New Developments in RADAR:
Safeguarding and Publishing Research Data for Long-term Usability

RADAR
FIZ Karlsruhe

RADAR Cloud

- Generic research data repository („All-in-One-Cloud“)
- Target groups: publicly funded research institutions and universities in Germany
- FIZ Karlsruhe: provider, contract partner, development, operation
- KIT and TU Dresden: data storage (3 copies on tape)
- TIB: DOI registration (DataCite)

FIZ Karlsruhe – Leibniz-Institut für Informationsinfrastruktur
KIT Karlsruher Institut für Technologie | TECHNISCHE UNIVERSITÄT DRESDEN | TIB Leibniz-Informationszentrum Technik und Naturwissenschaften Universitätsbibliothek

RADAR Core Features:

Archiving:
- Secure storage without publication
- Flexible retention period (5, 10, 15 years)
- Flexible access management

Publishing:
- Secure storage with publication (DataCite DOI)
- Unlimited retention period (at least 25 years)
- Optional embargo period (1-12 months or unlimited)
- Metadata indexing (RADAR, DataCite, Harvesting via OAI-PMH)

Peer Review:
- Secure link for reviewers

RADAR Metadata Schema:

10 mandatory fields	Identifier[1]	DOI
	Creator[1]	ORCID, ROR
	Title[1]	
	Publisher[1]	ORCID, ROR
	Production Year	
	Publication Year[1]	
	Subject Area	
	Resource	
	Rights[1]	
	Rights Holder	ORCID, ROR
13 optional fields	Additional Title	
	Description[1]	
	Keyword	GND
	Contributor[1]	ORCID, ROR
	Language[1]	
	Alternate Identifier	
	Related Identifier[1]	
	Geo Location[1]	
	Data Source	
	Software Type	
	Data Processing	
	Related Information	
	Funding Reference[1]	Crossref, ROR

Bases on DataCite metadata schema 4.4 ([1])

RADARCloud

2017 RADAR Cloud

2013-2016 DFG Project Phase

DFG Project Phase

- Interdisciplinary project team
- Goal: development of a cross-disciplinary research data repository
- for specific scientific fields ("long-tail")

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2019 OAI Provider

OAI Provider

- In-house development by FIZ Karlsruhe (open source)
- High-performance metadata harvesting (OAI-PMH incl. support of sets)
  by EUDAT / B2Find (2020)
  by BASE (2023)

B2FIND EUDAT | BASE

2021 RADAR Local | RADAR Hybrid

RADAR Local | RADAR Hybrid

- Alternative operating variants for institutions
- Custom integration of own storage infrastructure
- RADAR containers facilitate operation on own IT (RADAR Local)

docker

RADARCloud	For institutions that do not want to operate a technical infrastructure on their own for archiving and publishing their research data.
RADARHybrid	For institutions that want to store their research data in their own archive without giving up the convenience of a hosted service.
RADARLocal	For institutions that want to have RADAR operated by FIZ Karlsruhe as a local instance under their own domain and on their own IT-infrastructure.

2021 Subject Specific Metadata (as XML)

since 2022 Publication Services for Scientific Communities

2022 FAIR Signposting

2022 Update of RADAR Metadata Schema

Free Publication Services for Scientific Communities

- Target group: researchers from the subject communities of chemistry, cultural studies and history
- Complement the portfolio of subject repositories
- 2022: RADAR4Chem, RADAR4Culture
- 2025: RADAR4Memory

RADAR for CULTURE | RADAR 4Chem | RADAR for memory

Subject Specific Metadata

- Management of custom metadata schemas (XML) in RADAR backend
- RADAR-compliant schema or XSLT transformation

2024 Statewide Research Data Portal

Statewide Research Data Portal in Brandenburg (Test Operation)

- Central provision of IT services and RDM services by IN-FDM-BB project (RADAR, RDMO)
- University of Potsdam: service provider of statewide research data portal, contractual partner for partner universities
- Partner universities: own RADAR environment and RDM workflows, optional own start pages and decentralized data storage

Update of RADAR Metadata Schema (v 9.1)

- Bases on DataCite metadata schema 4.4
- Integration of further standard data: ROR, Integrated Authority File (GND)
- Integration of further licenses for research data and software

ROR | GND

2023 FAIRness Assessment Challenge

2023 Schema.org Knowledge Graph SPARQL Endpoint

FAIR Signposting

- Typed links in HTTP link header of RADAR dataset landing pages
- Improves machine readability and actionability as important part of the Fair Digital Object (FDO) framework

2024 WebDAV Support --- GitHub Import

2025 Versioning of Datasets

2025 More Download Options

Schema.org Ontology | Knowledge Graph | SPARQL Endpoint

schema.org

- Optimization of Schema.org ontology compliance improves discoverability and interpretability of RADAR data publications by web search engines, e. g. Google Dataset Search
- Linked Open Data (LOD) approach by using JSON-LD and Turtle serialisation
- Daily creation of RADAR knowledge graphs based on Schema.org vocabulary
- Support of a RADAR SPARQL Endpoint for standardized querying of the knowledge graphs

FAIRness Assessment Challenge

- Participation in support measure of the EU project FAIR-IMPACT
- Significant increase of FUJI score as indicator for the FAIRness of a data publication (up to 91%)

eosc | FAIR-IMPACT Expanding FAIR solutions across EOSC
F-UJI Automated FAIR Data Assessment Tool | FAIRSFAIR Fostering Fair Data Practices in Europe

Two Additional Data Import Options

WebDAV Support

- Convenient import of research data (files and folders)
- Maximum flexibility for organizing dataset content, even with larger data volumes
- Supported by numerous WebDAV clients (e. g. WinSCP) and operating systems

GitHub Import

- Direct import of GitHub content (public and private GitHub repositories)
- Import of the standard branch or individual branches
- Ensures long-term availability of software versions and projects
- Specific versions of a GitHub repository can be clearly referenced and cited using DOIs

More Download Options (in Progress)

- Open dataset after publication/archiving:
  Selective streaming of individual files and folders from the packed .tar archive (BagIt standard)
- Enables preview of data in the future and data transfer for versioning
- .zip download of the dataset for reviewers before publication

Versioning of Datasets (in Progress)

- Editing/updating the content of a dataset*
- Automatic linking of individual versions via their DOIs
- Citation of specific versions as well as all versions of a dataset

*subsequent correction of metadata is supported since 2021

re3data.org REGISTRY OF RESEARCH DATA REPOSITORIES
http://doi.org/10.17616/R3ZX96
RADAR

re3data.org REGISTRY OF RESEARCH DATA REPOSITORIES
http://doi.org/10.17616/R31NJNAY
RADAR4Chem

re3data.org REGISTRY OF RESEARCH DATA REPOSITORIES
http://doi.org/10.17616/R31NJNAZ
RADAR4Culture

FAIRsharing.org standards, databases, policies
10.25504/FAIRsharing.601a27

FAIRsharing.org standards, databases, policies
10.25504/FAIRsharing.3b3157

FAIRsharing.org standards, databases, policies
10.25504/FAIRsharing.0db6d6

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Download Poster

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