GeoStat

GSGF Europe: Requirements and Recommendations

GEOSTAT 4

R&R Status	TOTAL	P1	P2	P3	P4	P5
Requirements	**18**	3	5	2	4	4
Recommendations	**66**	12	20	9	13	12

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GSGF Principle	Requirement		Recommendation		
	Nr.	Name	Nr.	Name	Description
P 1	1.1	Use data from National Spatial Data Infrastructures	1.1.1	Use authoritative and INSPIRE compliant geospatial data and services	Any geospatial information used to geospatially enable or display statistical or other data (location information and/or reference data for geocoding), or to produce statistical content, should preferably be built on agreed, authoritative and INSPIRE compliant geospatial data and services.
P 1	1.1	Use data from National Spatial Data Infrastructures	1.1.2	Implement unique identifiers and lifecycle information	Following INSPIRE and UN-GGIM: Europe Core Data specifications, the use of unique and persistent identifiers and lifecycle information is recommended, in order to describe the temporal characteristics of a version of a spatial object (or the changes between versions). Use of unique and persistent identifiers and lifecycle information will help to effectively keep track of changes in time and space, thus facilitating integration of geospatial and statistical information.
P 1	1.1	Use data from National Spatial Data Infrastructures	1.1.3	Define roles and responsibilities of organisations involved in production of geospatial information	The different roles and responsibilities of various organisations involved in production of geospatial information should be well defined through formal protocols, agreements and Memorandum of Understanding (MoU). For instance, it should be agreed who maintains what information and how often data are updated. Custodian and stewardship models may need to be established to identify the most relevant stakeholders for a geospatial data source. MoU contributes to broaden the scope of geospatial and statistical integration within the design and production of statistical indicators and geospatial statistics, and also provides a context for modernisation and harmonisation of concepts and methodologies, bearing in mind the need to meet quality standards.
P 1	1.1	Use data from National Spatial Data Infrastructures	1.1.4	Establish common geospatial reference data repositories within NSDIs	The NSDIs must establish a reference data repository building on relevant, authoritative geospatial data and services, and promote the use of open data, in order to help both public and private actors to support their statistical and geospatial processes, including survey procedures.
P 1	1.1	Use data from National Spatial Data Infrastructures	1.1.5	Include Big Data in NSDIs	Though being in an early stage of development, countries should be open to and consider the need to include geospatial Big Data in their NSDIs and its potential. A common infrastructure for Big Data needs to be adapted concerning its features such as volume and velocity. If the spatial features and smart captors (e.g., sensor data and mobile/streaming data) are themselves elements that move over time, this may mean that the geographic reference frames must be scalable over suitable temporal frequencies, which could go as far as continuous updates (real-time basis). Earth Observation Data should be considered as a valuable Big Data source through its analytical potential on spatial resolution and time series encouraging its integration in official statistics (e.g., land use and land cover monitoring statistics) and management with authoritative and more traditional data sources and processes.
P 1	1.2	Use point-based reference data for geocoding	1.2.1	Use point-based geospatial reference data for geocoding	Use of point-based geospatial reference data should be adopted as the main and preferred approach for geocoding in the ESS. It is also recommended for non-European countries. In the absence, and only in the absence, of point-based reference data, more general location descriptions and/or larger geographies (e.g., enumeration areas or other statistical geographies) should be used.
P 1	1.2	Use point-based reference data for geocoding	1.2.2	Provide authoritative point-based geospatial reference data for geocoding	Repositories of point-based geospatial reference data, needed for geocoding of statistical or other information, should be provided through the NSDI in all Member States. Priority should be given to the reference data listed as Core data by UN-GGIM: Europe (e.g., Address, Building and Cadastral parcel), which refer to INSPIRE Themes. Data need to be accurate and consistent, have sufficient coverage and meet internationally and nationally agreed standards.
P 1	1.2	Use point-based reference data for geocoding	1.2.3	Set up national standards-based address registers	All countries should set up a single geospatially enabled, national and authoritative address register based on national and/or international standards. As minimum, the address register should be available for public institutions to include in their respective business processes, but the address register should preferably be open data.
P 1	1.2	Use point-based reference data for geocoding	1.2.4	Provide open geocoding services	Geospatial agencies should provide geocoding services based on national and authoritative reference data building on agreed standards (e.g., OGC geocoding API). Access to geocoding services should preferably be open.

P 1	1.3	Build formal working relationships on institutional agreements	1.3.1	Share knowledge and experience across communities at national level	NSIs and geospatial agencies should work actively to increase mutual exchange of knowledge between the geospatial and statistical communities by occasional and/or continuous training, information, communication and/or by working on concrete cooperative projects. Cooperation should be overseen and monitored by regular national steering groups composed of senior experts from both communities.
P 1	1.3	Build formal working relationships on institutional agreements	1.3.2	Set up formal agreements concerning access, licensing, governance and use	Agreements between NSIs and geospatial agencies should cover terms of access, licensing, governance and use of geospatial information, including legal aspects. Agreements may also need to involve other stakeholders, such as municipalities or regional bodies responsible for data provision. Data from the NSDIs need to be easily accessible and usable, for NSIs or other public institutions conducting geocoding, at a low or affordable cost, but preferably free of charge.
P 1	1.3	Build formal working relationships on institutional agreements	1.3.3	Enable fruitful and continuous collaboration between communities at European level	In addition to efforts on a national level, collaboration between statistical and geospatial communities on a European level is of vital importance. Institutions and initiatives operating on a European level should facilitate and/or support community-bridging forums, activities and projects such as UN-GGIM: Europe, EFGS and Eurostat.
P 2	2.1	Build an effective and secure data management environment	2.1.1	Store a high precision geocode for each statistical unit	Persistent storing of a high precision geocode for each statistical unit record in statistical and administrative datasets (i.e., a person, household, business etc.) should be the main and preferred approach for ESS Member States and is advised also for non-ESS European countries. A high precision geocode implies reference to an address location, building/dwelling or cadastral parcel.
P 2	2.1	Build an effective and secure data management environment	2.1.2	Enable effective and secure access to geocoded micro data	An efficient data management environment should allow integration of statistical and spatial objects at unit record level without compromising privacy of micro data. Implementation of data warehouse solutions could be an effective way to combine a widespread use of geocoded micro data with confidence that proper privacy measures have been applied in the data architecture.
P 2	2.1	Build an effective and secure data management environment	2.1.3	Ensure consistent and automated synchronisation between data repositories	Consistent and automated synchronisation between data repositories should be implemented to enable decentralised data ecosystems to grow. Synchronisation means maintaining the links between geospatial reference data and statistical and administrative unit record data. The relation between microdata and statistical or administrative geographies should also be synchronised.
P 2	2.1	Build an effective and secure data management environment	2.1.4	Develop a data management environment to support “Geospatial Statistics as a Service”	NSIs should consider and prepare for the emerging concept of ‘Geospatial Statistics as a Service’ when they design their data management environments. This entails the capability to allow users to query geocoded micro data and safely return the aggregated response.
P 2	2.1	Build an effective and secure data management environment	2.1.5	Develop a data management environment to support management of Big Data	The volume and velocity of Big Data sources profoundly challenges the technical and logical conception of statistical and geospatial production pipelines. NSIs need to speed up the technical and methodologies foundation and make efforts to develop capabilities and resources to harness the potential of Big Data.
P 2	2.2	Include a geospatial aspect in organisation’s	2.2.1	Integrate location data objects in data architecture and store location only once	Location data objects should be recognised and fully integrated in the general data architecture of NSIs in order to facilitate design of efficient workflows for data collection, integration, geocoding and processing. Location should be stored only once.

		enterprise architecture			
P 2	2.2	Include a geospatial aspect in organisation's enterprise architecture	2.2.2	Enable solutions for effective and simplified data aggregation	It is good practice to establish services and mechanisms, where each object in the geospatial reference data holds references to a set of common administrative and statistical geographies. These solutions should also include management of temporal changes through versioning or database historization (geo-historical data). This will facilitate statistical data collection (survey) and enable effective and simplified aggregation of data by non-geospatial experts.
P 2	2.2	Include a geospatial aspect in organisation's enterprise architecture	2.2.3	Support lifecycle attributes and versioning in geocoding services	Address services or geocoding services provided by geospatial agencies need to fully support use of lifecycle attributes and versioning. Serving only the most up-to-date information is not sufficient to incorporate such services in statistical business processes. Obsolete address objects should be retained in the data and their current status indicated using the INSPIRE mechanism of life-cycle attributes and versioning. Pre-allocated or provisional addresses, where available, should be managed in the same way.
P 2	2.3	Ensure consistency and quality of geocoding results	2.3.1	Develop and apply national geocoding guidelines	ESS Member States should develop and apply national guidelines for geocoding workflows in order to ensure a consistent approach and conformant result within and between organisations such as NSIs and Geospatial Agencies. Such geocoding guidelines may include agreed decisions on what reference data services to use to geospatially enable statistical data. They may also include agreed ad hoc methods to improve matching between reference data and unit record data.
P 2	2.3	Ensure consistency and quality of geocoding results	2.3.2	Develop European geocoding guidelines	In addition to national guidelines, geocoding guidelines on a European level should be developed in order to ensure coherence and interoperability, and enable data aggregation, for comparability between countries. The drafting of such guidelines will require a careful assessment of national conditions and practices.
P 2	2.3	Ensure consistency and quality of geocoding results	2.3.3	Ensure accurate and consistent geocoding metadata and quality declarations	Geocoding results should be as accurate and consistent as possible, and documented according to agreed geocoding metadata, quality declarations and standards. Geocoding metadata should be provided at object level so that the accuracy of the assigned location can be assessed for each observation.
P 2	2.3	Ensure consistency and quality of geocoding results	2.3.4	Request technical and methodological documentation from private data providers	Use of geo-enabled data that originates from private data providers implies little or no means of influencing the underlying technical infrastructure in data capture. It is highly recommended that technical parameters and methodological choices involved in the data capture process embedded in smart sensors should be documented and shared between stakeholders.
P 2	2.3	Ensure consistency and quality of geocoding results	2.3.5	Develop a consistent approach for non-matching observations in ESS data	For the provision of data to Eurostat, the ESS Member States should follow the agreed approach to use one additional synthetic grid cell without spatial representation to contain all observations that cannot be geocoded to real grid cells.
P 2	2.3	Ensure consistency and quality of geocoding results	2.3.6	Develop a consistent approach for non-matching observations in national data	Countries should define and describe a consistent approach for non-matching observations to be applied in production of small area or grid data on national level, for those cases where the approach set for European data is not applicable or not suitable for national purposes.
P 2	2.4	Use point-of-entry validation in collection of administrative or statistical data	2.4.1	Validate data at the source	When creating and maintaining administrative or statistical unit record data, point-of-entry validation mechanisms should be used to ensure the best possible quality of the location references (address, building/dwelling, cadastral parcel etc.) entered. All national public authorities in ESS Member States in charge of public records and registers should be obliged to use gazetteers when entering addresses, to avoid inconsistencies. This policy is also strongly recommended for non-ESS European countries.

P 2	2.4	Use point-of-entry validation in collection of administrative or statistical data	2.4.2	Enable custodians of administrative data access to address services or gazetteers	The statistical and geospatial communities should collaborate to promote the use of authoritative reference data among public institutions responsible for collection and management of administrative data. Address services or gazetteers provided by geospatial agencies need to be available with defined APIs and accessible for public custodians of administrative data for integration in their data collection platforms.
P 2	2.4	Use point-of-entry validation in collection of administrative or statistical data	2.4.3	Develop legal framework to enforce good data quality	Legal measures should be considered as means to enforce good quality of collected data. Such measures may concern both removal of legal barriers that prevent point-of-entry validation being conducted as well as legal instruments to enforce use of point-of-entry validation in the public sector.
P 2	2.5	Define common data quality frameworks taking into account spatial and temporal consistency	2.5.1	Define and assess coverage of geospatial data	The coverage of collected data in relation to the population of interest must be defined and assessed, with particular attention to measuring the representativeness at the local scales. When data is collected on principles that do not guarantee representativeness (Big Data, or even administrative data, by comparison with sampled survey data and weighted observations), a measure of "non-coverage" must be established (relative importance of missing values) and correction/imputation methods must be defined by statistical institutes which use these data.
P 2	2.5	Define common data quality frameworks taking into account spatial and temporal consistency	2.5.2	Record and assess temporal changes of geospatial data	Changes over time in data coverage should be documented by data providers, whether the data is collected on an ad hoc basis (e.g., administrative data from one year to the next) or continuously (e.g., Big Data stream). This provides geo-historical data to support data treatment and analysis, and preferably reduce the time gap/stamp between the time of the event and the data collection.
P 2	2.5	Define common data quality frameworks taking into account spatial and temporal consistency	2.5.3	Follow the ESS Quality Assurance Framework	Data Quality should be documented according to the ESS Quality Assurance Framework and take into account ISO standards on Geographic Data Quality (e.g., ISO 19157 and 19158).
P 3	3.1	Set up and maintain a consistent framework of national statistical and administrative geographies	3.1.1	Define clear custodianship roles for coding systems and boundary data	Geospatial agencies and NSIs should define clear custodianship roles for coding systems and boundary data for statistical and administrative geographies respectively, on a national level in order to enable a more efficient collaboration.
P 3	3.1	Set up and maintain a consistent framework of national statistical	3.1.2	Define geographies as authoritative geospatial data	All national administrative, statistical, functional and hybrid geographies with relevance for production and dissemination of official statistics (including grids) should be provided as authoritative geospatial data in compliance with the technical specifications of INSPIRE, whenever relevant, and the UN-GGIM: Europe Core Data Recommendation for Content on Statistical Units and Administrative Units, including full topological and coding consistency. This is relevant to ensure timely data for national geographies, especially for spatial analysis and dissemination purposes.

		and administrative geographies			
P 3	3.1	Set up and maintain a consistent framework of national statistical and administrative geographies	3.1.3	Record and maintain all changes in coding systems and geographies	A consistent framework of national statistical and administrative geographies should focus on current data, but must also include historical geographies for recasting current data for past administrative or statistical divisions. When changes occur in coding systems and/or geometry of boundaries, data on national statistical and administrative geographies should be maintained and made available to all users no later than six months after the reference date.
P 3	3.1	Set up and maintain a consistent framework of national statistical and administrative geographies	3.1.4	Ensure access and usability of current and historical geographies	Geospatial agencies and NSIs should work together to improve accessibility, speed of delivery and usability of current and historical national data on administrative and statistical geographies relevant for the statistical production process, with the aim to provide high quality data under Open Data licenses. Data should be machine-readable and provided through OGC/INSPIRE compliant view and download services.
P 3	3.1	Set up and maintain a consistent framework of national statistical and administrative geographies	3.1.5	Develop common methods and guidance towards harmonisation	The initiatives in ESS Member States on harmonised geographies should be undertaken and supported. Guidance and recommendations should be developed to promote and facilitate data aggregation methods and data comparison for spatial analysis and dissemination purposes.
P 3	3.1	Set up and maintain a consistent framework of national statistical and administrative geographies	3.1.6	Define agreed spatial resolution, reference dates and accuracy of geographies	Geospatial agencies and NSIs should agree on an approach to spatial resolution, reference dates and accuracy of administrative and statistical geographies building on UN-GGIM: Europe Core data recommendations. This is important to ensure data aggregation, data comparability and geographical coherence. Explain or provide a reference, preferably used or recommended by key stakeholders at European and global level (e.g., UN-GGIM refers to the European Location Framework), for the level of detail, may help to define what level of accuracy or spatial resolution is needed or more suitable.
P 3	3.2	Consolidate use of existing statistical grid systems and explore the potential of evolving global grid systems	3.2.1	Define European ETRS89 grid system as the main output grid geography	The current European ETRS89 grid system is the main output grid geography for pan-European statistics produced within the ESS. The grid system is already compliant with INSPIRE's Principles and Technical Guidelines on Data Specifications (e.g., Theme "Geographical Grid Systems" – Annex I, and Theme "Statistical Units" – Annex III). It is a well-established spatial feature to produce and disseminate pan-European geospatial statistics.
P 3	3.2	Consolidate use of existing statistical grid systems and explore the potential of evolving global grid systems	3.2.2	Promote the introduction of new grid sizes	Introduction of additional grid sizes should be considered and agreed upon for the European level (e.g., 100 m, 125 m or 200 m or quadtree – subdivision of some grid cells into four quadrants constructing an adaptable cells composition according to the units of interest) in line with the forthcoming revision of the INSPIRE implementing regulation on data interoperability for Statistical Units. The need for, and implications of, introducing additional grid sizes should be explored jointly by the statistical and geospatial community, taking into account a versatile and expanding use of spatial-statistical data and resources, even regarding earth observation data, and taking into account disclosure issues.

P 3	3.2	Consolidate use of existing statistical grid systems and explore the potential of evolving global grid systems	3.2.3	Monitor the development of the Discrete Global Grid Systems	The geospatial and statistical communities should closely monitor the development of the Discrete Global Grid Systems (DGGS) and its application, in order to prepare for a possible future implementation of the grid system for national and European data. Implementation of the DGGS will potentially be beneficial for the global data integration and for a seamless integration between the national and European level, however it is still at an early stage and more studies are needed on the benefits and implications of adopting the concept.
P 4	4.1	Improve geospatial workflows within statistical production	4.1.1	Engage in developing, using and promoting new standards	The statistical community should be actively involved when new geospatial standards, with relevance for data integration are developed, and be involved in the evaluation of utility to statistical production. Considering the international nature of standardisation, global and European organisations and institutions should provide forums to facilitate standardisation.
P 4	4.1	Improve geospatial workflows within statistical production	4.1.2	Design and implement standards-based production processes	Statistical production, involving geospatial information, should rely on both statistical models and standards as well as geospatial standards, e.g., in data collection, processing and dissemination technologies.
P 4	4.1	Improve geospatial workflows within statistical production	4.1.3	Design and implement a location-centred data architecture	Interoperability requires consideration of geospatial data and the concept of location as an integral part of data architecture. The location information should be considered as a matching key variable to integrate data from multiple data sources and datasets, including combining geospatial and statistical data or other non-statistical data, in which location information ensures a common approach to place each statistical unit in space and time.
P 4	4.1	Improve geospatial workflows within statistical production	4.1.4	Use services and develop common and reusable tools to increase integration and interoperability	Geospatial services in a modern service-oriented architecture are recommended to standardise geospatial production components. NSIs and Geospatial agencies should set up their work to develop and publish scalable tools and data integration service solutions to be shared in open repositories and platforms, for instance to allow on-the-fly mapping from statistical data to geospatial data using open data and services.
P 4	4.1	Improve geospatial workflows within statistical production	4.1.5	Design and implement Geospatial Reference Architecture for statistics	NSIs should implement Geospatial Reference Architecture for production of geospatially enabled statistics based on a centralized operating model, uniform use, geospatial data repositories, user-oriented approach and cooperation with other producers of geospatial information.
P 4	4.2	Enable data integration through consistent semantics and concepts across domains	4.2.1	Ensure common conceptual models and semantic interoperability across data domains	Common conceptual models of objects, fundamental to both statistical and geospatial communities, should be well-defined. Statistical and geospatial agencies should seek to ensure semantic interoperability across data domains, for example, ontologies for addresses and buildings, by working together to inform data providers about the need for conceptual harmonisation and the benefits of data interoperability.
P 4	4.2	Enable data integration through consistent semantics and concepts across domains	4.2.2	Define concepts for kinetic statistics	NSIs and geospatial agencies need to work together to define a harmonized set of core concepts for kinetic statistics (statistics derived from kinetic data that track objects that are continuously moving) that capture changes in time and space, in order to establish a coherent system of definitions and measurements, with an equivalence grid from one to the other, adapted to data sources (since discontinuous and declarative statistics in surveys up to continuous measurement systems with the Internet of Things – IoT - and Big Data).

P 4	4.2	Enable data integration through consistent semantics and concepts across domains	4.2.3	Enable data integration through services	NSIs should increasingly combine geospatial data and statistical data and metadata by integrating and adapting INSPIRE concepts (and spatial data infrastructure) in the Standard for Data and Metadata eXchange (SDMX). SDMX is evolving as a data exchange format for an increasing number of statistical domains. This is essential to support the combination of these two types of information and maximise the reuse of existing and accepted data infrastructures for statistics. NSIs and Eurostat should work closely together to explore applications of SDMX throughout the statistical production process.
P 4	4.3	Publish data once and leave them at their source to be reused many times	4.3.1	Disseminate open data and services	Countries should intensify their efforts to provide open and free dissemination of data through open APIs to open up data for geospatial statistics and ensure public use.
P 4	4.3	Publish data once and leave them at their source to be reused many times	4.3.2	Ensure open, centralised services by the ESS	Open, centralised, INSPIRE compliant services with NUTS geographies and 1km and other sized grids should be set up by the ESS (or by other European bodies by agreement with the ESS) for the whole of Europe, in order to avoid unnecessary duplication and effort by Member States. These services can be used for cross border mapping of statistics when joined by the SDMX service.
P 4	4.4	Increase use of services and semantic web technology to enable innovation in a wider data ecosystem	4.4.1	Develop and apply services for user-oriented statistical-geospatial integration	European bodies, national geospatial agencies and NSIs should work closely together to develop and apply services using automated and dynamic linking of geospatial data and statistical services and to establish an underlying governance for the provision of these services. This will enable more flexible and open statistical-geospatial integration that provides more value for users. The geospatial and statistical communities should jointly be involved in developing standards to consolidate and industrialise the implementation of statistical-geospatial integration.
P 4	4.4	Increase use of services and semantic web technology to enable innovation in a wider data ecosystem	4.4.2	Develop and apply common concepts and tools for Linked Open Data	The ESS should increase its efforts to facilitate common tools, concepts and methods in the field of Linked Open Data (LOD). Current progress made in individual ESS Member States on both statistical and geospatial data needs to be consolidated and exploited in a more systematic way to stimulate the exploitation of LOD and semantic web technology across Europe. The statistical and geospatial communities should promote innovative initiatives within LOD, especially on best practices for exposing, sharing and integrating data on the Web.
P 4	4.4	Increase use of services and semantic web technology to enable innovation in a wider data ecosystem	4.4.3	Publish reference data as Linked Open Data	Building on experiences from ESS Member States, a good practice is to approach the work on Linked Open Data (LOD) with one consistent reference dataset, e.g., statistical and administrative geographies.
P 5	5.1	Implement clear and simple data licensing policies	5.1.1	Release geospatial statistics as open data	Geospatial statistics should be released as open data. The licensing terms and conditions for geospatial statistics created by combining statistical and geospatial information shall be as unrestrictive as possible with regard to the respective open data licenses for the source data combined.

P 5	5.2	Use service-oriented data portals supporting dynamic integration of data	5.2.1	Promote data access via APIs, OGC compliant services and non-proprietary formats	Countries should explore use of service-oriented dissemination platforms, which provide greater flexibility in terms of usability and support data access through a variety of interfaces via APIs. Open Geospatial Consortium (OGC) compliant services and non-proprietary formats should be used for dissemination to ensure flexibility also from an end-user perspective.
P 5	5.2	Use service-oriented data portals supporting dynamic integration of data	5.2.2	Promote service-oriented and user-oriented data integration	The ESS should use common concepts and shared solutions for service-oriented and user-oriented data integration. Good practice and current progress made in some Member States or elsewhere needs to be consolidated and better exploited to stimulate development throughout Europe.
P 5	5.2	Use service-oriented data portals supporting dynamic integration of data	5.2.3	Promote 'Geospatial Statistics as a Service'	Countries should intensify the development of technical solutions that enable users to customise the content and extent of data extraction. This concept is known as 'Geospatial Statistics as a Service' or geospatial statistics data lakes.
P 5	5.2	Use service-oriented data portals supporting dynamic integration of data	5.2.4	Publish data in simple data structure	Geospatial agencies and NSIs should consider publishing data in simple data structure, as a complement to the complex data structures defined by INSPIRE. This will improve usability in GIS environments. Also consider following modern encodings like LOD, WFS 3.0 and other formats to improve available services also in the future.
P 5	5.2	Use service-oriented data portals supporting dynamic integration of data	5.2.5	Explore innovative geospatial dissemination platforms	Countries should explore innovative dissemination platforms by offering data visualization tools that highlight the geographic dimension of statistics. When possible, these data visualization tools should help internal organisations and end users in their data exploration and help to adapt the production and dissemination of geospatial statistics.
P 5	5.3	Define clear national and European rules to ensure protection of privacy	5.3.1	Develop disclosure control methods for dissemination of national grid data or small area statistics	For the dissemination of national grid data or small area statistics, countries should develop, apply and publish confidentiality methods and data disclosure control techniques to protect and preserve the privacy of sensitive data. These methods and techniques may include geospatial-related privacy requirements, especially addressing potential risks related to regional breakdowns and geographic differencing, and should be aligned with existing national data protection legislation and policies.
P 5	5.3	Define clear national and European rules to ensure protection of privacy	5.3.2	Enhance the quality of European statistics	ESS Member states need to be aware of potential confidentiality risks, due to geographical differencing, which come with an increasing number of national and European data being disseminated on small areas. The quality of European statistics should be a priority. National geospatial statistics should not be released/published if stricter disclosure controls lead to a loss of quality in European statistics. Methods and solutions to ensure data disclosure and confidentiality issues should be developed and shared between Member States.
P 5	5.4	Facilitate data search and use through cataloguing	5.4.1	Use the Data Catalogue Application Profile as the overarching vocabulary	The Data Catalogue Application Profile (DCAT-AP) should be used as the overarching vocabulary to achieve interoperability between statistical and geospatial metadata and support discovery in open data portals. DCAT extensions to statistical and geospatial data

		and improved guidance			(GeoDCAT-AP and StatDCAT-AP respectively) should be considered, providing a richer data description and maintaining easy interoperability with the generic DCAT-AP profile.
P 5	5.4	Facilitate data search and use through cataloguing and improved guidance	5.4.2	Establish regular consultations with the geospatial statistics users' community	It is advisable to establish procedures for systematic consultations with the user community for geospatial statistics. Consultations with users can be carried out in many and more or less formalised ways. They can take the form of user councils, focus groups or information seminars, etc.
P 5	5.4	Facilitate data search and use through cataloguing and improved guidance	5.4.3	Develop an ESS official geospatial statistics portfolio based on user needs analysis	The ESS should develop efforts for an official geospatial statistics portfolio based on user needs analysis to better respond to challenges. User-oriented product design can be a method to better meet the user requirements for geospatial statistics.
P 5	5.4	Facilitate data search and use through cataloguing and improved guidance	5.4.4	Promote the value of data and related services	Statistical and geospatial communities should reach out to users about the benefits and potential of using the infrastructure information elements, tools and geospatial services/APIs, encourage online consumption for end user applications and address their needs in addition to societal needs.