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Ressources informationnelles et archives
bâtiment Unicentre bureau 214
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swissuniversities
Open Science Program I - Phase B: ORD

Plan of measures to set up and strengthen the
Data Stewardship (Action B5.2)

Project title and short title	**Swiss Data Stewardship Environment : Profile - Training - Network (SwissDS-ENV)**
Start and end dates	01.01.2023 - 31.12.2024
Participating institutions (**lead**)	**University of Lausanne - UNIL** Haute école pédagogique Vaud - HEP VD Swiss Institute of Bioinformatics - SIB University of Geneva - UNIGE Geneva School of Business Administration - HEG GE//HESSO Swiss Competence Center for Social Sciences - FORS University of Zurich - UZH Zürcher Hochschule für Angewandte Wissenschaften - ZHAW
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Total budget and share of federal subsidies

Total project cost	1'087'000.-	
Of which partner funds without subsidies	*68'250.-*	
Eligible cost for subsidy calculation	1'018'750.-	100%
Partners' own funds	658'750.-	64.66%
real funds (in-cash)	*304,000 (74.14% of federal funding)*	
virtual funds (in-kind)	*354'750.-*	
Federal assistance funds required	**360'000.-**	**35.34%**

Summary

The project is part of the international and national context of *Open Science* (OS), and more specifically of the issues linked to *Open Research Data* (ORD) as defined in the Swiss National Strategy and its action plan. In order to meet the challenges of professionalizing ORD specialists and associated services, the project intends to develop a training course leading to certification in *data stewardship*. To achieve this, three actions will be developed:

1. Action 1 - definition and profile: The aim is to define and draw up a grid of competencies (professional, methodological, personal and social) required for *data stewardship, in* order to formalize a common definition and expected profiles - generalist profiles (cross-disciplinary foundation) and disciplinary profiles (social sciences and life sciences). A review of *data stewardship* projects and practices at universities will be carried out.

2. Action 2 - certification training: This component will focus on the creation of a *Certificate of Advanced Study* (CAS). This training in *data stewardship* will comprise a generalist (trans-disciplinary) foundation that will address the cross-disciplinary data management issues common to all research disciplines. This basic foundation will initially be supplemented by modules specific to the SHS and life sciences disciplines. Depending on the needs of the various

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research communities, other modules may be added to the training offer, particularly in relation to the types of data collected (laboratory data, field data, environmental data, etc.). Modules will be taught in English or French (or other national languages), depending on content, teacher and target audience. Some parts of the training may be given online, while others will be face-to-face. A pedagogical evaluation of the best teaching formats will be carried out as part of the project, with the help of pedagogical engineers. This action builds on the results of action 1.

3. <u>Action 3 - Formalization and coordination of a *Swiss Data Stewardship Network* (SDSNet) community of practice</u>: The aim of this action is to formalize and coordinate a network of future and current *data stewards, as* well as *data stewardship* professionals (including teachers)*.* The aim is to enable the exchange of best practices and experiences, to develop know-how and sustainable synergies, and to respond to current and future constraints in data management and openness. The possible attachment of this specific network to existing structures will be evaluated.

Target audiences for project results

<u>Action 1:</u> The grid of competencies and skills required for *data stewardship* will formalize a common definition and serve as a Swiss-level job reference for the entire research community and all universities. This tool will also make it possible to distinguish *data stewardship* from other existing profiles (*data librarian, data archivist, data curator, data scientist,* etc.).

<u>Action 2:</u> The training developed as part of the project targets two types of audience:

1) Researchers from universities and industry, in order to offer them recognized training in *data stewardship* that will enable them to take full advantage of their years of experience in scientific research, while developing their skills in data management and support for research projects. The expected outcome will thus offer a new possible professional orientation for researchers who are not pursuing an academic career and who wish to direct their skills towards supporting the production and management of FAIR (*Findable, Accessible, Interoperable, Reusable*) data and its reasoned opening (*Open Research Data*). These profiles will enable us to provide close support to researchers.

2) Research support staff, in particular people from the field of information and data sciences (IS - librarians, documentalists, archivists, etc.) as well as IT profiles. At a time of multiplying information flows, data proliferation, *big data*, etc., the complexity of the challenges to be met requires information and technology professionals capable of piloting large-scale projects, offering transdisciplinary support and coordinating the various ORD players within an institution.

Both support staff and IS profiles are often located at the central level of an institution (dedicated unit, library, etc.) and must therefore have a "generalist" vision of data management issues. *Data* stewards-researchers, on the other hand, have an intimate knowledge of today's research challenges, which is why they need to be as close as possible to the researchers they support, in faculties, institutes, laboratories, etc. These two target audiences reflect today's reality. These two target audiences reflect the current reality of support at university level. They are complementary and necessary for quality support for DSB.

Action 3: These people, along with *data stewardship* professionals and teachers, will be the main audience for the future *Swiss Data Stewardship Network* (SDSNet). This network could serve as a platform for exchanges and collaborations for other audiences involved in research data management and openness, and in particular provide an opportunity to discuss specific Swiss data management issues (legal regime, ethics, research practices, research community, etc.). The network could also eventually become a coordination center for *data stewardship services*.

Finally, higher education and research institutions, as well as industry, are indirectly targeted by the project's spin-offs, as they will *ultimately* be the main employers of these new profiles, along with existing research communities and academies.

Work packages and responsible partners	1. <u>Action 1 - definition and profile</u> **(UNIGE/HEG/UNIL/UZH/ZHAW)**
	  1.1. Glossary and definitions of terms used (All)
	  1.2. Identification of skills and aptitudes required (All)
	  1.3. Production of a skills and competencies repository (UNIGE/UNIL/UZH)
	  1.4. Production of a typical *data steward specification* (All): mission, tasks, activities, level of qualification, work environment, expected developments.
	
	2. <u>Action 2 - certification training</u> **(HEG/SIB/FORS/UNIGE)**
	  2.1. Drawing up a training plan (pedagogical objectives, learning objectives, teaching strategies, assessment methods, etc.) (HEP/SIB/HEG/UNIL/UZH)
	  2.2. Establishment of a Scientific Committee to oversee training to ensure relevance and alignment with the needs of the various research fields (All)
	  2.3. Cross-disciplinary modules in *data stewardship* (HEG (lead) with Tous)
	  2.4. Development of the Social Sciences module (FORS)
	  2.5. Development of the Life Sciences module (SIB)
	  2.6. Development of modules linked to data types or other specific domains (UNIGE (lead) with Tous)
	  2.7. Establishment of regulations, an inter-institutional study program and an agreement between training providers (UNIL (Lead) with Tous)

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2.8. Establish a communication plan for training, in line with the various target audiences (All)

3. Action 3 - Formalization and coordination of a *Swiss Data Stewardship Network* (SDSNet) community of practice (**UNIL/ZHAW/UZH**)
   3.1. List of people involved in supporting the management and opening up of research data in Switzerland (All)
   3.2. Development of SDSNet objectives, composition and terms of reference (All)
   3.3. Analysis of the possible legal form and statutes of such a network (UNIL/UNIGE/UZH)
   3.4. Drawing up a charter of ethics and commitment for network members (All)

Planning

Actions / lots de travail	2023												2024											
	Jan	Fév	Mar	Avr	Mai	Jui	Jui	Aoû	Sep	Oct	Nov	Déc	Jan	Fév	Mar	Avr	Mai	Jui	Jui	Aoû	Sep	Oct	Nov	Déc

Short-, medium- and long-term objectives and impacts

In the short term, the aim is to formalize a common language and definition of *data stewardship*, as we understand it in the Swiss context, while ensuring that this formalization is fully compatible with what is being done at European and international level. We will also provide a grid of expected competencies and skills in research data stewardship support, and profiles capable of meeting these requirements.

In the medium term, the aim is to create a pool of highly qualified, recruitable people from the various research fields and the world of information and data sciences, with a generalist or specialist vision, who are able to support the entire research community in managing data throughout its lifecycle.

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Current situation	In the long term, a community of practice in *data stewardship* will be set up at Swiss level, bringing together all the players involved in supporting the management and rational opening up of data. This *Swiss Data Stewardship Network* (SDSNet) will provide a coordinated and identified national platform for exchange, made up of certified *data stewards* from all fields of research and information and data sciences.

Open Science is an umbrella term for the concepts of openness, transparency, rigor, reproducibility and sharing of scientific knowledge. The OS movement is transforming the research environment and the way researchers advance and share science. In particular, open access to scientific knowledge and research results has the potential to improve the quality of science by making it more transparent, more responsive to societal challenges, more inclusive and more accessible to new users.

Alongside *Open Access* (OA), *Open Research Data* is one of the pillars of OS, alongside *Citizen Science* (CS), access to and sharing of source code and *Open Education* (OE). It has to be said, however, that progress in the various fields of open science is not linear, and is highly dependent on research disciplines and the resources available to institutions.

Against this backdrop, the project partners, like many other teaching and research institutions, have been working for several years to develop and strengthen the services offered to their community in the field of data management: training, infrastructures for data storage, management and sharing, training, strategies and action plans, documentation, personalized support for researchers, organization of open science and awareness-raising events, and so on.

Supported by operating budgets and/or temporary extraordinary funding, the services offered by institutions are still inadequate, given the many challenges involved in data management (ethical, technical, legal, economic, security, environmental, etc.), and the complexity and time-consuming nature of these challenges for researchers.

The profile of *data steward is* an emerging one. He/she plays an expert role in data management and openness, alongside other experts (*data scientist*, research engineer, *data curator*, etc.). He/she is in the front line of data management support for researchers, and must have extensive knowledge of their research fields and practices. The *data steward*'s role lies at the crossroads of data processing policies (international, national and institutional), researchers' needs and infrastructures. The aim is to ensure that these three areas are properly aligned, so that data management is in line with research expectations and context.

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At present, to our knowledge, only the Universities of Basel and Lausanne have temporary positions officially identified as *data stewards*, while in Europe, several countries, such as France, the Netherlands, Austria and England, have already taken the step in recent years. This role is often filled by researchers in the relevant field. They draw on the practice and experience they have acquired in data management as part of their own scientific research. The current *data steward often lacks the* necessary training and theoretical background. The practical skills acquired are often fragmented, albeit of a high quality, and only very partially cover the life-cycle aspects of data management. Last but not least, *data stewardship* tasks are often part of a broader, or even non-peer-recognized, remit, which leaves little room for real support in terms of data management and reasoned openness.

As far as we know, in Europe, in addition to various training courses, notably in *data science* (EPFL-HEC Lausanne), there is only one diploma course offered by a higher education institution to become a *data steward*. This is the "*Data Steward*" course at the University of Vienna. Starting in October 2022, this 5-module certification course offers the equivalent of 15 credits (ECTS). It should be noted that existing training courses will be taken into account as part of the project's development.

Desired situation with project benefits	The field of OS encompasses many fields of action aimed at "opening up science", making it accessible to as many people as possible, and reminding us that science, largely financed by public money, is to be considered a common good. Some of these fields of action have been "marked out" for many years, as with access to scientific publications, even if the guarantee of generalized open access to scientific knowledge enshrined in the Berlin Declaration of 2003 has not yet been fully achieved. The development and professionalization of *data steward* profiles should make a significant contribution to open science, and to ORD in particular, by offering high-quality support to researchers so that they can fully play their role as producers of living, accessible scientific knowledge.

By 2026, Swiss institutions of higher education and research will be equipped with *data stewards who* meet the requirements of the research community as a whole, as well as those of funding bodies, publishers, politicians and the business world. This training in *data stewardship will* take into account the specificities of Switzerland and the challenges of the various fields of research in ORD. A strong emphasis will be placed on practical training to enable *data stewards to* apply new technologies and ensure the highest levels of research quality and reproducibility. It will be important to ensure that the courses offered are timely and in line with the pedagogical objectives and the grid of expected competencies and skills, and that the training offer is well aligned, coordinated and federated between the partners.

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The evolution of training needs and teacher practices will be collected in order to continuously improve the quality of teaching.

A clear grid of competencies and an innovative professional orientation will offer researchers and specialists in information and data science new career prospects, and enable the community as a whole to benefit from high-quality support. These new skills will be recognized among partner institutions and harmonized, while taking into account the specific orientations required by the various disciplines.

A recognized community of practice will make it possible to identify *data stewardship* players in Switzerland, federate all *data stewards* and *data stewardship* teachers in order to break their relative isolation, enable the exchange of practices, sketch out new responses and capitalize on acquired experience in order to strengthen the reasoned opening of research data in line with the FAIR principles. The "reasoned" approach must enable research data to be managed transparently, within the limits of the law and scientific prescriptions in terms of ethics, deontology and respect for standards of protection of the individual and intellectual property ("*as open as possible, as closed as necessary*").

The expected results of the project will have a major impact on the Swiss research community as a whole, and will concretely strengthen the position of Swiss higher education institutions in terms of *Open research Data,* both nationally and internationally.

Integration of the action plan into the planning of the participating universities and institutions - Synergies with existing structures	The project partners have been active in the various fields of *Open Science* for a number of years, with the creation of dedicated permanent and fixed-term positions, as well as the development of services and, of course, training. Some institutions already have an Open Science strategy, action plan and guidelines focusing on *Open Access* and *Open research Data* (UNIL, UNIGE, UZH). These policies are currently being updated to incorporate other aspects of *Open Science*. A network of *data stewards* on three-year fixed-term contracts has been in place at UNIL since spring 2022, and other data management specialists exist at all partners (including with IT profiles). With all partners, experience in data management support covers the major research fields (social sciences, life sciences), with generalist and specialist skills (FORS, SIB), particularly in relation to data types (laboratory, geology, etc.).

SIB's contribution draws on decades of expertise in curating and sharing biological data through world-renowned databases, and on recent experience in developing the national BioMedIT/SPHN infrastructure for clinical data. Likewise, FORS's expertise enables project partners to benefit from years of experience in data management issues, methodologies, anonymization and documentation of datasets applied to the social sciences. The SIB, like FORS and the HEG, also offers numerous courses on data management throughout Switzerland. In particular, the SIB co-

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	organizes a CAS in personalized molecular oncology with the University Hospitals of Basel and Lausanne and the University of Basel.
	The project's spin-offs will consolidate and support the *data stewardship initiatives already* underway in the various institutions, and will strengthen ORD's development by offering highly qualified profiles to the institutions and new professional prospects to researchers and other support profiles.
Strategic and financial sustainability of project results beyond 2024	The project as a whole will enable the entire community - researchers and support services alike - to enhance their skills in the field of research data management, in particular through the certification of *data stewards*. We can see that the field of *data stewardship has been* expanding in recent years, and that the need for qualified personnel at universities and in industry will continue to grow over the next decade.
	Action 1 of the project, concerning the definition of *data stewardship* and its competency grid, is a one-off action which will be a necessary reference for other contexts (recruitment, creation of other curricula, *self-assessment*, etc.). It will be available for free and open access.
	Action 2 of the project, dedicated to the creation of a training program leading to certification, will be sustainable, as we believe we can maintain an attractive training program in terms of both its quality and its response to a market need. The micro-credit model will also be evaluated. By creating a continuous training program that gives access to jobs and offers professional prospects to a significant number of people from the research world, we can perpetuate the flow of new enrolees at each intake. The partners will give priority to evaluating the various *business models capable of* sustainably supporting the training program developed, bearing in mind that the primary objective is to achieve self-financing via enrolments. Ultimately, the course will become part of the continuing education catalog and will be supported by several project partners. The content and scope of the course may also evolve over time, depending on demand and needs. It is not out of the question that a *Diploma of Advanced Study* (DAS) will eventually be developed on the basis of the initial CAS. Finally, for the majority of courses, we will be adopting the *open education* model. This approach, complementing that of CAS certification, will give high visibility to the training, beyond national borders, and remove obstacles that can prevent both opportunities and recognition of participation in institutional learning.
	Action 3, the *Swiss Data Stewardship Network* (SDSNet), will be necessary to continue federating the practices of *data stewards*, and can be used as a *sounding board* to nurture the evolution of the CAS through professional practice. The SDSNet will be organized by a board/committee made up of one representative from each of the project's partner institutions. To spread the workload, a rotating

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	presidency will be organized for one-year terms. With regard to the network's operating costs, the organization of events will be covered by funds collected in the form of subscriptions or *memberships* from participating institutions and/or private partners. The *alumni* network model used by the project partners will be evaluated.
Project governance	• Project management Project management will be entrusted to a dedicated project manager (50-60%). This person will also need to have knowledge of data management issues. This profile will be complemented by the skills of an educational engineering specialist (40%). A description of roles (missions) and responsibilities will be established, as well as the project's operating modes between partners (communication, meetings, frequency, etc.). • Organization, decision-making, mandate and risk analysis At the start of the project, the partners will agree together on the organization needed for the project to run smoothly, and on the decision-making model linked to the results of the actions. Action *leaders* will be supported by the other partners (*in-kind*). Non-subsidized partners and module *leaders* (FORS, SIB, HEG) will be mandated by the project to carry out the modules and will be paid by the project. The partners will bring their expertise to bear in implementing the modules. A risk analysis will also be carried out to anticipate and remedy possible problems encountered by the project. • Administrative and legal aspects The partners will assess the project's administrative and legal issues, in particular all aspects relating to the establishment of an inter-institutional CAS (involving several partners) and its recognition by the relevant authorities, both in Switzerland and internationally. • Communication A communications plan for the project will be drawn up, with a focus on target audiences, the necessary tools, presentation events and the involvement of project partners in raising awareness of the project within their respective communities. Consideration will also be given to communication aspects relating to future training and the establishment of the *Swiss Data Stewardship Network.*

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