

## II. Agile Computing Infrastructure Strategy Board

- To establish a national, independent and neutral strategic board that assesses and decides on the design of a future-oriented computing infrastructure in form of a tiered system. The strategic board is responsible for:
  - designing the tiered system strategically, based on its continuous assessment of national large-scale computing resource needs and international computing infrastructure developments, taking into account multilevel governance. The national strategy should be based on the guiding principles outlined above.
  - monitoring the implementation and performance of the national strategy by the single tiers of the tiered computing infrastructure system.

The Federal Council should appoint this strategic board as an independent commission of experts. It should be equipped with the necessary powers to fulfil its responsibilities, if necessary on a legal basis.

- The strategic board should comprise all relevant competencies required to undertake their accountabilities, including technical, scientific, strategic, legal and financial expertise, simultaneously representing users and interest groups of national and regional computing resources of higher education institutions, with the size of the board allowing for efficient steering.

## III. Financial Implications

- To adapt funding in order to reimburse computing resources in their entirety, financing can only partially rely on grants, as these only provide for short-term costs. Computing resources, however, require long-term commitment and investment. Therefore, adequate long-term funding must be provided for all tiers. In general, computing resources should be provided in a transparent, cost-effective manner, meaning that costs must be covered but no profit should be made from higher education institutions.



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# Synergize. Strategize. Realize.

SSC recommendations for AI computing infrastructure in the ERI domain

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The SSC finds that research on and with AI is growing rapidly and that existing academic computing resources will not be sufficient in the future. Higher education institutions have limited and rapidly ageing resources, face high costs and data protection and data security requirements, and are experiencing a brain drain of qualified AI specialists to industry. The ERI system is therefore only partially prepared for future demands. The SSC recommends a long-term AI infrastructure strategy, the establishment of a national tiered computing infrastructure, a strategic board and guaranteed, long-term funding. As an immediate measure, the establishment of powerful computing capacities should be defined as a national task so that the relevant ERI actors can develop and implement new financing and governance models and ensure equal access for all ERI actors.

## SSC recommendations for AI computing infrastructure in the ERI domain

### National Strategy – Guiding Principles

Switzerland needs to develop a long-term AI infrastructure strategy that serves all public ERI needs. This national strategy has to include a modular computing infrastructure leveraging existing synergies, by forecasting and aligning the needs of the ERI domain’s national large-scale computing resources and by enabling Switzerland to participate in the development of international computing infrastructures. It is to outline how a tiered computing infrastructure system meets user requirements for flexibility, scalability and efficiency, including cost-efficiency, while also being resilient and sustainable considering natural resources. It should value digital sovereignty and knowledge security, and foster partnerships with value-sharing stakeholders. It should include a data lifecycle management strategy for the tiered computing infrastructure system that builds on the FAIR principles, and it also ought to set out how to promote and sustain world-class AI expertise in Switzerland that can compete internationally.

For the purpose of establishing such a national strategy, the SSC recommends that computing resources include all the necessary components, services and personnel required to make them usable for end users. Consequently, they require long-term commitment and investment. This is why the Council believes that enabling the use of AI for ERI stakeholders and other computationally intensive academic research requires appropriate computing infrastructure that leverages synergies and follows a national strategy. To achieve this, the Council believes that creating a computing infrastructure in the form of a tiered system is essential. Building such a system requires establishing a national strategic board and securing adequate funding.

The Council recommends:

### I. Tiered Computing Infrastructure System

- To build a tiered computing infrastructure system based on a national strategy and implemented by its stakeholders, guided by the principles outlined above.

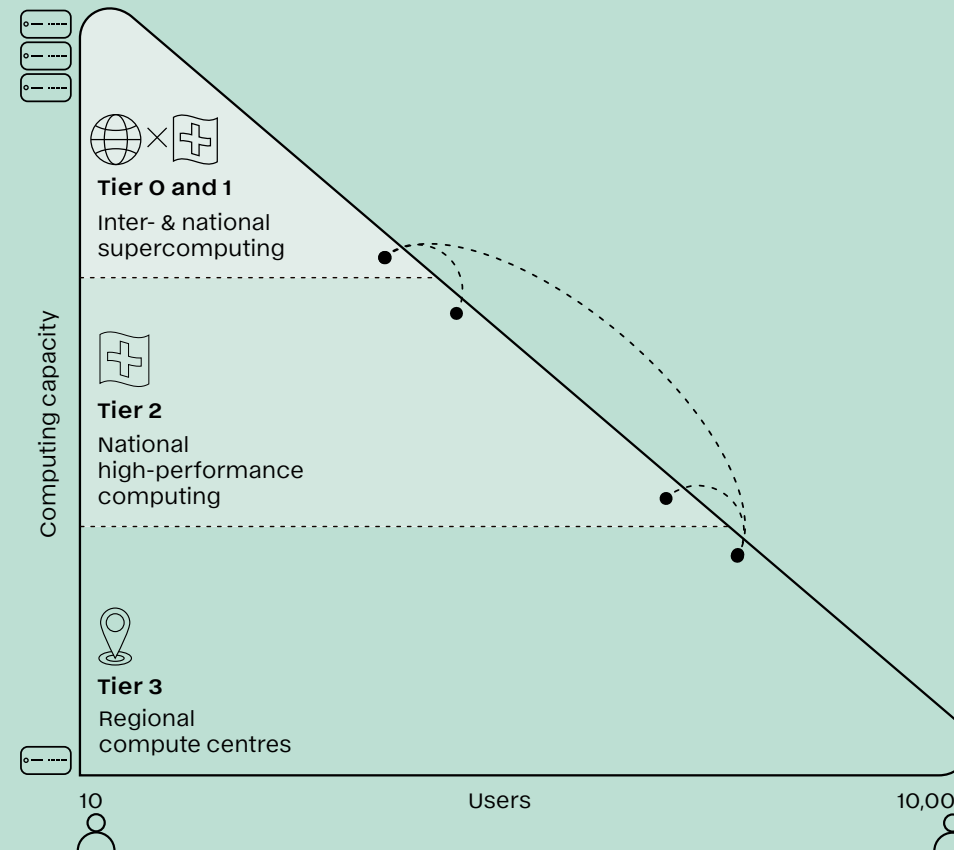


Figure 1: Illustration of the tiered computing infrastructure system. The X-axis exemplifies the number of users of the system, while the Y-axis shows the level of computing capacity. The number of users shown on the X-axis does not represent actual user numbers. It is for illustrative purposes only. The dotted lines represent permeability between the individual tiers. The dotted semicircles represent interoperability. Interoperability here refers to the ability to exchange and use information across all levels, e.g. data (incl. software) and computing capacity.

For Tier 0 and 1: International and national supercomputing

- To further develop the existing tiers of national and international supercomputing by expanding the access to and participation in the highest-end international computing resources and integrating them with the national resources.
- To place the existing national supercomputing provider (CSCS), which also provides access to international supercomputing facilities, under a governance that fulfils its national mandate, to ensure serving all ERI stakeholders throughout Switzerland.

For Tier 2: National high-performance computing

- To promote a national high-performance computing infrastructure which serves a wide variety of users who do not require supercomputing resources and which integrates or builds on existing computing resources.

For Tier 3: Regional compute centres

- To set up local or regional AI expert groups at higher education institutions that support users locally and direct them to the appropriate computing resources within the tiered system, as required.
- The tiers should provide computing resources that include all the necessary components, services and resources required to make computing power usable by end users, thereby also functioning as pools of national experts for user and scientific support including AI developments.

This will provide Switzerland’s diverse academic landscape with a comprehensive, appropriately scaled, sustainable and resilient computing infrastructure serving a wide range of needs. The SSC envisions a tiered computing infrastructure system that enables greater efficiency by building on interoperability and providing users with seamless transition between the tiers, e.g. for federated learning, and is managed through a single point of access (e.g. for tiers 0, 1 and 2), while taking into account the different funding sources and governance structures already in place.