

HLS Blueprint – Level A

Strategic orientations for the Health and Life Sciences Cluster



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AUTHORS Working Group Blueprint

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Introduction

In July 2021, Switzerland’s four key education, research, and innovation (ERI) actors – the ETH Domain, the Swiss Academies of Arts and Sciences, the Swiss National Science Foundation (SNSF), and swissuniversities— published the Swiss National Open Research Data (ORD) Strategy¹, initiated by the State Secretariat for Education, Research and Innovation (SERI). This strategy was further detailed in an Action Plan² in January 2022, which established the National ORD Strategy Council (StraCo) to oversee its implementation.

The StraCo is responsible for:

1. the implementation of the ORD Strategy
2. the consolidation of the ORD Landscape, as part of the Action Plan’s Action Area B and D (B: “Development, promotion, and maintenance of financially sustainable basic infrastructures and services for all researchers”; D: “Building up systemic und supportive conditions for institutions and research communities”).
3. the development and updating of the ORD Action Plan
4. representing the national ORD vision and the concerted interests of ERI actors regarding ORD in accordance with the ORD Strategy

To this end, the StraCo identifies specific disciplinary clusters within the Swiss ecosystem. These clusters undergo in-depth landscape analyses. The findings from these analyses are then translated into strategic decisions. This process ensures alignment with the StraCo’s mission. The StraCo has currently prioritised three clusters: Health and Life Sciences, Social Sciences and Humanities, and AI/Data Science.

The Blueprint is consequently a strategic plan for coordinating Research Data Infrastructures (RDI)³ and services of national relevance across Switzerland’s scientific landscape, which would adequately cover the main disciplinary clusters, starting with the Health and Life Sciences (HLS). The development of the Blueprint builds

upon landscape analyses conducted by Task Forces assembled by the StraCo. Using the information from these cluster analyses, the StraCo develops strategic options for the development, extension, or merging of infrastructures. This effort begins with the Cluster-specific HLS Blueprint, based on a landscape analysis and recommendations published in February 2024 and updated in July 2024⁴. The Blueprint serves as a guidance tool for long-term planning, influencing funding decisions, and encouraging institutions to align their strategies accordingly. As such, the Blueprint can feed into the strategic planning aspect of the Swiss Roadmap for research infrastructures.

The StraCo aims to enhance data interoperability and research quality within the Health and Life Sciences Cluster through the HLS Blueprint. The HLS Blueprint addresses critical gaps identified in the Task Force’s landscape analysis. Increased coordination among stakeholders would foster collaboration, establish robust and sustainable research data infrastructure, and promote excellence in research. The StraCo wishes to co-develop this vision for the cluster in time for this input to feed into the ERI period 2029-2032. There is much at stake, and seizing this momentum is essential for improving patient outcomes and safeguarding Switzerland’s edge and leadership in health innovation.

1 National Open Research Data Strategy, July 2021 (<https://openresearchdata.swiss/resources/swiss-national-open-research-data-strategy/>).

2 National Open Research Data Action Plan, January 2022 (https://openresearchdata.swiss/wp-content/uploads/2024/10/EPFL_ORD_ActionPlanV1.o_December_2021_def.pdf).

3 National ORD Strategy Council, “Concept paper: Research Data Infrastructures: a distinct characteristic in research infrastructures”, October 2023 (https://openresearchdata.swiss/wp-content/uploads/2024/07/Concept-Paper-StraCo_V4_2023-10-23-5.pdf).

4 ORD Task Force Health and Life Sciences Final Report, Second version, July 2024 (<https://openresearchdata.swiss/wp-content/uploads/2024/08/HLS-Landscape-Analysis-FULL-v3-190626.pdf>).

Cluster Specific Blueprints such as the HLS Blueprint are composed of two documents:

- Level A (strategic level): describes the main objectives and strategic orientations of the StraCo for the cluster, provides pathways to reach the objectives, and paves the way for a stakeholders engagement process to refine, consolidate and operationalize these strategic orientations.
- Level B (operational level): concretizes the strategic orientations and objectives. This may include a description of processes, timelines and milestones, roles and responsibilities of stakeholders, governance, funding, and resource implications, as well as a SWOT analysis of the cluster from different thematic perspectives. In developing the strategic orientations of the HLS Blueprint, the Working Group Blueprint⁵ has started addressing level B but seeks to carry on this work in collaboration with key stakeholders in the cluster.

The present document corresponds to Level A. It will be used as a basis for a stakeholders engagement, up until the start of 2025. This effort aims to engage the institutions of the ORD Strategy and key stakeholders of the cluster, including the initiatives analysed in the Task Force HLS report, and the hospitals willing to participate, around the general intentions of the Blueprint and to allow them to work with the Blueprint Working Group to develop aspects relevant to the operationalisation of the strategic orientations (Level B). The next sections describe the two overarching objectives of the HLS Blueprint and the associated strategic orientations.

These strategic orientations stem from a process of elimination in which the Working Group Blueprint, in collaboration with the Task Force HLS, the Strategy Council and its Coordination Group, assessed different options against their alignment with the following:

1. It must be connected with the reality of the ORD ecosystem as described in the landscape analysis of the Task Force HLS.
2. It must be linked to the opportunities for coordination identified by the Task Force HLS as well as proposals developed by other actors (e.g. future of DCC, position paper of SSC, Roadmap RI submissions...)
3. The overall vision and the guiding principles of the National ORD Strategy, as well as the objectives in Action Area B of the ORD Action Plan related to the development of Infrastructure and services of foremost national relevance in the Swiss ORD landscape.
4. The StraCo's intentions for the development of ORD clusters and the HLS cluster in particular, developed in discussions and decisions since its inception. These can be summarized as follows:
 - A strategic vision, carried by the StraCo, should support but not replace bottom-up developments coming from the research community and service providers.
 - Cost-effectiveness, the reduction of duplicated efforts, and an avoidance of uncontrolled development of new initiatives should be pursued as a matter of strategy.
 - New governance bodies should not be created. Instead, governance should rely on improvements in how existing bodies operate and interact with each other and with the StraCo.
 - HLS as a research concern, must not be considered alone, but in connection to the wider public health development.

⁵ The Working Group Blueprint (WG Blueprint) has been formed in January 2024. It currently comprises members from the Task Force Health and Life Sciences who conducted the landscape analysis, and members of the StraCo's coordination group (CoG) who bring in a policy/strategic perspective.

The HLS Blueprint aims to consolidate and improve the ecosystem of research infrastructures and services in the HLS Cluster.

Under the umbrella objective of consolidating and improving the ecosystem of RDI in Health and Life Sciences, the proposed vision is to focus the attention in this cluster on four areas of strategic build-up and consolidation: interoperability, findability, AI capacity-building, and international integration. For each of these areas, a specific proposition has been formulated, as outlined below. The StraCo intends for these propositions to be adapted and refined in collaboration with the stakeholders and key actors.

Within the four strategic areas, initiatives are encouraged to rally behind the common strategic orientations and refrain from developing parallel efforts. Initiatives outside these four strategic areas, particularly focusing on data collection, can be developed bottom-up with the support of individual institutions and evaluated for excellence and impact without requiring additional strategic coordination. However, they should operate by referring to and coordinating with the initiatives in the four strategic areas.

1. Empower an initiative of national relevance to operationalize the existing data interoperability framework (DCC) and further develop it for health-related clinical and non-clinical data, in alignment with international standards.

The interoperability of data in the HLS cluster is a priority. A single initiative should be mandated to act as a facilitator, providing guidelines and rules on how to implement existing international quality standards and supporting hospitals, institutions, and databases in implementing those standards. Considering the achievements of the SPHN-DCC⁶ in developing an interoperability framework in collaboration with the university-hospitals, higher education institutions, the ETH-Domain, the SIB, several other partners, and the support of SERI, the future DCC might be the appropriate entity for such a mandate.

The mandate should provide framework conditions for this standardisation efforts. They should notably:

- *seek to align with international standards, to facilitate the integration of Swiss initiatives into international developments (e.g. EOOSC).*

All involved actors should expand the collaboration with international initiatives to align their standards and allow researchers to access further data.

- *have a clear objective to provide harmonisation and alignment across the cluster and be independent of the needs of a specific network, services, or infrastructure.*
 - *engage all stakeholders and initiatives accordingly.*
- The DCC would continue to collaborate closely with complementary infrastructures and data producers such as research institutions, hospitals, SBP, SCTO, SIB⁷, and SFGN⁸ for coordinated standardisation efforts and interoperability.

As the reference platform for the interoperability and reuse of health-related data for research, it should be actively involved with DigiSanté⁹ to bring its technical expertise to all relevant fields of the initiative.

Hospital data should be systematically integrated into the DCC tools, with data remaining with the hospitals as they collect consents. As standardized, structured data collection is costly, technical manpower for aligning data with DCC standards should be provided by DCC to alleviate hospital costs. DCC should gradually reinforce its capacity to adapt and offer its interoperability framework beyond the university hospitals and to other initiatives such as cohorts, registries, etc.

- *be extended to the life sciences.*

With the support of the relevant infrastructures and initiatives, DCC extends standardisation and interoperability efforts to human non-clinical data and progressively to other research fields to respond to future health challenges such as One Health (e.g. microbiology data, bioimaging data, data from the social sciences, environmental data). The future DCC promotes the re-use of clinical data for broader research endeavours.

To be enabled to conduct this mandate, the future DCC and key data portals (see Proposition 2) should be funded in the long term by a single ERI actor, preferably SERI. It is also important that cantons and institutions recognise the importance of harmonising data for research purposes and support university and cantonal hospitals in aligning with DCC standards. Funders and institutions should strongly encourage new and existing initiatives to align with DCC and the core infrastructures to consolidate their reference role. The aim is to have researchers systematically use the DCC interoperability framework.

6 SPHN-DCC, Swiss Personalized Health Network – Data Coordination Center

7 SIB, Swiss Institute of Bioinformatics

8 SFGN, Swiss Federated Genomics Network

9 Programme to promote digital transformation in the healthcare sector. DigiSanté was commissioned by the Federal Council. It comprises 50 projects led by the FOPH and the FOS.

2. Mandate as few as possible key data portals of national relevance that cover the need for findability of and accessibility to most data in the cluster, driving the federation and improving the quality of HLS repositories.

As bottom-up initiatives produce data of value in the cluster, the ability for researchers to find and access it must be a priority. To that end, a restricted number of data portals should be consolidated as the main element for finding and accessing most of the HLS cluster data and considered portals of national relevance. The key data portals should be integrated into relevant international initiatives, if not already the case, and other efforts should be merged with those. The duplication of efforts through parallel initiatives would therefore be limited, leading to cost-efficiency for funders and a clearer findability structure for researchers.

The key data portals should be identified in collaboration with stakeholders. However, on the basis of the HLS landscape analysis, the following four are considered as candidates: 1) the SPHN-DCC Data Exploration and Analysis System (DEAS) for clinical data; 2) the SPB NExT Catalog for sample data; 3) Expasy (SIB) for life sciences data; and 4) the Swiss Federated Genomics Network (SFGN) for genotypic and phenotypic data.

Through these portals, researchers should be able to direct their search for HLS data to the portals and get information on the location of the data and its access policies. This would facilitate research endeavours, as data are easily findable, and it guarantees harmonized data at high-quality standards.

These portals should implement common operating standards, aligned with DCC's data interoperability framework (cf. Proposition 1) with which they would collaborate to make sure standards are adapted to different data types and machine-readable to allow for data-science/AI usage (cf. Proposition 3). Interoperability between portals and between the portals and international data infrastructures and initiatives should also be explored in this framework. The key portals should act as focal points for other data infrastructures or databases and support them in the harmonisation efforts for data to reach the portals' standards (e.g. cantonal hospitals, multi-omics databases, bioimaging databases, etc.). It would be essential that data providers recognize the importance of the portals and are encouraged to align with them.

3. Initiate a national drive for the integration of AI and data science tools in the HLS cluster, connecting dedicated initiatives of national importance and fostering innovation across existing initiatives.

The integration of data science and AI as a core component of the HLS cluster must be strengthened to drive innovation and make healthcare more personalized, accessible, and efficient. The StraCo wants to drive momentum for AI strategic development and capacity building in the HLS cluster.

To that end, a select number of RDI should be designated as national providers of centralized AI tools and receive the mandate of openly sharing these tools within the HLS cluster. These 'flagship' initiatives would also be responsible for providing training programs to equip researchers, clinicians, and healthcare professionals with the necessary skills and knowledge to apply AI techniques effectively in health and life sciences research. The development of data platforms for HLS research should be tightly connected and coordinated with AI/data science services (cf. Proposition 1 and 2). Collaboration with other stakeholders in the cluster is essential to prevent normative capture by these initiatives. The StraCo invites key stakeholders in the cluster to work with the WG Blueprint to formulate a concrete proposal.

The development of AI tools in the HLS cluster should strike the optimal balance between having the appropriate space for the bottom-up development of innovative and potentially disruptive AI projects and enabling resource efficiency through national leadership on general AI service provision. This collaborative framework would enable researchers, healthcare providers, and industry stakeholders to share deidentified patient data, analyse data distributed across several locations, and collaborate on research projects to develop and deploy AI solutions.

Regulatory frameworks should ensure that AI-driven technologies meet safety, efficacy, and quality standards. AI algorithms developed for healthcare applications would need to undergo rigorous scrutiny (especially in terms of responsibility, bias, and equity) and benchmarking to assess their performance, reliability, and generalizability. In line with similar work in other fields (e.g. social sciences), standardised evaluation protocols and reference datasets can help to ensure the consistency and reproducibility of different studies.

4. Reinforce the international dimension in the development of the HLS cluster, promoting international partnerships and attractiveness to global researchers, over the development of local-for-local resources.

The national and international, particularly European, HLS landscapes should not develop in parallel but rather be increasingly seamlessly connected and integrated with each other. Swiss HLS actors should be empowered to be active, reliable, and esteemed partners on the global stage.

All infrastructures of national importance in the HLS cluster should participate in new or existing international research projects and infrastructures. It should be recognised by the funders and SERI as an evaluation criterion for national importance and regularly monitored according to the needs of researchers.

The utilization of a Swiss RDI or service by international actors would also be a key quality criterion. It acknowledges that, in certain instances, having a few users within a robust global scientific community may carry more weight than having numerous users within a local context, as exemplified by research endeavours focused on rare diseases.

Through their participation in international infrastructures, national infrastructures, or initiatives should channel contributions to the development of international standards through the national focus point. They should actively engage in international discussion aimed at refining the implementation of the FAIR principles in the HLS domain¹⁰.

There is progress to be made to ensure researchers are well-informed about how they can use/leverage international infrastructures and services for their research endeavours, thereby mitigating the risk of developing redundant infrastructures and services. This principle would be embedded within the ORD Charter/Pact (see Proposition 5).

Given the strategic significance of the designation of national or thematic European Open Science Cloud (EOSC) node(s) for data access and sharing, the development of national RDI in connection to EOSC, but also European Research Infrastructure Consortia (ERICs), should be coordinated with a top-down approach. These discussions should refer to the HLS Blueprint as strategic guidance. There should be a close and transparent collaboration with funders, institutions, and SERI, where aims are commonly discussed and agreed upon. Infrastructures of national importance mandated to function as national nodes for international infrastructures, should receive dedicated long-term funding and serve the entire HLS research community.

¹⁰ The Council and the European Parliament have in March 2024 reached a provisional agreement on the establishment of the European Health Data Space (EHDS) https://ec.europa.eu/commission/presscorner/detail/en/ip_24_1346

The HLS Blueprint aims to propose a governance model that promotes collaboration within the intended strategic framework

The governance model proposed by the StraCo for the HLS cluster is collaboration driven. It revolves around bilateral or multilateral agreements and mutual responsiveness and focuses on incentives and the identification of mutually beneficial situations. These incentives should extend beyond just financial considerations.

The starting point for this governance model is the “HLS ORD Charter/Pact”, a document which formalizes the strategic orientations presented in this document. The envisioned content for the Charter/Pact is detailed in Proposition 5.

The Charter/Pact is a constitutional document, signed by the largest number of relevant stakeholders to create a common basis and a strategic framework for collaboration in the cluster. From then on, governance takes the form of a horizontal, multilateral process, with key actors and stakeholders agreeing to mutual commitments through Memoranda of Understanding (MoUs) and agreements (see Proposition 6).

The governance model aims to achieve two goals. First, it seeks to foster bottom-up innovation and expertise. Second, it aims to provide strategic guidance through the Charter/Pact. The model strives to harmonize these two elements. It would encourage multilateral collaboration among stakeholders while ensuring strategic coherence with the StraCo's vision, without resorting to an overarching central body.

In considering the governance model, Propositions 5 and 6 below therefore need to be addressed together. The model will need to be refined in collaboration with stakeholders.

In particular, engaging hospitals is key and strong incentives are needed. They suggest focusing on data valorisation as a potential draw. To develop effective strategies, the StraCo plans to collaborate and engage with hospitals to promote a broad adhesion to the proposed governance.

Additionally, it is considered important that the proposed governance ensures a close collaboration with DigiSanté. A fruitful exchange with the FOPH (*Federal Office of Public Health*) and the FOS (*Federal Office of Statistics*) is essential.

As a preamble, it is important to highlight that the resource requirements associated with the proposed governance model remain uncertain, given the difficulties in accurately assessing current and future needs at this stage of the discussion. This issue continues to generate differing analyses within the Working Group Blueprint and is anticipated to be clarified during the stakeholders engagement phase as the Blueprint progresses to its operational level (Level B).

5. Establish an HLS ORD Charter/Pact¹¹ that defines an overarching vision for the development of the cluster in reference to the StraCo Blueprint and the ORD national strategy, as a tool to facilitate the engagement of HLS actors

The HLS ORD Charter/Pact (hereafter “Pact”) derives from the National ORD Strategy and should be developed under the leadership of the StraCo and with the active engagement of stakeholders within the cluster, including university hospitals and other hospitals¹². In developing the Charter/Pact, actors and decisionmakers at the cantonal level also need to be adequately engaged and considered. The goal is to have it signed by all RDI of foremost national relevance in the cluster, as well as by the broadest possible number of other actors providing services and infrastructure for HLS research data.

The Charter/Pact is thought of as a constitutional document, designed with the intention to operate with a minimal dedicated resource¹³ beyond its initial drafting and signing. The aim is for the framework defined in the Charter/Pact to be self-consistent in the long-term and not require frequent updates.

In terms of content, the Charter/Pact would:

1. Establish the overarching vision for HLS research data in Switzerland, integrating the strategic orientations outlined in the present document (Level A). It would also outline the vision’s underlying principles: a cluster driven by the values of data FAIRness¹⁴, where a cohesive community fuels progress, ensuring the HLS cluster is fit-for-future, ready to lead scientific and technical advancements and embrace their full benefit.

2. Translate and anchor key principles of the ORD Strategy in the HLS cluster:
 - a. Recognizing the collective value of HLS health-related data, and the need for its sustainable management and valorisation to advance research and medical excellence.
 - Clarifying expectations in terms of ORD in the cluster: openness revolves around FAIR principles, with data being “*as open as possible, as protected as is necessary*” and in alignment with the Swiss legal framework.
3. Recall international best practices, and the intention to integrate HLS data with and into international initiatives (cf. Proposition 4).

Engagement with the Charter/Pact would be a requirement in relevant funding schemes and funding processes of the SNSF, swissuniversities and the concerned HEIs, ETH Domain, and A+. However, as a rallying cry to build a culture of collaboration and a common sense of purpose in the HLS cluster, the Charter/Pact would extend to other actors in the field, notably in the clinical setting.

This governance model aims to foster a collaborative culture in the HLS cluster where stakeholders are pulling together and where efforts are mutualized and complementary, supported by the Charter/Pact to ensure coherence across the landscape. Furthermore, researchers would gain from a clearer framework balancing FAIRness and protection of data in their field(s).

Working together within this framework presents an unprecedented opportunity to advance data interoperability, findability and to empower research quality and culture in the HLS Cluster in Switzerland. Multiple reports¹⁵ have highlighted that our country is falling behind in this area, emphasizing the urgent need for coordinated action.

We firmly believe this collaborative approach is our best path forward within the Swiss framework of achieving sustainable, stable, and robust progress in the Health and Life Sciences (HLS) cluster.

While this endeavour will require time and effort, it represents a crucial investment in our future. We’re not just enhancing research capabilities; we’re building a foundation for societal benefit. An efficient and competent ecosystem of data infrastructures and services in the HLS cluster is the cornerstone for advancing patient outcomes. Several countries have already made significant strides in this direction, and their successes should guide our efforts.

Switzerland should be at the forefront of health innovation. With the Charter/Pact and its associated governance model, we seek to provide a framework and a window of opportunity to work together and make it happen.

11 The Working Group Blueprint is still looking for the most appropriate terminology.

12 In developing the Charter/Pact, actors and decisionmakers at the cantonal level need to be adequately engaged and considered.

13 The resource requirements remain an open issue due to challenges in accurately assessing current and future needs. This point continues to be a subject of divergent analyses within the Working Group Blueprint. It is expected to be clarified in the stakeholders’ engagement phase, as we move to the operational level of the Blueprint (Level B).

14 FAIR: Findable, Accessible, Interoperable, Re-usable

15 ORD Task Force Health and Life Sciences, *Ibid*.
Swiss Academy of Medical Sciences (SAMS) (2021): White Paper: Clinical Research. In: Swiss Academies Communications 16 (4) (<https://www.samw.ch/en/Projects/Overview-of-projects/White-Paper-Clinical-Research.html>)
Swiss Personalized Health Network (SPHN) (2023): The SPHN Data Coordination Center (SPHN-DCC): Consolidating the SPHN infrastructures beyond 2024. In: Swiss Academies Communications 18 (4). DOI: 10.5281/zenodo.7919469
Swiss Federal Council (2022): Mieux utiliser les données médicales pour assurer l’efficience et la qualité des soins (Humbel report, 4 May 2022), report following up on Humbel postulate 15.4225 of 18 December 2015 (<https://www.admin.ch/gov/fr/accueil/documentation/communiqués.msg-id-88631.html>)
Swiss Science Council (2024), Recommendations by the Swiss Science Council SSC for a national patient data infrastructure for health care and research. Bern: SSC. (https://jahresbericht.wissenschaftsrat.ch/assets/content/swr/uploads/2023_SWR_Patient_Data_HFV_EPDG_Kap.8_Annex.pdf).

6. Organize multilateral governance in the cluster with RDI committing to one another on certain services and responsibilities, endorsed by the StraCo and under the common strategic framework of the Charter/Pact.

Through their engagement with and signature of the HLS ORD Charter/Pact (Proposition 5), actors and stakeholders in the cluster benefit from a general, common reference that frames their action and a commitment in principle to the HLS Blueprint.

The vision and principles outlined in the Charter/Pact, such as streamlining findability and accessibility through designated portals (c.f. Proposition 2), will be implemented within a multilateral governance model for the HLS Cluster. This model would be formalised through several agreements or Memoranda of Understanding (MoU) involving two or more initiatives, co-signed by the StraCo and relevant funders (different models can be envisioned, see below). These agreements will clearly define the role of each RDI of national relevance in the cluster, thereby preventing overlap and duplication. They also signify a commitment to each other, in terms of interoperability and mutual service provision among stakeholders.

By setting boundary conditions for collaboration and co-signing these agreements, the StraCo will act as a sponsor to ensure that major strategic orientations are upheld.

To illustrate, consider Proposition 1: the Charter/Pact would set the goal of having one nationally relevant actor responsible for data standardisation. The proposition 1, if confirmed and approved in consultation with stakeholders, suggests tasking the DCC with this role. In this case, the DCC would then sign an MoU committing to provide data standardisation services to the entire cluster, within the Charter/Pact's framework and under specific conditions (see Proposition 1). The DCC would be one of several RDI with a unique task and obligations to other cluster stakeholders, along, for instance, the four platforms named in Proposition 2.

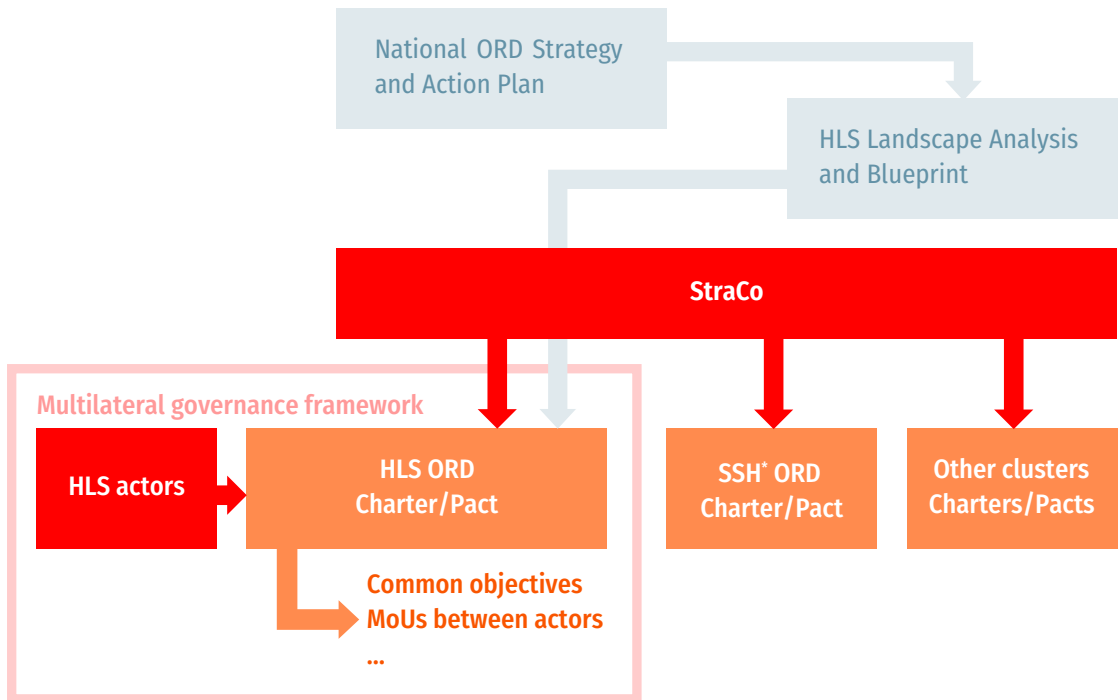
A visual representation of the proposed governance model is provided for clarity, but several models are possible and need to be explored. These models have different governance and resources consequences and the WG Blueprint does not have a consensual view on this:

- a. The StraCo is co-signatory of the Charter/Pact. It also co-signs the MoUs.
- b. The StraCo is co-signatory of the Charter/Pact. It proposes but does not intervene in the MoUs
- c. The StraCo is co-signatory of the Charter/Pact. It proposes a set of model-MoUs, contracts and memorandums. These signed documents are being published on the website of the StraCo. Accountability, funding, arbitration-solutions and information flows have to be further clarified (in Level B).

Some of the remaining open questions on the governance model (Proposition 5 and 6) include:

- The scope of the Charter/Pact remains to be discussed. Should it involve some ground rules of engagement?
- Could this governance operate without dedicated coordination, such as hired personnel in institutions or a secretariat backbone? If a secretariat is needed, where should it be hosted, and under what specific mandate?
- Will such a model generate considerable extra costs for institutions, or can it be absorbed in current operating budgets?
- Should there be an accountability mechanism to monitor the adherence to mutual obligations and service provisions in MoUs between institutions? If so, what form could it take?

FIGURE 1
Visual representation of the governance model proposed



*SSH = Social Sciences and Humanities



National
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Council