Fast Track to Vision 2030
A Fast Track towards Vision 2030

In 2019, the Nordic prime ministers adopted a vision that the Nordic Region should be the most sustainable and integrated region in the world by 2030. Accordingly, all co-operation in the Nordic Council of Ministers must serve this purpose.

The Nordic Council of Ministers’ action plan for the years 2021 to 2024 outlines how the Nordic Council of Ministers will work to achieve the objectives of the vision through a series of initiatives linked to the vision’s three strategic priorities: a green Nordic Region, a competitive Nordic Region, and a socially sustainable Nordic Region. There are 12 objectives linked to the strategic priorities.

The Nordic Council of Ministers is taking the next steps to deliver on Vision 2030 and plan strategic action beyond 2024. The three priorities – a green, competitive, and socially sustainable Nordic Region – are firmly established overarching goals. A new collaboration programme for the period 2025 to 2030 involving the different policy areas of the Nordic Council of Ministers will be set in motion and will be based on:

- an analysis of the challenges and opportunities that the Nordic Council of Ministers has in relation to the three strategic priorities, and
- an assessment of the Nordic added value, impact, and maximisation of synergies in relation to national and European initiatives.

This Fast Track publication is a collection of policy brief articles written by Nordic researchers participating in collaborative projects funded by NordForsk or Nordic Energy Research. NordForsk is aiming for this publication to contribute relevant and up-to-date research-based knowledge that facilitates the analysis of the challenges and opportunities of Nordic co-operation in the coming years. The articles are original and written in April and May 2023 in response to a NordForsk call for policy brief articles to invited researchers and research groups.

The 33 articles in this publication are broadly divided into three chapters. The challenges, opportunities, and consequences of digitalisation in our societies are discussed in the first, followed by the natural environment, climate, green energy, the bioeconomy, and healthy food systems of the Nordic Region in the second. The third and final chapter comprises articles debating the Nordic Region and relations with neighbouring countries, including research on migration, integration and how to preserve and promote safe and healthy Nordic welfare societies.

The papers provide status overviews, descriptions of opportunities and obstacles, and ambitious recommendations for Nordic co-operation and how the vision can be delivered by 2030.

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A Digitalised Nordic Region

Digitalisation is one of the most powerful tools in delivering Vision 2030. The articles in this section discuss the possibilities and challenges around digitalisation and the use of large-scale data for tackling climate change, and for developing and protecting our Nordic welfare and health systems.
Billions of diverse citizens in the Nordic Region use digital spatial data every day: they ask for directions, set up routes, get traffic information, and calculate distances on their gadgets. Citizens generate digital spatial data, too. These and other types of spatial data such as satellite imagery feed geographical information systems (GIS) and geospatial artificial intelligence (geoAI) applications that help researchers, governments and businesses analyse emerging patterns and make millions of decisions as well as monitor and solve global crises. Where will the next Russian bomb fall? Where will the draught hit hardest next year? Where will the next outbreak of the coronavirus take place? What are the best locations for relief efforts in case of calamities be it the 2004 Indian Ocean tsunami or the 2023 Türkiye–Syria earthquake? In short, what is the name of the location, and what are its coordinates?

However, even such an integrated region as the Nordic Region has difficulties in geospatial cooperation in research, government and business, as the findings of the Nordic Spatial pilot project [1] showcase. Regional geospatial data has multiple shortcomings due to ambiguous and/or heterogenous principles behind their collection, metadata and resolution. [2]

In order for the Nordic Region to become the most sustainable and integrated region in the world, one major requirement needed to achieve this is geospatial data that meet the highest quality standards, as well as human knowledge drawn from a range of different practical and intellectual fields. To meet the Nordic Vision 2030 goal of achieving “the green, competitive and socially sustainable Nordic region”, [3] decision-makers will need to be able to model Nordic actions and their consequences at national, Nordic, European and global levels, using first-class spatial research infrastructures (SRIs) and spatial data infrastructures (SDIs) designed in accordance with the latest scientific advances. Moreover, spatio-temporal modelling must also reflect the intersectionally diverse Nordic populations with respect to gender, race, ethnicity, socioeconomic status, sexual orientation, ability, and religion/spirituality. A humanities-driven geospatial data infrastructure development plan for Vision 2030 will maximise efforts to utilise spatio-temporal data so that it fits and illuminates human-driven needs in the Nordic Region for the future. The proposed recommendations would thus bring together diverse geospatial, interdisciplinary and multi-sectoral communities, harnessing the expertise and insights of the humanities to increase the impact of technical development.

However, the potential of the humanities to develop inclusive, responsible and sustainable innovation has hitherto been both undervalued and underfunded. Existing models and standards of spatial data as well as applications of those standards in spatial research and data infrastructures (SRIs/SDIs) neither grasp the complexities of present-day spatial data nor meet the ever-expanding repertoire of needs across research, government and private sectors. The available standard definitions and guidelines of digital spatial-temporal data – including linked open geodata recommendations – and, most importantly, ontologies and models, such as the mainstream digital gazetteer model, are incompatible with spatial humanities research, global governmental work on standardisation of names, as well as citizens’ and inhabitants’ involvement in spatial data policy implementations and...
the commercialisation of spatial data. Consequently, there is a lack of existing conceptual infrastructure frameworks and their practical, fit-for-purpose implementations that have the capabilities to accommodate the needs of research communities, governmental authorities, companies, and citizens. Most problematically, the inherent humanistic and democratic perspectives on spatial data and perception of space and place – encapsulated primarily in the concept of a place-name – are marginalised in the existing digital infrastructure landscape. Place-names are much more than standardised labels; they function as – often disputed – cultural heritage, archaeological finds preserving characteristics of place over thousands of years, language items subject to variation and re-interpretation, trademarks, and also personal and group identity markers.

The modelling of spatial-temporal data is a conceptual backbone in the geospatial solutions industry. Indeed, the global geospatial market is expected to grow at a compound annual growth rate (CAGR) of between 13.1% and 15.7 % until the 2030s. [4,5] Innovative technologies such as geoAI and 4D GIS and an increasing demand for geospatial modelling for analysis and decision-making constitute the main development drivers. The Nordic Region and Europe in general have a relatively weak position in the global market and are expected to fall behind during the same period. Moreover, present-day regulations with respect to standardisation, production, and (re-)use of spatial data differ across the Nordic countries. One of the few common denominators is a negative one: although citizens, including indigenous peoples and minority groups, produce data, they have often little say about standardised names and coordinates used on maps produced by government agencies or businesses. In order to make considerable improvements, the Nordic Regions needs a well-developed research and innovation (R&I) strategy and a long-term geospatial development plan for the whole geospatial sector, as well as transparent, future-proof and interoperable legislation.

Nordic collaboration for a green, competitive and socially sustainable Nordic Region

The state-of-the-art EU geospatial policy is summarised in the Integration of geographic and statistical data for better EU policy making report from 2021 which states that “no EU level legal mandate exists” [6] for the coordinated collection of spatial data. This, despite the strong EU cooperation on sharing geospatial data on the environment and the existence of specific RI tool for this: INSPIRE. [6] The report points out multiple obstacles on the path towards comparable spatial-temporal datasets such as national approaches to data collection and dataset resolution. The work towards a European geospatial agency proposed in the report is still in its infancy. There is no mention of technical innovations such as geoAI or 4D GIS or any strategies for their use in the EU. The place-name component of geospatial data is not paid any attention either. Global work towards place-name standardisation for effective geospatial data applications has instead been conducted by Member States and Associate States through the UN group, United Nations’ Group of Experts on Geographical Names (UNEGGN), since 1959. However, there are still no unified general legal frameworks for the standardisation and representation of minorities’ place-name data, and several surveys of differences and similarities of nation-states’ approaches to minority place-names have been conducted by researchers active in UNGEGN. [7]

The Nordic Region thus has the opportunity to seize the leadership in solving the EU’s geospatial data challenge through timely investments in humanities-driven geospatial data infrastructure development. The high level of integration within the region will lay the foundation for breakthroughs in work towards the collection of comparable spatial-temporal data at a regional level. Access to excellent and comparable geospatial data in the Nordic countries will most effectively facilitate the development of smart specialisation in the region.
Recommendations for visionary geospatial data modelling for Vision 2030

**Recommendation 1:** Develop a unified intellectual framework for modelling spatial-temporal data in research, the government and the private sector.

It is vital that this is a unified framework for modelling spatial-temporal data that is firmly grounded in the humanistic mindset for the building of the next generation of geoAI/4D GIS applications that will go beyond reproducing the simplistic Euclidian algorithm so as to incorporate democratic perspectives on spatial data. The Nordic response must pay special attention to the factual needs of citizens and inhabitants, as well as researchers, governmental officials, and businesses. The needs in question are often contradictory; these contradictions have to be managed and reconciled in a transparent sector-dependent fashion instead of being simplified away. Central to the proposal is the adoption of a holistic, inclusive approach to spatial-temporal data that accommodates the perspectives of multiple scientific disciplines, governmental officials, businesses, and diverse citizens and inhabitants – including females, males, gender-diverse people, minorities, and indigenous peoples. Thus, the framework should deepen and consolidate theoretical understandings of complex phenomena concerning name, place, and digital geospatial data.

**Recommendation 2:** Survey the existing legal frameworks for spatial-temporal data and geoAI/4D GIS and develop a geospatial innovation strategy and roadmap.

The Integration of geographic and statistical data for better EU policy making report (2021) [6] summarises current legislative challenges in the availability, quality and interoperability of European geospatial data. Shortcomings with regard to existing geospatial data management practices become particularly apparent at the regional level, as the results of the Nordic Spatial pilot project [1] show. It is imperative that we have a clear and interoperable legislative base for effective and fruitful development of R&I in the Nordic and European geospatial industry, as well as the implementation of common standards across sectors, and the uptake of geoAI, 4D GIS, and other innovations. The recommendation is to survey the current legal landscapes of production, (re-)use, and standardisation of digital spatial-temporal data – especially place-names – in research, the government, and businesses with respect to licensing, interoperability, compatibility, and citizens’ and inhabitants’ rights. These investigations will lay the foundations for legal recommendations regarding the solutions for best practice relating to future SRIs/SDIs in the Nordic Region. Besides adequate legislation, the successful expansion of the geospatial sector in the Nordic Region and the export of Nordic geospatial innovation requires a holistic vision for the long-term development of its R&I element, i.e. a geospatial innovation strategy and roadmap. No equivalent to such a roadmap exists. The CoR Geodata Report referenced above does not mention such technical innovations as geoAI or 4D GIS or any strategies for their use in the EU.
Recommendation 3: Develop new cluster-specific tools and infrastructure services to help stakeholders implement the proposed framework, spatial-temporal data models, and workflows.

We recommend investment in the development of tools and services to better enable the implementation of the proposed framework across sectors. These include overviews of legal landscapes of spatial data across the Nordic Region, data and metadata checklists, flowchart overviews of workflows, cluster-specific example datasets, and templates of spatial databases and spatial data services at the national, Nordic and possibly European level. These outputs should be published in accordance with Open Science and FAIR principles. The suggested investments will thus offer new services and opportunities for researchers, governments, and businesses, enabling them to explore geospatial data in novel ways in order to meet both scientific and societal challenges, including environmental change, and citizens’ and inhabitants’ involvement in the design and implementation of spatial data policies.

References


