

Research data management services at Leibniz University Hanover

*A self-assessment by the RDM Service Team
based on the RISE questionnaire (v1.1)*

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About this report

The Research Infrastructure Self Evaluation Framework (RISE)

The „Research Infrastructure Self Evaluation Framework“ (RISE) was published in 2017 by the British Digital Curation Centre (DCC) in order to provide research institutions with a standardised instrument to facilitate Research Data Management (RDM) service planning.¹ It helps to find the strengths and weaknesses of current Research Data Management support and to identify areas for future development. The results of a RISE assessment may form the basis of a roadmap towards enhanced RDM support.



Figure 1. DCC Research Data Service Model (source: see footnote 1, p.5)

RISE works with a generic RDM service model identified and validated through DCC’s activities - reflecting the needs and possibilities of highly research-intensive institutions as well as of smaller or specialised institutions. Within ten service areas, RISE describes three levels of capability - each represents a scale of maturity. Generally, the focus of level one lies on compliance, level two’s focus lies on providing locally tailored services and level three corresponds to a leading role beyond the own institution.

DCC is aware of different institutional contexts and does not claim that “more is better”². The achievement of different service levels depends on factors like the local research strategy, on-hand resources or the potential demand. Therefore, DCC recommends to check the own requirements and capabilities carefully. The RISE framework provides also guidance for the application of the questionnaire, for instance by describing how to define goals, engage stakeholders, or get through the questionnaire.

To our knowledge, the only other university that has shared its RISE results online so far is the Delft University of Technology, Netherlands.³ Since we were very grateful to have this example when preparing

¹ Rans, J and Whyte, A. (2017). ‘Using RISE, the Research Infrastructure Self-Evaluation Framework’ v.1.1 Edinburgh: Digital Curation Centre. Available online: <http://www.dcc.ac.uk/resources/how-guides/RISE>.

² Ibid. p. 6.

³ <https://openworking.tudl.tudelft.nl/2017/06/28/2017-self-assessment-of-research-data-services-and-4tu-centre-for-research-data-services-with-rise/>.

and conducting our own self-assessment, we decided to publish our results as well. By doing so, we hope to contribute to the development and widespread establishment of RISE.

The RDM service at Leibniz University Hanover

The RDM team consists of six RDM specialists from the Research and Innovation Services of the Leibniz University Hanover, the Technische Informationsbibliothek (TIB) - German National Library of Science and Technology, and the Leibniz University IT Services.

The RDM team was established when Leibniz University started to gradually improve and extend its central RDM related support in 2014. Since then, it is responsible for the upkeep and development of the corresponding services, which include counselling, training, providing information material, revising and updating the university's RDM policy and running the institutional data repository.⁴

The team offers a generic RDM service that has to meet the needs of about 3,100 researchers working at Leibniz University and almost 29,000 students in nine faculties. This means, the service must adapt to the generic needs of the researchers and not to specific disciplines.

Goals and aspirations using RISE

In 2018, the team decided to evaluate the service portfolio to identify gaps in support provision and to elaborate a basis for new prioritization decisions. The overall objective was to update road map documents and emphasize the significance of the RDM service for the university.

RISE allowed us to lean on an international evaluation guideline building on DCC's experience assessing data management services. At the same time, RISE enables networking with the RDM Community and contributing to its dissemination and development via the published results.

Conducting the self-assessment

First, the chapter structure and level descriptions of the RISE document were projected into an online questionnaire based on the software LimeSurvey. In the next step, each team member rated each chapter with one of five options, according to their subjective judgement of the level achieved by the RDM service:

- 1) Level one
- 2) Level two
- 3) Level three
- 4) Neither description fits
- 5) Cannot judge

Additionally, a comment field could be used to clarify the assessment. After filling in the online questionnaire individually, the results were compiled in excel charts and tables and then discussed within the team. Later on, the first results were presented to the upper management for feedback.

We followed these lead questions for each service area:

- 1) Do we agree on our judgement of the current level of the respective service? If not, why do we disagree?
- 2) Are we satisfied with the current level or do we aspire to reach a higher one?
- 3) If we aspire to reach a higher level, what would be necessary to get there?

The answers published in this report are the results of the discussion.

⁴ <https://www.fdm.uni-hannover.de/en/>.

Tabular overview of the self-assessment result

Level current: The level we have reached so far.

Level asp: This is the level we aspire to reach (or maintain) in the future.

		Level	
		current	asp
RDM policy and strategy			
A1	Policy development	1-2	2
A2	Awareness raising and stakeholder engagement	1-2	2
A3	RDM implementation roadmap	1-2	2

		Level	
		current	asp
Business plans and sustainability			
B1	Staff investment	1-2	2
B2	Technology investment	1-2	2
B3	Cost modelling	1-2	2

		Level	
		current	asp
Advisory services			
C1	Advisory services	2	3

		Level	
		current	asp
Training			
D1	Online training	1	2
D2	Face to face training	2	2

		Level	
		current	asp
Data management planning			
E1	Data management planning	1-2	2

		Level	
		current	asp
Active data management			
F1	Scaleability and synchronisation	2	2
F2	Collaboration support	2	2
F3	Security management	1	1

		Level	
		current	asp
Appraisal and risk assessment			
G1	Data collection policy?	1	1
G2	Security, legal and ethical risk assessment	1	2
G3	Metadata collection to inform decisionmaking	1	1

		Level	
		current	asp
Preservation			
H1	Preservation planning and action	1	1
H2	Continuity support	1-2	2

		Level	
		current	asp
Access and publishing			
I1	Monitoring locally produced datasets	1	2
I2	Data publishing mandate	1	1
I3	Level of data curation	1	1

		Level	
		current	asp
Discovery			
J1	Metadata cataloguing scope	1	2

RDM POLICY AND STRATEGY

A1 Policy development

Level One	Level Two	Level Three
Institutional policy articulates roles & responsibilities for researchers, other staff and students to comply with legal & regulatory obligations and external funders' RDM policy expectations.	Institutional policy articulates the value of good RDM practice to the institution and its rationale for retaining data of long-term value. Policy is subject to a regular, scheduled review process.	Institutional policies with a bearing on RDM (e.g. FOI, ethics, research conduct, etc.) are joined up and complementary. Policies are externally promoted, aiming to push the sector forward.

We currently see our services between Level One and Level Two

A regular, scheduled review process is not yet firmly established but intended. We plan to review our policy in spring 2019.

We aspire to reach Level Two

Though we do intend to harmonise institutional policies, we do not think it is practicable to join them into a single document. We do not seek to actively promote RDM policies externally.

A2 Awareness raising and stakeholder engagement

Level One	Level Two	Level Three
Research data policies are promoted to all relevant staff, students and researchers.	Guidance on how to apply all relevant policies to the institutional context is provided and promoted to all relevant staff, students and researchers.	Policies are promoted by the institution through channels designed to engage with staff, student and researcher groups' specific interests.

We currently see our services between Level One and Level Two

We inform researchers during counselling sessions and training courses as well as through info material, e.g. guides and templates offered at our webpage. We do not currently promote RDM support to students.

We aspire to reach Level Two

We plan to promote our generic RDM support also to students. We do not seek to systematically promote RDM support tailored to specific groups defined by discipline or career level.

A3 RDM implementation roadmap

Level One	Level Two	Level Three
RDM roadmap is compliance-focussed and defined by funder requirements.	Roadmap is informed by the institution's strategies and its researchers' priorities.	Roadmap/strategy seeks to derive competitive advantage from RDM support. It aims to be sector-leading and innovative.

We currently see our services between Level One and Level Two

RDM has not been a prominent factor in strategic planning so far. The linking between RDM support and strategic research focuses could still be improved.

We aspire to reach Level Two

We want to improve RDM support in a way that pays special attention to the needs of the university's strategic research focuses.

BUSINESS PLANS AND SUSTAINABILITY

B1 Staff investment

Level One	Level Two	Level Three
RDM service is delivered by dividing responsibilities among existing staff.	RDM service is delivered through significant redesign of staff roles including investment in staff development.	The RDM service is delivered by major redesign of staff roles, consistent with the establishment of an RDM service.

We currently see our services between Level One and Level Two

The situation differs between the departments involved in RDM support.

We aspire to reach Level Two

We aspire to reach at least level 2 for all departments involved in RDM support.

General comments on the RISE questionnaire:

It is hard to assess what is meant by 'significant redesign' vs. 'major redesign'.

B2 Technology investment

Level One	Level Two	Level Three
A base level of investment in technical infrastructure, with commitment to supporting recurring costs, ensures that researchers can make their data findable and accessible in the long-term.	The institution coordinates investment in the central technical services it deems a strategic priority for research data life-cycle support.	The institution invests in technical infrastructure for all aspects of the research data life cycle, interoperating with tools and workflows at research group level.

We currently see our services between Level One and Level Two

There is coordinated investment in central technical services, but RDM support isn't exactly a strategic priority, yet.

We aspire to reach Level Two

We will recommend to the board and the CIO to strengthen central coordination when investing in and operating major RDM-relevant IT infrastructure.

B3 Cost modelling

Level One	Level Two	Level Three
All RDM service costs are covered by overheads on grants.	Standard RDM services are funded through grant overheads. Where support exceeds the norm mechanisms allow for direct charging of grants.	Cost modelling enables specialist, stand-alone RDM services to be offered alongside standard support provision. (e.g. statistical modelling service or data visualisation service).

We currently see our services between Level One and Level Two

Project-specific resources at a larger scale can generally not be provided centrally by the university. We do, however, counsel the initiators of big projects on how and where to apply for third-party funding of RDM-relevant infrastructure and personnel.

We aspire to reach Level Two

We do not aspire to initiate major changes, but we seek to establish applications for additional RDM funding at bid stage as a standard procedure.

ADVISORY SERVICES

C1 Advisory services

Level One	Level Two	Level Three
Generic, online guidance is offered that addresses key areas of RDM. Content may be externally sourced, with little relating to the specific institutional context. Pages include a helpdesk email address.	Guidance offers relevant advice on how to use services that comply with institutional policies, and the benefits to researchers of doing so.	Guidance is significantly tailored to support the specific needs of the institution's researchers and support staff. Guidance content is externally referenced as sector best practice.

We currently see our services at Level Two

We provide guidance and counselling on internal and external services and how to use them. Some of our information material and templates are re-used by other institutions or serve as examples.

We aspire to reach Level Three

Though we are a central service offering support to all disciplines, we especially want to improve our competences according to the needs of disciplines defined as the university's research focuses. To this end, we seek close cooperation with major flagship projects.

TRAINING

D1 Online training

Level One	Level Two	Level Three
Externally sourced online courses are linked to from RDM pages.	Externally sourced online courses are supplemented with some materials which support local needs and services.	The institution produces a significant amount of online training material which meets the needs of its researchers and staff. Materials are reused by others in the sector.

We currently see our services at Level One

We recently updated our web page with a link section to external online courses.

We aspire to reach Level Two

We want to design online courses adapted to our university, building on existing examples.

D2 Face to face training

Level One	Level Two	Level Three
Face to face training in basic RDM principles is available on request. Course content is regularly updated and responsive to feedback.	Regular, structured face to face RDM courses are available to all. Training objectives are aligned with the objectives of the institution's RDM strategy.	Competencies for relevant researchers and professional support staff are defined in standard role descriptions. Training is provided which facilitates this development.

We currently see our services at Level Two

On demand, we also offer courses tailored to the specific needs of a project or institute.

We do not aspire to reach a higher level in the foreseeable future

DATA MANAGEMENT PLANNING

E1 Data management planning

Level One	Level Two	Level Three
Institution provides guidance to researchers on completing funder-mandated DMPs as part of grant bids.	Institution mandates DMP production at bid stage for all researchers. Guidance and templates are provided. Research Office connects to relevant stakeholders to appraise DMP content and notify them of relevant resource implications.	Institution promotes best practice in data management planning and facilitates good research design in relation to data generation and preservation. Automated systems flag researcher requirements to the relevant institutional support services (e.g. exceptionally large projected data volumes).

We currently see our services between Level One and Level Two

Whenever the Research Office is included at bid stage, it will check the DMP (or RDM statements) if these are required by the funder. If not, it will still recommend to work out a DMP.

We aspire to reach Level Two

General comments on the RISE questionnaire:

In Germany, most universities won't 'mandate' the elaboration of DMP, but funders and scientific communities do.

ACTIVE DATA MANAGEMENT

F1 Scalability and synchronisation

Level One	Level Two	Level Three
The service provides researchers with managed access to networked storage, from multiple devices, of sufficient capacity and performance to satisfy most of the organisation's projects.	The service can provide additional storage on request to satisfy exceptional storage capacity, device networking, or performance demands.	The service provides automated access to additional storage to satisfy exceptional capacity or performance demands.

We currently see our services at Level Two

In most cases, it is possible to find solutions for exceptional storage capacity needs. Nevertheless, there is no formalised workflow, and there are legal constraints/complications for extra-charging of a project/institute.

We do not aspire to reach a higher level in the foreseeable future

The university's board and the heads of infrastructure-providing departments should work out a formalised workflow and internal charging mechanism for requests of additional capacities.

F2 Collaboration support

Level One	Level Two	Level Three
The service enables access to data for external collaborators by providing them with local access rights to institutional storage systems.	The service provides managed access to tools that enable researchers to share data with external collaborators.	The service provides managed access to virtual research environments that enable researchers to work on data with external collaborators.

We currently see our services at Level Two

The university offers central Level 2 services, but it is up to the researchers if they use them or not.

We do not aspire to reach a higher level in the foreseeable future

Level 3 would have to be accomplished at the level of individual institutes or large projects, but not centrally.

F3 Security management

Level One	Level Two	Level Three
The service provides authenticated access to storage that is protected from unauthorised data access, and researchers are made aware of procedures for data protection and de-identification.	The service provides tools/environments that enable researchers to de-identify, encrypt or control access to data as required.	The service provides researchers from across the institution with access to ISO 27001/2 or equivalently accredited facilities for analysis of shared sensitive data.

We currently see our services at Level One

All central IT services include a rights management and require authorization.

We do not aspire to reach a higher level in the foreseeable future

Higher levels may be reached at individual institutes/projects with special needs regarding data protection and access control.

APPRAISAL AND RISK ASSESSMENT

G1 Data collection policy?

Level One	Level Two	Level Three
Service primarily supports data deposit to third-party repositories, and holds datasets in-house when legal/regulatory compliance requires.	Service defines criteria for retention of datasets of long-term value to the institution.	Service defines criteria for developing datasets as special collections and ensures these meet specialist depositor and user needs.

We currently see our services at Level One

We do provide a generic institutional data repository but strongly recommend to use discipline-specific repositories when available.

We do not aspire to reach a higher level in the foreseeable future

When using the institutional repository, formal and technical requirements on data quality may be further concretised, but it is not practicable that a central service assesses the scientific value of a set of research data.

G2 Security, legal and ethical risk assessment

Level One	Level Two	Level Three
Service seeks confirmation that data was collected or created in accordance with legal and ethical criteria prevailing in the data producer's geographical location or discipline.	Service commits to proactively manage legal and ethical risks relevant to its depositors and users, and to relevant professional and technical development for researchers and support staff.	Service offers data producers tailored guidance on risk assessment, and on solutions that offer an appropriate level of risk control for the data they manage.

We currently see our services at Level One

This confirmation is generally given in the funding applications at bid stage. Users of the institutional data repository also must confirm that they are responsible for compliance with legal and ethical standards.

We aspire to reach Level Two

Level 2 would require additional personnel with juridical expertise.

G3 Metadata collection to inform decisionmaking

Level One	Level Two	Level Three
Information is gathered from research projects to enable the identification of research data that must be kept for compliance purposes.	Metadata is routinely recorded to relate research activity to data and other outputs, and enable better informed decisions on the preservation costs, risks and value to the institution.	Metadata on data and related research outputs is sufficiently well-structured and interoperable to enable added value to be extracted for service users' needs.

We currently see our services at Level One

We do not aspire to reach a higher level in the foreseeable future

Since discipline-specific data centres are the preferred storage location, only few data is held by the university itself. Preservation costs and risk management are hence rather small-scale for the foreseeable future. When grant proposals are revised by the research office, feedback and recommendations on long-term data storage and available storage infrastructures are given. However, there is no systematic monitoring of data archiving.

PRESERVATION

H1 Preservation planning and action

Level One	Level Two	Level Three
Service demonstrates it can ensure continued bit-level integrity of the data collections it holds, its metadata, and its links to any related information submitted with it.	Service enables preservation plans e.g. file migration or normalisation to be enacted at time of ingest or dissemination, and records all actions, migrations and administrative processes it performs.	Service commits to deploy tools and expertise to maintain the significant properties of data, metadata and related information for required retention periods and identified user groups (full preservation).

We currently see our services at Level One

Most central IT services hold all data redundantly and ensures bit stream preservation, but do not migrate data to other formats.

We do not aspire to reach a higher level in the foreseeable future

Level 2 is much too labour intensive for central services and is better realized in external discipline-specific data repositories offering an active curation service.

H2 Continuity support

Level One	Level Two	Level Three
Service enables retained data to be stored with a copy automatically held in another location.	Service enables retained data to be stored with copies automatically held in two separate locations, at least one off-site.	Service enables data & metadata to be automatically distributed across multiple locations according to specific policy criteria.

We currently see our services between Level One and Level Two

The IT infrastructure is currently being extended to comply with Level 2 standards.

We aspire to reach Level Two

ACCESS AND PUBLISHING

I1 Monitoring locally produced datasets

Level One	Level Two	Level Three
Information is gathered from research projects to enable compliance with funders' requirements for research data discoverability.	Metadata is routinely recorded on locally produced data, and its links to research activity or related outputs, enhancing the quality of the institution's research information.	Metadata on locally produced research data, and its links to other activities or outputs, is sufficiently structured and organised to inform institutional strategy.

We currently see our services at Level One

The university is currently establishing a current research information system (CRIS) capable of holding metadata on projects in general, including published datasets.

We aspire to reach Level Two

It is planned to connect the CRIS to other data holding infrastructures such as the data repository for automated synchronisation of metadata.

I2 Data publishing mandate

Level One	Level Two	Level Three
Service supports minimum external requirements for metadata and publicly accessible data.	Service supports community best practice standards for data access, citation and metadata exchange.	Service supports bespoke content discoverability, access and quality review needs for user groups or organisations.

We currently see our services at Level One

We do advice every researcher actively seeking counsel on how to comply with his/her community's best practice standards etc.

We do not aspire to reach a higher level in the foreseeable future

Since we are a generic central service we consider it more practicable to help finding individual solutions on demand.

I3 Level of data curation

Level One	Level Two	Level Three
Service commits to brief oversight of submitted data and metadata e.g. for compliance purposes.	Service commits to maintain or enhance value through routine action across data collections.	Service commits to maintain or enhance value through bespoke action on individual collections.

We currently see our services at Level One

When data is to be uploaded to the institutional data repository the datasets and accompanying metadata will be checked briefly for compliance with formal/technical requirements.

We do not aspire to reach a higher level in the foreseeable future

Perhaps level 2 could be reached at some institutes if they maintain their own data curation service. Most leading external data repositories also offer such a service.

DISCOVERY

J1 Metadata cataloguing scope

Level One	Level Two	Level Three
Service catalogues metadata for the organisation's publicly funded datasets according to funder expectations that they are discoverable, citable, and linked to related content.	Service catalogues metadata to enhance value of the institutions data assets in accordance with recognised best practice standards.	Service catalogues metadata to enhance potential dataset reuse according to sector-leading standards, or fulfil domain-specific purposes.

We currently see our services at Level One

The university's research information system and the metadata catalogue of the institutional data repository should meet level one standards.

We aspire to reach Level Two

Level 2 could be reached by gradually extending the research information system.

Conclusions

Levels reached and fields of further improvement

In most areas, the RDM service at Leibniz University approaches level two. In the service areas RDM policy, business plans and sustainability, training, data management planning, and active data management a locally tailored service is already provided and it is not aspired to reach a higher level.⁵ This is a great result since the requirements for level two are high and sometimes difficult to meet for a generic RDM service. Nevertheless, it is worth taking a closer look at the results of the self-assessment in order to discuss their importance for the RDM service at Leibniz University.

In one category, the service has already gathered enough experience and expertise to assume a leading role at least at a regional level in the near future: Advisory services. Some of the information materials are referenced and re-used by other universities. We are currently planning to expand, develop and diversify our advisory services to fully reach level three in the near future. To this end, we seek close cooperation with the national and international RDM community as well as with major flagship projects at Leibniz University, especially with those that constitute the university's research foci.⁶

We also want to advance in the field of legal advice for RDM by continuing to build up expertise and by integrating it into an overall concept for ethical and legal risk assessment at the university.

At German universities, level three is difficult to achieve for RDM service areas such as "access and publishing" and "data management planning". Standardised regulations and procedures are hard to enforce due to Germany's federal structure and its largely independent research institutions. Leibniz University Hanover, for example, highly recommends to its researchers to work with data management plans (DMP) but thus far does not oblige them to do so. The same holds true for publishing research data. In contrast, funders like the European Commission or the Federal Ministry of Education and Research in Germany already demand DMP, thereby pushing the professionalisation of data handling and working towards a growing awareness for the necessity of RDM.

Although we are not aiming for a higher level in all areas, the discussion has brought important insights we want to explain in the following.

Interfaces, networks and dependencies

The central RDM support at Leibniz University is generic and not primarily meant to address discipline-specific issues in detail. Such special demands can best be satisfied at the institute or project level. Since there already exist a number of institutions providing discipline-specific RDM counselling, we consider it sufficient to refer to these whenever a question or request requires special expertise. We nevertheless also seek to extend our own competencies, especially in the fields that constitute the university's research foci.

Besides established service institutions, German policy makers are currently launching an extended programme to build up and sustainably fund a national research data infrastructure based on disciplinary consortia of researchers and infrastructure operators.⁷ These consortia are especially competent addressing any questions on discipline-specific requirements of data handling. We encourage our university's researchers to engage in these networks introducing their ideas and articulating their needs.

The areas "technology investment", "access and publishing" and "discovery" certainly affect the development of the RDM services but do not directly form part of the RDM team's sphere of responsibility at Leibniz University. Interfaces to other related projects and service teams as well as to higher level decision makers

⁵ Sometimes only small steps have to be made to entirely reach level two. For example, implementing a regular, scheduled review process for the policy or designing own online courses moves the service to level two in the respective area. The improvement "only" requires time commitment.

⁶ The key research areas (foci) of Leibniz University Hanover are biomedical research and engineering, quantum optics and gravitational physics, production engineering and Interdisciplinary Studies of Science. <https://www.uni-hannover.de/en/forschung/profil/>

⁷ The "Rat für Informationsinfrastrukturen", counselling policy makers in Germany, is launching a campaign to build up discipline-specific infrastructure for research data on a national level: <http://www.rfii.de/en/projects/>.

are hence very important. Results and recommendations of the RDM team are therefore regularly presented to the Chief Information Officer (CIO) of Leibniz University, and there is a close collaboration with the team establishing the Current Research Information System⁸ (CRIS) at the university. It is planned to connect the CRIS to the data repository⁹ for automated synchronisation of metadata.

RISE – a useful tool

RISE provides a helpful and highly recommendable self-assessment tool for service evaluation. It helped us to determine the strengths and weaknesses of the RDM service at Leibniz University – and to decide how to move on. In order to ensure the sustainability of the results and to accomplish future goals, the development of a roadmap for the next three to five years is planned.

⁸ See <https://www.uni-hannover.de/en/forschung/profil/forschungsinformationen>.

⁹ See <https://data.uni-hannover.de>.