AGILE: GIScience Series, 7, 1, 2026. https://doi.org/10.5194/agile-giss-7-1-2026
Proceedings of the 29th AGILE Conference on Geographic Information Science, 16–19 June 2026.
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Preface

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We are pleased to welcome you to Tartu, Estonia, for the AGILE 2026 conference. This year's theme, "Smart Data: Making geospatial data actionable," highlights the growing importance of turning geospatial data into meaningful information that can support better decisions and help address real-world challenges. At a time when vast amounts of spatial data are generated but their purpose often remains unclear, making this data usable and relevant is more important than ever.

Geographic Information Science has evolved considerably over the past decades. Initially, GIS was primarily used for digital mapping and the storage and visualisation of spatial data. Over time, the field expanded to include more advanced spatial analysis, modelling, and the integration of data from diverse sources. Today, with the rapid growth of data from sensors, satellites, and user-generated content, GIScience is increasingly concerned with handling large, complex, and dynamic datasets. This shift places greater emphasis on methods and approaches that not only manage and analyse data, but also make it accessible, interpretable, and usable in practice – supporting timely decisions and applications.

The conference brings together researchers, developers, educators, students, and professionals from across the field of Geographic Information Science. AGILE 2026 offers an opportunity to explore recent advances in the discipline, exchange ideas, and engage with colleagues from across Europe.

1 University of Tartu

The University of Tartu, founded in 1632, is one of the oldest universities in Northern and Eastern Europe. Located in Estonia's second-largest city, it has played a central role in the region's academic, cultural, and scientific development for centuries. Today, the university hosts around 14,000 students and employs roughly 3,500 staff members, including a strong international community of researchers and academics.

The university is organised into four faculties: the Faculty of Arts and Humanities, the Faculty of Social Sciences, the Faculty of Medicine, and the Faculty of Science and Technology. It is widely recognised for its research strength and innovation, particularly in areas such as information technology, data science, environmental research, and life sciences, and is consistently ranked among the leading universities in the Baltic region.

Research and education in geoinformatics and cartography are conducted within the Department of Geography, part of the Institute of Ecology and Earth Sciences. Geoinformatics and cartography are offered as a specialisation within the MSc in Geography, alongside the international MSc programme Geoinformatics for Urbanised Society, which prepares specialists to analyse spatial data and develop decision-support solutions across a wide range of sectors. In addition, the Department of Geography is a partner in the Erasmus Mundus Joint Master's Degree programme Geo-information Science and Earth Observation for Environmental Modelling and Management (GEM), delivered in collaboration with the University of Twente (Netherlands), Lund University (Sweden), and UCLouvain (Belgium).

There are two research groups that focus on geoinformatics:

- Landscape Geoinformatics Lab focuses on developing and applying advanced geospatial methods to better understand landscape processes and support sustainable environmental management. The research group's work centres on geospatial analysis, machine learning, and modelling, with particular emphasis on land use change, water and soil systems, biodiversity, and climate-related challenges. By integrating diverse datasets from remote sensing to large-scale environmental data, the team develops predictive models and spatial scenarios that help explain landscape dynamics and support planning and decision-making. A key aspect of their research is handling complex and large geospatial datasets, including the development

of scalable and reproducible workflows and data infrastructures. This includes work on data cubes, discrete global grid systems, and web-based geospatial services, enabling more efficient analysis and sharing of environmental data.

- The Mobility Lab focuses on understanding how people move in space and time, and how these movement patterns relate to society and the environment. The lab's research explores a wide range of topics, including travel behaviour, activity spaces, tourism, urban development, and socio-spatial inequalities. By analysing mobility patterns—from daily commuting to international travel—it aims to better understand how people interact with places, services, and each other across different scales. A key strength of the Mobility Lab is its use of large and innovative datasets, particularly mobile positioning data, which allow researchers to capture detailed spatio-temporal patterns of human behaviour. These data are combined with other sources and methods to support research, policy-making, and planning, with a strong emphasis on evidence-based decision-making and sustainable development.

With a vibrant academic community and a long tradition of international collaboration, the University of Tartu provides a perfect setting for hosting AGILE 2026.

2 Programme

The call for papers invited contributions across six categories, each with its own submission process: workshops and tutorials, full papers, short papers, posters, and previously published articles. In addition, this year marked the introduction of a dedicated education session for the first time, reflecting the growing importance of teaching and learning in Geographic Information Science. The number of submissions received in each category was as follows: 15 workshops, 25 full papers, 50 short papers, 33 posters, 15 published articles and 5 education track submissions.

The pre-conference workshop programme reflects a broad range of timely topics at the intersection of Geographic Information Science and emerging data-driven approaches. Contributions address the growing role of large and complex datasets, including initiatives such as MobilityBank and InWalkData, which focus on open, FAIR, and ethically grounded data practices. Several workshops explore advances in geospatial artificial intelligence, including the use of foundation models and GeoAI for urban analytics, highlighting new opportunities for making data more actionable.

Other sessions emphasise the importance of data quality, transparency, and communication, with topics covering reproducible research, uncertainty in geodata, and effective map design. Hands-on and application-oriented workshops, such as those on ESA EarthCode and climate surface modelling, further demonstrate how geospatial data and methods can be applied to real-world challenges. Together, these workshops showcase the diversity of current research and practice, while underlining the conference theme of transforming geospatial data into usable knowledge.

The AGILE 2026 programme brings together a wide range of topics that reflect how Geographic Information Science continues to evolve. Across the sessions, there is a clear focus on how to better work with growing volumes of geospatial data and how to turn them into something meaningful and usable in practice.

A strong presence of artificial intelligence runs throughout the programme, with contributions on foundation models, GeoAI, and spatial machine learning, alongside applications in areas such as cities, the environment, and spatial knowledge. At the same time, many sessions deal with new types of data, including LiDAR, remote sensing, and user-generated data, highlighting both opportunities and challenges in working with large and complex datasets. Overall, these contributions aim to strike a balance between, on the one hand, exploring the expanded scale and scope of geospatial analysis enabled by these approaches, and, on the other hand, addressing their methodological challenges, such as inherent biases and questions of validity.

The programme also shows how GIScience is applied to various domain problems. Topics such as mobility, accessibility, public health, climate and environmental change, and urban development demonstrate the importance of geospatial approaches in understanding and addressing current societal challenges. In addition, sessions on participatory mapping and planning emphasise the importance of involving people and communities in these processes.

Alongside these developments, attention is given to data quality, uncertainty, and reproducibility, as well as to scalable data infrastructures. The inclusion of an education track further reflects how the field is adapting to new technologies and ways of teaching.

3 Acknowledgments

We would like to thank all authors for their submissions, which showcase the diversity and ongoing development of research in Geographic Information Science. We are also grateful to the reviewers for their careful reading, constructive comments, and fair evaluations, which provided a strong basis for the selection of contributions. Special thanks go to the reproducibility committee for their dedicated efforts in supporting transparent and reliable research practices. Their work in assessing and facilitating the reproducibility of submitted contributions

adds an important dimension to the conference, helping us strengthen the quality, credibility, and long-term value of the research presented at AGILE 2026.

Our sincere thanks go to the local organising committee for their dedicated work and excellent collaboration in preparing the AGILE 2026 conference in Tartu, Estonia. Their efforts have played a key role in bringing the community together around this year's theme.

Finally, we gratefully acknowledge our sponsors, ESRI,OSGeo and Tartu City, for their support in making AGILE 2026 a successful and engaging event.