would like to define which feature I use for which managing task to explicitly organise my collaborative work.

\* with team member I include also individual working conditions, as we need to communicate with our future me about what we did and what we are planning to do (self collaboration). :-)



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# Organising teams and tasks – Take Home



Explicit documentation and communication!

- ▶ Define parameters that you would like to organise!
- ▶ Define which feature you use for which parameter.
- ▶ Define which



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Barker, Michelle, Neil P. Chue Hong, Daniel S. Katz, Anna-Lena Lamprecht, Carlos Martinez-Ortiz, Fotis Psomopoulos, Jennifer Harrow, Leyla Jael Castro, Morane Gruenpeter, Paula Andrea Martinez, and Tom Honeyman (Oct. 14, 2022). "Introducing the FAIR Principles for research software". In: *Scientific Data* 9.1, p. 622. DOI: [10.1038/s41597-022-01710-x](https://doi.org/10.1038/s41597-022-01710-x). URL: <https://www.nature.com/articles/s41597-022-01710-x> (visited on 01/09/2025).



Biernacka, Katarzyna, Dominika Dolzycka, Petra Buchholz, and Kerstin Helbig (2019). *Wie FAIR sind Deine Forschungsdaten?* DOI: [10.5281/ZENODO.2547339](https://doi.org/10.5281/ZENODO.2547339).



Chue Hong, Neil P., Daniel S. Katz, Michelle Barker, Anna-Lena Lamprecht, Carlos Martinez, Fotis E. Psomopoulos, Jen Harrow, Leyla Jael Castro, Morane Gruenpeter, Paula Andrea Martinez, and Tom Honeyman (2021). "FAIR Principles for Research Software (FAIR4RS Principles)". In: in collab. with Alexander Struck, Allen Lee, Axel Loewe, Ben Van Werkhoven, Catherine Jones, Daniel Garijo, Esther Plomp, Francoise Genova, Hugh Shanahan, Joanna Leng, Maggie Hellström, Malin Sandström, Manodeep Sinha, et al. Publisher: Research Data Alliance. DOI: [10.15497/RDA00068](https://doi.org/10.15497/RDA00068). URL: <https://zenodo.org/record/6623556#.YqCJTJNBw1w> (visited on 12/06/2024).



Cox, Andrew and Winnie Tam (Mar. 2018). "A critical analysis of lifecycle models of the research process and research data management". In: *Aslib Journal of Information Management* 70. DOI: [10.1108/AJIM-11-2017-0251](https://doi.org/10.1108/AJIM-11-2017-0251).



Data Government Institute (Dec. 6, 2024). *Definitions of Data Governance*. URL: <https://datagovernance.com/the-data-governance-basics/definitions-of-data-governance/>.



Ebel, Nadin (2021). *Basiswissen ITIL 4: Grundlagen und Know-how für das IT Service Management und ITIL Foundation Prüfung*. 1. Auflage. Heidelberg: dpunkt.verlag. 1 p.





Grossmann, Yves Vincent, Giacomo Lanza, Katarzyna Biernacka, Tim Hasler, and Kerstin Helbig (Sept. 2024). "Software Management Plans – Current Concepts, Tools, and Application". In: *Data Science Journal* 23, p. 43. DOI: [10.5334/dsj-2024-043](https://doi.org/10.5334/dsj-2024-043). URL: <https://datascience.codata.org/articles/10.5334/dsj-2024-043/> (visited on 01/20/2025).



Gruenpeter, Morane, Daniel S. Katz, Anna-Lena Lamprecht, Tom Honeyman, Daniel Garijo, Alexander Struck, Anna Niehues, Paula Andrea Martinez, Leyla Jael Castro, Tovo Rabemanantsoa, Neil P. Chue Hong, Carlos Martinez-Ortiz, Laurents Sesink, et al. (2021). *Defining Research Software: a controversial discussion*. DOI: [10.5281/zenodo.5504016](https://doi.org/10.5281/zenodo.5504016).



Katz, Daniel S., Stephan Druskat, Robert Haines, Caroline Jay, and Alexander Struck (Apr. 2019). "The State of Sustainable Research Software: Learning from the Workshop on Sustainable Software for Science: Practice and Experiences (WSSSPE5.1)". In: *Journal of Open Research Software*. DOI: [10.5334/jors.242](https://doi.org/10.5334/jors.242).



Kindling, Maxi and Peter Schirmbacher (2013). "„Die digitale Forschungswelt“ als Gegenstand der Forschung". In: *Information. Wissenschaft & Praxis* 64 (2-3), pp. 127–136. DOI: [10.1515/iwp-2013-0017](https://doi.org/10.1515/iwp-2013-0017). (Visited on 01/13/2016).



Leendertse, Jan, Susanne Mocken, and Dirk Von Suchodoletz (May 29, 2019). "Datenmanagementpläne zur Strukturierung von Forschungsvorhaben". In: Medium: application/pdf Publisher: Philipps-Universität Marburg. DOI: [10.17192/BFDM.2019.2.8003](https://doi.org/10.17192/BFDM.2019.2.8003). URL: <https://bausteine-fdm.de/article/view/8003> (visited on 01/13/2025).



McGreal, Don and Ralph Jocham (2018). *The professional product owner: leveraging Scrum as a competitive advantage*. The professional scrum series. Boston Amsterdam London: Addison-Wesley. 344 pp.



Pohl, Klaus and Chris Rupp (2021). *Basiswissen Requirements Engineering: Aus- und Weiterbildung nach IREB-Standard zum Certified Professional for Requirements Engineering Foundation Level*. 5., überarbeitete und erweiterte Auflage. Berlin Heidelberg: dpunkt.verlag. 1 p.





Whyte, A. and J. Rans (2024). *Research Data Management*. Publication Title: Digital Curation Centre Glossary. URL: <https://www.dcc.ac.uk/about/digital-curation/glossary#R> (visited on 02/13/2024).



Wilkinson, Mark D., Michel Dumontier, Aalbersberg, I Jsbrand Jan, Gabrielle Appleton, Myles Axton, Arie Baak, Niklas Blomberg, Jan-Willem Boiten, da Silva Santos, Luiz Bonino, Philip E. Bourne, Jildau Bouwman, Anthony J. Brookes, Tim Clark, et al. (2016). "The FAIR Guiding Principles for scientific data management and stewardship". In: *Scientific data* 3, p. 160018. DOI: [10.1038/sdata.2016.18](https://doi.org/10.1038/sdata.2016.18).



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