Benefit from Swiss quality service
In line with international standards
Store and share your research data
## PROJECT

### Context

Many institutions in the Swiss academic and data landscape are confronted with the challenges of managing research data and ensuring long-term preservation and accessibility, but do not have the tools nor the knowledge needed to fulfill these requirements.

The development and implementation of a large number of isolated local solutions is cost-inefficient and cannot ensure accessibility. The use of private and international solutions brings substantial risks with respect to control and sustainability.

Hence, a national, public, sustainable and cross-disciplinary solution is needed.

### Objective

To offer a national, cross-disciplinary research data service by extending and scaling up the established domain-specific social science research data service FORSbase.

### Outcome

SWISSUbase is a research data service that provides a technical solution and services for the management of research projects and the archiving, dissemination, and promotion of research data and metadata across scientific disciplines.

### Partners

- FORS
- University of Zurich
- University of Lausanne
- SWITCH

Supported by: swissuniversities

### Launch

Available from January 2021

<table>
<thead>
<tr>
<th>Content</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project</td>
<td>3</td>
</tr>
<tr>
<td>Benefits</td>
<td>4</td>
</tr>
<tr>
<td>Institutional framework</td>
<td>6</td>
</tr>
<tr>
<td>System and workflow</td>
<td>8</td>
</tr>
<tr>
<td>Features</td>
<td>10</td>
</tr>
<tr>
<td>Services</td>
<td>11</td>
</tr>
<tr>
<td>What makes SWISSUbase unique?</td>
<td>12</td>
</tr>
<tr>
<td>Compliance</td>
<td>13</td>
</tr>
<tr>
<td>Tech stack</td>
<td>13</td>
</tr>
<tr>
<td>About us</td>
<td>14</td>
</tr>
</tbody>
</table>

3
**BENEFITS**

for partner institutions

› trusted and **certified in-house solution** for researchers to archive their data for the long term

› connectivity and **interoperability on the European level** (ERICs, EOSC, etc.) and the national level (SNSF P3, COSI)

› **sharing of development costs**

for data producers

› **common workspace** for research project teams to manage research data and metadata, synchronised with SWITCHdrive

› **data published in a FAIR, OAIS-compliant, and non-commercial repository** (requirement of the SNSF)

› **data producers control the access to their data** by defining the conditions of access to their data, ranging from open to highly restricted

› **certified, trustworthy environment for long-term preservation** of data

› **free persistent identifiers for data** (DOIs) for all published datasets

› **standardised data citations for all datasets** for use in journal publications

› **data producers receive information** about who has downloaded their data, and for which purposes

› **data producers can improve the visibility** of their data, making their work and data discoverable and reusable within the larger scientific community, at national and international levels

› **data producers gain in visibility as active players in their discipline in Switzerland**

for data consumers

› **an online public catalogue** with advanced search functionality for data and metadata discovery

› **data consumers can trust that data, metadata, and documentation are quality-controlled**

› **users of data have access to professional (human) service for discovery and access**

› **data for reuse or replication** are accompanied by **adequate documentation**

› **users receive a notification** when previously downloaded data have been updated
INSTITUTIONAL FRAMEWORK

SWISSUbase
- overall management
- general support and services to archive and share data
- IT development and operations
- general administration

Data service units at partner institutions
These can be data service units for one university, certain departments or institutes, or for an entire discipline (e.g. FORSbase for the social sciences).

Data consumer

Data producer

SWITCH
SWITCHhengines
SWITCHdrive
SWITCH edu-ID

SWITCH
- setup and support of the SWITCHhengines environment
- support for SWITCH edu-ID authentication and SWITCHdrive
- support for short-term and long-term storage solutions

SWISSUbase
- The Management Board is responsible for the overall direction of SWISSUbase and overseeing operational matters.
- The support and services team provides services and training to data service units at partner institutions, a helpdesk on the use of SWISSUbase, and cross-disciplinary expertise (legal advice, handling of sensitive data etc.).
- The IT unit assures ongoing operations, maintenance, and further development.
- The administration unit handles the general administration, billing, and reporting processes.

Data service units at partner institutions
- review, validate and publish project descriptions submitted by researchers
- perform quality assurance on deposited data and metadata
- archive the datasets deposited by researchers
- manage SWISSUbase users from their institution
- publish studies and datasets to the institutional catalogue
- provide training to data producers on SWISSUbase and research data management
- consult and assist individual researchers with data deposit and access
- offer IT helpdesk for researchers
**SYSTEM AND WORKFLOW**

**Data producer**
- **SWITCH edu-ID**
- **SWISSUbase Collaborator**
- **SWISSUbase Workspace**
- **SWITCH edu-ID**
- **Data consumer**
- **Search/browse**
- **Download**

**Processes**
- **Quality assurance**
- **Publication/archive**
- **Workshop**
- **Archive**
- **SWISSUbase Collaborator**
- **SWISSUbase Workspace**
- **SWITCH edu-ID**
- **Data consumer**
- **Search/browse**
- **Download**

**Environment**
- **Personal Workspace**
- **SWISSUbase Collaborator**
- **SWISSUbase Workspace**
- **SWITCH edu-ID**
- **Data consumer**
- **Search/browse**
- **Download**

**Users**
- **Data producer**
- **SWISSUbase Collaborator**
- **SWISSUbase Workspace**
- **Data consumer**
- **SWITCH edu-ID**

**Infrastructure**
- **SWISSUbase Collaborator**
- **SWISSUbase Workspace**
- **SWITCH edu-ID**
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**Study elaboration**
- **Submission**
- **SWISSUbase Collaborator**
- **SWISSUbase Workspace**
- **SWITCH edu-ID**
- **Data consumer**
- **Search/browse**
- **Download**

**Workspace**
- **Study elaboration**
- **Submission**
- **SWISSUbase Collaborator**
- **SWISSUbase Workspace**
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**Short-term storage of data and metadata during project.**
- Data and metadata are unpublished and only accessible by the project team.
- Data are accessible on Switchdrive.

**Fulfils international metadata standards:**
- DDI / META-SHARE

**General compliance:**
- FAIR data principles / GDPR

**Technical infrastructure:**
- SWITCHengines

**Long-term preservation of data and metadata.**
- Data and metadata are published in the catalogue and accessible to other researchers.
- Every dataset receives its own persistent identifier (DOI).

**Certified and in line with international standards:**
- OAIS / CoreTrustSeal
FEATURES

Existing features in FORSbase implemented and scaled up in SWISSUbase

- a FAIR, OAIS-compliant, and non-commercial repository (requirement of the SNSF)
- certified, trustworthy environment for long-term preservation
- free persistent identifiers (DOIs) for all published datasets
- standardised citations for datasets for use in journal publications
- data producers control the access to their data by defining the conditions of access, ranging from open to highly restricted
- customisable contract templates for data producers
- producers receive information about who has downloaded their data, and for which purposes

See FORSbase (forsbase.unil.ch) to learn more about these features.

New features available in SWISSUbase

- an embedded institutional project registry and catalogue allows partner institutions to have an overview of all the current and completed projects of the researchers affiliated with their institution

SERVICES

Expertise
We provide expertise and user support in archiving, data management and digital preservation.

Research infrastructures
We support and accompany the implementation of the data service unit at your institution.

Capacity building
We produce and provide guidelines, policies and training resources for the data service units at partner institutions and researchers.

Data protection and access
We provide guidance on data protection policies and access control.

Metadata and data discovery
We promote the use of rich metadata standards for data and metadata discoverability.

Data management
We provide guidance and best practices regarding data management for research data producers.

Digital curation and data publishing
We support and contribute to defining standards for long-term access to managed digital resources.

- discipline-specific metadata schemas for rich metadata
- SWITCH edu-ID authentication
- common workspace for research teams, synchronized with SWITCHdrive
- statistics on new projects, published datasets, and dataset downloads
WHAT MAKES SWISSUbase UNIQUE?

Rich metadata

FAIR data needs high-quality metadata. The more these metadata are discipline-specific, the better they suit the different scientific communities in terms of findability and reuseability of research data. That is why SWISSUbase provides a general metadata schema as well as discipline-specific metadata modules.

Services and expertise

Technical solutions for long-term storage of research data have been around for a while but are only a small part of a proper data archiving solution. SWISSUbase’s broad range of services and expertise in the management and preservation of data provide crucial added value for institutions and researchers.

COMPLIANCE

with international standards

<table>
<thead>
<tr>
<th>Compliance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OAIS</td>
<td>Open Archival Information System</td>
</tr>
<tr>
<td>FAIR data principles</td>
<td><img src="FAIR.png" alt="FAIR Logo" /></td>
</tr>
<tr>
<td>CoreTrustSeal</td>
<td>CoreTrustSeal is a standard for the trustworthiness of archiving solutions.</td>
</tr>
<tr>
<td>DDI</td>
<td>Metadata schema for social sciences</td>
</tr>
<tr>
<td>META-SHARE</td>
<td>Metadataschema for language resources</td>
</tr>
<tr>
<td>CMM</td>
<td>CESSDA Metadata Model</td>
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<tr>
<td>GDPR</td>
<td>General data protection regulation</td>
</tr>
</tbody>
</table>

TECH STACK

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTML</td>
<td>HTML is a standard markup language for structuring documents.</td>
</tr>
<tr>
<td>CSS</td>
<td>CSS is a style sheet language that is used for styling HTML documents.</td>
</tr>
<tr>
<td>Material</td>
<td>Material is a service that provides support for the presentation layer.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Python</td>
<td>Python is a high-level, interpreted programming language for general-purpose programming.</td>
</tr>
<tr>
<td>Flask</td>
<td>Flask is a micro web framework for Python.</td>
</tr>
<tr>
<td>SQLAlchemy</td>
<td>SQLAlchemy is a SQL toolkit and Object-Relational Mapping (ORM) framework.</td>
</tr>
<tr>
<td>Elasticsearch</td>
<td>Elasticsearch is a distributed, scalable search engine.</td>
</tr>
<tr>
<td>REST API</td>
<td>REST API provides a method for accessing and manipulating data.</td>
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</table>

<table>
<thead>
<tr>
<th>Metadata</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>JSON</td>
<td>JSON is a data interchange format.</td>
</tr>
<tr>
<td>PostgreSQL</td>
<td>PostgreSQL is an open-source relational database management system.</td>
</tr>
</tbody>
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ABOUT US

FORS is the Swiss centre of expertise in the social sciences and responsible for the development of SWISSUbase.

› We have nearly 30 years of experience in long-term preservation of research data.

› We offer already a certified trusted repository and a broad range of services, including data archiving, data management training and individual consultations.

› We work closely with researchers who produce and use data.

› We developed FORSbase in-house – a technical solution since 2013 for social science research data.

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