



Interoperability through Persistent Identifiers Metadata

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PID Coordination Hub

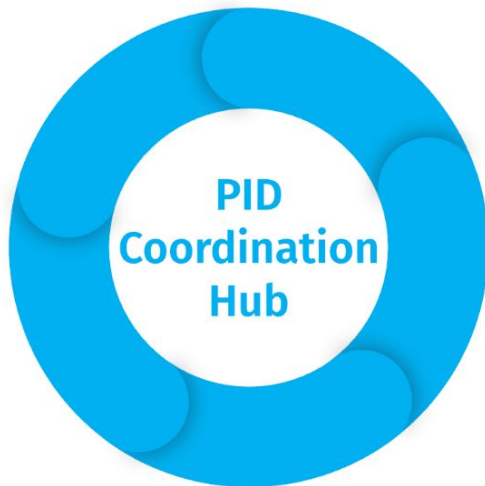
A Vision for PID4NFDI

Support and Information

- Linking existing PID resources
- Display best practices
- Helpdesk and open hours
- Training

Target group-specific community engagement

- Repository managers
- Researchers
- Organizations
- Decision makers



Metadata and Interoperability

- Support for metadata quality assessment
- Guidelines for metadata harmonization
- Focus on resources from use cases

Services

- Prefix registration service for PID use-cases
- B2Inst
- Data Type Registry (EOSC)
- PID Metaresolver (EOSC)
- Compliance Assessment Toolkit (EOSC)

Governance

- Tool for PID provider selection
- NFDI-wide PID guidelines and compliance testing

Use Cases

Focus Groups

Outreach

1. What is PID Metadata? Why DataCite Schema?
2. PID Metadata and FAIR Principles
3. Practical Examples from FID Repositories
4. Interoperability in Practice: TS4NFDI Mapping Service

The information collected during the registration of a PID.

PID metadata is useful when it includes key descriptive information about the digital object, ensuring that it is identifiable and accessible in various contexts.

Findable

because identifiers are globally unique and searchable.

Accessible

because metadata remains available even if the object moves.

Interoperable

because it follows shared, machine-readable standards.

Reusable

because it preserves provenance and context.

DataCite Metadata Schema Structure

6 Mandatory

ID	Property
1	Identifier
2	Creator
3	Title
4	Publisher
5	PublicationYear
10	ResourceType

6 Recommended and 8 Optional

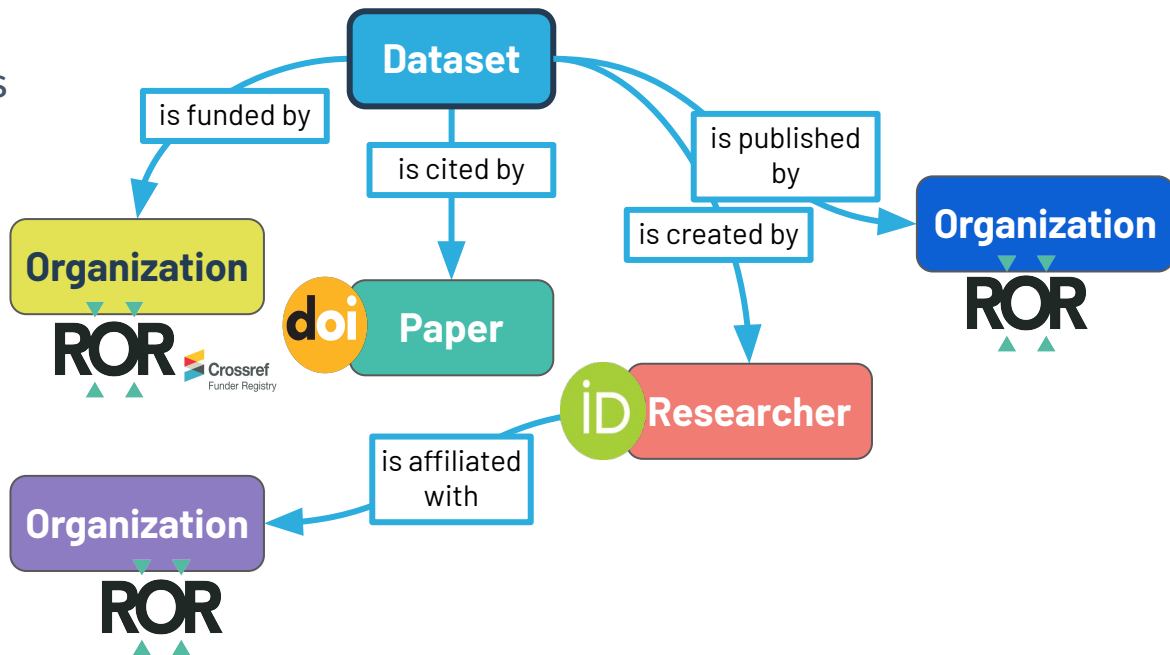
ID	Property	Obligation
6	Subject	R
7	Contributor	R
8	Date	R
9	Language	O
11	AlternateIdentifier	O
12	RelatedIdentifier	R
13	Size	O
14	Format	O
15	Version	O
16	Rights	O
17	Description	R
18	GeoLocation	R
19	FundingReference	O
20	RelatedItem	O

What is connection Metadata?

Metadata that represents relationships
connections between entities

Examples:

- A paper cites a dataset
- A person authors a paper
- A person is affiliated with an institution
- An institution funds a research output
- A dataset is compiled/created by software



Documentation can be accessed from main site

<https://schema.datacite.org>

Why DataCite Schema?

(1) **Breadth:** Over 100 million DOIs, CC0 metadata,



Why DataCite Schema?



(1) **Breadth:** Over 100 million DOIs, CC0 metadata, openly queryable via API.

The screenshot shows the DataCite API Reference page for the 'Return a list of DOIs' endpoint. The page is organized into several sections:

- Navigation:** Includes links for Home, Guides, and API Reference, along with a search bar and a 'Contact us!' button.
- Left Sidebar:** A 'JUMP TO' section with a list of API endpoints and their methods. The 'Return a list of DOIs' endpoint is highlighted with a green 'GET' button.
- Main Content Area:**
 - Return a list of DOIs:** Shows the endpoint URL 'https://api.test.datacite.org/doi's' with a green 'GET' button.
 - Log in to see full request history:** A section for viewing request history, showing a table with columns for TIME, STATUS, and USER AGENT. It indicates '0 Requests This Month'.
 - Support Documentation:** A list of links for 'Retrieving a list of DOIs', 'Queries and filtering' (including 'Building a query string'), and 'Retrieving a random sample of DOIs'.
 - Query Params:** A section for defining query parameters. It includes a 'query' string parameter for searching DOI metadata fields using OpenSearch syntax, and a 'created' string parameter for filtering by DOI date created (yyyy). It also includes a 'created' string parameter for filtering by multiple years (yyyy,yyyyy).
- Right Sidebar:**
 - LANGUAGE:** A section for selecting the API language, with options for Shell, Node, Ruby, PHP, and Python.
 - CREDENTIALS:** A section for entering credentials, showing a 'Basic' authentication type with fields for 'username' and 'password'.
 - URL:** A section for entering the base URL, showing 'https://api.test.datacite.org/doi's'.
 - cURL Request:** A section for generating a cURL request, showing the command:

```
curl --request GET \
--url https://api.test.datacite.org/doi's \
--header 'accept: application/vnd.api+json'
```
 - RESPONSE:** A section for viewing the response, showing the response body:

```
application/vnd.api+json
```

 and a status code of 200.

Why DataCite Schema?

(1) **Breadth:** Over 100 million DOIs, CC0 metadata, openly queryable via API.

(2) **Authority:** Recommended by the NFDI Metadata Task Force.

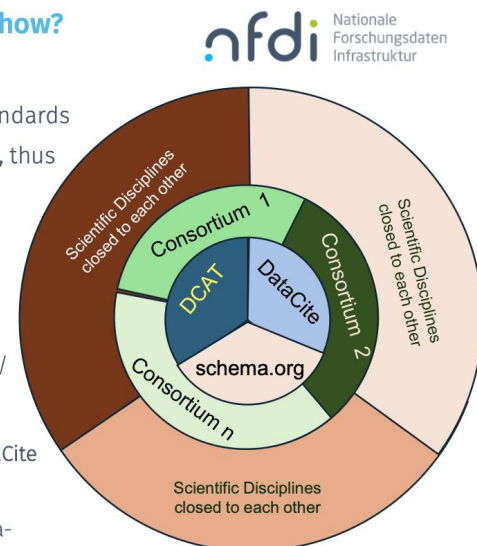
Initiating agreed metadata kernel profiles

Can core schemas be applied in NFDI and how?

Goal: The main purpose for common metadata standards is, to be able to exchange data across repositories, thus enabling interdisciplinary interoperability.

Why DCAT, DataCite, and schema.org:

- Our research showed, that these are the most common “general purpose” standards currently in use to export / harvest data from repositories.
- There exist good cross-walks between schema.org, DataCite and DCAT (RDA Research Metadata Schemas WG)
<https://www.rd-alliance.org/groups/research-metadata-schemas-wg/outputs/>



Why DataCite Schema?

(1) **Breadth:** Over 100 million DOIs, CC0 metadata, openly queryable via API.

(2) **Authority:** Recommended by the NFDI Metadata Task Force.

(3) **Familiarity:** Many consortia and repositories already use it.

Name	DOIs	Consortium
ZBW Journal Data Archive	1,898	German National Library of Economics
MediaRep	29,959	Philipps-Universität Marburg/Universitätsbibliothek
HAB-Repositorium	1,558	Consortium with 4 Repos
CrossAsia	472	Prussian Cultural Heritage Foundation
CrossAsia Integrated Textrepository (ITR)	23,835	Prussian Cultural Heritage Foundation
intRechtDok	16,378	Prussian Cultural Heritage Foundation
FID move	28	Technische Informationsbibliothek (TIB)
Sachsen-Anhalt Data Archive and Repository	410,463	Universitäts- und Landesbibliothek Sachsen-Anhalt
SADAR		
pharmRxiv	62	Technische Universität Braunschweig, Universitätsbibliothek
GESIS Data Services for the Social Sciences- Archiving BASIS	9,680	Leibniz Institute for the Social Sciences

Resource Type

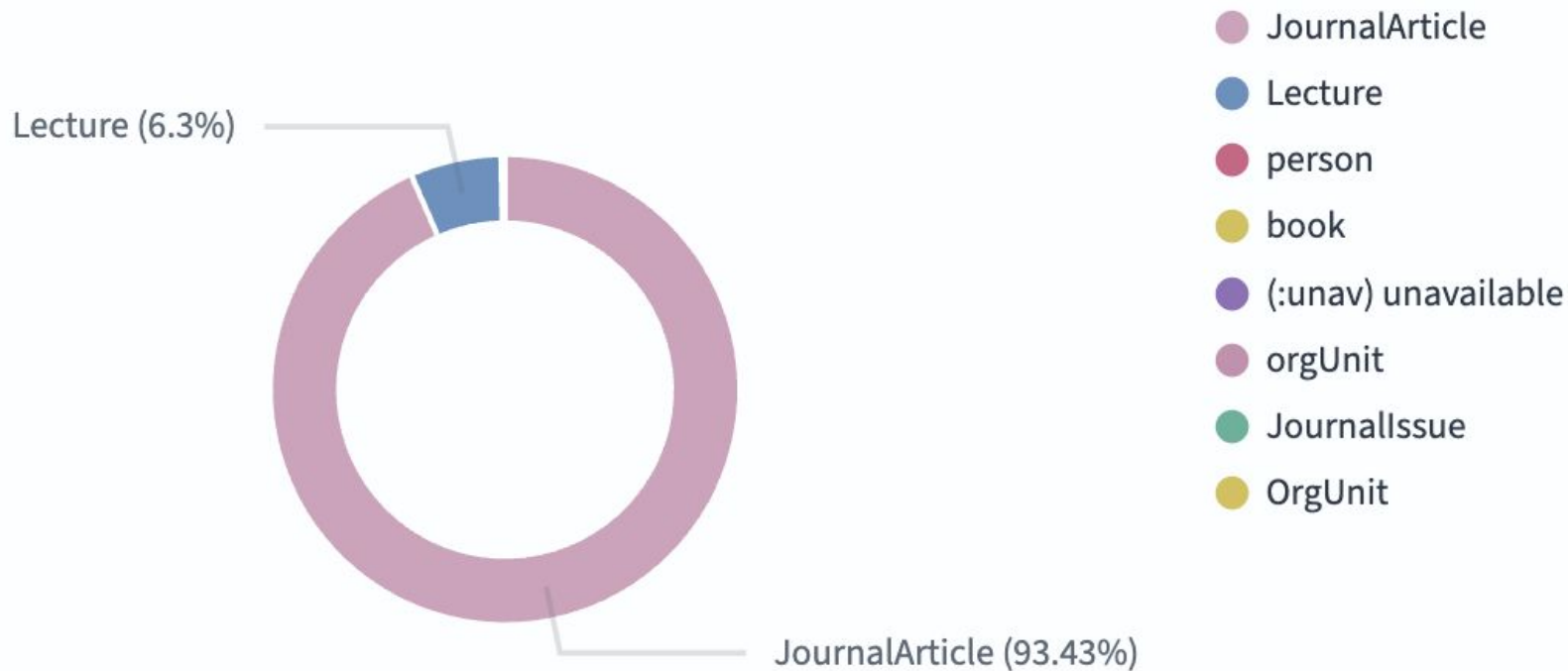


```
"types": {  
  "resourceType": "Census Data",  
  "resourceTypeGeneral": "Dataset"  
}
```

Repository : MediaRep

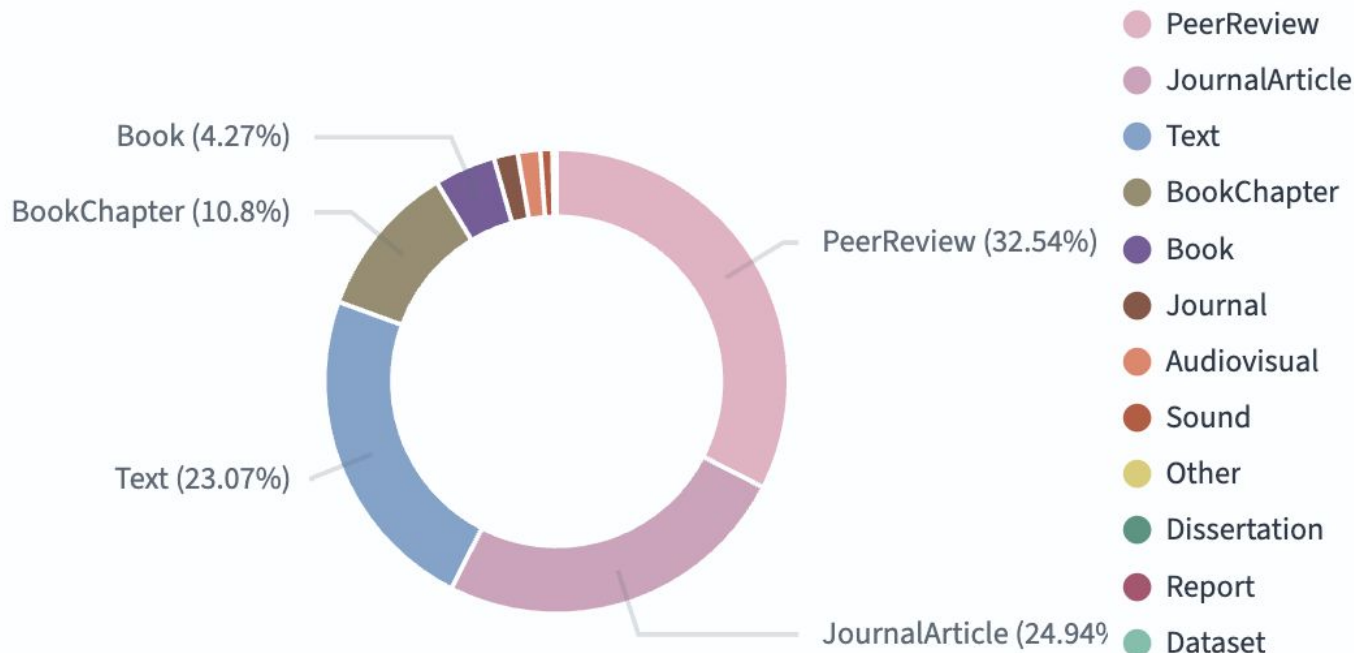
Consortium: Philipps-Universität
Marburg/Universitätsbibliothek

MediaRep ResourceType = Free Text



MediaRep ResourceTypeGeneral = controlled vocabulary

RTGs



Subjects



```
"subjects": [  
  {  
    "subject": "Climate change processes",  
    "schemeUri":  
      "https://www.abs.gov.au/statistics/classifications/australian-and-new-zealand-standard-research-classification-anzsrc",  
    "valueUri":  
      "https://id.loc.gov/authorities/subjects/sh2009009655.html",  
    "subjectScheme": "ANZSRC Fields of Research",  
    "classificationCode": "370201",  
    "lang": "en"  
  }  
]
```

Repository : intRechtDok

Consortium: Prussian Cultural Heritage Foundation

InterRechtDok - Prussian Cultural Heritage Foundation Consortium

▼ meta:

```
total: 16379
totalPages: 400
page: 1
▶ states: [ { ... } ]
▶ resourceTypes: [ { ... }, { ... } ]
▶ created: (10) [ { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... } ]
▶ published: (16) [ { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... } ]
▶ registered: (10) [ { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... } ]
▶ providers: [ { ... } ]
▶ clients: [ { ... } ]
  affiliations: []
▶ prefixes: [ { ... } ]
▶ certificates: [ { ... } ]
▶ licenses: (9) [ { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... }, { ... } ]
▶ schemaVersions: [ { ... }, { ... } ]
▶ linkChecksStatus: (3) [ { ... }, { ... }, { ... } ]
```

▼ subjects:

```
▶ 0: { id: "342", title: "342", count: 9313 }
▶ 1: { id: "340", title: "340", count: 3480 }
▶ 2: { id: "341", title: "341", count: 2961 }
▶ 3: { id: "344", title: "344", count: 280 }
▶ 4: { id: "343", title: "343", count: 162 }
▶ 5: { id: "Deutschland", title: "Deutschland", count: 104 }
▶ 6: { id: "345", title: "345", count: 86 }
▶ 7: { id: "Verfassungsrecht", title: "Verfassungsrecht", count: 62 }
▶ 8: { id: "346", title: "346", count: 43 }
▶ 9: { id: "19 17", title: "19 17", count: 35 }
```

Base Query:

<https://api.datacite.org/does?client-id=WWPX.INTR2>

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```
▼ meta:
  total: 9313
  totalPages: 373
  page: 1
  ▶ states: [ { } ]
  ▶ resourceTypes: [ { }, { } ]
  ▶ created: (10) [ { }, { }, { }, { }, { }, { }, { }, { }, { }, { } ]
  ▶ published: (16) [ { }, { }, { }, { }, { }, { }, { }, { }, { }, { }, { }, { }, { }, { } ]
  ▶ registered: (10) [ { }, { }, { }, { }, { }, { }, { }, { }, { }, { } ]
  ▶ providers: [ { } ]
  ▶ clients: [ { } ]
  ▶ affiliations: [ ]
  ▶ prefixes: [ { } ]
  ▶ certificates: [ { } ]
  ▶ licenses: (6) [ { }, { }, { }, { }, { }, { } ]
  ▶ schemaVersions: [ { } ]
  ▶ linkChecksStatus: (3) [ { }, { }, { } ]
▼ subjects:
  ▼ 0:
    id: "342"
    title: "342"
    count: 9313
  ▶ 1: { id: "Verfassungsrecht", title: "Verfassungsrecht", count: 5 }
  ▶ 2: { id: "Grundrechte", title: "Grundrechte", count: 4 }
  ▶ 3: { id: "19", title: "19", count: 2 }
  ▶ 4: { id: "BVerfG", title: "B Verf G", count: 2 }
  ▶ 5: { id: "Bundestag", title: "Bundestag", count: 2 }
  ▶ 6: { id: "Demokratie", title: "Demokratie", count: 2 }
  ▶ 7: { id: "Forschungsfreiheit", title: "Forschungsfreiheit", count: 2 }
  ▶ 8: { id: "Rechtstatsachenforschung", title: "Rechtstatsachenforschung", count: 2 }
  ▶ 9: { id: "Verhältnismäßigkeit", title: "Verhältnismäßigkeit", count: 2 }
  fieldsOfScience: [ ]
```

Base Query:

<https://api.datacite.org/doi/client-id=WWPX.INTR2>

Filter- 342:

[https://api.datacite.org/doi/client-id=WWPX.INTR2&query=\(subjects.subject:342\)](https://api.datacite.org/doi/client-id=WWPX.INTR2&query=(subjects.subject:342))

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```
▶ data: (3) [ {...}, {...}, {...} ]
▼ meta:
  total: 3
  totalPages: 1
  page: 1
  states: [ {...} ]
  resourceTypes: [ {...} ]
  created: (3) [ {...}, {...}, {...} ]
  published: (3) [ {...}, {...}, {...} ]
  registered: (3) [ {...}, {...}, {...} ]
  providers: [ {...} ]
  clients: [ {...} ]
  affiliations: []
  prefixes: [ {...} ]
  certificates: [ {...} ]
  licenses: []
  schemaVersions: [ {...} ]
  linkChecksStatus: [ {...} ]
  subjects:
    ▶ 0: { id: "Japan", title: "Japan", count: 3 }
    ▶ 1: { id: "Juristenausbildung", title: "Juristenausbildung", count: 2 }
    ▶ 2: { id: "342", title: "342", count: 1 }
    ▶ 3: { id: "344", title: "344", count: 1 }
    ▶ 4: { id: "349", title: "349", count: 1 }
    ▶ 5: { id: "Europa", title: "Europa", count: 1 }
    ▶ 6: { id: "Interdisziplinarität", title: "Interdisziplinarität", count: 1 }
    ▶ 7: { id: "Umweltrecht", title: "Umweltrecht", count: 1 }
  fieldsOfScience: []
  citations: []
  views: []
  downloads: []
  links: { self: "https://api.datacite.org/doi?client-id=WWPX.INTR2&query=(subjects.subject:Japan)" }
```

Base Query:

<https://api.datacite.org/doi?client-id=WWPX.INTR2>

Filter- 342:

[https://api.datacite.org/doi?client-id=WWPX.INTR2&query=\(subjects.subject:342\)](https://api.datacite.org/doi?client-id=WWPX.INTR2&query=(subjects.subject:342))

Filter- Japan:

[https://api.datacite.org/doi?client-id=WWPX.INTR2&query=\(subjects.subject:Japan\)](https://api.datacite.org/doi?client-id=WWPX.INTR2&query=(subjects.subject:Japan))

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```
▼ data:
  ▶ 0: { id: "10.17176/20220120-192043-0", type: "dois", attributes: {...}, ... }
▼ meta:
  total: 1
  totalPages: 1
  page: 1
  ▶ states: [ {...} ]
  ▶ resourceTypes: [ {...} ]
  ▶ created: [ {...} ]
  ▶ published: [ {...} ]
  ▶ registered: [ {...} ]
  ▶ providers: [ {...} ]
  ▶ clients: [ {...} ]
  affiliations: []
  ▶ prefixes: [ {...} ]
  ▶ certificates: [ {...} ]
  licenses: []
  ▶ schemaVersions: [ {...} ]
  linkChecksStatus: []
▼ subjects:
  ▶ 0: { id: "342", title: "342", count: 1 }
  ▶ 1: { id: "Interdisziplinarität", title: "Interdisziplinarität", count: 1 }
  ▶ 2: { id: "Japan", title: "Japan", count: 1 }
  ▶ 3: { id: "Juristenausbildung", title: "Juristenausbildung", count: 1 }
  ▶ 4: { id: "Umweltrecht", title: "Umweltrecht", count: 1 }
  fieldsOfScience: []
  citations: []
  views: []
  downloads: []
```

Base Query:

<https://api.datacite.org/doi?client-id=WWPX.INTR2>

Filter- 342:

[https://api.datacite.org/doi?client-id=WWPX.INTR2&query=\(subjects.subject:342\)](https://api.datacite.org/doi?client-id=WWPX.INTR2&query=(subjects.subject:342))

Filter- Japan:

[https://api.datacite.org/doi?client-id=WWPX.INTR2&query=\(subjects.subject:Japan\)](https://api.datacite.org/doi?client-id=WWPX.INTR2&query=(subjects.subject:Japan))

Filter 342 & Japan:

[https://api.datacite.org/doi?client-id=WWPX.INTR2&query=\(subjects.subject:342\)AND\(subjects.subject:Japan\)](https://api.datacite.org/doi?client-id=WWPX.INTR2&query=(subjects.subject:342)AND(subjects.subject:Japan))

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```
▼ data:
  ▼ 0:
    id: "10.17176/20220120-192043-0"
    type: "dois"
    ▼ attributes:
      doi: "10.17176/20220120-192043-0"
      ▶ identifiers: (3)[ {...}, {...}, {...} ]
      ▶ creators: [ {...} ]
      ▼ titles:
        ▼ 0:
          lang: "en"
          title: "Environmental Legal Education as if Earth Really Mattered: A Brief Account from Japan"
          publisher: "Fachinformationsdienst für internationale und interdisziplinäre Rechtsforschung"
          ▶ container: { type: "Series", title: "Asian Journal of Legal Education", volume: "vol. 8", ... }
          publicationYear: 2021
          ▶ subjects: (5)[ {...}, {...}, {...}, {...}, {...} ]
```

Title: "Environmental Legal Education as if Earth Really Mattered: A Brief Account from Japan"

Base Query:

<https://api.datacite.org/doi?client-id=WWPX.INTR2>

Filter- 342:

[https://api.datacite.org/doi?client-id=WWPX.INTR2&query=\(subjects.subject:342\)](https://api.datacite.org/doi?client-id=WWPX.INTR2&query=(subjects.subject:342))

Filter- Japan:

[https://api.datacite.org/doi?client-id=WWPX.INTR2&query=\(subjects.subject:Japan\)](https://api.datacite.org/doi?client-id=WWPX.INTR2&query=(subjects.subject:Japan))

Filter 342 & Japan:

[https://api.datacite.org/doi?client-id=WWPX.INTR2&query=\(subjects.subject:342\)AND\(subjects.subject:Japan\)](https://api.datacite.org/doi?client-id=WWPX.INTR2&query=(subjects.subject:342)AND(subjects.subject:Japan))

Repository : CrossAsia

Consortium: Prussian Cultural
Heritage Foundation

CrossAsia - Prussian Cultural Heritage Foundation Consortium



```
▼ meta:
  total: 472
  totalPages: 19
  page: 1
  states: [ { } ]
  resourceTypes: [ { }, { } ]
  created: (4) [ { }, { }, { }, { } ]
  published: (16) [ { }, { }, { }, { }, { }, { }, { }, { }, { }, { }, { }, { }, { }, { } ]
  registered: (4) [ { }, { }, { }, { } ]
  providers: [ { } ]
  clients: [ { } ]
  affiliations: [ ]
  prefixes: [ { } ]
  certificates: [ ]
  licenses: [ { }, { } ]
  schemaVersions: [ { } ]
  linkChecksStatus: [ ]
```

```
▼ subjects:
  0: { id: "Japan", title: "Japan", count: 353 }
  1: { id: "3", title: "3", count: 151 }
  2: { id: "Ländlicher Raum", title: "Ländlicher Raum", count: 150 }
  3: { id: "rural Japan", title: "Rural Japan", count: 147 }
  4: { id: "Regionale Mobilität", title: "Regionale Mobilität", count: 90 }
  5: { id: "Wirtschaft", title: "Wirtschaft", count: 33 }
  6: { id: "Regionale Strukturverbesserung", title: "Regionale Strukturverbesserung", count: 30 }
  7: { id: "320", title: "320", count: 26 }
  8: { id: "327", title: "327", count: 26 }
  9: { id: "Feldforschung", title: "Feldforschung", count: 24 }
```

Base Query:

<https://api.datacite.org/doi/client-id=SHKL.LOFHSJ>

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```
▶ data: (25) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, ... ]
▼ meta:
  total: 353
  totalPages: 15
  page: 1
  states: [ {...} ]
  resourceTypes: [ {...} ]
  created: (3) [ {...}, {...}, {...} ]
  published: (16) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, ... ]
  registered: (3) [ {...}, {...}, {...} ]
  providers: [ {...} ]
  clients: [ {...} ]
  affiliations: []
  prefixes: [ {...} ]
  certificates: []
  licenses: [ {...} ]
  schemaVersions: [ {...} ]
  linkChecksStatus: []
▼ subjects:
  ▶ 0: { id: "Japan", title: "Japan", count: 353 }
  ▶ 1: { id: "3", title: "3", count: 149 }
  ▶ 2: { id: "Ländlicher Raum", title: "Ländlicher Raum", count: 149 }
  ▶ 3: { id: "rural Japan", title: "Rural Japan", count: 147 }
  ▶ 4: { id: "Regionale Mobilität", title: "Regionale Mobilität", count: 89 }
  ▶ 5: { id: "Wirtschaft", title: "Wirtschaft", count: 33 }
  ▶ 6: { id: "Regionale Strukturverbesserung", title: "Regionale Strukturverbesserung", count: 30 }
  ▶ 7: { id: "327", title: "327", count: 25 }
  ▶ 8: { id: "Feldforschung", title: "Feldforschung", count: 24 }
  ▶ 9: { id: "320", title: "320", count: 22 }
```

Base Query:

<https://api.datacite.org/doi?client-id=SHKL.LOFHSJ>

Filter- Japan:

[https://api.datacite.org/doi?client-id=SHKL.LOFHSJ&query=\(subject s.subject:Japan\)](https://api.datacite.org/doi?client-id=SHKL.LOFHSJ&query=(subject s.subject:Japan))

CrossAsia - Prussian Cultural Heritage



Foundation Consortium

```
▶ data: [ {...}, {...} ]
▼ meta:
  total: 2
  totalPages: 1
  page: 1
  ▶ states: [ {...} ]
  ▶ resourceTypes: [ {...} ]
  ▶ created: [ {...} ]
  ▶ published: [ {...}, {...} ]
  ▶ registered: [ {...} ]
  ▶ providers: [ {...} ]
  ▶ clients: [ {...} ]
  affiliations: []
  ▶ prefixes: [ {...} ]
  certificates: []
  licenses: []
  ▶ schemaVersions: [ {...} ]
  linkChecksStatus: []
▼ subjects:
  ▶ 0: { id: "342", title: "342", count: 2 }
  ▶ 1: { id: "Japan", title: "Japan", count: 2 }
  ▶ 2: { id: "Abe, Shinzō (1954–2022)", title: "Abe, Shinzō (1954–2022)", count: 1 }
  ▶ 3: { id: "Geschichte 1960", title: "Geschichte 1960", count: 1 }
  ▶ 4: { id: "Geschichte 2015", title: "Geschichte 2015", count: 1 }
  ▶ 5: { id: "Gesetzgebungsverfahren", title: "Gesetzgebungsverfahren", count: 1 }
  ▶ 6: { id: "Hassrede", title: "Hassrede", count: 1 }
  ▶ 7: { id: "Protestbewegung", title: "Protestbewegung", count: 1 }
  ▶ 8: { id: "Rechtsstellung", title: "Rechtsstellung", count: 1 }
  ▶ 9: { id: "Verfassung", title: "Verfassung", count: 1 }
```

Base Query:

<https://api.datacite.org/doi?client-id=SHKL.LOFHSJ>

Filter- Japan:

[https://api.datacite.org/doi?client-id=SHKL.LOFHSJ&query=\(subject s.subject:Japan\)](https://api.datacite.org/doi?client-id=SHKL.LOFHSJ&query=(subject s.subject:Japan))

Filter- 342:

[https://api.datacite.org/doi?client-id=SHKL.LOFHSJ&query=\(subject s.subject:342\)](https://api.datacite.org/doi?client-id=SHKL.LOFHSJ&query=(subject s.subject:342))

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```
▼ data:
  ▶ 0: { id: "10.48796/20230628-009", type: "dois", attributes: {...}, ... }
  ▶ 1: { id: "10.48796/20230705-002", type: "dois", attributes: {...}, ... }
▼ meta:
  total: 2
  totalPages: 1
  page: 1
  ▶ states: [ {...} ]
  ▶ resourceTypes: [ {...} ]
  ▶ created: [ {...} ]
  ▶ published: [ {...}, {...} ]
  ▶ registered: [ {...} ]
  ▶ providers: [ {...} ]
  ▶ clients: [ {...} ]
  affiliations: []
  ▶ prefixes: [ {...} ]
  certificates: []
  licenses: []
  ▶ schemaVersions: [ {...} ]
  linkChecksStatus: []
▼ subjects:
  ▶ 0: { id: "342", title: "342", count: 2 }
  ▶ 1: { id: "Japan", title: "Japan", count: 2 }
  ▶ 2: { id: "Abe, Shinzō (1954–2022)", title: "Abe, Shinzō (1954–2022)", count: 1 }
  ▶ 3: { id: "Geschichte 1960", title: "Geschichte 1960", count: 1 }
  ▶ 4: { id: "Geschichte 2015", title: "Geschichte 2015", count: 1 }
  ▶ 5: { id: "Gesetzgebungsverfahren", title: "Gesetzgebungsverfahren", count: 1 }
  ▶ 6: { id: "Hassrede", title: "Hassrede", count: 1 }
  ▶ 7: { id: "Protestbewegung", title: "Protestbewegung", count: 1 }
  ▶ 8: { id: "Rechtsstellung", title: "Rechtsstellung", count: 1 }
  ▶ 9: { id: "Verfassung", title: "Verfassung", count: 1 }
fieldsOfScience: []
```

Base Query:

<https://api.datacite.org/doi/client-id=SHKL.LOFHSJ>

Filter- Japan:

[https://api.datacite.org/doi/client-id=SHKL.LOFHSJ&query=\(subject.s.subject:Japan\)](https://api.datacite.org/doi/client-id=SHKL.LOFHSJ&query=(subject.s.subject:Japan))

Filter- 342:

[https://api.datacite.org/doi/client-id=SHKL.LOFHSJ&query=\(subject.s.subject:342\)](https://api.datacite.org/doi/client-id=SHKL.LOFHSJ&query=(subject.s.subject:342))

Filter- 342 & Japan:

[https://api.datacite.org/doi/client-id=SHKL.LOFHSJ&query=\(subject.s.subject:342\)AND\(subjects.subject:Japan\)](https://api.datacite.org/doi/client-id=SHKL.LOFHSJ&query=(subject.s.subject:342)AND(subjects.subject:Japan))

CrossAsia - Prussian Cultural Heritage Foundation Consortium



- Title : "Die Regulation von Hate Speech unter Abe"
- Title : "Die Friedensverfassung und ihre Verteidiger: Proteste zum Schutz von Artikel 9?"

```
▼ subjects:
  ▼ 0:
    subject: "Japan"
  ▼ 1:
    subject: "Hassrede"
  ▼ 2:
    subject: "Rechtsstellung"
  ▼ 3:
    subject: "Gesetzgebungsverfahren"
  ▼ 4:
    subject: "Zensur"
  ▼ 5:
    subject: "Abe, Shinzō (1954–2022) "
  ▼ 6:
    subject: "342"
    subjectScheme: "ddc"
  -- contributors:
```

```
▼ data:
  ► 0: { id: "10.48796/20230628-009", type: "dois", attributes: {...}, ... }
  ► 1: { id: "10.48796/20230705-002", type: "dois", attributes: {...}, ... }
▼ meta:
  total: 2
  totalPages: 1
```

Base Query:

<https://api.datacite.org/dois?client-id=SHKL.LOFHSJ>

Filter- 342:

[https://api.datacite.org/dois?client-id=SHKL.LOFHSJ&query=\(subject s.subject:342\)](https://api.datacite.org/dois?client-id=SHKL.LOFHSJ&query=(subject s.subject:342))

Filter- Japan:

[https://api.datacite.org/dois?client-id=SHKL.LOFHSJ&query=\(subject s.subject:Japan\)](https://api.datacite.org/dois?client-id=SHKL.LOFHSJ&query=(subject s.subject:Japan))

Filter- 342 & Japan:

[https://api.datacite.org/dois?client-id=SHKL.LOFHSJ&query=\(subject s.subject:342\)AND\(subjects.subject:Japan\)](https://api.datacite.org/dois?client-id=SHKL.LOFHSJ&query=(subject s.subject:342)AND(subjects.subject:Japan))

Cross Repository query InterRect & CrossAsia

Query: Repo1 % Subject Japan OR Repo2 & Subject Japan:

[https://api.datacite.org/does?query=\(client id:%22shkl.lofhsj%22%20AND\(subjects.subject:japan\)AND\(subjects.subject:342\)\)OR%20\(client id:%22wwpx.intr2%22%20AND%20\(subjects.subject:japan\)%20AND%20\(subjects.subject:342\)\)](https://api.datacite.org/does?query=(client id:%22shkl.lofhsj%22%20AND(subjects.subject:japan)AND(subjects.subject:342))OR%20(client id:%22wwpx.intr2%22%20AND%20(subjects.subject:japan)%20AND%20(subjects.subject:342)))

```
► providers:      [ {...} ]
▼ clients:
  ► 0:            { id: "shkl.lofhsj", title: "CrossAsia Open Access Repository", count: 2 }
  ► 1:            { id: "wwpx.intr2", title: "IntRechtDok", count: 1 }
affiliations:    []
```

RelatedIdentifiers



```
"relatedIdentifiers": [  
  {  
    "relationType": "IsCitedBy",  
    "relatedIdentifier": "10.21384/bar",  
    "resourceTypeGeneral": "JournalArticle",  
    "relatedIdentifierType": "DOI"  
  }  
]
```

ZBW Journal Data Archive

ZBW Journal Data Archive (Economics):

storing data sets of published articles and to link the data sets to their corresponding publication.

Benefit: Using DataCite's **RelatedIdentifier** field to connect datasets and publications realizes the PID Graph: it makes scholarly links explicit and machine-readable, improving discovery and context

Search	
Repository details	
ZBW Journal Data Archive	
General	Institutions Terms Standards
Name of repository	ZBW Journal Data Archive
Additional name(s)	ZBW Leibniz Information Centre for Economics Journal Data Archive ZBW JDA
Repository URL	https://journaldata.zbw.eu/
Subject(s)	Humanities and Social Sciences Social and Behavioural Sciences Economics Economic Theory Management and Marketing
Description	The ZBW Journal Data Archive is a service for editors of economics journals. The aim of this web service is to promote reproducible research by providing researchers and their journals with an easy-to-use infrastructure for managing and storing replication packages of published economic research articles. The data and the corresponding publication are linked by DOIs.
Contact(s)	support: journaldata@zbw.eu

Re3Data:

<https://www.re3data.org/repository/r3d100012190#:~:text=The%20ZBW%20Journal%20Data%20Archive,publi%20are%20linked%20by%20DOIs>

Example Dataset deposited in JDA

<https://journaldata.zbw.eu/dataset/replication-package-for-why-don-t-firms-hire-young-workers-during-recessions-replication>

 Dataset

Jonathan Créchet ; Jing Cui ; Barbara Sadaba ; Antoine Sawyer DOI:10.15456/j1.2025210.1943358304

REPLICATION PACKAGE FOR WHY DON'T FIRMS HIRE YOUNG WORKERS DURING RECESSIONS? A REPLICATION OF FORSYTHE [2022]

Data and Resources

 0_main.do	 explore
Downloads: 9	
 0b_laus_data.do	 explore
Downloads: 8	
 1_data_preparation.do	 explore
Downloads: 8	
 1b_original_data_prep.do	 explore
Downloads: 7	
 2_hiring.do	 explore
Downloads: 7	
 2b_hiring_figure.do	 explore
Downloads: 7	

Query:

<https://api.datacite.org/doi/10.15456/j1.2025210.1943358304>

relatedIdentifiers:	
▼ 0:	
relationType:	"HasPart"
relatedIdentifier:	"https://journaldata.zbw.eu/dataset/51411a56-ee7e-49a3-95d9-309b55e8209d/resource/a4647e88-9324-489f-9123-309b55e8209d"
relatedIdentifierType:	"URL"
▼ 1:	
relationType:	"HasPart"
relatedIdentifier:	"https://journaldata.zbw.eu/dataset/51411a56-ee7e-49a3-95d9-309b55e8209d/resource/cb984024-ee75-42a1-9123-309b55e8209d"
relatedIdentifierType:	"URL"
▼ 2:	
relationType:	"HasPart"
relatedIdentifier:	"https://journaldata.zbw.eu/dataset/51411a56-ee7e-49a3-95d9-309b55e8209d/resource/ac19ee98-4aae-487e-9123-309b55e8209d"
relatedIdentifierType:	"URL"
▼ 3:	
relationType:	"HasPart"
relatedIdentifier:	"https://journaldata.zbw.eu/dataset/51411a56-ee7e-49a3-95d9-309b55e8209d/resource/63dde144-18dc-455c-9123-309b55e8209d"
relatedIdentifierType:	"URL"
▼ 4:	
relationType:	"HasPart"
relatedIdentifier:	"https://journaldata.zbw.eu/dataset/51411a56-ee7e-49a3-95d9-309b55e8209d/resource/53543953-a89c-442f-9123-309b55e8209d"
relatedIdentifierType:	"URL"
▼ 5:	
relationType:	"HasPart"
relatedIdentifier:	"https://journaldata.zbw.eu/dataset/51411a56-ee7e-49a3-95d9-309b55e8209d/resource/d2f7b055-361d-437f-9123-309b55e8209d"
relatedIdentifierType:	"URL"
▼ 6:	
relationType:	"HasPart"
relatedIdentifier:	"https://journaldata.zbw.eu/dataset/51411a56-ee7e-49a3-95d9-309b55e8209d/resource/e2d5b34c-dd35-4d3e-9123-309b55e8209d"
relatedIdentifierType:	"URL"
▼ 7:	
relationType:	"HasPart"
relatedIdentifier:	"https://journaldata.zbw.eu/dataset/51411a56-ee7e-49a3-95d9-309b55e8209d/resource/e236340a-b933-4e1c-9123-309b55e8209d"
relatedIdentifierType:	"URL"

Example Dataset deposited in JDA

<https://journaldata.zbw.eu/dataset/replication-package-for-why-don-t-firms-hire-young-workers-during-recessions-replication>

Downloads: 8

DATA

4_wages.do

Downloads: 7

DATA

full replication package

explore

explore

download all

Suggested Citation

export

Créchet, Jonathan; Cui, Jing; Sadaba, Barbara; Sawyer, Antoine (2025): Replication Package for Why don't Firms Hire Young Workers during Recessions? A Replication of Forsythe (2022). Version: 1.0. JCRE. Dataset. <https://doi.org/10.15456/j1.2025210.1943358304>

Related Publication

doi: 10.18718/81781.43

Query:

<https://api.datacite.org/doi/10.15456/j1.2025210.1943358304>

```
relatedIdentifierType: "URL"
▼ 8:
  relationType: "HasPart"
  relatedIdentifier: "https://zenodo.org/records/15065991"
  relatedIdentifierType: "URL"
▼ 9:
  relationType: "IsSupplementTo"
  relatedIdentifier: "10.18718/81781.43"
  resourceTypeGeneral: "JournalArticle"
  relatedIdentifierType: "DOI"
▼ relatedItems:
```

Rights



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"rightsList": [  
  {  
    "rights": "Creative Commons Attribution 4.0  
International",  
    "rightsUri":  
"https://creativecommons.org/licenses/by/4.0/",  
    "schemeUri": "https://spdx.org/licenses/",  
    "rightsIdentifier": "CC-BY-4.0",  
    "rightsIdentifierScheme": "SPDX",  
    "lang": "en"  
  }  
]
```

Ex: <https://spdx.org/licenses/>

Herzog August Bibliothek (HAB)

Consortium



```
▼ meta:
  total: 1486
  totalPages: 60
  page: 1
  ▶ states: [ {...} ]
  ▶ resourceTypes: (10) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...} ]
  ▶ created: (10) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...} ]
  ▶ published: (16) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, ... ]
  ▶ registered: (10) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...} ]
  ▶ providers: [ {...} ]
  ▶ clients: (3) [ {...}, {...}, {...} ]
  ▶ affiliations: (10) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...} ]
  ▶ prefixes: (3) [ {...}, {...}, {...} ]
  certificates: []
```

```
▼ licenses:
  ▶ 0: { id: "cc-by-sa-4.0", title: "CC-BY-SA-4.0", count: 934 }
  ▶ 1: { id: "cc-by-nc-sa-4.0", title: "CC-BY-NC-SA-4.0", count: 17 }
  ▶ 2: { id: "cc-by-4.0", title: "CC-BY-4.0", count: 12 }
  ▶ 3: { id: "cc0-1.0", title: "CC0-1.0", count: 3 }
  ▶ 4: { id: "cc-by-nc-4.0", title: "CC-BY-NC-4.0", count: 2 }
  ▶ 5: { id: "cc-by-nd-4.0", title: "CC-BY-ND-4.0", count: 2 }
  ▶ 6: { id: "cc-by-nc-nd-4.0", title: "CC-BY-NC-ND-4.0", count: 1 }
  ▶ 7: { id: "cc-pddc", title: "CC-PDDC", count: 1 }
```

Query:

[https://api.datacite.org/doi
s?provider-id=HAB](https://api.datacite.org/doi?s?provider-id=HAB)

Query Rights free text:

[https://api.datacite.org/doi
s?provider-id=HAB&query=ri
ghtsList.rights:*](https://api.datacite.org/doi?s?provider-id=HAB&query=rightsList.rights:*)

Herzog August Bibliothek (HAB)

Consortium



```
▶ data: (25) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, ... ]
▼ meta:
  total: 966
  totalPages: 39
  page: 1
▶ states: [ {...} ]
▶ resourceTypes: (10) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...} ]
▶ created: (9) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...} ]
▶ published: (16) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, ... ]
▶ registered: (9) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...} ]
▶ providers: [ {...} ]
▼ clients:
  ▶ 0: { id: "hab.repo", title: "HABREPO", count: 704 }
  ▶ 1: { id: "hab.manifold", title: "MANIFOLD", count: 157 }
  ▶ 2: { id: "hab.zfdg", title: "ZFDG", count: 105 }
```

Query:

<https://api.datacite.org/doi/s?provider-id=HAB>

Query Rights free text:

https://api.datacite.org/doi/s?provider-id=HAB&query=rightsList.rightsIdentifier:*

Herzog August Bibliothek (HAB) Consortium



Query:

[https://api.datacite.org/does?
provider-id=HAB](https://api.datacite.org/does?provider-id=HAB)

Query Rights free text:

[https://api.datacite.org/does?
provider-id=HAB&query=rights
List.rights.*](https://api.datacite.org/does?provider-id=HAB&query=rightsList.rights.*)

Query missing rightsIdentifier:
[https://api.datacite.org/does?
provider-id=HAB&query=NOT%
20rightsList.rightsIdentifier.*](https://api.datacite.org/does?provider-id=HAB&query=NOT%20rightsList.rightsIdentifier.*)

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▼ meta:
  total: 592
  totalPages: 24
  page: 1
  ▶ states: [ {...} ]
  ▶ resourceTypes: (9) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...} ]
  ▶ created: (10) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...} ]
  ▶ published: (16) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, ... ]
  ▶ registered: (10) [ {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...}, {...} ]
  ▶ providers: [ {...} ]
▼ clients:
  ▶ 0: { id: "hab.repo", title: "HABREPO", count: 473 }
  ▶ 1: { id: "hab.zfdg", title: "ZFDG", count: 113 }
  ▶ 2: { id: "hab.manifold", title: "MANIFOLD", count: 6 }
  ▶ affiliations: (5) [ {...}, {...}, {...}, {...}, {...} ]
```

Herzog August Bibliothek (HAB) Consortium



```
▼ rightsList:
  ▼ 0:
    rights: "Attribution-ShareAlike 4.0 International"
  ▼ 1:
    rights: "Creative Commons Attribution Share Alike 4.0 International"
    rightsUri: "https://creativecommons.org/licenses/by-sa/4.0/legalcode"
    schemeUri: "https://spdx.org/licenses/"
    rightsIdentifier: "cc-by-sa-4.0"
    rightsIdentifierScheme: "SPDX"
```

Versus

```
▼ rightsList:
  ▼ 0:
    rights: "Attribution-ShareAlike 3.0 Germany"
  ▼ 1:
    rights: "http://creativecommons.org/licenses/by-sa/3.0/de/"
```

Query:

[https://api.datacite.org/doi
s?provider-id=HAB](https://api.datacite.org/doi
s?provider-id=HAB)

Query Rights free text:

[https://api.datacite.org/doi
s?provider-id=HAB&query=ri
ghtsList.rights:*](https://api.datacite.org/doi
s?provider-id=HAB&query=ri
ghtsList.rights:*)

Description



```
"descriptions": [  
  {  
    "lang": "en",  
    "description": "Example abstract",  
    "descriptionType": "Abstract"  
  }  
]
```

Description types include: Abstract, Methods,
SeriesInformation, TableOfContents, TechnicalInfo, Other

DataCite wide search German

Technical Info documentations

▼ 0:	lang:	"de"
▼ description:		'Die Dateien ermöglichen die Replikation der Analysen im QOpen Artikel "Weather and Crime \u0096 Cautious Evidence frc Datei enthält Geodaten, die in GIS software bearbeitet wurden, Originaldaten und zugehörigen Quellen sowie die Stata-S Datenaufbereitung und Analyse.'
	descriptionType:	"TechnicalInfo"
▼ 1:	lang:	"en"
▼ description:		'The files allow for replicating the analyses in the QOpen article "Weather and Crime \u0096 Cautious Evidence from Sc contains geo data processed in GIS software, original data and and related sources as well as stata scripts to perform analysis.'
	descriptionType:	"TechnicalInfo"
▼ 2:	lang:	"de"
description:		"RWI-REPLICATION-FILES"
descriptionType:		"SeriesInformation"
▼ 3:	lang:	"en"
description:		"RWI-REPLICATION-FILES"
descriptionType:		"SeriesInformation"
▼ 4:	lang:	"en"
description:		"Compilation/Synthesis"
descriptionType:		"Methods"
▼ 5:	lang:	"de"
description:		"In die Analysen fließen Daten aus verschiedenen Quellen ein. Die jeweilige Grundgesamtheit unterscheidet sich dabei j können in den jeweiligen Quellen nachgeschlagen werden (s. Relations)."
	descriptionType:	"Methods"
▼ 6:	lang:	"en"
description:		"The analyses include data from various sources. The respective sampled universe differs depending on the source. Deta respective sources (see Relations)."
	descriptionType:	"Methods"
▼ 7:	lang:	"de"
description:		"Wie bei der Grundgesamtheit unterscheiden sich auch die Stichprobenverfahren je nach Quelle. Details können in den je nachgeschlagen werden (s. Relations)."
	descriptionType:	"Methods"

Query:

[https://api.datacite.org/doi?query=\(descriptions.descriptionType:TechnicalInfo\)AND\(descriptions.lang:%22de%22\)](https://api.datacite.org/doi?query=(descriptions.descriptionType:TechnicalInfo)AND(descriptions.lang:%22de%22))

Total hits: 75 DOIs

Interoperability challenge

HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)

SITUATION:
THERE ARE
14 COMPETING
STANDARDS.

14?! RIDICULOUS!
WE NEED TO DEVELOP
ONE UNIVERSAL STANDARD
THAT COVERS EVERYONE'S
USE CASES.

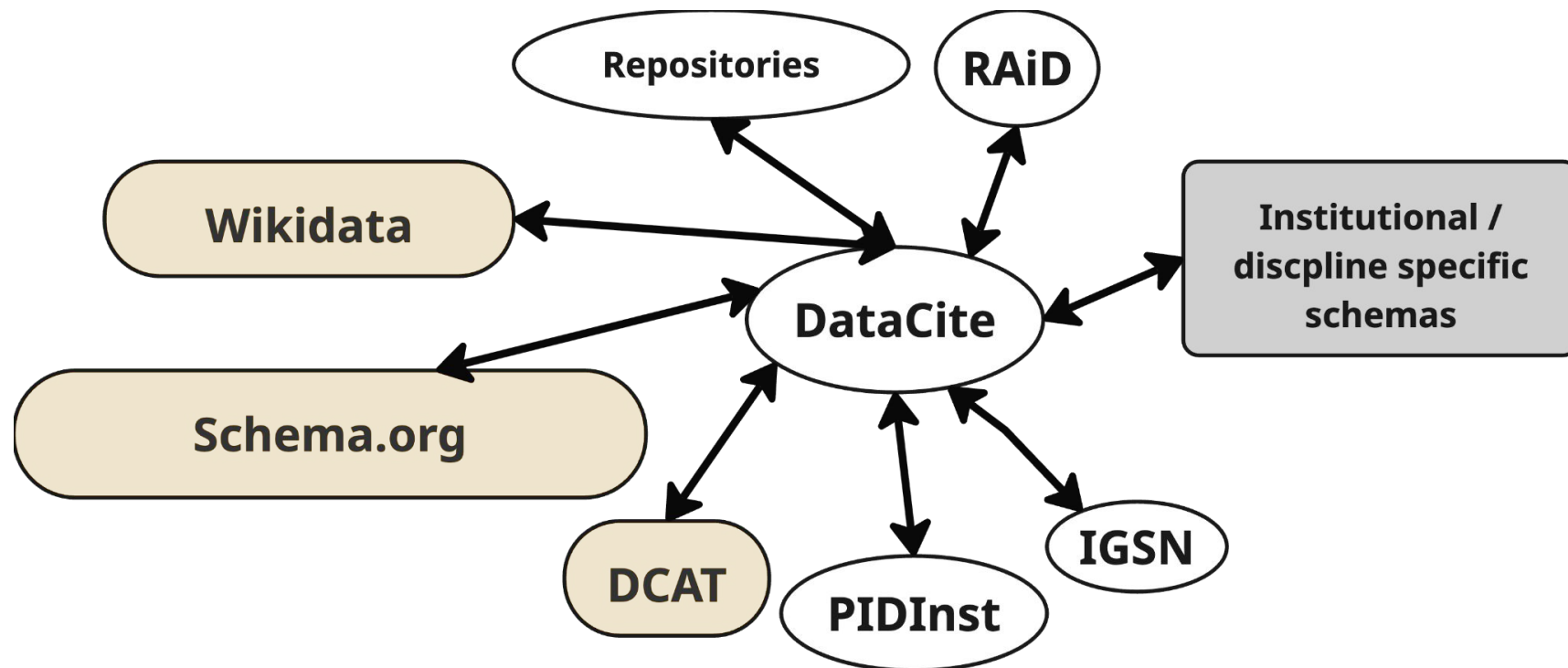


SOON:

SITUATION:
THERE ARE
15 COMPETING
STANDARDS.

Map Once, Reuse Everywhere

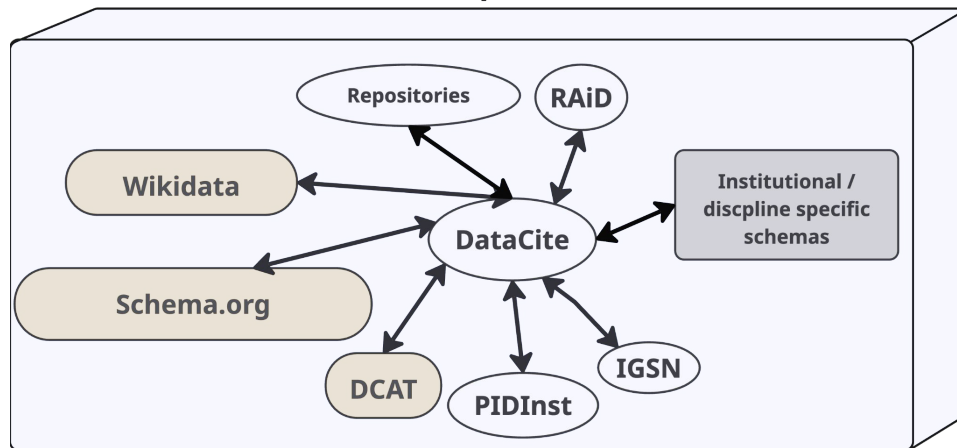
Normalization, Not Translation



The Vision: Interoperability by Design

- TS4NFDI

TS4NFDI tools, Crosswalks



- Create, review, and manage crosswalks (DataCite’s “creator” aligns with Schema.org’s “author” and DCAT’s “contactPoint.”).
- Store these mappings centrally, in a way that’s both human-readable and machine-actionable.
- Publish them through an **API**, so anyone can query: “What’s the mapping for this DataCite field?” and get the equivalent in response.

PIDs + Metadata: Building Blocks for Interoperability

Reduce effort and duplication (Findable, Reusable)

- Pre-fill repository forms via PID lookups
→ faster deposits, less manual curation
- ORCID and ROR prevent duplicates (no more “John Smith / J. Smith”)

Enable seamless compatibility (Interoperable)

- Shared identifiers and aligned schemas
→ interoperability without enforcing uniformity

Improve visibility and discovery (Findable, Accessible)

- Schema.org markup on landing pages → searchable directly by web crawlers and aggregators

Build traceability and trust (Reusable, Interoperable)

- Track how data moves, changes, and connects across systems
- Proven lineage through queries (e.g., datasets derived from Award X by ORCID Y)
- Scales discovery and reuse across NFDI

Support Documentation: <https://support.datacite.org/docs/api>

- Guide to using the REST API
- Focused on retrieving DOIs, creating DOIs, and updating DOIs
- Includes examples

API Reference: <https://support.datacite.org/reference/>

- Lists all endpoints and available requests
- Interactive tool to create requests

→ [API Reference demo](#) 

Thank you!

Sara El-Gebali
sara.elgebali@datacite.org

