



Cost for research

How cost data of research can be included in open metadata to be reused and evaluated

Workshop on Open Citations & Open Scholarly Metadata 2025, 29/May/2025,
Gernot Deinzer (University Library of Regensburg)

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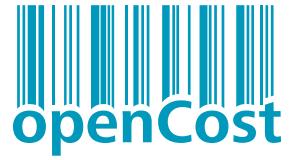
- The openCost project
- Metadata of a publication
 - Development of a metadata schema
 - Open data exchange
- Using repositories to achieve transparency
- Where to store cost data?
- Integrating cost data into repositories
- Sharing of Information
 - Display of OpenAPC information in repositories
 - Display of OpenAPC information in the Electronic Journals Library

The project openCost

- **Project partners:** University Library of Regensburg, Bielefeld University Library, Deutsches Elektronen-Synchrotron DESY Hamburg
- Funded by the German Research Foundation (DFG)
- **Goals:**
 - Creating a technical infrastructure that allows to comprehensively record all publication costs and subsequently make them freely accessible by means of standardized interfaces
 - Enabling cost transparency on an institutional, national, and international level

Project focus

- Development of a **standardized metadata schema** for the collection/recording and transfer of data on publication costs
- Implementation of an open interface for **harvesting** and querying this data
- Extension of the **Electronic Journals Library** (EZB) with special functions for displaying information on open access publication costs and on the assumption of costs



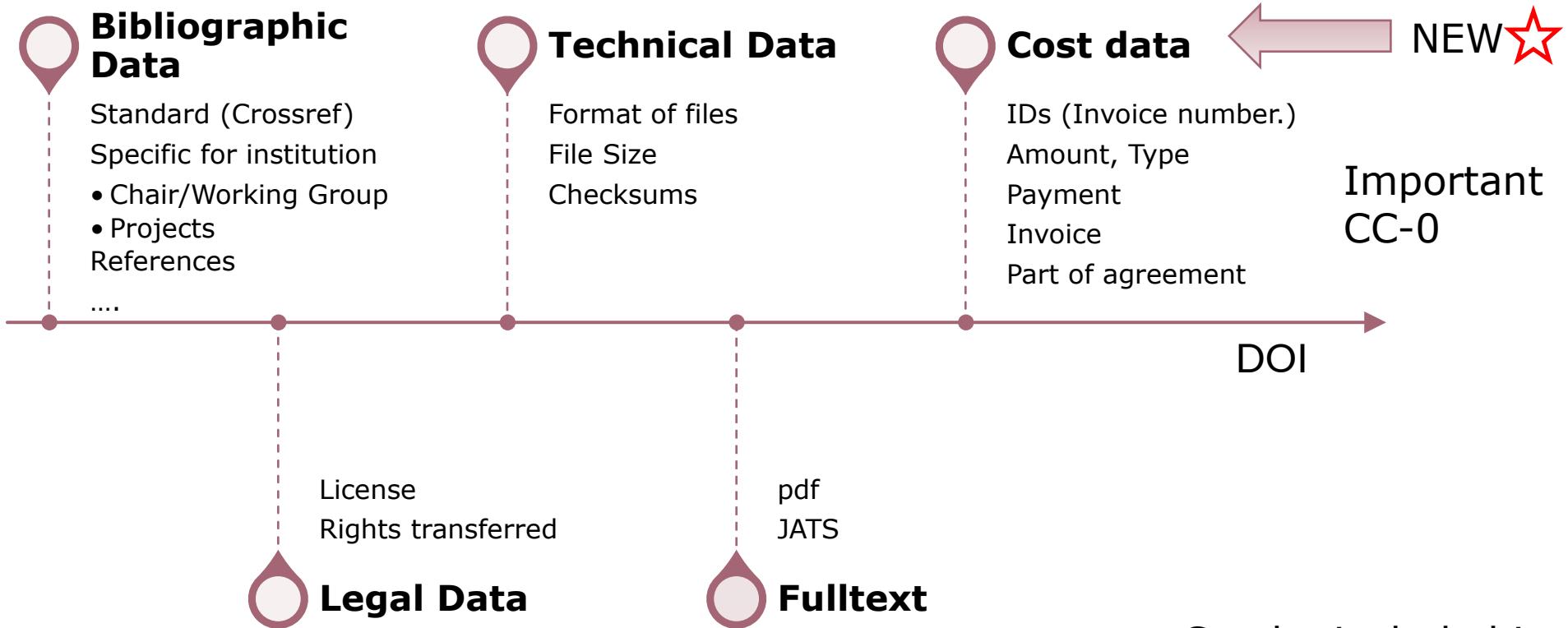
Metadata of publication

Extending the metadata of a publication with costs associated for publishing

Funded by Deutsche Forschungsgemeinschaft (DFG) – Project Number 457354095



Metadata of publication



Metadata schema and open data exchange

- The metadata schema:
 - Development in collaboration with experts and stakeholders
 - Community feedback (public GitHub repository)
 - Coverage of fee-based journal articles, additional costs, processing fees, costs from contracts, ...
- Open format for the exchange of cost data:
 - Exchange via über OAI-PMH-interface, XML as exchange format
 - Attribute-less XML for easy export in other formats (e.g. JSON)

```
publication
  --- primary_identifier
    |   --- doi _OR_ bibliographic_information!*
  --- secondary_identifiers
    |   --- id type=doi
    |   --- id type=local
    |   --- id type=oai
  --- institution
    |   --- id type=ror
    |   --- name type=short
  --- publication_type = COAR controlled vocabulary
  --- external_costsplitting = true _OR_ 1 / false _OR_ 0
  --- cost_data
    |   --- part_of_contract
      |     --- primary_identifier
        |       --- id type=ESAC
      |     --- group_id
    |   --- invoice
      |     --- invoice_number
      |     --- creditor
      |     --- dates
        |       --- invoice
        |       --- paid
      |     --- amount_invoice
        |       --- amount
        |       --- currency
    |   --- amounts_paid
      |     --- amount_paid
```

Articles part of a publishing agreement

Consortium SCOAP³

Mentioned in copyright

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DEAL (German Transformative Agreement with Springer Nature, Wiley, Elsevier)

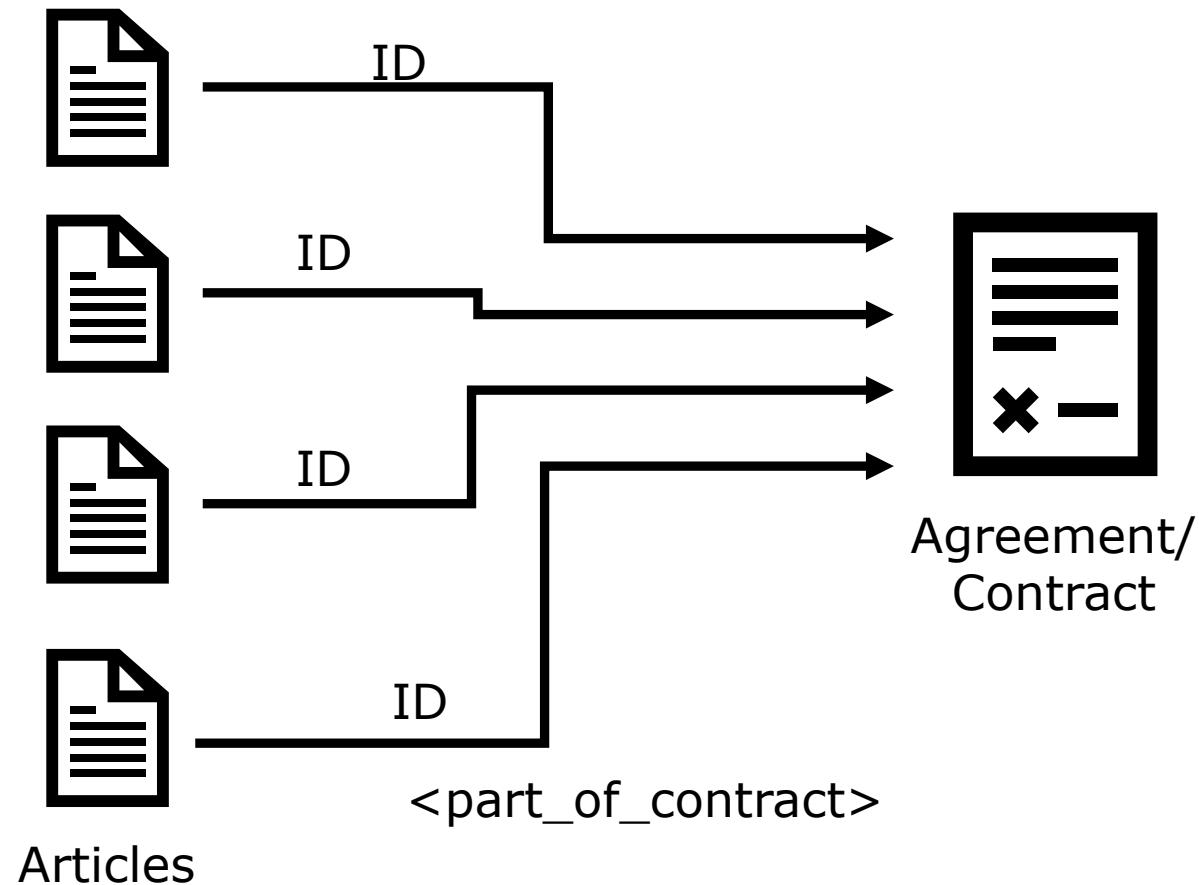
Mentioned in Acknowledgement - Funding

Open Access funding enabled and organized by Projekt DEAL.

Others: No mention at all

???

Reference in Article Metadata to Contract



XML and JSON Representation

```
<contract>
  <contract_name>DEAL</contract_name>
  <institution>...</institution>
  <invoice_group>...
    <payment>...</payment>
  </invoice_group>
</contract>
```

```
contract: {
  contract_name: DEAL,
  institution: {...},
  invoice_group: {...}
  payment: {...}
}
```

Machine Readable Data

Exchange of data possible via

- OAI-PMH
- API

Repositories

Achievement of transparency in the transformation process to open access



Repositories

- Repositories as designated location for sustainable publication of research results
 - Parallel publication of Gold Open Access Publications
- Metadata is automatically gathered from various sources: Crossref, DataCite, OpenAlex
- Enrichment with local requirements such as institutions, chairs, and local identifiers to obtain additional value
- Funding: funder and project number - provision of financial information, no exact figures

Other publication data

Data, that has not been stored or is only available in other sources:

- Reason for the publication licence
- Payments
- Part of contract (transformative agreement, ...)
- Investment in infrastructure or personell

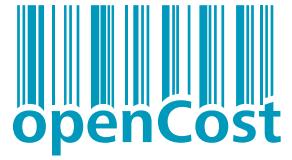
Where to store data on publication costs?

- Metadata of a publication that is stored in a repository:
 - **Bibliographic metadata:** all data describing the publication
 - **Technical metadata:** technical information and data about the publication
 - **Legal metadata:** mainly rights that are assigned to the publication
 - **Administrative metadata:** all relationships between a publication to an organization
- Metadata in library or management systems:
 - Cost data, but no information about the publication
 - Difficult to expand
 - Transformative agreements: publications have to be assigned to single payments

Cost data in repositories

Advantages:

- Free combination of metadata
- Enabling statistical analyses
- Budget planning for libraries: Publication costs
- Standardized interfaces for easy and automated data exchange



Integrating cost data into repositories

Exemplary implementation by the project partners

Funded by the German Research Foundation (DFG) – Project number 457354095



Display of OpenAPC information in repositories

Quantification of gas-accessible microporosity in metal-organic framework glasses

Frentzel-Beyme, L. ; Kolodzieski, P. ; Weiss, J.-B. ; Schneemann, A. ; Henke, S. (Corresponding author)

2022

Nature Publishing Group UK [London]

Nature Communications 13(1), 7750 (2022) [10.1038/s41467-022-35372-5]    

This record is in other databases:    

Please use a persistent id in citations: doi:10.1038/s41467-022-35372-5 doi:10.3204/PUBDB-2022-07789

Abstract: Metal-organic framework (MOF) glasses are a new class of glass materials with immense potential for applications ranging from gas separation to optics and solid electrolytes. Due to the inherent difficulty to determine the atomic structure of amorphous glasses, the intrinsic structural porosity of MOF glasses is only poorly understood. Here, we investigate the porosity features (pore size and pore limiting diameter) of a series of prototypical MOF glass formers from the family of zeolitic imidazole frameworks (ZIFs) and their corresponding glasses. CO₂ sorption at 195 K allows quantifying the microporosity of these materials in their crystalline and glassy states, also providing excess to the micropore volume and the apparent density of the ZIF glasses. Additional hydrocarbon sorption data together with X-ray total scattering experiments prove that the porosity features of the ZIF glasses depend on the types of organic linkers. This allows formulating design principles for a targeted tuning of the intrinsic microporosity of MOF glasses. These principles are counterintuitive and contrary to those established for crystalline MOFs but show similarities to strategies previously developed for porous polymers.

Classification:

- ddc:500

Contributing Institute(s):

1. DOOR-User (DOOR ; HAS-User)

Research Program(s):

1. 6G3 - PETRA III (DESY) (POF4-6G3) (POF4-6G3)

Publication costs of 5579.37€ funded by Technische Universität Dortmund (Source: OpenAPC)

Tumour stage distribution and survival of malignant melanoma in Germany 2002–2011

URN zum Zitieren dieses Dokuments:

URN NBN:DE:BVb:355-EPUB-427213 

DOI zum Zitieren dieses Dokuments:

10.5283/EPUB.42721 

Schoffer, Olaf ; Schülein, Stefanie ; Arand, Gerlinde ; Arnholdt, Hans ; Baaske, Dieter ; Bargou, Ralf C. ; Becker, Nikolaus ; Beckmann, Matthias W. ; Bodack, Yves ; Böhme, Beatrix ; Bozkurt, Tayfun ; Breitsprecher, Regine ; Buchali, Andre ; Burger, Elke ; Burger, Ulrike ; Dommissch, Klaus ; Elsner, Gudrun ; Fernschild, Karin ; Flintzer, Ulrike ; Funke, Uwe ; Gerken, Michael ; Göbel, Hubert ; Grobe, Norbert ; Gumpf, Vera ; Heinzerling, Lucie ; Kemper, Lana Raffaela ; Kiani, Alexander ; Klinkhammer-Schalke, Monika ; Klöcking, Sabine ; Kreibich, Ute ; Knabner, Katrin ; Kuhn, Peter ; Lutze, Stine ; Mäder, Uwe ; Maisel, Tanja ; Maschke, Jan ; Middeke, Martin ; Neubauer, Andreas ; Niedostatek, Antje ; Opazo-Saez, Anabelle ; Peters, Christoph ; Schell, Beatrice ; Schenckirs, Gerhard ; Schmalenberg, Harald ; Schmidt, Peter ; Schneider, Constanze ; Schubotz, Birgit ; Seide, Anika ; Strecker, Paul ; Taubenheim, Sabine ; Wackes, Matthias ; Weiβ, Steffen ; Welke, Claudia ; Werner, Carmen  ; Wittekind, Christian ; Wulff, Jörg ; Zettl, Heike ; Klug, Stefanie J.  

Lizenz: [Creative Commons Namensnennung 4.0 International](#)
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 [▲ \(976kB\)](#)

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Alternative Links zum Volltext:  

Details

Details

Dokumentenart: Artikel

Höhe Gebühr (aus OpenAPC): 1661.24

Institution der Zahlung: TU Muenchen

Titel eines Journals oder einer Zeitschrift: BMC Cancer

Verlag: BMC

PUB – Publikationen an der Universität Bielefeld

Expertise-dependent perceptual performance in chess tasks with varying complexity

Küchelmann, T. ; Velentzas, K. ; Essig, K. ; Koester, D. ; Schack, T. (2022)
Frontiers in Psychology 13: 1-13.

Zeitschriftenaufsatz | Veröffentlicht | Englisch

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Details Dateien

Autor*in: Küchelmann, Thomas  ; Velentzas, Konstantinos ; Essig, Katrin  ; Koester, Dirk  ; Schack, Thomas 

Einrichtung: Center of Excellence - Cognitive Interaction Technology CITEC
 Fakultät für Psychologie und Sportwissenschaft > Abteilung Sportwissenschaft > Arbeitsbereich II - Neurokognition und Bewegung - Biomechanik

Abstract / Bemerkung: Perceptual performance, anticipating opponents' strategies, and judging chess positions especially in subliminal processing is related to expertise level and dependent on chunking processes. It becomes obvious that chess expertise is a multidimensional phenomenon related predominantly to



English 

Export
 Markieren/ Markierung löschen
 Markierte Publikationen
 Open Data PUB

Finanzierung
 Quelle: OPENAPC
 Publikationskosten von 3401€
 finanziert durch Bielefeld University.

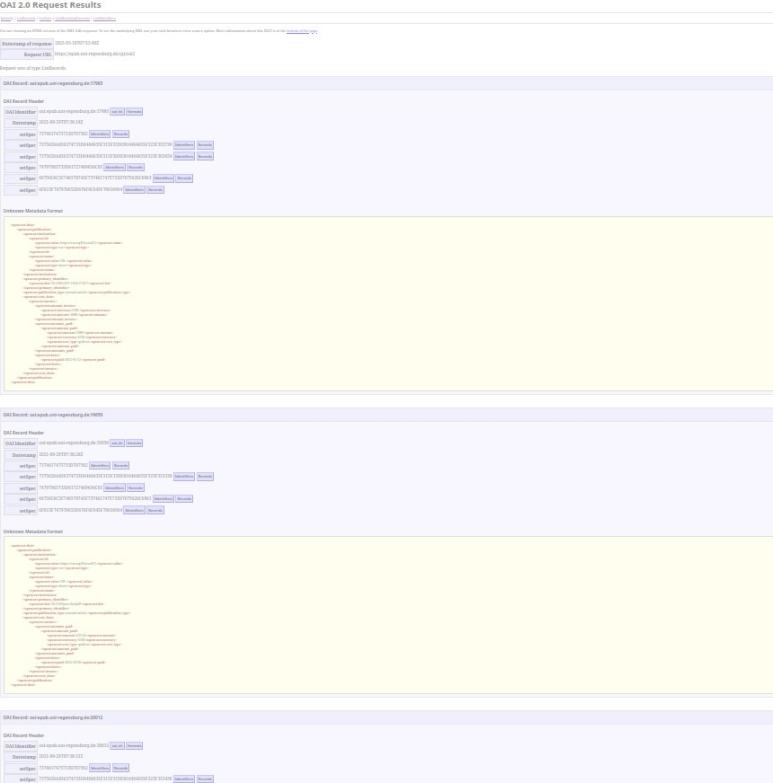
Finanzierung

Quelle: OPENAPC

Publikationskosten von 3401€

finanziert durch Bielefeld University.

OAI-Interface for cost data



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```

<https://epub.uni-regensburg.de/cgi/oai2?verb=ListRecords&metadataPrefix=openCost&set=openCost>

Sharing of data

Are libraries/repository providers willing to openly share their publication cost data?



Goal: Transparency

Fairness and cost transparency in scientific publishing can only be achieved if this data is shared!

openCost:

- Automated standard reduces workload
- OAI interface: harvesting of cost metadata
- Cost transparency for publishing and reading
- Comparisons on institutional, national and international level

OpenAPC

The Open APC initiative releases data sets on fees paid for Open Access journal articles by universities and research institutions under an Open Database License.

Select a region from the map or use the list below to view APC data for individual institutions.



- Releases data sets on fees paid for OA journal articles by universities and research institutions under an Open Database License
- Willingness to share cost data:
419 institutions from Europe have contributed to the OpenAPC project
 - Sweden: 27 institutions
 - Germany: 122 institutions
 - France: 105 institutions
- OpenAPC metadata schema has been extended to the openCost metadata schema

Reuse of OpenAPC information in the Electronic Journals Library

▼ Publish in this journal

Secondary publication of your own articles from this journal in Open Access

Publisher's Open Access Policy

Publisher / Provider: Public Library of Science (PLoS); PubMed Central

Sherpa Romeo: [Find the publisher's Open Access policy in Sherpa Romeo](#)

Contribution to publication costs by your own institution

Person to Contact: Cornelia Lang (electronic publishing, publishing fund, electronic dissertations, research data), oa@ur.de

Funding*: For journal articles with an invoice date of 2023/2024, a contribution of €2000 will be provided if the journal is listed in <https://doaj.org/>, the article originated at UR, the corresponding author is a member of UR, and as a result, lists UR as their first affiliation in the article. All information and publishing agreements regarding free or discounted publishing are available at <https://epub.uni-regensburg.de/oa-publizieren.html>.

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Information about Publishing

[The Directory of Open Access Journals](#)

Instructions for authors: [Link to the instructions](#)

Languages the journal accepts: English

APCs: Yes

APC amount: 2290 USD

Journal license: CC BY

Quality seal: DOAJ Seal

Review process: Anonymously

Plagiarism screening policy: Publisher

Duration of publishing process: 24 Weeks

Cost Information from OpenAPC

Institutions report the publication costs (APC) paid for this journal to [OpenAPC](#):

Year	2021	2022	2023	2024
Average APC per article worldwide	1,557 EUR (777 record(s))	1,792 EUR (665 record(s))	1,756 EUR (258 record(s))	1,721 EUR (7 record(s))
Average APC per article in your institution	1,705 EUR (13 record(s))	2,003 EUR (8 record(s))	1,980 EUR (2 record(s))	- (no records)

Cost Information from OpenAPC

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Year	2021	2022	2023	2024
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Average APC per article in your institution	1,705 EUR (13 record(s))	2,003 EUR (8 record(s))	1,980 EUR (2 record(s))	- (no records)

Conclusion

First time, that cost data are published

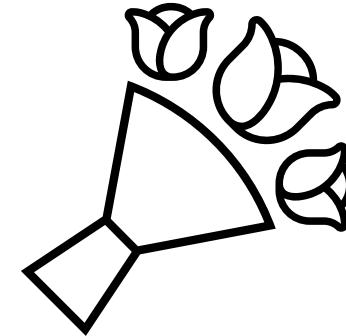
- Standardized
- Human readable
- Machine readable

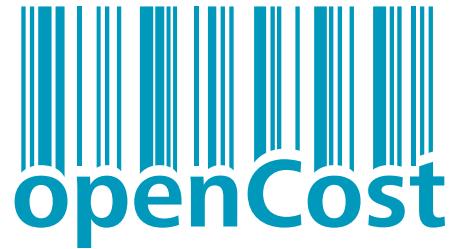
Fulfilling FAIR-principles



Thanks

- openCost
- DFG-Grant 457354095
- Team
- **Julia Bartlewski, Christoph Broschinski, Dirk Pieper (Bielefeld)**
- **Lisa-Marie Stein, Alexander Wagner (Hamburg)**
- **Bianca Schweighofer (thanks for slides), Colin Sippl, Lisa-Marie Stein, Alexander Wagner, Silke Weisheit (Regensburg)**





Thank you for the attention!

- Website: <https://opencost.de/en>
- openCost publications: <https://www.opencost.de/en/publications/>
- openCost mailing list: opencost.info@mailman.uni-regensburg.de
- Github repository: <https://github.com/opencost-de/opencost>
 - Contains the schema and its documentation (including FAQs, tabular description, XSD file for formal verification, and folder with valid sample files)
 - Tracks the evolution of the schema in a transparent way