InfraVis Strategic and Operational Plan 2026

Updated spring 2026

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Part I: Strategic plan 2026

This document is based on the InfraVis application submitted to the Swedish Research Council in 2021. Part I presents the updated strategic plan for 2026, while Part II outlines the operational plan for 2026.

Introduction

InfraVis is the Swedish national research infrastructure designed to enhance scientific discovery through advanced visual data analysis, supporting Swedish research across all scientific disciplines. In an era of data-driven research, the ability to effectively analyse, interpret, and visualize complex datasets is crucial. InfraVis addresses this critical need by bridging cutting-edge visualization expertise and resources with practical scientific applications, thereby accelerating innovation and discovery.

Established in 2022, InfraVis operates as a distributed research infrastructure involving nine prominent Swedish universities: Chalmers University of Technology, Linköping University, Linnaeus University, Lund University, Mid Sweden University, KTH Royal Institute of Technology, Umeå University, University of Gothenburg, and Uppsala University. InfraVis ensures long-term availability of expertise and resources necessary for advanced visualization, fostering a vibrant ecosystem of collaboration and innovation.

InfraVis not only provides essential visualization support, but also actively contributes to the international visualization community through pioneering methods and best practices. This positions InfraVis as a unique resource globally, demonstrating Sweden's leadership in visualization infrastructure and research capabilities.

Vision, Mission and Aims

InfraVis operates in line with its vision *"Scientific discovery through state-of-the-art visualization support".* The mission is to provide researchers across Sweden with access to advanced visualization services and laboratories through a distributed and adaptable team of experts, thereby enhancing their global scientific impact. The overarching aims of InfraVis are to serve all scientific domains in Sweden with: visualization support to propel Swedish research and its impact nationally and internationally, education in state-of-the-art visualization methods, increased awareness of visualization and data analysis as research tools in all research areas.

Science Strategy

Effective data analysis remains integral to research workflows across academia, industry, and government, with data sources expanding to include increasingly sophisticated experiments, high-fidelity simulations, advanced sensor networks, detailed modelling, comprehensive surveys, and extensive data repositories. The complexity, dimensionality, volume, and inherent noise of these datasets present substantial challenges for domain researchers.

InfraVis addresses these evolving challenges by providing targeted expertise and advanced visualization capabilities. Specifically, InfraVis supports researchers in:

- Data collection and curation
- Statistical analysis
- Integration and application of machine learning (ML) and artificial intelligence (AI)
- State-of-the-art visualization techniques, and interactive and collaborative visual analysis

InfraVis enables innovative and efficient visual workflows and can support the extraction of otherwise hidden information and knowledge from complex and large-scale data. The combination of AI, visualization, and traditional analysis creates a toolkit for groundbreaking scientific discoveries.

The InfraVis model leverages a coordinated, distributed network of visualization competencies across its partner universities, further strengthened by an influx of additional specialised visualization experts (InfraVis application experts). This pooling of expertise enables efficient resource sharing and robust knowledge transfer across the Swedish research community, enhancing the national capacity for innovative visualization-driven research.

Additionally, from 2024 the InfraVis Faculty, composed of senior visualization researchers from participating universities, plays a critical role in guiding scientific excellence and driving educational initiatives. The InfraVis Faculty ensures that the visualization expertise remains at the cutting edge, continuously integrating advancements into the InfraVis support framework.

InfraVis also offers researchers a streamlined, single point of entry to visualization knowledge, software, and advanced visualization laboratories, significantly lowering the barrier to accessing sophisticated visualization support. Through this consolidated network, InfraVis not only elevates existing research capabilities but also facilitates the development and initiation of novel research projects requiring complex visualization methodologies.

Research Fields and User Groups

Visualization remains a versatile and broadly applicable research tool, allowing InfraVis to support an extensive and diverse range of scientific inquiries without pre-defining specific research questions. Instead, InfraVis continuously seeks to engage emerging areas of research, identifying disciplines where visualization can yield substantial new insights and foster innovative approaches.

InfraVis has attracted users from a broad range of academic fields, demonstrating significant representation from natural and engineering sciences, medical and life sciences, social sciences, and humanities. All support projects from 2022 through 2025 are shown in Figure 1. An increasing interest from interdisciplinary teams was also highlighted with the introduction of open calls in 2023, underscoring visualization's critical role in facilitating cross-disciplinary collaboration.

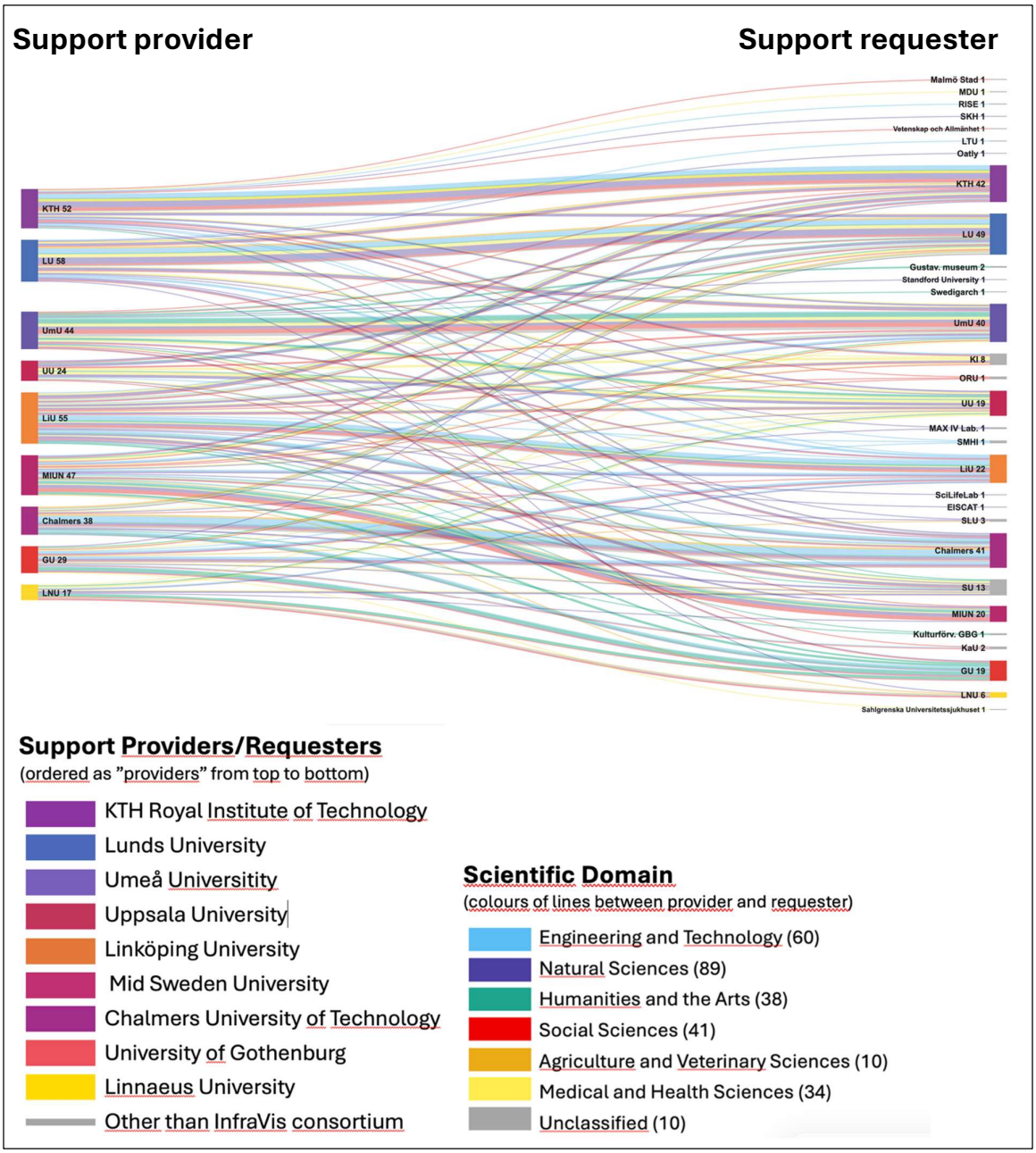

Figure 1. All support projects 2025-2025. The left column "providers" shows the InfraVis partner/s providing support. The right column shows the user affiliation/s requesting support. The coloured lines connecting the columns show the scientific domain of the project. The number of projects for each domain are shown in brackets. The table shows that users from 18 organisations other than InfraVis consortium have got support, including 13 at Stockholm University and 8 at Karolinska Institute. Visualization by Therese Tikkanen, Chalmers Library. Data from the InfraVis database.

To ensure streamlined support, InfraVis maintains a structured approach to user interaction via its website, offering three clearly defined tiers of assistance:

- Helpdesk (L1): Rapid responses to general inquiries through the established TOPdesk system.

- Mid-level Support (L2): Targeted expert assistance to address specific analytical and visualization challenges, actively engaging with users' datasets.
- In-depth Support (L3): Extensive collaboration over several months, during which InfraVis experts provide comprehensive involvement in the user's visualization processes, including the development of customized visualization tools tailored to project-specific needs.

Continuous outreach activities remain central to InfraVis' operational strategy, proactively engaging new user groups and academic domains to expand visualization's transformative impact throughout the research community.

InfraVis also engages with specific user communities through collaboration with other research infrastructures, initiatives, and organisations. These collaborations extend the use of visualization and strengthen its integration into existing research workflows. Examples include the collaboration with NAISS, to ensure seamless integration of computational resources and data management services, facilitating efficient handling and visualization of large-scale datasets. InfraVis also collaborates with MAX IV by providing specialised visualization support to users of different beamlines, facilitating data interpretation and analysis. In addition, InfraVis works directly with MAX IV staff to develop and implement visualization solutions tailored to beamline workflows and user needs. Further details on collaboration with other research infrastructures are provided in the section below.

Relationship to and Interaction with Other Research Infrastructures

InfraVis operates in close complementarity with other Swedish research infrastructures, with a specific focus on advanced visualization and application-oriented support. By enabling analysis and interpretation of data generated across infrastructures, InfraVis contributes to increased usability of existing resources and supports integration across scientific domains and data types. Collaboration with other research infrastructures takes several forms, including joint user support projects and organisational overlap, where InfraVis nodes also participate in other infrastructures. InfraVis maintains active collaboration with several national infrastructures, including NAISS, MAX IV Laboratory, Onsala Space Observatory, the Swedish Biodiversity Data Infrastructure (SBDI) and Huminfra. Through these interactions, InfraVis connects visualization and analysis capabilities with existing capacities in computing, data storage, and data generation.

A central area of collaboration concerns NAISS, where joint activities focus on integrating visualization with high-performance computing and data management workflows. InfraVis also maintains a strategic priority in supporting MAX IV and its users, providing tailored visualization support that significantly enhances data interpretation and analysis capabilities derived from synchrotron sources

InfraVis further aligns with national initiatives and programmes including Data-Driven Life Science (DDLS), Treesearch, the National Research Program Migration and Integration, and initiatives related to sustainable spatial planning. These connections support interdisciplinary use and contribute to broader coordination within the research system. As the only national visualization infrastructure open to researchers from all scientific domains, InfraVis occupies

a unique position both nationally and internationally, setting a benchmark for future developments in visualization networks globally.

Competence Accumulation and Open Science

InfraVis will contribute in the long-term to competence accumulation nationally by building and leveraging the resources at our nodes. The InfraVis experts, the developed methods, the domain-specific tailored tools, and engineered software will together form a rich collection for users of visualization in the future. InfraVis fully subscribes to the Swedish Research Council (Vetenskapsrådet) guidelines for open access to research data[1], and more generally, the principles of Open Science[2]. Some restrictions may apply because of sensitive data, ethical considerations (see appendix "Ethical Considerations"), or Swedish legislation.

Societal Benefit and Innovation

InfraVis provides substantial societal benefits that extend beyond immediate scientific discovery, by embedding visualization technology into data-driven processes. Elevating visualization expertise across Sweden is vital to maintaining the country's competitiveness in a rapidly evolving global landscape characterized by digitalization, autonomy, and artificial intelligence.

Visualization technologies offer exceptional opportunities to enhance science communication, making complex scientific concepts more accessible and understandable to the broader public. Initiatives like the Wallenberg Immersive Science Communication Domes (WISDOME) exemplify new paradigms in interactive and immersive science communication, supported actively by InfraVis.

Complex societal challenges such as sustainability, forensics, urban development, transport infrastructure, and public engagement benefit significantly from advanced visualization techniques, fostering transparency, accessibility, and informed decision-making. InfraVis' support is relevant for not only academic users, but also the public sector and industry. InfraVis also aligns with the Swedish government's STEM strategy and promotes advanced digital competence and interdisciplinary skills through hands-on training in visualization, AI, and data analysis - central components in the national STEM strategy.

Through visualization research and collaborative projects, InfraVis actively promotes knowledge transfer to industry and government. It supports innovation by empowering PhD students and researchers with advanced visualization skills that enhance their employability and effectiveness in postdoctoral and professional environments. Furthermore, InfraVis'

[1] https://www.vr.se/analys/rapporter/vara-rapporter/2015-12-10-oppen-tillgang-open-access-till-forskningsdata.html

[2] https://creativecommons.org/about/program-areas/open-science/

educational impact extends to undergraduate programmes across multiple disciplines, embedding visualization expertise within future generations of professionals.

InfraVis contributes directly to achieving the United Nations' Sustainable Development Goals (SDGs), particularly through visualizing and analyzing complex datasets relevant to global sustainability challenges. Collaborative initiatives such as Treesearch leverage InfraVis' expertise to support critical research in sustainable forest materials and bioeconomy advancements. Additionally, InfraVis significantly impacts environmental and climate research, as exemplified by the user-support microfossil project by PI Helena Filipsson where visualization enhances our understanding of climate change and environmental dynamics.

Figure 2. InfraVis user Alessandro Iop presenting his project 3D Modeling for simulated ventricular surgery at the WISDOME, Visualiseringscenter C.

Organisation and Leadership

The operational framework and mutual commitments of the partner universities are defined and regulated by the InfraVis Consortium Agreement (appended as an annex). Chalmers, serving as the host institution, is responsible for financial management, ensuring compliance with infrastructure commitments, and reporting activities to the Swedish Research Council (Vetenskapsrådet, VR). Chalmers also handles critical communication with partner universities and anchors strategic decisions within the consortium.

The Advisory Partner Committee (Partsrådet), as defined in the Consortium Agreement, fulfills essential advisory roles, including (I) Proposing Steering Group composition for formal decision by the Host Organization, (II) Providing recommendations regarding the financial framework, including co-financing, (III) Offering advice on significant collaboration-related matters within the consortium.

InfraVis' organisational leadership comprises four main entities, each with distinct roles:

- *The Steering Committee:* Provides strategic direction and formal decision-making for steering documents and operational oversight, financial sustainability, compliance with funding requirements, and evaluation of impact.
- *The Management Team (MT):* Oversees daily operations, ensuring strategic alignment, effective implementation of goals, financial planning, and coordinated decision-making across modules and nodes.
- *The Scientific Advisory Board:* Consists of internationally renowned visualization experts offering strategic scientific guidance, ensuring InfraVis maintains global standards and cutting-edge developments.
- *The User Forum:* Provides essential feedback, integrating user perspectives into InfraVis operations and strategic developments.

Planned strategic development and organisational effectiveness rely on clear mandates, structured decision-making, and defined responsibilities, ensuring transparency and scalability. The governance structure comprises clearly defined roles:

- *Director:* Has the overall responsibility for InfraVis operations, strategic direction and planning, as well as reporting to the Swedish Research Council. Ensures overarching coordination and alignment across all modules and nodes. Additionally, represents InfraVis in national and international contexts.
- *Vice-Director:* Supports the Director in strategic planning and daily operations, oversees infrastructure development activities and strategic initiatives, and represents InfraVis externally when required.
- *Central Coordinator:* Manages administrative operations to ensure efficient documentation and communication, supports the preparation and documentation of Steering Committee (SC) meetings, and coordinates internal InfraVis events.
- *Financial Officer:* Prepares budget forecasts, produces economic reports, and coordinates with Node Financial Officers
- *National Technical Managers:* Oversees the technical development of InfraVis services, ensuring alignment with evolving user needs and research advancements; leads competence development initiatives in visualization, AI, and data analysis tools; and coordinates technical efforts across modules to prevent silos and ensure service interoperability.
- *Communication Officer:* Coordinates internal and external communication.
- *Module Leaders (MLs)* drive the operational execution within each module, aligning closely with the MT to optimise resources, maintain consistency across modules, and prevent operational silos. MLs report regularly to the MT, ensuring transparency and accountability.
- *Node Coordinators:* Oversees and coordinates the activities of Modules 2–7 at their node, delegates projects and tasks to the node's InfraVis Application Experts, coordinates with other Node Coordinators to allocate user support tasks based on time and skill availability and oversees the management of TOPdesk.

Additionally, the InfraVis Faculty plays a crucial role in the network, comprising senior researchers and experts from participating universities. The Faculty is responsible for maintaining high scientific standards, fostering innovative research collaborations, and driving educational initiatives in visualization and data analysis.

InfraVis actively prioritises gender equality and inclusiveness, implementing targeted actions and regularly updating its Gender Equality Plan[3]. This commitment ensures balanced representation and equitable participation throughout InfraVis' organisational structure and activities.

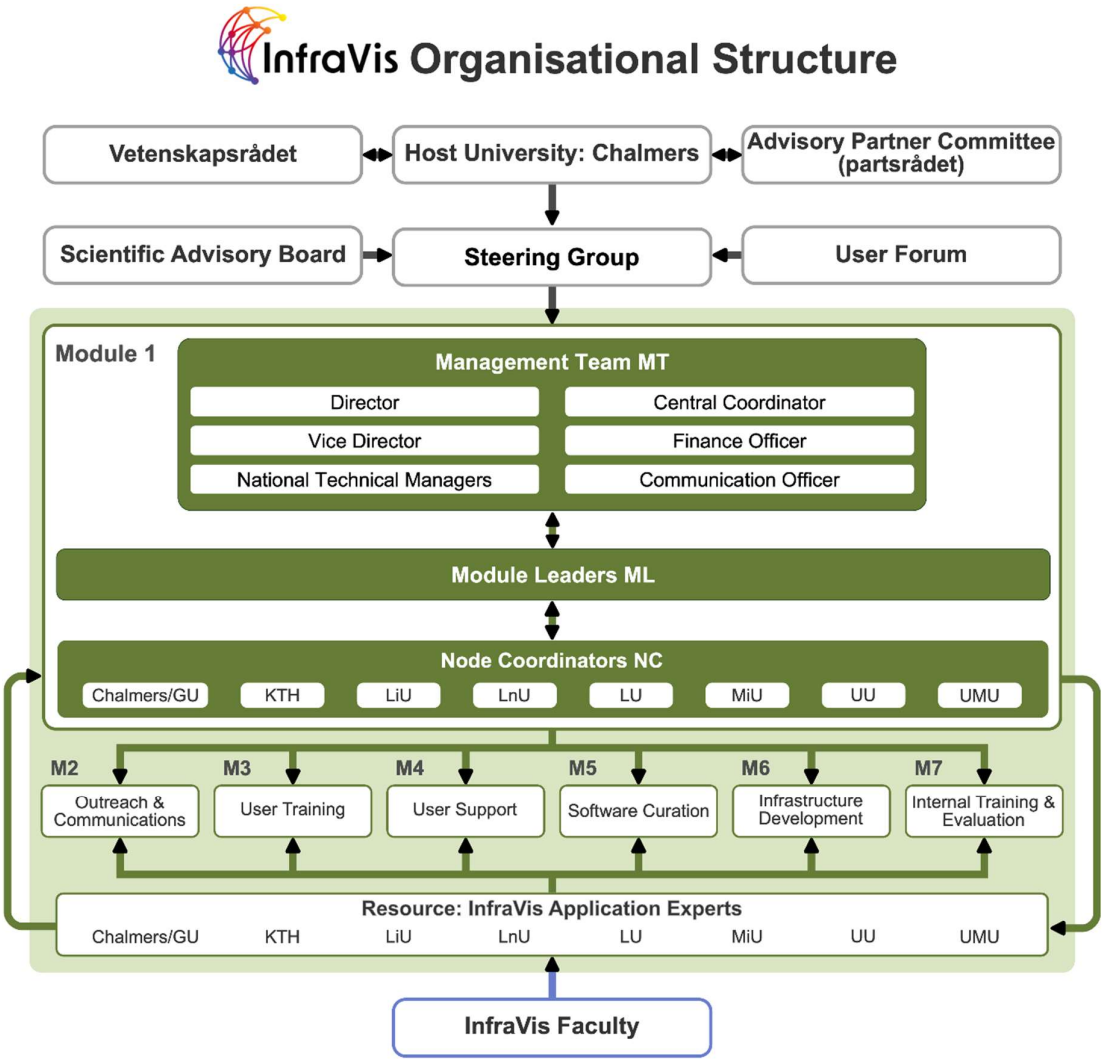

Figure 3. InfraVis organisational structure.

Operation

InfraVis is organised into seven modules, each addressing a specific function within the infrastructure. The operational model consists of a user-facing layer, supported by underlying

[3] https://infravis.se/about-infravis/operations-reports/

service functions and coordinated through a management layer. Figure 4 illustrates the functional relationships between the modules.

Module 1 consists of the Management team, the Module Leader team and the Node coordinator team and covers overall management and leadership.

Modules 2–4 constitute user–facing operational activities and interact directly with users. Module 2 focuses on outreach and user recruitment. Module 3 provides user training. Module 4 delivers user support at three levels: (i) helpdesk support for short queries, (ii) intermediate support requiring expert involvement, and (iii) advanced support involving tailored solutions, including software development. These activities are supported by Modules 5–7, which form the service and development layer of the infrastructure. Module 5 is responsible for software development including software engineering practices, documentation, archival, maintenance, and open publication. Module 6 carries out development projects aimed at improving infrastructure capabilities. Module 7 focuses on evaluation, internal training, and quality assurance.

InfraVis provides access to advanced visualization laboratories and hardware resources across its nodes, including high-end workstations, virtual reality equipment (e.g. HMDs), immersive environments and dome theatres, and novel interactive devices (e.g. multi-sensory input systems). User access is structured across four levels: (i) physical access to laboratories, (ii) remote access to infrastructure resources, (iii) online collaborative access and user support, and (iv) access to equipment (on-site, remote, or via lending arrangements).

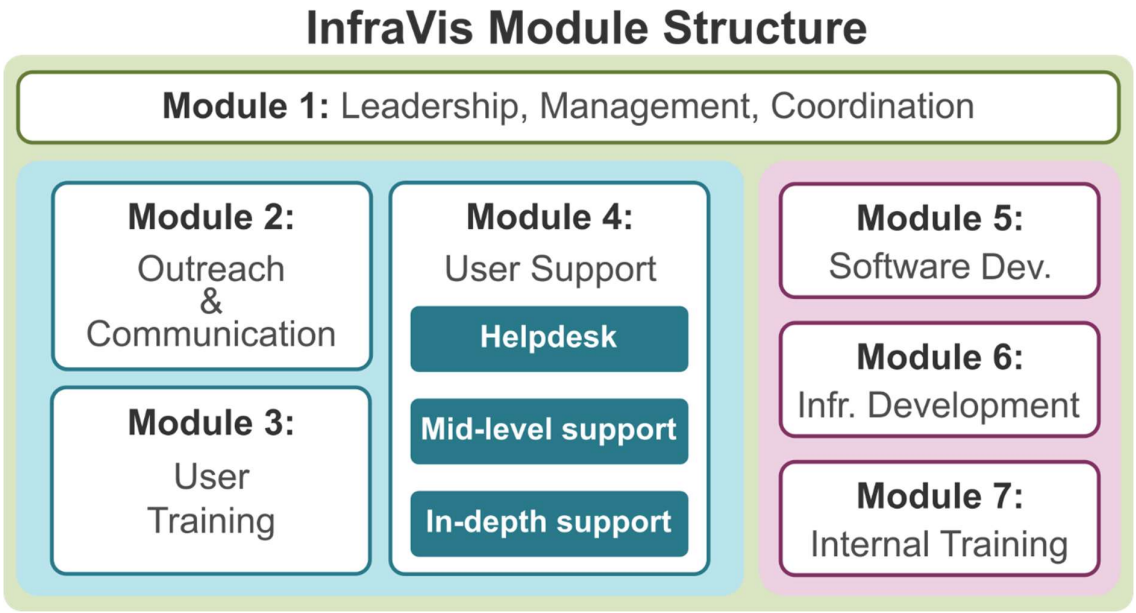

Figure 4. InfraVis seven modules and how they relate to each other.

Time Plan

The InfraVis time plan is defined through the infrastructure's internal schedule of milestones and deliverables and is further specified in quarterly Gantt charts (see Appendix: Gantt Chart 2026). Each year, the Steering Committee and Management Team meet in November to review and approve the budget for the upcoming year, and in May to address strategic priorities for the forthcoming operational period. The Management Team is responsible for coordinating implementation and monitoring progress in relation to defined milestones and deliverables.

Following a positive funding decision from the Swedish Research Council, InfraVis has secured continued funding for the period 2027–2028. The next funding period builds on accumulated experience, identified user needs, and developments in science and technology. Further development includes a continuation of establishing InfraVis' role within the national research infrastructure landscape, in particular through continued coordination and complementarity with relevant infrastructures such as NAISS and data-generating infrastructures such as MAX IV.

Data Management and Need for Supporting e-Infrastructure

The general principle for InfraVis data management is that responsibility for all aspects of data handling rests with the user of the infrastructure, specifically the Principal Investigator (PI) of the project using InfraVis services. InfraVis has established a Data Management Policy, as well as an appendix to the User Support Project Agreement that specifically addresses data handling. These documents provide the framework for how data-related responsibilities are defined and managed within InfraVis projects.

The PI is responsible for ensuring that all requirements related to confidentiality, data protection and ethical approval are fulfilled before any InfraVis personnel access or handle the data. Where ethical approval or regulatory specifications are required, the PI must ensure that these are obtained and that the necessary resources are provided to enable InfraVis personnel to meet such requirements. In particular InfraVis Application Experts (IAEs), who are directly involved in data handling, must hold all required certifications before engaging in the project.

InfraVis does not provide infrastructure for data storage, distribution, audit trails, or other components of long-term data management. The PI is therefore responsible for ensuring that appropriate and compliant data management solutions are in place. When relevant and feasible, users are encouraged to use national e-infrastructure resources such as NAISS[4]/Swestore[5] for data storage and management. The PI is also responsible for granting IAEs appropriate access to relevant data repositories. For Level 3 projects, the PI, with

[4] https://www.naiss.se

[5] https://www.snic.se/resources/swestore/

support from InfraVis, may apply for dedicated data management resources such as NAISS-SENS4 and Swestore.

The e-infrastructure requirements for InfraVis are expected to be modest but remain difficult to quantify at this stage. There is, however, a clear need for access to NAISS resources, particularly for data storage and remote visualization. InfraVis users partly overlap with the existing NAISS user base, but the overall InfraVis user community is broader, as it also attracts researchers who have not previously engaged with High Performance Computing (HPC). For a significant share of these users, InfraVis will serve as a first point of contact with HPC, introducing them to relevant concepts, tools and workflows. In this context, InfraVis plays an important role in supporting users in accessing and effectively using NAISS resources.

InfraVis is currently engaged in a joint development project with NAISS, which is ongoing and will continue throughout 2025 (Module 6). This work is particularly important considering the rapid growth in data generated by instruments and simulations, where visualization increasingly needs to be performed close to where the data is stored and processed. Remote visualization services are expected to play a key role by bridging visualization and HPC, enabling users to interact with visualization tools directly within HPC and AI/ML environments.

Part II: Operational Plan 2026

Module 1: Leadership, Management and Coordination

2026 constitutes the final year of the first InfraVis funding period. A surplus remains from the initial start-up phase, and the Steering Committee has approved a set of proposals for strategic activities to be supported during 2026 using these funds. The proposals have been consolidated and assessed by the Management Team based on scientific relevance, methodological relevance to InfraVis, strategic relevance for Swedish research, and their contribution to collaboration with other national research infrastructures.

The proposed activities cover multiple scientific domains and reflect the role of InfraVis in supporting visualization, data integration, and quantitative analysis across research areas. The activities contribute to methodological development, broadened user engagement, and interaction with infrastructures such as MAX IV, NAISS and WISDOME. Module 1 is responsible for coordinating the implementation of this activity portfolio.

Alongside operational development, attention is given to organisational conditions and work environment. As InfraVis is a distributed organisation across nine universities, formal employer responsibility rests with the respective host institutions. At the same time, a significant share of tasks is defined and coordinated within InfraVis, requiring coordination across nodes. During 2026, specific activities will be undertaken with a focus on the work environment. Workshops will be organised for the Management Team, the Node Coordinators, and the Module Leaders. These will be facilitated by a leadership coach from Chalmers HR and are intended to support continued organisational development, including for InfraVis Application Experts (IAEs).

In addition to these activities, Module 1 will:

- Conduct regular meetings with the Management Team, Node Coordinators and Module Leaders to support coordination of ongoing activities
- Oversee one open call for Level 3 projects during 2026
- Prepare and submit annual reporting to the Swedish Research Council, including financial and activity reporting across nodes and modules
- Organise Steering Committee meetings to support governance and follow-up of activities
- Facilitate InfraVis Days
- Organise one User Forum during 2026, with a focus on reviewing format and function
- Organise one Scientific Advisory Board meeting
- Continue development of the user-support call process, including evaluation criteria and applicant interaction
- Support coordination of internal resource allocation across nodes
- Further develop and implement user fee models for different user groups [6]

[6] InfraVis partly finances its services through a transparent user fee model. Academic researchers benefit from subsidised rates supported by Swedish Research Council funding and university contributions. Industrial users pay full cost.

- Support activities of the InfraVis Faculty
- Facilitate professional development activities for InfraVis staff

Module 2: Outreach and Communication

Module 2 is responsible for outreach and communication within InfraVis. Its primary objective is to increase awareness, broaden engagement, and ensure that InfraVis' services reach both existing and new user communities across Sweden. The module coordinates communication activities across nodes and supports a coherent national and digital presence.

InfraVis uses four main communication channels: (i) the InfraVis website, (ii) social media, (iii) a national quarterly newsletter, and (iv) communication and outreach events. The website provides an overview of InfraVis resources and competences (i.e. the Application Experts), leadership, completed projects and reports, and serves as the main entry point for applicants wishing to engage in projects with InfraVis (the annual Open Call). InfraVis uses social media in an interactive manner, including co-publication of events with other actors, such as major Swedish research infrastructures, to increase visibility.

In addition to these activities, Module 2 will focus on:

- Weekly Module 2 coordination meetings
- Ongoing updates to the InfraVis website, including L2 and L3 projects and Application Expert skill cards
- Development of an "InfraVis impact" section on the website
- Continued development of the "Infrastructure Development" section of the website to present ongoing and completed projects
- Production of national quarterly newsletters and internal newsletters for InfraVis staff
- Continued presence on social media platforms, including co-publication with other infrastructures
- Participation in conferences with relevance to visualization, AI and software tools
- Outreach to researchers in additional scientific domains and institutions
- Engagement with other research infrastructures and initiatives, including WISDOME, Treesearch, XR Sweden, NBIS, SBDI and Huminfra, in coordination with Module 4 (User Support) and Module 6 (Infrastructure Development)
- Organisation of outreach events at InfraVis nodes, including events combined with training activities
- Communication support for InfraVis representatives participating in events hosted by other research infrastructures or scientific communities

Module 3: User Training

Advanced training is an important component in supporting Sweden's scientific competitiveness in a context where research increasingly relies on complex and large-scale data. Module 3 focuses on user training through seminars, workshops and tutorials, and in the longer term through the development of a national mentoring programme. InfraVis training activities support knowledge transfer in the use of visualization methods and tools, with the aim of strengthening users' understanding of both the possibilities and challenges associated with visualizing their data.

InfraVis provides user training in visualization across disciplinary domains. Researchers involved in InfraVis already contribute to academic courses at participating universities, which form a basis for several of the training activities offered within the infrastructure. Seminars, workshops and tutorials are provided and adapted based on identified user needs, including input from researchers and the InfraVis User Forum. Training activities are designed to address domain-specific requirements and varying levels of user proficiency.

Figure 5. User trainings: left: storytelling workshop; right: guide through virtual MAX IV beamline.

The primary mode of user training is on-site. On-site training provides opportunities for interaction between participants and InfraVis staff, as well as between participants from different nodes and institutions. In addition, some activities offer the possibility of remote participation, for example in data clinics, hackathons and workshops. Training opportunities are communicated via the InfraVis website and through outreach activities described in Module 2: Outreach and Communication.

The operational plan also includes the following activities:

- Inclusion of upcoming Module 3 events as a standing item in Module 2 meetings
- Definition of event types and target groups to ensure diversity in content and levels Alignment of user training with needs identified through Module 4 (User Support) and Module 7 (Internal Training)

- Development of training activities addressing identified knowledge gaps among InfraVis users
- Organisation of user training activities, including seminars, workshops and tutorials
- Coordination of training activities across nodes to ensure coverage of different domains and competence areas
- Provision of primarily on-site training, with selected opportunities for remote participation (e.g. data clinics, hackathons and workshops)
- Integration of training activities with user support projects, particularly within Level 2 and Level 3 engagements
- Organisation of joint training activities with Module 6 (Infrastructure Development), including co-events with research infrastructures
- Communication of training opportunities via the InfraVis website and through outreach activities in coordination with Module 2 (Outreach and Communication)

Module 4: User Support

During 2025, InfraVis established defined and tested project management protocols based on operational experience. These workflows reflect iterative development and refinement over four years of implementation and use. Knowledge and tools developed within L3 projects are integrated into InfraVis to support future users and contribute to the broader knowledge base, in coordination with Module 5: Software Development and Curation. During 2026 we will continue the development and testing of project workflow protocols (see Figure 6), building on revisions implemented during 2025. M4 works closely with M5 to provide support in the curation of software that was developed as part of a L2 or L3 project and to adjust the project workflow when necessary to improve and streamline our processes and collaboration across modules.

Module 4 will coordinate the fourth open call for in-depth (L3) projects during 2026 (April–October). In-depth support projects involve close collaboration between users and InfraVis experts, including engagement across the visual data analysis process and, where relevant, adaptation or development of visualization tools. The annual call provides a structured and transparent mechanism for access (announced in coordination with Module 2: Outreach and Communication). The user fee model for in-depth support will be further tested. In-depth projects will remain flexible in scope and duration. In parallel, a full-cost model for non-academic user groups will be further developed.

The main activities within Module 4 include:

- Bi-weekly module meetings to coordinate processes
- Quarterly one-to-one meetings with Node Coordinators (NCs) to review ongoing projects and resource allocation
- Provision of user support across Levels 1–3
- Operation of the InfraVis helpdesk service
- Organisation of open house meetings in connection with the fourth open call
- Management of processes related to the user call, including dialogue and agreements

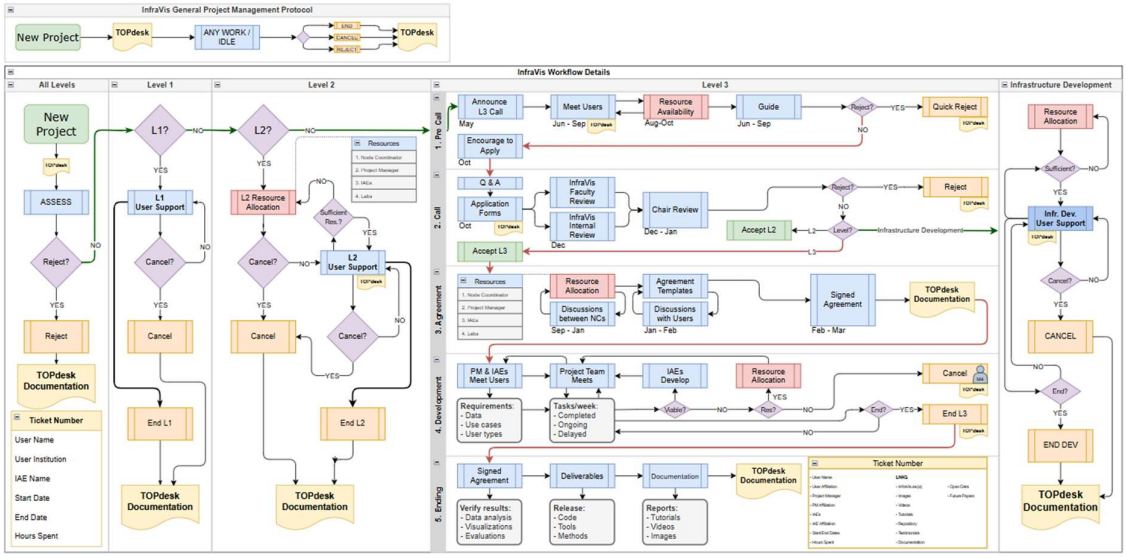

Figure 6. Presentation of the project management protocols and workflow diagrams for user support activities across all levels (M4 L1–L3).

Module 5: Software Development and Curation

Module 5 focuses on the curation of software tools and documentation developed or contributed to by InfraVis, with the aim of enabling both internal reuse and broader external use. The appointment of a Module Leader in autumn 2025 has strengthened the definition and coordination of the module's scope. Outputs span a broad range of software-related artefacts, including visualization tools, scripts, plugins, and workflow configurations, primarily originating from user support (Module 4) and development activities (Module 6), and additional targeted efforts.

The module establishes a structured knowledge base and a library of reusable solutions that can be maintained and adapted across application domains. It also supports the publication of open software and promotes best practices for documentation, licensing, and software management. Activities include collecting, documenting, storing, and sharing software repositories for both internal and external use, as well as developing Software Management Plans (SMPs) and associated guidelines. Module 5 further develops tutorials and domain-specific recommendations, including example configurations, and supports integration between software tools where needed. The module contributes to enabling effective use of visualization in Swedish research through curated software resources, documentation, training materials (Module 3), and integration with user support (Module 4). The work is primarily personnel-driven and requires continuous maintenance as software environments evolve. Baseline configurations of software and sample datasets will be established and maintained to support reuse, with a limited roadmap guiding updates and transitions. Changes in software recommendations are coordinated with Module 3 and Module 6 and may include relevant Software as a Service (SaaS) solutions.

Module 5 main activities 2026:

- Maintain inventory of InfraVis software contributions
- Establish and extend internal knowledge base (tools, competences, hardware, application areas)
- Develop templates for Software Management Plans (SMPs)
- Establish central repository (GitLab, hosted by Chalmers)
- Develop documentation standards (repositories, versioning, tutorials, open publication)
- Initiate public-facing knowledge base
- Develop user-oriented tutorials and example configurations
- Maintain software-related resources on infravis.se

Figure 7. Ship Ahoy! Interactive web application visualizing the environmental pressures and impacts from maritime transport. InfraVis user Ida-Maja Hasselöv, Chalmers.

Module 6: Infrastructure Development

Module 6 drives the continued development of InfraVis in response to evolving user needs, including both established and emerging types of requests, as well as cases that fall outside existing service models. Development projects are defined through internal processes coordinated by the Management Team and approved by the Steering Committee. Research-oriented activities are expected to be supported within the host research environments. InfraVis complements data-generating infrastructures by supporting data handling, analysis, and visualization. Key areas include remote visualization (in collaboration with NAISS) and post-acquisition data analysis (e.g. at MAX IV), enabling effective use and interpretation of complex datasets. The module strengthens collaboration with other research infrastructures and supports integration of visualization into user workflows across domains.
Development activities are carried out in close interaction with research environments at participating universities, contributing to both competence development within InfraVis and methodological advancement in research. Ongoing

collaborations initiated in 2024–2025, including the NAISS–InfraVis and MAX IV–InfraVis projects, will continue during 2026.

Main activities 2026:

- Maintain overview of relevant research infrastructures
- Strengthen collaboration with selected infrastructures
- Support integration of visualization into user workflows
- Initiate at least one new development project
- Continue NAISS–InfraVis and MAX IV–InfraVis projects
- Collaborate with user groups on advanced methods (with Modules 4 and 5)
- Organise targeted outreach and collaboration activities
- Support cross-module development of workflows, coordination, and documentation

In addition, development work is carried out across modules, including activities to improve coordination, documentation and workflows for mid-level (L2) and in-depth (L3) projects within Module 4 (User Support).

Figure 8. Left: Several Swedish research infrastructures invited for networking at InfraVis Days. Right: Visualization work-in-progress of the ForMAX Beamline, based on actual CAD drawing.

Module 7: Internal Training and Evaluation

InfraVis is a competence-based infrastructure, where knowledge and skills constitute its core resources. InfraVis Application Experts (IAEs) develop expertise through their day-to-day activities. To support knowledge transfer across the infrastructure, structured mechanisms for internal training and exchange are integrated into regular operations.

Internal training and knowledge sharing will continue to be prioritised during 2026, reflecting the importance of competence development for service delivery and coordination across nodes. Activities also support increased engagement of IAEs within InfraVis and facilitate participation in shared activities across the infrastructure.

Internal training and knowledge-sharing activities consist of regular bi-weekly meetings for InfraVis Application Experts (IAEs), where methods, challenges and practical experiences are exchanged. These activities also include train-the-trainer workshops focusing on visualization methods, tools and workflows, some of which are organised jointly with

Module 3 (User Training). In addition, short-term staff exchanges between nodes support cross-node learning and competence development.

The module also plans to conduct structured self-evaluation activities aimed at improving services and internal processes, which is carried out through several coordinated inputs across modules. User feedback is collected through surveys, interviews and usage data, in collaboration with Module 1 and Module 2. Internal procedures are assessed through staff surveys and operational data analysis, coordinated with Module 4 (User Support). Furthermore, post-project reviews, including postmortem analyses, are conducted together with Module 4 to document experiences, identify areas for improvement and support continuous enhancement of InfraVis services.

Module 7 activities also include:

- Organisation of InfraVis Days with additional time allocated for IAE-focused activities
- Continued development of user group mapping across research areas and communities
- Continued training in the use of internal systems, including TOPdesk
  Seminars with senior visualization researchers (train-the-trainer format)
- On-demand IAE-to-IAE training activities