

DATA STEWARDSHIP IMPLEMENTATION AT THE UNIVERSITY OF TEACHER EDUCATION VALAIS (HEP-VS)

First steps in setting up a support for research data management

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Abstract – Data stewardship implementation at the HEP-VS was conducted during the year 2024 as a project supported by swissuniversities which met a strategic need to implement Open Research Data (ORD) practices within the institution. This article outlines the initial steps taken and proposed measures at HEP-VS to establish an institutional strategy for Research Data Management (RDM). These steps aim to provide effective support to researchers throughout the lifecycle of their projects while promoting the principles of ORD. The strategy is currently under review and will be submitted to HEP-VS management for approval in early 2025. This process underscores the institution's commitment to enhancing transparency, accessibility, and sustainability in research practices, pending decisions from leadership in the coming months. Data Stewardship represents a huge challenge that will require a major investment from the various stakeholders and that will undoubtedly take time. We can be delighted that we are fully committed to a path that will fundamentally transform the way research is carried out. For the benefit of all.

Keywords – data stewardship, research data management, Open Research Data, University of Teacher Education Valais (HEP-VS)

I. INTRODUCTION

RDM is undoubtedly one of the most topical subjects in higher education institutions in Switzerland and beyond. For researchers across all disciplines,

sustainable RDM is an integral part component of the research process and one of the foundations of good scientific practice. Institutions need to carefully manage all the data throughout its entire lifecycle. RDM is a process that allows data to fulfil its role as the collective output of researcher's efforts. High-quality RDM plays a crucial role in advancing science and discovery. By ensuring that research data is organized, accessible and reproducible, RDM strengthens the integrity and reliability of scientific results while fostering interdisciplinary collaboration across fields and international boundaries. Effective RDM practices enable researchers and institutions to work more efficiently, share knowledge seamlessly and accelerate innovation. Moreover, they provide an essential mechanism for recognizing and crediting the contributions of individual researchers and research institutions, thereby promoting accountability, transparency and academic visibility.

The subject is closely linked to the principles of Open Science and more specifically to ORD, a key dimension of Open Science dedicated to promoting the accessibility, reusability, and effective management of research data.

Under the guidance of swissuniversities, which has established a comprehensive ORD strategy and action plan, Swiss institutions now benefit from a clear and structured vision of what effective RDM support should entail. This framework provides institutions with essential guidance on the key principles, resources, and best practices required to promote the FAIR principles (Findable, Accessible, Interoperable, Reusable) for



research data. By setting clear objectives and defining strategic priorities, swissuniversities encourages institutions to develop tailored support services that address the specific needs of their researchers. A significant aspect of this strategy includes the establishment of dedicated roles, such as Data Stewards, to provide targeted expertise and support.

Ultimately, the approach seeks to foster a cultural shift within research institutions, transforming RDM from a perceived administrative burden into an integral aspect of high-quality, transparent, and reproducible research.

While the strategic vision is well-defined and certain financial resources are available through targeted funding initiatives, the implementation process remains inherently complex. At HEP-VS, the challenge was particularly pronounced as the institution had to build RDM support systems almost entirely from scratch. This ambitious endeavour required the design of a robust support framework tailored to the institution's unique context. Far from being a simple logistical exercise, this was a transformative initiative – both demanding as rewarding.

A key driver of this transformation was the opportunity presented by swissuniversities call for projects, particularly action line B5.2 "Data Stewardship." This initiative provided crucial momentum to accelerate the adoption of new RDM practices. The action line focuses on the professionalization of Open Research Data (ORD) specialists and the development of support services within research institutions.

At the heart of this process is the Data Steward, a pivotal figure in overseeing and governing RDM. The Data Steward serves as a key point of contact for researchers, offering expert guidance on a broad range of topics, including the development of Data Management Plans (DMPs), storage solutions, data protection and security, data organization, documentation, data publication, and the selection of appropriate repositories for data archiving and sharing.

By providing hands-on support at every stage of the research data lifecycle, the Data Steward plays a vital role in embedding a culture of good data management practices within the institution. This role not only enhances institutional capacity but also empowers researchers to meet the demands of transparency, reproducibility, and compliance with evolving legal and ethical standards.

II. THE ESSENTIAL INSTITUTIONAL SUPPORT

The HEP-VS management has demonstrated strong commitment to advancing RDM by initiating an ambitious action plan for Data Stewardship. This strategic decision reflects the institution's dedication to fostering internal expertise in Open Science, promoting

best practices in RDM, and aligning with the FAIR principles. These efforts aim to ensure the sustainable and ethical conservation of research data, consistent with the objectives outlined in the Swiss national strategy for Open Research Data (ORD).

In line with this commitment, HEP-VS management has provided continuous support to the Research & Development (R&D) department, which plays a central role in shaping and implementing the institution's strategic vision for Open Science. This backing has been instrumental in initiating and advancing the Data Stewardship project, signalling the institution's intent to position itself as a forward-thinking institution that prioritizes transparency, accountability, and the responsible management of research data.

HEP-VS leveraged the opportunity provided by swissuniversities call for projects to strengthen its alignment with ORD practices. This initiative not only enabled access to critical funding but also provided a platform for articulating a broader ambition: to deliver comprehensive support for researchers throughout the entire research data lifecycle.

However, the institution's approach transcends mere compliance with regulatory requirements. Its true objective is to instigate a paradigm shift in how researchers conceptualize and manage their data. Instead of relegating data management to a post-project consideration, the strategy emphasizes the importance of integrating RDM practices into the initial planning phases of research design. This proactive approach necessitates a profound cultural change, encouraging researchers to adopt new habits and mindsets on data management.

To facilitate this transformation, HEP-VS acknowledges the importance of providing researchers with robust support systems, targeted training programs, and tailored tools and resources that will enable researchers to adapt smoothly. This initiative is essential to fostering the adoption of good data management practices across the institution and ensuring alignment with evolving national and international standards for Open Science.

III. WHERE TO START?

The R&D department has been assigned the responsibility of establishing a RDM service at HEP-VS. This department provides advice and support at various levels for the institution's research teams. The scientific librarian has taken on the central role of data steward, with the aim of implementing and developing research data management according to the FAIR principles within the institution. Acting as the primary point of contact for researchers, the data steward will provide expert advice on all RDM-related-matters.



The initial and crucial step in this process was the setup of an internal ORD committee. This committee was designed to bring together a multidisciplinary group of experts whose skills are essential for addressing the complex challenges of RDM. Alongside the scientific librarian, the committee includes a senior research team leader, a legal expert and the IT manager, all of whom are employees at HEP-VS. To further strengthen the team's capabilities, a librarian specialising in RDM was recruited to contribute their expertise and support the professional development of the data steward. This ORD committee is intended to be a forum for collaboration, sharing and comparing ideas, in a spirit of openness and goodwill.

Throughout 2024, the committee convened regularly to discuss and define the foundational elements of the RDM service. These meetings laid the groundwork for a structured and collaborative approach to RDM at HEP-VS, with a focus on developing solutions that are both practical and tailored to the institution's specific needs. This structured approach has set the stage for creating a sustainable support system that empowers researchers to adopt effective data management practices.

IV. UNDERSTANDING THE PRACTICES OF RESEARCH TEAMS

HEP-VS has five research teams. All researchers of the teams were invited to participate in a survey on their current practices and needs about RDM. Qualitative interviews were then conducted with a subset of researchers to gain deeper insights into their experiences and challenges. The results were unequivocal: the management of research data was frequently neglected or entirely overlooked within the research process.

The survey results underscored the near absence of an established RDM culture at HEP-VS. Specifically, the data revealed that:

- 75 % of researchers had never participated in any RDM training courses
- 80% had never drafted a DMP
- 75 % had not created any documentation describing their research data
- 90 % had never deposited their research data in a repository.

These results were not entirely surprising, given that no institutional support services for RDM had been available until now. However, they highlighted significant risks associated with the current practices, particularly in terms of inadequate data storage and non-compliant data sharing methods.

There was therefore an urgent need to offer support to researchers. The fact that data management was often not planned for in research projects, that data storage and sharing practices varied, and that non-

compliant management of sensitive data could lead to security risks, meant that a strategy was needed.

Researchers were also able to express their wishes and needs in terms of training: from drawing up a DMP to making the most of their data.

V. MANY QUESTIONS AND... A FEW ANSWERS

One of the primary challenges in this context has been to establish the fundamental elements required to build a coherent and effective strategy, all while recognizing that the work of researchers continues unabated, regardless of whether the strategy is fully defined. This dynamic creates a need for adaptability and iterative development. Communication with research teams is therefore essential at every stage of the process. Establishing an ongoing dialogue helps to better understand the needs of researchers, anticipate emerging requirements, and ensure that proposed solutions are both relevant and practical.

The development of an RDM support framework is inherently non-linear. It requires careful reflection, thorough research, and active exchange of ideas before concrete solutions can be implemented. This step is crucial to ensure that the support services are not only functional but also aligned with the real-world practices and expectations of research teams. However, responding to the highly specific and sometimes unpredictable requests from research teams can be a complex task. Such requests often vary significantly depending on the discipline, used methodologies, and the nature of the data being generated.

Another key consideration is the broader institutional context, which includes the availability of tools, technical infrastructures, human resources, and financial support. These contextual factors directly influence the feasibility and scope of any support offered. Consequently, providing transparent and clear information about the services under development and the resources available to researchers is essential. Proactively sharing this information fosters trust, manages expectations and encourage the early adoption of new support measures.

A particularly illustrative example is the need for IT storage infrastructures. The ability to store, access, and manage large volumes of research data in a secure and efficient manner is a critical need for most research teams. However, the development and deployment of such infrastructures require significant technical, financial, and logistical planning. Ensuring that researchers understand the available storage solutions— as well as their limitations and associated procedures— is essential to avoid bottlenecks, prevent data loss, and support seamless collaboration across projects and disciplines.



VI. BUILD A NETWORK

The project also aimed to establish strong connections with experts from various institutions specializing in data stewardship and RDM. Throughout 2024, numerous experts were consulted to gather insights, share best practices, and learn from their experiences. This collaborative approach enabled HEP-VS to benefit from the knowledge and expertise of more advanced institutions, many of which were willing to share the proven methods and tools.

This exchange of expertise was a fundamental pillar of the project's success. By leveraging the experiences of other institutions, HEP-VS was able to avoid common pitfalls, sidestep recurring mistakes, and significantly accelerate the development of our own support offer. Learning from others minimized reliance on trial and error, allowing for a more efficient allocation of time and resources. Whenever specific approaches, tools, or methods were deemed suitable for the context of HEP-VS, they were adopted and integrated into the strategy. The aim was never to "reinvent the wheel," but rather to capitalize on tried-and-tested solutions that had already demonstrated their effectiveness elsewhere. This pragmatic, evidence-based approach ensured the development process remained grounded and focused.

To achieve these outcomes, a combination of research, interviews, and feedback sessions was conducted. Information searches helped identify best practices and relevant case studies from other institutions. Interviews with external experts provided more in-depth insights and allowed for direct knowledge exchange. Additionally, feedback from internal stakeholders was also essential to ensure that the proposed solutions would be practical and contextually appropriate.

Through this iterative process of exploration, consultation, and reflection, HEP-VS gradually developed a clear and coherent vision for the support framework to be implemented. Importantly, this vision is not a static blueprint but a dynamic and evolving framework, shaped by the lessons learned from external collaborations and tailored to the unique requirements of HEP-VS. This iterative and adaptive approach allows the institution to refine its support system over time, ensuring it remains relevant, effective, and responsive to the evolving needs of research teams.

VII. DEFINE A STRATEGY

The institutional strategy for Data Stewardship has been drafted and approved by the ORD committee and is currently being prepared for submission to HEP-VS management for final review and approval.

Central to the strategy is the formal definition of the Data Steward role, which has been assigned to the scientific librarian. This role includes providing

comprehensive guidance to researchers on various aspects of RDM, such as data collection, data organization, secured storage, sharing, and compliance with preservation standards.

Building on prior efforts to promote Open Science, the strategy reinforces HEP-VS's commitment to making research more transparent, accessible, and collaborative. By aligning with Open Science principles, it ensures that research data produced within the institution can be easily shared and reused, fostering innovation and reproducibility across disciplines.

A crucial element of the strategy is the creation of a robust regulatory framework to govern the processing of research data. Special attention is given to the handling of personal and sensitive data belonging to research participants. In this regard, strict compliance with relevant legal standards is emphasized, including adherence to the New Federal Act on Data Protection (NFADP). This alignment ensures that ethical and legal obligations related to data privacy and security are met, thereby protecting the rights and privacy of participants.

To enhance oversight of research projects, the strategy includes a systematic referencing process on the institutional Open Access (OA) platform "FREDI". Through this platform, all research projects are validated, tracked and monitored to ensure the compliance with institutional and regulatory requirements. This process also increases the visibility of research activities.

To facilitate the early planning stages of research projects, the strategy proposes the introduction of an institutional DMP template based on the standards set by the Swiss National Science Foundation (SNSF) and aligned with the guidelines and best practices from the Digital Curation Centre (DCC). The use of a standardized DMP aims to ensure consistency and compliance across all research projects. As part of the institutional strategy, the use of the DMP template is expected to become mandatory, embedding structured data management from the outset of each project.

To build the skills and knowledge of researchers, a RDM training program is planned for launch in 2025. This program will provide researchers elementary knowledge and practical tools to manage the increasingly complex requirements of RDM effectively. The appropriate platform must be selected for this training and the course must be developed based on the specific needs identified through the survey ensuring that it addresses real-world challenges faced by research teams. This RDM training will also be integrated into a broader Open Science curriculum, further emphasizing the institution's commitment to transparency and collaboration in research.



Another key aspect of the strategy is the establishment of a secure and user-friendly data repository. A comparative process was conducted to evaluate various data repositories, leading to the selection of an option that best meets the specific needs of the researchers. By 2025, the selected repository will be operational, providing research teams with a reliable platform for the secure sharing and preserving of their research data.

Collectively, these initiatives aim to create a comprehensive support system for all members of HEP-VS research community. Researchers will have access to essential resources, including best practices, detailed documentation, RDM tools, and repositories services. By implementing this strategy, HEP-VS seeks to promote high-quality data management, enhance research integrity, and uphold the principles of Open Science.

VIII. CONCLUSION

The implementation of data stewardship at HEP-VS represents a decisive step toward a more structured, transparent, and collaborative approach to RDM. By drafting a clear institutional strategy, defining the role of a dedicated Data Steward, and proposing support tools such as a standardized DMP template, training programs, and a secure data repository, HEP-VS is laying the groundwork to equip its researchers to meet the demands of ORD and align with the principles of Open Science.

This initiative addresses both the immediate needs of researchers and long-term goals of fostering sustainable RDM practices. The establishment of an internal ORD committee, the adoption of a lessons learned from other institutions, and the development of tailored resources and training courses demonstrate HEP-VS's commitment to cultivating a culture of best practices. By prioritizing adaptability and evidence-based approaches, the institution has created a dynamic framework capable of evolving alongside the changing needs of its research community.

While challenges remain — notably in ensuring consistent researcher engagement to managing the complexity of sensitive data — the approach taken by HEP-VS underscores a fundamental perspective: RDM is not merely a regulatory obligation, but an opportunity to enhance the visibility, impact, and reproducibility of research. It is also a means to protect participants rights, uphold ethical standards, and foster interdisciplinary collaboration.

Looking ahead, HEP-VS's strategic investment in Data Stewardship will undoubtedly extend its benefits beyond the institution itself. As research data increasingly becomes the "currency" of modern science, the institution's proactive stance positions it as a model of good practice. Just as a well-curated library enriches the collective knowledge of its community, well-

managed research data holds the potential to spark new discoveries, bridge disciplinary divides, and accelerate scientific progress.

Ultimately, research data is more than just bytes of information — it represents the living memory of scientific inquiry. At HEP-VS, we are committed to safeguarding, enriching, and sharing that memory, ensuring it continues to serve the advancement of knowledge and the benefit of society.

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