



InfraVis

InfraVis Annual Report 2025



This annual report has been prepared by the Management Team in collaboration with Module Leaders and Node Coordinators, based on module reports, financial reporting, and collected user statistics. The Steering Committee has contributed to strategic reflection during the reporting process.

In 2025, InfraVis continued to operate as Sweden's national distributed research infrastructure for advanced data visualization and visual analytics. The infrastructure serves researchers across all scientific domains and partner universities by aggregating specialised competence across nine institutions. This national coordination enables a competence base that no single university could sustain independently and ensures equal access to advanced analytical support regardless of geographical location. Support is allocated based on methodological expertise rather than institutional affiliation, enabling cross-node collaboration and efficient use of national resources.

Through strategic collaborations with infrastructures such as NAISS and MAX IV, InfraVis integrates visualization and advanced data workflows into existing research environments, strengthening interoperability and increasing the overall return on national infrastructure investments. The distributed organisational model has proven functional and scalable, combining national coordination with strong local anchoring. By addressing data-related bottlenecks and strengthening analytical capacity, InfraVis contributes directly to Sweden's scientific competitiveness and long-term research excellence.

POPULAR SCIENCE SUMMARY

InfraVis is a national research infrastructure funded by the Swedish Research Council and nine Swedish universities. It supports researchers across Sweden with advanced data visualization and visual analytics. Through a distributed network of visualization experts and laboratories, InfraVis helps researchers analyse, interpret, and communicate complex data. Unlike infrastructures focused on specific scientific disciplines, InfraVis serves all domains. Its distributed model ensures that expertise can be shared nationally, providing equal access to advanced support regardless of geographical location. By combining specialised competence from multiple universities, InfraVis strengthens research quality and contributes to more effective use of national research investments. As data volumes and analytical complexity continue to grow, InfraVis plays an increasingly important role in supporting Swedish research and enhancing its international competitiveness.

DESCRIPTION OF OPERATIONS

Time plan

InfraVis progressed according to plan during 2025, completing the milestones and deliverables defined for the funding period (see updated GANTT chart in Attachment 1). The infrastructure has continued to develop in line with the approved operational timeline, with increasing demand for services across scientific domains. The third national user call attracted 18 applications. Two strategic development collaborations were continued with NAISS and MAX IV. An evaluation of the start-up phase was conducted through user forums and interviews, and a broader user survey is ongoing. Preparations for the 2027–2030 funding period were initiated during spring and followed by strategic dialogue with all partners during autumn.

Construction, development and operation

M1 Organisation and Leadership

The Management Team coordinated activities across nodes and modules, ensured financial follow-up, and delivered annual reporting to the Swedish Research Council. The continuation application for 2027–2028 was successfully prepared and approved. Node Coordinators implemented the Operational Plan 2025 and contributed actively to user support and cross-node collaboration. Two User Forums were organised in connection with InfraVis Days (MiUn and GU/Chalmers), providing structured feedback from users. The Scientific Advisory Board and Steering Committee contributed to evaluation and strategic development, including a two-day strategic meeting. The governance

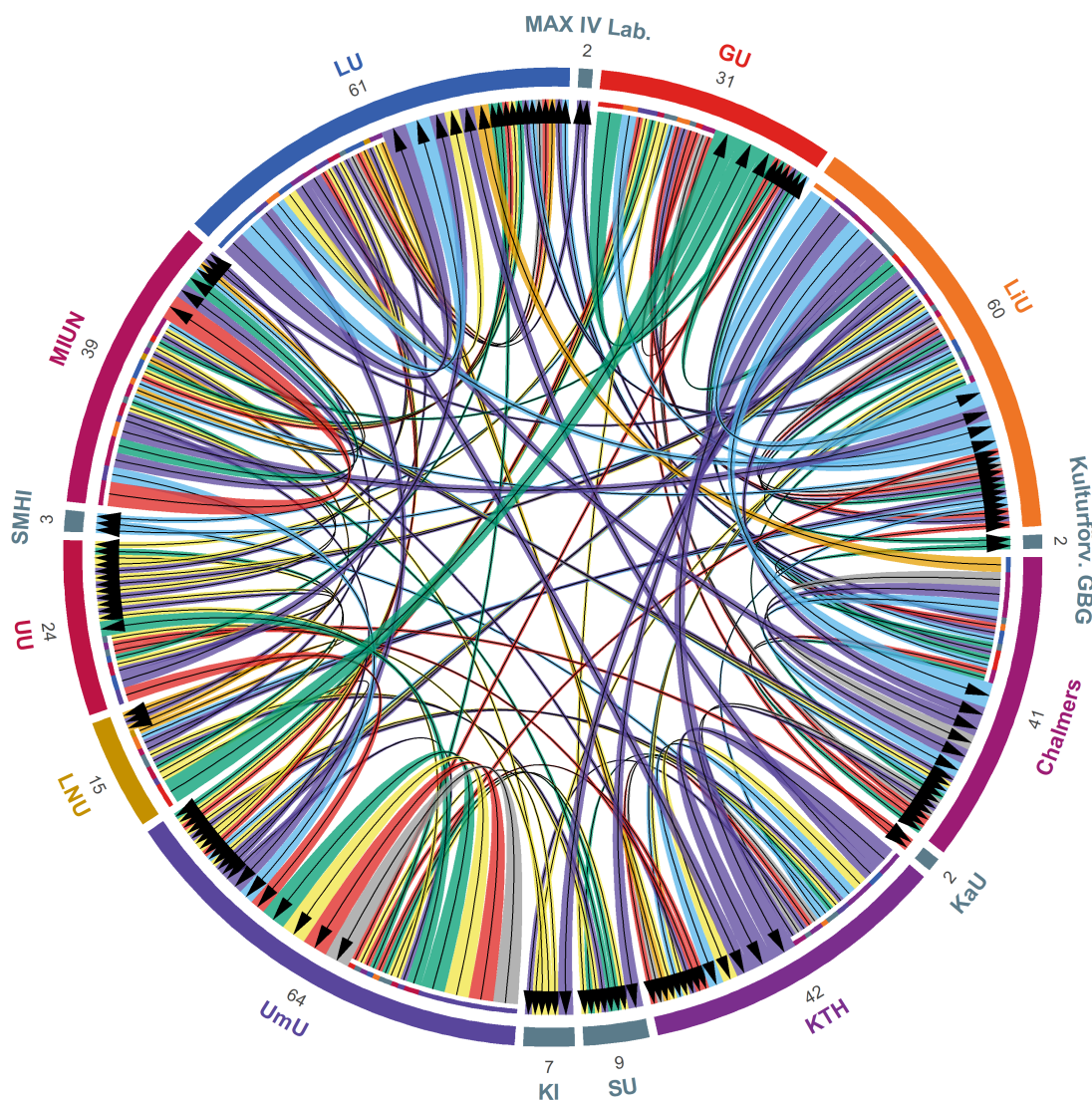
structure, combining national coordination with local anchoring, has demonstrated that the distributed model functions effectively and maintains strategic coherence.

M2 Outreach and Communication

InfraVis reached the research community through its website, newsletters, social media, and 72 events involving approximately 3,000 participants. Collaboration with infrastructures such as LINXS, Huminfra, MAX IV, and HALRIC strengthened national visibility and engagement.

M3 User Training

User training expanded during 2025 and included open training events, thematic workshops, and embedded hands-on support within L3 projects. Topics included HPC-related programming, AI in humanities research, and GIS. Onsite training was prioritised to strengthen interaction and peer learning.



Domain

- Engineering and Technology
- Natural Sciences
- Humanities and the Arts
- Social Sciences
- Agriculture and Veterinary Sciences
- Medical and Health Sciences
- Unclassified

Figure 1. Multi-disciplinary and cross-node collaborations within InfraVis 2025. Chord diagram showing the distribution of supported projects across InfraVis nodes and scientific domains. Outer segments represent participating institutions, and coloured chords indicate project domains. The figure shows cross-node collaboration and a broad disciplinary span, highlighting InfraVis' role as a national integrative infrastructure. Importantly, the level of cross-node engagement is underestimated, as the visualization primarily reflects the main assigned application expert and does not fully capture additional cross-node activity.

M4 User Support

InfraVis applies a one-point helpdesk model (L1 up to 10 hours; L2 up to 80 hours; L3 exceeding 80 hours with user fee). During 2025, 68 new applications were received across all scientific domains. In total, 106 projects were supported (36 L3, 44 L2, 26 L1), involving 151 users from all nine partner universities, seven additional HEIs, and five non-academic organisations. 16 projects were rejected or discontinued. Projects were allocated based on methodological expertise rather than geography, with several L3 projects supported by cross-node teams. This competence-based allocation is central to InfraVis as a distributed national infrastructure (Figure 1). Several projects included software development components, extending methodological impact beyond individual cases.

M5 Software Development and Curation

InfraVis experts contributed to 46 software-related outputs, including interactive tools, XR applications, analytical scripts, and workflow configurations. Work continues toward establishing a centralised repository and structured software management practice to ensure long-term accessibility and reuse.

Number of Software Contributions in 2025 by Category	
Tool	25
Script	4
Programming Extension	10
Artifact-based Extension	6
Other	1
Grand Total	46

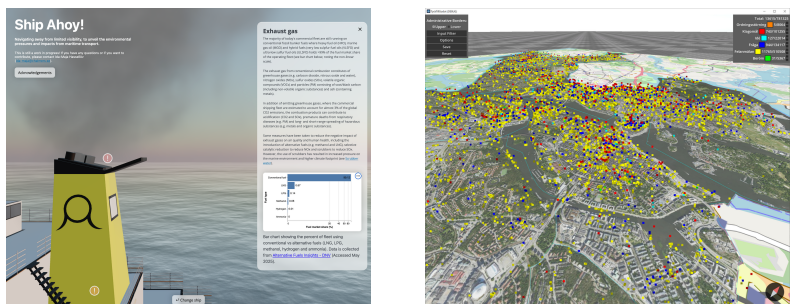


Figure 2. InfraVis software contributions in 2025. Left: the summary of contributions by category. Center: Ship Ahoy web tool developed at Gothenburg and Lund nodes for a user support project unveiling the environmental pressures and impacts from maritime transport (available at <https://infravis.github.io/shipAhoy/>). Right: visualization tool developed at KTH node for a user support project focusing on crowd sourced urban data collected from Tyck Till, an app developed by Stockholms Stad (see <https://infravis.se/interactive-visualization-of-crowd-sourced-urban-data-from-tyck-till/>).

M6 Infrastructure Development and Integration

Four development projects were conducted in 2025, including strategic collaborations with NAISS and MAX IV. Collaboration with other national research infrastructures constitutes a core strategic function of InfraVis. Rather than operating as a standalone support unit, InfraVis acts as an integrative layer within the Swedish research infrastructure ecosystem, enhancing the analytical and visualization capacity of complementary infrastructures.

Achieving interoperability and delivering effective services requires solutions that integrate seamlessly with diverse data workflows and computational environments. In 2025, InfraVis continued the development projects initiated in 2024 with MAX IV and NAISS. The collaboration with MAX IV focused on strengthening data integration pipelines and embedding visualization support directly within beamtime workflows, making advanced analytical expertise accessible at earlier stages of the experimental process. The work with NAISS aimed to improve computational accessibility by integrating visualization and analytical processes with national HPC and AI/ML resources.

Through these efforts, InfraVis embeds advanced visualization competence within existing national infrastructures rather than operating as a parallel structure. This approach strengthens interoperability, improves methodological coherence across infrastructures, and increases the overall return on national infrastructure investments. Strategic engagement with other national infrastructures continued throughout the year, including a dedicated outreach event during the InfraVis Days at the University of Gothenburg, as well as presentations and coordination meetings across Swedish universities. A targeted initiative was also launched to strengthen engagement with

Humanities-oriented infrastructures and researchers, a currently underrepresented group, thereby broadening national coverage and reinforcing InfraVis' cross-disciplinary mandate.

M7 Internal Training and Self-Evaluation

Internal competence development remained a priority during 2025 in order to sustain quality and consistency across the distributed organisation. M7 delivered xxx internal training sessions involving IAEs and coordinators across nodes. Topics included onboarding processes, project management practices, introduction to R, and continued training in support systems such as TOPdesk. Workshops held during the InfraVis Days in Sundsvall and Gothenburg focused on best practices, workflow harmonisation, and cross-node knowledge exchange. These activities strengthened internal coordination and contributed to more consistent service delivery across the infrastructure. Self-evaluation was conducted in connection with the preparation of the continuation application. Feedback from users, Module Leaders, the Scientific Advisory Board, and the Steering Committee informed refinements of governance structures, support models, and strategic priorities. This structured reflection process supports continuous improvement within the distributed model.

Interaction with other research infrastructures

This section is dealt with under M6 above.

Data management and supporting e-infrastructure

InfraVis operates in alignment with FAIR principles and national data management standards. Researchers retain primary responsibility for Data Management Plans, while InfraVis ensures that data management considerations are addressed before support is initiated. Collaboration with SND and NAISS strengthens interoperability between visualization workflows, national data repositories, and HPC environments. This coordinated approach supports long-term usability of research data and reinforces the national e-infrastructure landscape.

ORGANISATIONAL CHANGES

Coordination responsibilities for Modules 2–7 were transferred to respective Module Leaders in March 2025 in accordance with the Operational Plan. No major structural changes requiring VR approval occurred during the year.

FINANCIAL OUTCOME

InfraVis was established in 2022 and has, since its inception, strategically expanded both its capacity and staffing levels through 2025 in response to increased demand and continued growth. For 2025, InfraVis has reached its spending according to the annual budget with full staffing (22.6 FTE, representing an increase of approximately 4 FTE compared to 2024). However, the organisation has not yet caught up with the underspending from previous years (a total of 20,000 kSEK in VR and co-financing funds). According to the 2026 forecast, a significant portion of this underspend will be utilized as InfraVis has now reached a higher level of activity and resource demand associated with its operational maturity. Time reporting into the various modules has improved and become more accurate; however, reporting for modules M5, M6, and M7 still does not fully reflect actual use. Part of the reported time in M4 should correctly belong to these modules. InfraVis continued to develop and implement its user-fee model, which includes both in-kind contributions (421 kSEK) and direct cash payments (337 kSEK), totaling 758 kSEK.

InfraVis reported contracted services totalling 620 kSEK, of which 355 kSEK replaced planned salary expenses at Chalmers. Other costs were related to InfraVis Days (MiUN: 50 kSEK; Chalmers: 140 kSEK). The remaining covered licenses, printing, and similar expenses. Furthermore, InfraVis had from start budgeted contracted services costs for the use of supporting e-infrastructure (NAISS). Instead, VR has approved the reallocation of SEK 1,100 kSEK of these

SEK 1,500 kSEK development projects with NAISS (300 kSEK) and MAX IV (phase one: 300 kSEK; phase two: 500 kSEK). All development projects are currently ongoing and are scheduled for completion in spring 2026. The associated costs will be reported in the 2026 annual report.

COMMENT ON KEY PERFORMANCE INDICATORS

Demand for support remained high, particularly for L2 and L3 projects, reflecting increasing methodological complexity in research. The number of supported projects and the continued involvement of users from outside partner universities demonstrate national reach. Cross-node collaboration increased, indicating that the distributed model functions effectively. Compared to past years, organisational stability improved while activity levels continued to grow.

COMMENT ON PUBLICATIONS AND OTHER OUTPUT

InfraVis was acknowledged or mentioned in 20 peer-reviewed publications during 2025. Given that many L3 projects are ongoing or recently completed, a time lag between support and publication is expected. In addition to peer-reviewed output, InfraVis contributed to reports, conference presentations, and methodological developments. The publication pipeline is expected to grow as supported projects mature.

In addition, other output including software contributions are listed in the document 'Other output'.

GENDER EQUALITY

InfraVis monitors gender distribution among staff, users, and governing bodies. Gender distribution among IAEs reflects the broader gender imbalance in computer technology education. Recruitment processes continue to consider gender balance. User participation shows variation across modules, with relatively balanced participation in outreach activities but lower female representation in L3 support projects. Continued efforts include targeted outreach, inclusive training formats, and awareness in recruitment processes. Planned measures aim to address identified imbalances in both internal staffing and user engagement.

RISK ANALYSIS

Organisational stability improved during 2025. However, increasing demand and parallel L2–L3 projects require continued coordination and prioritisation. Expanded collaboration with national infrastructures strengthens strategic relevance but increases planning complexity. Long-term sustainability depends on stable funding and continued access to specialised expertise. The distributed model reduces systemic vulnerability by avoiding concentration of competence at a single site while requiring sustained coordination and shared standards.

EDUCATION, OUTREACH AND USER SUPPORT

Internal and external training, outreach activities, and user support are described in Modules 2–4 and 7. Demand for advanced support continues to increase, particularly within data-intensive research areas.

Attachment 1: InfraVis time-plan (updated 2025) as a Gantt chart based on the application to the Research Council for funding 2022-2026.

InfraVis Milestones (M) & Deliverables (D)

2022			2023		2024		2025		2026	
March (0) Startup	June (1) 6-month M&D	December (2) 12-month M&D	June (3) 18-month M&D	December (4) 24-month M&D	June (5) 30-month M&D	December (6) 36-month M&D	June (7) 42-month M&D	December (8) 48-month M&D	June (9) 54-month M&D	December (10) 60-month M&D
M0.1. Pre-kickoff meeting KTH Nov 9 2021	M1.1. Definition of recruitment process	M2.1. All internal & most external recruitment completed	M3.1. Pilot studies completed	M4.1. Optimized full TOPDesk operation	M5.1. User group mapping	M6.1. Full evaluation of 2- ops	M7.1. Follow-up on user call 2024		M9.1. Follow-up on user call 2025	
M0.2. Kickoff at Gothenburg March 23	M1.2. Development of operations and protocols	M2.2. All currently needed HW & SW purchased	M3.2. Proposed adjustments	M4.2. Optimized InfraVis protocols	M5.2. Define development project with at least 1 other RI	M6.2. Start up development project with at least 1 other RI	M7.2. Send application 2027 and onwards			
D0.1. Steering Committee meeting - Jan	D1.1. Pilot project plan to develop infrastructure	M2.3. All protocol definitions outlined	D3.3. Protocols for interfacing with InfraVis in: Box, Trello, Meetings, documents	D4.1. Pilot study report	M5.3. Follow-up on user call 2023	M6.3. Preparation for continuation and application 2027 and onwards	D7.1. Publish strategic and operational plan		D9.1. Publish strategic and operational plan	
D0.2. Steering Committee meeting - Feb	D1.2. InfraVis Plan for Gender Equality	M2.4. Full operation TOPDesk Nov 7	D3.4. Report to VR	D4.2. InfraVis adjustments proposal	D5.1. Report to VR	M6.4. Present plan and strategy for application	D7.2. Report to VR		D9.2. Report to VR	
D0.3. Steering Committee meeting - Mar	D1.3. Steering Committee meeting - April	D2.1. User training workshops and courses	D3.5. Scientific Advisory Board assembled	D4.3. Validated protocols document		D6.1. User Call 2024		D8.1. User Call 2025		D10.1. User Call 2026
	D1.4. Steering Committee meeting - May	D2.2. InfraVis Communication Strategy	D3.6. InfraVis Data Management Plan DMP	D4.4. Steering Committee meetings	D5.2. Steering Committee meetings (at least 2/half year)	D6.2. Steering Committee meetings (at least 2/half year)	D7.3. Steering Committee meetings (at least 2/half year)	D8.2. Steering Committee meetings (at least 2/half year)	D9.3. Steering Committee meetings (at least 2/half year)	D10.2. Steering Committee meetings (at least 2/half year)
	D1.5. Steering Committee meeting - June	D2.3. Steering Committee meeting - Sep	D3.7. Steering Committee meeting - Jan		D5.3. InfraVis Days Umeå	D6.3. InfraVis Days Lund	D7.4. InfraVis Days Sundsvall	D8.3. InfraVis Days Göteborg	D9.4. InfraVis Days Växjö	D10.3. InfraVis Days TBA
		D2.4. Steering Committee meeting - Oct	D3.8. Steering Committee meeting - Mar		D5.4. InfraVis internal/external Newsletter (3/half year)	D6.4. InfraVis internal/external Newsletter (3/half year)	D7.5. InfraVis internal/external Newsletter (2/half year)	D8.4. InfraVis internal/external Newsletter (2/half year)	D9.5. InfraVis internal/external Newsletter (2/half year)	D10.4. InfraVis internal/external Newsletter (2/half year)
		D2.5. Steering Committee meeting - Nov	D3.9. Steering Committee meeting - April							
			D3.10. Steering Committee meeting - June							