NAISS Strategic Plan

Approved by the NAISS steering group 2024-12-11

The goal of NAISS' strategic plan is to provide guidance in complex decision-making and explain why certain areas are prioritised based on stakeholder needs. The present version covers the period 2025─2029, with emphasis on critical tasks to establish and achieve broad support for a new infrastructure with stronger national scope. For a description of the organisation itself, we refer e.g. to https://www.naiss.se/about-us/.

1. Vision & Mission

NAISS provides the unified computing infrastructure for Sweden to address the most pressing scientific & societal challenges and attract funding, talent and innovation.

Computing has become a critical resource to generate knowledge, insight, improved competitiveness and economic growth. The field has expanded from simulations to artificial intelligence, data analysis, storage, dissemination of data sets, and visualisation, with corresponding massively increasing needs throughout academia and industry. Sweden's research excellence relies on this infrastructure supporting fields from fundamental research in physics to climate modelling, the green transition and life science. It is similarly essential for emerging fields like AI, autonomous vehicles, economics, power grids, 6G research, digitising cultural heritage, and personalised medicine. NAISS is funded by Vetenskapsrådet (VR) to provide the computational infrastructure required for this research. Our mission extends beyond supercomputing to integrated services and expertise to ensure access to high-performance computing, data storage, and AI capabilities. We support researchers across fields, and ensure high-quality, efficient and environmentally responsible operations while delivering support throughout Sweden.

NAISS is an expanding infrastructure transforming into a single entity with staff across Sweden, as well as a vital node in the internationally unique EuroHPC infrastructure. Our mission is to ensure that researchers benefit from and contribute to resources both in Sweden and throughout Europe, to prioritise cutting-edge technologies, AI capabilities, large-scale sensitive data analyses, and contribute to method development to improve science, society and industry.

2. Core Guiding Values

Scientific Excellence & User-prioritised services: Resources are allocated based on competitive applications from individual scientists prioritised according to merit and anticipated impact. Services are based on priorities set by users and advisory boards and evaluated regularly. Other usage can be made available on a cost basis.
Collaboration, Partnership & Transparency: NAISS promotes national and international collaborations, in particular EuroHPC, to maximise resource sharing, expertise, and impact. Networks include academic institutions, infrastructures, industry, agencies, and competence centres. We are transparent and efficient in decisions, management, and reporting. Clear goals, milestones, and measurable outcomes ensure accountability.
Inclusivity & Equal opportunities: Services must be useful both to well-established scientific computing, emerging disciplines, and underrepresented communities. NAISS is active in a field with challenges in particular when it comes to gender balance and has a particular responsibility to advance diversity and inclusion in the organisation and users.

Innovation, Futureproofing & Global competitiveness: NAISS embraces new technologies/access mechanisms and should be an international leader in scientific computing. We identify new research that could drive sustainability/development and seek to contribute to innovation and training that lead to benefits for existing as well as new industries and skilled jobs.
Security & Trust: NAISS ensures secure and legally correct handling of sensitive data in disciplines like biomedical research, AI, and numerous others, with strong cybersecurity.
Efficiency & Sustainability: Operations are optimised for quality and cost-effectiveness. We are committed to environmental sustainability and energy-efficient computing.

3. Focus Areas 2025–2029

3.1. A Unified National Organization with a Broader User Base

We will develop a cohesive organisation where users only experience the unified NAISS brand, with standardised allocation proposals, user accounts, and support to facilitate migration between systems and services. Events will be hosted at partners and streamed online. Some staff will work at local branches, but NAISS roles will normally be full-time to achieve an agile organisation that can rapidly re-prioritize tasks. We need to create career opportunities and establish an organisation ready for a significantly expanded scope.

3.2. National Hosting, Cost Efficiency, and Streamlined Operations

The needs for computing, AI & storage infrastructure have increased much faster than available funding. With scarce resources, NAISS must prioritise critical services that can only be delivered in national scope, but it is equally important to show that the organisation could serve a much broader scope with increased resources. To justify new investments and an expanded national role, NAISS must provide cost and energy efficiency by pursuing a new hosting site, establish quick decision-making and reduce administrative overhead - rapid execution is a goal in itself that provides time to adjust implementations. Performance will be followed up with clear but brief reports focused on concrete data.

3.3. Integrating Users and Services in the EuroHPC Infrastructure

The Arrhenius system is a key component of our strategy to improve the impact of scientific computing by enabling Swedish researchers to access larger resources, training and funding in the European ecosystem, and deliver better services by hosting other EuroHPC users to exchange expertise and raise the bar for excellence, and not least attract more industrial European users to the Swedish infrastructure through collaborations e.g. with the EuroHPC Competence Centres and Centres-of-Excellence.

3.4. Improved User Experience & Comprehensive Support

NAISS will focus on addressing requests long expressed by users and implement a transparent support system to ensure all researchers have easy access to qualified assistance delivered by a single national organisation. In fields with large usage, NAISS should have domain experts for intermediate-level support. Some support staff funded by partners will work at branches located at their sites to have expertise close to users and extend the geographical base for recruitments. To coordinate long-term Research Software Engineering (also known as “level 3” support) directed by researcher communities, NAISS will develop a framework where the universities can either have their experts work as part of the NAISS organisation or provide funding to have NAISS manage national teams.

3.5. Data-Driven Research, AI, Sensitive Data & New Access Models

NAISS should facilitate access to modern hardware, new access models and training to support emerging and existing fields focusing e.g. on data, AI, inference workloads, and new usage patterns. We must support secure processing of sensitive data, enabling researchers

in life science and social sciences to comply with ethical and legal standards while having access to cutting-edge technology and large storage on the largest resources, including Arrhenius. Assistance to early adopters of technology should be prioritised to keep Swedish research competitive. NAISS should also use its advisory board and e.g. research reviews from Vetenskapsrådet to identify strong emerging fields that do not yet rely on scientific computing, but where targeted resources could enable breakthroughs.

4. Strategic Objectives

4.1. A Unified National Organization with a Broader User Base

4.1.1. Establish a strong NAISS Brand with High User Awareness

Objective: Position NAISS as a unified national entity where all communication, support, and services are branded under “NAISS”, and perceived to be delivered by a single entity. Reduce overlapping efforts to increase quality, number of activities and execution speed.
Measure: Fraction of user interactions, e-mails, and collaboration tools that use the NAISS brand and collaboration tools.
Outcome: 100% of staff/users transition to the NAISS communication platforms by 2026, with extensive news, information and support resources available on the platforms. Events and resources are delivered for all NAISS users/systems rather than specific resources. All NAISS-funded events clearly list NAISS as the organiser.

4.1.2. Clear Line Organization for NAISS staff & Efficient Management

Objective: NAISS staff should feel belonging and commitment in the organisation, with competitive career opportunities. NAISS management is able to quickly and efficiently allocate personnel between projects, including adjustments with short notice, and staff should increasingly have full-time duties within NAISS. Reduce turnover of existing staff and attract more international talent to work in NAISS.
Measure: Fraction of staff managed entirely within the NAISS framework. fraction of work organised within NAISS collaboration tools. Staff satisfaction and career development, diversity in operations and recruitment.
Outcome: 50% staff managed entirely within NAISS, 90% only using naiss.se e-mails, efficiency improvements, and satisfaction with internal reporting and allocation by end of 2026. Agreements signed for 2026 will have staff report to NAISS managers and use NAISS collaboration tools. Increased staff fraction feeling the national organisation is clear, that they have good support, and opportunities to develop as a specialist or manager.

4.1.3. Successful NAISS Funding Renewal at Increased Level

Objective: Justify a significantly expanded computational infrastructure based on successful execution, user satisfaction, strategic relevance, and operational efficiency, including AI and sensitive data, as well as funding from international funding agencies such as EuroHPC and Horizon Europe.
Measure: Renewal proposal developed and submitted 2025 (subject to deadline changes). Fraction of operations funded by non-VR grants. Total amount of infrastructure funding and increased number of NAISS partners both at base and full level.
Outcome: 15% of NAISS staff funded by international grants, and the total funding for the infrastructure increased by 150% in 2029 compared to 2023 baseline (including EuroHPC parts). Renewal achieves strong support by partners, including new ones. By 2029, NAISS should be the preferred partner to coordinate international computing collaborations involving Sweden, with direct funding for method development and operating Centres-of-Excellence in application fields.

4.1.4. Partnerships with Industry and The Non-Academic Public Sector

Objective: Make NAISS resources available to industry and non-academic public sector at cost coverage. Develop the case for how NAISS contributes to economic growth in industry and expand collaborations with the ENCCS EuroCC competence centre and similar organisations catering to industrial user needs. Initiate partnerships with key industrial/agency stakeholders to justify new funding streams and position NAISS as the organisation to lead Swedish high end AI infrastructure, not just for academia.
Measure: New formal collaborations, fraction of users outside academia.
Outcome: Two industrial strategic partnerships started by 2026, 1% of usage from non-academic organisations by 2027, 5% by 2029.

4.1.5. Establish Long-Term Collaborations with User Organizations

Objective: Build long-term collaborations with national and international infrastructures to expand services, improve quality/impact, and strengthen the networks both for Swedish infrastructure staff and users.
Measure: Number of established formal partnerships and collaborations with industry and public sector agencies. Collaborations with other infrastructures.
Outcome: By 2027, NAISS will have established formal partnerships with at least three national infrastructures and participates in three joint international initiatives, additional collaborations with industry and the non-academic government sector, including large-scale experimental infrastructures as well as AI and quantum computing investments targeting EuroHPC.

4.2. National Hosting, Cost Efficiency, and Streamlined Operations

4.2.1. Establishing a National Data Centre site for an Expanded NAISS Role

Objective: Prepare moving NAISS hardware operations to an external data centre for improved cost efficiency.
Measure: Completed feasibility study covering quality-of-service, cost efficiency and co-location possibilities. Analysis of staff resources and alternative cost impacts.
Outcome: Feasibility study completed mid-2026, including cost efficiency outcomes. Decision on potential implementation by early 2027, subject to consultation with funding agencies if it requires long-term commitments. If the outcome is positive, a new site should be available before Arrhenius is planned to be replaced, and ideally first used for a smaller test system. When a new data centre is available, all new hardware installations will be located at it targeting 10–20% reduced cost, and additional partners should choose to co-localize due to higher operational efficiency, as well as NAISS hosting a post-Arrhenius EuroHPC system there.

4.2.2. NAISS hosting HPC resources for other stakeholders

Objective: NAISS hosts and runs dedicated local systems funded by partners for research and teaching in synergy with NAISS national systems, and/or systems funded by non-academic stakeholders.
Measure: Amount of new partner universities' investment in local HPC and systems for large storage in collaboration with NAISS rather than at local HPC centres.
Outcome: At least 25% of partner university investments in infrastructure are co-localized with NAISS when a new data centre is available. Decrease overhead and system service costs for hosting local university systems by 50% through co-location and co-design with NAISS national systems. Offer storage services at full cost coverage by 2027.

4.3. Integrating Users and Services in the EuroHPC Infrastructure

4.3.1. Deliver Arrhenius System on Time & Expanded EuroHPC Participation

Objective: Launch the Arrhenius system on time, with high satisfaction from non-Swedish users as well as NAISS participation in additional EuroHPC projects.

Measure: Meeting or exceeding EuroHPC deadlines. User satisfaction. Number of EuroHPC projects with NAISS partners as co-applicants.
Outcome: Arrhenius to be fully operational by Q4 2025, with at least 85% of users rating the system as satisfactory or better in 2026. NAISS takes part in three additional EuroHPC projects by 2027, with successful international user training events completed annually.

4.3.2. Increased Swedish Applications to EuroHPC-quota Allocations

Objective: Increase Swedish researcher applications for EuroHPC resources by providing support and aligning the Swedish proposal format requirements to EuroHPC.
Measure: Number and fraction of Swedish groups choosing to apply to the EuroHPC quota of Arrhenius and other systems.
Outcome: By the end of 2026, the number of Swedish researchers applying for EuroHPC resources should increase by 25% compared to pre-2023. Achieve at least a 30% success rate for applications supported by NAISS, with a growing pipeline of EuroHPC-aligned allocations.

4.4. Improved User Experience & Comprehensive Support

4.4.1. Test Multi-Year Allocations for Mature Proposals

Objective: Implement a trial program with multi-year resource allocations to reduce administrative overhead for long-term research groups with a strong track record of renewing annual grants.
Measure: Fraction of user groups submitting multi-year applications, satisfaction with the NAISS allocation policies.
Outcome: 30% of eligible projects will shift to multi-year allocations, reducing administrative workload by 2/3 for these groups by 2027 and 80% of them appreciating the multi-year allocation change. The trial program should be evaluated in terms of resources usage efficiency, scientific impact and reduced administrative burden before making it permanent.

4.4.2. Expanded Advanced User Support

Objective: Expand the first line support helpdesk with a rapid and efficient support organisation to handle moderately advanced issues such issues with porting, assistance to improve performance and help with data handling. Establish procedures for how NAISS can help coordinate and offer collaboration tools for long-term research software engineering steered by partner organisations.
Measure: Response time, fraction of issues solved, support activities organised at partner sites and online availability, coordination tools available for work at partners.
Outcome: 90% of requests get first response within 1 business day by 2026. Simple issues are resolved within five working days, and intermediate-level issues are properly evaluated and frequently result in allocating staff resources for weeks or months, with 50% of eligible ones resolved in a month and 75% in six months. 90% user satisfaction with the support system, ensure key software optimizations are in place for 80% of high-demand research applications, and that all multiple-week resource allocations result in an analysis of the outcome/impact on users, including a user satisfaction follow-up.

4.5. Data-Driven Research, AI, Sensitive Data, and New Access Models

4.5.1. Deployment of New Access Mechanisms for Compute & Storage

Objective: Pilot new access mechanisms including Kubernetes, virtual machines, interactive Jupyter notebooks, object storage, and large-scale interactive GPU resources for AI training and inference workloads.
Measure: Fraction of users adopting new mechanisms, user satisfaction surveys.
Outcome: Complete initial trials of new services by the end of 2025, deploy broader trials in 2026, with full implementation by mid-2027. 20% of users adopting new access mechanisms, with at least 75% of AI workload users leveraging GPU resources by 2028.

4.5.2. Object Storage Services

Objective: Enable users to access cost-efficient object storage directly on the NAISS resources both for AI applications, databases, and to facilitate data transport to/from external services at experimental infrastructures. Provide long-term storage at cost.
Measure: Number of users utilizing object storage, users and infrastructures willing to pay for expanded or long-term object storage.
Outcome: 100 users of object storage within 1 year of deployment, object storage used as the main transport mechanism from other infrastructures and for storing reference data. By 2029, other infrastructures are co-funding NAISS for long-term storage services.

4.5.3. Integration of Sensitive Data Services

Objective: Fully integrate sensitive data services into the NAISS ecosystem, using unified user accounts and support systems, and move the storage to the main NAISS datacentre.
Measure: Availability of sensitive data services on new large NAISS compute/storage resources such as Arrhenius, with possibilities of using secure storage for AI workloads.
Outcome: By 2026, sensitive data services will be served from the main NAISS resource, with possibilities of using large-scale secure storage options for AI workloads. Ensure 100% of sensitive data research complies with ethical and legal standards, with an increase in sensitive data usage by 30% across relevant research fields by 2027, and have relevant infrastructures fund additional resources. Successful participation in EuroHPC and international collaborations to lead establishments of international standards for how to deliver services for and exchange sensitive data to reduce development costs.

4.5.4. Enhance Method Development and Research Software Engineering

Objective: Deemphasize development of local software specific to Swedish systems or users, and instead partner with international infrastructure and user communities to pool resources and achieve impact both for infrastructure operations software and application method development together with partner universities.
Measure: Number of strategic international partnerships with other centres to develop software and services for infrastructure operations. Cost savings and publication impact for NAISS staff as well as users. Contributions to conferences and broadly used tools such as compilers, libraries and major application codes with broad usage in EuroHPC.
Outcome: By 2027, establish method development programs with at least five international partners and formalise software engineering collaborations with three universities. Increase method development projects by 25% and ensure 50% of NAISS-supported projects adopt improved scientific computing methods by 2029.

5. Actions & Projects

5.1. Planning: Budget, activity plan, annual report & roadmaps

Action: Operations are decided based on the annual budget and expanded into concrete efforts in the activity plan. This will document how actions relate to strategic goals, and schedule tentative dates for meetings and user activities well ahead of time. We will document expected infrastructure needs, how service and technologies in e-infrastructure are developing worldwide, and the corresponding financial requirements. The long-term economic plan will relate this to what funding resources have been secured, how they will be used, and what services will be prioritised. The outcome is reported yearly, summarising utilisation, user satisfaction, and scientific excellence.
Contributes to objectives: 4.1.1; 4.2.1; 4.3.1; 4.5.1

5.2. Monitoring: operations, financial outcome, and user satisfaction

Action: Operations, incidents, utilisation, performance, access patterns, and support statistics are monitored and followed up every six months. Financial performance and

deviations are followed up quarterly. User satisfaction surveys are performed annually.
Contributes to objectives: 4.1.1; 4.1.2; 4.3.2; 4.4.1; 4.5.1

5.3. Organisation development: rapid execution & reduced paperwork

Action: It has been necessary to establish agreements and contracts between all partners, but for NAISS to be efficient it needs to execute faster. Require simpler contract negotiations for partner subcontracting, prioritise critical tasks and cancel unimportant ones. To help NAISS staff feel ownership of and commitment both to the process of change and the new national organisation, we will have staff help identify how they want to develop and how to handle delegation, reporting and inclusion to rely more on commitment than contracts.
Contributes to objectives: 4.1.1; 4.1.2; 4.2.2; 4.5.3

5.4. NAISS communication plan

Action: Adopt a plan that sets priorities and practices for NAISS communications with stakeholders, users, partners, staff, funding agencies, and the general public. It should contribute to strengthening the NAISS brand through a common profile, to ensure we use communication strategically to reach the objectives of supporting users and explain the value of investments in e-infrastructure.
Contributes to objectives: 4.1.1; 4.1.2; 4.1.3; 4.1.4; 4.3.2

5.5. NAISS Diversity, Equity and Inclusion plan

Action: NAISS is subject to the equal opportunity activities of the host and partners, and in the interest of operational efficiency we will not duplicate those. NAISS also has a broader responsibility to support a broad user base, to identify talent when hiring, to recruit staff with non-HPC background, and to provide role models both within the organisation and in communication activities. We will write a concrete set of guidelines for equal opportunities to be further developed with the staff at annual meetings to make it a joint cultural value and identify measures to be monitored and followed up.
Contributes to objectives: 4.1.1; 4.1.3; 4.1.4; 4.1.5; 4.3.2; 4.4.2; 4.5.1

5.6. Systems operations & the Arrhenius project

Action: Maintain operation of actively supported systems, licence management, and gradually consolidate operations as numerous small systems are replaced by fewer large ones. Complete the procurement and installation of the Arrhenius EuroHPC system, move users to the new unified system, move users from old NAISS systems, and start the planning to host new resources in a new nation data centre.
Contributes to objectives: 4.1.1; 4.1.3; 4.2.1; 4.2.2; 4.3.1; 4.5.1; 4.5.2; 4.5.3

5.7. The sensitive data activities

Action: Plan and start executing the consolidation of sensitive data storage and processing into NAISS national resources. Develop principles for prioritisation of (finite) storage resources and ways to allocate storage of different cost types e.g. as volume multiplied by time used. Integrate sensitive data into NAISS' storage lifecycle policies, document procedures for how all types of storage is migrated away from NAISS resources at the end of a project and develop long-term storage alternatives offered at cost.
Contributes to objectives: 4.1.1; 4.1.3; 4.1.4; 4.1.5; 4.2.1; 4.2.2; 4.3.1; 4.4.2; 4.5.1; 4.5.3

5.8. Consolidate services and streamline subcontracts

Action: Go through all existing contracts and operations, account for usage relative to operational costs, and deprecate services that either have low usage or are deemed to not provide sufficient value relative to cost. Reduce duplication of efforts and part-time coordination roles with similar profiles present at multiple sites.
Contributes to objectives: 4.1.1; 4.1.2; 4.1.3; 4.3.1; 4.5.1; 4.5.4

5.9. Training program

Action: Organise training throughout Sweden and develop a new program with common format rather than resource-specific training. Introductory training should be delivered multiple times annually at different sites and made available online to reduce travel needs. Resources saved by reduced duplication will be invested in more intermediate- and advanced-level training. Intermediate-level topics will be offered yearly so users can plan, and advanced topics on demand. Training for broadly used application software can be organised in collaboration with international partners or EuroHPC Centers-of-Excellence.
Contributes to objectives: 4.1.1; 4.1.3; 4.1.5; 4.3.1; 4.3.2; 4.5.1

5.10. Helpdesk & in-depth support

Action: NAISS day-to-day support is handled with a ticketing system. The first-line helpdesk (so-called “level 1” support) for routine assistance should increasingly be automated. More complex technical issues will be escalated by the helpdesk to more advanced expertise (“level 2”) that is fully managed by NAISS based on co-funding by the partners. The support team will organise meetings at sites of partners contributing co-funding, and report how they are interacting directly with large user communities. The in-depth support should be able to handle tasks that require domain expertise and weeks or occasionally months of work. Requests that cannot be satisfied will be documented for partners to possibly contribute to new long-term research software engineering efforts.
Contributes to objectives: 4.1.1; 4.1.2; 4.3.1; 4.4.2; 4.5.1

5.11. Organise research software engineering - NAISS & partners

Action: Long-term highly advanced support activities such as developing software, porting to new architectures, or designing data handling (so-called “level 3”, or “Research Software Engineers” - RSEs) is the financial responsibility of partners according to the NAISS application and partner agreements. This is likely to include the most impactful scientific computing research in Sweden, but potentially also emerging other fields of high scientific excellence, where investments in research computing could lead to breakthroughs. NAISS will provide collaboration tools, offer access to the ticketing systems, and provide information to users about what partnerships have been established. All RSE work should be prioritised and steered by responsible scientists, but NAISS can offer to hire and manage staff to achieve national coordination based on discussions with strong user communities and their partner organisations.
Contributes to objectives: 4.1.2; 4.1.3; 4.1.5; 4.3.2; 4.4.2; 4.5.4

5.12. Stakeholder Advisory Reference Committee (STARC)

Action: Organise at least one yearly meeting with all partners co-funding NAISS services to communicate strategic priorities and how trade-off calls are made, how services are evolving, what needs can and cannot be met with current funding, and possibilities to extend operations with additional resources.
Contributes to objectives: 4.1.1; 4.1.3; 4.1.5; 4.2.1; 4.2.2; 4.3.1; 4.5.1

5.13. Science and Technical Advisory Board (STAB)

Action: Appoint an external advisory board with experts who have shown international leadership in science, usage, planning or operations of major e-infrastructures. The members should not have any connection to Swedish infrastructure operations, and annual meetings should be organised. STAB should serve as support to the director and steering board in evolving (i) the strategic plan, (ii) defining projected infrastructure needs, and (iii) improving quality and efficiency of operations.
Contributes to objectives: 4.1.3; 4.1.5; 4.2.1; 4.2.2; 4.3.1; 4.5.1; 4.5.4

5.14. National Allocations Committee (NAC)

Action: Renew appointments and organise meetings every six months to evaluate and prioritise proposals that require scientific review. The committee needs to have members with competence in the major scientific areas where proposals are expected every round, and additional members appointed on rotating basis to ensure emerging fields are not systematically deprioritized. Start the work to align formats of NAISS and EuroHPC proposals to facilitate portability and prepare for offering multi-year allocations. Ensure proposals also undergo proper technical review, and that applicants are provided with feedback on issues such as scaling and the technical efficiency of the tools they are using.
Contributes to objectives: 4.1.3; 4.3.2; 4.4.1; 4.5.1; 4.5.4

5.15. User Support Advisory Committee (USAC)

Action: Organise and document quarterly meetings, and help the committee establish procedures for how to solicit broader input from the community to evolve and prioritise services. Ensure the committee grows to represent the broad background diverse seniority of NAISS users and establish procedures for rolling renewal of mandates.
Contributes to objectives: 4.1.5; 4.3.2; 4.4.1; 4.4.2; 4.5.1; 4.5.4

5.16. NAISS User Forum (NUF) and staff meetings

Action: Organise annual meetings for all NAISS users, and at least one internal event for NAISS staff to focus on team building and how we can engage in improving the user experience. These will typically be organised back-to-back to promote user/staff interactions and located at partner sites to expose NAISS to local users. User organisations of scientific areas should be encouraged to participate in NUF, including satellite meetings, and given opportunities to interact with NAISS staff and leadership to discuss requirements related to current and future hardware, training, and potential long-term development.
Contributes to objectives: 4.1.1; 4.1.5; 4.3.2; 4.4.2; 4.5.1; 4.5.4

5.17. Usage by industry & agencies

Action: Improve NAISS services for non-academic users (including partners like SMHI, KB, FOI, etc.) and evolve partnerships with ENCCS and other EuroCC competence centres where allocations are provided through EuroHPC. Develop principles for service-for-fee offered directly or in partnership with other funding agencies.
Contributes to objectives: 4.1.3; 4.1.4; 4.1.5; 4.2.2; 4.3.2; 4.4.2; 4.5.1

5.18. Swedish infrastructure partnerships

Action: Discuss partnerships with infrastructures such as SciLifeLab, MAX IV, ESS, Onsala/SKA, NBIS, and InfraVIS to fund compute, storage and support resources needed by the respective infrastructure, or to provide guaranteed resources-for-fees specifically serving their communities to avoid users having to go through competitive review.
Contributes to objectives: 4.1.3; 4.1.4; 4.1.5; 4.2.2; 4.4.2; 4.5.1; 4.5.2

5.19. Collaborations for operations & open-source development

Action: Identify organisations or partnerships (e.g. CSC, DEIC, Sigma2, CSCS, NeIC) to collaborate on operations software, training and data storage standards for improved quality and cost efficiency compared to national solutions. Support NAISS staff to engage in development of broadly used standards, cloud operations, and pursue opportunities for external funding. Prioritise efforts with high impact that can be presented at infrastructure conferences and prioritise attendance for staff that contribute to program events.
Contributes to objectives: 4.1.5; 4.3.1; 4.4.2; 4.5.1; 4.5.2; 4.5.3; 4.5.4

Annex 1: Resource operations and investment plan

Each investment and procurement process has significant additional hidden costs in terms of staffing (including not being able to work on other important projects), contract negotiations and financial planning. In light of this, NAISS will execute fewer but larger investments to achieve improved cost efficiency, and partners will be offered to participate in planned investments rather than organizing dedicated processes. This must be balanced with keeping up with users' needs (in particular rapidly changing hardware), and timing of external calls e.g. by EuroHPC that provide opportunities for co-funding.

As illustrated in the Gantt chart on the next page, NAISS will discontinue operations of some smaller resources, but the corresponding services will be integrated in new resources. This process started already during the SNIC phase where two CPU clusters at Chalmers & Lund University were retired. Additional resources will stop being operated at the end of 2024, and the distributed cloud and storage operations are scheduled to be retired by the end of 2025. With this plan, NAISS will have reduced from the previous nine different computing resources (some of which have had hardware at several sites) to instead focus on at most three major national hardware investments where high-performance storage, cloud access and sensitive data storage/processing are integrated parts of the large resources.

During 2025, national high performance computing resources will primarily be delivered through:

- General purpose computing: Dardel, Tetralith and LUMI
- AI usage: Alvis
- Sensitive data processing and storage: Bianca
- Cloud usage: SNIC/NAISS Cloud
- Storage: Split over centre storage and Swestore

Towards the end of 2025, we expect the unified VR/EuroHPC resource Arrhenius to become available, which will provide a broad range of the services above from 2026.

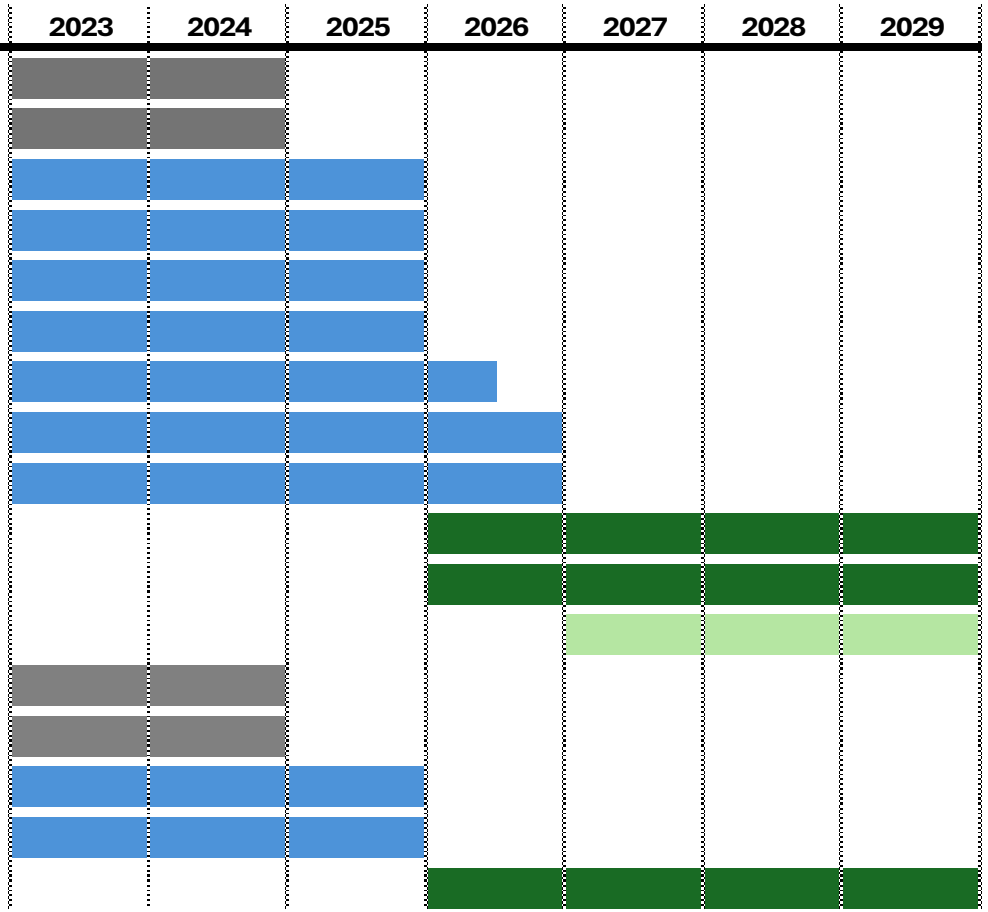
With support of VR & VINNOVA, NAISS has submitted a proposal – Mimer - in the EuroHPC AI factory call. If this is granted and a contract negotiated, it will be a major new resource focused entirely on AI usage with cloud-style access models that is also open to industry.

The potential new CPU compute resource investment from 2027 is subject to considerations about (1) how the usage of CPUs vs GPUs develops, (2) if the demands and number of users keeps rising, and (3) whether we can find options to increase funding. Future systems after Arrhenius/Mimer are likely to be operated in external datacentres if NAISS can reach financially sustainable agreements.

For large-scale storage, NAISS will revise storage policies during 2025 and consider investing in a new cost-optimized large-volume storage (to succeed Swestore) where users can get apply for volumes with single-year lifetime free of charge as part of their proposals while long-term storage will be provided on cost basis.

Gantt chart over existing, coming and potential planned investments

Resource	Type	Funding	Location
Rackham	CPU cluster	VR	UU
Cloud	CPU nodes	VR	CTH
Cloud	CPU nodes	VR	UmU
Cloud	CPU nodes	VR	UU
Tetralith	CPU cluster	VR	LiU
Alvis	AI GPU cluster	KAW/VR	CTH
Dardel	CPU/GPU cluster	VR	KTH
Bianca (1)	Sensitive data	VR	UU
LUMI	CPU/GPU cluster	VR	Finland
Arrhenius (2)	CPU/GPU/Cloud/Sens	VR/EuroHPC	LiU
Mimer (3)	AI factory/GPU cluster	VR/EuroHPC	LiU
New resource (4)	CPU cluster	VR	Datacentre
Swestore	dCache servers	VR	LU
Swestore	dCache servers	VR	CTH
Swestore	dCache servers	VR	UmU
Swestore	dCache servers	VR	LiU
NAISS storage (5)	Object storage	VR/Partners	LiU/Datacentre



[1] Due to the special nature of sensitive data processing, we are planning a 1-year overlap between Bianca and Arrhenius.
[2] Arrhenius will provide several types of services, and it is a large mixed CPU/GPU resource partially allocated by EuroHPC.
[3] If EuroHPC funds the Swedish proposal, Mimer will be an AI-dedicated resource with extensive support staff available to academia and industry.
[4] The new planned resource would replace Dardel and LUMI allocations but would likely require increased or new sources of funding.
[5] Depending on the technical solution, this will either be an evolution of or centralized replacement of Swestore.