

SUPSI

SUPSI ORD Stewardship Action Plan

Programme Open Science I, Phase B – ORD 2022–2024 - plans de mesures

Executive Summary

In line with the Open Research data national Strategy and with the call of the Programme Open Science I, Phase B action line B5.2 “action plan on data stewardship” this proposal defines the SUPSI action plan for implementing ORD Stewardship. The document analyses the current state of Open Science and Open Data in SUPSI and identifies 11 existing gaps, ranging from organization creation to competence strengthening and cultural awareness, to be fulfilled. As a result, the proposal identifies 4 objectives for the institution (assimilate, align, support and contribute) and 4 objectives for the academic community (understand, apply, embed and advocate); objectives that are to be implemented in an action plan composed by 5 action topics and their associated tasks. The implementation of the action plan will result in the establishment of the SUPSI-ORD Alliance which is conceived as the ORD stewardship community of SUPSI. It includes an operational board formed by departmental data stewards and key services’ representatives (legal, library, research, IT), ORD champions and ORD community. Other milestones of the action plan include the training of the data stewards, the creation of ORD guidelines and recommendation for ORD infrastructures to be implemented, the definition and adoption of ORD policies, the engagement of the entire academic community for achieving a full ORD awareness and increase of personal competences.

1. Current State of the art and future perspective

1.1 State of the art of Open Science in SUPSI

The SUPSI embracement of Open Science principles is quite recent. It started in 2018 with the setup of an Open Science (OS) work group that has, as its main objectives, the implementation of the Swiss national strategy for Open Access and the consideration of other aspects related to Open Science. The group saw the participation and contribution of several collaborators from different departments.

As a result, SUPSI put the implementation of OS principles as one of its priorities in the research. In particular, SUPSI declares its intention to adhere to the OS strategy designed by swissuniversities and signed the [Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities](#) in 2020. Thereafter, SUPSI defined its research strategic plan for 2021-2024 ([Piano Strategico della Ricerca SUPSI 2021-2024](#)) in which it expresses its commitment in applying the OS recommendations and strategies and in providing the required infrastructures. In chapter 5.6.2 the strategy indicates 16 practical actions related to OS to be implemented which are briefly summarized herein after.

Five actions were related to governance:

- ◆ 6.2.1 - approve and adopt *SUPSI Open Science guidelines* by the end of 2021;
- ◆ 6.2.2 - define and adopt a policy for Open Research Data (ORD) in the 2022;
- ◆ 6.2.3 - continue in supporting OS adoption at national and international level;
- ◆ 6.2.4 - integrate OS in the internal directives and processes for quality assessment (see DORA principles);
- ◆ 6.2.5 - evaluate the SUPSI adherence with OS (monitoring and survey).

Five actions were dedicated to resources, infrastructures and tools:

- ◆ 6.2.6 - guarantee the institutional support for Open Access by subscribing contracts of Read & Publish;
- ◆ 6.2.7 - strengthen the role of libraries (including courses) in supporting researchers and students with Open Access;
- ◆ 6.2.8 - make OS participative including other key persons for each department/school and promote discussion in institutional meetings;
- ◆ 6.2.9 - support researchers on OS questions and creation of an online FAQ section;
- ◆ 6.2.10 - offer adequate IT tools to support the research chain process: (i) setup of institutional research repository (Open Access principles like OAIS and FAIR) starts in 2021; (ii) evaluate the necessity of an institutional Open Research Data repository (check existing solutions like OLOS, SWISUbase, DASH and SWITCH); (iii) implementation of virtual tools to ease the data management (i.e., notebooks and Data Management Plan monitoring).

Six actions were associated to education and communication:

- ◆ 6.2.11 - activate OS education programmes for researchers, teachers and students and publish lessons online;
- ◆ 6.2.12 - promote OS with news, practical tips, adopted policies, funder's requests;
- ◆ 6.2.13 - organize dissemination events: (i) yearly meeting with the [International Open Access week](#) (held in 2018); (ii) present SUPSI research projects to citizens for divulgative and citizen science scopes;
- ◆ 6.2.14 - collaborate with the SUPSI communication service to create and adapt communication to the general public;
- ◆ 6.2.15 - foster the creation of new Open Innovation projects with industrial partners (see Swiss Innovation Park n Ticino) for networking activating the head of SUPSI research axes and the respective working groups;
- ◆ 6.2.16 - promote educational projects whose outputs are made available for free, generally in digital format and with open licenses;

At the time of writing action 6.2.1 has been fully implemented, in fact in October 2021, at the proposal of the OS working group, SUPSI Directorate approved the *Open Science guidelines* ([Linee guida Open Science](#)) that came into effect on the 1st of January 2022. It includes two sections: the general commitments in the OS

context and the Policy Open Access. The document has been conceived to include future additional policies to be developed yet.

Action 6.2.6 has also been successfully executed, and today SUPSI's researchers and collaborators have access to several journals thanks to the *Read&Publish* contracts negotiated by swissuniversities and the libraries consortium ([Accordi con case editrici](#)).

Action 6.2.10 is ongoing. It started in 2021 with the collection of SUPSI researcher's needs and requirements and will continue along the entire 2022 with the implementation of an institutional research portal (Current Research Information System) based on the Open Source DSpace-CRIS software specifically customized to fit SUPSI's needs.

1.1.1 State of the art of Open Research Data & Software in SUPSI

With specific reference to Open Research Data & Software, so far, SUPSI has mostly taken into account the aspect related to governance. In fact, in the Open Science commitments, stated in the *Open Science guidelines*, we can find at point 8 "Research data (data, text, images, software and other documentation of research) are archived and made available on institutional servers and/or open databases, except for justified reasons". Additionally, point 4 states: "Each department and school appoint or indicate a contact person for Open Science matters, which provides indications to collaborators and students regarding the opening and the archiving of content, data, software and hardware, and licenses with respect to the diversity of specific disciplinary sectors".

From an implementation perspective, the *research strategic plan for 2021-2024* of SUPSI includes action 6.2.10 which foresees the evaluation of the need of an institutional Open Research Data & Software repository and the implementation of digital tools to ease the data management. Finally, action 6.2.2 aims at defining and adopting a policy for Open Research Data (ORD) in 2022. It is clear then that other actions of the guidelines focusing on OS include ORD as a subdomain.

Currently, the institutional support for researchers is guaranteed by the SUPSI *Research, Development and Knowledge Transfer Service*, which acts as a contact point for any Open Science questions, including ORD. Nevertheless, competences in ORD exist at SUPSI. In fact, among the academic personnel there's people which have long standing national and international involvement in Open Data, Open Software, Open Licenses and Open Standards initiatives and that executed several research projects on these topics, such as:

- ◆ SNSF-R4D project 4onse (<http://4onse.org>) that studies how to strengthen the collection and FAIR service of environmental data monitoring system in low-income countries by using open technologies only;
- ◆ EU-Interreg V-A project GIOCOOnDa (2018-23) that led SUPSI to develop and run a platform for the publication of Linked Open Data (LOD) according to standard ontologies supporting the access to various datasets (<https://gioconda.supsi.ch>);
- ◆ Open Science for Arts, Design and Music (OS-ADM) project led by SUPSI, meant to produce guidelines for researchers and scholars to use and produce open content and data in the fields of arts, design and music. It is supported by swissuniversities (2022-2024) and involves all the other art and design schools in Switzerland, FHNW HES-SO HKB HSLU ZHdK ([link](#));
- ◆ Brick project (Hasler Stiftung 2011-2012, <http://data.supsi.ch>) that was a pioneering prototypical experiment of open data publishing to demonstrate the potential benefits of the Linked Data approach in an academic context using SUPSI open data;
- ◆ INDG20-60 project by SUPSI, HEIGV, UniGE funded by swisstopo to explore and define guidelines for the implementation of OGC' standards to serve FAIR geodata (<https://github.com/MediaComem/geostandards-INDG20-60/blob/main/introduction.adoc>).

All these previous experiences and competences in the field of open data creation and publication developed in SUPSI could be exploited by contributing to form a systematic approach/solution to the ORD management and their related above-mentioned actions.

1.2 Future perspective of Open Research Data & Software in SUPSI (vision)

1.2.1 Overarching goal

SUPSI aims to fully implement the Open Science principles and Open Research Data & Software which is one of its essential, and maybe *tougher*, components to ensure reproducibility and foster innovation and reuse of its research.

Long-term Vision (objectives)

The long-term vision is that **SUPSI researchers apply ORD principles** and related best practices in their daily work as a default approach. To achieve this important change, we need to establish a virtuous system which is based on the voluntary adhesion of the single researcher rather than a top-down imposition. This requires actions from the institutional level, to correctly consider ORD and provide essential services, and from the research community, to appropriately and correctly understand, embrace and apply ORD principles.

Short-term Vision (objectives)

In the short term, SUPSI aims to set up internally an **Open Research Data & Software Alliance** as a collaborative effort of the SUPSI's institution, researchers, students, research and information infrastructure facilities, departments, competence centers, institutes and libraries. As depicted in Figure 1, in line with the roles and activities identified for Data Stewardship by TU Delft (10.5281/zenodo.2684278), the alliance will be coordinated by a *Stewardship Board* whose members include the ORD Stewards indicated by each department and associated schools, which broadly represents the different disciplines. Within each department the single research groups will indicate an ORD champion, whose role is to support his group by acting as a first local contact point for upstream communication (needs, issues, etc..) and for downstream communication (news, initiatives, policies, etc..). Other members of the Stewardship Board include a representative of the *SUPSI Research, Development and Knowledge Transfer Service*, a representative for Data Protection, a representative of the *IT service* and a representative of the *libraries*. ORD stewardship will be coordinated by an appointed chairperson whose role is to ensure the correct functioning of the Alliance and that its operations are in line with the vision of the SUPSI Direction.

The Alliance will be governed as an Open Source community. Communication and activities will happen mostly online taking advantage of selected collaboration channels where Data Stewards act as mediators and promoters stimulating discussion, answering questions and nurturing activities. Meeting's agenda and minutes of the Stewardship Board will be made openly and transparently available. Decisions should be operated as much as possible on a consensus basis.

In this vision, the idea is to combine, integrate and expand existing resources, competencies and skills already present in SUPSI to create a real ORD competence center that will:

- ◆ led the development and design and implementation of the SUPSI data management policy, including the capacity to understand different disciplines need;
- ◆ explore and analyse the trends and latest practice for data management that may suite SUPSI needs;
- ◆ advise on actions to advance ORD management in SUPSI
- ◆ design and coordinate educational programs customized to researchers needs
- ◆ support the academic community in data collection, management and publication
- ◆ raise awareness and explain the advantages of ORD

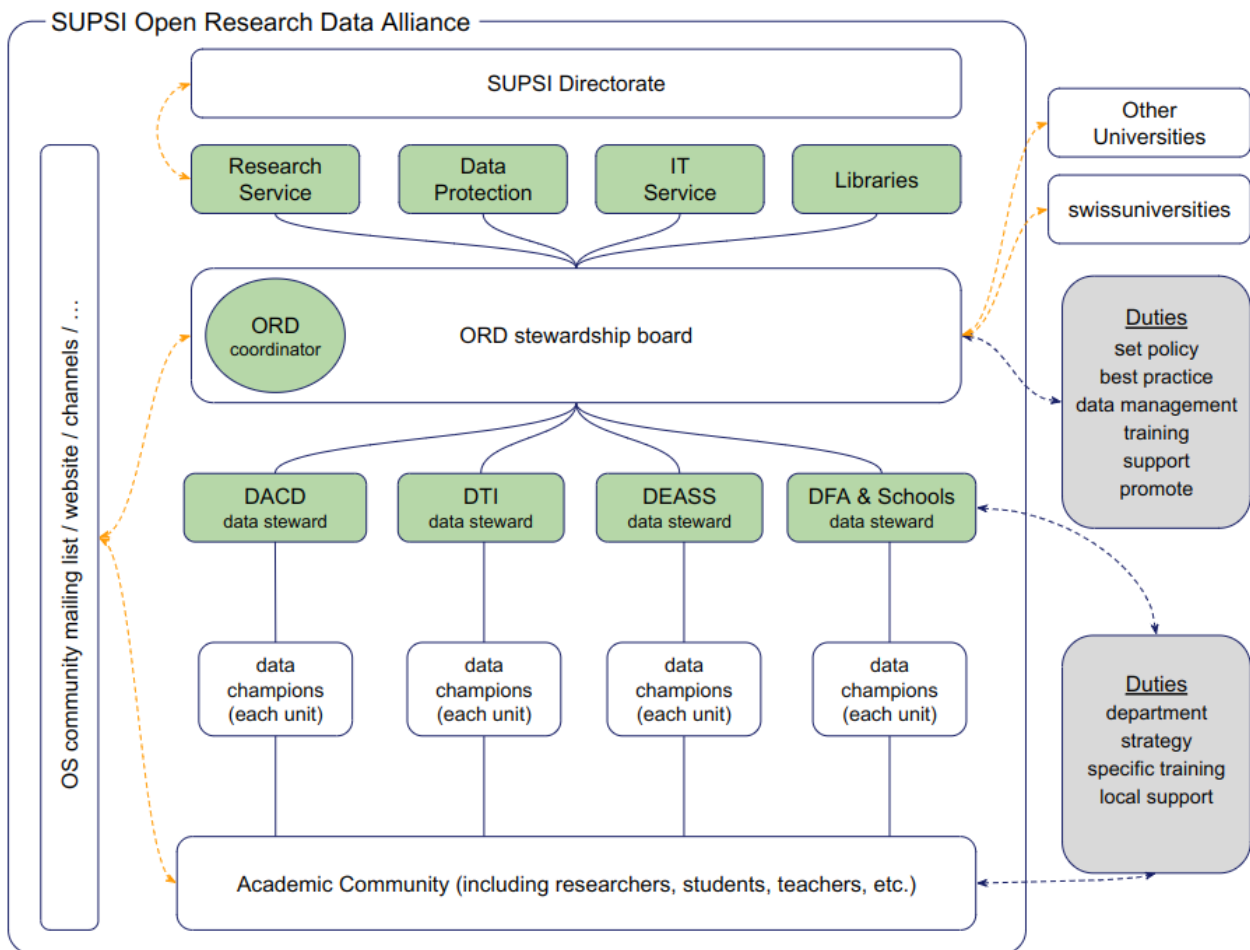


Figure 1. SUPSI Open Research Data & Software Alliance structure.

2. Gap analysis

Comparing the presented vision and state of the art, we clearly see that most of the work has to be done. With respect to the long-term vision, there are several general issues that need to be fulfilled at different levels.

G1 - Institution reward: The practice of opening research data is a resource-expensive process that today in SUPSI it is mostly seen as an overhead for the single researcher with limited recognition and reward. A policy that indicates data management processes, obligations and/or responsibilities will help to promote the value of ORD and foster its adoption in the academic community.

G2 - Cultural awareness: In general, the academic community in SUPSI is not aware of the open data potential. People do not well understand the advantages, the limitations, the risks, the benefits and as a result not opening the data is the simpler choice.

G3 - Competence strengthening: Supposing the willingness of opening the research data, very often the single academic in SUPSI does not have the formation to put this in practice: how to prepare the data, how to choose the right format, which metadata are required, etc. These are just some of the skills that ORD requires.

G4 - Juridical issues: Often there are legal aspects to be considered in opening data, several privacy laws from different administrative levels interact with each other and often are not simple to grasp. Legal responsibilities, copyrights and contract respect is often to be clarified. These competencies should grow in SUPSI.

G5 - Technical infrastructure: To open the data there's the need for adequate informatic tools that permits, in line with the SUPSI policy, to publish and preserve data. The necessity and type of institutional Open Research Data repository should be evaluated.

G6 - Economic support: Some research projects include funds to open the data but many don't. In SUPSI very often this is not the case (for example projects funded by Innosuisse or local administration) and no other financial budget is available for completing this action which may require additional and not negligible working hours. Additionally, the cost of self-creating competencies is not covered.

Moreover, in respect to the Short-term Vision, the following aspects are key missing elements:

G7 - Organization: There is not yet an organizational structure for ORD Stewardship in SUPSI. This is the precondition to establish a group of people that can collaboratively work together for achieving the desired results in the application of Open Research Data & Software in SUPSI.

G8 - Stewards and their training: While having several ORD competent people in SUPSI their experience is often limited to specific disciplines (e.g.: environment, culture, or economy) or sectors (e.g.: open data or open software). There's a missing horizontal base of knowledge to open the multidisciplinary dialogue required for ORD stewardship; this has to be established (legal, IT, licenses, data types, etc..) to form ORD Stewards.

G9 - Community: There's not yet an ORD community in SUPSI. An open data community in SUPSI which develops collective knowledge on issues, solutions and best practice should be set up.

G10 - Tools and activities: Like any modern Open Community, digital tools are essential to establish communication, enable participation and activate positive actions. In SUPSI a basic infrastructure and an approach to keep the community live for supporting the idea of an Open Research Data & Software Alliance should be created.

G11 - Recognition: The voluntary adhesion of researchers to ORD principles, which requires considerable efforts, is difficult without an appropriate recognition (economic or scientific). Additionally, in some cases opening data may lead to a perceived potential loss of opportunities for future projects and of competitive advantage for the researcher and consequently to the institution.

3. Medium & Long-term objectives in Research Data Management

Based on the current state of the art, the long term (LT) and medium term (MT) visions and the individuated gaps, in this action plan we individuate 8 strategic goals to be pursued: four dedicated to the institution and four related to the academic community.

| Objectives for SUPSI as institution | |
|---|---|
| Assimilate: support, value, adopt, showcase and reward ORD in institutional policies and in activities. (MT) | Align: guarantee that ORD policy and practice are aligned with national and international initiatives and properly consider flagship examples applied in the SUPSI context. (MT) |
| Support: offer services, tools, training, and resources required to support ORD. (MT/LT) | Contribute: actively contribute at local, national and international level in advancing ORD strategies. (MT) |
| Objectives for each member of the SUPSI's academic community | |
| Understand: take part in courses and events to gain knowledge of ORD good practices and awareness of its positive impacts in research and innovation. (MT) | Apply: embrace and use a range of best ORD practices in research, teaching and learning. (LT) |
| Embed: include whenever is possible ORD policy, in research projects, communications and professional services. (LT) | Advocate: advocate ORD across SUPSI and beyond. (LT) |

Table 1: SUPSI's Research Data Management objectives

4. Institutional Processes to Implement the ORD Action Plan

Considering the existing Open Science action plan in SUPSI, toward the achievement of the previously identified vision and goals and to start fulfilling existing gaps, the following action plan is proposed:

| Period | Actions | Outputs/Outcomes | Lead & Participants |
|--|--|---|---------------------|
| Establish the ORD Alliance in SUPSI (Assimilate) [G7, G9] | | | |
| S1-2023 | SUPSI appoints ORD stewardship board with the mandate of creating the ORD Alliance | ORD Alliance in SUPSI is created and operative | SUPSI directorate |
| S1-2023 | Identify and define governance rules of the ORD Alliance | Governance rules are defined and publicly available | ORD Alliance Board |
| S1-2023 | Request for appointment of ORD champions at each group | ORD champions are appointed | ORD Stewards |

| | | | |
|---|--|--|--|
| S1-2023 | Setup the IT infrastructure and channels to establish the community (MS Team, mailing list, Slack, Website, issue tracker, git repository, etc.) | Communication channels are in place | SUPSI IT service + ORD Alliance Board |
| Form ORD Stewards for SUPSI (Support) [G8] | | | |
| S2-2023 | Run 5 workshops for the appointed ORD stewardship board for alignment and training on general ORD aspects like protection, tools, formats, repositories, policy to be customized for SUPSI | 5 ORD Stewards appointed by SUPSI are formed and aligned | ORD Alliance Board coordinator |
| Promote ORD practice within SUPSI (Assimilate) [G2, G3] | | | |
| S2-2023 | Launch stewardship board, ORD Alliance concept, action plan and position statement | SUPSI academic community and local stakeholders knows the initiative | SUPSI research directorate + communication office + ORD Alliance Board |
| S2-2023 | Launch ORD Stewardship service | SUPSI academic community have access to the stewardship service | ORD Alliance Board |
| S1-2024 | Run a ORD management course for the ORD champions (appointed or voluntary) including Data Management Plan (DMP) creation | ORD practices are diffusely known in the institution | ORD Alliance Board |
| S2-2024 | Run an ORD open workshop involving all SUPSI departments | ORD applied practices are shared among the academic community | ORD Alliance Board + potentially other universities / UAS |
| S2-2024 | Design a module of continuing education in Open Science and ORD management | OS&ORD qualification course is ready | ORD Alliance Board + ORD Champions |
| Develop ORD policy in SUPSI (Assimilate) [G1, G4, G11] | | | |
| S2-2023 | the SUPSI Copyright Policy to ensure alignment with ORD principles and suggest updates of the " Regolamento SUPSI per la tutela della proprietà intellettuale " | The "Regolamento SUPSI per la tutela della proprietà intellettuale" is aligned with ORD | ORD Alliance Board + SUPSI directorate |
| S2-2023 | Define a policy for Open Research Data & Software to be embedded in the current Open Science guidelines | Policy documents are produced and embedded in OS guidelines | ORD Alliance Board |
| S1-2024 | Approve/Adopt the Open Research Data & Software policy | Policy documents are adopted by SUPSI | SUPSI directorate |
| S2-2024 | an approach for Open Science and ORD knowledge as a requirement for career progress (OS&ORD qualification) | A document detailing how to recognize ORD as a researcher qualification is proposed to the SUPSI directorate | ORD Alliance Board |
| Infrastructures and processes in SUPSI (Support) [G5, G10] | | | |

| | | | |
|-----------|---|---|-------------------------------------|
| S2-2023 | Evaluate and propose a data repository solution for SUPSI considering data, metadata and standard for different types and disciplines | Report proposing a strategy for ORD infrastructure at SUPSI | ORD Alliance Board |
| S2-2023 | Design of ORD management guidelines including standard processes for data preparation, publication and maintenance and for software development | SUPSI ORD management guidelines are issued in its first version (to be considered as a live document) | ORD Alliance Board |
| S1/2-2024 | Setup of institutional service catalogue for ORD, collect and publish some ORD as a demonstration best practice | ORD datasets are published, best practice examples are available | ORD Alliance Board + ORD data owner |

Table 2: SUPSI's ORD action plan for the period 2023-2024

4.1 Milestones

| Milestone | Date | Description |
|-----------|------------|---|
| M1 (6m) | 31.06.2023 | The SUPSI ORD-Alliance is established |
| M2 (12m) | 31.01.2024 | SUPSI ORD Stewards are trained |
| M3 (12m) | 31.01.2024 | SUPSI ORD infrastructures and guidelines are delineated |
| M4 (18m) | 31.06.2024 | SUPSI adopts the implemented ORD policy |
| M5 (24m) | 21.12.2024 | ORD awareness is reach by the SUPSI academic community |

Table 3: SUPSI's milestones of its ORD action plan

5. Synergies and Collaboration with Existing Structures

The designed ORD Alliance illustrated in figure 1, includes strict internal connection and relations with:

- ◆ **libraries:** in SUPSI several libraries in different departments currently exist but there are limited personnel qualifications toward data science literacy. The collaboration aims at raising awareness on the future of academic libraries which are called to adapt and expand their services to the new research and educational paradigm of Open Science and Open data.
- ◆ **research direction:** SUPSI Research, Development and Knowledge Transfer Service represents and defines the research vision of the institution and provides support services to apply it. Its inclusion in the process is essential since a connection with ongoing international and national funding initiatives is required to align and advance in ORD. Moreover, since the head of the service is the Director of Research, this guarantees direct collaboration and alignment with the SUPSI directorate and the institutional vision.
- ◆ **IT service:** the informatic service at SUPSI oversees managing most of the institutional digital infrastructure to support operational processes. This includes finances and human resources but also, the ongoing realization of the SUPSI's current research information system. This interaction will permit us to leverage existing knowledge and infrastructure to set up identified solutions and tools for ORD.

- ◆ **legal service:** the legal service provides support for contracts and disputes, together with the Information security Manager of SUPSI, will expand their competencies in privacy and licenses.

6. Strategic and Financial Sustainability of the Proposed Action Plan

6.1 Strategic sustainability

SUPSI is committed to Open Science, which is part of the current research strategy, and has planned activities for its implementation and adoption. For ORD stewardship, the main idea is to create a sustainable organization. The identified actions and proposed solution consider, instead of hiring an ORD expert, to use internal human resources expanding their competences to form one ORD steward for each SUPSI department. This approach brings the following main strategic advantages:

- ◆ This solution is more resilient and sustainable, in fact the competence is shared and does not exist in a single person;
- ◆ Appointed ORD stewards well understand the institution operation and will quickly and better adapt and customize ORD to the institution peculiarities;
- ◆ The cost for supporting the ORD stewards is shared among the departments and are existing fixed costs not requiring extra budget.

The above-mentioned collaboration, which relies on representatives of SUPSI existing bodies guarantee the covering of all the competencies required by the ORD Stewardship and thus its implementation in the long term. The governance structure, which is based on commonly applied open communities' best practice, also assure the continuity of the initiative besides the single persons.

Additionally, if adequately included in career advancement processes and adequately recognized the researchers will self-join to the community and apply the ORD practice due to the personal incentives it brings.

6.2 Financial Sustainability

The cost of the ORD Alliance is estimated at about 150'000 CHF a year. Part of its activities and services are guaranteed in the long term by the voluntary collaborative help provided by the open community, which will be supported and coordinated by the ORD Stewards whose cost is shared between SUPSI and the departments. Furthermore, the setup of continuing education courses in Open Science and Research Data Management will contribute to raising the funds to partially sustain the costs.

The creation of an ORD Alliance Board in the medium term should foster the participation in competitive projects for the advancement of Open Research Data & Software and the rise of funds to cover part of the costs.

The cost of the IT infrastructure will be covered by SUPSI.

Appendix 1 – Budget details

The budget for the implementation of the proposed actions mostly allocated for personnel costs of the ORD Alliance Board activities, which includes departmental data stewards (4 senior at 20% and one coordinator at 28% with average cost of 120'000 CHF/y) and existing services (65 hours at 110.- CHF). Other costs are allocated to support external expert visits in SUPSI for the training session of the departmental stewards (5'000). Virtual money is 64'800 CHF of overhead at 25% plus the 21'450 CHF for the personnel costs for existing services support (legal, librarian and IT).

| 2023-2024 | Federal contribution | Internal financing | | Other contribution | Project budget |
|------------------------|----------------------|--------------------|---------------|--------------------|----------------|
| | | Real money | Virtual money | | |
| Personnel costs | 175'000 | 84'200 | 86'250 | '0 | |
| Equipment costs | 0 | 0 | 0 | '0 | |
| Other material costs | 0 | 5'000 | 0 | '0 | |
| Total 2023-2024 | 175'000 | 89,200 | 86'250 | '0 | 350'450 |

Table A1.1: SUPSI's ORD action plan budget

Budget breakdown:

| Resource | % | unit cost | Cost | type |
|--------------------------|-------------|-----------|----------------|---------|
| Steward DACD | 20,00% | 24k / y | 48'000 | REAL |
| Steward DTI | 20,00% | 24k / y | 48'000 | REAL |
| Steward DEASS | 20,00% | 24k / y | 48'000 | REAL |
| Steward DFA&AS | 20,00% | 24k / y | 48'000 | REAL |
| Coordinator - extra time | 8,00% | 9,60k / y | 19'200 | REAL |
| Research office | 20,00% | 24k / y | 48'000 | REAL |
| external experts | | 5k | 5'000 | REAL |
| SUBTOTAL | | | 264'200 | |
| overhead @ 25% | 25% of 239k | 32,4 / y | 64'800 | VIRTUAL |
| Legal service | 65 h @ 110 | 7,15 | 7'150 | VIRTUAL |
| IT service | 65 h @ 110 | 7,15 | 7'150 | VIRTUAL |
| Librarian | 65 h @ 110 | 7,15 | 7'150 | VIRTUAL |
| SUBTOTAL | | | 86'250 | |
| TOTAL | | | 350'450 | |

Table A1.2: Breakdown of the SUPSI's ORD action plan budget