

Shared RDM – Framework Conditions for Shared RDM Services in Austria

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Abstract: This paper outlines the development and implementation of the Shared RDM Services & Infrastructure project, a key initiative aimed at establishing a coordinated and sustainable national landscape for research data management (RDM) in Austria. Building on the foundations of the FAIR Data Austria initiative, the project focuses on translating FAIR principles into institutional practice by developing scalable, cross-institutional operating models. The project evaluates, integrates, and deploys a portfolio of essential research data management software solutions, including the data analytics platform CyVerse Austria, the machine-actionable data management plan (maDMP) tool DAMAP, the electronic laboratory notebook (ELN) eLabFTW, and the repository systems DBRepo, InvenioRDM, and PHAIDRA, thereby supporting FAIR-compliant data practices across diverse research disciplines. In parallel, it strengthens national research data management capacity through shared competences by providing training resources, establishing networking platforms such as the National RDM Exchange, and analysing the evolving professional landscape of Data Stewardship. The results indicate that the project acts as a catalyst for institutional transformation, fostering a cultural shift toward Open Science, supporting Austria's integration into the European Open Science Cloud (EOSC), and laying the foundation for AI-ready data and trustworthy AI-driven research.

Keywords: Research Data Management (RDM), FAIR principles, Open Science, Shared Services, EOSC, Austria, Data Stewardship

Shared RDM – Rahmenbedingungen für Shared RDM-Services in Österreich

Zusammenfassung: Dieser Beitrag beschreibt die Entwicklung und Umsetzung des Projekts „Shared RDM Services & Infrastructure“, einer Schlüsselinitiative, die darauf abzielt, eine koordinierte und nachhaltige nationale Landschaft für das Forschungsdatenmanagement (FDM) in Ös-

terreich zu etablieren. Aufbauend auf den Grundlagen der Initiative „FAIR Data Austria“ konzentriert sich das Projekt darauf, die FAIR-Prinzipien durch die Entwicklung skalierbarer, institutionsübergreifender Betriebsmodelle in die institutionelle Praxis umzusetzen. Das Projekt evaluiert, integriert und implementiert ein Portfolio wesentlicher Softwarelösungen für das Forschungsdatenmanagement, darunter die Datenanalyseplattform „CyVerse Austria“, das Tool „DAMAP“ für maschinell verarbeitbare Datenmanagementpläne (maDMP), das elektronische Laborjournal (ELN) „eLabFTW“ sowie die Repositoriumssysteme „DBRepo“, „InvenioRDM“ und „PHAIDRA“, und unterstützt damit FAIR-konforme Datenpraktiken in verschiedenen Forschungsdisziplinen. Parallel dazu stärkt es die nationalen Kapazitäten im Forschungsdatenmanagement durch den Austausch von Kompetenzen, indem es Schulungsressourcen bereitstellt, Netzwerkplattformen wie den „National RDM Exchange“ einrichtet und die sich wandelnde Berufslandschaft im Bereich Data Stewardship analysiert. Die Ergebnisse zeigen, dass das Projekt als Katalysator für den institutionellen Wandel wirkt, einen kulturellen Wandel hin zu Open Science fördert, die Integration Österreichs in die European Open Science Cloud (EOSC) unterstützt und die Grundlage für KI-fähige Daten sowie vertrauenswürdige KI-gestützte Forschung schafft.

Schlagwörter: Forschungsdatenmanagement (FDM), FAIR-Prinzipien, Open Science, Shared Services, EOSC, Österreich, Data Stewardship

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1. Background

The Shared RDM Services & Infrastructure project establishes a foundation for a sustainable, cross-institutional research data management (RDM) ecosystem in Austria. Recognizing that sustainable RDM requires both technological foundations and human capacities, the project addresses two complementary dimensions: the development of shared technical infrastructures and the establishment of shared competences through capacity building, training, networking, and community engagement. Building on the achievements of FAIR Data Austria (January 2020–December 2022), it extends previous work on FAIR RDM concepts and services towards their long-term operation and institutional adoption. This chapter first summarizes the foundations established by FAIR Data Austria before introducing the concept of shared services as the organizational model underpinning the project.

1.1 FAIR Data Austria

Led by Graz University of Technology, FAIR Data Austria was Austria's pioneering national initiative for FAIR research data management, driving knowledge exchange between academia, industry, and society and significantly advancing the sustainable implementation of the European Open Science Cloud (EOSC). Central to its mission was the application of the FAIR principles (Findable, Accessible, Interoperable and Reusable)¹ across the entire research data lifecycle.

To ensure the practical realisation of these principles, FAIR Data Austria focused on three key pillars:

1. **Integrated Research Data Management (RDM):** Tailored to the discipline-specific and generic needs of research communities to ensure flexibility and usability across fields.
2. **Next-generation repositories:** The development of advanced repository solutions for managing research data, software and other research outputs in a FAIR-compliant manner.
3. **Training and support services:** Comprehensive training programmes and support infrastructures are established to enable researchers to efficiently manage and share data.

The project fostered collaboration among Austrian universities and research institutions, promoting the development of coherent, inter-

operable RDM services. This collective approach was crucial in enhancing Austria's position within the international research landscape, ensuring its institutions remain competitive and aligned with evolving global standards.²

The Shared RDM Services & Infrastructure project is a natural continuation of this work, building on the achievements and lessons learned from FAIR Data Austria to move from foundational development towards operational implementation. It advances the shared vision of a federated, interoperable and sustainable national RDM landscape that is EOSC-aligned and visible internationally.

1.2 Shared Services in Research Data Management

In the context of research data management, shared services are tools and infrastructures that are operated, maintained and supported jointly by multiple institutions. This distributes responsibilities, expertise and resources across organisational boundaries. Unlike institution-specific, isolated solutions, shared services are designed for cross-institutional use, ensuring interoperability, cost efficiency and scalability. They are implemented according to agreed operating models which define how deployment, maintenance and support are shared among partners. Strong collaboration, mutual trust and tailored agreements are required to ensure long-term sustainability.

Similar issues have been addressed in the past for specialized virtual research environments³ or implemented on a limited scale for discipline-specific federations⁴, but not on a national scale in the coordinated establishment of RDM software solutions. In 2025, simultaneously with the activities of the Shared RDM Services & Infrastructure project, a structural evaluation was conducted of the large German national research data infrastructure (NFDI)⁵, whose structure and scope of responsibility are not directly comparable to the situation in Austria, nevertheless, the results could prove relevant for the future design of national shared services.

The remainder of this paper is structured as follows: Section 2 introduces the operating models developed for shared RDM services, Section 3 presents the implemented RDM service portfolio, and Section 4 discusses practical use cases and project impacts. Section 5 describes the project's shared competences, capacity-building and commu-

nity engagement activities, while Section 7 concludes the paper and provides an outlook on future developments.

2. Operating Models for Shared RDM Services

A core element of the Shared RDM Services & Infrastructure project is developing and evaluating sustainable operating models for software solutions in research data management. These operating models determine how a service or tool is deployed, maintained, supported and utilised. The choice of model depends on various factors, such as security requirements, scalability, cost, available infrastructure and personnel resources, as well as the nature of the software itself.⁶

Despite their variety and adaptability, these models can be categorised into four overarching types:

Model 1: Fully in-house

All key activities — deployment, maintenance and support — are handled internally by the institution. This model offers full control but requires significant internal resources and infrastructure.

Model 2: Predominantly in-house

Maintenance and user support are managed internally, while deployment is outsourced. This hybrid model enables the development of internal expertise while outsourcing more technical infrastructure tasks.

Model 3: Predominantly external

Deployment and maintenance are handled externally, while user support remains internal. This model enables institutions to provide localised assistance while reducing the technical burden.

Model 4: Fully external

All activities — deployment, maintenance and support — are outsourced. This turnkey approach involves minimal internal overhead and is suited to institutions lacking technical infrastructure or personnel.

While all four models can be found in various institutional configurations, models 2 and 3 best exemplify the concept of shared services as they distribute responsibilities, expertise and resources across multiple institutions. These hybrid models are particularly well suited to collaborative environments, where universities contribute in different ways based on their capabilities and strategic roles.

The development and selection of these models is guided by several key criteria:

- The objectives and requirements of the RDM tool: What need does the tool address? What institutional or research benefits does it deliver?
- Roles and responsibilities: Who provides the tool and who uses it? Which roles and responsibilities lie with the service provider and which with the receiving institution?
- Processes and workflows: What deployment and maintenance procedures are required? What service level agreements or compromises are necessary? What kind of support infrastructure must be built?
- Resources and infrastructure: What technical resources (hardware/software) are needed? Are additional services or personnel required to ensure operation?

By carefully aligning institutional needs with sustainable operational structures, these models provide a foundation for long-term, federated RDM services that are flexible, scalable and efficient.⁷

3. Shared RDM Service Portfolio

Effective management of research data requires robust, reliable and user-friendly tools to support researchers throughout the entire data lifecycle, from planning and collection to analysis, publication and long-term preservation. As part of the Shared RDM Services & Infrastructure project, a number of essential tools and platforms have been selected, modified, and tested to address the varied requirements of Austrian universities and research organisations.

This chapter introduces and describes a selection of these tools, each of which plays a distinct role in enabling FAIR-aligned data practices and supporting collaborative, cross-institutional research workflows. The following sections provide an overview of their functionalities, technical foundations and relevance within the national and European RDM ecosystems.

3.1 CyVerse Austria

CyVerse Austria offers researchers a secure and collaborative environment in which to manage their research data, enabling them to store,

manage, annotate and share their datasets efficiently. Leveraging Docker technology, the platform facilitates reproducible data analysis by enabling complex computational workflows to be packaged and consistently reused across different research contexts.

At its core, CyVerse Austria is a modern cyberinfrastructure, which is defined as the integration of hardware, software, data and human expertise designed to support data-intensive and computationally demanding research. Just as traditional laboratories support physical experimentation and data collection, cyberinfrastructures empower researchers to store, process and analyse large-scale datasets in a scalable and collaborative way. This is particularly important in disciplines where the computational demands exceed what individual laboratories or institutions can manage independently.

CyVerse Austria is based on the open-source codebase of CyVerse US, a project originally funded by the US National Science Foundation and coordinated by the University of Arizona. The Austrian implementation of CyVerse began as part of the BioTechMed initiative⁸ and continues to evolve within the Shared RDM Services & Infrastructure project. It is a successful example of the adaptation of internationally developed technology to national needs, providing a solution for data management and analysis that is both FAIR-compliant and interoperable.

3.2 DAMAP

DAMAP is an open-source, community-based software tool that facilitates the creation of data management plans (DMPs). It supports researchers in managing both data and code along the research data lifecycle and helps meet funders' requirements by generating DMPs in funder-specific templates. DAMAP can integrate with an institution's existing systems, e.g., the CRIS, to pull relevant data into a DMP, increasing accuracy and reducing the overall effort needed to complete a DMP.

The content and structure of DAMAP are based on Science Europe's Core Requirements for Data Management Plans. The tool guides users through all sections of a DMP in ten steps by asking questions, suggesting text, and providing helpful information. As a result, DAMAP delivers a DMP as a document that can be customised and used for submission

to European and national research funders. Furthermore, the tool is compatible with the RDA's recommendation for machine-actionable DMPs and offers a JSON export of the DMP.

DAMAP can be used by institutions in two ways: either as an on-premises service that runs on an internal server and is provided and set up by the institution's IT department, or as a cloud service, provided by the DAMAP team, that runs on ARI&Snet.

The development of DAMAP began in the FAIR Data Austria project from 2020 to 2022. During the following Shared RDM Services & Infrastructure project, DAMAP was further developed, tested by several national and international universities, security-audited, and finally offered as an easy-to-implement cloud solution to interested Austrian universities. Starting with three institutions using DAMAP at the beginning of the project, we now have a group of nine additional universities that have expressed serious interest in implementing the cloud solution for their researchers. The aim is to clarify the legal and financial framework for the use of the DAMAP Cloud Service and provide access until the end of the Shared RDM Services & Infrastructure project in June 2026.

More information can be found at <https://damap.org/>, in the regular DAMAP community meetings, or by contacting the DAMAP team at info@damap.org.

3.3 DBRepo

DBRepo is an open-source database repository that covers the entire data lifecycle, supporting data evolution, citation and versioning. It uses persistent identifiers and implements the recommendations of the RDA Working Group on Data Curation (WGDC). The tool is intended for use by IT service operators, researchers and Data Stewards at universities and other research institutions. DBRepo is available free of charge under the MIT licence. It was initiated and developed by TU Wien and the University of Vienna as part of the FAIR Data Austria and Shared RDM Services & Infrastructure projects, which received partial funding from public sources. The service's lead moved to TU Darmstadt in 2025.

3.4 eLabFTW

eLabFTW is an open-source electronic laboratory notebook (ELN) that replaces traditional paper-based laboratory records with a digital, struc-

tured and secure alternative. Supporting both research and teaching activities, it enables users to document experiments, manage data and organise laboratory workflows in a central, searchable environment.

Alongside core functionalities such as note-taking and metadata storage, eLabFTW features a built-in calendar system for efficient lab space management. Resources such as microscopes, rooms and other laboratory equipment can be scheduled and booked directly through the platform, making it a valuable tool for coordinating shared infrastructure in collaborative environments.

Developed by researchers for researchers, eLabFTW is highly customisable and operates under the AGPL licence, ensuring full transparency and modifiability. Its technical architecture is based on PHP and MySQL, and it runs in Docker containers to ensure portability and ease of deployment. The software can be accessed via standard web browsers and is compatible with all major operating systems.

As part of the Shared RDM Services & Infrastructure project, eLabFTW is being piloted and adapted to meet the needs of different institutions across Austrian universities. Integrating it into the broader national RDM strategy will contribute to more structured, reproducible and FAIR-aligned research practices, while its open-source nature will ensure long-term sustainability and adaptability to future requirements. As part of the project, a community has also formed—the Austrian ELN Community—which aims to support the long-term establishment and further development of the initiative in Austria. This group conducted a survey among eLabFTW users, and some of the results have already been incorporated into the project's further development.⁹

More information about eLabFTW itself can be found at elabftw.net/, and questions about the Austrian ELN Community can be directed at austrian.eln@mlist.tugraz.at.

3.5 InvenioRDM

InvenioRDM is a modern, open-source repository platform designed to support the management, publication and dissemination of research data in accordance with the FAIR principles. Built on CERN's robust Invenio framework, InvenioRDM offers a flexible, extensible infrastructure that is particularly well-suited to institutional and national repository services.

As a general-purpose data repository, InvenioRDM enables researchers and institutions to upload, describe, licence, version and share research outputs of all kinds, ranging from datasets and software to preprints, images and other digital research objects. It integrates persistent identifier services (e.g. DOI and ORCID), supports custom metadata schemas and enables granular access control. Its modern user interface, REST APIs, and support for multilingual metadata make it accessible to both end users and system integrators.

The platform is under active development by an international community coordinated by CERN and the InvenioRDM Open Consortium. It benefits from the ongoing experience of large-scale repositories such as Zenodo. As such, it ensures alignment with cutting-edge developments in the global Open Science ecosystem.

Within the Shared RDM Services & Infrastructure project, InvenioRDM is being piloted as a shared repository solution for Austrian universities. Particular attention is given to shared operational models, crossinstitutional governance, and interoperability with existing systems and services, including EOSC-aligned infrastructures. The aim is to provide a sustainable, community-driven, feature-rich repository option that can be scaled across institutional boundaries and that will support Austria's participation in the international sharing of research data.

3.6 PHAIDRA

PHAIDRA (Permanent Hosting, Archiving and Indexing of Digital Resources and Assets) is a robust, long-term digital repository system designed to ensure the secure storage, accessibility, and preservation of research outputs. Originally developed at the University of Vienna, PHAIDRA has evolved into a network across several Austrian and international institutions, supporting the principles of Open Science and FAIR data.

The repository enables the structured storage of diverse digital objects, including research data, publications, teaching materials, images, multimedia files, and more. Metadata can be exported or imported in a wide range of schemes, including Dublin Core and OpenAIRE. PHAIDRA also is connected to the national Open Educational Resources Hub (oerhub.at) that provides open access teaching materials, stemming from various repositories, on a central platform. A key feature of PHAIDRA is its

persistent identifier (PID) system, which guarantees long-term citability and traceability of archived materials. This makes it particularly suitable for fulfilling institutional and funder requirements related to research integrity and Data Stewardship.

PHAIDRA is based on open standards and offers an easy-to-use web interface for uploading, describing, and managing digital objects. It supports multilingual metadata, access control mechanisms, and DOI registration. Its modular and extensible design, which is based on Fedora, allows for integration with other research information systems and infrastructures.

PHAIDRA has become an important component of Austria's national RDM ecosystem. By enabling institutions to offer repository services collaboratively, PHAIDRA contributes to a more coherent, sustainable, and federated landscape of research data preservation in Austria.

4. Implementation and Impact

4.1 Use Cases

During the initial project phase, foundational operating models for shared research data management (RDM) services were established to provide project partners with a shared understanding of the purpose, scope and operational readiness of these services. These models, which ranged from fully in-house to fully external, were subsequently adapted to the specific institutional contexts and requirements of each partner. While the first phase primarily served as an orientation and alignment process, the second phase marked the transition to implementation and the initial steps towards service sustainability.

Since July 2024, TU Graz has deployed multiple test systems in collaboration with partner institutions, covering the full spectrum of operating models. Examples include:

- Hosting on TU Graz infrastructure for partner use (e.g. eLabFTW for University of Veterinary Medicine Vienna);
- Hosting on partner infrastructure with TU Graz setup and support (e.g. DAMAP and eLabFTW for JKU Linz);
- Provision of customised Docker images for partner-managed deployment (e.g. DAMAP and InvenioRDM for the Medical University of Graz).

- Training and consultancy for independent operation (e.g. eLabFTW and InvenioRDM for the Medical University of Innsbruck and BOKU University).
- Hosting a multi-tenant variant on an OpenShift cluster (e.g. DAMAP on ARI&Snet for BOKU University)

Alongside these implementations, the project began drafting formal shared service agreements to ensure continuity beyond the funded project period. Developing such agreements proved to be a resource-intensive process, requiring close personal collaboration, the involvement of legal experts and a high degree of mutual trust. Standard commercial contracts were deemed unsuitable for the collaborative nature of universities, so bespoke agreements were created that were tailored to the priorities and institutional needs of each partner.¹⁰

A diverse range of use cases illustrates the flexibility of the shared services approach.

- Since summer 2025, TU Wien prepared a multi-tenancy DAMAP version which can be hosted on a cloud. Where previously every institution had to do the same work of installing DAMAP and integrating their login system, this can now be managed centrally. Each institution can still customise their tenant, i.e. with their branding or their own templates and integrations.
- Medical University of Graz: Test deployment of DAMAP (with CI customisations, extended metadata options and near-complete DMP workflows), and InvenioRDM (with DOI assignment via DataCite, CI adjustments and potential PURE integration).^{11,12}
- Medical University of Innsbruck: Independent in-house deployment of eLabFTW following consultation; currently in the pilot phase with a select group of researchers.¹³
- University of Veterinary Medicine Vienna: a former TU Graz-hosted instance was migrated to a self-hosted version of eLabFTW and is now in a stable productive phase, also a service agreement with TU Graz was created.¹⁴
- BOKU University: Preparations for InvenioRDM with an OER module are underway, supported by dedicated development staff and cross-institutional workshops. The DAMAP instance on ARI&Snet is in development.¹⁵

- JKU Linz: Partner-hosted eLabFTW and DAMAP test instances have been set up by TU Graz. eLabFTW has successfully transitioned from a test phase to an established productive use, and DAMAP integration is pending.^{16,17}
- University of Innsbruck: Full in-house deployment of eLabFTW is now being used by over 30 research groups and more than 100 users.¹⁸

These activities demonstrate the adaptability of shared services and highlight the commitment required for their sustainable operation. The experience gained will inform the development of future cross-university structures, such as cooperatively operated competence centres, which can manage resources more effectively than individual institutions acting alone.

An in-depth analysis of needs and technical requirements is key for each of the institutions to benefit from shared applications. For example, the preparation of the introduction of a voluntary usage of an ELN at Medical University of Innsbruck took more than five years, including several rounds of surveys and semi-structured interviews. As this is longer than any of the individual projects, a continuous approach to shared development is necessary.

4.2 Impact: Statements from project partners

The Shared RDM Services & Infrastructure project has acted as a catalyst for technological innovation and institutional transformation across institutions. Although each university started from a different place, common themes have emerged: strengthened research data management (RDM) structures, closer collaboration between technical and academic departments, and a tangible cultural shift towards more sustainable, FAIR-oriented research practices.

At the University of Veterinary Medicine Vienna, the introduction of eLabFTW was closely tied to a broader strategic goal of gaining practical insight into the role of Data Stewards and implementing RDM structures on campus. The system was introduced smoothly and operated reliably throughout the project phases, with a broad rollout planned. Particularly valued were constructive collaboration, structured project management involving regular monthly meetings, and an open participation culture enabling continuous feedback and knowledge exchange.

At the University of Innsbruck, eLabFTW evolved from a test use case into a fully established institutional service in less than a year. Implementation required technical expertise, such as containerised deployment via Kubernetes and integration with central systems, as well as significant organisational development. Processes for user management, compliance, documentation and IT security were systematically established. With around 200 registered users and multiple productive instances, the service now actively contributes to the digital transformation of research and the implementation of FAIR principles. This experience has emphasised the importance of early stakeholder engagement, robust technical infrastructure and ongoing communication across institutional and international communities.

At the Medical University of Graz, InvenioRDM and DAMAP worked together to advance institutional RDM capabilities. Installing a customised InvenioRDM test instance paved the way for future publication workflows, including DOI assignment and potential integration with research information systems. Although the project is still in its early stages, it has clarified requirements, highlighted the importance of early IT involvement and strengthened internal coordination.

Similarly, the implementation of DAMAP has shown how a DMP tool can evolve from a compliance instrument into a central component of structured research support. This process revealed the need for clear documentation, the early clarification of responsibilities and sufficient personnel resources. Lessons learned – such as the distinction between core software issues and local customisation challenges – have informed more efficient processes for future developments.

At BOKU University, the project marked a strategic turning point. Having previously lacked a central repository infrastructure, BOKU has now embedded InvenioRDM as a key institutional objective within its performance agreement for 2025–2027. The initiative has significantly increased awareness of Open Science by connecting research data, open educational resources and publications within a unified vision. In the performance agreement for 2025–2027 was also established to send two persons to a Data Stewards training per year. The recruitment of dedicated technical staff and the clarification of responsibilities across institutional units signal a long-term commitment to sustainable research support structures. One additional research support

infrastructure will be the DAMAP instance on ARI&Snet for BOKU which will be rolled out until the end of 2026 with support from the TU Wien. An eLabFTW and a Galaxy instance at BOKU is also in planning in collaboration with the Core Facilities of Bioinformatics and will be rolled out likely until the end of 2027.

At Johannes Kepler University (JKU) in Linz, both the DAMAP and eLabFTW projects stimulated institutional reflection and structural development. Although the DAMAP test phase was delayed due to technical interface issues, preparatory work intensified discussions about responsibilities, support models and system integration. This strengthened internal expertise and raised the profile of RDM topics across campus. In particular, the integration with the institutional CRIS system (Pure) is a key aspect of the testing phase. It is still unclear at this point whether a local instance should be deployed, or a cloud solution (ARI&Snet) pursued in the event of the establishment of a productive system.

The implementation of eLabFTW at JKU had a clear practical impact: students, researchers and lecturers were able to use an electronic laboratory notebook on a large scale, thereby improving efficiency, reproducibility and the quality of documentation. The project also accelerated the establishment of FDM structures within the university library and fostered cross-institutional knowledge exchange. Key insights included the diversity of disciplinary requirements and the importance of allocating sufficient time for testing, workflow development, and stakeholder coordination. Currently, in addition to a test instance, there are two separate productive instances (“research” and “study”).

At the Medical University of Innsbruck, the introduction of the electronic laboratory notebook has provided clear benefits for both individual researchers and the organization. Time spent on administrative tasks by researchers was decreased, as the ELN allowed them to access and review experiments from any location, quickly find relevant entries through filtering, directly link data files to their records, and easily present current or past experiments during weekly meetings or spontaneous discussions without needing printed materials. At the organizational level, the ELN replaced previously fragmented documentation across different programs and handwritten notebooks with a unified platform, improving transparency, facilitating the sharing of protocols

and SOPs, reducing paper use, and fostering greater exchange and collaboration between researchers from different fields.

At TU Wien, the Shared RDM Services & Infrastructure project made it possible to establish DAMAP as a genuinely shared service – technically through a cloud-based solution, and on the community building/ user level through monthly community meetings where new developments and emerging needs have been discussed and priorities continuously reassessed. During the project, TU Wien obtained the Core Trust Seal certification for the institutional repository, which required the introduction of a data review process. This created valuable opportunities for exchange on review procedures, responsibilities, and handling of restricted data, particularly with the Medical University of Graz, which must pay special attention to sensitive data. As part of the project, a distinctive FAIR-themed campaign was developed together with researchers and disseminated across TU Wien via info screens, news channels, and social media. The various exchange formats and the different institutional approaches to training – along with large-scale events such as the Cluster Research Data Expo 2025 and activities on FAIR and AI – also proved highly beneficial.

Several shared lessons stand out across all partner institutions. Early and continuous communication, structured project management, and clearly defined responsibilities were all identified as essential. The involvement of IT departments, legal and data protection offices, and institutional leadership was repeatedly identified as a decisive success factor. Documentation tools such as GitHub and Confluence enhanced the transparency and sustainability of knowledge transfer.

The project's deeper impact lies in institutional learning, beyond the implementation of individual tools such as eLabFTW, InvenioRDM, and DAMAP. It has fostered awareness of research data management, strengthened collaboration between technical and academic units, and laid the foundation for long-term Open Science infrastructures. What began as software implementation projects has evolved into broader organisational development processes, shaping policies, clarifying governance structures and building communities of practice that will extend well beyond the project.

5. Shared Competences and Capacity Building

Another key focus of the project was to further strengthen close collaboration between partner institutions and to develop related services and training offerings, embedding the principles of Open Science and FAIR data. To coordinate the shared competences and capacity building strand, a dedicated working group was established, comprising at least one member from each partner institution and meeting on a monthly basis.

Ongoing exchange between partners was crucial, taking place not only during formal meetings but also through other formats that supported the sharing of relevant information. For example, a “University Matrix” was used to collect and organize information, resulting in an overview of RDM tools and services, as well as RDM training and advisory offerings at the partner institutions. Being among the core topics, educational offerings in the RDM area were explored in depth in a one-day internal project workshop held in person.

The exchange was important not only within the project itself but also beyond it. For this purpose, the “National RDM Exchange” format was established to foster networking among RDM support staff and promote knowledge sharing. Subsequently, this format evolved into thematic sub-working groups focused on targeted particularly important topics such as discipline-specific training offerings, legal questions, and AI.

Three key outputs within the framework of Shared Competences will be briefly highlighted.

5.1 Webinar series “RDM in Austria”

The webinar series “Research Data Management in Austria,” launched within FAIR Data Austria, has been continued and further developed in the Shared RDM Services & Infrastructure project. In total, 17 webinars were held, covering a wide range of topics, including discipline-specific issues as well as cross-disciplinary themes, with contributions from national and international experts. Following the presentations participants had the opportunity to ask questions and engage in discussion. The talks were recorded, and presentation slides and videos were subsequently made available in the TU Graz Repository¹⁹ in accessible formats, with videos also published on YouTube²⁰.

5.2 Cheatsheet series: Training materials on various RDM topics

To disseminate knowledge on RDM, freely accessible, modular training materials were developed in the form of a so-called “Cheatsheet Series”, offering information on individual aspects of RDM in a compact, sustainable, and adaptable format. To maximize accessibility and reusability, the cheatsheets were published under a free Public Domain Mark 1.0 license, provided in two languages (German and English), and available in PDF and PowerPoint formats, both fully compliant with digital accessibility standards. Each cheatsheet presents core information on a particular RDM topic on a double-sided A5 sheet, with the front providing a general overview and the back allowing for a deeper dive or institution-specific variations. The materials are designed for both professional printing and digital use. The workflow, spanning thematic crowdsourcing, multi-stage feedback, and final preparation meet layout and digital accessibility standards, relied on close collaboration within the working group. The cheatsheets are published and versioned in PHAIDRA as a collection, using base DOIs with language- and version-specific suffixes.^{21,22}

5.3 Data Stewardship

Within the framework of the FAIR Data Austria project, three models for Data Stewards, along with corresponding competencies and training offerings, were developed, and a national strategy for creating tailored solutions in the Austrian context was formulated. As a follow-up project to FAIR Data Austria, the Shared RDM Services & Infrastructure project aimed to continue this work and monitor current developments. The following focus areas were addressed:

- A bibliography on Data Stewardship was compiled, made available via Zotero, and is continuously maintained and updated.²³
- A survey on Data Stewardship at Austrian universities was carried out, providing insights into the overall development of research data management, the roles and profiles of Data Steward professionals, their organizational positioning, employment conditions, and qualifications.²⁴
- A study on the labour market situation and professional profile of Data Stewards in Austria was carried out, based on systematically collected job advertisements.²⁵

5.4 National RDM Exchange

The National RDM Exchange served as a networking format addressing a range of topics, including DAMAP, community building, data protection, training resources for students, and the archiving of sensitive data. All meetings were systematically documented to ensure transparency and traceability of the discussions and outcomes.

Over time, the initially broad online exchange on research data management (RDM) topics has been further developed into more focused working groups, enabling a more targeted treatment of specific issues. Three thematic groups were established:

- integration of artificial intelligence (AI) into RDM tools²⁶
- legal aspects of RDM
- discipline-specific exchange of experiences

Within the AI integration working group, key questions at the intersection of artificial intelligence and research data management were identified, analysed, and systematically structured. The discussions addressed both how RDM practices can support AI-driven applications and how AI methods can, in turn, be applied within research data management workflows. All results and additional resources^{27,28,29} were collaboratively documented on a coLAB page and made available to all project partners.

While the working groups on legal aspects of RDM and discipline-specific exchange are currently not being actively continued, both thematic areas remain highly relevant in the context of the planned continuation of the National RDM Exchange beyond the project's end. They will therefore continue to be considered and revisited in future activities.

6. Conclusion and Outlook

The Shared RDM Services & Infrastructure project represents a significant advancement of Austria's national research data management landscape. Building on the foundations established by FAIR Data Austria, it has successfully translated FAIR principles into sustainable institutional practice through shared operating models and the deployment of interoperable RDM services. By demonstrating the feasibility of jointly operated software solutions, the project shows that collaborative infrastructures can increase interoperability, reduce

costs, and strengthen institutional capacities while supporting diverse research communities. Qualitative feedback from partner institutions underscores a key finding: the project's most significant impact lies in institutional learning, beyond the deployment of software. The initiative has developed operating structures, strengthened the role of Data Stewards, and fostered a community of practice capable of addressing new challenges such as the integration of AI and legal complexities.

Looking ahead, the project's outcomes provide an important foundation for Austria's participation in the European Open Science Cloud (EOSC). As Austria prepares to establish a national EOSC Node, the shared services, operating models, and training activities developed within the project can be integrated into the broader European research infrastructure. Several of the implemented services, such as DAMAP, also demonstrate the potential for national solutions to be adopted and operated within an international context, while continued engagement through initiatives such as the InvenioRDM community, and European university alliances (such as Unite! and EULIST) will further strengthen collaboration and knowledge exchange.

By promoting FAIR, interoperable, and reusable research data through sustainable shared infrastructures, the project also lays the groundwork for AI-ready research data and supports the development of trustworthy and reproducible AI-enabled research.

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