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Swiss National Strategy Open Research Data Version 1.0 Action Plan

Adopted by the Delegation Open Science on 17 November 2021

The following bodies have noted the Action Plan with approval:

The Board of swissuniversities on 2 December 2021

The ETH Domain on 14 December 2021

The Board of Directors of the Swiss Academies of Arts and Sciences on 2 December 2021

The Presiding Board of the National Research Council of the SNSF on 8 December 2021

Legal notice

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Abbreviations

A+	Swiss Academies of Arts and Sciences
CARE	Collective Benefit, Authority to control, Responsibility, and Ethics
DDP	Domain Data Protocols
DeIOS	Delegation Open Science
DORA	Declaration on Research Assessment
ECR	Early Career Researchers
EOSC	European Open Science Cloud
EPFL	Swiss Federal Institute of Technology Lausanne
ERI	Education, Research, Innovation
ERIC	European Research Infrastructure Consortia
ETHZ	Swiss Federal Institute of Technology Zurich
FAIR	Findability, Accessibility, Interoperability, and Reusability
FSO	Swiss Federal Statistical Office
GDPR	General Data Protection Regulation
HEdA	Federal Act on the Funding and the Coordination of the Higher Education Sector
HEI	Higher Education Institutions
NCCR	National Centre of Competence in Research
NaDB	National Data Management
ORD	Open Research Data
OSPP-REC	Open Science Policy Platform Recommendations
PgB	Federal project contributions
PID	Personalized Identifier
RDM	Research Data Management
RIPA	Federal Act on the Promotion of Research and Innovation
SCOSS	Global Sustainability Coalition for Open Science Services
SDSC	Swiss Data Science Center
SERI	State Secretariat for Education, Research, and Innovation
SHK	Swiss Conference of Higher Education Institutions
SNSF	Swiss National Science Foundation
SPHN	Swiss Personalized Health Network
SWITCH	Swiss Foundation with the purpose to create, promote, and maintain information and communication technologies in Switzerland at the service of education and research
UNESCO	United Nations Educational, Scientific, and Cultural Organization

Action Plan: Swiss National Strategy Open Research Data

Executive Summary

Open Science is a paradigm that seeks to make scientific research, data and their dissemination available to all levels of an enquiring society and the public. This represents a major cultural shift within research and promotes better, more effective research for the benefit of society as a whole. As a dimension of Open Science, Open Research Data (ORD) specifically deals with facilitating access to and reuse of research data.

The present ORD Action Plan – a collaborative process between the ETH Domain, the Swiss National Science Foundation (SNSF), the Swiss Academies of Arts and Sciences (A+), and swissuniversities was drafted in the scope of the Swiss National Open Research Data (ORD) Strategy, which in turn was initiated by a mandate of the State Secretariat for Education, Research and Innovation (SERI). The ORD Action Plan is guided by overarching objectives and principles for the ORD landscape in Switzerland, as defined in the ORD Strategy. The Action Plan ensures that Swiss higher education and research institutions support researchers across Switzerland in making data and results from publicly funded research openly accessible and reusable for further research. Seven overarching principles form the foundation of the Action Plan: (1) the FAIR principles, (2) the understanding that openness is part of good research practice, (3) the understanding that research data should be as open as possible, and as protected as necessary, (4) the recognition of the value of data, (5) the respect for disciplinary diversity, (6) the connection to national and international ecosystems, and (7) the pursuit of a sustainable approach.

Because there are no overarching governance structures in place between existing decision-making bodies in Switzerland to effect consolidation of the historically grown ORD infrastructures and services or to coordinate the strategic development, the ORD Strategy and Action Plan introduce a new governance model – the Strategy Council. As a body, the Strategy Council is responsible for setting the general agenda and for ensuring that high-level principles are upheld and that goals are met when implementing the ORD Action Plan. Additionally, the Strategy Council has the competence to update and further develop the ORD Action Plan (ORD Action Plan Version 2.0). The Strategy Council is composed in such a way that the key actors responsible for steering the development of the Swiss ORD landscape are represented: the ETH Domain, the universities, the universities of applied sciences and arts, the universities of teacher education, the SNSF, and the Swiss Academies of Arts and Sciences. The partners are committed to working at the highest level in order to develop a shared vision for the ORD landscape in Switzerland. The lean structure of the proposed governance model – a Coordination Group provides decentralised support to the Strategy Council, which has the legal form of a simple partnership – underlines the collaborative approach. The Strategy Council will also set up two permanent sounding boards, one with researchers and one with service providers, to facilitate deliberations and decision-making processes.

The ORD Action Plan defines four action areas, each of which is further structured into measures and action lines:

- Action Area A aims to encourage and promote ORD practices by means of national funding measures for exploratory ORD projects and competitively awarding ORD grants for innovative and collaborative projects.
- Action Area B aims to develop, maintain, and promote the consolidation of financially sustainable infrastructures and services. This is achieved by evaluating the Swiss ORD landscape with regard to the consolidation and strategic development of services and infrastructures (Measure B1), providing researchers with long-term ORD services and infrastructures through five different pathways (Measure B2), ensuring long-term funding for ORD infrastructures and services of foremost national relevance (Measure B3), providing access to ORD services and infrastructures and improving interoperability (Measure B4), and by instituting ORD specialists and professionalising related services (Measure B5).

- Action Area C is concerned with raising awareness of FAIR principles and ORD best practices in the scientific community through advocacy programmes and long-term networks (Measure C1). It also promotes research data management education and ORD training, envisioning these elements as a requirement in all university curricula (Measure C2).
- Finally, Action Area D focuses on incentives and rewards for researchers and calls for making ORD a prerequisite for funding and career advancement (Measure D1). It furthermore addresses legal and ethical aspects surrounding ORD practices (Measure D2) and ensures that policies and measures implementing ORD practices are in line with international standards (Measure D3).

The ORD Action Plan covers two ERI periods, from 2022 to 2028. The action lines described in detail in the document pertain to the 2022–2024 period only. For each of these action lines, primary ownership and funding responsibilities are assigned; nevertheless, respecting and safeguarding the autonomy of the involved institutions remains a guiding principle. Funding responsibility for the action lines lies with the designated key actors, who coordinate their activities with the Strategy Council. For the 2022–2024 period, the plan taps existing or planned ORD funding, including funds from the *PgB Open Science I, Phase B – ORD*. This, however, covers only federal funds that are linked to a specific program, and the plan is intended to mobilize more funding, especially from research institutions themselves. The Strategy Council is responsible for assessing and coordinating financial requirements for 2025–2028, after the ETH Board, the Swiss National Science Foundation, swissuniversities, and the Swiss Academies of Arts and Sciences have submitted their strategic plans for the 2025–2028 ERI period.

1. Introduction

1.1. Purpose and context of the ORD Strategy

The Swiss National Open Research Data (ORD) Strategy and Action Plan are based on the ORD Agreement¹ between the State Secretariat for Education, Research, and Innovation (SERI), swissuniversities, the Swiss National Science Foundation (SNSF), the Swiss Federal Institute of Technology Zurich (ETHZ), and the Swiss Federal Institute of Technology Lausanne (EPFL). The Swiss Academies of Arts and Sciences (A+) were later included as an additional partner. The purpose of the ORD Strategy² is to define overarching objectives and principles for the Swiss ORD landscape³. The present ORD Action Plan expands on and details the objectives of the ORD Strategy by presenting clear terms and conditions regarding organisation, governance, and financing for the 2022–2024 Education, Research, and Innovation (ERI) period and a blueprint for the 2025–2028 period.

The ORD Strategy was drafted under the leadership of the Delegation Open Science (DeIOS) and, following consultation with the relevant stakeholders,⁴ was adopted by DeIOS on 23 April 2021. The ORD Strategy then received the approval of the Plenary Assembly of swissuniversities, the ETH Domain, the Board of Directors and Delegates of the Swiss Academies of Arts and Sciences, and the Presiding Board of the SNSF National Research Council.

The Swiss National ORD Strategy outlines ways for Swiss higher education and research institutions to realise the goal of creating and using publicly funded open research data. It defines seven principles to guide the processes:

1. *FAIR principles*:⁵ FAIR principles foster good data management and optimise the sharing and use of data, which is beneficial for downstream investigations.⁶
2. *Good research practice includes openness*: in addition to general best practices in research, openness is both a prerequisite and a means of supporting outstanding research, as it promotes transparency, enhances effectiveness of the research process, and promotes reproducibility of results.
3. *As open as possible, as protected as necessary*: ORD principles stipulate that research results must be as accessible as possible. In certain cases, however, some reasonable restrictions may apply; examples include reserving the right of first use for data creators, when justified legal, ethical, or security reasons exist, or when collaborative research with the private sector is an issue.⁷

1 ORD Agreement between SERI, swissuniversities, ETHZ, EPFL, and the SNSF to develop the Swiss National ORD Strategy and the corresponding Action Plan, January 2020. https://www.swissuniversities.ch/fileadmin/swissuniversities/Dokumente/Hochschulpolitik/ORD/Vereinbarung_Open_Research_Data-sign.pdf

2 swissuniversities. (2021). *Swiss National Open Research Data Strategy*. https://www.swissuniversities.ch/fileadmin/swissuniversities/Dokumente/Hochschulpolitik/ORD/Swiss_National_ORD_Strategy_en.pdf

3 The ORD Action Plan currently understands the term "ORD landscape" as the entire governance structure, the initiatives, and the services and infrastructures related to Open Research Data in Switzerland. The ORD landscape is to be shaped, consolidated, and strategically developed by the Strategy Council and the key actors. The term "ORD ecosystem" refers to a narrower description of ORD infrastructures and services available in the Swiss ORD landscape.

4 The organisations consulted during January and February 2021 included the following: higher education institutions, the SNSF, ETH Domain, Swiss Academies of Arts and Sciences, Innosuisse, and SWITCH.

5 FAIR principles refer to the findability, accessibility, interoperability, and reusability of research data. For more information on FAIR principles: <https://www.go-fair.org/fair-principles>

6 The TRUST Principles are also relevant in this guiding principle: Lin, D., Crabtree, J., Dillo, I. et al. (2020). The TRUST Principles for digital repositories. *Sci Data* 7, 144. <https://doi.org/10.1038/s41597-020-0486-7>

7 The ORD Strategy stipulates "that research results must be accessible. Therefore, and in line with international declarations such as the 2020 Sorbonne Declaration, the creators or rights holders of research findings must grant users the right of access, including the right to copy, use, distribute, transmit, and present findings with the aim of conducting and distributing follow-up research. The authorship and ownership rights of the data creators must be respected, and, in keeping with good scientific practice, are to be cited accordingly. This also applies to the citation practices of publications. Data creators have the right to reasonable first use and processing of their data within the scope of ongoing research projects and related publications, under consideration of the various time frames in different disciplines. Valid access restrictions according to good disciplinary practices regarding data may apply, but are limited to justified legal and/or ethical constraints or security reasons and must not be

4. *Recognition of the value of data*: the action of providing data to the research community in all its dimensions (acquisition process, data as an asset, access and use of data, long-term maintenance and curation) must be given due acknowledgement.
5. *Respect for disciplinary diversity*: it is essential that researchers have the freedom to implement procedures related to ORD as is appropriate within the relevant academic community.
6. *Connection to national and international ecosystems*: the interoperability⁸ of existing and emerging infrastructures and organisations as well as compliance with relevant legal frameworks at the national and international level must be ensured.
7. *A sustainable approach*: the development of ORD must pursue a long-term strategy and take its ecological, societal, and economic impact into account.

The realisation of ORD practices is viewed in the ORD Strategy as a paradigm shift in academia, whose objectives mainly impact researchers and communities of researchers. In addition to seeking to consolidate infrastructures and services, the ORD Strategy aims to achieve a targeted development of ORD practices on the basis of coordinated governance structures that nonetheless preserve and acknowledge the autonomy of the individual institutions.

The progress towards ORD can be achieved only through collaboration and partnerships within the Swiss ERI sector; various interdependent legal requirements regarding research coordination and collaboration have been set out in the Federal Act on the Promotion of Research and Innovation (RIPA), the Federal Act on the Federal Institutes of Technology (ETH Act), and the Federal Act on the Funding and the Coordination of the Higher Education Sector (HEdA).⁹ It is therefore important that all individuals and institutions involved are strongly committed to defining common objectives and aligning their activities. To ensure that the fundamental changes brought about by ORD are successfully implemented in academia, it is critical that all stakeholders are included in developing a common framework.

1.2. Developing the ORD Action Plan

The ORD Action Plan is one of the deliverables named in the ORD Agreement. In accordance with the ORD Agreement, DeLOS charged a project group with developing the ORD Strategy and Action Plan at the beginning of 2020.

During the summer of 2020, the ORD project group responsible for developing the ORD Strategy conducted a survey to consult with the relevant stakeholders, then completed this consultation during three workshops with panels of ORD experts in September of 2020. The results of the consultation process are presented in the report “National Open Research Data Strategy – Analysis Report based on Survey and Workshop Panels”.¹⁰

In September 2020, DeLOS resolved to establish a monitoring committee, which at the beginning of 2021 assumed full responsibility for finalising the ORD Strategy and Action Plan.

extended to metadata. No negative consequences will be imposed on researchers who do not share data for justified reasons. Switzerland is a leader in innovation, and because collaborative research with the private sector is greatly valued by higher education institutions in Switzerland, it is important that the national ORD Strategy enables companies to collaborate with research institutions. There is therefore a need to develop guidelines on whether, when, and how commercially sensitive data are to be made openly accessible.”

swissuniversities. (2021). *Swiss National Open Research Data Strategy* (https://www.swissuniversities.ch/fileadmin/swissuniversities/Dokumente/Hochschulpolitik/ORD/Swiss_National_ORD_Strategy_en.pdf), p. 6.

- 8 The ORD Action Plan understands “interoperability” in a broad sense: ORD infrastructures and services implement technical standards and uphold legal, administrative, and financial rules. Moreover, they comply with FAIR principles for data access as well as equivalent best practices for access to services. They facilitate coordinated and aligned use of data, that is, they make access to data and use of services available in a manner that enables easy integration into other services.
- 9 Public research funding institutions and ETH institutions are required by RIPA, article 40 para. 3, and ETH Act, article 3 para. 3 to coordinate their activities in particular with the Swiss higher education domain according to article 36 to 39 HEdA. Furthermore, article 55 of the RIPA ordinance charges SERI with periodically compiling a report on existing research infrastructures in Switzerland, with the aim of coordinating the development of research infrastructures of national relevance.
- 10 The report is available at: https://www.swissuniversities.ch/fileadmin/swissuniversities/Dokumente/Hochschulpolitik/ORD/20201123_ORD_Grundlagenbericht_final_swu_.pdf

DeIOS also revised the mission of the ORD project group into that of an ORD sounding board that reported to the monitoring committee. Over the course of 2021, the monitoring committee also commissioned the following three actions: (1) assessing the ORD capability of scientific communities, (2) preparing an overview of the ORD landscape in Switzerland, and (3) obtaining advice on legal and financial aspects linked to the creation of the ORD Strategy Council, as described in the Swiss National ORD Strategy. The resulting reports will be submitted to the ORD Strategy Council.

1.3. International alignment

Alignment with international standards and norms is a central aspect of the ORD Strategy, and the principles of interoperability and international alignment must be included in all future activities. The ORD Action Plan therefore aims to consider the activities at the international level in which Switzerland is involved, while remaining flexible in this respect. For this reason, the ORD Action Plan endeavours to highlight the importance of establishing closer alignment with related international initiatives, including the following:

- Research Data Alliance: contribute to the development of ORD standards and best practices at a global level¹¹
- European Open Science Cloud: promote ORD services available in Switzerland for European research and research services communities¹²
- SparcEurope: further develop Swiss contributions to the Global Sustainability Coalition for Open Science Services (SCOSS) and new initiatives to advance Open Data, Diamond Open Access as well as efforts to promote “Open by Default” for Research Data¹³
- OpenAIRE: support repository managers in eliminating duplicates and redundancies, in disambiguation (Explore) as well as in securing a harmonised Personalized Identifier (PID) approach¹⁴
- ERIC Infrastructures: ensure an efficient and meaningful integration of Swiss research and data communities and support the infrastructure needs of the communities¹⁵
- Invest in Open Infrastructure: contribute to this new initiative that focuses on “open” infrastructures¹⁶
- UNESCO Recommendation on Open Science: participate in the development of the Open Science Global Partnership¹⁷

1.4. Swiss federal initiatives and general context

Switzerland has an umbrella strategy for the digital transformation, the “Strategy Digital Switzerland”, and a corresponding action plan.¹⁸ The federal umbrella strategy names the goal of providing open access to research data and findings, as this “also makes a substantial contribution to improving the effectiveness, transparency and the reproducibility of scientific research and is being monitored as part of the open data strategy of the universities and the Swiss National Science Foundation”.¹⁹

11 More information on the Research Data Alliance: <https://www.rd-alliance.org/about-rda>

12 More information on the European Open Science Cloud: <https://eosc-portal.eu>

13 More information on SparcEurope: <https://sparc-europe.org>

14 More information on OpenAIRE: <https://www.openaire.eu>

15 More information on ERIC Infrastructures: https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/our-digital-future/european-research-infrastructure/eric_en

16 More information on Invest in Open Infrastructure: <https://investinopen.org>

17 More information on the UNESCO Recommendation on Open Science: <https://en.unesco.org/science-sustainable-future/open-science>

18 Swiss Federal Chancellery. (2020). *Strategy Digital Switzerland*. <https://www.digitaldialog.swiss/en>

19 Swiss Federal Chancellery. (2020). *Strategy Digital Switzerland: Data, digital content and artificial intelligence: Appropriate datasets are available as open data*. <https://www.digitaldialog.swiss/en/objectives/appropriate-datasets-are-available-as-open-data>

The strategy and action plan for the digital transformation are updated every two years, most recently on 11 September 2020. Since 1 January 2021, responsibility for all work relating to the “Strategy Digital Switzerland” has rested with Digital Transformation and ICT Steering at the Federal Chancellery.²⁰ The action plan covers all activities of the Swiss federal government (in part, also of other agencies/bodies) in the area of digitisation. The umbrella strategy is supplemented on a case-by-case basis by sectional strategies, including the following, which are related to the ORD Strategy:

- Open Government Data Strategy 2019–2023²¹
- Federal Cloud Strategy²²
- National Strategy for the Protection of Switzerland against Cyber Risks²³
- National Strategy for Critical Infrastructure Protection²⁴

Also relevant is the newly established Data Science Competence Center at the Federal Statistical Office (FSO) and a collaboration between ETHZ, EPFL, and the FSO: “Data science and artificial intelligence for the common good”.²⁵ The latter is also responsible for the National Data Management project (NaDB).²⁶

The ORD Strategy and Action Plan are designed to underpin the efforts of swissuniversities in steering the Open Science agenda at the national level. The ambitious agenda achieved an initial milestone in 2018 with the completion of the Swiss National Strategy and Action Plan on Open Access²⁷ for the 2018–2024 period. Following a first set of activities conducted in parallel to the “Scientific Information” programme, the programme Open Science I (2021–2024)²⁸ assumed all related responsibilities, while also ensuring the co-funding of swissuniversities members within the corresponding action lines.

The ORD Strategy and Action Plan have been developed with reference to the following related national initiatives:

- The position of the ETH Domain regarding ORD and related initiatives such as the Swiss Data Science Centre (SDSC)²⁹
- The commitment of the SNSF to Open Science, especially the SNSF policy on ORD and its guidelines for data management plans³⁰
- The Open Science initiatives of the Swiss Academies of Arts and Sciences³¹ and more specifically, the Swiss Personalized Health Network (SPHN) initiative³² in personalised medicine

20 More information (in German and French) about the Strategy Digital Switzerland and its implementation: <https://www.bk.admin.ch/bk/de/home/digitale-transformation-ikt-lenkung/digitale-schweiz.html>

21 More information on the Open Government Data Strategy: <https://www.bk.admin.ch/bk/en/home/digitale-transformation-ikt-lenkung/ikt-vorgaben/strategien-teilstrategien/sn004-open-government-data-strategie-schweiz.html>

22 More information about the Federal Cloud Strategy: <https://www.bk.admin.ch/bk/en/home/digitale-transformation-ikt-lenkung/ikt-vorgaben/strategien-teilstrategien/sb020-cloud-strategie-der-bundesverwaltung.html>

23 More information about the National Strategy for the Protection of Switzerland against Cyber Risks: <https://www.bk.admin.ch/bk/en/home/digitale-transformation-ikt-lenkung/ikt-vorgaben/strategien-teilstrategien/sn002-nationale-strategie-schutz-schweiz-cyber-risiken-ncs.html>

24 More information about the National Strategy for Critical Infrastructure Protection: <https://www.babs.admin.ch/en/aufgabenbabs/ski/nationalestrategie.html>

25 More information on the project: <https://ethz.ch/en/news-and-events/eth-news/news/2021/03/data-science-and-ai-for-the-public-good.html>

26 More information on the project: <https://www.bfs.admin.ch/bfs/en/home/nadb/nadb.html>

27 More information about the Swiss National Strategy and Action Plan on Open Access: <https://www.swissuniversities.ch/en/topics/digitalisation/open-access/national-strategy-and-implementation-plan>

28 More information about the Open Science I (2021–2024) programme: <https://www.swissuniversities.ch/en/topics/digitalisation/open-science-2021-2024>

29 More information on the position on ORD and related activities of the ETH Domain: <https://www.ethz.ch/en/themen/aktuelles/open-research-data>; <https://www.news.admin.ch/news/message/attachments/52302.pdf>; <https://datascience.ch>

30 More information about the SNSF commitment, ORD policy and DMP guidelines: <https://www.snf.ch/en/dmILj9t4LNk8NwyR/topic/research-policies>

31 More information about the initiatives of the Swiss Academies of Arts and Sciences: <https://akademien-schweiz.ch/en/themen/wissenschaftskultur/open-science>

32 More information about the SPHN programme: <https://sphn.ch/network/projects>

- The programme led by educa, the organisation charged with managing data in education³³
- The portal opendata.swiss for open data in Switzerland³⁴
- The link.hub project led by FORS, the Swiss Centre of Expertise in the Social Sciences³⁵
- The project “Research Data Connectome” led by SWITCH, the foundation for technology in education³⁶
- The harmonisation efforts at the level of the federal government led by the Data Science Competence Center of the FSO³⁷

In the context of the ORD Strategy and Action Plan, the term “open research data” is understood as research data that are publicly accessible, generally online, and that observe to the most appropriate and capable technical standards. Researchers access data using a license that permits usage, modification,³⁸ and redistribution; in addition to avoiding delays beyond what is considered best practice in the specific community (embargo), no fees are charged for accessing the data, nor are there other requirements other than acknowledging the origin of the data (citation). By extension, the term “open research data” can refer to any research data throughout the entire data lifecycle that are managed with the eventual goal of making them openly available. Because it is impossible to fully implement ORD in all cases, however, it is essential that the ORD Action Plan considers and acknowledges justified restrictions on research data.

1.5. Scope of the ORD Action Plan

The scope of the ORD Action Plan is determined by the framework set out in the ORD Strategy regarding the development practices for sharing publicly funded research data in Switzerland and the coordination of services and infrastructures that support researchers and facilitate ORD practices. The ORD Strategy also defines the relevant Swiss ORD landscape, where the efforts of the Swiss ERI actors in the area of ORD are focused, as presented in the four action areas and measures described in chapter 3.

The ORD Strategy and ORD Action Plan define objectives that face numerous conceptual, practical, and financial hurdles. In particular, the current decision-making bodies were not created to consolidate the historically grown ORD infrastructures and services or to coordinate the strategic development thereof. For this reason, the ORD Strategy proposes a new governance model (see chapter 2). Overall, the ORD Strategy proposes an innovative, decentralised funding model to ensure that the institutions retain maximum autonomy while nonetheless realising shared goals regarding open research data (see chapter 4).

The Action Plan will be implemented under the guidance of the ORD Strategy Council (see chapter 2), whose main responsibility is issuing recommendations to ensure that research communities are capable of developing ORD research practices and that the infrastructures and services necessary are developed and utilised in a coherent and efficient manner.

The ORD Action Plan covers the years 2022 to 2028, thus two ERI periods. The first period between 2022 and 2024 is a transitional phase, as the measures and action lines are financed via funds procured through the strategic planning during the 2025–2028 ERI period. The action areas are structured in measures and action lines (see chapter 1.6).

33 More information about the educa programme: <https://www.educa.ch/fr/themes/utilisation-des-donnees/donnees-dans-leducation-donnees-pour-leducation> (in German, French, and Italian)

34 More information about the Open Data Swiss portal (in French): <https://opendata.swiss/fr/group/education>

35 More information about link.hub: <https://linkhub.ch>

36 More information about the Research Data Connectome: <https://www.switch.ch/about/open-science>

37 More information about the Data Science Competence Center: <https://www.bfs.ad-min.ch/bfs/en/home/dscc/dscc.html>

38 This depends on the type of data; for raw data of experimental measurements, modifications are naturally not permitted.

In its intended scope, the ORD Action Plan goes beyond the work required to prepare a PgB³⁹, as the ORD Action Plan is the result of a complex collaboration between the ETH Domain, the SNSF, the Swiss Academies of Arts and Sciences, and swissuniversities.

1.6. Structure of the ORD Action Plan

The considerations described above shaped the ORD Action Plan, which is structured as follows: (1) Introduction, (2) Governance, (3) Objectives (4) Funding, (5) Schedule. The four objectives formulated in the ORD Strategy are now translated into four corresponding action areas (chapter 3):

- Action Area A: Support researchers and research communities in imagining and adopting ORD practices
- Action Area B: Development, promotion, and maintenance of financially sustainable basic infrastructures and services for all researchers
- Action Area C: Equipping researchers for ORD skills development and exchange of best practices
- Action Area D: Building up systemic and supportive conditions for institutions and research communities

The Strategy Council (see chapter 2) assumes overall leadership for setting the general agenda, ensuring that principles of integrity are upheld, and that goals are met when implementing the Action Plan; the Strategy Council is also responsible to coordinate activities between the action areas.

Each action area contains measures and action lines to realise the vision and objectives of the ORD Strategy. In the interest of guaranteeing coordination between measures, primary ownership and funding responsibilities are assigned for each action line. The primary owner of an action line takes the leading role in implementation while nevertheless respecting and safeguarding the autonomy of the institutions. The key actors⁴⁰ responsible for funding certain action lines act autonomously, but also duly consider the need to coordinate their funding and actions with other relevant actors and in dialogue with the primary owner. Depending on the type and amount of funding an action line requires, different combinations of funding sources and thus actors responsible for funding are determined (see chapter 4 for more on funding).

For each action line, the current ORD Action Plan (Version 1.0) therefore assigns overall primary ownership and the funding responsibility for the 2021–2024 ERI period. The allocated costs for the measures are to be read as estimations; evolving needs will make changes necessary. The amounts for 2022 to 2024 named in the Action Plan represent contributions on a federal level (ORD Funding from the ETH Domain, the ORD Funding by the SNSF for FORS, DaSCH, Biomedicine, Swiss Biobanking Platform and ICOS, ORD Funding by the Swiss Academies of Arts and Sciences, and the current proposal for the PgB Open Science I, Phase B – ORD by swissuniversities): The ORD Action Plan therefore contains no cantonal or in-kind contributions and the total amount indicates an estimation of the overall costs of the action plan on the federal level.

The action lines are presented in varying degrees of detail, as the key actor responsible for an action line is free to define the exact steps in its planning and internal processes, which are then coordinated with other key actors. The proposed plans are further detailed and coordinated among the key actors in the Coordination Group (see chapter 2).

The ORD Action Plan will be updated in 2022 (after the ETH Board, the Swiss National Science Foundation, swissuniversities, and the Swiss Academies of Arts and Sciences have submitted their strategic plans for the 2025–2028 period); the Strategy Council bears responsibility for this procedure (Version 2.0).

³⁹ Federal project contributions, in the following PgB, are federal funds that are linked to a specific project.

⁴⁰ Key actors are the following organisations: swissuniversities (specifically DeLOS), the SNSF, the ETH Domain, the Swiss Academies of Arts and Sciences, the universities, the universities of applied sciences and arts, and the universities of teacher education (see also chapter 2.2).

2. Governance

There are several challenges to shaping the Swiss ORD landscape. With regard to the objectives of consolidation and the strategic development of ORD infrastructures and services, no currently existing institution or body in the Swiss higher education area is authorised to make binding declarations and decisions for the Swiss research and higher education area. The ORD Strategy therefore proposes instituting a Strategy Council to steer the development of the Swiss ORD landscape:

The ORD Strategy Council is constituted in such a way that the key actors responsible for steering the development of the Swiss ORD landscape have balanced representation. Members of the Council are senior officeholders in their respective institutions. Their status and expertise enable them to generate a common understanding of how to coordinate and act together while also permitting them to make reliable and binding statements on behalf of their institutions or to represent a robust position for a group of institutions. To assess the landscape, to negotiate and consolidate, and to prepare its decisions, the Council can issue commissions to third parties.⁴¹

In order to strategically develop and consolidate an ORD landscape based on a shared vision and rooted in the common interests of the diverse Swiss higher education and research institutions, the Strategy Council aims to advance ORD practices in Switzerland, both in the national and international context, and it supports the leadership ambitions of the individual Swiss research communities at the international level. The Strategy Council is, however, not conceived as an executive body; it derives its legitimacy solely through its will to coordinate ORD practices. As such, the Strategy Council is not a surrogate for the higher education and research institutions or for public funding bodies, be they the federal government, the cantons, the Swiss Academies of Arts and Sciences, swissuniversities, the ETH Board, or the SNSF. The governance of the ORD Action Plan will be evaluated to foster trust in the newly established system and to make changes if necessary.⁴² The Strategy Council undertakes to report on a regular basis to the key actors and to inform the SERI and Swiss Conference of Higher Education Institutions (SHK).

2.1. ORD Strategy Council

Legal form and composition of the Strategy Council

The Strategy Council comprises nine members who represent the key actors; ideally, the DeIOS president numbers among the university representatives:

- 2 members designated by the ETH Domain
- 2 members designated by the universities (without ETHZ and EPFL)
- 2 members designated by the universities of applied sciences and arts
- 1 member designated by the universities of teacher education
- 1 member designated by the SNSF
- 1 member designated by the Swiss Academies of Arts and Sciences

The legal form of the Strategy Council is a simple partnership⁴³ that is formalised in a contract between swissuniversities, the SNSF, the ETH Board, and the Swiss Academies of Arts and Sciences. The contract defines the basic parameters of the simple partnership. The by-laws, to be issued by the Strategy Council, will set out in detail all responsibilities, procedures, processes, and financial liabilities.

⁴¹ swissuniversities. (2021). *Swiss National Open Research Data Strategy* (https://www.swissuniversities.ch/fileadmin/swissuniversities/Dokumente/Hochschulpolitik/ORD/Swiss_National_ORD_Strategy_en.pdf), p. 10.

⁴² A first evaluation will take place towards the end of 2022 or in the first quarter of 2023.

⁴³ The expert opinion commissioned to decide on this issue determined that a simple partnership was the most effective legal form. Under Swiss law, a simple partnership involves a contract in which two or more parties agree to unite their efforts and/or their resources to achieve a common goal (Swiss Code of Obligations, articles 530 to 551).

Organisation of the Strategy Council

The Strategy Council constitutes itself. It appoints a chairperson and determines the duties and responsibilities of its members not covered in the contract.

The Strategy Council endeavours to reach decisions by consensus, a principle that is central to its legitimacy. Nevertheless, the Council sets out procedural rules to remain capable of action when a consensus cannot be reached.

Coordination Group

To fulfil its role, the Strategy Council relies on a support structure in the form of the Coordination Group, which is ideally made up of personal representatives or staff of Strategy Council members; it should also be open to representatives from other organisations.⁴⁴ The Coordination Group operates under the direction of the Strategy Council and is responsible for preliminary strategic work on behalf of the Strategy Council. Duties include preparing the meetings of the Strategy Council, supporting implementation of the Action Plan, coordinating actions with the sounding boards, and guaranteeing that all key actors are involved (e.g. communication flow). As a body, the Coordination Group has no legal status nor does it have a centralised structure (i.e. no centralised secretariat). The institutions finance the work of their coordinators. The decentralised approach ensures that responsibility for implementing the ORD Strategy is distributed across all key actors within the narrowest possible structure.

Sounding boards

Two permanent sounding boards are created to facilitate deliberations and decision-making processes in the Strategy Council. The Strategy Council is responsible for determining the composition, size, function, and scope of the sounding boards. The members of the sounding boards do not sit on the Strategy Council; rather, they are researchers and specialists who provide their expertise to further develop the Swiss ORD landscape.

In the interest of accommodating and acknowledging the needs and experiences of experts in the field, one sounding board consists of researchers; this board is administered by the Swiss Academies of Arts and Sciences on behalf the Strategy Council. The second sounding board is responsible for grouping service providers involved in the operational implementation of ORD services.

2.2. Stakeholders in the Action Plan: tasks, roles, and responsibilities

The task assigned by SERI to consolidate and strategically develop the ORD landscape calls for an innovative collaboration between ERI institutions. Although their role in ORD governance may evolve and change in the future, the following tasks, roles, and responsibilities are assigned to stakeholders in the initial phase.

Key actors in ORD governance

Tasks	Are represented in the Strategy Council and participate in the Coordination Group
Competences/ roles	Implement the ORD Strategy and Action Plan
Responsibilities	Guarantee the coherence of ORD-related actions taken by institutions with the ORD Strategy

44 The Action Plan defines "coordinator" as personal representatives or staff of the Strategy Council members or of another institution familiar with the subject area.

ORD Strategy Council

Tasks	Consolidate and strategically develop the ORD landscape
Competence/role	Coordinate and steer the development of the Swiss ORD landscape. It guarantees the coherence of the development of the ORD Strategy and Action Plan and is responsible in the sense of primary ownership for certain action lines. The Strategy Council has no overriding authority or legitimacy other than that conferred by the conviction of all institutional actors that coordination in planning and implementation is ultimately in the interest of all institutions and of the entire Swiss research community
Responsibilities	Guarantee the development of ORD research practices; ensure the coherent distribution of ORD infrastructures and services, interoperability, and the connection to national and international ecosystems; optimise funding use by fostering collaboration and synergies, by sharing of infrastructures and services, and by avoiding duplicate infrastructures and services if no verifiable added value exists

ORD Coordination Group

Tasks	Implement measures in the Action Plan assigned to the Strategy Council; prepare proposals for decisions to be submitted to the Strategy Council; supervise external work on behalf of the Strategy Council; prepare meetings and documentation; interact with groups responsible for external commissions; organise management duties (administrative and otherwise) for the Strategy Council, negotiation teams, and sounding boards
Competence/role	Make decisions necessary to ensure the advancement of issues and progress of projects commissioned by the Strategy Council; independently assign work to expert groups
Responsibilities	Monitor and document the progress of projects commissioned by the Strategy Council; implement Strategy Council decisions; ensure conformity of all Strategy Council processes with regulatory requirements; secure the necessary information flows and facilitate participation processes

ORD Sounding Board Researchers

Tasks	Advise the Strategy Council or ORD Coordination Group
Competence/role	Respond to questions and issue recommendations
Responsibilities	Guarantee the participation of research communities in the further development of the Swiss ORD landscape

ORD Sounding Board Service Providers

Tasks	Advise the Strategy Council or ORD Coordination Group
Competence/role	Respond to questions and issue recommendations
Responsibilities	Guarantee the participation of service providers in the further development of the Swiss ORD landscape

2.3. Financial organisation

The Strategy Council requires sufficient resources to carry out its work, which includes tasks such as commissioning external experts with compiling reports and conducting monitoring. Because the 2021–2024 ERI budget has already been approved by the Swiss parliament, external assignments and various related tasks for the 2022–2024 period (e.g. preparation for consolidating the ORD landscape, identification of desiderata in the landscape) are to be financed via the programme PgB Open Science I, Phase B – ORD, thus ensuring that the Strategy Council can begin its work as soon as possible. The ORD Action Plan is designed to ensure that the funding in the transitional phase has no influence on the independence of

the Strategy Council and that all regulatory requirements are met. It is important to note that the ETH research institutes, the Swiss Academies of Arts and Sciences, and the SNSF are not eligible for PgB credits.

Action lines

The following action lines are proposed to implement the governance model in 2022–2024:

No.	Action lines	Primary ownership	Identified funding responsibility
G1.1	Establish and operate the Strategy Council, the Coordination Group, the sounding boards, and (if applicable) negotiation team(s)	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD
G1.2	Build up, maintain, and facilitate the ORD Sounding Board Researchers	Strategy Council (overall lead) A+	swissuniversities: PgB Open Science I, Phase B – ORD
G1.3	Evaluation of governance	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD

Total estimated 2022–2024 contribution for the development of the governance model and further transitional funding from PgB Open Science I, Phase B – ORD: 6,480,000 Swiss francs.

3. Objectives

The ORD Strategy defines four objectives that translate into four action areas in the Action Plan. Although the separation into action areas implies a clear differentiation, the objectives are in fact related: the Strategy Council is responsible for overall coherence and synergetic implementation, while ownership and funding of the action areas are interconnected.

The action areas are further broken down into measures, and then again into individual action lines. The primary ownership of each measure and action line on a political level is assigned to a single organisation and is distinguished from financial responsibilities. The label “primary ownership” describes the responsibility for the overall coordination and implementation of the measure or action line. Open communications and a collaborative approach are central to realising the vision of the ORD Strategy.

The first two action areas address financing ORD practices. Action Area A is concerned with funding ORD through competitive, research-focused projects; Action Area B deals with creating long-term funding models for ORD services and infrastructures, promoting consolidation thereof, and managing the costs.

Action Area C focuses on raising awareness for ORD best practices in the scientific community and promoting Research Data Management (RDM) education as well as ORD training.

In addition to addressing incentives and rewards for researchers, Action Area D is also concerned with the legal and ethical aspects surrounding ORD practices and international alignment.

3.1. Action Area A: Support researchers and research communities in imagining and adopting ORD practices

Action Area A is driven by the demands of researchers who take a collaborative approach to research and whose overall research culture is shaped by developing and adopting novel ORD practices. As such, Action Area A is demand-driven, whereas the other action areas are geared to supporting researchers through services, infrastructure, information, training, and legal advice.

Action Area A comprises a single measure designed to support researchers and research communities in developing and adopting ORD practices. It acknowledges that the willingness and capacity of researchers to integrate ORD into their everyday research practice, projects, and collaborations are of critical importance. The specific aim of Action Area A is to create and promote new disciplinary and interdisciplinary open data communities and to foster the leadership skills of Swiss researchers in these communities.

3.1.1. Measure A1: Provide bottom-up support to promote excellence in ORD practices

Measure A1 primarily addresses the needs of researchers and, by extension, research communities by providing ORD grants. The measure should be understood in a context of a community building approach. This means that Measure A1 is mainly concerned with the needs of research communities, keeping the strategic development of the ORD landscape in mind in order to guarantee a targeted and efficient allocation of the funds.

Measure A1 in particular focuses on ORD practices that facilitate or enrich collaboration within a community, or that are at the basis of a shared research agenda. As a researcher-driven measure, the academic quality of the (collective) research derived from an ORD practice is an essential part of the project evaluation; this aspect includes how a community engages with ORD. When appropriate, the project evaluation also considers the broader impact outside science. Measure A1 may include criteria for integrating and consolidating ORD practices with existing services and infrastructures. It must also remain flexible enough to

accommodate a broad range of ORD practices in the various disciplines and research institutions as well as in communities with different levels of ORD maturity⁴⁵.

The measure supports the academic development and improvement of ORD services and infrastructures inasmuch as projects can be evaluated by the criteria above. However, neither promotion of their general development nor covering operational costs (which are addressed in Action Area B) is the aim.

Measurable objectives

- Increase the number of Swiss researchers at all academic levels engaging in data communities; explore innovative ORD-driven research agendas; develop ORD tools and expertise
- Secure the participation of researchers working within mature ORD communities as well as those exploring the potential of ORD practices in new areas and disciplines
- Advance internationally recognised ORD research leaders and flagship ORD research projects in Switzerland
- Increase reuse and integration of data, avoid duplicates

Primary ownership and responsibility for funding:

- In the long term, it is proposed that primary ownership and funding responsibility are assigned to the SNSF as a central body in the Swiss research landscape
- During the transitional phase, the ETH Domain and swissuniversities fund projects in their respective areas

Action lines

The following action lines are proposed to implement Measure A1 in 2022–2024:

No.	Action lines	Primary ownership	Identified funding responsibility
A1.1	Conceptualise a broad national funding measure for exploratory ORD projects; respect needs of different disciplines and HEIs; enable communities at different levels of maturity to advance ORD practices without duplicating existing measures/schemes	SNSF potentially assumes primary ownership	
A1.2.1	Provide ORD grants to (a) support and develop ORD practices that primarily benefit researchers, and (b) help researchers develop ORD practices	swissuniversities and ETH Domain	swissuniversities: PgB Open Science I, Phase B – ORD ETH Domain
A1.2.2	By extension, provide ORD grants to research communities in a community building and institution building approach ⁴⁶	swissuniversities and ETH Domain	swissuniversities: PgB Open Science I, Phase B – ORD ETH Domain

Total estimated federal contribution for 2022–2024 by the key actors: 20,000,000 Swiss francs (10,000,000 Swiss francs stem from PgB Open Science I, Phase B – ORD).

⁴⁵ The Action Plan currently has the following understanding of “ORD maturity of a research community”: the maturity of ORD practices varies greatly between fields, disciplines, and within research/data communities. The nature of data management procedures is also vastly different. For example, the challenges facing disciplines that seek to exploit petabytes of highly structured data per year are very different from research fields that consolidate smaller, yet highly heterogeneous datasets. The Strategy and Action Plan understand “maturity” as a description of the way of interacting – the literacy so to speak – as well as the integration of RDM knowledge in bachelor’s, master’s, and PhD programmes, and the access to ORD infrastructures and services within research communities.

⁴⁶ Efficient ORD management relies on supportive services within the institutions of the research communities (e.g. metadata standards, interoperability). As a general rule, research communities applying for funding under this measure will have to confirm this support by submitting a letter of intent formulated by their respective institution. Long-term funding for ORD infrastructure and services is a central goal of the ORD Action Plan: Measure B2 describes five different pathways for long-term funding for projects, infrastructures, and services that will be managed by the Strategy Council (see chapter 3.2.2).

3.2. Action Area B: Development, promotion, and maintenance of financially sustainable basic infrastructures and services for all researchers

Action Area B aims to ensure that researchers have reliable and easy access to relevant ORD services and infrastructures⁴⁷ in a way that is cost-effective, that avoids duplication, and that can be managed by the ERI actors involved. Action Area B creates coherent conditions for developing, operating, and seeking funding for ORD services and infrastructures to benefit institutions and ORD service providers across the entire Swiss ERI landscape. These conditions enable ERI actors to plan their financial commitments and be confident that the services and infrastructures maintained accommodate researchers' needs, are interoperable and internationally connected, and do not duplicate other efforts.

In its first aspect, Action Area B outlines the processes for creating a consolidated and strategically developed ORD landscape from 2022 onwards, while also defining how future needs analyses regarding ORD infrastructures and (community) services are to be conducted. To achieve the objectives, Swiss higher education and research institutions are called on to assume additional responsibilities in supporting the financial, technical, and organisational structures needed to secure long-term operation of ORD infrastructures and services.

The second aspect of Action Area B concerns defining and establishing ORD support structures. One key feature is promoting the role of data stewards at Swiss higher education and research institutions, including the development and definition of effective models to anchor and connect these stewards; this latter aspect is an important part of establishing and consolidating the ORD landscape in Switzerland.

3.2.1. Measure B1: Evaluate the Swiss ORD landscape with regard to the consolidation and strategic development of services and infrastructures

Measure B1 aims to first analyse and evaluate the current landscape with a view to consolidating the strategic development of the national ORD landscape, and to identifying those infrastructures and services that should be maintained beyond the pilot phase. This process requires a collaborative approach that nonetheless respects the autonomy of the institutions and refrains from taking decisions that are not supported by the key actors. The Strategy Council assumes ownership of the process and consults with the sounding boards in its decision-making processes.

To prepare the consolidation and strategic development of ORD services and infrastructures, the Strategy Council may commission on a regular basis a comprehensive report on the ORD landscape; it may also charge negotiation teams with preparing Strategy Council decisions related to consolidating existing basic infrastructures and services or existing community-specific infrastructures and services. Another area of work deals with identifying gaps in the ORD landscape and deciding where a strategic development is necessary.

In the annex to the ORD Agreement, SERI required clarification of the Swiss Data Science Center's role within the Swiss ORD landscape; the resulting Analysis Report, however, provides no conclusive answer to this question.⁴⁸

In the interest of consolidating the ORD landscape, Measure B1 advises commissioning a preliminary study that, based on practices at the Swiss Data Science Center and SWITCH, describes how services can contribute to and support the ORD landscape, with all services

⁴⁷ The ORD Action Plan currently understands "ORD Infrastructure" as shared computer facilities or software platforms whose primary purpose is to support ORD practices; by contrast, an "ORD service" is a resource fostering ORD practices that is provided to researchers as a service, including access to ORD Infrastructures. Other important services are data stewardship, technical and administrative support for ORD, software development, data curation, and training.

⁴⁸ See Jaekel, M., Biniossek, C. & Betz, D. (2020). *National Open Research Data Strategy: Analysis Report based on Survey and Workshop Panels*. https://www.swissuniversities.ch/fileadmin/swissuniversities/Dokumente/Hochschulpolitik/ORD/20201123_ORD_Grundlagenbericht_final_swu_.pdf

being assessed for their potential to become a service of foremost national relevance.⁴⁹ The preliminary study will be submitted to the Strategy Council and will potentially provide the basis for developing suitable criteria for further defining ORD infrastructures and/or services of foremost national relevance. The preliminary study is supplementary to the proposed action lines dealing with the formation of the negotiation teams described above.

Objectives

- Ensure the Strategy Council has access to all requisite information sources and negotiation capacities
- Identify which ORD infrastructures and services are of foremost national relevance
- Consolidate the ORD landscape in collaboration with the relevant stakeholders
- Collaboratively decide where new infrastructures and services are necessary

Primary ownership and responsibility for funding

- The Strategy Council assumes primary ownership and the responsibility for funding Measure B1
- In the long term, the Strategy Council decides upon a funding mechanism
- In the transitional period, swissuniversities funds certain assignments of the Strategy Council for the 2022–2024 period through the PgB Open Science I, Phase B – ORD

Action lines

The following action lines are proposed to implement Measure B1 in 2022–2024:

No.	Action lines	Primary ownership	Identified funding responsibility
B1.1	An independent pilot study of selected providers of services and infrastructures identifies how and what they can contribute to the ORD landscape	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD
B1.2	Consolidate existing basic infrastructures and service and existing community-specific infrastructures and services	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD
B1.3	Commission a report to establish, operate, and specify processes for identifying new needs for infrastructures and services	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD

Total estimated federal contribution for 2022–2024 through the PgB Open Science I, Phase B – ORD: 745,000 Swiss francs.

3.2.2. Measure B2: Provide researchers with long-term ORD services and infrastructures

The Strategy Council manages five different pathways for long-term funding for projects, infrastructures, and services. In principle, funding is allocated only to projects that have a long-term funding scheme. Each pathway can either stand alone or be combined with one or more other pathways.

To support the development of ORD, it is important that researchers exploring ORD practices are able to rely on readily available ORD infrastructures and services. The first four pathways include action lines to offer long-term support to researchers working on major ORD projects, infrastructures, and services, both in terms of financing and in terms of information. The fifth pathway addresses long-term funding for projects, infrastructures, and services of foremost national relevance, which are covered in Measure B3. As such, the various

⁴⁹ The ORD Action Plan currently understands “ORD (community-) infrastructures or services of foremost national relevance” to be infrastructures or services that have the capacity to influence the structural development of ORD in Switzerland. These provide infrastructures or services to a significant proportion of researchers in Switzerland across communities (transversal services) or to a large research community in Switzerland, or they ensure that a community based in Switzerland achieves international excellence and impact.

pathways imply a distinction between important infrastructures and services and those (community) infrastructures that are of foremost national relevance. This is a decisive factor when securing long-term funding for important services for a significant proportion of researchers in Switzerland across communities (transversal services), services for a large community in Switzerland, and those services that enable a community based in Switzerland to attain international excellence and impact.

The funding pathways chosen should refer to the overall consolidation and coordination resulting from activities in Action Area B1.

Pathways for long-term financing of ORD infrastructures and services

1. Swiss higher education and research institutions: an HEI consortium or an individual institution assumes responsibility for financing ORD infrastructures or services on behalf of a community (for example, the Linguistic Research Infrastructure LiRI at the University of Zurich). It is therefore important to foster capacity building to aide communities and researchers in gaining the support of a national consortium or a flagship institution and to provide an ORD infrastructure or service as a common good.
2. International research consortiums: the ORD infrastructure or service is operated as part of an international research consortium that is funded through membership fees or that has other cost recovery mechanisms. It is central to provide funding for HEIs, research communities, or researchers to join international consortiums for ORD infrastructures and services, thus creating opportunities for attracting international consortiums and grants for ORD infrastructures or services
3. Technology transfer: a private or public entity operates the ORD service or infrastructure and recoups costs through fees or other sources of funding. In the case of private entities, the institution may be for-profit or non-profit, closely connected to academia, or a commercial business. This model has the advantage of enabling access to other potential funding streams by creating links to additional customers. Public funding for ORD projects (similar to publicly funded archives or libraries) must ensure the same goal of long-term funding. It is necessary to provide information and support to researchers on financing ORD infrastructures and services via a private or public entity.
4. Financing through research grants: infrastructure funding can be partially secured in the context of research grants and complementary to other pathways. Communities self-fund ORD infrastructures or services (including open-source development) by charging user fees that may be covered through research grants or HEI research budgets. Long-term financing depends on a critical mass of users. This pathway is flexible: the funding may be informal and stem from numerous smaller grants within a community, or the financing may take a more structured form and stem from large, community-wide grants (NCCR grants, for example). In either case, this pathway is defined by ORD infrastructures presenting a predefined cost model that can be covered by a grant. It is planned that the Strategy Council will monitor how costs for developing ORD practices and expertise are included in research proposals; the Strategy Council will also monitor and periodically publish a report on Swiss academic spin-offs/non-profits offering commercially oriented ORD infrastructures or services, schemes, and ORD philanthropy.
5. Projects of foremost national relevance:⁵⁰ in this pathway, ORD services and infrastructures of foremost national relevance that cannot be otherwise funded are given access to long-term funding (in the form of an operational budget). It is important that management of these critical ORD infrastructures and services be coordinated and that value-for-money be given priority.

⁵⁰ The pathway for services, infrastructures, or projects of foremost national relevance is further addressed in Measure B3.

Objectives

- Secure long-term funding for ORD services and infrastructures with the aim of facilitating access for researchers
- Ensure that ORD infrastructure and service providers know how they can obtain operational funding
- Ensure that relevant actors support all five pathways through appropriate funding mechanisms

Primary ownership and responsibility for funding

- The Strategy Council assumes primary ownership of Measure B2
- The ETH Domain and swissuniversities may fund activities, in coordination with the Strategy Council

3.2.3. Measure B3: Ensure long-term funding of ORD infrastructures and services of foremost national relevance

While Measure B1 addresses the consolidation of the ORD landscape, and Measure B2 defines support options and describes funding pathways for developing new ORD infrastructures and services, Measure B3 targets the consolidation and strategic development of the Swiss ORD landscape with regard to infrastructures and services of foremost national relevance. While the ORD Strategy Council is responsible for implementing Measure B3, all decisions it takes respect the principle of institutional autonomy. The aim of Measure B3 is to allocate cost-effective, long-term funding for ORD services and infrastructures of national significance when they require this type of support. Action Line B3.2 consolidates the investments that have been requested by the key actors in their respective strategic plans for the 2025–2028 ERI period. The complex relationships and interdependencies between different political and funding processes (ERI message, Roadmap for Research Infrastructures,⁵¹ and the education strategies and funding goals of each of the cantons⁵²) are assessed with the aim of making coherent strategic decisions for the future ORD landscape.

Objectives

- Ensure the strategic development of new infrastructures and basic services under consideration of existing international infrastructures and in conformity with the requirements for research practice
- Ensure that infrastructures made available to researchers are interoperable and cover all phases of the data lifecycle

Primary ownership and responsibility for funding

- The Strategy Council assumes primary ownership of Measure B3
- Responsibility for funding lies with the key actors; to promote alignment between the Strategy Council and the key actors, and in the interest of the consolidation and strategic development of the ORD landscape, projects may be funded by the ETH Domain, swissuniversities, and other key actors

⁵¹ Information on the Roadmap for Research Infrastructures: <https://www.sbf.admin.ch/sbf/en/home/research-and-innovation/research-and-innovation-in-switzerland/swiss-roadmap-for-research-infrastructures.html>

⁵² See chapter 4 Funding.

Action lines

The following action lines are proposed to implement Measure B3 in 2022–2024:

No.	Action lines	Primary ownership	Identified funding responsibility
B3.1	Pathway 5: regular monitoring of the national and international ORD landscape	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD
B3.2	Pathway 5: long-term funding based on decisions by the ORD Strategy Council for ORD infrastructures and services of foremost national relevance	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD ETH Domain SNSF A+ Universities, universities of applied sciences and arts, universities of teacher education

swissuniversities

Total estimated federal contribution for 2022–2024 by the key actors: 80,300,000 Swiss francs (3,800,000 Swiss francs stem from PgB Open Science I, Phase B – ORD).

3.2.4. Measure B4: Provide access to ORD services and infrastructures and improve interoperability

Data management for ORD generally requires researchers to integrate multiple ORD services and infrastructures into their research; interfaces with self-developed code or databases may also be needed to accommodate different ORD needs and phases of the data lifecycle. In addition, an increasingly important type of data-driven research builds on the capacity to integrate data and analytics from multiple sources, regardless of whether the application is big data or interdisciplinary research.

Although all-in-one, custom-built services can be a solution in certain cases, they are not generally considered to be the way forward. Instead, it is believed that researchers will increasingly rely on services that are designed to facilitate access to other services and infrastructures and that help to integrate the data and create workflows in line with an individual researcher's own needs; the Swiss Biobanking Platform is an example of this type of service. It is also believed that these kinds of platforms will help with the reuse and reproducibility of data, as a consolidated approach helps to lengthen the entire data lifecycle, including collection methods, analysis, and multiple data sources.

It is also essential that general interoperability of ORD services and infrastructures be improved with the aim of mainstreaming coordinated and aligned ORD platforms – the Swiss Data Science Center, for instance – and in order to support data-driven research that requires integration of multiple services.

Objectives

- Support and incentivise service providers and infrastructure operators, notably those supported within the framework of Action Area B in implementing technical standards and best practices for interoperability
- Include criteria for interoperability and accessibility of research data in the evaluation of research projects that develop new ORD practices and/or operate ORD services and infrastructures

Primary ownership and responsibility for funding

- The Strategy Council assumes primary ownership for Measure B4
- Responsibility for funding lies with the key actors; to promote alignment between the Strategy Council and the key actors, and in the interest of the consolidation and strategic development of the ORD landscape, projects may be funded by the ETH Domain and swissuniversities in their area of responsibility

Action Lines

In 2022–2024, action lines for Measure B4 will be developed on the basis of the action lines in Measure B3; long-term funding decisions taken by the Strategy Council will consider interoperability and accessibility requirement and associated costs.

3.2.5. Measure B5: Professionalisation of ORD specialists and related services

A further aspect of Action Area B is to define, establish, and promote the role of ORD experts – data stewards, data scientists, IT specialists, and other ORD support professionals – at Swiss higher education and research institutions and to determine effective models for anchoring ORD professionals in these institutions.

ORD expertise encompasses the management and monitoring of an organisation’s data assets with the aim of providing access to high-quality data. As such, it represents the link between researchers and support units in the form of IT, libraries, and infrastructure providers. ORD expertise is discipline- or even community-specific, and it requires that researchers as well as ORD service providers and data stewards have mastered a certain skillset, making Research Data Management training essential. Each HEI is called on to define the relationship between institutional RDM services and data stewards so that researchers receive effective support in managing their research data (creating efficiencies for researchers); examples include Open Science/ORD competence centres at the individual HEIs. Because cross-institutional collaboration is an intrinsic part of data stewardship and because international collaboration is a key aspect of Swiss data stewardship,⁵³ it is recommended that best practices applicable to all Swiss academic and research institutions are formulated.

Objectives

- Support HEIs in developing Open Science/ORD competence centres
- Define, establish, and promote the role of data stewards at Swiss academic institutions and determine effective models to anchor data stewards at HEIs
- Create networks of data stewards
- Support collaboration (and specialisation) between RDM services, service centres, and/or data stewards at institutions and clarify these roles within HEIs
- Ensure data curation and data management at research institutions
- Swiss-wide best practices and standards for various ORD consultant roles are established
- ORD expertise (e.g. data stewardship) as a career path is established by 2028

Primary ownership and responsibility for funding

- swissuniversities assumes primary ownership for Measure B5
- swissuniversities funds action lines for the 2022–2024 period through the programme PgB Open Science I, Phase B – ORD.

Action lines

The following action lines are proposed to implement Measure B5 in 2022–2024:

No.	Action lines	Primary ownership	Identified funding responsibility
B5.1	Establish and maintain/update Swiss-wide best practices of ORD expertise	swissuniversities	swissuniversities: PgB Open Science I, Phase B – ORD
B5.2	Promote and incentivise data stewardship/ORD specialists at all research institutions in Switzerland; incentivise the hiring of Open Science experts, data stewards, and other experts to build competence centres at HEIs and promote cooperation between HEIs by providing start-up funding	swissuniversities	swissuniversities: PgB Open Science I, Phase B – ORD

53 The ORD Action Plan currently understands “data stewardship” in a broad sense and other key roles such as data curators, data analysts, and open-source tools providers must be included in the conceptualisation.

No.	Action lines	Primary ownership	Identified funding responsibility
B5.3	Establish networks for ORD experts (e.g. data stewards), if possible encompassing other experts (e.g., data curators)	swissuniversities	swissuniversities: PgB Open Science I, Phase B – ORD
B5.4	Establish ORD expertise (e.g. data stewardship) as an independent career path at HEIs by 2028	swissuniversities	swissuniversities: PgB Open Science I, Phase B – ORD

Total estimated federal contribution for 2022–2024 through the PgB Open Science I, Phase B – ORD: 6,870,000 Swiss francs.

3.3. Action Area C: Equip researchers for ORD skills development and exchange of best practices

Action Area C addresses supporting researchers in their ability to practice ORD. A prerequisite to establishing ORD in research practice is that researchers have mastered the requisite skills. And while researchers are responsible for developing their own ORD practices and capacities, it is important that higher education and research institutions support them by providing relevant services and training opportunities in a wide range of skills, including technical skills in data management, or RDM skills, knowledge of the legal provisions, and understanding of the principles of research integrity; moreover, it is important to address a broad audience of students, instructors, research leaders, and administrators, and to consider discipline-specific aspects.

RDM skills form an integral part of scientific practice. In the interest of establishing and passing on best practices, it is crucial to strengthen knowledge exchange among research communities through the creation of networks between institutions and between data stewards or similar positions at higher education and research institutions. Intensifying collaboration and coordination among communities, institutions, and service providers in addition to developing shared and complementary services that are tailored to a community's needs are some of the necessary steps towards supporting skills development and knowledge exchange.

3.3.1. Measure C1: Raising awareness of FAIR principles and ORD practices in the scientific community

Raising awareness among researchers about the benefits stemming from ORD practices and FAIR principles is crucial and should be supported through systematic education and training. To facilitate these processes, networking among data stewards and other experts (see Measure B5), and ORD advocacy programmes are necessary, as is the exchange of best practices and participation in international networks.

Objectives

- Raise awareness among researchers across disciplines of the general and political expectations related to Open Science, and detail the implications of ORD in their specific research area
- Educate and train researchers in objectively assessing whether and in what ways ORD practices have the potential to enhance their research and benefit their career
- Facilitate peer-based ORD support for researchers
- Ensure adequate representation of Swiss researchers in international forums, including disciplinary and community-specific settings

Primary ownership and responsibility for funding

- The Swiss Academies of Arts and Sciences and swissuniversities are assigned primary ownership for Measure C1
- Responsibility for funding lies with the primary owner
- Additionally, swissuniversities funds action lines through PgB Open Science I, Phase B – ORD for the transitional 2022–2024 period

Action lines

The following action lines are proposed to implement Measure C1 in 2022–2024:

No.	Action lines	Primary ownership	Identified funding responsibility
C1.1	ORD advocacy programmes are established on both a national and institutional level, including an outreach campaign to provide researchers with easily accessible and regularly updated information and resources as well as information on relevant international and national ORD initiatives	A+	swissuniversities: PgB Open Science I, Phase B –ORD
C1.2	Create and foster long-term networks (e.g. permanent working groups or Citizen Science networks) of research communities with the aim of building a common understanding of best practices and methods leading to effective ORD practices and standards	A+	swissuniversities: PgB Open Science I, Phase B –ORD
C1.3	Mobilise and facilitate participation in relevant international initiatives	swissuniversities	swissuniversities: PgB Open Science I, Phase B –ORD

Total estimated federal contribution for 2022–2024 through the PgB Open Science I, Phase B – ORD: 645,000 Swiss francs.

3.3.2. Measure C2: Training researchers for RDM and ORD practices

Research Data Management skills represent a key element in promoting and facilitating the creation of ORD. It is therefore important that academic and research institutions, in consultation with research communities, develop comprehensive RDM/ORD education and training programmes for students and researchers. To ensure the development of best practices, systematic exchanges between instructors/trainers, researchers, and relevant experts (ORD consultants, data stewards, library staff, and other support staff) are recommended. It is also important that people who no longer have access to academic teaching/training are able to acquire RDM/ORD skills through a range of continuing education courses.

Objectives

- Institutions support their researchers with relevant services and training opportunities for building their own ORD practices and capacities
- Training for RDM and for ORD practices is a required part of the curricula at all levels of higher education (bachelor's to doctoral programmes) and in continuing education

Primary ownership and responsibility for funding

- Primary ownership of and responsibility for funding Measure C2 lies with swissuniversities
- The ETH Domain may fund activities in its institutions in coordination with swissuniversities

Action lines

The following action lines are proposed to implement Measure C2 in 2022–2024:

No.	Action lines	Primary ownership	Identified funding responsibility
C2.1	Projects developing good practices for RDM training at HEIs in consultation with research communities	swissuniversities	swissuniversities: PgB Open Science I, Phase B – ORD
C2.2	RDM training is included as a required element in all curricula, from bachelor's to doctoral programmes	swissuniversities	swissuniversities: PgB Open Science I, Phase B – ORD
C2.3	Framework for systematic communication between trainers and data stewards to facilitate professionalisation and the exchange of experiences, best practices, needs, and to develop training modules	swissuniversities	swissuniversities: PgB Open Science I, Phase B – ORD

swissuniversities

Total estimated federal contribution for 2022–2024 by the key actors: 1,650,000 (650,000 Swiss francs stem from PgB Open Science I, Phase B – ORD).

3.4. Action Area D: Building up systemic and supportive conditions for institutions and research communities

In the first three action areas, the goal is to create the framework for a consolidated, strategically developed ORD landscape with a coherent ORD ecosystem that facilitates access for researchers and addresses their need for education and training. Action Area D is concerned with the need to create further supportive structures and to incentivise the use and development of ORD best practices. When building a coherent ORD landscape and ecosystem, it is essential that systemic issues concerning the needs of the federal government and cantons, higher education and research institutions, and the researchers themselves are addressed, including legal and ethical aspects of ORD. As described in chapter 1.3, Open Science and ORD are part of an international movement, and alignment with international standards and policies is a cornerstone of the Swiss ORD landscape. Moreover, ensuring information flows among all higher education and research institutions forms a central part of a cohesive framework.

3.4.1. Measure D1: Incentives and rewards

To implement ORD, a multipronged approach to rewarding researchers for adopting and adhering to ORD practices is required. Research assessment and career evaluation systems must be aligned with the principles of Open Science, while different elements of practising ORD must be incentivised and rewarded. Moreover, criteria for evaluation and assessment procedures are to be adapted accordingly, including criteria for hiring academic staff or for the allocation of research funding.

Objectives

- Make ORD practices (including sharing tools to analyse, curate, or investigate data) that lead to data being “as open as possible” a prerequisite for career progression and funding
- Incentivise, recognise, and reward researchers’ contributions to the development of ORD practices

Measurable objectives

- All HEI and research funding institutions have developed best practices to evaluate Open Science activities, and they reward sharing and reuse of data on the basis of international best practices

- All HEIs and research funding institutions have developed internal guidelines and policies on how to integrate ORD practices as a prerequisite in recruitment, career advancement, and funding
- National prizes to reward and promote ORD best practices are established

Primary ownership and responsibility for funding

- For the action lines in Measure D1, the Strategy Council and different key actors assume primary ownership
- Responsibility for funding lies with the primary owner
- For the transitional 2022–2024 period, swissuniversities also funds action lines through PgB Open Science I, Phase B – ORD
- The ETH Domain may fund activities in its institutions in coordination with the Strategy Council

Action lines

The following action lines are proposed to implement Measure D1 in 2022–2024:

No.	Action lines	Primary ownership	Identified funding responsibility
D1.1	Develop and implement criteria to evaluate Open Science activities and to reward data sharing and reuse, building on international best practice (e.g. DORA, Open Science Career Assessment Matrix) in dialogue with research communities	Strategy Council	
D1.2	Develop and adapt assessment processes to make ORD practices a prerequisite for funding, building on exchange of best practice among higher education, research and education institutions, and other national and international stakeholders	SNSF (lead) in cooperation with swissuniversities	
D1.3	Develop, implement, and adapt assessment processes to make ORD practice a prerequisite for recruitment and career advancement, building on exchange of best practice among higher education and research institutions as well as other national and international stakeholders	swissuniversities (lead) in cooperation with SNSF	swissuniversities: PgB Open Science I, Phase B – ORD
D1.4	Establish national ORD prizes to reward and promote ORD best practices and to foster the transition to practices that set standards and create new opportunities for an entire (data-) community, including junior researchers	A+ (lead)	swissuniversities: PgB Open Science I, Phase B – ORD

Total estimated federal contribution for 2022–2024 by the key actors: 610,000 Swiss francs (510,000 Swiss francs stem from PgB Open Science I, Phase B – ORD).

3.4.2. Measure D2: Ethical and legal aspects

Producing, accessing, and using data present numerous legal, ethical, and societal challenges. Switzerland has complex legal frameworks at both the cantonal and federal level and is subject to other regulations, for instance, the European General Data Protection Regulation (GDPR). These legal bases influence and regulate many of the processes involving data, from acquisition to reuse, and they delegate different levels of accountability to individual stakeholders, including citizens, companies, and organisations. Because the legal status of various types of data and the associated constraints must be fully understood within a research community, it is important that researchers have access to support and resources they need to acquire the necessary expertise. Information on and documentation of ongoing national and international initiatives regarding legal and ethical aspects must be made available (e.g. in the form of a catalogue of existing data transfer agreements and templates). To ensure a basic stability across the ORD landscape, the establishment of guidelines and sup-

port systems for data processes is necessary, including Domain Data Protocols DDP; in addition, issues regarding data ownership (e.g. collaboration with the private sector) must be addressed. To remain flexible for future developments, a monitoring of new requirements and implications of new technology for legal aspects must be introduced.

Objectives

- Raise awareness and understanding among research communities about legal aspects of data, the associated constraints, and how to best deal with them
- Ensure that researchers observe general or discipline-specific ethical codes of conduct when collecting and processing data, in particular open research data⁵⁴
- Align actions related to legal and ethical issues with Measures C1 and C2

Measurable Objectives

- Collaboration with the private sector to develop best practices/guidelines on data ownership, data protection, and the promotion of ORD practices in research projects is established

Primary ownership and responsibility for funding

- For the action lines in Measure D1, the Strategy Council and different key actors assume primary ownership
- Responsibility for funding lies with the primary owner
- For the transitional 2022–2024 period, swissuniversities also funds action lines through PgB Open Science I, Phase B – ORD
- The ETH Domain may fund activities in its institutions in coordination with the Strategy Council

Action lines

The following action lines are proposed to implement Measure D2 in 2022–24:

No.	Action lines	Primary ownership	Identified funding responsibility
D2.1	A common understanding/benchmarks/best practices/guidelines on the question of data ownership (including data, code sharing) and data protection are developed	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD
D2.2	HEIs adapt best practices regarding data ownership (including data, code sharing) and data protection to their own needs	swissuniversities	swissuniversities: PgB Open Science I, Phase B – ORD
D2.3	Incentivise, support, and fund Research Data Protection Officers (RDPO) at HEIs where necessary to build up support for research communities in legal questions	swissuniversities	swissuniversities: PgB Open Science I, Phase B – ORD
D2.4	Monitor and publish information on lawful licensing of data/metadata and software with the aim of fostering correct reuse	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD
D2.5	Develop guidelines for collaboration with the private sector to determine whether, when, and how commercially sensitive data are to be developed, regularly updated, and made openly accessible	swissuniversities	swissuniversities: PgB Open Science I, Phase B – ORD
D2.6	Develop and disseminate discipline- or data community-specific codes of conduct with regard to ORD	A+	swissuniversities: PgB Open Science I, Phase B – ORD

Total estimated federal contribution for 2022–2024 by the key actors: 2,244,000 (2,094,000 Swiss francs stem from PgB Open Science I, Phase B – ORD).

⁵⁴ See Code of conduct for scientific integrity: <http://doi.org/10.5281/zenodo.4707560>

3.4.3. Measure D3: International alignment

It is indispensable that the policies and measures to implement ORD practices at the national level are aligned with international standards and that action lines are relevant to the Swiss research community. Interconnectedness, interoperability, and representation of the Swiss research landscape in European and global initiatives are essential factors for ensuring that Swiss higher education and research institutions retain their leadership position.

Objectives

- Ensure the interconnectedness of the Swiss research landscape
- Identify where connections between the Swiss ORD landscape and European and international initiatives are lacking

Measurable objectives

- A review of Swiss participation in the European Research Infrastructure Consortium (ERIC) is established, and the processes for funding and realising participation are clarified
- A monitoring of European and global initiatives is set up
- The emergence of internationally recognised ORD research leaders and flagship ORD research projects in Switzerland are supported

Primary ownership and responsibility for funding

- The Strategy Council assumes primary ownership of and responsibility for funding Measure D3
- swissuniversities funds action lines of the Strategy Council for the 2022–2024 period through the programme PgB Open Science I, Phase B – ORD

Action lines

The following action lines are proposed to implement Measure D3 in 2022–2024:

No.	Action lines	Primary ownership	Identified funding responsibility
D3.1	Regular updated analysis of the interconnectedness of the Swiss research landscape and its representation in European and global initiatives, including an overview of European and global initiatives with an assessment of their value for the Swiss landscape; existing gaps are identified, and adequate measures developed	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD
D3.2	Review and facilitate Swiss participation in ERIC (adapt legal framework; own position in ERI for membership fees)	Strategy Council	swissuniversities: PgB Open Science I, Phase B – ORD

Total estimated federal contribution for 2022–2024 through the PgB Open Science I, Phase B – ORD: 390,000 Swiss francs.

4. Funding

As described above, the ORD Action Plan is the result of a complex collaboration between swissuniversities (specifically DeLOS, the SNSF, the ETH Domain, the Swiss Academies of Arts and Sciences, the universities, the universities of applied sciences and arts, and the universities of teacher education) and it covers the years 2022 to 2028, thus two ERI periods. The concept of the ORD Action Plan builds on the principle that the measures and action lines are mainly financed via funds procured through strategic planning during the 2025–2028 ERI period.

As a consequence, any negative decisions on proposals based on the strategic plans, or due to budget cuts by SERI, the Federal Council, Parliament, or the Swiss Conference of Higher Education Institutions (SHK), will have a direct and tangible impact on the ORD Action Plan. Therefore, to realise the objectives of the ORD Strategy, Swiss higher education and research institutions are called on to navigate a paradigm shift in how research is conducted, organised, and lived. Moreover, the measures proposed in the Action Plan will require considerable additional expenditures on the part of all institutions and stakeholders involved.

Because the 2021–2024 ERI budget will have been approved by parliament before the Action Plan is adopted, the Action Plan proposes redirecting the 32.25 million francs in PgB funds that have been reserved as part of Open Science I, Phase B – ORD. From 2022–2024, these funds may be allocated for ORD projects, either top-down or bottom-up, to institutions eligible for funding under the Higher Education Act (HEdA) (in accordance with the matching funds principle). As a result, even for those action lines that are outside swissuniversities' sphere of responsibility, (partial) funding can nevertheless flow from the PgB Open Science I, Phase B – ORD during the transitional phase, enabling work to begin before 2025. Auxiliary funding frameworks that comply with the regulatory requirements are also needed to ensure that funding can be provided via PgB Open Science I, Phase B – ORD for the years 2022–2024. Additionally, the ETH Domain plans to invest a total of up to 15 million francs in ORD measures between 2021–2024. This does not exclude ETHZ and EPFL from applying for and receiving funds from the PgB Open Science. From 2025 onwards, the Swiss Academies of Arts and Sciences, the ETH Domain, the SNSF, and swissuniversities assume responsibility for funding from their own resources.

The Strategy Council has no overriding executive authority. The ORD Strategy and Action Plan therefore rely on the willingness of the involved key actors to participate in the Strategy Council and Coordination Group and to follow the strategic lead proposed – and that they respect the overall strategic development of the ORD landscape in the funding of projects (by swissuniversities or the ETH Domain, for example). It is important to note that approval of the ORD Action Plan by key actors does not imply approval of the individual funding schemes (for instance, a PgB or ORD funding by the ETH Domain).

4.1. Funding sources

Depending on which institution or body has responsibility for funding a measure, different funding sources can be tapped to finance the measures of the ORD Action Plan. The following legal bases are relevant for the ERI dispatch of the federal government:

- Federal Act on Funding and Coordination of the Swiss Higher Education Sector (HEdA)
- HEdA Ordinance (HEdO)
- Federal Act on the Promotion of Research and Innovation (RIPA)
- RIPA Ordinance (O-RIPA-EAER)
- Federal Act on the Federal Institutes of Technology (ETH Act)
- ETH Domain Ordinance

In addition, cantonal legislation is also applicable for funding measures for cantonal higher education institutions.

HEdA

In accordance with HEdA, article 47, para. 1, item. a and HEdA, articles 49–53, the federal government allocates basic contributions to the cantonal universities and other institutions within the higher education sector to cover operational costs. The basic contributions are calculated with the reference costs. Together with the cantonal contributions, they make up the basic funding for the higher education institutions.

Project contributions (PgB) are established by law in HEdA, article 47, para. 1, item c as well as in HEdA, articles 59–61. As defined in HEdA, PgB are “expenditures that serve national higher education policy interests”. SERI requires that projects funded via PgB promote collaboration between higher education institutions and that they are projects that would otherwise not be possible on the desired scale. As defined in HEdA, only eligible institutions are entitled to receive project funding. Institutions in the ETH Domain or other institutions are entitled to participate in projects, but they are not eligible to receive project contributions.

In accordance with HEdO, article 49, institutions participating in a project must provide funding that is at least equal to the amount contributed by the federal government. If a participating institution assumes more coordinative, developmental, or administrative tasks to the benefit of other project participants, SERI may reduce or waive the funding to be provided by this institution.

Lastly, the funding instrument as defined in HEdA, article 47, para. 3 is also relevant, as it provides for “financial support in the form of contributions to shared infrastructure facilities of higher education institutions [...] if the said infrastructure facilities are used to carry out tasks of importance to the whole of Switzerland”. As with project contributions (PgB), projects described in HEdA, article 47, para. 3 also require the institutions to contribute their own funds in an amount that matches the federal contribution.

RIPA

In accordance with RIPA, article 10, para. 3, the SNSF focuses on the promotion of highly qualified junior researchers and funding for research infrastructures that serve the “development of research areas in Switzerland but do not fall within the remit of the higher education institutions research centres or the federal government”.

As defined in RIPA, article 11, para. 4, the Swiss Academies of Arts and Sciences “promote collaboration among scientists and experts in specialist bodies, commissions and other suitable organisational forms and use these to perform their tasks”. In accordance with RIPA, article 11, para. 6, they may also “support data collections, documentation systems, scientific journals, publications, or similar institutions, which serve as useful infrastructures for the development of fields of expertise in Switzerland which do not come under the remit of the SNSF or the higher education research centres or do not receive direct support from the Confederation”.

ETH Act

In accordance with the ETH Act, article 34b, the institutions in the ETH Domain receive federal funding to cover operations and investment costs.

4.2. Overview of federal funding

The chart below provides an estimate of the federal funding required to finance the transition to ORD in the period 2022–24. The amounts for 2022–2024 stated in the Action Plan represent contributions on a federal level (ORD Funding from the ETH Domain, ORD Funding by the SNSF for FORS, DaSCH, Biomedicine, Swiss Biobanking Platform and ICOS, ORD Funding from the Swiss Academies of Arts and Sciences, and the current proposal for the PGB Open Science I, Phase B – ORD by swissuniversities). The ORD Action Plan therefore contains no cantonal, or in-kind contributions and the total amount indicates an estimation of the overall costs of the action plan on the federal level

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Action area	Measure n°	Measure	Estimated Amount Federal Funding 2022–2024	
Governance	G.0.0	Governance Funding	CHF	3'350'000
Sub-total funding Governance			CHF	3'350'000
Action Area A	A.3.1.1	Measure A1	CHF	20'000'000
Sub-total funding Action Area A			CHF	20'000'000
Action Area B	B.3.2.1	Measure B1	CHF	745'000
Action Area B	B.3.2.2	Measure B2	CHF	-
Action Area B	B.3.2.3	Measure B3	CHF	80'300'000
Action Area B	B.3.2.4	Measure B4	CHF	-
Action Area B	B.3.2.5	Measure B5	CHF	6'870'000
Sub-total funding Action Area B			CHF	87'915'000
Action Area C	C.3.3.1	Measure C1	CHF	645'000
Action Area C	C.3.3.2	Measure C2	CHF	1'650'000
Sub-total funding Action Area C			CHF	2'295'000
Action Area D	D.3.4.1	Measure D1	CHF	610'000
Action Area D	D.3.4.2	Measure D2	CHF	2'244'900
Action Area D	D.3.4.3	Measure D3	CHF	390'000
Sub-total funding Action Area D			CHF	3'244'900
TOTAL			CHF	116'804'900
Further Funding for the Coordination and Development (PGB OS I, Phase B – ORD)			CHF	3'000'000
TOTAL			CHF	119'804'900

5. Schedule

The following schedule presents a timeline with the key points for the start and, if applicable, end of an action line for the ORD Action Plan (Version 1.0). It is the responsibility of the Strategy Council to update and modify the schedule in agreement with all key actors by 31 December 2022.

		2022				2023	2024
		Q1	Q2	Q3	Q4		
Governance		1st meeting of the Strategy Council and the Co-ordination Group	Completion of the financial information of the Action Plan	First meetings of the sounding boards	Evaluation of the Strategy Council		
		G.1	G.2	G.3			
Action Area A	Measure A1	Start: conceptualisation funding scheme		First call under "small scheme"			Conceptualisation complete
		A1.1		A1.2			A1.1
Action Area B	Measure B1	Pilot study has begun	Negotiation teams begin work	First recommendations for consolidation			Consolidation first phase complete
		B1.1	B1.2-3	B1.1-3			B1.1-3
	Measure B2						
	Measure B3	Start: regular monitoring of ORD landscape				Start: strategic development	
		B3.1				B3.2	
	Measure B4						
	Measure B5			First call data stewards		Start: best practices data stewardship / first call: support ORD in HEIs	Start: establish data steward networks
				B5.2		B5.1-2	B5.3
Action Area C	Measure C1			Start for: participation in international initiatives		Start for: ORD advocacy programs	Start for: long-term networks
				C1.3		C1.1	C1.2
	Measure C2			First call good RDM practices			Start for: framework for systemic exchange
				C2.1			C2.3
Action Area D	Measure D1			Start for: establishment ORD prizes		Start for: evaluation criteria	Start for: develop assessment criteria
				D1.4		D1.1	D1.2-3
	Measure D2			Start: best practices data ownership are developed		First call for RDPO in HEIs by swissuniversities	Start: monitor information data
				D2.1		D2.3	D2.4
	Measure D3	Start: review and facilitate participation in ERIC		Start: analysis Swiss research landscape and its representation in European and global initiatives			
		D3.2		D3.1			