

## GSFI development roadmap (draft)

Title: GSFI development roadmap (draft)

Project: The GSGF in Finland – Integration of geospatial and statistical information in Finland (GSFI)

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## 1. Introduction

The GSGF Finland (GSFI) roadmap is a strategic plan that guides the integration of statistics and geospatial information towards the GSFI vision. The aim is for the roadmap to provide a clear view of what is being pursued together and what is being done to achieve it. In this type of ecosystemic co-development, the roadmap is particularly important because it helps ensure that everyone has the same situational awareness, and that development progresses as planned. The roadmap also facilitates communication and collaboration between different actors, which is essential in a complex operating environment where actors have different perspectives, responsibilities, and expertise.

The starting point for building the roadmap has been the global GSGF framework (UNSC and UN-GGIM, 2019) and its interpretation in the European context, GSGF Europe (GEOSTAT 4 and Eurostat, 2021). Based on these, the current state of geospatial information and the need for change in Finland's statistical production have been analysed. As a result of this analysis, this first draft of the GSFI roadmap has been created.

GSGF (Global Statistical Geospatial Framework) is an international framework that combines the management of statistical and geospatial information. Its goal is to improve the interoperability and usability of this information in decision-making and policy planning. The GSGF framework applies five principles and four key elements that support the implementation of the principles (Figure 1).

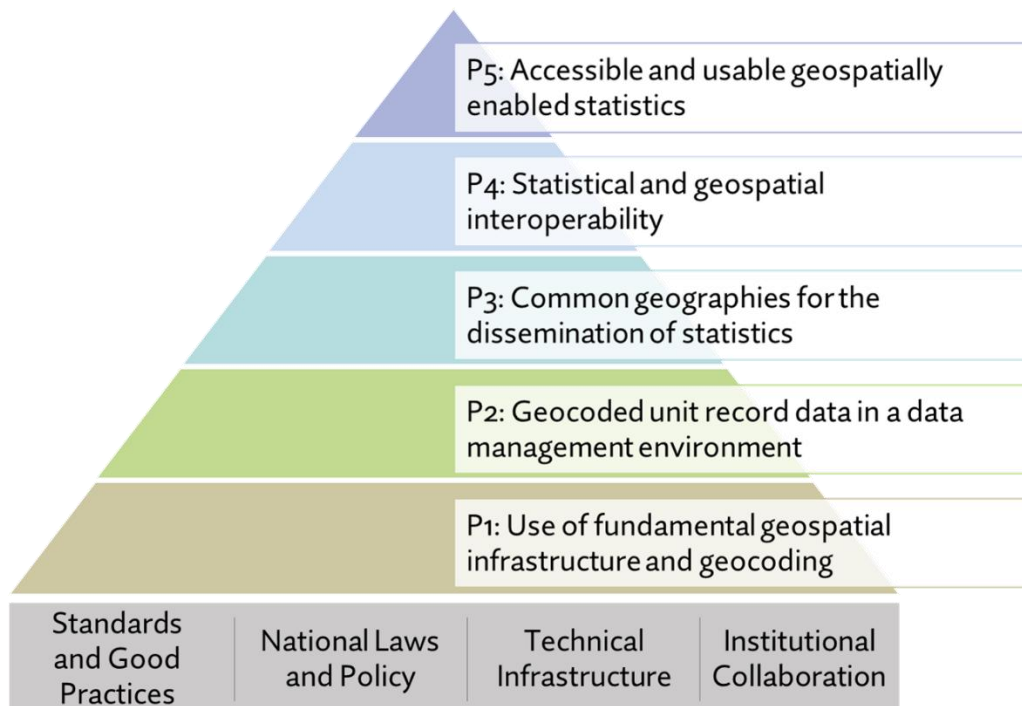


Figure 1. GSGF (Global Statistical Geospatial Framework) is an international framework that applies five principles and four key elements that support the implementation of the principles.

In Finland, the production and management of geospatial information and statistics in public administration is decentralised. Administrative data is also widely used in the production of statistics, meaning that statistical production is based on data that has primarily been collected for the tasks and services of municipalities and other public administration organisations. Due to the decentralised

operating environment, the implementation of GSFI cannot be assigned to individual organisations, but the work must be a broad joint development towards a common goal. The GSFI roadmap identifies development areas and provides a method for individual actors to participate in the national implementation work.

The GSFI roadmap is based on an understanding of the current state and includes the long-term objectives described by the vision, the tasks leading towards these objectives, and the development paths of different actors linked to the tasks (Figure 2). The design of the structure has been guided by the idea of an agile operating model that can be supplemented, monitored, and updated as work progresses and understanding increases. The tasks, and especially the objectives, are relatively stable over time. The development paths based on the tasks, on the other hand, are thought to evolve at least on an annual basis and be supplemented by development paths brought in by new actors. The first development paths have been outlined for the years 2025–2027.

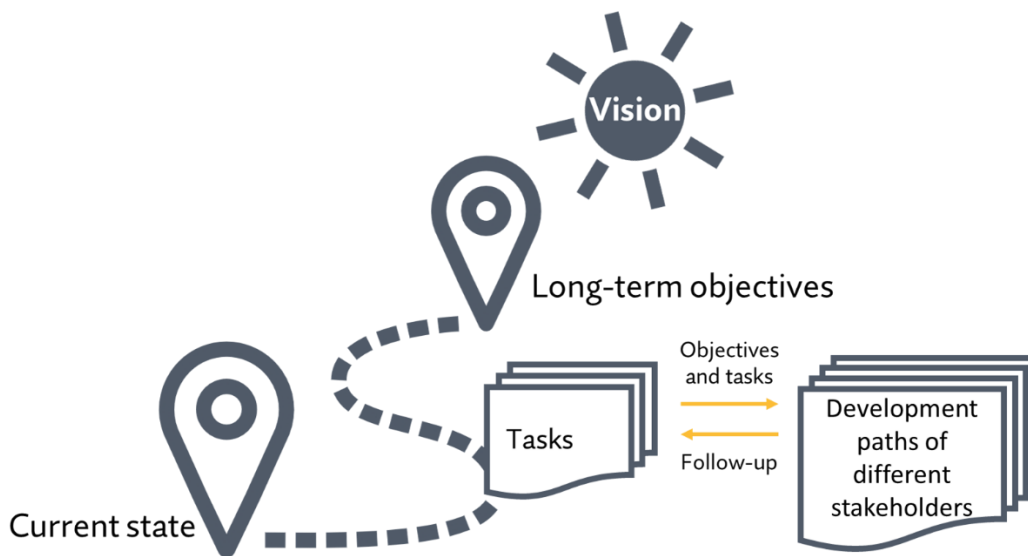


Figure 2. The GSGF Finland (GSFI) roadmap is built on an understanding of the current state, the long-term objectives described by the vision, the tasks leading towards the objectives, and the development paths of different actors linked to the tasks.

This document was developed in the project “The GSGF in Finland – Integration of geospatial and statistical information in Finland (GSFI)”. The project consortium included Statistics Finland, the Finnish Environment Institute and the National Land Survey of Finland. The project was financed by EU. The project was executed in close collaboration with The National Network for the Integration of Statistics and Geospatial Information in Finland (NISGIF).

## 2. GSFI Vision

The vision and the common roadmap are tools for steering the ecosystem and working together (Valkokari et al., 2020). The target state outlined by the GSFI vision is based on the implementation of an operating model according to the GSGF framework, interpreted for Finland’s situation and context.

The vision illustrates what kind of world we want to be building. The vision is described below (Figure 3) and is described in the document 'GSGF Finland (GSFI)' (GSFI and Eurostat, 2024a).

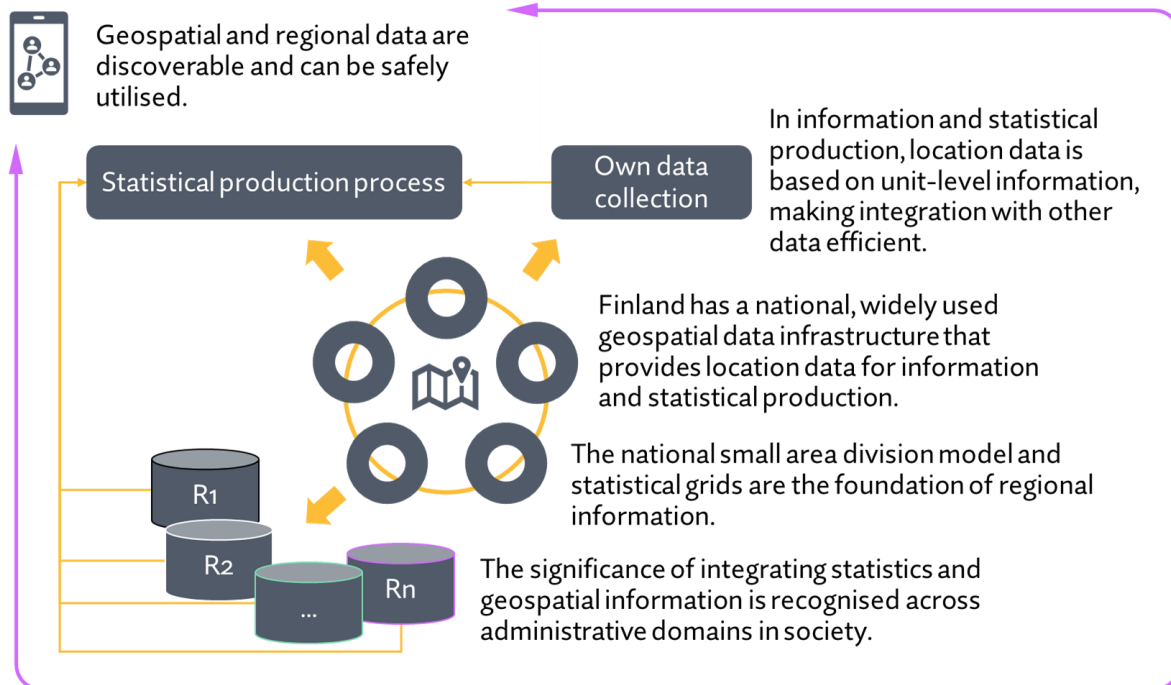


Figure 3. GSGF Finland (GSFI) vision.

### 3. Objectives and Tasks

The practical implementation starts from the common objectives and the tasks that realise the objectives. They are described below in sections 3.1–3.5. The objectives and tasks are grouped according to the five principles of GSGF. They take into account the current state in Finland and what changes the implementation of each principle and thus the journey towards the vision described above would require in the Finnish context. The tasks are still relatively high-level entities, so that the practical implementation of each action includes numerous steps and typically requires input from several different parties.

The objectives and linked tasks are listed in Appendix A. Detailed descriptions are available on the GSFI website in Finnish (GSFI and Eurostat, 2024b).

### 3.1. Principle 1 – The national spatial data infrastructure enables the linking of location to information in a consistent manner

Principle 1 involves the integration of selected spatial data, such as addresses and buildings, into the national spatial data infrastructure. It also requires the promotion of the use of selected parts of the spatial data infrastructure in national data resources. High-quality and interoperable data are made available. It is essential that principle 1 requires guided cooperation between organisations that produce and manage spatial data and other data producers. Figure 4 presents the GSFI objectives that fall under GSGF principle 1.

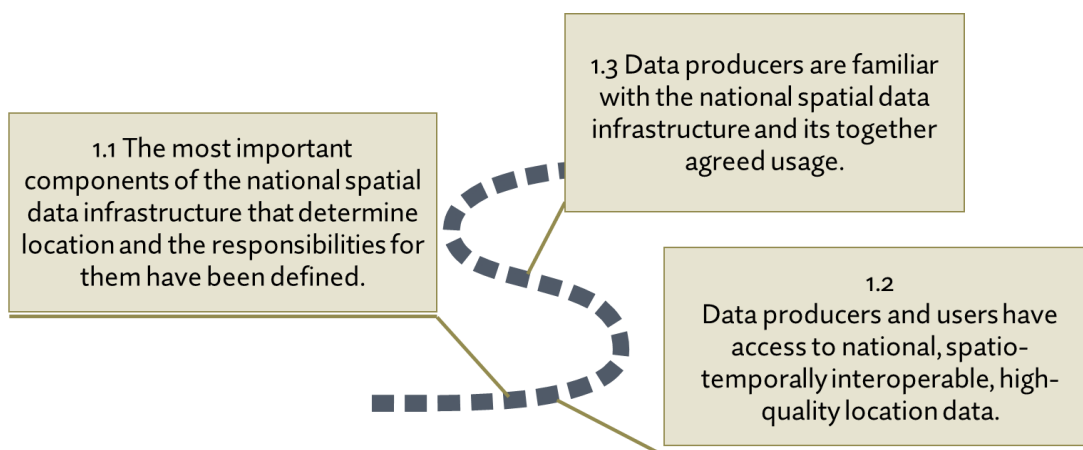


Figure 4. GSFI objectives under the GSGF principle 1.

Figure 5 presents the tasks aimed at achieving the GSFI objectives linked to GSGF principle 1. The objectives and tasks are listed in Appendix A of this document.

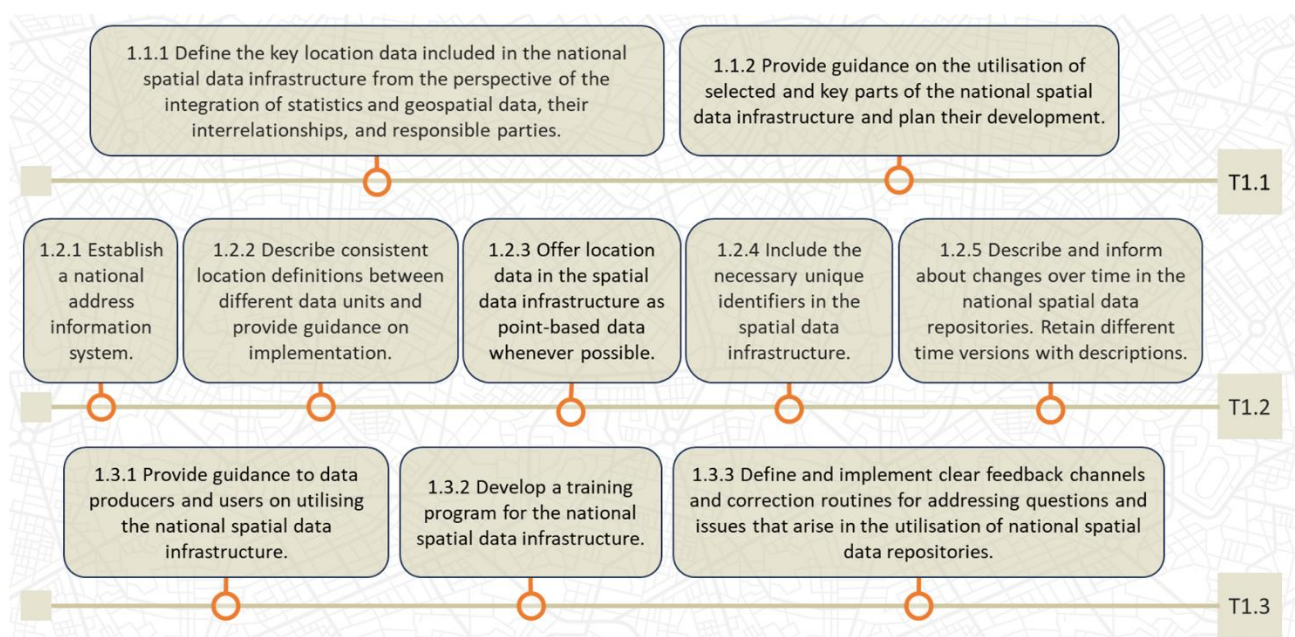


Figure 5. The tasks to implement objectives 1.1–1.3.

### 3.2. Principle 2 – Consistent linking of location information to statistical and other data, and uniform management of the produced geospatial information.

Principle 2 aims to build an efficient, secure, and quality-assured spatial data management environment. The implementation of Principle 2 is the responsibility of the data-producing organisations. The implementation is most effective when the datasets to be adopted in statistical production utilise the location reference data already agreed upon in Principle 1 as part of the spatial data infrastructure. Figure 6 presents the GSFI objectives under GSGF Principle 2.

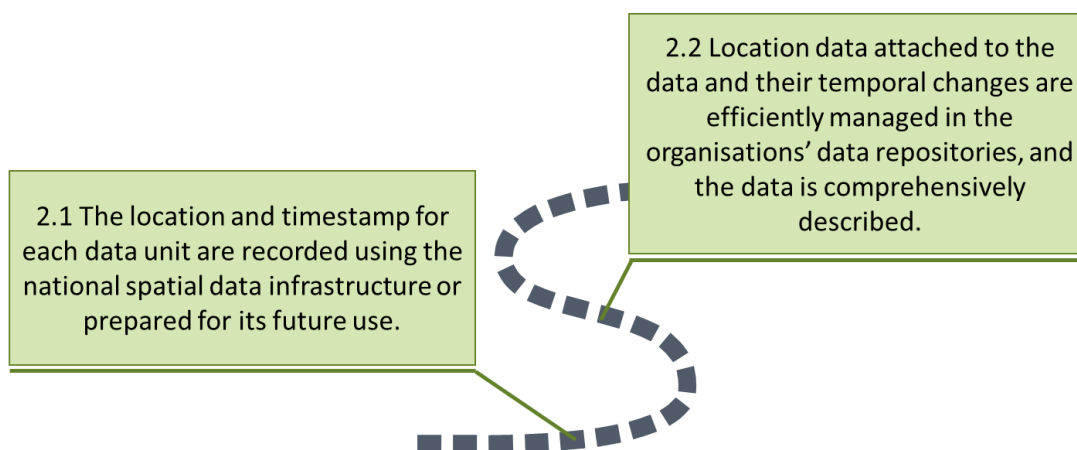


Figure 6. GSFI objectives under the GSGF principle 2.

Figure 7 presents the tasks aimed at achieving the GSFI objectives linked to GSGF principle 2. The objectives and tasks are also listed in Appendix A of this document.

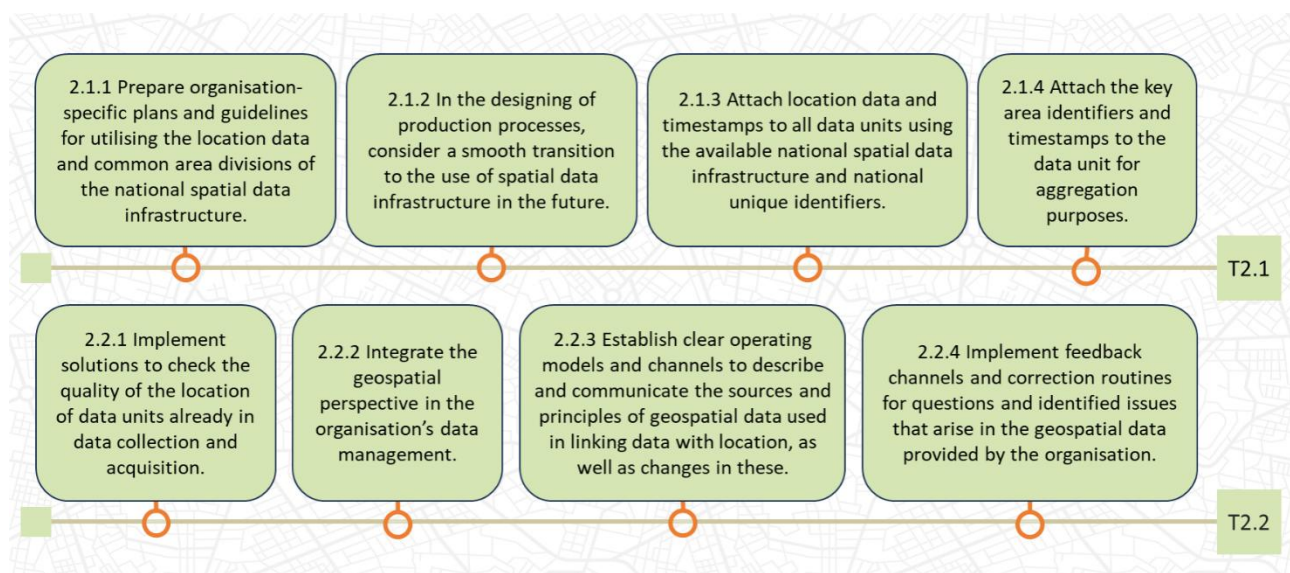


Figure 7. The tasks to implement objectives 2.1-2.2.

### 3.3. Principle 3 – Common geographies in the distribution of data and statistics

Principle 3 ensures that common area divisions are available for data distribution. They support the management and use of data from different sources as regional data, as well as the integration, visualisation, analysis, and interpretation of data. Figure 8 presents the GSFI objectives under GSGF Principle 3.

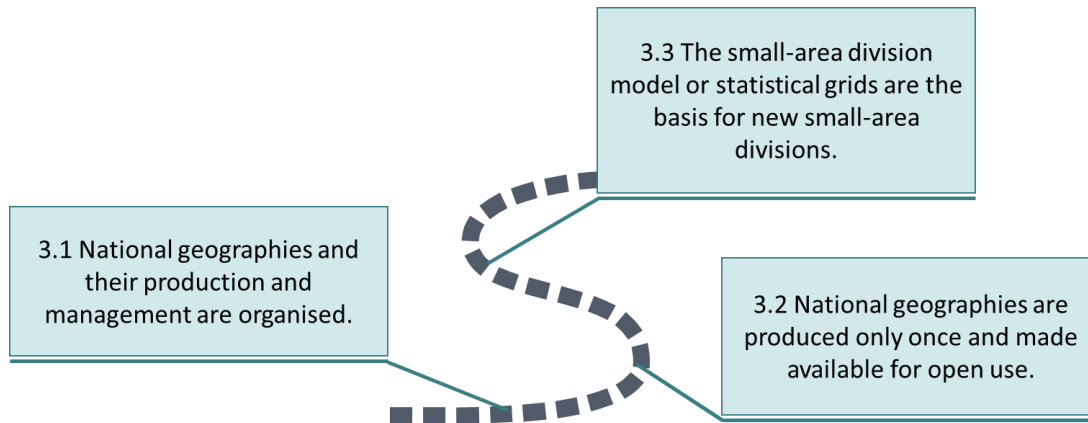


Figure 8. GSFI objectives under the GSGF principle 3.

Figure 9 presents the tasks aimed at achieving the GSFI objectives linked to GSGF principle 3. The objectives and tasks are also listed in Appendix A of this document.

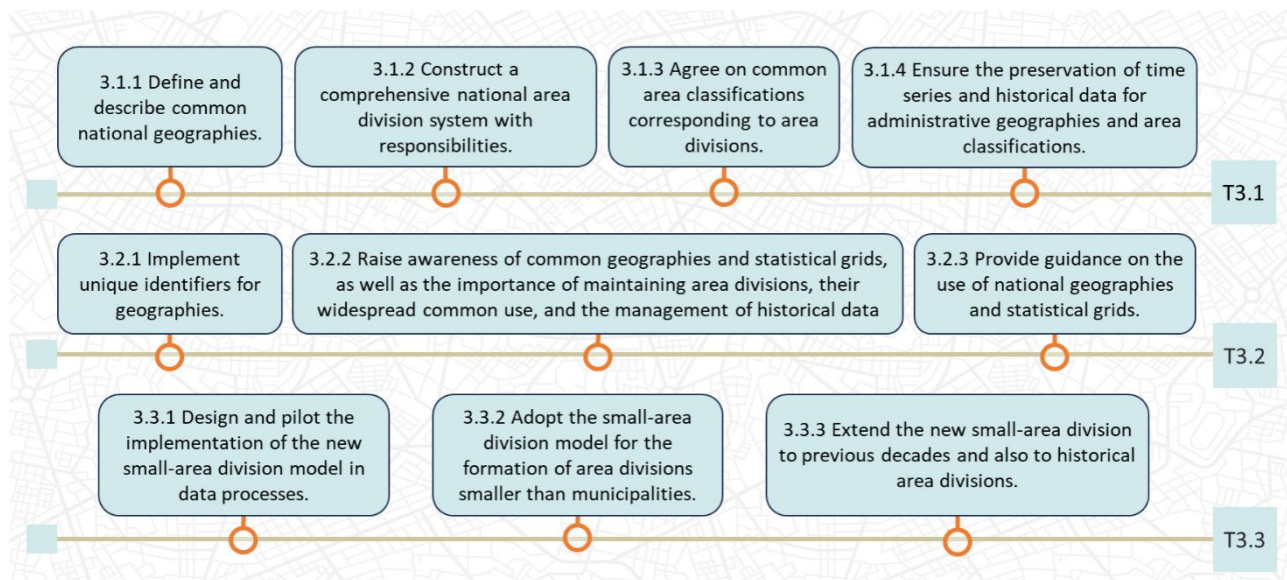


Figure 9. The tasks to implement objectives 3.1–3.3.

### 3.4. Principle 4 – Interoperable statistics and geospatial information

Principle 4 leverages standards and best practices and develops spatial data-related workflows across organisational boundaries. Organisations ensure the use of adequate communication methods in their operations and strive for a broad common understanding with other actors.

The use of standards is a key factor in assessing the maturity level of an organisation's data production, taking into account spatial data. Each organisation is responsible for the implementation of Principle 4, but its realisation requires cooperation with other data producers. Figure 10 presents the GSFI objectives under GSGF Principle 4.

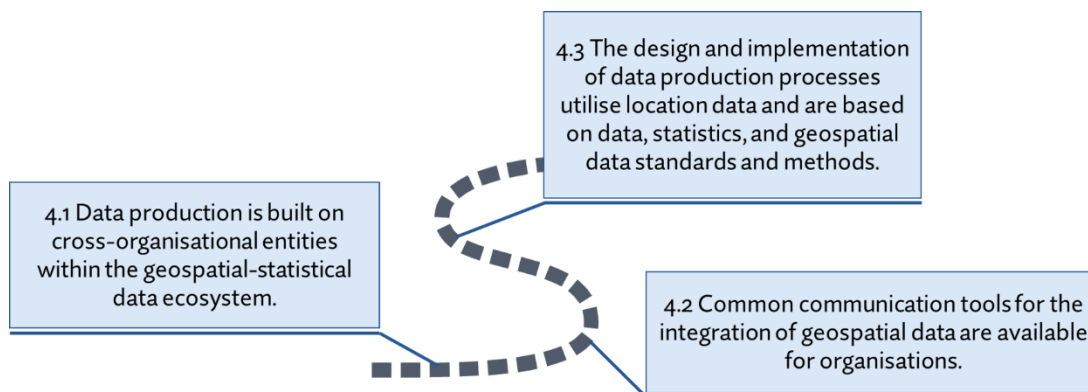


Figure 10. GSFI objectives under the GSGF principle 4.

Figure 11 presents the tasks aimed at achieving the GSFI objectives linked to GSGF principle 4. The objectives and tasks are also listed in Appendix A of this document.

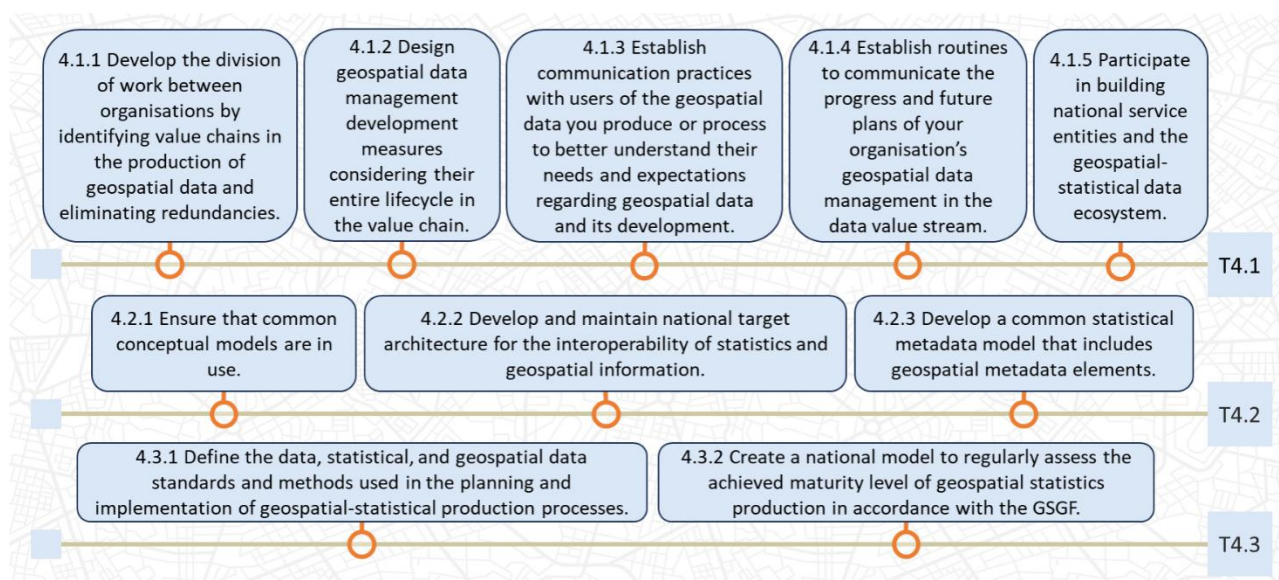


Figure 11. The tasks to implement objectives 3.1–3.3.

### 3.5. Principle 5 – Easily adoptable statistics and geospatial information

Principle 5 ensures the seamless retrieval, secure access, integration, analysis, and visualisation of statistics and spatial data. The data must be able to be processed with the location data and regional divisions required by the data user. Principle 5 also ensures the confidentiality. The principle emphasises the definition of clear operating models and dataset-specific management responsibilities. Figure 12 presents the GSFI objectives under GSGF Principle 5.

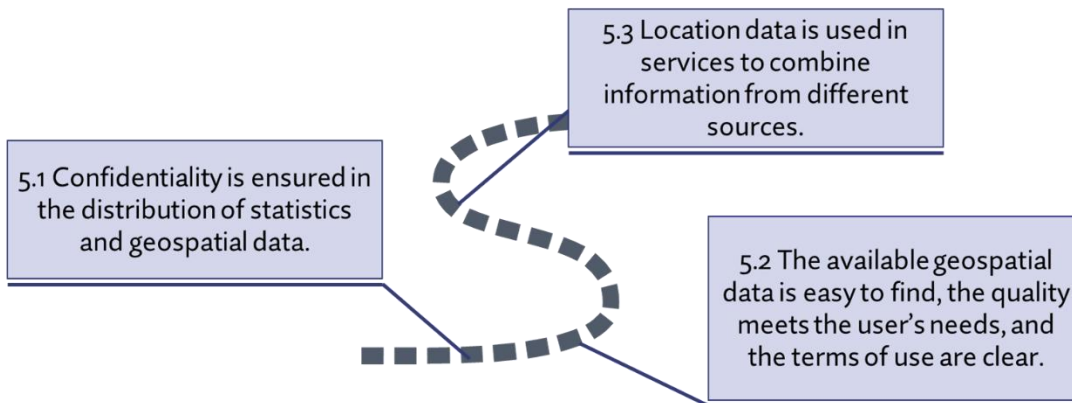


Figure 12. GSFI objectives under the GSGF principle 5.

Figure 13 presents the tasks aimed at achieving the GSFI objectives linked to GSGF principle 5. The objectives and tasks are also listed in Appendix A of this document.

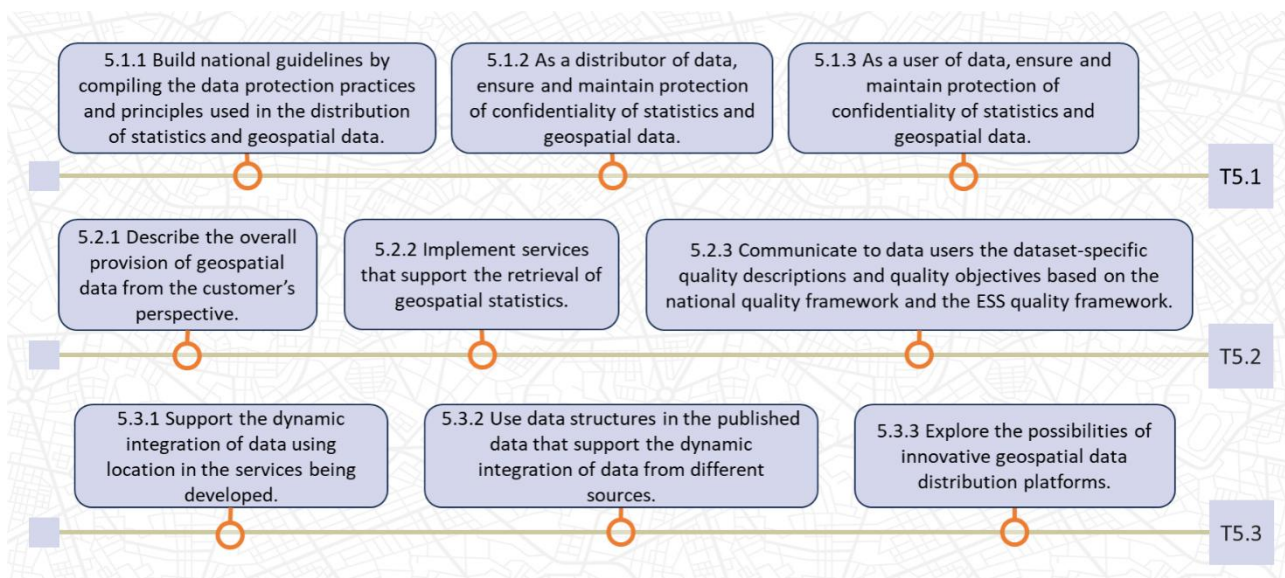


Figure 13. The tasks to implement objectives 3.1–3.3.

#### 4. Development paths

The concretisation of the tasks presented above into practical action is planned on the road map with the help of the development paths built according to an OKR model. The aim is for actors in different roles to examine the GSFI objectives and tasks on their own and together with other actors and to identify elements that they are already doing or could take responsibility for. These elements are articulated as OKR-objectives and key results. Individual OKR objectives would each take a step forward in a selected GSFI roadmap task. Gradually, these steps would accumulate from the development paths of different actors, so that the task can be considered accomplished. The focus is on the next three years and more specifically on the planning of the coming year. A separate Excel file is available for planning organisation's own development path, where ideas can also be collected on the 'Objectives Ideation Repository' tab.

Thus, the development paths are built using the OKR model. The OKR model (Objectives and Key Results) is a simple and widely used change management model. The method is used for planning, implementing, and monitoring the execution of an organisation's strategy. On the GSFI roadmap, the OKR objectives describe what the actor, e.g., an organisation or a network, aims to achieve during the review period for the selected GSGF Finland measures. The objectives should be qualitative, they can be ambitious and inspiring, and they should describe the desired change. The key results that measure the achievement of the objectives are more concrete and measurable criteria by which the achievement can be assessed. The key results should be quantitative and time-bound. Only after defining the objectives and the key results, it is considered the sub-tasks required for progress. The recommendation is to have 3–5 OKR objectives at a time, and correspondingly 3–5 key results for the objectives. Goal-oriented thinking is also believed to help in communicating the development paths to other actors, as well as in making the necessary summaries for coordination and monitoring.

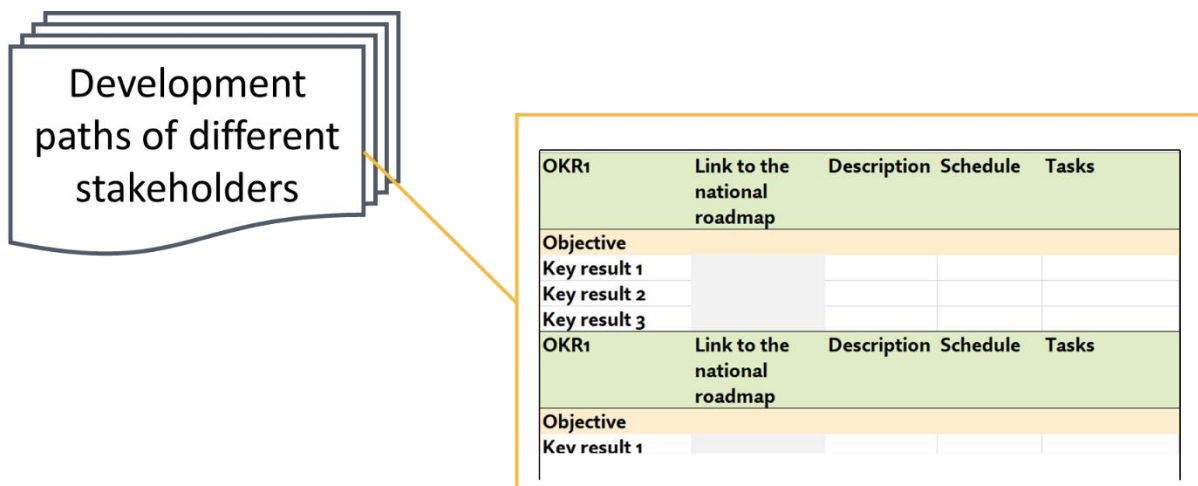


Figure 14. On the GSGF Finland (GSFI) roadmap, the action plans of various actors have been constructed using the OKR method.

The initial outline of the development paths according to the OKR model was started with The National Network for the Integration of Statistics and Geospatial Information in Finland (NISGIF). Table 2 provides a few example objectives and their related key results.

Table 1. An example of the OKR goals and key results of the development path drafted on the OKR model and proposed for the network.

OKR-objective	Link to the national roadmap	Key results (and schedule)
The benefits and user needs of the address register, along with justifications, are known to both strategic level actors and experts.	Task 1.2.1	We are able to list all those who would use the address register. (Q1/2025) We know the needs of different parties for the address register and the expected benefits. (Q3/2025) Awareness of the address register, what it could be like, and why it is needed has spread among the stakeholders. (Q4/2025) Both strategic level actors and experts find it easy to explain the benefits and user needs of the address register. (Q4/2025)
The GSFI glossary is in active use.	Task 4.2.1	Information about the glossary has reached the network members. (Q1/2025) The network members truly understand the glossary. (Q3/2025) The glossary is reflected in the practical work of the network. (Q4/2025)

## 5. Roadmap maintenance, monitoring, and evaluation

Progress on the GSFI roadmap should be monitored and evaluated regularly. The lessons learned and new understanding gained during the progress should also be incorporated into the roadmap, thus ensuring the roadmap's relevance and significance to the actors. This requires regular roadmap update reviews. The following metrics are proposed for monitoring the roadmap:

- The number of new actors maintaining their own development path: The stakeholder group for the implementation of GSGF Finland is broad, and therefore it is necessary to reach a large number of actors and get them actively involved in the implementation of the roadmap.
- The number of annual updates to the OKRs of actors who have created their own development path: The implementation of GSGF Finland is a long-term effort, and as important as it is to get new actors involved, it is equally important that those who have already joined continue to work actively.
- The degree of achievement of the OKR objectives planned for the year: It is important to work effectively, which is measured here by the number of OKR objectives completed during the year relative to the OKR objectives planned to be completed.

The GSFI roadmap is part of the implementation of GSGF Finland (GSFI). The management and maintenance of the roadmap, as well as the GSFI entity, are examined in the proposal for the GSFI national maintenance model (GSFI and Eurostat, 2024c).

## 6. References

GEOSTAT 4 and Eurostat, 2021. GSGF Europe. EU. 945503 - 2019-FI-GEOSTAT4. [A link to the GSGF Europe document.](#)

GSFI and Eurostat, 2024a. GSGF Finland (GSFI). EU. 101112903 - 2022-FI-GEOS-GSFI.

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## Appendix A. GSFI roadmap: the objectives and the tasks

Table 2. The objectives and tasks of GSFI roadmap (version 1.0) linked to GSGF principle 1.

GSFI objective number	GSFI objective	Tasks
1.1	The most important components of the national spatial data infrastructure that determine location and the responsibilities for them have been defined.	<ol style="list-style-type: none"> <li>1. Define the key location data included in the national spatial data infrastructure from the perspective of the integration of statistics and geospatial data, their interrelationships, and responsible parties.</li> <li>2. Provide guidance on the utilisation of selected and key parts of the national spatial data infrastructure and plan their development.</li> </ol>
1.2	Data producers and users have access to national, spatio-temporally interoperable, high-quality location data.	<ol style="list-style-type: none"> <li>1. Establish a national address information system.</li> <li>2. Describe consistent location definitions between different data units and provide guidance on implementation.</li> <li>3. Offer location data in the spatial data infrastructure as point-based data whenever possible.</li> <li>4. Include the necessary unique identifiers in the spatial data infrastructure.</li> <li>5. Describe and inform about changes over time in the national spatial data repositories. Retain different time versions with descriptions.</li> </ol>
1.3	Data producers are familiar with the national spatial data infrastructure and its together agreed usage.	<ol style="list-style-type: none"> <li>1. Provide guidance to data producers and users on utilising the national spatial data infrastructure.</li> <li>2. Develop a training program for the national spatial data infrastructure.</li> <li>3. Define and implement clear feedback channels and correction routines for addressing questions and issues that arise in the utilisation of national spatial data repositories.</li> </ol>

Table 3. The objectives and tasks of GSFI roadmap (version 1.0) linked to GSGF principle 2.

GSFI objective number	GSFI objective	Tasks
2.1	The location and timestamp for each data unit are recorded using the national spatial data infrastructure or prepared for its future use.	<ol style="list-style-type: none"> <li>1. Prepare organisation-specific plans and guidelines for utilising the location data and common area divisions of the national spatial data infrastructure.</li> <li>2. In the designing of production processes, consider a smooth transition to the use of spatial data infrastructure in the future.</li> <li>3. Attach location data and timestamps to all data units using the available national spatial data infrastructure and national unique identifiers.</li> <li>4. Attach the key area identifiers and timestamps to the data unit for aggregation purposes.</li> </ol>
2.2	Location data attached to the data and their temporal changes are efficiently managed in the organisations' data repositories, and the data is comprehensively described.	<ol style="list-style-type: none"> <li>1. Implement solutions to check the quality of the location of data units already in data collection and acquisition.</li> <li>2. Integrate the geospatial perspective in the organisation's data management.</li> <li>3. Establish clear operating models and channels to describe and communicate the sources and principles of geospatial data used in linking data with location, as well as changes in these.</li> <li>4. Implement feedback channels and correction routines for questions and identified issues that arise in the geospatial data provided by the organisation.</li> </ol>

Table 4. The objectives and tasks of GSFI roadmap (version 1.0) linked to GSGF principle 3.

GSFI objective number	GSFI objective	Tasks
3.1	National geographies and their production and management are organised.	<ol style="list-style-type: none"> <li>1. Define and describe common national geographies.</li> <li>2. Construct a comprehensive national area division system with responsibilities.</li> <li>3. Agree on common area classifications corresponding to area divisions.</li> <li>4. Ensure the preservation of time series and historical data for administrative geographies and area classifications.</li> </ol>
3.2	National geographies are produced only once and made available for open use.	<ol style="list-style-type: none"> <li>1. Implement unique identifiers for geographies.</li> <li>2. Raise awareness of common geographies and statistical grids, as well as the importance of maintaining area divisions, their widespread common use, and the management of historical data</li> <li>3. Provide guidance on the use of national geographies and statistical grids.</li> </ol>
3.3	The small-area division model or statistical grids are the basis for new small-area divisions.	<ol style="list-style-type: none"> <li>1. Design and pilot the implementation of the new small-area division model in data processes.</li> <li>2. Adopt the small-area division model for the formation of area divisions smaller than municipalities.</li> <li>3. Extend the new small-area division to previous decades and also to historical area divisions.</li> </ol>

Table 5. The objectives and tasks of GSFI roadmap (version 1.0) linked to GSGF principle 4.

GSFI objective number	GSFI objective	Tasks
4.1	Data production is built on cross-organisational entities within the geospatial-statistical data ecosystem.	<ol style="list-style-type: none"> <li>1. Develop the division of work between organisations by identifying value chains in the production of geospatial data and eliminating redundancies.</li> <li>2. Design geospatial data management development measures considering their entire lifecycle in the value chain.</li> <li>3. Establish communication practices with users of the geospatial data you produce or process to better understand their needs and expectations regarding geospatial data and its development.</li> <li>4. Establish routines to communicate the progress and future plans of your organisation's geospatial data management in the data value stream.</li> <li>5. Participate in building national service entities and the geospatial-statistical data ecosystem.</li> </ol>
4.2	Common communication tools for the integration of geospatial data are available for organisations.	<ol style="list-style-type: none"> <li>1. Ensure that common conceptual models are in use.</li> <li>2. Develop and maintain national target architecture for the interoperability of statistics and geospatial information.</li> <li>3. Develop a common statistical metadata model that includes geospatial metadata elements.</li> </ol>
4.3	The design and implementation of data production processes utilise location data and are based on data, statistics, and geospatial data standards and methods.	<ol style="list-style-type: none"> <li>1. Define the data, statistical, and geospatial data standards and methods used in the planning and implementation of geospatial-statistical production processes.</li> <li>2. Create a national model to regularly assess the achieved maturity level of geospatial statistics production in accordance with the GSGF.</li> </ol>

Table 6. The objectives and tasks of GSFI roadmap (version 1.0) linked to GSGF principle 5.

GSFI objective number	GSFI objective	Tasks
5.1	Confidentiality is ensured in the distribution of statistics and geospatial data.	<ol style="list-style-type: none"> <li>1. Build national guidelines by compiling the data protection practices and principles used in the distribution of statistics and geospatial data.</li> <li>2. As a distributor of data, ensure and maintain protection of confidentiality of statistics and geospatial data.</li> <li>3. As a user of data, ensure and maintain protection of confidentiality of statistics and geospatial data.</li> </ol>
5.2	The available geospatial data is easy to find, the quality meets the user's needs, and the terms of use are clear.	<ol style="list-style-type: none"> <li>1. Describe the overall provision of geospatial data from the customer's perspective.</li> <li>2. Implement services that support the retrieval of geospatial statistics.</li> <li>3. Communicate to data users the dataset-specific quality descriptions and quality objectives based on the national quality framework and the ESS quality framework.</li> </ol>
5.3	Location data is used in services to combine information from different sources.	<ol style="list-style-type: none"> <li>1. Support the dynamic integration of data using location in the services being developed.</li> <li>2. Use data structures in the published data that support the dynamic integration of data from different sources.</li> <li>3. Explore the possibilities of innovative geospatial data distribution platforms.</li> </ol>