



ing.grid



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

**A SCHOLARLY-LED JOURNAL
FOR FAIR DATA MANAGEMENT
IN ENGINEERING SCIENCES**

NFDI4Ing Conference, September 28th, 2023

Kevin Logan, Michaela Leštáková, Izadora Silva Pimenta, Peter F. Pelz
Chair of Fluid Systems / TU Darmstadt



**FAIR Data Management
in Engineering
Sciences**

ing.grid

**discussed
and presented
in a FAIR Journal**



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

SCIENTIFIC DISCUSSION

SCIENTIFIC CREDIT

NATIONAL AND INTERNATIONAL NETWORK

DRIVEN BY ENGINEERING COMMUNITIES



TOPICS

data literacy

data infrastructure

data governance

data economics

data ethics

data sets

data management software

ADRESSEES

engineering sciences

mechanical, electrical, civil, computational, materials

academic research

non-academic research

industry

services

humanities

law

economics

management

libraries

computing centres



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.



EDITORIAL BOARD



Peter Pelz



Thomas Stäcker



Robert Schmitt



Petra Gehring



Ina Heine



Bernd Flemisch



Jane Wyngaard



Martin Horsch



Gretchen Greene



Christian Stemmer



Jörg Unger



Achim Streit



Ulrike Küsters



Irina Sens



Andrea Rapp



Christine Legner



Christian Langenbach



Regine Gerike



Stefan Decker



Satoshi Watanabe



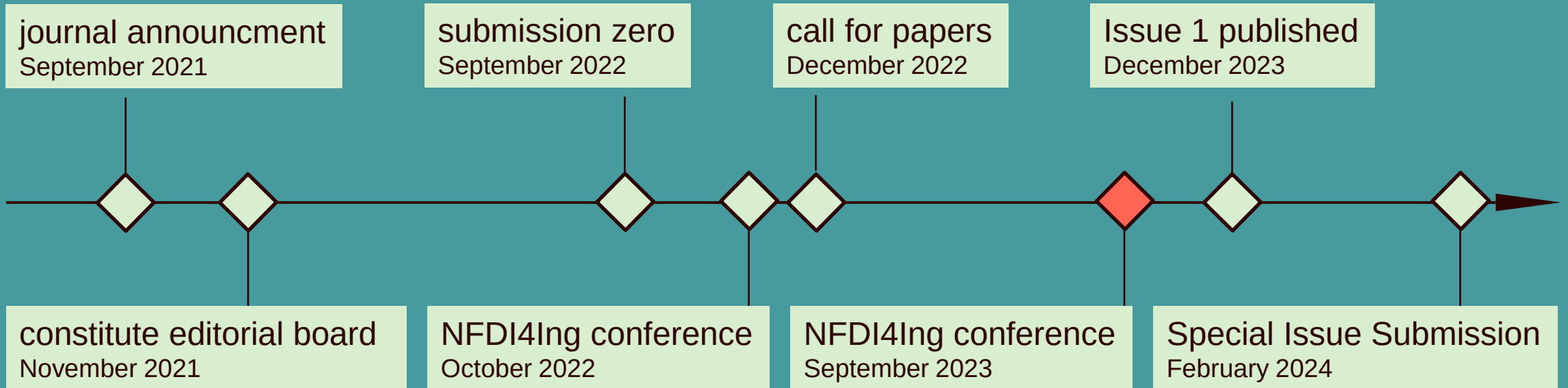
Dazhuan Wu



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

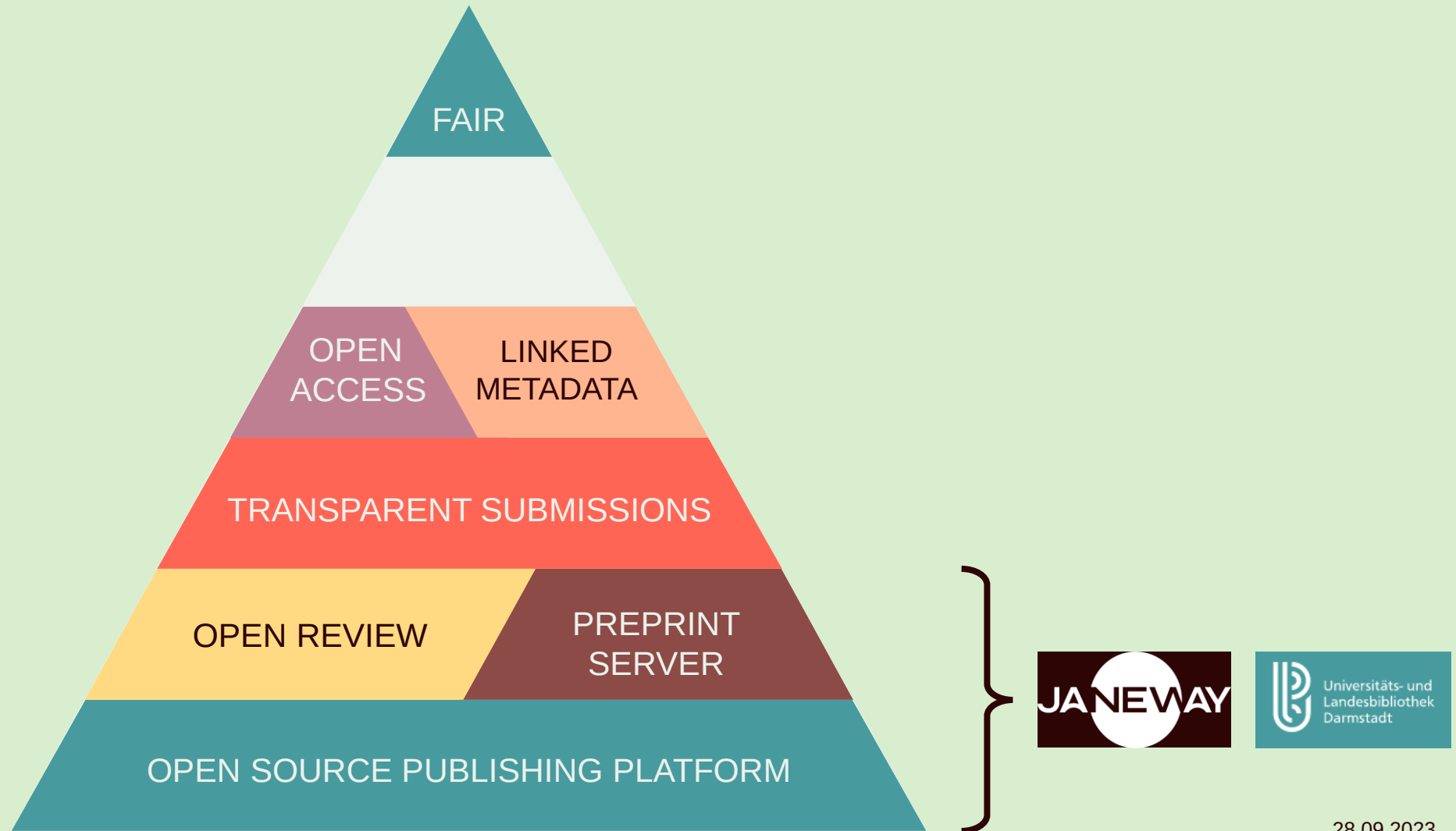




Building blocks of a FAIR Journal



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.





(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

INCREASED TRANSPARENCY

IMPROVED REVIEW QUALITY

OPEN SCIENTIFIC DISCUSSION

ENGAGED COMMUNITY



ROLES

52 x



Author

3 x



Managing Editor

21 x



Topical Editor

28 x



Reviewer

69 x

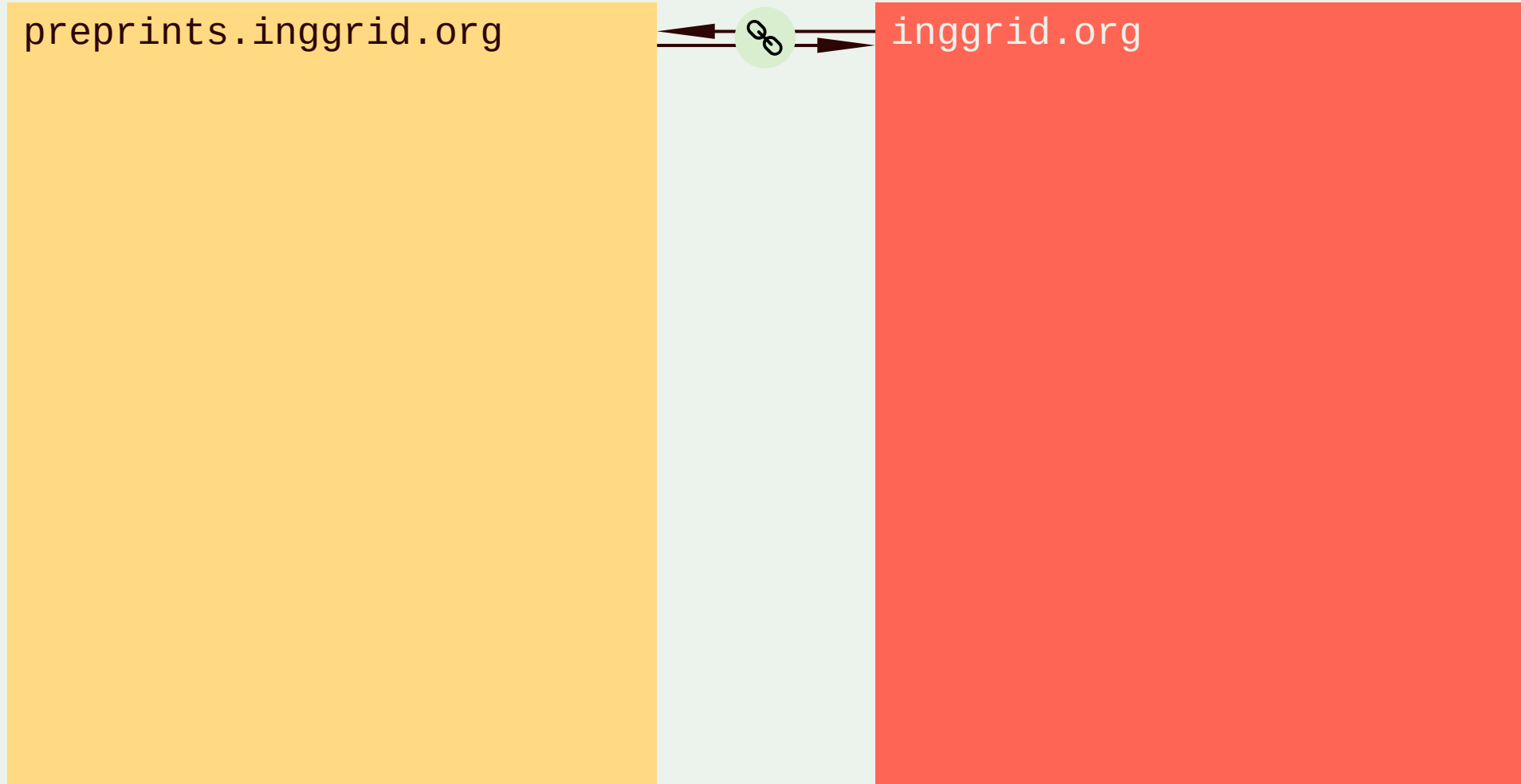


Community

14 Preprints
3 Peer-Reviewed Articles

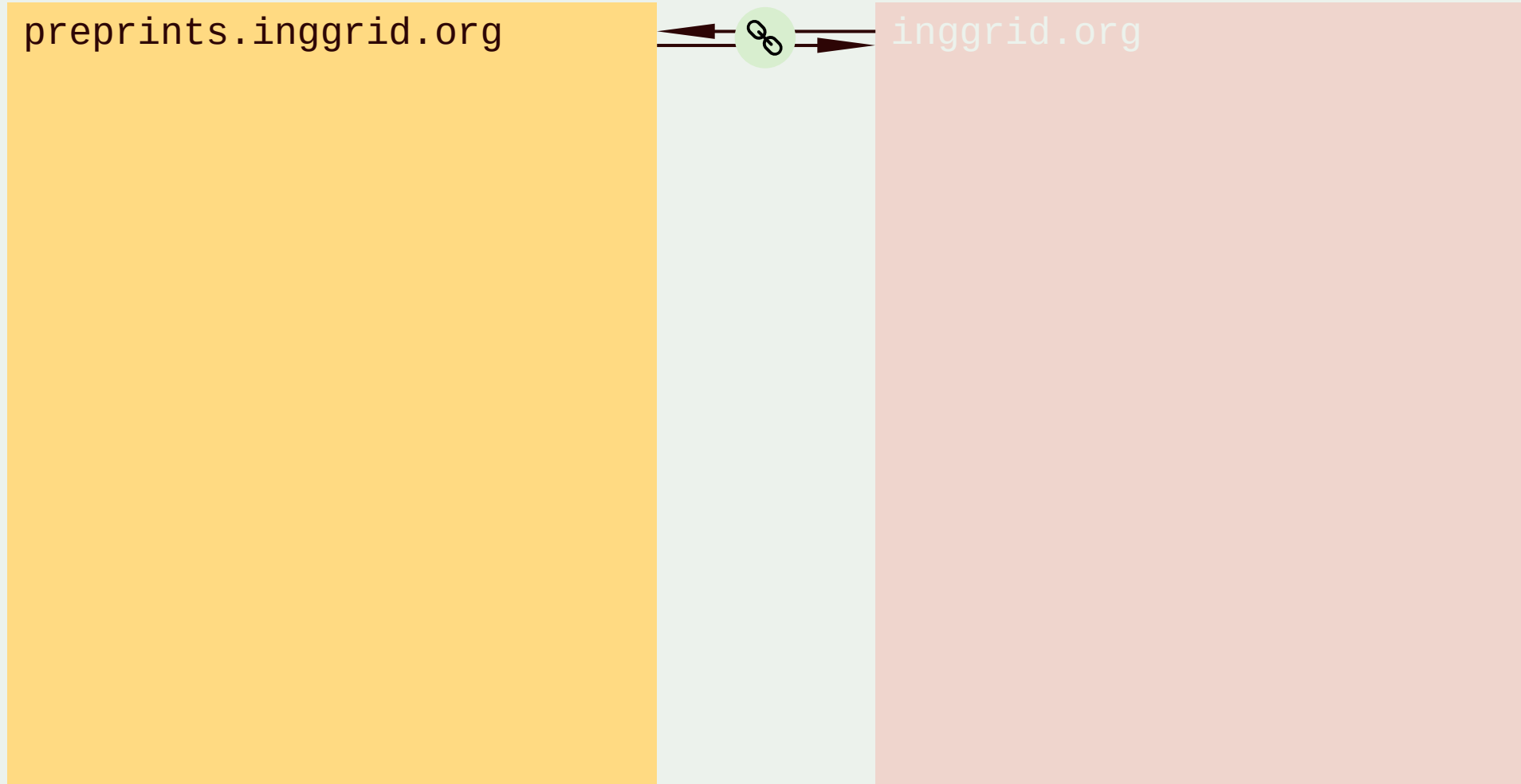


Platforms: Preprint Server and Journal Website





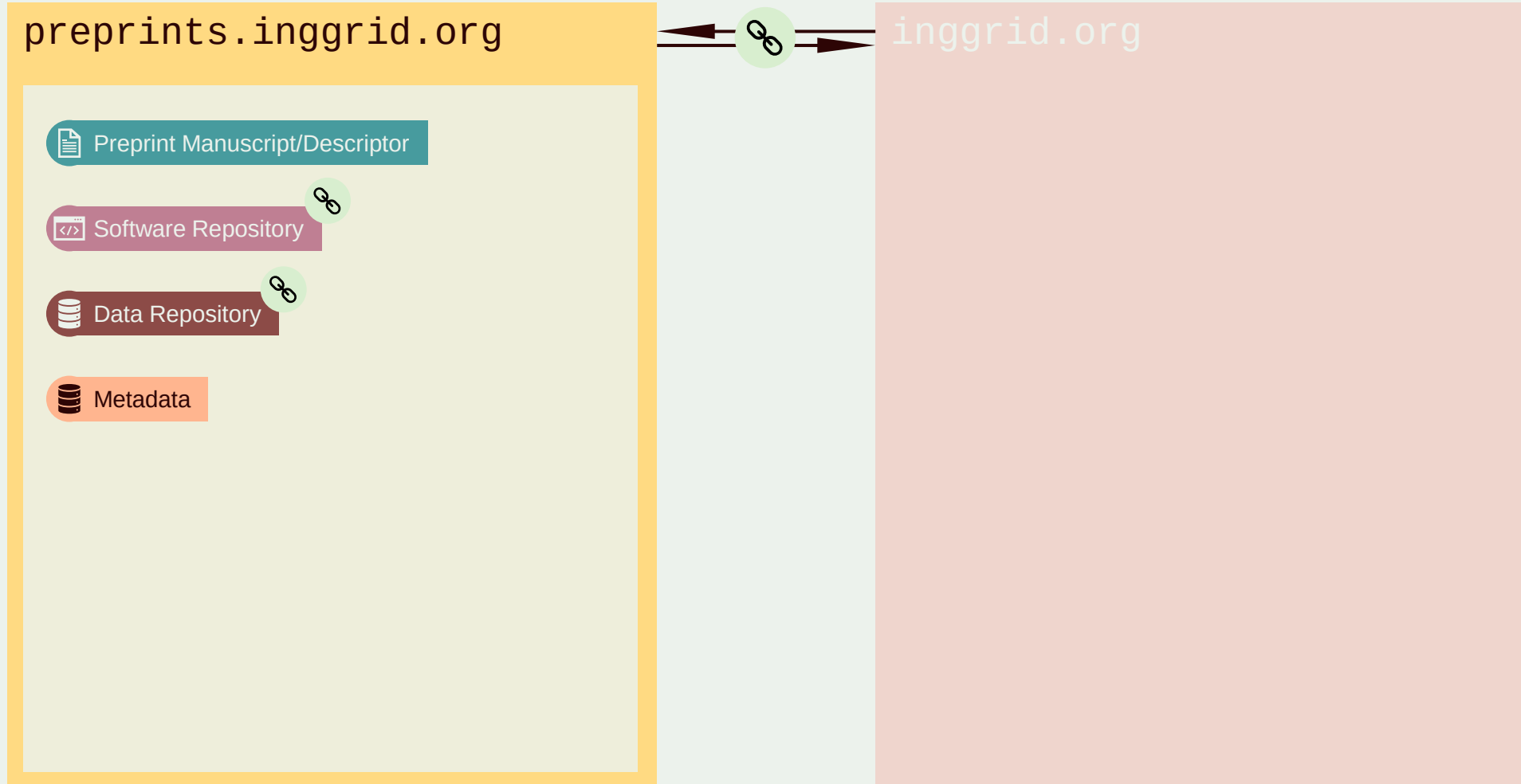
Domain of Open Peer Review



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

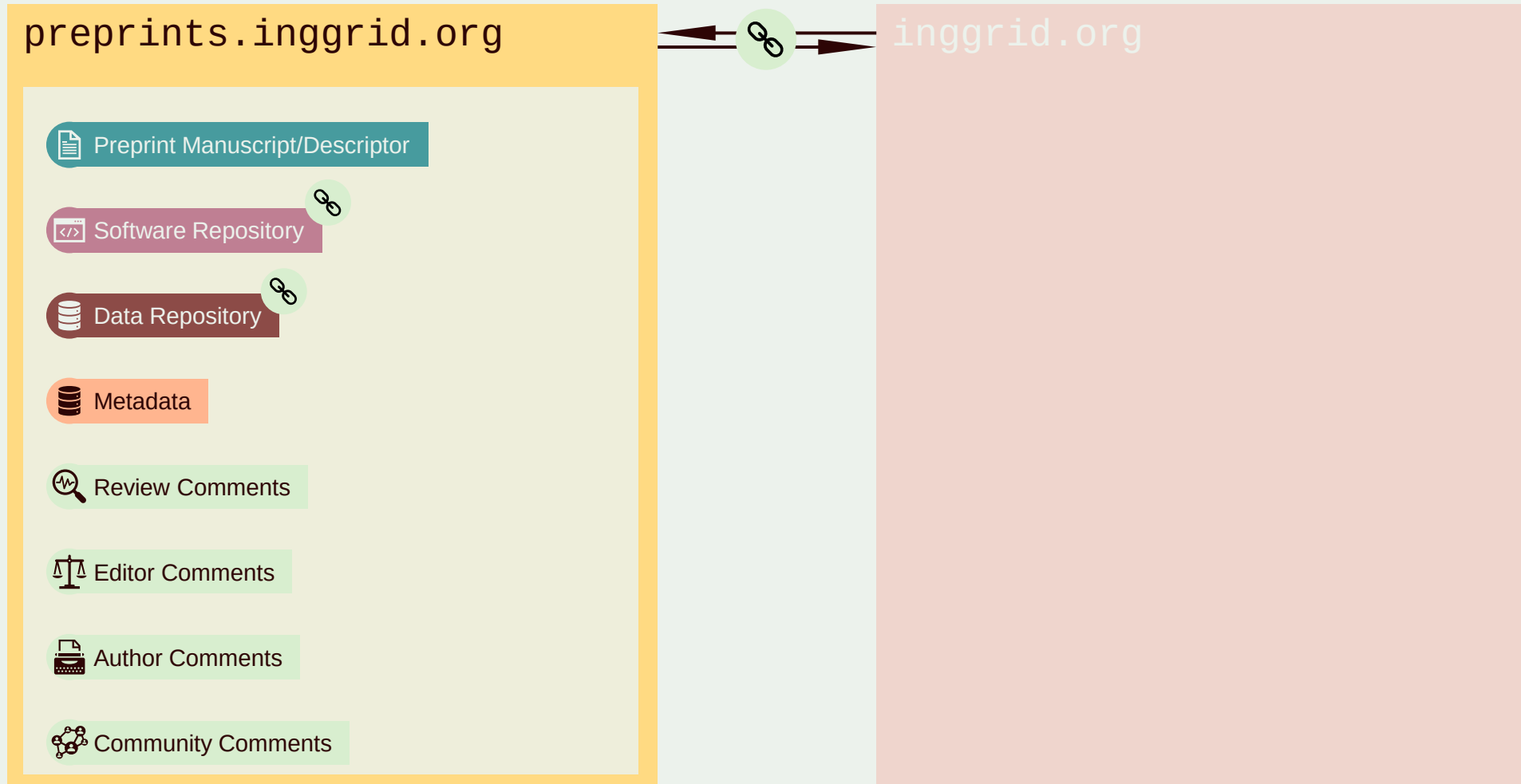


Peer-Reviewed Preprint Publication





Peer-Reviewed Preprint Publication





preprint
title

preprint
PDF



This is a Preprint and has not been peer reviewed. A published version of this Preprint is available on [ing grid](#). This is version 6 of this Preprint.

RESEARCH ARTICLE

ing grid preprints

plotD - a toolkit for connecting research data and visualization

Martin Hock ¹
 Hannes Mayr ¹
 Manuela Richter ¹
 Jan Lemmer
 Peter F. Pelz ¹

¹ Chair of Fluid Systems, Technische Universität Darmstadt, Darmstadt.

Abstract. While visualizations can carry a vast amount of information compared to text and are often used for validation, references to data and metadata resulting in these visualizations are not common. To provide such references, the software plotD provides two key modules that strive to seamlessly integrate into a generic, Python-based research workflow. The module `figplot` generates or accepts a unique ID and anchors it (visibly) as a reference to a figure or picture. The module `publish` exports the figure along with the data, code and parameters used in its creation into folders named by the reference ID for later reuse. The tools work to provide aid in research data management with simple base functionality as opposed to encompassing management frameworks. Later features and improvements will expand the scope and applicability to other programming environments.

Keywords: research data management, visualization, figure, plot, missing, referencing, ID

Data availability:
Data can be found here: [https://doi.org/10.15497/RDA00068](#)

Software availability:
Software can be found here: [https://doi.org/10.15497/RDA00068](#)

1 **Statement of need**

2 Scientific results are published in the form of hypotheses, axioms and equations as well as text
 3 and diagrams. Likewise, research software is being published more and more frequently. The
 4 comprehensibility of scientific results is indispensable for scientific discourse and reproducibility.
 5 Hypotheses, axioms and equations are usually published in text form and can be referenced
 6 accordingly. Software can be made traceable and referenceable through the use of version control
 7 software. But what about diagrams? A diagram published in a paper is difficult to trace because
 8 the (raw) data is usually not available. However, the traceability of diagrams and the data they
 9 contain is not only a challenge to publication but also in everyday research. Diagrams are used for
 10 visualization and are therefore often produced for interim results. While the researcher continues

Downloads

[Download Preprint](#)

Supplementary Files

[Supplementary File](#)

Authors

Martin Hock , Hannes Mayr, Manuela Richter, Jan Lemmer, Peter Pelz

Abstract

The highest amount of published information on paper is contained in visualizations such as 2D and or 3D plots. Supporting a generic research workflow, plotD provides tools that can a) create and anchor a reference (ID code, URL,...) for and b) package figures, data, code and parameters used to create the figure.

The code is provided as tools with small impact, that need to be used consciously by the researcher and does not aim to relieve the researcher of his duty to keep his digital working environment organized. The exported packages help immensely to make results reusable and repeatable. The initial implementation was created [more](#).

Subjects

Data Management Software

Keywords

research data management, visualization, figure, plot, mapping, referencing, ID, visualization, figure, plot, mapping, reference, ID, organisation

Dates

Published: 2022-09-05 10:00

Last Updated: 2023-03-17 11:45

Older Versions

[Version 4 - 2023-03-10](#)

[Version 3 - 2022-11-18](#)

[Version 2 - 2022-10-14](#)

[Version 1 - 2022-09-05](#)

License

[Creative Commons Attribution 4.0](#)

Add a Comment

Write your comment:

[ADD COMMENT](#)

Comments

Comment #18 Kevin Logan @ 2023-03-15 11:24

I thank the authors for implementing the corrections recommended by the reviewers. Minor linguistic errors should be corrected during the copy editing step.

I would like to make one suggestion regarding the reference [16], Lambrecht et al. The authors may consider the latest work regarding FAIR principles for research software, which is also an RDA recommendation. The text is publicly available here: <https://doi.org/10.15497/RDA00068>.

Other than that, I would like to ask the authors to submit their LaTeX project folder in order for it to be processed for publication in the ing grid journal.



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

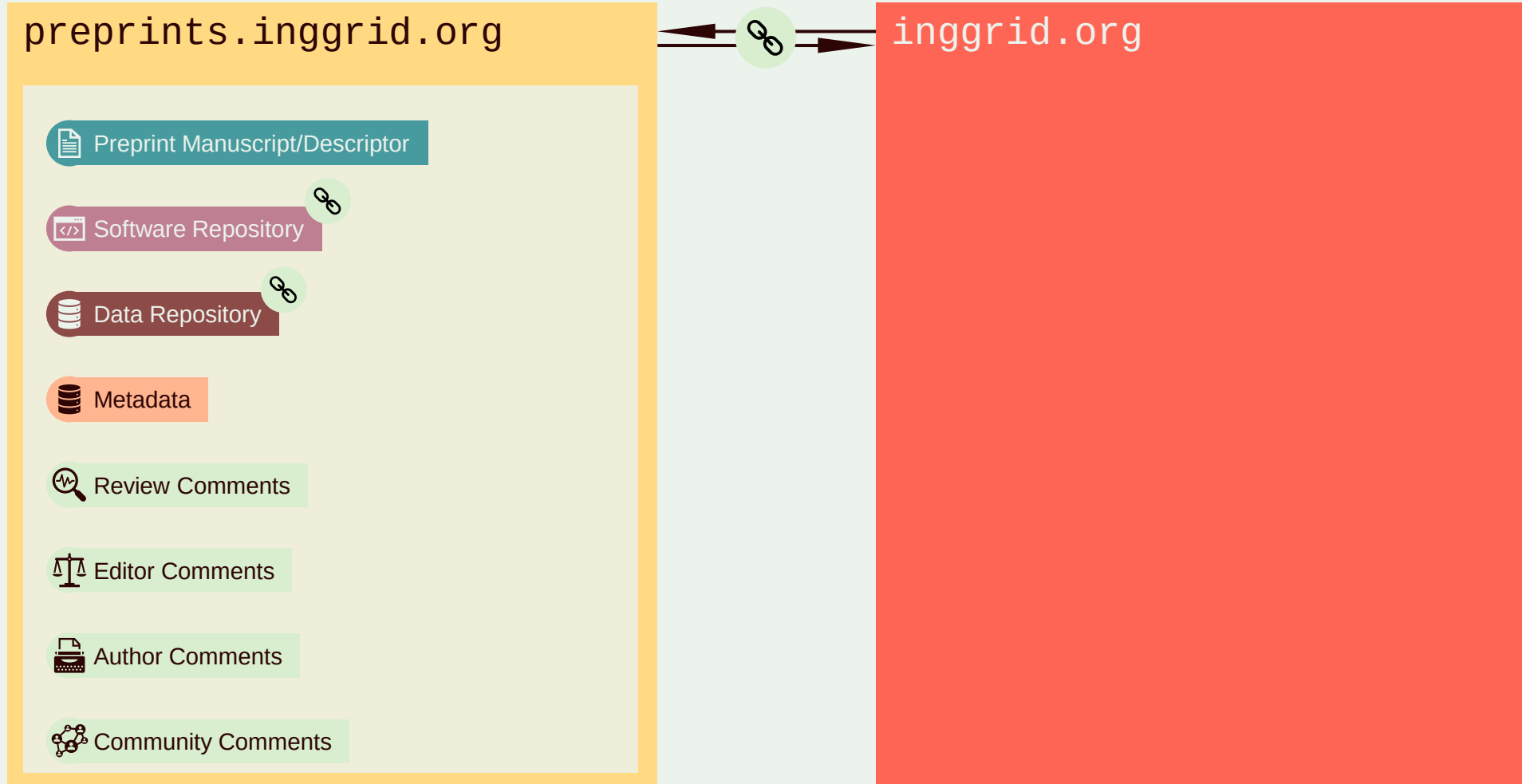
links to
data,
software

metadata

comment/
review
section

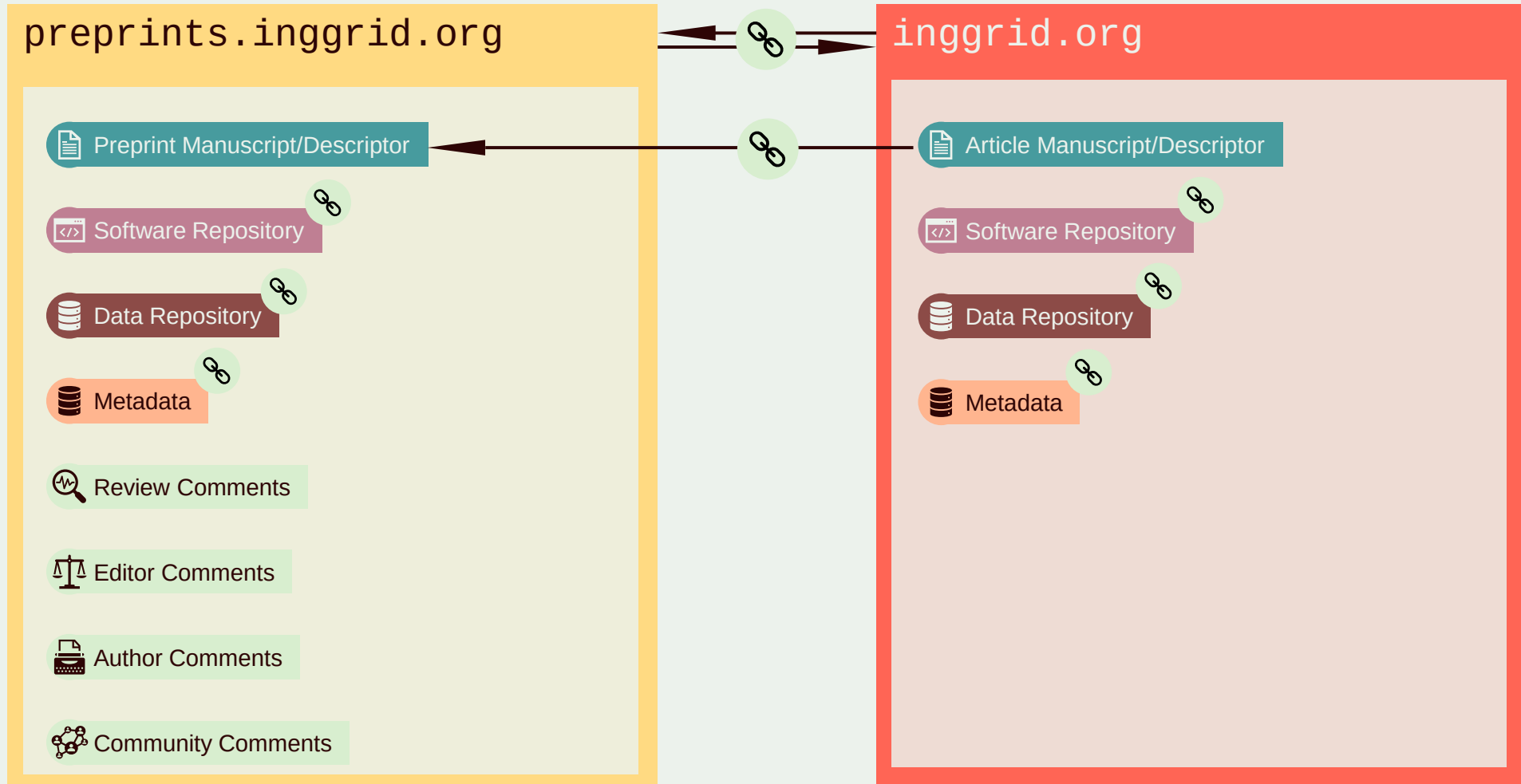


Peer-Reviewed Preprint Publication





Peer-Reviewed Preprint Publication





The screenshot shows the ing.grid website interface. At the top, there is a search bar and the user name 'Michaela Leštáková'. The navigation menu includes Home, News, About, Submissions, Preprints, Articles, Issues, Editorial Team, Contact, and Become a Reviewer. The main content area features a 3D bar chart visualization. The article title is 'plotID - a toolkit for connecting research data and visualization', with authors listed below. The abstract describes the toolkit's purpose. On the right, there are sections for 'DOWNLOAD' (XML and PDF), 'ISSUE' (Volume 1, Issue 1, 2023), 'IDENTIFIERS' (DOI link), 'RELATED MATERIAL' (GitHub repository), and 'PREPRINT' (link to preprint repository). At the bottom, a metrics box shows 442 views and 140 downloads, along with publication date (21 APR 2023), peer review status, and license (Creative Commons Attribution 4.0). A QR code is located in the bottom left corner of the article content area.

article title

download links

article metrics

DOI

link to software

link to preprint



<https://doi.org/10.48694/inggrid.3632>



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

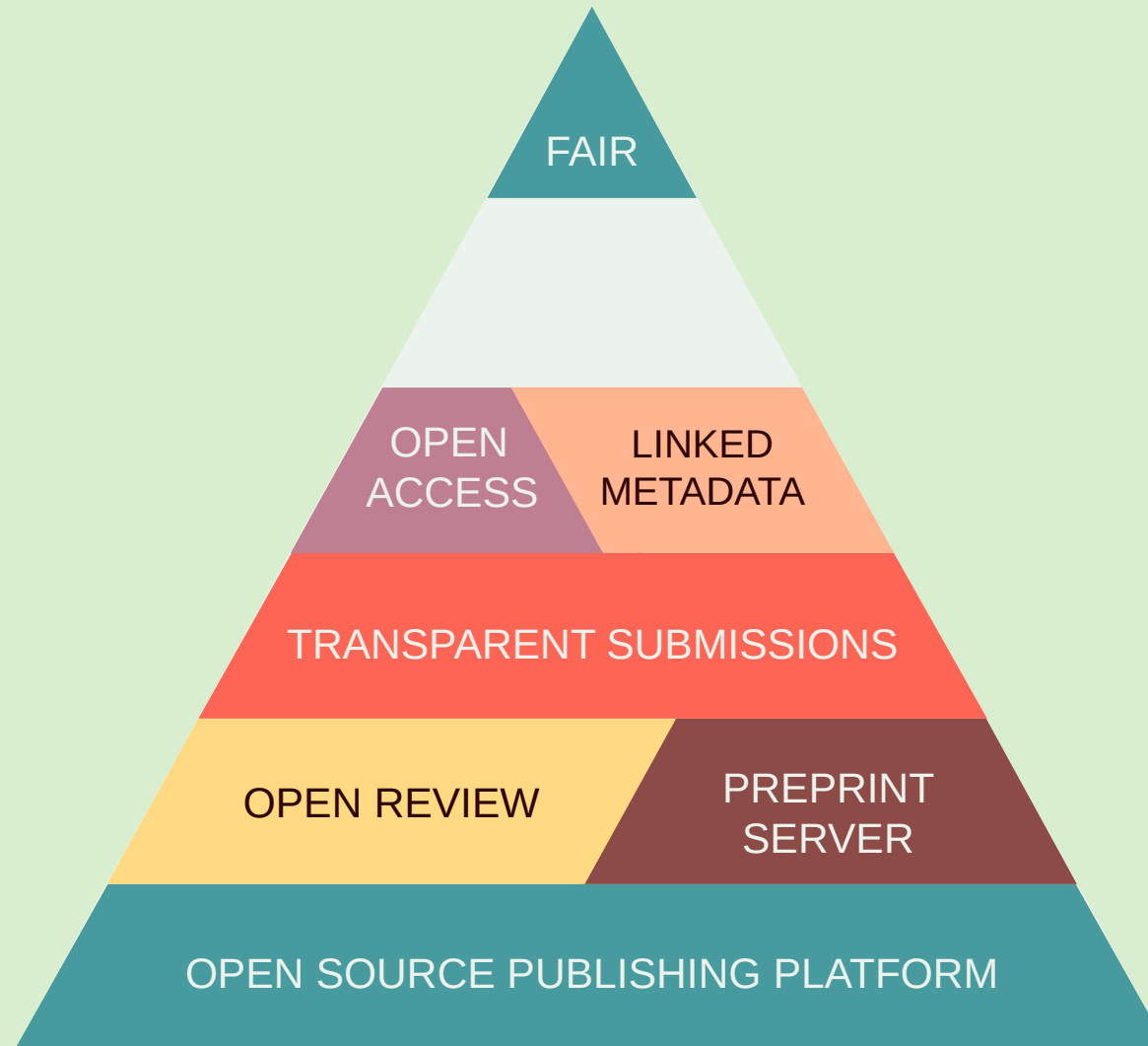




Building blocks of a FAIR Journal



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.








Summary of Submission Types



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

	 manuscript	 software	 data
submission type			
mandatory material	manuscript	software descriptor link to software	data descriptor link to data
optional material	link to software link to data	link to data	link to software



Standard for FAIR Data Publications

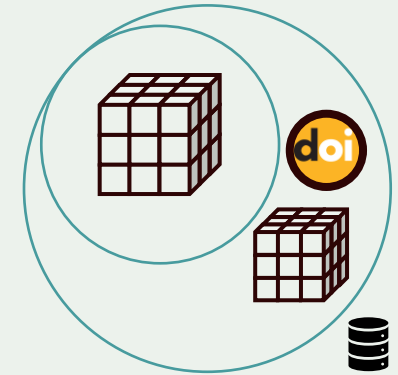


(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

FINDABLE

Data, and its associated metadata, is easy for both humans and machines to find.

- Datasets are assigned a DOI
- Data are described with relevant metadata
- Metadata contains the DOI of the dataset
- Datasets are deposited in a searchable data repository (e.g., institutional repository, Zenodo)





Standard for FAIR Data Publications



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

FINDABLE

Data, and its associated metadata, is easy for both humans and machines to find.

- Datasets are assigned a DOI
- Data are described with relevant metadata
- Metadata contains the DOI of the dataset
- Datasets are deposited in a searchable data repository (e.g., institutional repository, Zenodo)

ACCESSIBLE

Data, and its metadata, is retrievable via standardised protocols.

- The DOI references a page, from which the dataset can be downloaded





Standard for FAIR Data Publications



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

FINDABLE

Data, and its associated metadata, is easy for both humans and machines to find.

- Datasets are assigned a DOI
- Data are described with relevant metadata
- Metadata contains the DOI of the dataset
- Datasets are deposited in a searchable data repository (e.g., institutional repository, Zenodo)

ACCESSIBLE

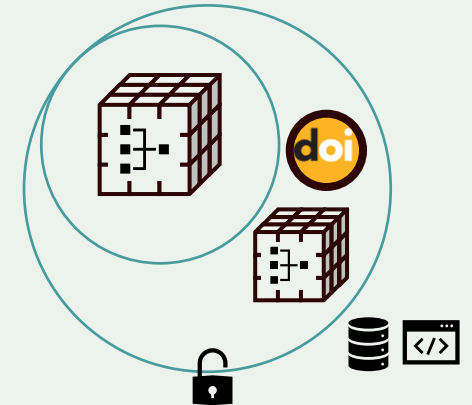
Data, and its metadata, is retrievable via standardised protocols.

- The DOI references a page, from which the dataset can be downloaded

INTEROPERABLE

The data need to interoperate with applications or workflows for analysis, storage, and processing.

- The dataset should be described by metadata using a formal, accessible, shared, and broadly applicable language for knowledge representation.
- If possible, (meta)data should use standardised vocabularies



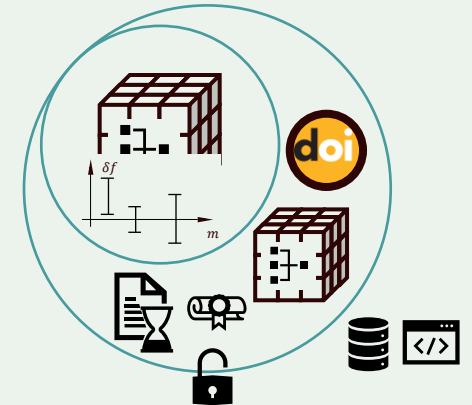


Standard for FAIR Data Publications



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

FINDABLE	Data, and its associated metadata, is easy for both humans and machines to find.
	<ul style="list-style-type: none">▪ Datasets are assigned a DOI▪ Data are described with relevant metadata▪ Metadata contains the DOI of the dataset▪ Datasets are deposited in a searchable data repository (e.g., institutional repository, Zenodo)
ACCESSIBLE	Data, and its metadata, is retrievable via standardised protocols.
	<ul style="list-style-type: none">▪ The DOI references a page, from which the dataset can be downloaded
INTEROPERABLE	The data need to interoperate with applications or workflows for analysis, storage, and processing.
	<ul style="list-style-type: none">▪ The dataset should be described by metadata using a formal, accessible, shared, and broadly applicable language for knowledge representation.▪ If possible, (meta)data should use standardised vocabularies
RESUABLE	Data is both usable and reusable.
	<ul style="list-style-type: none">▪ Datasets should be accurately described by metadata, documentation, license and version<ul style="list-style-type: none">▪ The dataset is released with a clear and accessible data usage license▪ The metadata indicates a version number of the dataset and where possible provides provenance information▪ The datasets meet domain-relevant community standards of formal quality

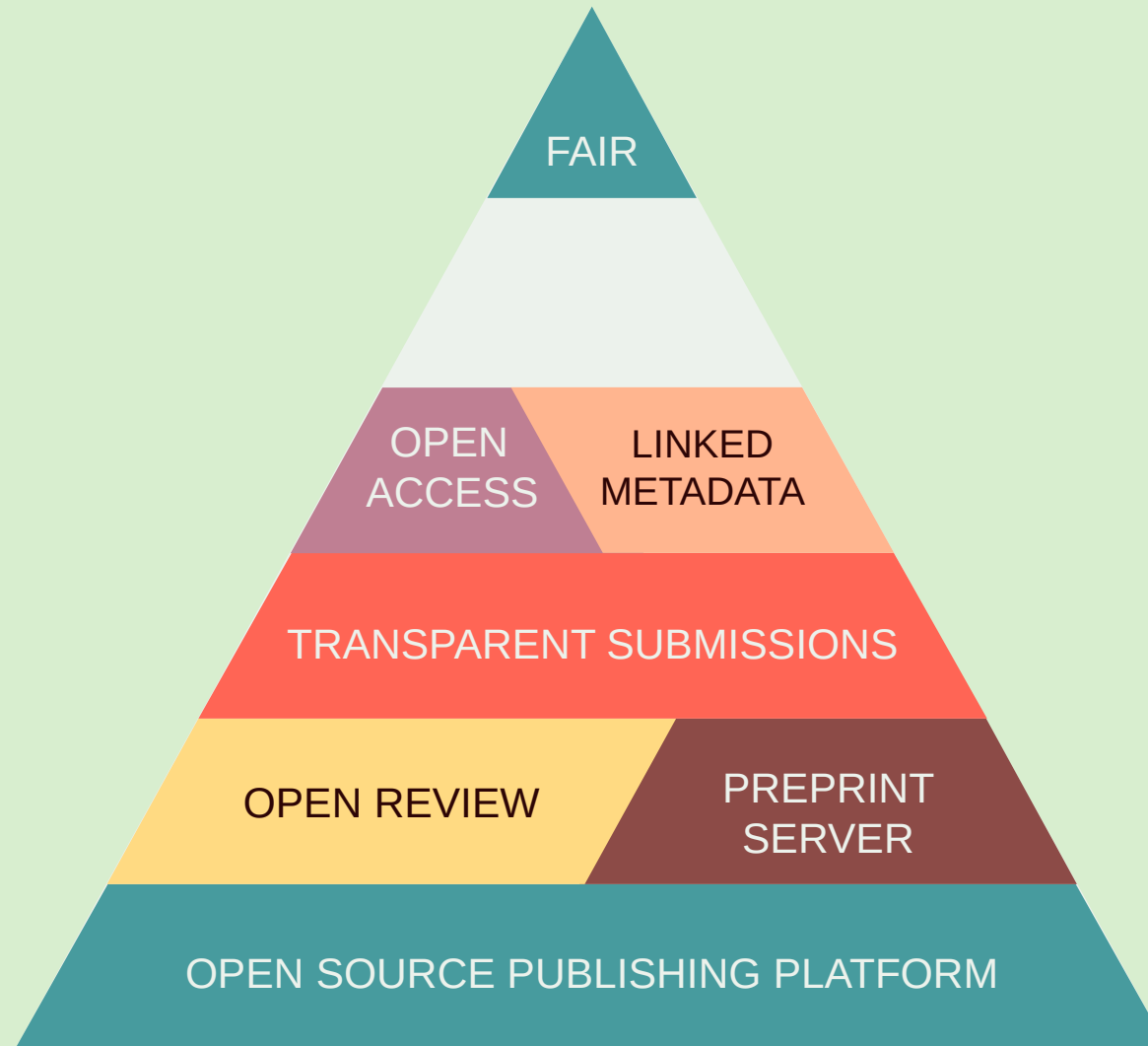




Building blocks of a FAIR Journal

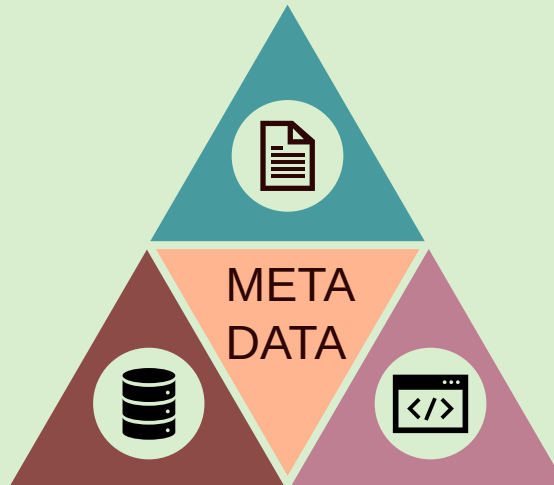


(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.



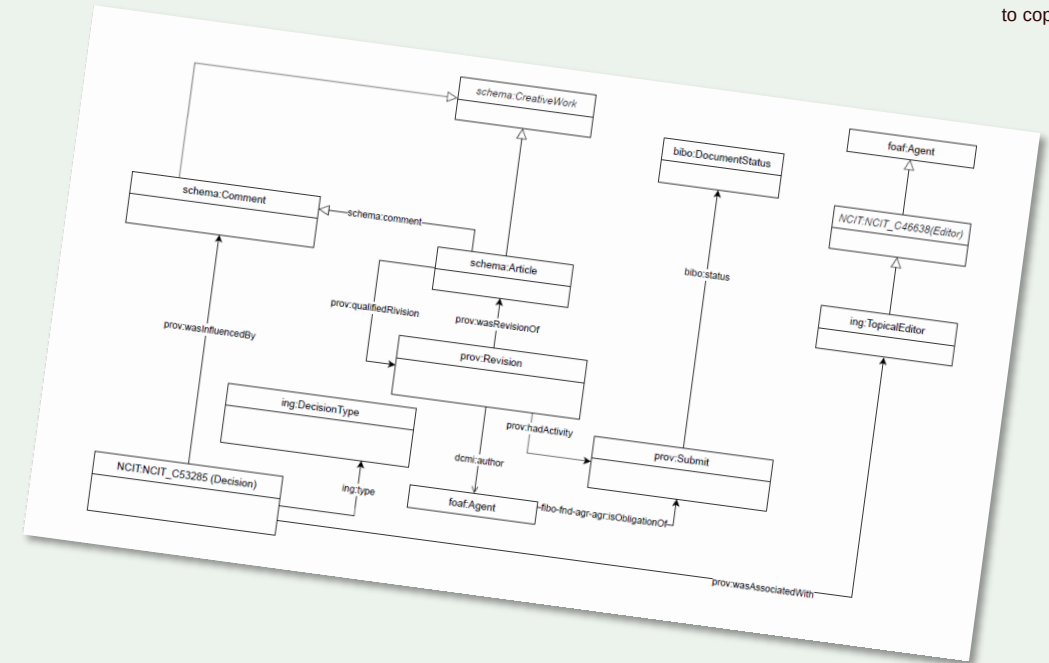
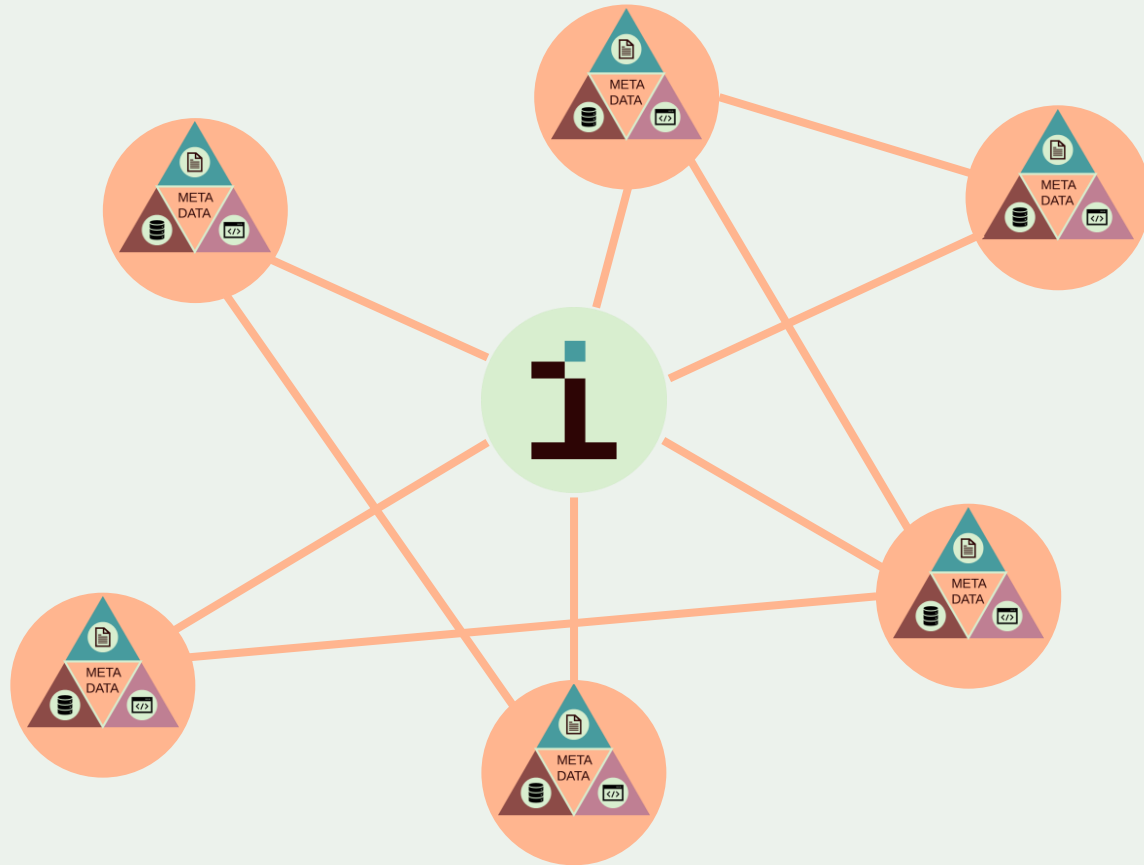


(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.





Journal Knowledge Graph

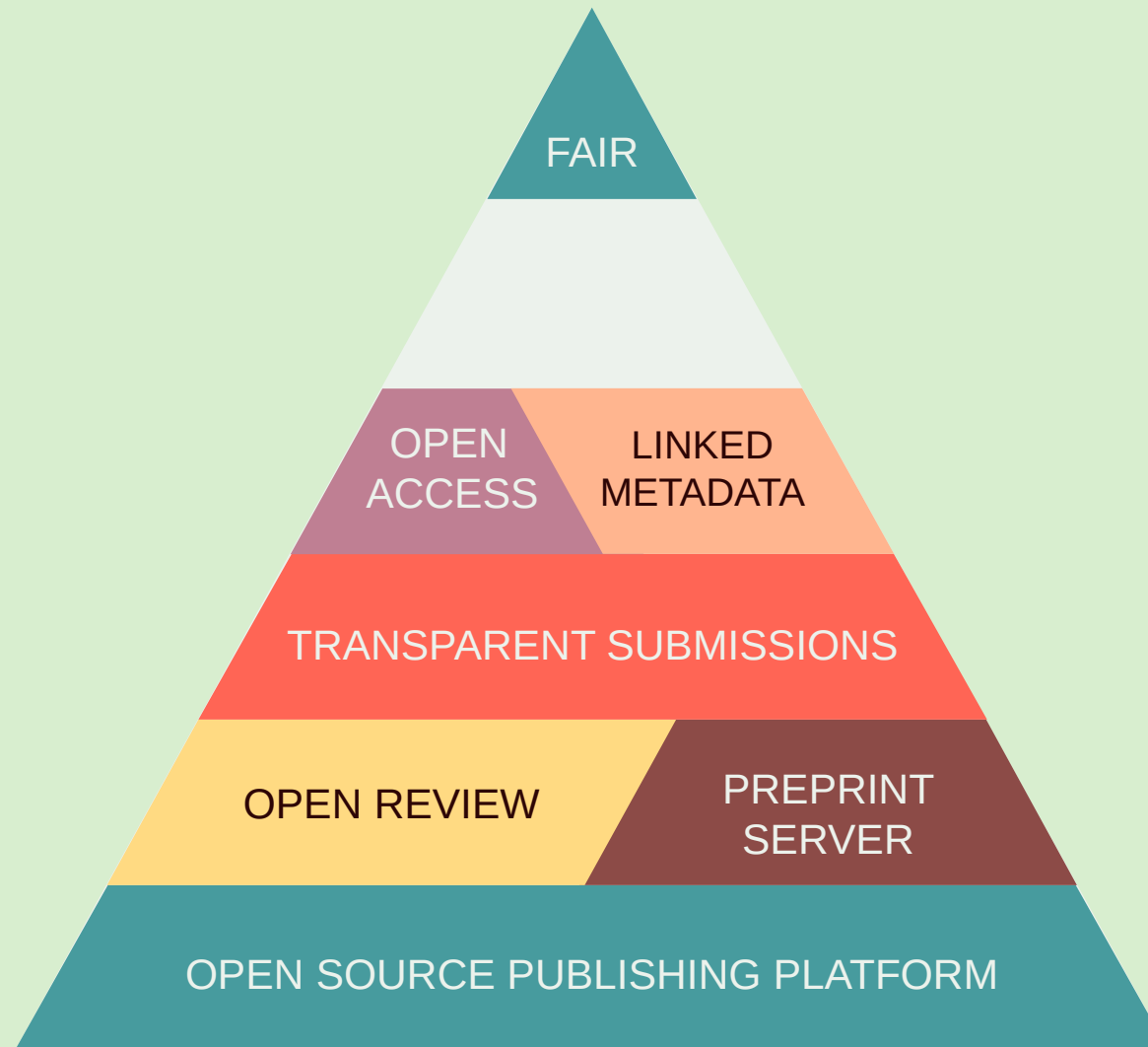




Building blocks of a FAIR Journal

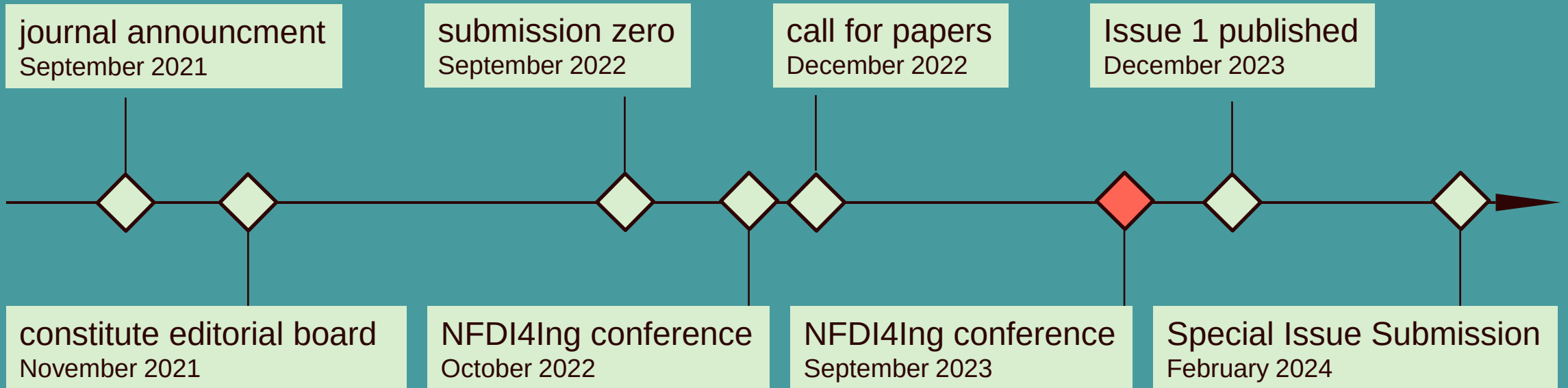


(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.



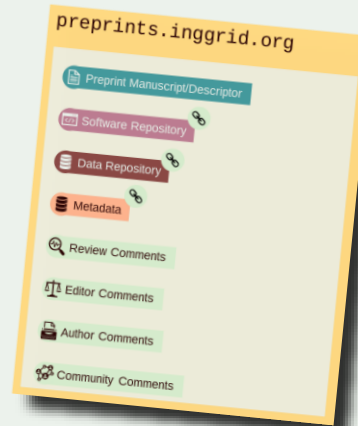


(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.





NFDI4Ing Conference Special Issue





(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

COMPLETE CURRENT ISSUES

SPECIAL ISSUE NFDI4ING CONFERENCE 2023

ACCELERATE PUBLISHING TIME

DOAJ AND SCOPUS INDEXING



Stay in touch!



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.





ing.grid



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

**A SCHOLARLY-LED JOURNAL
FOR FAIR DATA MANAGEMENT
IN ENGINEERING SCIENCES**

NFDI4Ing Conference, September 28th, 2023

Kevin Logan, Michaela Leštáková, Izadora Silva Pimenta, Peter F. Pelz
Chair of Fluid Systems / TU Darmstadt



Acknowledgements



(excluding logos)
ing.grid logo
rights are held by
the rights holders
and are subject
to copyright.

The authors would like to thank the Federal Government and the Heads of Government of the Länder, as well as the Joint Science Conference (GWK), for their funding and support within the framework of the NFDI4Ing consortium. Funded by the German Research Foundation (DFG) - project number 442146713.