INSPIRE
Infrastructure for Spatial Information in Europe

# Monitoring and Reporting Drafting Team Monitoring Indicators – Guidelines Document

| | |
|---|---|
| **Title** | INSPIRE Monitoring Indicators – Guidelines Document |
| **Creator** | Monitoring and Reporting Drafting Team and European Commission - Eurostat |
| **Creation date** | 2007-01-23 |
| **Date of last revision** | 2011-01-18 |
| **Subject** | INSPIRE implementing rules for monitoring and reporting |
| **Status** | v. 5.0 |
| **Publisher** | European Commission - Eurostat |
| **Type** | Text |
| **Description** | Guidelines for monitoring and reporting the INSPIRE Directive |
| **Contributor** | Monitoring and Reporting Drafting Team and European Commission - Eurostat |
| **Format** | PDF |
| **Source** | European Commission - Eurostat |
| **Rights** | Public |
| **Identifier** | INSPIRE_MR_Guidelines_Reporting_2011-01-18_v 5.0.doc |
| **Language** | EN |
| **Relation** | Not applicable |
| **Coverage** | Not applicable |

These are Dublin Core metadata elements. See for more details and examples http://www.dublincore.org/.

DISCLAIMER

This document is publicly available as a 'non-paper', as it does not represent an official position of the Commission, and as such can not be invoked in the context of legal procedures.

# Table of contents

# Foreword

The INSPIRE Drafting Team Monitoring and Reporting has been created by the European Commission in October 2005, in order to draft Implementing Rules for monitoring and reporting. The activity of the team has been defined through two documents:

1-INSPIRE Work Programme Preparatory Phase 2005-2006

2-INSPIRE Work Programme Transposition Phase 2007-2009

The first programme defined the objective, the scope and the process to be followed by the team. The second programme, built upon the results of the activities of the team in 2005 and 2006, proposed to continue the development, to test the feasibility of the proposed approach for monitoring and to elaborate draft implementing rules for monitoring and reporting.

The Drafting Team Monitoring and Reporting analysed all the comments received during reviews (from the Consolidation Team, from all the Drafting Teams, from the Spatial Data Interest Community (SDICs) and Legally Mandated Organisations (LMOs)) and during the feasibility tests (from stakeholders and members states who accepted to test the approach). Some of them were accepted and taken into account when re-formulating (parts of) the draft implementing rules, some rejected and, where necessary, clarification was given in the guidelines document.

This document is an accompanying document that should be read together with the implementing rules for monitoring and reporting itself, and the other accompanying document, called “Justification Document”; in order to have a clear view on how monitoring and reporting should be implemented in practice. The Justification document explains the approach selected for monitoring and reporting, it gives an overview of the indicators and it explains the rationale and the objectives of the indicators, as well as the limitations for monitoring or reporting.

These documents should be read first, before starting with the guidelines.

# Purpose of the document

This document intends to explain further how Member States should implement the monitoring and reporting of INSPIRE (Infrastructure for Spatial Information in the European Community) based on COMMISSION DECISION regarding INSPIRE monitoring and reporting from 2009/06/05. It should be seen as a guideline that explains how the how the necessary information can be collected and how monitoring and reporting can be implemented.

This document will also describe the procedures to be used for calculating the indicators. Though the guidelines will not provide any tools for automating monitoring they will propose an approach which will help Member States to collect the data needed with the help of a spreadsheet described in this document and provided separately on the same website.

These guidelines are also accompanied by a template for reporting.

It is up to the Member States to decide how they will coordinate the work; also establishing some web functionalities to collect the information or automate the procedure remains the entire initiative of the Member States and is out of scope of these guidelines.

This document must be seen as a living document; meaning that it can and will be adapted over time in the light of experience and through the clarification of issues raised by Member States during the implementation process.

# 1. Basic topics related to monitoring and reporting

Monitoring and reporting provide important information on the development of the NSDI (National Spatial Data Infrastructure) and INSPIRE and therefore constitute an important source of information for decisions concerning the implementation of INSPIRE Directive (Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)) and for the future evolution. While the rational of the chosen approach has been discussed in the document titled "Justification document" this chapter discusses some basic issues related to monitoring and reporting such as the feasibility of the approach, and closely linked to this, the possibility to automate data collection, the list of spatial data sets and of services.

## 1.1. The feasibility of the approach

The approach proposed for monitoring and reporting activities has been selected based on its ability to provide the information necessary to decide on the future evolution of INSPIRE as requested in the INSPIRE Directive. It is deemed to be the only realistic approach that will give the results required by the INSPIRE Directive and that is feasible for Member States. A detailed justification for the chosen approach is given in the Justification document.

The most critical phase is to establish the list of data sets and services that are part of the INSPIRE infrastructure. Potentially, there are thousands of data sets and hundreds of services. It is important to recognise that it is up to Member States to evaluate what datasets and services fall under the scope on INSPIRE and therefore need to be brought into compliance and taken into account for monitoring and reporting obligations. For guidelines on how to establish the lists, see section 1.4.

Once the list is established, Member States should score each data set and service for the defined indicators. This is a straightforward procedure which could be simplified by involving the appropriate data custodians and service providers. Some of the information can be found in the metadata (e.g. conformity of a data set), some of it will be collected manually, while other information will be gathered automatically (use of the services).

The list of data sets and services and the values for the different indicators can be recorded in an excel spreadsheet (see template proposed by the Drafting Team).

Once this is done, the calculation of the variables required and of the indicators itself will be done automatically within the spreadsheet.

The resulting figures should be published and can be used for preparing the 3-yearly report. The preparation of the report itself will be supported by a template (Word) as well. It is suggested to use the existing (if it is still valid) information from the State of Play as a starting point.

The main work will be in the set-up of the monitoring and reporting mechanism during the first year. Once this is done, yearly collection and calculations as well as the three yearly reporting are expected to require limited efforts.

## 1.2. Automating monitoring

To facilitate monitoring it is important to automate the collection of information using dedicated tools and existing applications and services. The following paragraphs will explore how metadata and metadata catalogues can be used to this end and introduce the spreadsheet developed by the drafting team which allows to automate the calculations necessary for monitoring. A dedicated chapter will present the structure of this spreadsheet in detail. Also, some tools might be developed by the European Commission.

## Metadata

"Member States shall ensure that metadata are created for the spatial data sets and services corresponding to the themes listed in Annexes I, II and III" (see Article 5 of the Directive).

So existing metadata can be a starting point for establishing the list of spatial data sets and services required in Article 2 of the regulation on Monitoring and reporting.

But this is not enough because spatial data sets, spatial data services and also network services without metadata and falling under the scope of the Directive exist. So the list will be incomplete if only spatial data sets, spatial data services and also network services with metadata are used for the calculation of the indicators.

Some specific metadata elements can also be used to collect detailed information on spatial data sets, spatial data services and network services like the degree of conformity. It will be up to the Member States to check the conformity of spatial data sets, spatial data services and network services but the results will be available in the metadata element "Degree of conformity".

Other specific metadata elements are not detailed enough for the monitoring. For example, the "geographic bounding box" is a rectangle around the area concerned. But, in most cases, it will not correspond to the actual area; and neither is it possible to extract information about the relevant area.

So, as a conclusion, metadata elements will provide some useful information for monitoring but they are not sufficient to provide an overview of the implementation of the Directive.

## Metadata catalogues

Metadata catalogues therefore constitute a first important source of information in order to establish the list and to collect part of the information required for each data set or service for monitoring, information which then needs to be completed through surveys or other means, such as a website where every administration can list its spatial data sets and their services and provide information on them.

## Monitoring services

Member States will have to put in place tools in order to automatically record the use of services as requested by the indicators for monitoring.

## The spreadsheet

A spreadsheet has been developed that, based on the list of:
- existing spatial data sets, eventually grouped per series,
- existing spatial data services,
- existing network services.

allows to automate the calculation of the indicators and all the variables needed for monitoring. A separate worksheet will list all the information that needs to be published. This spreadsheet is described in detail in chapter 3.

# 1.3. Conformance testing

There are indicators for metadata (MDi2), data sets (DSi2) and services (NSi4) that require checking conformity with the respective Implementing Rules. The metadata, data set or service must be fully conformant with the Implementing Rules. It is up to the Member States to make this check. Conformity

testing as such it out of scope of monitoring and reporting and might be further explored within the specific expert groups related to each topic (e.g. metadata, data specifications…).

## 1.4. List of relevant data sets and services

### *How to establish the list of data sets and services?*

- Who to establish this list?

It is up to the Member States to establish this list. The list can't and won't be established through a decision of the European Commission. Member States should define the list at the national level, taking into account all the data custodians that provide data sets or services that can contribute to the infrastructure of INSPIRE. So collaboration (through the coordination structure) is necessary to achieve this.

- Is the list a register?

No. The list doesn't have a legal value in that sense. It is a way to collect the information for the indicators. Of course Member States are free to use this list as an official reference if they see this as an added value of their infrastructure.

- When should the list be established?

The list should be established at the start of the monitoring cycle, i.e. at the latest by the 15$^{th}$ of May following the approval of the Implementing Rules on Monitoring and Reporting. However, it is most appropriate to establish the list at the beginning of this process. The list should be updated annually (since monitoring is annual).

- How can Member States decide which data set belongs to the list?

Each Member State will decide which spatial data sets and services will be put on the list.
The following questions could be helpful in reference to establishing this list.
The main question is "Does the data set falls under the scope of at least one of the themes listed in the annexes of the Directive?". From a purely legal point of view, the text of the Directive, in particular, in this case, its annexes I to III, is the only formal reference, together with any provision adopted by Member States for its transposition into national legislation, to be used to decide what falls under the INSPIRE scope and therefore has to be included in the list.
A second question that can help is "If multiple identical copies of the same spatial data set exist, which will be the INSPIRE reference version and therefore the one to be brought into conformity with the Implementing Rules?"
A further general question which can help in defining the scope of the Directive is "Can the data set or the service be used for direct or indirect environmental policy purposes?". The European Spatial Data Infrastructure resulting from the implementation of INSPIRE is in fact established "for the purposes of Community environmental policies and policies or activities which may have an impact on the environment".

- Should only data sets which are INSPIRE conformant be on the list?

No. One of the aims is to look at the proportion of data sets that are conformant within the overall number of spatial data sets. Listing only those which one knows to be conformant will result in 100% conformity, but will not give a correct idea of the real status of the overall infrastructure.

- Should data sets which are under production be put on the list?

If the answer to the questions above is yes, then they should. E.g. data sets are sometimes produced on a sheet by sheet basis (or per administrative zone). This will result in a data set series of which the

finished parts can be used. But also other data sets under production should be monitored since they will gradually contribute to the INSPIRE infrastructure. Although it is not required to collect new data, Member States must apply the implementing rules specifying the structure of the data when creating new data sets. Therefore, it is useful to monitor these from the beginning.

- Data sets made up of physically distinct files

Data sets sometimes can be made up of physically distinct files but if these files are managed together as a whole they do conceptually constitute a single data set. This obviously supposes that the parts have a common data model and common metadata characteristics so that in fact a single metadata file completely represents them. Examples are topographic data sets which are organized in sheets, or data sets which are organized according to administrative areas (e.g. per commune).
The determining factor is the way these data sets are actually managed: together or separately. For example Orthophotos are usually managed in tiles, but all the tiles are based on the same specifications and together they provide the coverage for a specific area (e.g. national coverage).

- How to treat data sets that have a larger extent than the area where a Member State has and/or exercises jurisdictional rights

Member States should only monitor data sets that relate to an area where a Member State has and/or exercises jurisdictional rights (this is according to the Directive). This means that specific data sets or parts of data sets that fall outside these territories should not be monitored. If member States have data sets that cover more than the area where they exercise jurisdictional rights, it should be included in the list (but for area calculations only the area where they have jurisdictional rights will be considered, see section 3.2), For themes like oceanographic features, the future Implementing Rules for data specifications will give further guidance.

- How to treat data sets that have been derived from other data sets?

Derived data sets should be included if it can be considered that they generate a new reference data set falling under INSPIRE Directive.
A simple extraction of a subset of information from a spatial data set does not necessarily constitute a new data set, unless Member States consider this to be a new reference version.

- Is the list of data sets a fixed list?

No it is not, for several reasons. For example, data sets can become obsolete because they are replaced by a new data set according to new specifications. Alternatively, a data set for a specific theme could be created in the future even if it does not exist now. These types of changes won't occur that often over time.

- Can a data set be part of several themes?

Yes it can. E.g. a data set can contain features of the hydrographical network, roads, etc. So they should be reported under all the respective themes. The fact that these data sets are reported multiple times is not a problem, since it means that they will get a higher weight which reflects correctly their importance. However, the same data set should never be listed more than once under the same theme.

- Can a theme be covered by several data sets?

It is certainly possible that a theme is covered by several data sets. For example transport data might be distributed on different data sets but is certainly referring to one INSPIRE theme, which is transport networks (Annex I), so several data sets can be referred to transport networks.

## *Specific issues related to services*

- How to establish the list of spatial data services and of network services?

Member States should list all the spatial data services and the network services that make it possible e.g. to discover, view, download, and/or transform any of the listed data sets or operate on any spatial data set falling under INSPIRE Directive. In addition, network services that provide specific capabilities but are needed for making the infrastructure work should also be listed, e.g. invoking services. The list should be organized per type of service. For each service it should be specified if it is a spatial data service and/or a network service. If spatial data services can be referred to specific spatial data sets this should be specified. As applies to the data sets, also services without metadata and that are not (yet) compliant with their implementing rules should be listed.

## 1.5. Specific trans-boundary issues

### *Transnational spatial data sets*

The existence of transnational spatial datasets for some of the INSPIRE themes, managed by supra-national organisations, for instance at EU level, does not change the monitoring and reporting obligations of the Member States. The harmonisation efforts made so far, and the sharing practices already established, are an important contribution to INSPIRE and are taken into account in the INSPIRE development process. On the other hand the legal basis for the monitoring and reporting regulation is in the directive, and as such, specifically and directly addresses the Member States. There is no formal obligation on supra-national organisations; only indirect obligations in that the Member States have to consider spatial data sets provided by supra-national organisations on their behalf (see Article 4(1)c of INSPIRE Directive 2007/2/EC) as part of their national reference data for INSPIRE.
Therefore Member States have to monitor and report on the subsets which constitute their contributions to transnational data sets and fall under INSPIRE.

Besides the legal restrictions on the Monitoring and Reporting obligations, a few additional considerations can be taken into account, and show that there's hardly an alternative to set up this particular aspect of Monitoring and Reporting:

1. Umbrella organisations at EU level generally represent a category of similar stakeholders within the Member States. Communication directly at EU level would in most cases require linking back to each of the national "antennas". Whether a national antenna reports to a supra-national organisation or to its INSPIRE Member State Contact Point, doesn't make that much difference. Moreover in many cases the basic data are collected at the national level before being forwarded and integrated in a supra-national context.
2. Supra-national organisations do not necessarily exactly cover the now EU-27. There may be "structural" gaps of countries missing, "temporary" gaps (e.g. spatial data sets under construction), or alternatively geographically broader configurations (e.g. countries outside the EU, areas covering international waters…), which would entail similar complexity to report exactly at EU-27 level as compared to the monitoring and reporting via the Member State-level. Clearly, there can be no obligation to monitor and/or report on those parts of trans-national coverage that go beyond the jurisdictional rights of the Member States.
3. Some EU-wide coverages are set up in a step by step process, for which it takes several years to end up with the full coverage. All kinds of political, budgetary, user requirement and other consideration may lead to earlier or later participation of a Member State in a EU-wide programme. As a consequence, there can be (long lasting) gaps in a coverage, for which reporting at national level has the advantage of easily providing the context and rationale for specific situations.
4. It is acknowledged that supra-national organisations have the advantage of providing an overarching approach to some of the INSPIRE themes, but in most cases, the national representative stakeholders don't cede their ownership rights on the spatial data sets and services: a co-ownership is as far as it mostly gets, hence there's generally at least part of the responsibility left at national level, or indirectly linked back to the national level.

5. Nevertheless, there is an opportunity for the umbrella organisations to ensure that the basic calculations in the respective national antennas are done according to exactly the same methodology, in view of maximal coherence. As such, an advisory and supporting role from the supra-national level to its national representatives and vice-versa can be useful to streamline the monitoring and reporting within a specific INSPIRE theme.

### *Metadata for transnational datasets*

Regarding the specific case of metadata for transnational datasets it has to be pointed out that there is no legal requirement on transnational organisations to provide conformant metadata, but again, if these data sets are held on behalf of a public authority there is an obligation on the Member State limited to the national territory to provide compliant metadata for the data set. It could certainly be useful if this national metadata contains also a link to the transnational data set or to information on the transnational data set.

Moreover, the INSPIRE directive foresees the possibility for third parties to link up with the infrastructure, if data sets and metadata comply with the INSPIRE specifications. Transnational organisations, managing specifically EU-wide spatial data sets can link their metadata services with the EU-geoportal based on this provision. But again, regarding monitoring and reporting on the existence of these metadata, there's no direct and formal obligation put on the supra-national organisations.

## 1.6. Relevant and actual area

The indicator on the existence of data sets makes reference to 'relevant area' and 'actual area'. This information is used to evaluate the spatial coverage of a theme (i.e. is it covering the whole area concerned or only part of it?).

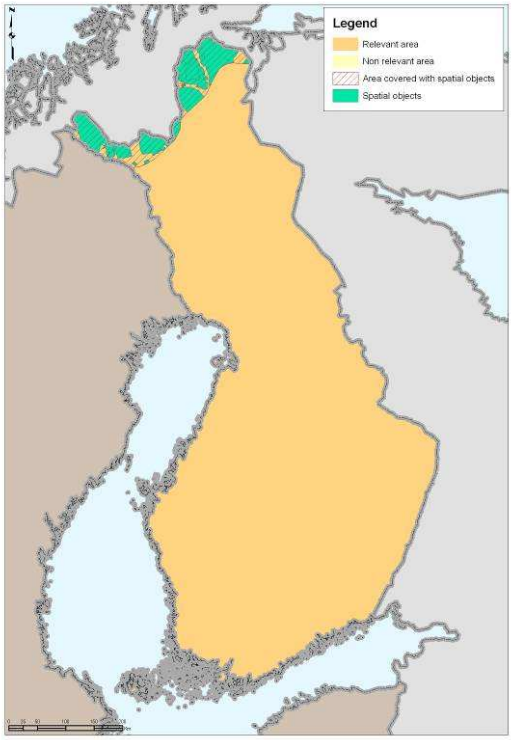
Below, the area concept as used in the implementing rules is explained, and then some examples are provided to illustrate this concept.

It proved to be necessary to fine tune the area definition as set out in § 1 a of art. 4 of the INSPIRE directive for the purposes of Monitoring and Reporting. Introducing 2 area related definitions should enable stakeholders to understand and calculate precisely the indicators related to the coverage of a spatial data set:

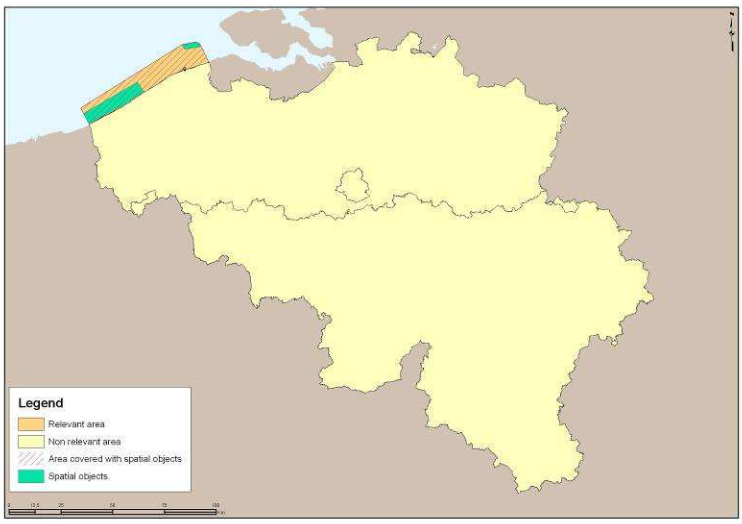
1. **Relevant area** - "the area which is to be covered by a given spatial data set" As specified by the Directive this territory has to relate to an area where a Member State has and/or exercises jurisdictional rights. As stated before, the relevant area could be land, it could be sea, or both, or it could just be a subset of land (mountain areas).
2. **Actual area** - "the area which is covered by the spatial data". This figure reflects the status of the coverage already reached for a certain theme.

Some examples are provided in the following paragraphs to illustrate the application of these definitions in order to allow Member States to estimate the spatial coverage correctly. It should be noted that spatial data sets may be structured differently in different countries and that as a result also relevant and actual area might be split up differently (see examples 1 and 2).
It should also be noted that it is impossible to use the spatial extent of the metadata since this defines a bounding box and does not relate at all to spatial coverage as used in the indicator.

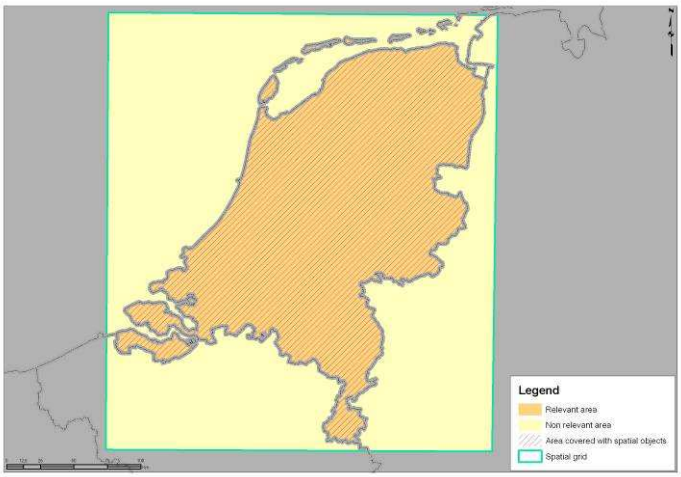
Example 1: Natura 2000 data (boundaries of Natura 2000 sites), which are part of theme 9 of annex 1. In most cases they are proposed and maintained by the Member States and approved by the EC per biogeographical region. In the figure below, the Natura 2000 spatial objects are shown for the Alpine region in Finland. The aim is to have this information for the whole Finnish territory, including marine areas. So the 'relevant area' finally to be covered is the whole Finnish territory including the marine areas. The 'actual area' covered by the data set is only the Alpine part of it.



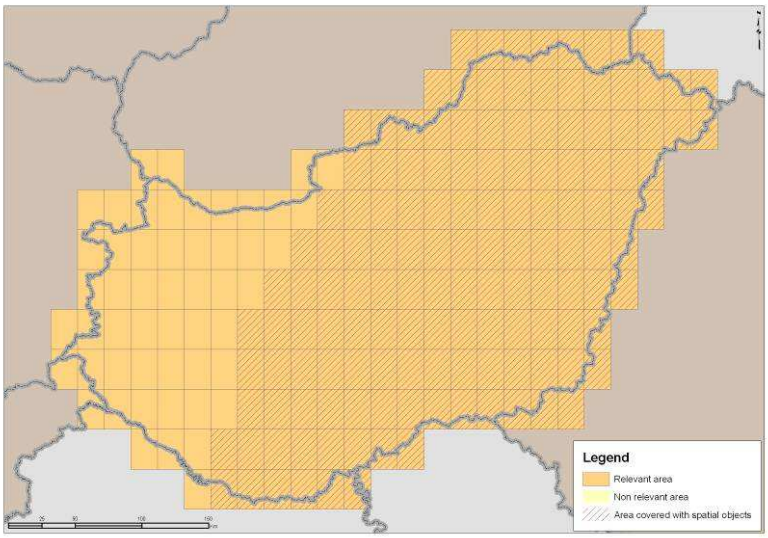

Example 2: In Belgium on the other hand, Natura 2000 data are organised in 4 data sets: one for each region, and one for the Federal level (which is competent for the sea area of Belgium). The figure below illustrates the Natura 2000 objects for this federal level. The 'relevant area' for the federal level is only the sea area of Belgium which is entirely covered ('actual area'). There will be similar data sets in the list for the three other regions.



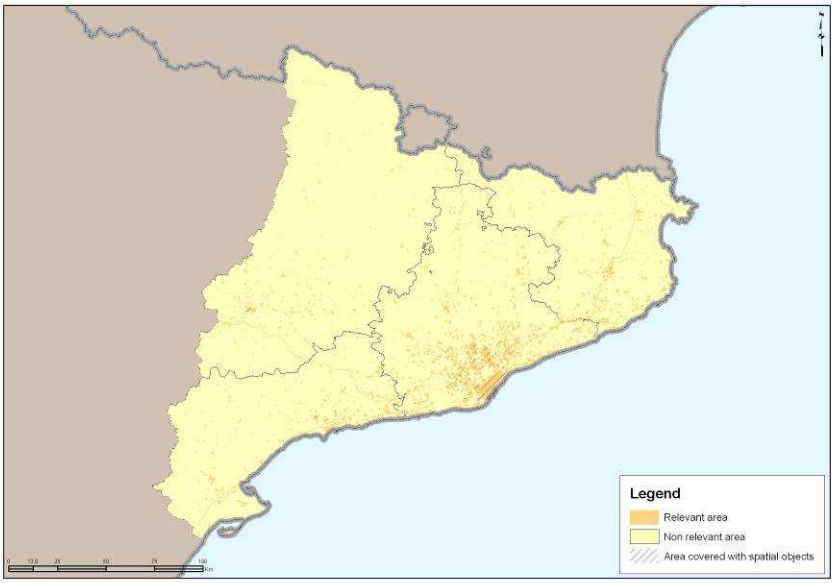
Example 3: In case a data set is in raster format, it usually covers a rectangular map extent (e.g. rasters generated by interpolation). Although in the example below, the raster contains information about the Netherlands and part of the neighbouring countries, the 'relevant area' is only the territory of The Netherlands, which in this case it is covered completely. So the 'actual area' in this case is the same as the territory of The Netherlands.




Example 4: If a data set is organised in map sheets, like in the fictitious example shown for Hungary below. The 'relevant area' is the whole of Hungary with some smaller parts in neighbouring countries that can be disregarded, so the relevant area is the sum of the area of all the map sheets that will be produced). The 'actual area' covered so far is the sum of the area of the sheets that are ready.



Example 5: In Catalonia the aim is to have a large scale base map for the urban areas. The ‘relevant area’ to be covered eventually is Catalonia. Assuming data is organised per commune and only major cities like Barcelona, Girona, etc., are ready, the ‘actual area’ covered is the sum of the communal areas of those cities as compared to the total area of all the communes of Catalonia that have foreseen to produce maps on this topic.




The same approach holds true for point data. If the goal is to map invasive trees for a region but for the time being only 4 provinces out of 20 have been covered then the 'relevant area' is the whole region while the 'actual area' is the sum of the area of 4 provinces already covered

## 1.7. Services requests and services conformity

### *Monitoring the use of network services*

The indicator requires counting of all the requests to the service. If, for any reason, this counting cannot be done continuously through the year, it is acceptable to extrapolate the annual number of requests from the available data, as long as this extrapolation has sufficient statistical basis.

Some spatial data services may be used for data sets others than the ones of the lists as defined in section 4(2) of the Implementing Rules on Monitoring and Reporting. For the purpose of monitoring, a request counts only when at least one data set of the list is involved.

### *Monitoring the conformance of network services*

Only services *fully* conformant with its implementing rules get a “1” value here, otherwise the service get a “0” value.

# 2. Issues related to the collection of information needed to calculate the indicators

## 2.1. Collecting the information needed to calculate the indicators

### List of information needed to calculate indicators and detailed indicators

The information needed to calculate specific indicators and general indicators is presented here for each indicator. Every calculated value has a name (or an ID) in order to better identify each of these values and to be able to determine easily where information is used in several indicators and also to present the formula used to calculate general and detailed indicators.

Each indicator is described through the different steps needed to collect information and then to calculate general and detailed indicators.

But before describing each indicator, as stated previously, it is necessary to establish a list of spatial data sets and of the services.

### 2.1.1. Spatial data sets and services: list and basic counts

#### Step 0: Setting up the list of spatial data sets and services and collecting basic information

The basis for monitoring at Member State level is:

- a list of spatial data sets grouped by theme and by Annex as defined in the Directive;
- a list of spatial data services and network services grouped by service types defined in Article 11(1)(a-e) of the INSPIRE Directive and in the implementing rules on metadata.

To help Member States in establishing this list and to collect all the information needed for monitoring purposes, it is proposed to use a predefined spreadsheet provided in an Excel file format (see chapter 3 for a detailed description).

In order to fill in the spreadsheet, it is first necessary to list, for each theme of each annex, the spatial data sets that are relevant for that theme. This list has to be completed by a list of spatial data services and network services (see section 3.1 on how to establish the list) grouped per type of service.

**Information collected for spatial data sets**

For each spatial data set, the information needed is the one providing an answer to the following questionnaire:

1. What is the name of the spatial data set (usually used to designate it)? (Name)
2. What is the relevant area? ($km^2$)
3. What is the actual area of the spatial data set? ($km^2$)
4. Do metadata exist for that spatial data set? (Yes/No)
   If yes:
   a) Are the existing metadata conformant to implementing rules on metadata? (Yes/No)
      If yes:
      - Is the structure of the data set compliant to the related implementing rules (Yes/No)
   b) Is that spatial data set with metadata accessible through a discovery service? (Yes/No)

5. Is that spatial data set accessible through view service(s)? (Yes/No)
6. Is that spatial data set accessible through download service(s)? (Yes/No)
7. Is that spatial data sets accessible through both view and download services? (Yes/No)

**Information collected for spatial data services and network services**

Network services are classified according to article 11 of INSPIRE Directive and cover discovery service, view service, downloads service, transformation service, invoke service. Spatial data services are classified according to INSPIRE Metadata Regulation 2008/12/04, which proposes 6 categories. 5 categories are named as the ones listed above and in addition there is a category "Other service".
The availability of metadata is monitored for the spatial data services while several indicators proposed are applicable only to network services.

The information needed is the one providing the answer to the following questions:
1. Is the service a spatial data service? (Yes/No)
2. Is the service a network service? (Yes/No)

3. For **spatial data services**:
   a. What is the name of the **spatial data service**? (Name)
   b. Do metadata exist for the **spatial data service**? (Yes/No)
      If yes:
      - Are the existing metadata conformant to implementing rules on metadata? (Yes/No)
      - Is that **spatial data service** with metadata accessible through a discovery service? (Yes/No)
   c. Can specific INSPIRE themes listed in Annex I, II, III of INSPIRE Directive be associated to this **spatial data service**. If so name them.

4. If the spatial data service is also a network service then:
   a. What is the name of this **network data service**,( the URL)?
   b. How many user requests are annually on that **network service**? (Count)
   c. Is that **network service** conformant with the implementing rules on Network Services? (Yes/No)

In the spreadsheet, “Yes” is represented by 1 and “No” by 0. Also automatic formulas are set up to calculate the specific indicators and the general indicators. These formulas and variables are described in the next steps.

## Step 1: Calculate the number of spatial data sets and services

The basic denominators are those referring to the number of spatial data sets, the number of spatial data services and the number of network services. This information will be used in most of the calculations of the general indicators and the specific indicators, and can be easily deduced from the lists of spatial data sets and services.

For the number of spatial data sets, the variables are defined as follows:

DSv_Num1: number of spatial data sets for Annex I
DSv_Num2: number of spatial data sets for Annex II
DSv_Num3: number of spatial data sets for Annex III

DSv_Num: number of spatial data sets for all Annexes
DSv_Num = DSv_Num1 + DSv_Num2 + DSv_Num3

For the number of spatial data services:

SDSv_Num: number of spatial data services

For the number of network services, the variables are defined as follows:

NSv_NumDiscServ: number of discovery services
NSv_NumViewServ: number of view services
NSv_NumDownlServ: number of download services
NSv_NumTransfServ: number of transformation services
NSv_NumInvkServ: number of invoke services

NSv_NumAllServ: number of all services
NSv_NumAllServ = NSv_NumDiscServ +
NSv_NumViewServ +
NSv_NumDownlServ +
NSv_NumTransfServ +
NSv_NumInvkServ

### 2.1.2 Monitoring of the existence of metadata

#### Step 1: Calculate the number of spatial data sets and services that have metadata

Given the list of spatial data sets information on the availability of metadata has to be collected for every item.

The variables are defined as follows:

MDv1.1: number of spatial data sets for Annex I that have metadata
MDv1.2: number of spatial data sets for Annex II that have metadata
MDv1.3: number of spatial data sets for Annex III that have metadata

MDv1_DS: number of spatial data sets for all Annexes that have metadata
MDv1_DS = MDv1.1 + MDv1.2 + MDv1.3

Given the list of spatial data services, information on spatial data services with metadata (no distinction for each category of services in the final monitoring data) has to be collected.
The variable is defined as follows:

MDv1.4: number of spatial data services that have metadata

#### Step 2: Calculate the indicators on the existence of metadata

With the common denominators, collected previously (DSv_Num1, DSv_Num2, DSv_Num3, SDSv_Num) and the 4 new variables MDv1.1, MDv1.2, MDv1.3, MDv1.4, it is then possible to calculate the indicators evaluating the existence of metadata", these are the specific indicators MDi1.1, MDi1.2, MDi1.3, MDi1.4 and the general indicator MDi1.

**Specific indicators**

MDi1.1 = MDv1.1 / DSv_Num1
MDi1.2 = MDv1.2 / DSv_Num2
MDi1.3 = MDv1.3 / DSv_Num3
MDi1.4 = MDv1.4 / SDSv_Num

**General Indicator**

MDi1 = (MDv1.1 + MDv1.2 + MDv1.3 + MDv1.4) / (DSv_Num + SDSv_Num)

### 2.1.3 Monitoring of the conformity of metadata

#### Step 1: Calculate the number of spatial data sets with conformant metadata and the number of spatial data services with conformant metadata

For every spatial data set with metadata, information on the conformity of this metadata has to be collected.
The variables are defined as follows:

MDv2.1: number of spatial data sets for Annex I that have conformant metadata
MDv2.2: number of spatial data sets for Annex II that have conformant metadata
MDv2.3: number of spatial data sets for Annex III that have conformant metadata

MDv2_DS: number of spatial data sets for all Annexes that have conformant metadata
MDv2_DS = MDv2.1 + MDv2.2 + MDv2.3

For every spatial data service with metadata, information on the conformity of this metadata has to be collected.
The variable is defined as follows:

MDv2.4: number of spatial data services that have conformant metadata

#### Step 2: Calculate the indicators on the conformity of metadata

With the common denominators DSv_Num1, DSv_Num2, DSv_Num3, SDSv_Num and with the 4 new variables MDv2.1, MDv2.2, MDv2.3, MDv2.4 it is then possible to calculate the specific indicators MDi2.1, MDi2.2, MDi2.3, MDi2.4 and the general indicator MDi2 and therefore to monitor the conformity of metadata.
The variables are defined as follows:

**Specific indicators**

MDi2.1 = MDv2.1 / DSv_Num1
MDi2.2 = MDv2.2 / DSv_Num2
MDi2.3 = MDv2.3 / DSv_Num3
MDi2.4 = MDv2.4 / SDSv_Num

**General Indicator**

MDi2 = (MDv2.1 + MDv2.2 + MDv2.3 + MDv2.4) / (DSv_Num + SDSv_Num)

### 2.1.4 Monitoring of the geographical coverage of spatial data sets

#### Step 1: Calculate the actual and the relevant area of spatial data sets

For each spatial data set, the actual area and the relevant area will be collected by the Member States. The individual area of each spatial data set will not be published: only the sum of the actual areas and the sum of the relevant areas per Annex will be.

For the actual areas, the variables are defined as follows:

DSv1.1_ActArea: sum of the actual areas of all the spatial data sets of Annex I
DSv1.2_ActArea: sum of the actual areas of all the spatial data sets of Annex II
DSv1.3_ActArea: sum of the actual areas of all the spatial data sets of Annex III

DSv1_ActArea: sum of the actual areas of all the spatial data sets of all Annexes
DSv1_ActArea = DSv1.1_ActArea + DSv1.2_ActArea + DSv1.3_ActArea

For the relevant areas, the variables are defined as follows:

DSv1.1_RelArea: sum of the relevant areas of all the spatial data sets of Annex I
DSv1.2_RelArea: sum of the relevant areas of all the spatial data sets of Annex II
DSv1.3_RelArea: sum of the relevant areas of all the spatial data sets of Annex III

DSv1_RelArea: sum of the actual areas of all the spatial data sets of all Annexes
DSv1_RelArea = DSv1.1_RelArea + DSv1.2_RelArea + DSv1.3_RelArea

#### Step 2: Calculate the indicators on the geographical coverage of spatial data sets

With the following 6 newly collected variables DSv1.1_ActArea, DSv1.2_ActArea, DSv1.3_ActArea, DSv1.1_RelArea, DSv1.2_RelArea, DSv1.3_RelArea it is possible to calculate the specific indicators DSi1.1, DSi1.2, DSi1.3 and the general indicator DSi1 and therefore to “monitor the geographical coverage of spatial data sets”).
The variables are defined as follows:

**Specific indicators**

DSi1.1 = DSv1.1_ActArea / DSv1.1_RelArea
DSi1.2 = DSv1.2_ActArea / DSv1.2_RelArea
DSi2.3 = DSv1.3_ActArea / DSv1.3_RelArea

**General Indicator**

DSi1 = DSv1_ActArea / DSv1_RelArea

## 2.1.5 Monitoring of the conformity of spatial data sets

### Step 1: Calculate the number of conformant spatial data sets

For each spatial data set it is necessary to know if the spatial data set is in conformity with the implementing rules on data specifications and if its metadata is in conformity with the implementing rules on metadata. The information on each spatial data set will not be published, only the sum per Annex.
The variables are defined as follows:

DSv2.1: number of conformant spatial data sets with conformant metadata for Annex I
DSv2.2: number of conformant spatial data sets with conformant metadata for Annex II
DSv2.3: number of conformant spatial data sets with conformant metadata for Annex III

DSv2: number of conformant spatial data sets with conformant metadata for all Annexes
DSv2 = DSv2.1 + DSv2.2 + DSv2.3

### Step 2: Calculate the indicators on the conformity of spatial data sets

With the common denominators previously collected DSv_Num1, DSv_Num2, DSv_Num3 and the 3 newly collected variables DSv2.1, DSv2.2, DSv2.3 it is possible to calculate the specific indicators DSi2.1, DSi2.2, DSi2.3 and the general indicator DSi2 and therefore to monitor the conformity of spatial data sets.
The variables are defined as such:

**Specific indicators**

DSi2.1 = DSv2.1 / DSv_Num1
DSi2.2 = DSv2.2 / DSv_Num2
DSi2.3 = DSv2.3 / DSv_Num3

**General Indicator**

DSi2 = DSv2 / DSv_Num

### 2.1.6 Monitoring of the accessibility of metadata through discovery services

#### Step 1: Calculate the number of spatial data sets and the number of spatial data services whose metadata is accessible through discovery services

Fore every spatial data set and spatial data service with metadata, it is necessary to determine if they are accessible through at least a discovery service.

For the spatial data set, the variable is defined as follows:

| NSv1.1: number of spatial data sets with metadata, for which a discovery service exists |
|---|

For the spatial data service, the variable is defined as follows:

| NSv1.2: number of spatial data services with metadata, for which a discovery service exists |
|---|

#### Step 2: Calculate the indicators on the accessibility of metadata through discovery services

With the 2 newly collected variables NSv1.1, NSv1.2 and the previously collected common denominators on the number of spatial data sets and services DSv_Num, SDSv_Num, it is possible to calculate the specific indicators NSi1.1, NSi1.2 and the general indicator NSi1 and therefore to monitor the accessibility of metadata through discovery services.

The variables are defined as follows:

**Specific indicators**

NSi1.1 = NSv1.1 / DSv_Num

NSi1.2 = NSv1.2 / SDSv_Num

**General Indicator**

NSi1 = (NSv1.1 + NSv1.2) / (DSv_Num + SDSv_Num )

### 2.1.7 Monitoring the accessibility of spatial data sets through view and download services

#### Step 1: Calculate the number of spatial data sets which are accessible through view and/or download services

Information on the number of spatial data sets that are accessible through a view service, a download service, both – view and download service - needs to be collected.
The variables are defined as follows:

NSv2.1: number of spatial data sets for which a view service exists
NSv2.2: number of spatial data sets for which a download service exists
NSv2.3: number of spatial data sets for which both a view and a download service exists

#### Step 2: Calculate the indicators on accessibility of spatial data sets through view and download services

With the 3 newly collected variables NSv2.1, NSv2.2, NSv2.3 and the previously collected denominators on the number of spatial data sets DSv_Num, it is possible to, calculate the specific indicators NSi2.1, NSi2.2 and the general indicator NSi2 and therefore to "monitor the accessibility of spatial data sets".

The variables are defined as follows:

**Specific indicators**

NSi2.1 = NSv2.1 / DSv_Num
NSi2.2 = NSv2.2 / DSv_Num

**General Indicator**

NSi2 = NSv2.3 / DSv_Num

## 2.1.8 Monitoring the use of network services

### Step 1: Calculate the annual number of service requests for discovery, view, download, transformation and invoke services

These variables can only be applied to existing network services.
Information to be collected regards the annual number of service requests for each existing network service, which is then grouped by service types: discovery, view, download, transformation and invoke.

The variables are defined as follows:

NSv3.1: sum of the annual number of network service request for all the discovery services
NSv3.2: sum of the annual number of network service request for all the view services
NSv3.3: sum of the annual number of network service request for all the download services
NSv3.4: sum of the annual number of network service request for all the transformation services
NSv3.5: sum of the annual number of network service request for all the invoke services

NSv3: sum of the annual number of network service request for all services
NSv3 = NSv3.1 + NSv3.2 + NSv3.3 + NSv3.4 + NSv3.5

### Step 2: Calculate the indicators on the use of network services

These variables can only be applied to existing network services.
With the 5 newly collected variables NSv3.1, NSv3.2, NSv3.3, NSv3.4, NSv3.5 and the previously collected common denominators on network services NSv_NumDiscServ, NSv_NumViewServ, NSv_NumDownServ, NSv_NumTransServ, NSv_NumInvkServ, it is possible to calculate the specific indicators (NSi3.1, NSi3.2, NSi3.3, NSi3.4, NSi3.5) and the general indicator (NSi3) and therefore to monitor the use of network services.

The variables are defined as follows:

**Specific indicators**

NSi3.1 = NSv3.1 / NSv_NumDiscServ
NSi3.2 = NSv3.2 / NSv_NumViewServ
NSi3.3 = NSv3.3 / NSv_NumDownServ
NSi3.4 = NSv3.4 / NSv_NumTransServ
NSi3.5 = NSv3.5 / NSv_NumInvkServ

**General Indicator**

NSi3 = NSv3 / NSv_NumAllServ

## 2.1.9 .Monitoring the conformity of network services

### Step 1: Calculate the number of conformant network services

Information on conformant network services has to be collected.
The variables are defined as such:

NSv4.1: number of conformant discovery network services
NSv4.2: number of conformant view network services
NSv4.3: number of conformant download network services
NSv4.4: number of conformant transformation network services
NSv4.5: number of conformant invoke network services

NSv4 : number of all conformant network services
NSv4 = NSv4.1 + NSv4.2 + NSv4.3 + NSv4.4 + NSv4.5

### Step 2: Calculate the indicators on the conformity of network services

With the 5 newly collected variables NSv4.1, NSv4.2, NSv4.3, NSv4.4, NSv4.5 and the previously collected common denominators on network services (NSv_NumDiscServ, NSv_NumViewServ, NSv_NumDownServ, NSv_NumTransServ, NSv_NumInvkServ), it is possible to calculate the specific indicators (NSi4.1, NSi4.2, NSi4.3, NSi4.4, NSi4.5) and the general indicator (NSi4) and therefore to monitor the conformity of network services.

**Sub-indicators**

NSi4.1 = NSv4.1 / NSv_NumDiscServ
NSi4.2 = NSv4.2 / NSv_NumViewServ
NSi4.3 = NSv4.3 / NSv_NumDownServ
NSi4.4 = NSv4.4 / NSv_NumTransServ
NSi4.5 = NSv4.5 / NSv_NumInvkServ

**Indicator**

NSi4 = NSv4 / NSv_NumAllServ

## 2.2. List of indicators and variables to be published for monitoring

The indicators and variables to be published are, at least:

-the general indicators (in a “percentage format”, e.g. 98% and not 0,98).

8 indicators have been defined:

- MDi1
- MDi2
- DSi1
- DSi2
- NSi1
- NSi2
- NSi3
- NSi4

-the specific indicators (in a “percentage format”, e.g. 98% and not 0,98)

28 detailed indicators have been defined:

- MDi1.1, MDi1.2, MDi1.3, MDi1.4
- MDi2.1, MDi2.2, MDi2.3, MDi2.4
- DSi1.1, DSi1.2, DSi1.3
- DSi2.1, DSi2.2, DSi2.3
- NSi1.1, NSi1.2
- NSi2.1, NSi2.2
- NSi3.1, NSi3.2, NSi3.3, NSi3.4, NSi3.5
- NSi4.1, NSi4.2, NSi4.3, NSi4.4, NSi4.5

-the numerators and denominators of all general indicators and of all specific indicators

50 numerators and denominators have been defined:

- DSv_Num1, DSv_Num2, DSv_Num3, DSv_Num
- SDSv_Num
- NSv_NumDiscServ, NSv_NumViewServ, NSv_NumDownServ, NSv_NumTransServ, NSv_NumInvkServ, NSv_NumAllServ
- MDv1.1, MDv1.2, MDv1.3, MDv1_DS, MDv1.4
- MDv2.1, MDv2.2, MDv2.3, MDv2_DS, MDv2.4
- DSv1.1_ActArea, DSv1.2_ActArea, DSv1.3_ActArea, DSv1_ActArea,
- DSv1.1_RelArea, DSv1.2_RelArea, DSv1.3_RelArea, DSv1_RelArea
- DSv2.1, DSv2.2, DSv2.3, DSv2
- NSv1.1, NSv1.2
- NSv2.1, NSv2.2, NSv2.3
- NSv3.1, NSv3.2, NSv3.3, NSv3.4, NSv3.5, NSv3
- NSv4.1, NSv4.2, NSv4.3, NSv4.4, NSv4.5, NSv4

These values have to be publicly available and have to be provided to the European Commission. The implementing rules state that all the results of monitoring should be public. The implementing rules also ask Member States to publish the data on the Internet. It is also proposed that the European Commission publishes the results in their geo-portal.

Member States must decide whether or not they wish to publish more detailed data (e.g. the list of relevant data sets, the whole spreadsheet or part of it or any other data).

## 2.3. Cascaded reporting (role of Member State/stakeholders)

### Role of Member States

The monitoring of the progress in implementing INSPIRE Directive has to be carried out by the Member States.

It is the responsibility of each Member State to collect the information needed for monitoring among the relevant stakeholders involved in the implementation of the Directive. It is also the responsibility of each Member State to calculate the indicators based on the information collected (but this can partly be automated with the help of templates/tools). Finally the Member State will provide the European Commission with the results through their national contact point (Article 19 of the Directive).

Since the implementation of the Directive will need the involvement of a lot of organisations, it is clear that the process for monitoring and reporting should be kept as simple as possible. Tools and/or templates could make life easier for everyone involved. They can support automatic collection of information needed to calculate the indicators, for example using the web (services), e.g. a web-portal with well-established templates, etc.

### Role of SDIC/LMO

In the review process, SDIC and LMO have been invited to comment on the draft implementing rules for monitoring and reporting. But the requirements of the implementing rules are defined for Member States, not for SDIC, nor LMO, nor any separate stakeholder: it is the responsibility of each Member State therefore to involve the relevant stakeholders in the implementation of INSPIRE, according to its administrative structure. As a consequence, the process to collect data for monitoring and reporting is the responsibility of the Member States and of the public administration involved in implementing INSPIRE.

In particular, there is no legal obligation for international SDIC. Only Member States and their public authorities, as defined in Article 3 of the Directive, are involved so in the case of an international SDIC the institution involved would be the national antenna. For example, for an international SDIC, as WMO[1], the members involved in each country will be: Finnish Meteorological Institute, Hellenic National Meteorological Service, Meteorological Service of the Republic of Hungary…

### Role of the European Commission

The implementing rules do not create obligations for the European Commission: All the monitoring and reporting tasks regarding the European level (Inspire geo-portal, tools and guidelines developed by the European Commission...) will be defined by the European Commission. General requirements are defined in Article 23 of INSPIRE Directive.

[1] WMO : World Meteorological Organization

# 3. Template for indicators and detailed indicators and monitoring data

The purpose of the template is to organize the information that has to be collected for monitoring, facilitating its collection and consultation and to provide an automatic mechanism to calculate the general and the detailed indicators, the nominators and denominators. Also the template provides a structured way of presenting the data.
The template makes automatically all the calculations needed for the indicators and detailed indicators, so the user only needs to fill in the information collected.
The names used in the implementing rules have been used to identify the indicators and detailed indicators (e.g. NSi1.2). Other calculated values (numerators, denominators, partial values, …) are using the same pattern (for the root of the name) as the indicators and detailed indicators but changing "i" for "v" (e.g. NSv1.2); when more names are needed an extension in the name has been chosen having some related meaning (e.g. NSv1.2_DiscServ).

## 3.1. Column headings

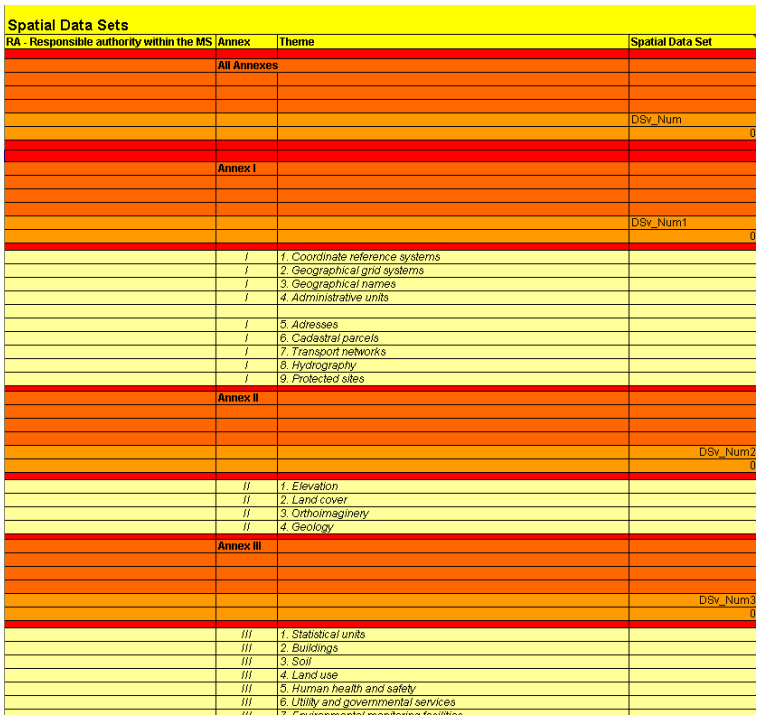
At the top of the table the names of the indicators indicate the columns where the associated information has to be inserted..

| | | | Indicator set | | Metadata | | Data Sets | | | Services | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Member State: | | | Indicator | | Existence | Complian | Extend | Complian | | MD Acces | DS Acces | | Use | Complian | |
| | | | | Indicator Name | MDi1 | MDi2 | DSi1 | DSi2 | | NSi1 | NSi2 | | NSi3 | NSi4 | |
| | | | | Indicator Value | 0% | 0% | 0% | 0% | | 0% | 0% | | 0 | 0% | |
| | | | | Numerator | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |
| | | | | Denominator | 0 | 0 | 0 | 0 | | 0 | 0 | | 0 | 0 | |

There is a pair of cells one below the other for each indicator, the first row is for the name and the row below for the value.

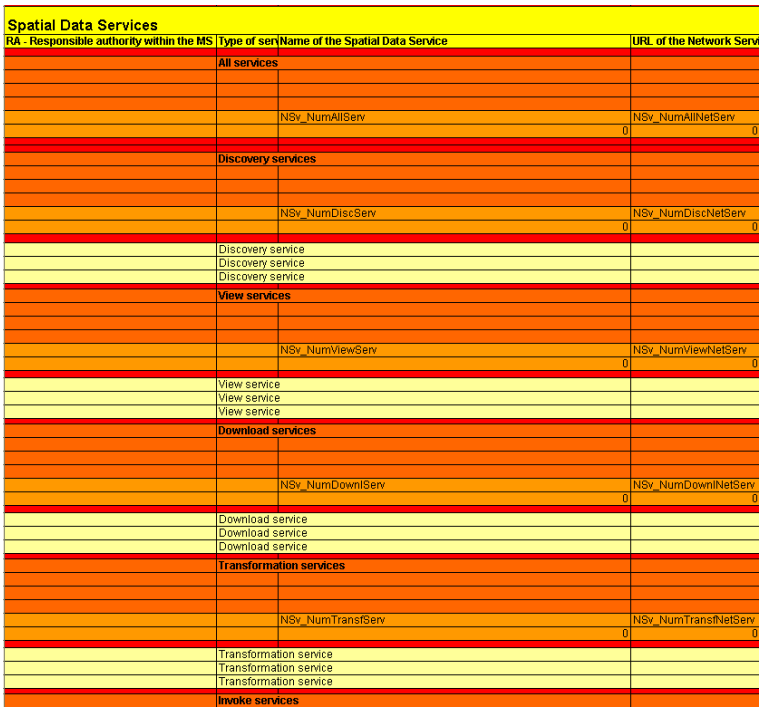
## 3.2. Rows headings

At the left are the rows for the identification of spatial data sets (split by annex) and spatial data services (split by type of service) and network services and the detailed indicators.



Spatial Data Sets

| RA - Responsible authority within the MS | Annex | Theme | Spatial Data Set |
|---|---|---|---|
| | All Annexes | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | DSv_Num |
| | | | 0 |
| | | | |
| | | | |
| | Annex I | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | DSv_Num1 |
| | | | 0 |
| | I | 1. Coordinate reference systems | |
| | I | 2. Geographical grid systems | |
| | I | 3. Geographical names | |
| | I | 4. Administrative units | |
| | | | |
| | I | 5. Adresses | |
| | I | 6. Cadastral parcels | |
| | I | 7. Transport networks | |
| | I | 8. Hydrography | |
| | I | 9. Protected sites | |
| | Annex II | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | DSv_Num2 |
| | | | 0 |
| | II | 1. Elevation | |
| | II | 2. Land cover | |
| | II | 3. Orthoimaginery | |
| | II | 4. Geology | |
| | Annex III | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | DSv_Num3 |
| | | | 0 |
| | III | 1. Statistical units | |
| | III | 2. Buildings | |
| | III | 3. Soil | |
| | III | 4. Land use | |
| | III | 5. Human health and safety | |
| | III | 6. Utility and governmental services | |
| | III | 7. Environmental monitoring facilities | |



Spatial Data Services

| RA - Responsible authority within the MS | Type of serv | Name of the Spatial Data Service | URL of the Network Servi |
|---|---|---|---|
| | All services | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | NSv_NumAllServ | NSv_NumAllNetServ |
| | | 0 | 0 |
| | | | |
| | Discovery services | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | NSv_NumDiscServ | NSv_NumDiscNetServ |
| | | 0 | 0 |
| | Discovery service | | |
| | Discovery service | | |
| | Discovery service | | |
| | View services | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | NSv_NumViewServ | NSv_NumViewNetServ |
| | | 0 | 0 |
| | View service | | |
| | View service | | |
| | View service | | |
| | Download services | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | NSv_NumDownlServ | NSv_NumDownlNetServ |
| | | 0 | 0 |
| | Download service | | |
| | Download service | | |
| | Download service | | |
| | Transformation services | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | NSv_NumTransfServ | NSv_NumTransfNetServ |
| | | 0 | 0 |
| | Transformation service | | |
| | Transformation service | | |
| | Transformation service | | |
| | Invoke services | | |

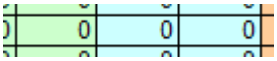
To introduce a new spatial data set or service, duplicate the row that matches with that item and modify accordingly.

## 3.3. Cells

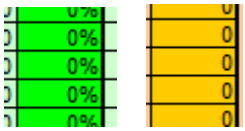
The rest of the table is used to hold the collected values and the calculations for the general indicators and other partial values.

| SubInd. Name | MDi1.1 | MDi2.1 | | | DSi1.1 | DSi2.1 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubInd. Value | 0% | 0% | | | 0% | 0% | | | | | | |
| Numerator | 0 | 0 | | | 0 | 0 | | | | | | |
| Denominator | 0 | 0 | | | 0 | 0 | | | | | | |
| Data Name | MDv1.1 | MDv2.1 | DSv1.1_RelA | DSv1.1_ActArea | | DSv2.1 | NSv1.1.1 | NSv2.1.1 | NSv2.2.1 | NSv2.3.1 | | |
| Data Value | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0% | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0% | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0% | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0% | 0 | 0 | 0 | 0 | 0 | | |
| | | | | | | | | | | | | |
| | 0 | 0 | 0 | 0 | 0% | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0% | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0% | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0% | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0% | 0 | 0 | 0 | 0 | 0 | | |

The cells of this area can be of different types:




- Cells used to write data
  - have borders and
  - are of the colour of the corresponding indicator




- Cells used for calculated data (read only), in a darker colour
  - they already have the default values



- Not used, without cell borders

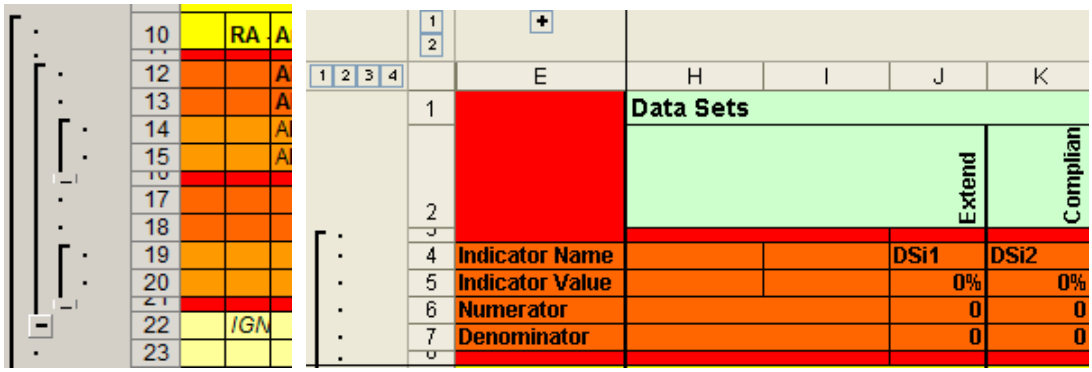
The data types of the cells to be filled are as follows:

| Indicator set | Indicator | Column | Data type | Unit of measure |
|---|---|---|---|---|
| Data Sets | Extend | Relevant area | Integer | $km^2$ |
| | | Actual area | Integer | $km^2$ |
| | | Extend | % (calculated) | |
| | Compliance | Compliance | Boolean | |
| Metadata | Existence | Existence | Boolean | |
| | Compliance | Compliance | Boolean | |
| Services | MD Access | MD Access | Boolean | |
| | DS Access | View Services | Boolean | |
| | | Download Services | Boolean | |
| | | View & Download Services | Boolean (calculated) | |
| | Use | Use | Integer | requests |
| | Compliance | Compliance | Boolean | |

There are rows for detailed indicators (darker) and other calculated values (less dark). They come in pairs, one cell is for the name and the cell below for the calculated value:

| All services | | | SubInd. Name | MDi1.4 | MDi2.4 | | | | | NSi1.2 | | | | NSi3 | NSi4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SubInd. Value | 0% | 0% | | | | | 0% | | | | 0 | 0% |
| | | | Numerator | 0 | 0 | | | | | 0 | | | | 0 | 0 |
| | | | Denominator | 0 | 0 | | | | | 0 | | | | 0 | 0 |
| | NSv_NumAllServ | NSv_NumAllNetServ | Data Name | MDv1.4 | MDv2.4 | | | | | NSv1.2 | | | | NSv3 | NSv4 |
| | 0 | 0 | Data Value | 0 | 0 | | | | | 0 | | | | 0 | 0 |
| Discovery services | | | SubInd. Name | | | | | | | | | | | NSi3.1 | NSi4.1 |
| | | | SubInd. Value | | | | | | | | | | | 0 | 0% |
| | | | Numerator | | | | | | | | | | | 0 | 0 |
| | | | Denominator | | | | | | | | | | | 0 | 0 |
| | NSv_NumDiscServ | NSv_NumDiscNetServ | Data Name | MDv1.4_D | MDv2.4_Dis | | | | | NSv1.2_DiscServ | | | | NSv3.1 | NSv4.1 |
| | 0 | 0 | Data Value | 0 | 0 | | | | | 0 | | | | 0 | 0 |

For usability reasons most of the rows and columns are grouped in homogeneous sets that are initially folded (detailed indicator, annex, service type, ...), they can be unfolded by clicking on the schema symbols.




The excel sheet described above is available on the INSPIRE website.

# 4. Reporting the implementation of the INSPIRE Directive

## 4.1. The rationale for the Reporting section of the Implementing Rules

The Implementing Rules for the INSPIRE Directive include a requirement for monitoring and reporting. The intention behind the Monitoring and Reporting Implementing Rules is to minimise the burden of monitoring and reporting on the Member State whilst at the same time providing a standardised approach that will allow information to be collected on the progress made in implementing the Directive.

In doing this, information on the development of National Spatial Data Infrastructures (NSDI) in each Member State and on their connectivity across the EU as a whole will be collected. Monitoring the implementation will be done by each Member State calculating and publishing a number of indicators that have already been described elsewhere in these guidelines.

In evaluating the progress of implementation of the Directive there are a number of components that lend themselves to quantitative methods, and these are the elements that have been chosen for monitoring – items such as numbers of datasets, data services etc. The reporting part is concerned with more qualitative components; items that may require a textual description in order to convey particular aspects, or nuances not easy to convey in a purely quantitative way. This section of the guidelines offers guidance on how Member States should approach this reporting task.

As stated in Chapter VII of the Implementing Rules, Member States shall provide the first report on 15 May 2010 and then every 3 years. As long as each Member State provides information according to the requirements of the Implementing Rules the level of detail of that information is up to the Member State to decide. The aim is to minimise the burden on the Member States, but they are encouraged to provide a reasonable depth to their report to enable an unambiguous understanding of the progress the Member State has made in implementing INSPIRE Directive – for the benefit of its own stakeholders as well as interested parties from outside the Member State. As an example, Member States are not expected to list and describe every example of cross-border usage of spatial data – but to provide some good examples of where this is taking place and, if possible, to describe how this usage is developing over time, any barriers to this usage and any steps being taken to overcome those barriers.

There are five sub-sections to the Reporting chapter of the Implementing Rules; these are briefly described below (using the same section numbering as the Implementing Rules):

Organisation, co-ordination and quality assurance
The first part of this section is concerned with the way in which the Member State contact point and co-ordinating bodies are organised – the body responsible, its associated co-ordinating structure and some information about how this works. The second part offers the Member States the opportunity to report on quality assurance processes within the NSDI (as required by Art 21 of the Directive).

Contribution to the functioning and coordination of the infrastructure
The second section asks for information about the stakeholders involved in the NSDI – including a description of their roles, how they co-operate, how they share data/services and how access is made to services via the INSPIRE geo-portal.

Usage of the infrastructure for spatial information
Having some or all of the various components of an NSDI in place is important, but equally important is information on how much the infrastructure is being used. This part of the report is intended to give Member States the opportunity to describe how spatial data and services are being used by public bodies and if possible (because it is recognised that this is difficult to observe) how they are being used by members of the general public. Because of the environmental emphasis of the Directive

Member States are particularly encouraged to find and describe examples of use within the field of environmental policy. The report should also describe any examples of cross-border usage, efforts to improve cross-border consistency and examples of the use of transformation services.

Data sharing arrangements
Chapter 5 of the INSPIRE Directive is concerned with data sharing. It has not been possible to derive adequate indicators to monitor data sharing – the subject does not lend itself to quantitative methods in a way that would provide meaningful output with reasonable efforts. It is a major part of the Directive however and so this Chapter is dealt with, in terms of monitoring and reporting, by asking Member States to describe data sharing arrangements in their 3 yearly reports. Member States are required to provide an "overview" of data sharing arrangements i.e. not all such agreements have to be listed and described (which would be very difficult and extremely onerous) – but Member States are encouraged to provide sufficient description to enable readers to understand the main type or types of agreements that are used – both for sharing of data between public bodies in the Member State and between those public bodies and the institutions of the EU. An important section requires a description of known barriers that may be inhibiting the sharing of spatial data and services, and what steps the Member States are taking to overcome those barriers.

Cost and benefit aspects
Finally, the Directive requires Member States to quantify the costs and benefits involved in the establishment and maintenance of the NSDI that are directly attributable to the implementation of the Directive. The report should attempt to estimate the costs and to provide examples of benefits as described in the Implementing Rules. As with other aspects of the report Member States are responsible for deciding the depth/level of reporting that they find appropriate to satisfy the Implementing Rules and to provide a suitable level of information for stakeholders.

## 4.2. Template for reporting

As long as the reporting requirements of the Implementing Rules are fulfilled the Member States can complete the report as they feel appropriate. Member States are strongly encouraged to use a standard template for reporting that will be available on this website soon.

The main headings suggested in the template are shown below.

Information about the document
Introduction
Organisation, co-ordination and quality assurance
Contribution to the functioning and coordination of the infrastructure
Data sharing arrangements
Cost / Benefit aspects
Conclusions
Annexes

# Abbreviations

| | |
|---|---|
| EU | European Union |
| INSPIRE | Infrastructure for Spatial Information in the European Community |
| INSPIRE Directive | Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) |
| LMO | Legally Mandated Organisation |
| NSDI | National Spatial Data Infrastructure |
| SDIC | Spatial Data Interest Community |