Position paper: *Social sciences and humanities research infrastructures in Switzerland*

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The purpose of this paper is to raise awareness and stimulate a discussion on the current situation of social sciences and humanities research infrastructures in Switzerland, the Swiss roadmap process, and possible improvements of the way in which projects for research infrastructures are funded. This paper was first written by an informal *Social Sciences and Humanities Swiss and European infrastructures* coordination group and then presented and discussed at a stakeholders' conference on May 31, 2022, in Bern.

Summary

Many of today's biggest challenges are societal and cultural. The war in Ukraine, dysfunctionalities of democracies, media and information systems, climate change, worldwide migration, and economic inequalities are central issues and threats that are rooted deeply in human and cultural behavior. Addressing these challenges requires a fundamental understanding of social, political, historical, economic, and cultural processes that are at the core of research in the social sciences and humanities (SSH).

In our rapidly evolving digital society, researchers in the SSH must be well equipped with digital methods and research techniques and have easy access to resources and information. It becomes increasingly important to create research infrastructures (RIs), connect and share knowledge about culture and society in the SSH domain as well. SSH RIs provide data and other information sources, develop suitable, cutting-edge data analysis tools, and ensure sustainable data storage and data sharing across countries and disciplines.

At the national level, the need for SSH infrastructures is not sufficiently addressed. The national infrastructure roadmap process, which aims to prioritize the development of RIs in Switzerland, has been rather biased against SSH projects in the last two rounds due to various mechanisms that favor natural science and medical RIs. It is of vital importance for the SSH community that this change. Science policy makers should recognize the importance of RIs in all domains and create fair and equal conditions for infrastructure prioritization and funding of RI for social science and humanities through the national roadmap process and specific funding mechanisms. SSH project leaders should take responsibility to coordinate well among themselves and to make sure new infrastructure projects are well embedded and linked, where feasible, to existing RIs in the domain.

1 Introduction

Research into important social, political, historical, and cultural processes, such as how to create peace and foster the establishment of functioning democracies, how to sharpen our understanding of cultural, linguistic, and ideological peculiarities, how to combat climate change, and how to face the challenges that demographic change poses to the labor market and social security systems, can only be studied on the basis of solid data, which in turn often requires well-established RIs. The human and social consequences of technical and medical developments also need further investigation. What is the use of developing a vaccine without understanding how a sufficiently large part of the population might be convinced of the vaccine's usefulness and thus increase its willingness to get vaccinated? What is the use of being able to effectively measure global warming and its consequences when we only have a very limited understanding of how to implement the necessary societal changes in order to fight global warming in the real world?

The SSH, and their objects of study, are critical for understanding the cultural, social, political, and economic challenges of modern societies and for preparing to shape the future development of the world. One example of a SSH scholars' object of study is human language. Language is an instrument of human communication and a central component of the identity of individuals, groups, cultures, or nations, an instrument for human cognition and expression, and also a training source for data-driven analytics. Another example is cultural heritage, which needs to be preserved in our technologically evolving society. A deep understanding of cultural heritage and how societies are rooted in culture is necessary to provide a stable social, political, and economic foundation for democratic societies. A third example is the need to understand the effects of health, social, economic, and environmental conditions and policies on the life-course of citizens to address demographic challenges or to handle migration. These examples highlight the importance and urgency of getting the entire SSH field anchored at the center of our knowledge society, with its rapidly evolving technologies, in a systematic and sustainable way. National infrastructures and active involvement in pan-European RIs are essential to support and enhance the sustainable development of digitally enabled research through their networks of people, knowledge, data and information, methods and tools.

2 Research infrastructures

In recent years, RIs have become increasingly important for research progress in many disciplines. As defined by the European Commission, RIs are "facilities that provide resources and services for research communities to conduct research and foster innovation."[1] They consist of (i) major scientific equipment or sets of instruments, (ii) collections, archives, or scientific data, and/or (iii) computing systems and communication networks. RIs can be used beyond research, such as for education or public services. From an organizational perspective, RIs can be single-sited, distributed, or virtual. For example, the High-Luminosity Large Hadron Collider at CERN in Geneva or the Extremely Large Telescope currently being built in Chile are single-site RIs, whereas *the Aerosol, Clouds, and Trace Gases Research Infrastructure* (ACTRIS) or the *European Social Survey* (ESS) are distributed types of RI. RIs are also necessary to implement Open Research Data (ORD) policies.

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[1] https://ec.europa.eu/info/research-and-innovation/strategy/strategy-2020-2024/our-digital-future/european-research-infrastructures_en

The growing importance of RIs over the last thirty years is related to some larger trends. Global science competition requires large and long-term investments. Research also becomes more collaborative in various disciplines involving many countries in collecting and storing data and, in some cases, also requires long-term data collections to detect trends. RIs are particularly important in all domains where research cannot be funded through existing project- or career-funding instruments. This is often the case when research requires large investments, long-term planning, and funding and when it needs the contribution and collaboration of many partners or countries. RIs, therefore, usually have specific governance and funding structures compared to typical research projects.

3 Research infrastructures in the field of social sciences and humanities

RIs are also key in the SSH, and not only in natural sciences, technical or medical fields. For example, libraries and archives have traditionally formed the core of infrastructures in the humanities. The digital age has not changed this. However, the digital transformation deeply impacts how such resources are made available. While traditionally scholars produced books and articles that were simply stored in libraries, nowadays humanities projects often output original data collections that are intended to be reused by others. Research outputs themselves become part of humanities infrastructures because they are meant to serve future researchers who might in turn contribute to their continuous evolution. For example, a digital edition of a historical source produced by one researcher might be enhanced with analytical annotations by another and linked with reference data about places, people, and artifacts by a third. Digital research output of the humanities is inherently dynamic in the long-term perspective. While books in paper or digital form remain central to humanities research, the dynamic digital product of humanities research as it has emerged over the past thirty years simply requires other instruments and infrastructures than those developed for print and open-access publications.

At a more general level, SSH RIs collect data and give scholars access to data, tools, services, knowledge, and networks they need, and they produce excellent, digitally enabled assets that are reusable, visible, and sustainable. Established European infrastructures that collect data in many countries include the ESS and the *Survey on Health, Ageing and Retirement in Europe* (SHARE) and infrastructures that make data and other resources available, such as *Consortium of European Social Science Data Archives* (CESSDA), *Common Language Resources and Technology Infrastructure* (CLARIN), and *Digital Research Infrastructure for the Arts and Humanities* (DARIAH). By charting stability and change in social structure, conditions, and attitudes in Europe and interpreting how Europe's social, political, and moral fabric is changing, as well as by investigating the effects of health, social, economic, and environmental policies over the life-course of European citizens and beyond, the ESS and SHARE RIs contribute significantly to a better understanding of our current society and to our preparation for the society of tomorrow. Other RIs, such as DARIAH and CLARIN, empower research communities with digital methods to create, connect, and share knowledge about culture and society and focus on language as a carrier of cultural content and information. In our rapidly evolving digital society, RIs such as DARIAH and CLARIN play an essential role in the application of novel, data-driven methods in the SSH domain, the discovery of new ways for machines to interact with humans and vice versa, and the increase of the level of data literacy, among numerous other benefits. CESSDA coordinates and connects existing national data archives, which are essential for making ORD a reality in the discipline. Exiting RIs also increasingly form clusters: All the SSH RIs at the European level are now working together in the Social Sciences and Humanities Open Cloud (SSHOC) in order to ensure that RIs are well

connected and create synergies where possible.[2] In addition, through the *European Open Science Cloud* (EOSC), European countries are aiming to build an entire interconnected scientific data space.[3]

From a Swiss perspective, (European) RIs are also gaining in importance because Switzerland is not currently associated with Horizon Europe, while Swiss participation in European infrastructures is still possible and Switzerland is unlikely to be excluded from RIs any time soon. Switzerland's participation in these European RIs may be done either as *Observer* or *Full member*. The status of Observer represents a preparatory and temporary phase during which the country prepares itself (i.e., its national node) to join an European RI. Importantly, only full members have the right to vote in the general assemblies of the European Research Infrastructure Consortium (ERIC) and, thus, the opportunity to be directly involved in pan-European decision-making processes for the strategic development of SSH RIs.

Infrastructures exist not only at the international level but also at the national level. In the social sciences, the Swiss Center of Expertise in the Social Sciences (FORS) hosts some national infrastructure projects such as *Swiss Electoral Studies* (SELECTS), *Measurement and Observation of Social Attitudes in Switzerland* (MOSAiCH), and the *Swiss Household Panel* (SHP), as well as servers such as the Swiss node for ESS, *International Social Survey Program* (ISSP), CESSDA and, in collaboration with the University of Lausanne, SHARE. The Swiss National Center for Data and Services in the Humanities (DaSCH) was established as a sister organization supporting the creation and dissemination of humanities research across disciplines, furthering, for instance, reflection on questions of history, identity, beliefs and values, culture, and language, which are becoming more and more relevant in the contemporary regional and global context. Several other national infrastructures exist and are funded through the Swiss Academy of Human and Social Sciences (SAGW/ASSH), the SNSF, swissuniversities, and/or by higher education institutions (e.g., Schweizerisches Idiotikon, the four national dictionaries, Dodis, infoclio.ch, the Swiss-AL family of corpora).

Overall, funding for infrastructures comes from a variety of sources. In Switzerland, many of the larger investments are funded or cofinanced either directly by the federal government or through the Swiss Federal Institute of Technology (ETH) as part of the ETH budget. The SNSF also funds infrastructures (including FORS and DaSCH since 2021), and the SNSF has the R'Quip program, which covers smaller infrastructures mainly in the natural sciences and medicine. Some funding is channeled through the Swiss academies, including various editions, dictionaries, and databases in the SSH, but also the *Swiss Personalized Health Network* (SPHN). Last but not least, many of the higher education institutions in Switzerland also finance infrastructures, such as laboratories and technical infrastructures. These costs can be substantial, especially in the natural sciences and medicine. While at many higher education institutions the non-salary related costs in the SSH account for about 15%–20% of the total costs, in medicine or the natural sciences this share is 30% or more, representing a substantial investment in local RIs as well.

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[2] https://sshopencloud.eu/
[3] https://eosc-portal.eu/

4 Roadmap processes

So-called roadmap processes have been used to guide the development of the RI landscape. Infrastructure roadmaps serve as a tool for prioritizing and planning RIs, but they are not a funding instrument, at least not directly.

At the European level, this roadmap process is carried out by the European Strategy Forum on Research Infrastructures (ESFRI) and currently takes place in cycles of four years. The roadmap process includes a landscape analysis, evaluation of new project proposals, and monitoring of existing projects. The last update of the roadmap was in 2021, and the next is planned for 2025. There are currently sixty-three projects on the ESFRI roadmap; forty-one of the projects are so-called landmarks, which are usually the more established projects.[4] Many of the RIs are distributed infrastructures (forty-eight out of sixty-three), that is, they are consortia with different activities in different countries and institutions. Many of the landmarks have been established as ERICs, a special legal form under European law. Most infrastructures are funded by national funds; however, special funding schemes for infrastructures also exist within Horizon Europe.[5]

Eleven of the sixty-one projects are in the SSH domain. Five of these are landmarks: CESSDA ERIC, CLARIN ERIC, DARIAH ERIC, ESS ERIC, and SHARE ERIC. The other projects are GGP, RESILIENCE, *European Research Infrastructure for Heritage Science* (E-RIHS), *Growing Up in Digital Europe: EuroCohort* (GUIDE), *OPen scholarly communication in the European Research Area for Social Sciences and Humanities* (OPERAS), and *European Holocaust Research Infrastructure* (EHRI), which have not been established as ERICs. Switzerland is currently participating in four of the five landmarks (CESSDA, DARIAH, ESS, SHARE) and will join CLARIN by the end of 2022 as an Observer. The application to participate in GGP was submitted earlier in 2022.

Increasingly, there are also roadmap processes at the national level, including in Switzerland, as there is a need to plan, prioritize, and coordinate not only at the European level but also in many countries at the national level. In Switzerland, an infrastructure roadmap was published for the first time in 2019, and an update of the process is currently underway so that a new national roadmap can be published in 2023.[6] The roadmap has two main components:

1. the development of new national infrastructures; and
2. Swiss participation in international RIs.

A call for both parts was published in 2021. For new national infrastructures, the proposal had to come from a higher education institution; institutions like FORS or DaSCH were not allowed to submit projects unless in partnership with higher education institutions. Swissuniversities and the ETH board then preselected proposals for new national RIs. This meant that the higher education institutions and swissuniversities were in reality gatekeepers, as the rectorates had to express their support and also prioritize certain projects within their institution, given that it was at the level of individual higher education institutions where the necessary funding had to be provided should an IR project make it on the roadmap. For Swiss participation in international RIs, the proposal had to go directly to SERI.

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[4] Detailed information on all ESFRI projects can be found at https://roadmap2021.esfri.eu/
[5] https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/research-infrastructures_en
[6] https://www.sbfi.admin.ch/sbfi/de/home/forschung-und-innovation/forschung-und-innovation-in-der-schweiz/uebersicht-forschungsinfrastrukturen.html

For both the national and international RIs, the SNSF conducted the scientific evaluation in 2022; it will then be presented to the Swiss higher education institutions and the ETH Board, who will assess the feasibility of the submitted RIs. The final decision on the next national roadmap will be taken by SERI/the Federal Council.

5 The roadmap process from the social sciences and humanities perspective

From the SSH perspective, the experience with the current roadmap process has been mixed. Existing institutions such as FORS and DaSCH and Switzerland's nodes of some ERICs have become part of the national infrastructure roadmap. Some editions and data collections in the humanities have also become part of the roadmap, funded through the SAGW/ASSH. However, most of these institutions and projects were established long before the introduction of a national roadmap process.

When it came to prioritizing new national projects, the outcome was less satisfactory from the SSH's point of view. In the first national roadmap process in 2019, only one new national project, the Linguistic Research Infrastructure (LiRI), made it onto the roadmap, representing 2% of the budget for new national infrastructures. The costs are covered entirely by the University of Zurich; a funding mode for access for researchers from other areas has to be found in each case. Such an arrangement is not conducive to building an RI intended to operate at the national level. In the current phase for the 2023 Roadmap, not a single genuine new SSH project made it to the evaluation phase. As far as participation in European projects is concerned, participation in DARIAH was included in the 2019 Roadmap, CLARIN will be included in the 2023 Roadmap and participation in GGP is currently being evaluated. Participation as Full member at the European level in the SSH is not very costly; overall, less than 1% of the funds for participation in international RIs and research organizations is spent for participation in SSH infrastructures.

There are various reasons for this overall unfavorable outcome from the SSH's point of view:

- The roadmap process was not based on a strategic consideration across all disciplines of where infrastructures exist and where Switzerland has gaps. There is also no tradition of acknowledging infrastructure needs from the SSH domain at all levels of science policy decision-making (higher education institutions, swissuniversities, SERI). The Swiss Academy of Sciences (SCNAT)[7] carried out a systematic landscape analysis in certain disciplines but not in any other area. Independent initiatives have been launched by members of the SSH community themselves only recently: (i) during autumn 2021, the CLARIN-CH Consortium made an overview of language resources and areas of expertise and will launch a survey in autumn 2022; (ii) the DARIAH-CH Consortium is currently conducting a landscape analysis, in the form of a survey, for the field of Digital Humanities; (iii) the Digital Discourse Lab from the Zurich University of Applied Sciences is conducting a landscape study for discourse analysis, funded by the SAGW/ASSH. Nevertheless, these initiatives are done separately and do not pursue the same objectives. Other SSH disciplines are not included in a systematic landscape analysis.

- A minimum threshold of five million CHF for a period of four years was set for new projects. This is problematic for several reasons. Size and budget are not an indication of importance, excellence,

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[7] https://scnat.ch/en/for_a_solid_science/networks_and_infrastructures/research_infrastructures

or relevance; even smaller- or medium-sized infrastructures can be very important for a discipline.[8] SSH infrastructures are often smaller in scale compared to other disciplines, and inflating budgets would likely have led to criticism/rejection.

- Projects under ten million CHF—with the exception of the ETH Domain—have to be covered exclusively by funds from higher education institutions. Only when a new RI exceeds ten million CHF can higher education institutions apply for national funding of up to 50%. Since the universities also have no strong tradition of recognizing the need for SSH infrastructures, this was not favorable for the SSH, so the projects had difficulty moving past the universities' bottlenecks.

- The combination of the required level of funding and the fact that direct funding flows mainly to the ETH domain, where the SSH are a secondary concern, make it particularly difficult for SSH projects to succeed. In practice, instead of being a strategy and prioritization exercise for all disciplines and higher education institutions, the roadmap mainly opened up an additional funding line for the ETH domain in the first roadmap process.

- Projects in the SSH are thus not well positioned for participation in such calls. There are generally only a limited number of strong projects, and projects tend not to pass the internal review process within higher education institutions.

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[8] https://www.leru.org/publications/four-golden-principles-for-enhancing-the-quality-access-and-impact-of-research-infrastructures

6 Toward a fair funding environment for infrastructures in social sciences and humanities

To improve the situation for SSH RIs and to create a fair and equal funding environment, different steps are required:

1. ***Higher education institutions as well as research policy actors such as swissuniversities and SERI should recognize the need for the SSH to advance research through infrastructures and create respective funding and governance models.***

Research into important social, political, historical, and cultural processes can only be studied on the basis of solid data and information, which in turn requires well-established RIs. Creating sustainable digital infrastructures for the SSH will require a sustainable perspective on personnel, funding, and governance. Establishing infrastructures in the SSH often does not require large investments in equipment or facilities, but it does require large investment in personnel. SSH RIs need to be able to employ computer and other specialists with a range of skills and expertise, just as some facilities in other domains need engineers or lab technicians to build and run a technical infrastructure. It is also essential to ensure the continuity of this expertise since any change of staffing entails a loss of knowledge. Conditions will, therefore, need to be created to employ people for the long-term with competitive salaries.

Being able to run long-term infrastructures needs to be a key factor in the design of funding instruments. Specialists representing such infrastructures need to be involved in these processes from the start. If this does not happen, funders will provide money for projects whose output cannot be sustainably preserved and reused.

2. ***Switzerland should systematically participate in European SSH infrastructures once the relevance for the Swiss research community is established.***

Switzerland should create the legal conditions and provide funding for Swiss research institutions to participate in European RIs, especially ERICs, as Full members and not just as Observers, as currently proposed by the Federal council.[9] The Swiss nodes of the European RIs, in turn, should have the responsibility of properly coordinating their efforts, creating synergies, and avoiding duplication.[10]

3. ***The national roadmap process should create fair and equal conditions for prioritizing infrastructures in all disciplines.***

This step includes:

*   A systematic landscape analysis should be carried out in all disciplines of the SSH domain in order to identify needs and gaps within a research community. A landscape analysis of current projects with digital outputs will reveal which of them are in urgent need of long-term solutions that go beyond their current funding by the SNSF and SAGW/ASSH;

*   Prioritization should be the same for all disciplines and all higher education institutions, and not separate for the ETH domain and the other higher education institutions;

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[9] https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-88020.html
[10] The Swiss nodes of SSH infrastructures started to coordinate in the previous years and hold regular meetings.

- Minimum budget requirements should be lowered or eliminated altogether so that less costly infrastructure projects can be evaluated when they correspond to a clearly expressed need of a research community;

- Policy makers need to acknowledge that SSH infrastructures also need adequate resources. While the spending on equipment in the natural sciences or medicine far outstrips any budget of a history or literature project, there is a need to create long-term funding solutions in the SSH domain, too, in order to get the most out of new digital research in the SSH. This includes, in addition to technical and digital infrastructures, investments in human resources that can build and operate the respective infrastructures.

- Therefore, funding models for prioritized infrastructure projects of national importance should be developed jointly by research funding organizations (SERI, swissuniversities, SNSF, and higher education institutions).

4. *Stronger emphasis should be placed on data preservation and reuse.*

At the moment, many researchers in the SSH are forced to think only within the timescale of a typical project duration in absence of long-term funding models. There needs to be a shift toward a landscape in which the project is seen as the first step in a series of intellectual endeavors that will continue adding to and transforming the object of research. Such thinking is inherent in the SSH in principle, but it is not supported in practice by the infrastructural, organizational, and financial frameworks within which research is undertaken. This means that data produced by projects, often at great cost to public funders, are not carried on or well preserved.

5. *The SSH research community needs to coordinate well, create synergies between existing infrastructures and long-term projects, and make sure that newly proposed infrastructure projects for future roadmap processes are well linked to existing RI at the national and international level.*

Existing and future SSH infrastructure projects in Switzerland should showcase how they collaborate and create synergies within the SSH domain but also with RIs in other domains. Like cluster projects at the European Level, in the SSH domain through the SSHOC project, SSH RIs should form clusters as well and establish forms of coordination. RIs usually have a unique relevance to advance research in one research community. However, RIs especially need to cooperate in the establishment of digital and technical tools for data creation and preservation as well as analytical tools for the exploration of data and information. Infrastructure should also coordinate in training and education, which are key aspects of the activities for SSH infrastructures. Newly proposed projects and RIs need to make sure that they have adapted governance and funding models and that they are well linked and coordinated with existing RIs in order to create synergies and avoid the duplication of efforts.

7 Abbreviations

ACTRIS	Aerosol, Clouds, and Trace Gases Research Infrastructure
CESSDA	Consortium of European Social Science Data Archives
CLARIN	Common Language Resources and Technology Infrastructure
DARIAH	Digital Research Infrastructure for the Arts and Humanities
DaSCH	Data and Service Center for the Humanities
EHRI	European Holocaust Research Infrastructure
EOSC	European Open Science Cloud
E-RIHS	European Research Infrastructure for Heritage Science

ERIC	European Research Infrastructure Consortium
ESFRI	European Strategy Forum on Research Infrastructures
ESS	European Social Survey
FORS	Swiss Center of Expertise in the social sciences
GGP	The Generations and Gender Program
GUIDE	Growing Up in Digital Europe: EuroCohort
ISSP	International Social Survey Program
LiRI	Linguistic Research Infrastructure
MOSAiCH	Measurement and Observation of Social Attitudes in Switzerland
OPERAS	OPen scholarly communication in the European Research Area for Social Sciences and Humanities
RESILIENCE	REligious Studies Infrastructure: tooLs, Innovation, Experts, conNections and Centers in Europe
SELECTS	Swiss Electoral Studies
SERI	State Secretariat for Education, Research, and Innovation
SHARE	Survey on Health, Ageing, and Retirement in Europe
SAGW	Schweizerische Akademie der Geistes- und Sozialwissenschaften
SAHSS	Swiss Academy of Human and Social Sciences
SHP	Swiss Household Panel
SNSF	Swiss National Science Foundation
SPHN	Swiss Personalized Health Network
SSH	Social Sciences and Humanities