

# INSPIRE & NSDI State of Play

D3.2 - Detailed survey on use and usability (September 2011)



**SPATIAL APPLICATIONS DIVISION  
K.U.LEUVEN RESEARCH & DEVELOPMENT**

Celestijnenlaan 200 E, BE-3001 LEUVEN  
TEL.: 32 16 32 97 32 FAX: 32 16 32 97 24  
URL: <http://www.sadl.kuleuven.be>



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## EXECUTIVE SUMMARY

Between January and June 2011 a detailed survey was held among 34 countries on the use and usability of the INSPIRE and the National Spatial Data Infrastructure (NSDI). This report, "*INSPIRE & NSDI State of Play: use and usability of INSPIRE & NSDI (August 2011)*", summarizes and evaluates the findings of this survey, and formulates some key recommendations.

The use and usability are key parameters for evaluating if a Spatial Data Infrastructure (SDI) is successful or not. SDIs are not a goal in themselves. Therefore it is not enough to know if the particular components (e.g. as foreseen in the INSPIRE Directive) are in place. Indeed, an SDI is only valuable and reaches its goals if its components are used in daily work processes of public authorities, thereby improving the efficiency and effectiveness of those processes and the quality of their outputs/outcomes. SDIs add value if also the private sector can develop innovative solutions on top of them, and if the academic sector use them as a platform for high quality research. Finally SDIs should also be useful for citizens, NGOs, ..., especially by providing access to (processed) information combined with reference spatial data sets through easy-to-use end-user applications. Even if INSPIRE & NSDI are still under development in Europe, already an early stage attention should be paid to the use and usability. This entails many aspects. Questions that should be answered are amongst others:

- What is the target user community of INSPIRE & the NSDI?
- How are user needs taken into account?
- Is the infrastructure used?
- Who are the users and user communities?
- What is the infrastructure used for?
- What are good examples of usage?
- Does INSPIRE & NSDI bring the benefits?
- How can the infrastructure be improved to meet user requirements better?
- ...

Based on these considerations, it was decided to organise the second detailed survey on use and usability of INSPIRE and the NSDI. The survey was based on a questionnaire. A draft version was discussed with the International Board of Experts and during a Progress Meeting with DG ESTAT in September 2010. The final questionnaire was ready by the end of 2010 and sent to the National Contact Points (NCP) and key INSPIRE stakeholders in January 2011. Several reminders were sent to obtain a maximal feedback. Finally, 26 countries of the 34 that were invited to answer the questionnaire responded: 21 Member States, 1 Candidate

Country and 4 EFTA countries. The questions themselves were grouped into four topics: 1) the user involvement, 2) the use of the infrastructure, 3) the users and purpose of use and 4) examples of the use in business processes and the expected benefits. The four topics were further detailed in several subtopics:

#### User involvement

- What is the intended user community of INSPIRE and of the NSDI in the country and which community is the most important one?
- Was a user requirements study carried in view of INSPIRE implementation? If so, when did that happen?
- Through which mechanisms are the users involved in the INSPIRE and NSDI implementation process?
- Are there user feedback mechanisms (e.g. regarding quality of data & services, regarding access to the data & services) and if so, what are they?

#### Use of the infrastructure

- Which methodology is used to monitor the use of the INSPIRE & NSDI infrastructure(s)?
- Does the country have a clear view on the extent of the use of the infrastructure(s)?
- Did you analyse the use of the services and of the geoportal, and if so what are the main results?
- Are there any effects in one way or another on the sales of spatial data sets that are part of the service oriented infrastructure(s)?

#### Users and purpose of use

- What is the level at which you collect information regarding the use of the infrastructure(s)?
- In which sectors the infrastructure is being used?
- Which types of organisations make use of the infrastructure?
- What is the infrastructure being used for? How do the services help to access the infrastructure? For which type of activities the infrastructure is being used?

#### Examples of use and benefits

- Can you describe two examples of business processes in which components of the INSPIRE & NSDI are used?
- What are the benefits of the infrastructure from the perspective of G2G, G2C and G2B?
- What are the improvements that can be made to the infrastructure?

Many countries consider the target user community for INSPIRE relatively narrow, e.g. excluding local authorities and/or citizens. However, when applying the INSPIRE Directive and following the spirit of it, the target user community of INSPIRE should include the public sector at all levels (also the local level), as well as citizens, NGOs, etc. Of course, citizens, or even local authorities might only be 'consumers' of the infrastructure through applications, but even then they should be considered part of the intended target public of the infrastructure(s).

Explicit user requirement studies seem to be less important since other feedback mechanisms give the necessary insight in the user needs as well (e.g. through complaint mechanisms, workshops). Nevertheless, the efforts made by the Czech Republic to collect systematic information about the users and usage of their infrastructure can be considered as an example of a good practice with respect to

user involvement. Their knowledge about the users and usage allows them to improve their INSPIRE & NSDI infrastructures in a focused way.

The examples of complaints mentioned by several countries needs to be taken into account very seriously in order to be able to take the necessary measurements to enhance access, use and sharing of the spatial datasets and services. It would be interesting to collect more systematically those complaints over the coming years and bring them together in one repository at the European level to assess progress and highlight the major bottlenecks.

Although many countries involve user communities through representatives in the coordinating body, some countries also found other ways to have more interactive user feedback like forums, the use of social networks, etc. It seems that these mechanisms become even more important since they provide the NSDI with useful input to enhance their implementation strategy. All countries should have such a multitude of interactive mechanisms to guarantee that user needs are taken into account as much as possible.

It is striking that the majority of the countries do not yet monitor the use of the services at all although the implementing rules for monitoring and reporting make this a legal obligation. There are various reasons mentioned with regard to the why this is not yet the case. Some countries only want to monitor INSPIRE network services that are conformant. Others want to focus on the development of the infrastructure first and then start monitoring (when the infrastructure is "ready"). However, the objective of monitoring the existence and use of the data sets and services is precisely to evaluate the status of implementation and the development of the infrastructure and its use over time. It is a tool to evaluate whether countries succeed in reaching the goals of the INSPIRE Directive and if and to which degree they approach these goals. It is recommended that member states that struggle with setting up a sound monitoring system are helped in doing so (e.g. by sharing monitoring tools). Examples of good practice in this domain (e.g. Norway) could be promoted through the organisation of workshops.

Many countries struggle with the coordination of the monitoring efforts. This is logic since the collection of information regarding the characteristics and the use of services might be very hard, especially when many data providers are involved at different levels of authority. In many cases different methods for measuring the usage of services are applied which makes integration at the national level not always obvious. Also here, experiences of different countries could be shared through workshops, the INSPIRE forum, etc.

It is clear that the figures on the numbers of users of the services should be treated with care. Not only because the above mentioned different methods of measuring, but also because the figures need to be normalised - e.g. by taking into account population numbers. In addition, different types of services will target different types of use (e.g. download versus viewing). Nevertheless, it would be useful to analyse the (normalised) figures over a longer period to reveal some patterns and understand the dynamics.

Most countries have no idea on who the users and user communities are. In general terms the major groups are known (e.g. universities, major public sector players). However, the exact usage and use cases are not very well known. It is acknowledged that it would be useful to know more about the users and the usage, but at the same time it is stated that it is difficult to collect that type of

information. It is recommended that at least good examples of usage would be actively searched for since they can serve as show cases for other (potential) user communities and they also allow us understand better potential shortcomings in the infrastructure.

The usage in some sectors is currently less important than expected: e.g. the use of the SDI for Coastal Zone Management. The use of the infrastructure should be more promoted in those sectors. Also, the use of the infrastructure will probably improve if specific existing applications integrate the network services or if new applications are build that make directly use of them.

The type of organisations that currently make use of the infrastructure seems to be very broad - from national public authorities over private sector, academia to citizens - which is what the INSPIRE Directive is aiming for.

Finally, most countries have problems in clearly describing how the infrastructure is currently used in existing work processes. This is partially related to the fact that the spatial data and service providers that play an important role in coordinating the NSDI and INSPIRE are not directly involved in these processes. Countries should be more pro-active in searching examples of work processes in which the use of components of the infrastructure (geoportals, network services) improves the efficiency and effectiveness of the process and the quality of the outcomes. Those examples could serve as demonstrators or show cases for (potential) new users. In this report we provide one example of an added value process in which components of different NSDI are combined with Google Maps and Google Earth products in an easy-to-use application. More examples would be useful to illustrate the benefits of INSPIRE and NSDI developments.

In general terms we can conclude that the knowledge about the use, the users and the usages should be further enhanced. Many countries do not have a clear idea on what their infrastructure is being used for. And although it should be noticed that the INSPIRE & NSDI implementation is still at an early stage, it is advisable for all countries to better understand the use and user satisfaction in order to streamline further development. In the summary report more specific recommendations are made with regard to the results of this detailed survey.

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# ABBREVIATIONS AND ACRONYMS

BAG	Basisregistratie Adressen en Gebouwen (Authentic Register Addresses and Buildings in The Netherlands)
CAGI	Czech Association for GeoInformation
DG	Directorate General
DG ESTAT	Directorate General Eurostat
EC	European Commission
EFTA	European Fair Trade Association
EU	European Union
G2B	Government to Business
G2C	Government to Citizen
G2G	Government to Government
GINIE	Geographic Information Network In Europe
IGN-ES	Instituto Geográfico Nacional (National Mapping Agency of Spain)
INSPIRE	INfrastructure for SPatial InfoRmation in Europe
INSPIRE MR	INSPIRE Monitoring and Reporting
NCP	National Contact Point
NGO	Non-Governmental Organization
NMA	National Mapping Agency
NSDI	National Spatial Data Infrastructures
OGC	Open Geospatial Consortium
SADL	Spatial Applications Division Leuven
SDI	Spatial Data Infrastructure
SoP	State of Play
WMS	Web Mapping Service

# 1 INTRODUCTION

This report is deliverable D3.2 within the framework of Activity 3 of the “*INSPIRE and NSDI implementation state of play (INSPIRE & NSDI SoP)*” project which is carried out by the Katholieke Universiteit Leuven together with a group of 10 International Experts (contract n° 50502 2008.001-2008.833). This report describes the results of the second detailed survey carried out between January and June 2011 which aimed at collecting quantitative and qualitative information on the way INSPIRE and the NSDI components are currently used in the 34 countries studied. The report also assesses the status of the different aspects of this usage and usability. Based on the assessment, recommendations are formulated briefly in this report. They are further described and integrated as part of the summary report. This report complements the 34 country reports which describe the status of INSPIRE & NSDI implementation in the countries studied and the summary report assessing the overall situation at the European level.

The Tender Specifications indicate following general objectives for the detailed survey: “*For each phase (i.e. 2009-2010 and 2010-2011) an in-depth study is to be performed focusing on selected aspects of the development of the NSDIs related to INSPIRE in some more detail, looking at the development in view of the contributions to the general goals of INSPIRE and going also beyond legal compliance. (...) The topics selected should be examined in some detail during the project phase, using, among others, questionnaires to be submitted to all the countries. In this context special attention should be paid to examples of best practice*” (European Commission, 2008). These general objectives were used as the starting point to propose two topics for the two detailed surveys and to elaborate the methodology.

The Tender Specifications also described some potential topics of interest for the detailed surveys. “*1. Legal transposition of INSPIRE directive and connected implementing rules. 2. Organisational aspects at national level such as: Tasks assigned to the Member States Contact Points; Tasks and distribution of tasks within the national coordination structure; Participation of national stakeholders in the INSPIRE process (evolution, improvements, reasons for the development); Data and service sharing: cost models, type of licence, free viewing services, tasks of Member States Contact Points related to facilitating data and service sharing, access in case of emergency, stakeholders and procedures for data and service sharing, access constraints; Financing of INSPIRE: funding models, level of funding (what is to be covered). 3. Content of data and services, such as: How is interoperability of data obtained, through transformation or harmonisation?; What quality checks are mostly used?; How is conformance testing implemented within the Member States; Availability of discovery, view and download services, especially for INSPIRE data themes. 4. Accompanying aspects, such as: Actual use of NSDI; Cost/benefit analysis.*” (European Commission, 2008). The proposal of K.U.Leuven contained two suggested topics but left room for final selection of the topics in the course of the first year of the study.

After a progress meeting in September 2009, the topic for the first detailed survey (2009-2010) was fixed: *"Coordinating, funding and sharing measures"*. This survey took place in 2009-2010. The results of this survey are summarised in the report *"INSPIRE & NSDI State of Play - D3.1 - Detailed survey on coordination, funding and sharing measures (August 2010)"*. During the progress meeting of September 2010, the topic for the second detailed survey was discussed and decided. It is the topic of this report: *"INSPIRE & NSDI State of Play: use and usability of INSPIRE & NSDI (August 2011)"*.

The report consists of 4 sections. Section 2 summarises briefly the survey methodology. The survey questionnaire can be found in annex 6.1. Section 3 describes the results of the survey in detail including the quantitative figures and some factual observations based on the replies from the countries. Section 4 provides conclusions and drafts some potential recommendations which are taken into account in the summary report in which the situation in Europe is assessed.

## 2 SURVEY METHODOLOGY

This survey focuses on the use and usability of the INSPIRE & NSDI components as they become available for all the stakeholders involved. Although most countries are still early in the implementation phase of INSPIRE it is clear that many components are emerging at the national levels (harmonised data, services, geoportal, etc.). Therefore it is deemed to be useful to get an idea on the degree to which the infrastructure is integrated (or 'consumed') by the intended user communities.

K.U.Leuven elaborated a draft questionnaire in September 2010. This was discussed with the International Board of Experts and during a Progress Meeting with DG ESTAT. The final questionnaire was ready in October 2010. The questions were grouped into four topics: 1) the user involvement, 2) the use of the infrastructure, 3) the users and purpose of use and 4) examples of the use in business processes and the expected benefits. The questionnaire is included in annex 6.1. Most questions are based on pre-defined list of options, while asking to explain and give examples to motivate and illustrate the choices. Ultimately, the objective of the survey is not to compare the countries per se, but rather to understand the way the countries are working and why.

The questionnaire of the survey was sent to the INSPIRE National Contact Points (NCP) in the Member States and of the non-Member States that have such a contact point. In case such a contact point was not available, the questionnaire was sent to coordinating bodies and/or recognised SDI experts. The questionnaire was sent on 18 January 2011 in order to allow countries to include the results on the usage of services of the INSPIRE monitoring exercise for 2010. The envisaged deadline was 14 March 2011. Two reminders were sent: on 31 March 2011 and 2 June 2011. Some countries that replied and promised to deliver the results of the survey were also contacted separately by mail or phone.

A response was received from 26 countries between February and June 2011: 21 Member States, 1 Candidate Country and 4 EFTA countries. The countries that responded are:

<b>21 EU Member States</b>
BE (Belgium), BG (Bulgaria), Cyprus (CY), Czech Republic (CZ), Germany (DE), Denmark (DK), Estonia (EE), Spain (ES), Finland (FI), France (FR), Greece (GR), Ireland (IE), Lithuania (LT), Netherlands (NL), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovenia (SI), Slovakia (SK), and United Kingdom (UK)
<b>1 Candidate Countries</b>
FYROM Macedonia (MK)
<b>4 EFTA</b>
Switzerland (CH), Iceland (IS), Liechtenstein (LI), and Norway (NO)

**Table 1: Countries that replied to the survey on use and usability**

From 8 countries no response was received: Austria (AT), Hungary (HU), Italy (IT) Luxemburg (LU), Latvia (LV) and Malta (MT), and Croatia (HR) and Turkey (TR). In general terms, we can consider this to be a good response rate although less countries replied as compared to the result of the first year (26 in 2011; 31 in 2010).

The results of the survey (24 countries at that time) were presented and discussed twice during a two day workshop prior to the INSPIRE Conference in Edinburgh in June 2011. The first day the results were discussed with a group of international SDI experts and the second day with representatives from 18 countries. The conclusions and suggestions from the workshop were taken into account for the final release of this report.

Chapter 3 of the report describes the major results of the survey itself and is structured in sections and sub-sections according to the topics of the questionnaire. Each of the sections 3.1 – 3.4 introduces the relevant questions related to topic, followed by the answers and most important observations that can be made. Most of the answers are presented in the form of figures and tables summarising the answers.

## 3 RESULTS OF THE SURVEY

The results of the survey are described and discussed in the following sections, with one section for each topic of the survey. Each sub-topic is elaborated in a sub-section. The answers from the 26 countries for the individual questions can be found in annex 6.2.

### 3.1 Involvement of the users

This topic analysis if and how the users and user communities are involved in the development of INSPIRE and the NSDI. Four questions are considered:

- What is the intended user community of INSPIRE and of the NSDI in the country and which community is the most important one?
- Was a user requirements study carried in view of INSPIRE implementation? If so, when did that happen?
- Through which mechanisms are the users involved in the INSPIRE and NSDI implementation process?
- Are there user feedback mechanisms (e.g. regarding quality of data & services, regarding access to the data & services) and if so, what are they?

#### 3.1.1 Intended user community

The first question relates to the intended user community. The question is split in two sub-questions: *"What is the intended user community of INSPIRE in your country?"* and *"What is the intended user community of the NSDI in your country?"*. The question was a closed question with the following options: public sector (national, sub-national, local); private sector; academic & research sector; NGOs and individual citizen.

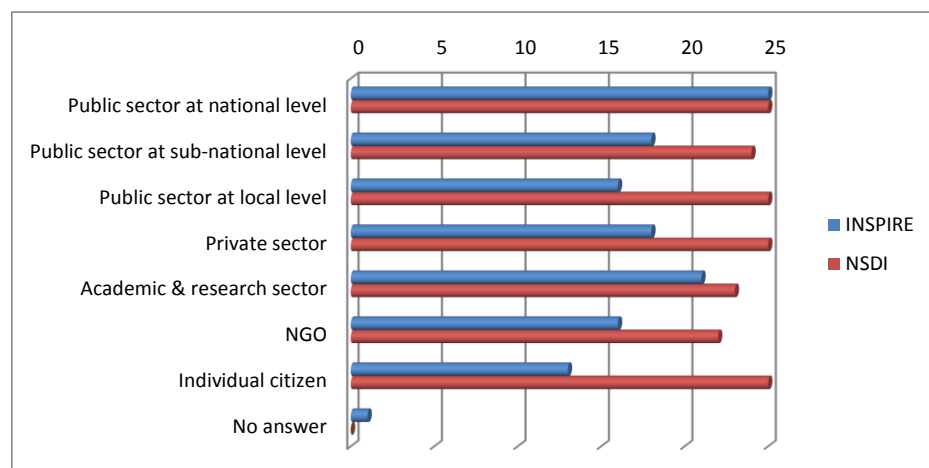


Figure 1: Intended user communities for INSPIRE and the NSDI (26 responses)

All the 26 countries responded to this double question<sup>1</sup>. Only Switzerland said the first sub-question related to INSPIRE was not applicable to them.

Several observations can be made:

- It is clear from figure 1 that in several countries the INSPIRE and NSDI infrastructures have not entirely the same target user communities. For those countries INSPIRE seems to be a subset of the NSDI with a clear focus on the public sector at the national level.
- For INSPIRE, only half of the countries (13/25), consider the citizens as an intended user community. But also the local level is not always considered (16/25)! This seems to be in contradiction with the objectives and requirements of INSPIRE which takes all levels of government into account, and which is also dealing with public access to the infrastructure.
- In 11 countries (CY, CZ, DE, FI, FR, GR, IE, NL, PL, SE and UK), both INSPIRE and the NSDI target all the user communities.
- When asking for the most important intended user community the large majority of the countries state that this is the public sector. SI mentions more specifically the Ministry of Environment and Spatial Planning, while Greece states that the citizen will become more important in the long term.

### 3.1.2 User requirements study

The second question is about the existence and timing of a user requirements study in view of INSPIRE implementation. If such a study was carried out, it was asked what the type of study was and its content/topics. In case such study exists, it was also asked when it was carried out: independent from the INSPIRE process, once prior to the transposition phase, once during the transposition phase or at several stages of implementation. Finally it was asked whether the results of the study are available (and a reference). Table 2 gives an overview of the results regarding the existence and timing of user requirement studies.

Existence	Population	# of countries
Yes	26	12
No	26	14
No answer	26	0
If yes, when		
Long time ago, Independent from the INSPIRE process	12	4
Once, prior to the INSPIRE transposition phase	12	3
Once, during the INSPIRE transposition phase	12	2
At several stages of the INSPIRE implementation process	12	5
No answer	12	0

**Table 2: Existence and timing of user requirements surveys**

All the 26 countries answered this question. Following observations can be made:

<sup>1</sup> It should be noticed that some countries - although they might have indicated the local level - did not indicate the public sector at the sub-national level since this level of jurisdiction is not relevant for them. In that case, it was considered that they consider all relevant levels of the public sector.

- Less than half of the countries carried out such a requirements study (12/26). There seems - at first sight- no relationship with the degree to which the NSDI is developed as described in previous summary reports. Some big countries with established SDIs did not carry out user requirement studies (e.g. DE, ES), while others did so (e.g. NL, FR).
- For those countries that have performed such studies, the picture of when they have done so is highly variable: 4 countries carried out the study long time ago (BE, FI, FR, SI), 3 countries did so prior to INSPIRE transposition (GR, IS, UK), 2 during the INSPIRE transposition phase (BG, SI). Finally 5 countries studied the user requirements at several stages of INSPIRE and NSDI implementation (CH, CZ, FI, LT, NL).

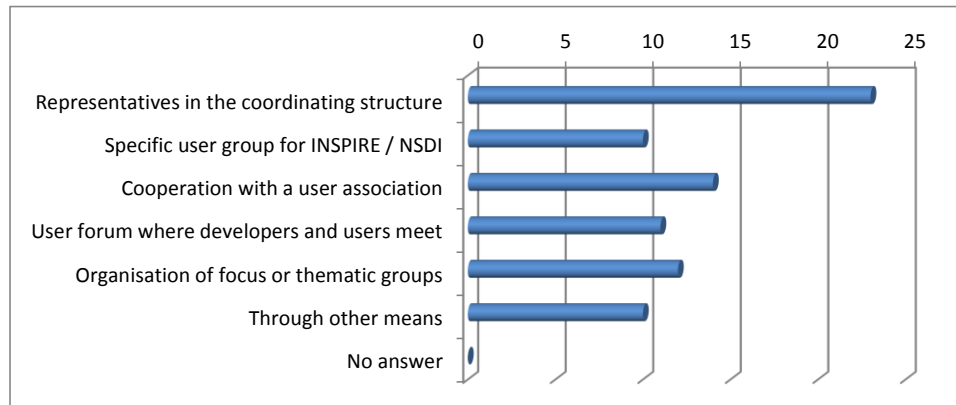
Some countries provided additional information with regard to their user requirements studies.

- Some countries performed a survey to know more about the user satisfaction of the current status (BE), or the satisfaction of the heads of state regarding the INSPIRE principles (BG).
- In Switzerland the requirements study was not specifically related to INSPIRE, but concerned the concepts of the national geo-portal and the usage and requirements of the private sector.
- In several countries the user requirement study focused on the data needs, and the current availability and use of geographic information (FI, IS, SI), sometimes including the current problems encountered (GR). In some cases particular attention was paid to the businesses and work processes in which spatial data and geographic information are/should be used (GR, SI, UK). Greece did also studied the tools in use.
- Often the requirements analysis took place as part of the INSPIRE consultation (UK) or the INSPIRE data specification process (NL). In Greece the data sharing policies in place were part of the analysis
- The Czech Republic carried out many preparatory studies: GINIE (2003), a study carried out by the GI association CAGI on the conditions of accessibility and usability of spatial data (2004), an INSPIRE stakeholder survey (2006), and socio-economic, cost/benefit and INSPIRE impact studies (2007, 2008 and 2010).

### 3.1.3 The way users are involved

The third question considers the methodology used to involve the user communities. *"How do/did you involve users in the INSPIRE & NSDI implementation process?"* In total 6 options were mentioned:

- through representatives in the coordinating structure;
- through a specific user group for INSPIRE/NSDI;
- through cooperation with a user association;
- through a user forum where developers and users meet;
- through the organisation of focus or thematic groups;
- through other means.



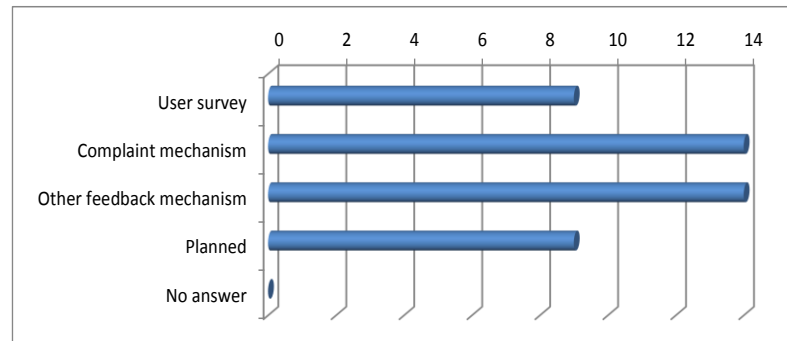
**Figure 2: Mechanisms to involve users and user communities (26 responses)**

All 26 countries replied. They could indicate several approaches. Figure 2 gives an overview of the results.

- From the figure we can conclude that users and user communities are mostly involved through representatives in coordinating bodies (23/26). Cooperation with user association is indicated by 14 countries as a way to involve the users. Several countries (11) have a user or INSPIRE forum; in Poland the forum has 48.000 registered users!
- From the complete table in annex 6.2 we learn that the vast majority of the countries (23/26) have several ways to involve the users. Only three countries apply only one method: IS (organisation of focus or thematic groups), LI and NL (representatives in coordinating structures).
- Some original mechanisms to involve users that were mentioned are:
  - through dedicated projects with broad or very specific user groups (CH); cooperation with associations through projects (DE);
  - through dedicated INSPIRE networks (DK, DE);
  - through specific OGC groups or forums (FR, ES);
  - through educational activities (FI);
  - through a dedicated profile on Facebook and the use of twitter (IGN-ES);
  - through mandatory user consultation prior to setting-up key-registers (NL).
- Many countries mention conferences, workshops and dedicated meetings (e.g. CH, CZ, PT); also newsletters and other communication channels are mentioned (CH, PT).
- Mobilisation of public authorities, private sector and other users during the transposition and implementation phase (e.g. CZ, EE, FR, SI) - calls for comments from thematic user communities and the public at large on draft legislation and implementing rules.

### 3.1.4 Feedback mechanisms

The fourth question relates to the collection of feedback from users, e.g. regarding the quality and usability of data and services, regarding the accessibility of the data and service, etc. Distinction was made between user surveys, complaint mechanisms or other feedback mechanism. If no feedback was organised until now, it was asked whether a feedback mechanism was planned in the near future.



**Figure 3: Users' feedback mechanisms (26 responses)**

All 26 countries answered this question. The results are summarised in figure 3. Some striking observations can be made:

- All countries have already a feedback mechanism in place (21) and/or have planned such a mechanism (9). More than half of the countries (14) have a complaint mechanism, while a third of the countries (9) organise user surveys. A variety of other mechanisms exist.
- Several countries give the user feedback mechanism through the organisation of user surveys an important place in the INSPIRE & NSDI development:
  - Switzerland holds an annual survey on the usage, usefulness and economic impact of the NSDI with focus on the private sector. Also a customer survey was carried out at the federal level (and will be organised each 4 years) related to the satisfaction with the transposition and implementation of the Swiss Act on Geo-information (sent to 3000 persons and institutes in the sector of which 800 replied).
  - The Czech Republic also organises user surveys each year on topics such as requirements of the future infrastructure and the usage of the current infrastructure. Norway organises surveys on the availability and use of thematic information every second year. The UK has a quarterly survey with questions reflecting the INSPIRE readiness. Sweden organises also annual online surveys among the registered users with 9 questions related to the availability and usability of spatial data and services and the user requirements and expectations.
  - In Finland extensive surveys are carried out covering many aspects: the organisations' maturity, the use of the infrastructure, co-operation, data and service procurement, know-how, services

offered, benefits of geographic information and key factors for successful implementation.

- Lithuania organises user surveys in the form of polls each six months covering topics such as the quality and satisfaction of the services offered, and the quality, functionality and content of the geoportal.
- Greece organised a user survey once, but covering several aspects as well: the recording of all the data sets and services in the public sector; the problems regarding usage and production of spatial data sets; the requirements for spatial data sets and services in order to render the workflows of the stakeholders more effective (lack of reference data sets and interoperability with data specifications); the problems related to the lack of a data sharing framework and the existence of a restrictive sharing policy.
- Most complaints mechanisms are quite straightforward. It consists merely of contacts through phone and e-mail, online user feedback forms, existing organisational procedures, the use of forums to formulate complaints, etc. In addition, complaints are also gathered during conferences and formal INSPIRE meetings. The content of the complaints relate mostly to reporting of
  - spatial data errors or quality problems at large (DK, ES, FI, LT, NL, PL);
  - problems regarding the consistency of spatial data provision according to specific thematic legislation (CZ);
  - lack of services (SE);
  - non-performing or bad performing services (ES, PL); doubts about how to exploit a service from within a GIS software (ES);
  - the bad functioning of (LT), or difficulties in using and understanding the content of the portal (CZ);
  - weak coordination of the INSPIRE implementation and the fuzzy edge between the INSPIRE SDI and the NSDI (CZ);
  - the limited access rights (CH),
  - the price of data and restrictive licensing policies (CH, FI, SI);
  - the complexity of the regulation on access rights (CH).

The most important other feedback mechanisms that are mentioned are:

- The organisation of helpdesks that rely mostly on phone and e-mail support (BE);
- The organisation of dedicated conferences and users where users can give feedback (CZ);
- Visiting of users and stakeholders to hear about their problems (CZ)

In total 9 countries plan to set-up (new) feedback mechanisms or to repeat existing initiatives:

- Some countries plan new surveys in 2011 or 2012 (BE, IS), or the inclusion of short and simple questionnaires as part of the user interface of the geoportal

(CZ). In case of Germany it is foreseen to allow users to rate the metadata through the portal and propagate that information to the data and service providers.

- Other countries plan the set-up of a user forum or the organisation of public consultations, conferences, workshops or thematic user groups to allow users to give their opinion and to debate INSPIRE developments (BG, EE, ES).
- Putting in place a public sector data ombudsman (SI)
- Use of Twitter and Facebook (EE, ES); use of dropbox for complaints (PL).
- Development of an application for reporting errors in data sets and services (NO)

### 3.1.5 Conclusions, assessment and recommendations

In this section we assess the major findings in relation to the user involvement. The following conclusions and recommendations can be drawn:

- When applying the INSPIRE Directive and following the spirit of it, the target user community of INSPIRE should include the public sector at all levels (also the local level), but also citizens, NGOs, etc. This seems not to be interpreted by all countries in the same way. Of course, citizens, or even local authorities might only be 'consumers' of the infrastructure through applications, but even then they should be considered part of the target public of the infrastructure(s).
- Explicit user requirement studies seem to be less important since other feedback mechanisms give the necessary insight in the user needs as well (e.g. through complaint mechanisms, workshops). Nevertheless, the efforts made by the Czech Republic to collect systematic information about the users and usage of their infrastructure can be considered as an example of a good practice with respect to user involvement. Their knowledge about the users and usage allows them to improve their INSPIRE & NSDI infrastructures in a focused way.
- The examples of complaints mentioned by several countries needs to be taken into account very seriously in order to be able to take the necessary measurements to enhance access, use and sharing of the spatial datasets and services. It would be interesting to collect more systematically those complaints over the coming years and bring them together in one repository at the European level to assess progress and highlight the major bottlenecks.
- Although many countries involve user communities through representatives in the coordinating body, some countries also found other ways to have more interactive user feedback like forums, the use of social networks, etc. It seems that these mechanisms become even more important since they provide the NSDI with useful input to enhance their implementation strategy. All countries should have such a multitude of interactive mechanisms to guarantee that user needs are taken into account as much as possible.

## 3.2 Use of the infrastructure

The second topic focus is on the use of INSPIRE and NSDI components, with particular attention for the usage of spatial data through services. Four questions were considered:

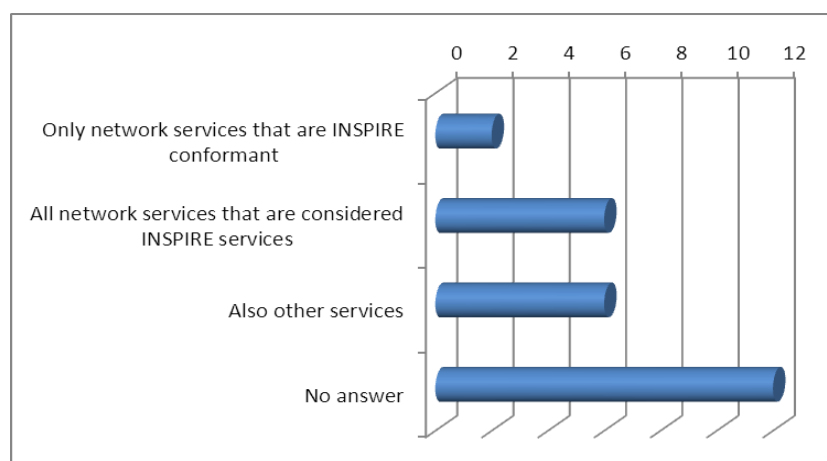
- Which methodology is used to monitor the use of the INSPIRE & NSDI infrastructure(s)?
- Does the country have a clear view on the extent of the use of the infrastructure(s)?
- Did you analyse the use of the services and of the geoportal, and if so what are the main results?
- Are there any effects in one way or another on the sales of spatial data sets that are part of the service oriented infrastructure(s)?

### 3.2.1 Methods to monitor the infrastructure

The first question relates to how the countries monitor the use of the infrastructure. Several sub-questions apply. First it is asked which type of services are monitored: INSPIRE conformant services, all services that are considered INSPIRE services or all services of the NSDI (see figure 4). The second sub-question assess which type of geoportals are monitored. The national, the sub-national and/or thematic geoportals were the three options (see table 3). The third sub-question concerns the level of detail of user registration: the individual user, the organisation and/or the user groups & user communities (see figure 5).

The number of responses to this question is much lower than for the questions under topic one (user involvement). Depending on the sub-question 12 or 13 countries did not respond. This is mainly due to the fact that many countries do not (yet) monitor the use of their infrastructure. This is explicitly confirmed by 7 countries, while others just started to implement such mechanisms (e.g. DE).

With regard to the type of services monitored it can be observed that only 2 countries (LT, SI) only monitor INSPIRE services they consider conformant to INSPIRE, 6 countries monitor the use of all the INSPIRE services and another 6 countries monitor also services that are beyond the scope of INSPIRE.



**Figure 4: Services that are monitored (14 responses)**

In Norway, the NMA is monitoring the use of its services since 2007. This is not yet the case for other data providers. Also the Netherlands mentions the fact that not all the data providers did develop tools for monitoring yet. Poland states that their focus is now on the development of the services (and their performance, capacity and availability) and that monitoring of the services will follow in a later stage.

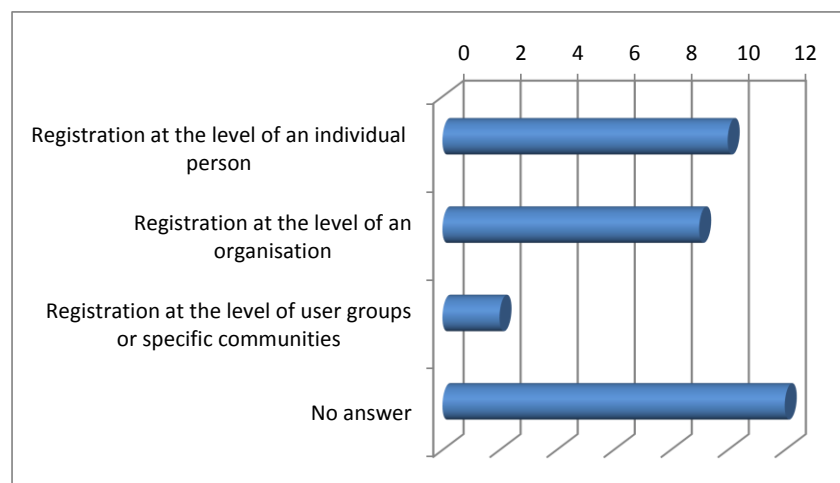
From the 13 countries that provide information regarding the monitoring of their geoportals, 9 countries only monitor their national geoportal, 3 countries monitor all geoportals - i.e. national, sub-national, thematic (CH, CZ, EE), while one country (BG) only monitors the thematic geoportals.

Number of users of geoportals	Population	# of countries
National geoportal	13	12
Sub-national geoportals	13	3
Thematic geoportals	13	4
No answer	26	13

**Table 3: Geoportals that are monitored (13 responses)**

With regard to the geoportals it is said by several countries that the way they are monitored is very variable. Technically speaking, geoportals are mostly monitored through the registration of unique IP addresses. But there are also organisational issues that impact the approach chosen. For example, Switzerland mentions that different data policies and administrative processes might apply and that no harmonisation occurs in this particular field although federal and cantonal administrations will start coordinating monitoring in 2011. Also, most countries have no information on what happens at the sub-national or thematic levels.

The third sub-question reveals somewhat more variation. While only two countries (CZ, PT) register users at the individual, organisational and user group levels, three countries (BE, LT, RO) register users at both the individual and organisational level. And while 5 countries register users only at the individual level, 4 countries do this only at the organisational level. Overall, the registration of users at the level of user groups or specific thematic communities is not so popular (2 countries).



**Figure 5: Registration of users (14 responses)**

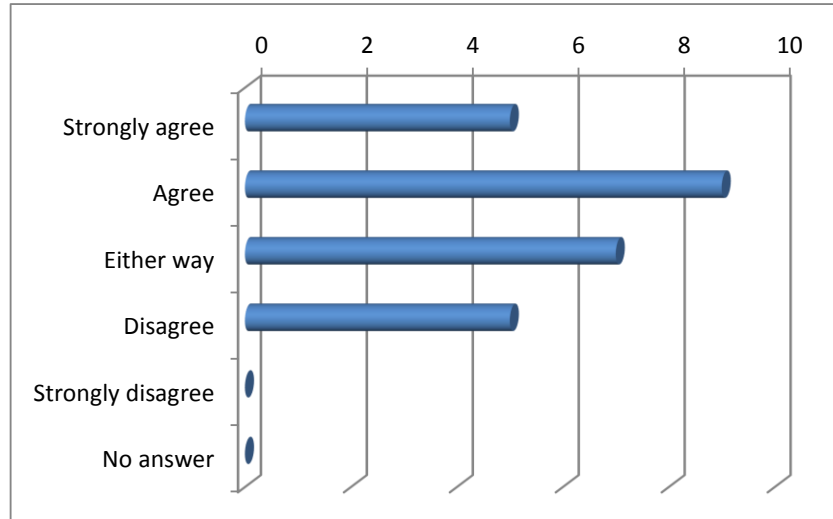
The registration (or not) of users of the infrastructure is of course highly dependent on the data access policy. The Czech Republic mentions that for most of the data sets no registration is required. Users can search, view and even download most of the spatial datasets. Registration is only necessary when purchasing data or when data access is limited for particular reasons. This depends highly on the data provider. France will not work with an authentication mechanism, while Belgium will use an authentication mechanism for some of its datasets.

Finally it should be noticed that while some countries will develop tools to perform monitoring as much as possible in an automated way (e.g. SE), other countries collect monitoring information from the different levels of authority without relying on such tools. Also, Sweden wants to tackle the monitoring of INSPIRE implementation and the assessment of their SDI following an integrated approach known as the Balanced Score Card approach (Toomanian et al., 2011).

### 3.2.2 Knowledge about usage

The second question with regard to the use of the infrastructure is in the form of a statement with which the countries could "strongly disagree", "disagree", "agree" or "strongly agree", or leave the score open to "either way". The statement is: *"We do not have a very precise idea about the number of users of our infrastructure"*. The answer to this question could be further clarified when needed. All the 26 countries responded to the question. The results are depicted in figure 6. Overall more countries, agree with this statement (14/26) than countries that disagree (5/26).

Most of the countries that (strongly) agree do so due to the fact that the monitoring mechanism is not in place yet. Finland states that since SDI is a broad concept, it is impossible to identify all the users of the SDI. This complexity is referred to by other countries as well. Estonia for example refers to the difficulties to monitor unique users because of the nature of the geoportal software and the IT infrastructure used. Switzerland has clear information regarding the federal geoportal, including which data sets are requested by how many users. Also information at the level of services and data providers exists. The problem is to find a mechanism to collect and integrate this information in a consistent way for the whole country. Similar statements are made by the Czech Republic, Germany, France and the Netherlands. Spain that monitors the number of users, the number of petitions (requests), the number and volume of spatial data sets download, etc., but they are not available in a consolidated manner at the national level. Norway has exact figures for the main network services as well.



**Figure 6: Agreement or disagreement with the statement "We do not have a very precise idea about the number of users of our infrastructure" (26 responses)**

Even if countries do not monitor the use of services yet, they have often precise information on the use of the national portal (e.g. GR, PL), while others have a clear view of all the registered users (e.g. LT, PT). Sweden states that in the previous geoportal, when users had to registers, they had a better view of the numbers and the types of users.

Finally, Slovenia states that since the services are free of charge (discovery, view) they have not the right, nor the obligation to monitor and classify the users of those services. Only registered users can be monitored.

### 3.2.3 Figures on usage

The third question explores the information on the usage further. The question is split in three sub-questions. First it is asked whether the country has INSPIRE monitoring figures for network services and if not, why (see table 4). The second sub-question is in the form of a statement with which countries can agree or disagree: *"The figures from the INSPIRE MR on the use of network services are in line with what we expected"* (see figure 7). The last sub-question relates to the existence of different portals and the number of unique users of the national geoportal (see table 5).

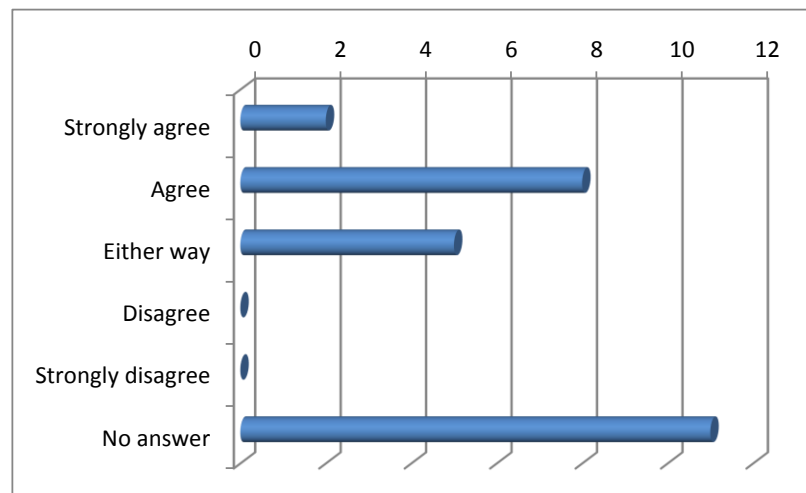
Figures use INSPIRE network services	Population	# of countries
Yes	26	12
No	26	14
No answer	26	0

**Table 4: Monitoring the use of INSPIRE network services (26 responses)**

All 26 countries answered the first sub-question. A majority (14/26) of the countries does not collect figures on the usage of the infrastructure although that is a legal

requirement of the INSPIRE Directive (at least for the Member States). Several reasons are mentioned for not monitoring (yet)<sup>2</sup>:

- Lack of expertise and capacity (BG). or organisational and funding problems (CY);
- Network services are said not to be operational yet (IE, LT) and/or not to be conformant (DK, LI) at the time of the survey; or the portal is said not to be in place or open yet (IS);
- Several countries are preparing tools for automatic monitoring, but they are not operational yet and they are deemed to become available step by step together with the services (PL, SE);
- Sometimes only figures for part of the infrastructure are available (PL, DE, GR), e.g. at the national level for reference data sets of the NMA (NO, FR); or no information was received from the relevant public institutions (PT);
- Countries like Switzerland indicate that it is not a requirement for them to monitor (and report) although INSPIRE is implemented and services of the NSDI are monitored. Lichtenstein is in a similar situation.



**Figure 7: Agreement or disagreement with the statement “The figures from the INSPIRE MR on the use of network services are in line with what we expected” (15 responses)**

Although only 12 countries confirmed they have figures on the use of INSPIRE network services, 15 countries have answered the second sub-question, i.e. whether the results of the monitoring were in line with what they expected. In addition it was asked for whether any changes between the situation in 2009 and 2010 could be noticed. Following observations were made:

- The Czech Republic's figures were said to be in line with their expectations because the country has a long tradition of developing and using network services (since 2007). Some services became very popular, e.g. the cadastral maps. They noticed clear rise in the figures between 2009 and 2010. In addition they even analysed the figures from other countries and compared them with their own.

<sup>2</sup> The Czech Republic's answer to the question was also “No” although in reality figures for some of the services can be found in the INSPIRE monitoring & reporting. At the time of the survey, the figures for 2010 were not yet available. Nevertheless we have categorized the Czech Republic for the first reason rather as “Yes”.

- Also Finland and France noticed a sharp increase of the usage figures. Finland states that this is mainly due to the development of the viewing services, while download services only start to emerge.
- Spain has since long a very precise picture of the use of the portal and the services from the NMA, as well as from the key organisations (nodes) in the infrastructure. They noticed a small increase for the national services, but a larger increase for the services from the local level, as well as for the thematic services. The most unexpected development was the huge amount of spatial data download centres in the country (80), many of which they were even not aware before at the national level (see also [http://www.ideo.es/resources/Centro\\_descargas/tabla\\_descargas.html](http://www.ideo.es/resources/Centro_descargas/tabla_descargas.html)).
- The Netherlands reports a growth of the use of discovery services between 2009 and 2010.
- Some countries (e.g. BE) expect the usage of services to increase when more and more services will become available.

The development of the INSPIRE implementation (the results of the 8 indicators for 2009 and 2010) are discussed in the summary report.

Geoportal	Population	# Countries
Unique national geoportal	25	16
Several national geoportals	25	5
Dedicated INSPIRE geoportal	25	3
No answer	26	1

**Table 5: National and dedicated INSPIRE geoportals (25 responses)**

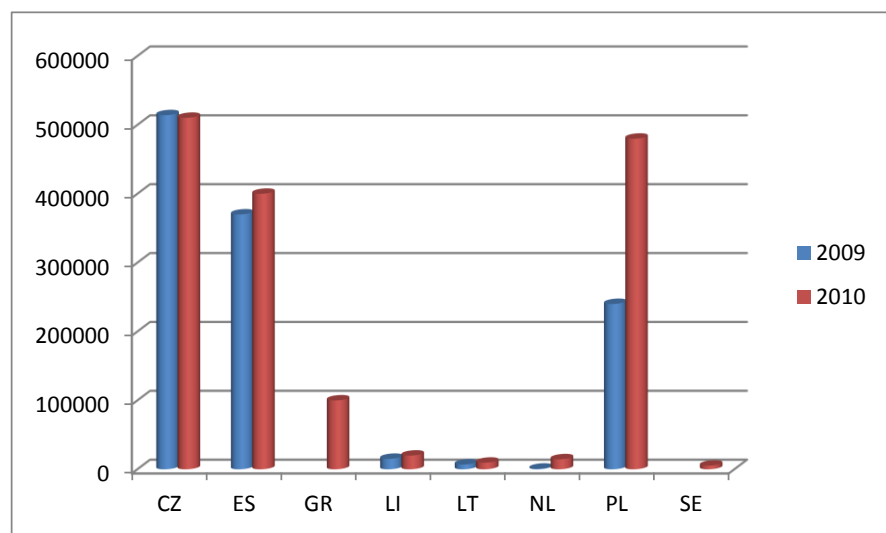
The last sub-question regarding the geoportal has been answered by 25 countries. The majority of the countries (16/25) have a unique national geoportal. Only 3 countries (EE, FI, PT) have a dedicated INSPIRE portal, while 5 countries have more than one national geoportal. The Netherlands flags the data sets they consider to be INSPIRE data sets in the NSDI catalogues.

Following observations can be made:

- Several countries have not yet a national portal, but are developing or planning to develop (a new) one (CH, DE), or their portal is still in a test phase and not yet open for the public (IS).
- Countries with more than one national geoportal refer to (cross-)thematic and/or specific geoportals with national relevance, mostly maintained by specific institutions (CZ, DE, ES).
- A specific sub-question asked for figures on the number of unique users of the national geoportal for 2009 and 2010. From the answers, it becomes clear that there exist several methods to measure the use of the geoportal. Some countries provided the requested figures (unique users), others could only mention the number of requests (DE, DK), others stated even that they do not measure the use of the geoportal at all. The way the usage is measured might also have changed over time (NL).
  - France mentions the difficulties to have precise measures. For example, the number of professional users is said to be difficult to

measure since they can't be detected separately. Further work will be done in the future to improve the measurement method.

- Figure 8 gives an overview of the use of the national geoportal for the countries that provided the number of unique users per year (usually these are unique IP addresses). Four countries have very low numbers (between 5000 and 20000), three other countries have relatively high numbers (between 300.000 and 500.000) France estimates the number of unique users as well (estimated number of unique visitors: 3.000.000/year)<sup>3</sup>. They apply an own, relatively complex method for calculating. In general the figures from the survey should be treated with care since in general no (clear) information is available on how they were measured and/or calculated.



**Figure 8: Number of unique users of the national geoportal (2009 and 2010)**

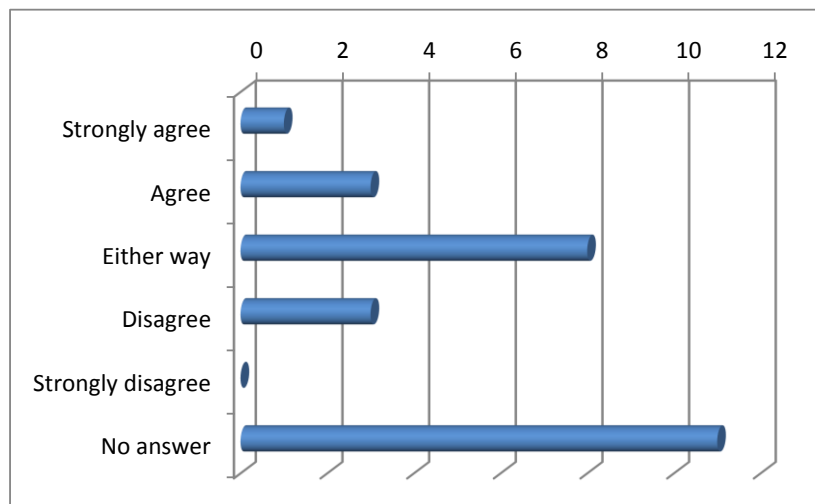
- Germany, Estonia and Slovenia do not collect information at the level of number of unique users, but rather at the level of requests or hits. Estonia started to collect also information at the level of unique visitors (per month).

### 3.2.4 Impacts on sales

The last sub-question for topic two relates to the direct or indirect impact of the INSPIRE & NSDI infrastructure(s) on the sales of spatial data sets. Fifteen countries replied whether they agree or disagree with the statement *“We see a rise in sales of spatial data sets which are made accessible through network services”*. This statement is based on the assumption that because of the INSPIRE and NSDI infrastructure, use in general would be stimulated, and therefore also commercial use. Or oppositely, that due to the improved access to the data (e.g. viewing services), the need for buying the data decreased. Many countries (8/15) did not

<sup>3</sup> It is estimated that 5000 unique visitors come to the geoportal to make use of the API services (around 10% of the total number of daily visitors). This figure is rising since 2009.

pronounce themselves (answer "either way"), while 4 countries tend to agree and 3 countries tend to disagree.



**Figure 9: Agreement or disagreement with the statement “We see a rise in sales of spatial data sets which are made accessible through network services”**

Several observations are made by the countries:

- Belgium and Iceland state that since most of the data of the NSDI are free anyway, the impact on the sales is said to be low or difficult to estimate.
- Greece, the Netherlands and Sweden state they do not have information on this topic. Estonia says it is difficult to know since the new legislation on INSPIRE entered just into force and regulates the sales of spatial data sets as well.
- Switzerland saw sales increasing when they opened an internet based shop for spatial data (Swisstopo) in 2004. Since then, a steady increase in sales could be observed. Lichtenstein reports an increase in sales in 2006, when the municipalities started participating in the NSDI.
- The Czech Republic and Spain mention a decrease in sales. While the data provision through services improved and reached more and more organisations and users, the need for buying data decreased in consequence. Spain adds that during the period of WMS development (2004-2009) the sales remained relatively stable, while during and after the development of the download centre (2009-2011) the sales started to decrease. This is not seen as a negative evolution.

### 3.2.5 Conclusions, assessment and recommendations

In this section we assess the major findings in relation to the use of the infrastructure. The following conclusions and recommendations can be drawn:

- It is striking that the majority of the countries do not yet monitor the use of the services at all although the implementing rules for monitoring and reporting make this a legal obligation. There are various reasons mentioned with regard to the why this the case. Some countries only want to monitor INSPIRE network services that are conformant. Others

want to focus on the development of the infrastructure first and then start monitoring (when the infrastructure is "ready"). However, the objective of monitoring the existence and use of the data sets and services is precisely to evaluate the status of implementation, and the development of the infrastructure and its use over time. It is a tool to evaluate whether countries succeed in reaching the goals of the INSPIRE Directive and if, and to which degree, they approach these goals. It is recommended that member states that struggle with setting up a sound monitoring system are helped in doing so (e.g. by sharing monitoring tools). Examples of good practice in this domain (e.g. Norway) could be promoted through the organisation of workshops.

- Many countries struggle with the coordination of the monitoring efforts. This is logic since the collection of information regarding the characteristics and the use of services might be very hard, especially when many data providers are involved at different levels of authority. In many cases different methods for measuring the usage of services are used which makes integration at the national level not always obvious. Also here, experiences of different countries should be shared through workshops, the INSPIRE forum, etc.
- It is clear that the figures on the numbers of users of the services should be treated with care. Not only because the above mentioned different methods of measuring, but also because the figures need to be normalised - e.g. by taking into account population numbers. In addition, different types of services will target different types of use (e.g. download versus viewing). Nevertheless, it would be useful to analyse the (normalised) figures over a longer period to reveal some patterns and understand the dynamics.

### 3.3 Users and usage of the infrastructure

The topic on the users and the usage deals with who the users are, not the individual end users, but rather the sectors and types of organisations on the one hand, and the type of usage on the other hand. Following questions were considered:

- What is the level at which you collect information regarding the use of the infrastructure(s)?
- In which sectors the infrastructure is being used?
- Which types of organisations make use of the infrastructure?
- What is the infrastructure being used for? How do the services help to access the infrastructure? For which type of activities the infrastructure is being used?

#### 3.3.1 Available information

This question aims to collect information regarding the level at which information is gathered about the users and the usage of the infrastructure: 1) at sectorial level, 2) at the level of organisations, or 3) at the level of individuals.

Q3.1 - Information available	Population	# countries
At sectorial level	19	13
At organisational level	19	18
At individual level (persons)	19	11
No answer	26	7

**Table 6: Level at which the information regarding the usage is available (19 responses)**

From the 26 countries, 19 replied. Most countries (18/19) collect information at the level of organisations. This means that they know which organisations are users of their infrastructure. The collection of information at the level of individuals is less applied (11/19). The way this information is gathered is variable:

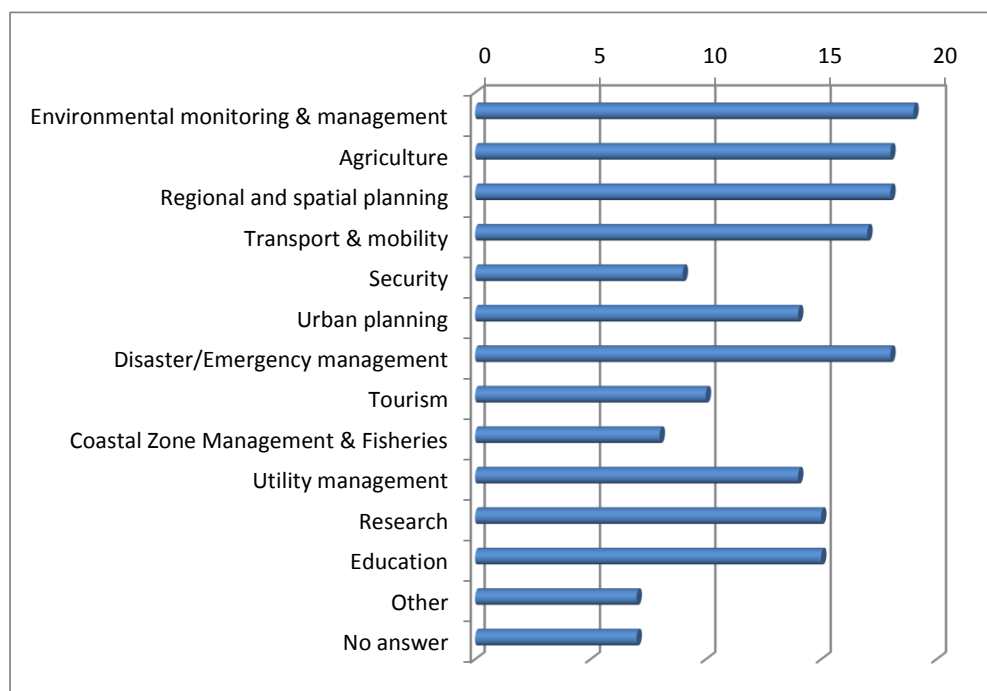
- Through the set-up of surveys (FI)
- By analysing the received user requests or information concerning the selling of the data (GR, LI, NL), often formalised through license agreements that clearly state the users (CZ, SE)
- Logging through user registration (BE, LT); certainly when downloading data sets or tools (e.g. online use of the metadata editor: UK)
- By studying of or searching for use cases (ES)
- Through the feedback (GR, SK) and/or complaints (ES) received, or through communication with the users (PL, SI)
- Through contacts with members of the coordinating body (RO)
- Through publications (PL)

Many countries state that no accurate information is available (CY, DE), and that it is very difficult to monitor users of network services (ES) or that it is not (always)

necessary (CH) to monitor who is using the infrastructure (and for what). Other countries state that usually the data producers know their users or user groups very well (CZ).

### 3.3.2 Sectors using the infrastructure

The second question relates to the different thematic sectors or domains in which the infrastructure is used. The question contained a pre-defined list of 12 sectors and the option "other". The latter could be further specified by the respondents. Again 19 of the 26 countries replied to this question. The results can be found in figure 10. Environmental monitoring and management is mentioned by all the countries. This sector is followed closely by the sector of agriculture, regional & spatial planning, disaster & emergency management, and transport & mobility. The sectors in which the infrastructure is used less are tourism, security and coastal zone management & fisheries.



**Figure 10: Sectors in which the infrastructure is being used (19 responses)**

Only a few countries mention other sectors. Lithuania mentions the public administration sector in more general terms. Finland refers to the forestry sector, while the Czech Republic gives a long list of sectors and specific fields of application: mining, banking, energy providers, protection of monuments, telecom, control of nuclear facilities, etc.

### 3.3.3 Types of organisations using the infrastructure

While under topic 1, involvement of the users, it was asked which are the intended user groups for INSPIRE and NSDI, this question aims to grasp the user groups that are using the infrastructure in practice. Almost all countries (22/26) responded to this

question. The infrastructure is used by the public sector in all the countries<sup>4</sup>. Also the private sector and the academic sectors make use of the infrastructure in most of the countries (18-19/22). The NGO sector and the individual citizens score a little bit lower (15-16/22).

When looking at the most important type of users, it is clear that in the majority of the countries, the public sector is the most important sector. This is explicitly mentioned by 12 countries. In Slovenia, especially the Ministry of Environment and Spatial Planning is mentioned. In Ireland, the governmental and academic sector are said to be the most important sectors because the NSDI has not been fully developed yet. Bulgaria mentions the private sector, the NGOs and the individual citizens as being the most important users. Greece states that all the sectors are equally important users. Finally Spain gives more details on the users. They identified 20 regional and around 100 local geoportals making use of the web services of the NSDI, as well as many private companies and more or less 20 universities and research centres. Also the individual citizens are said to make use of the services.

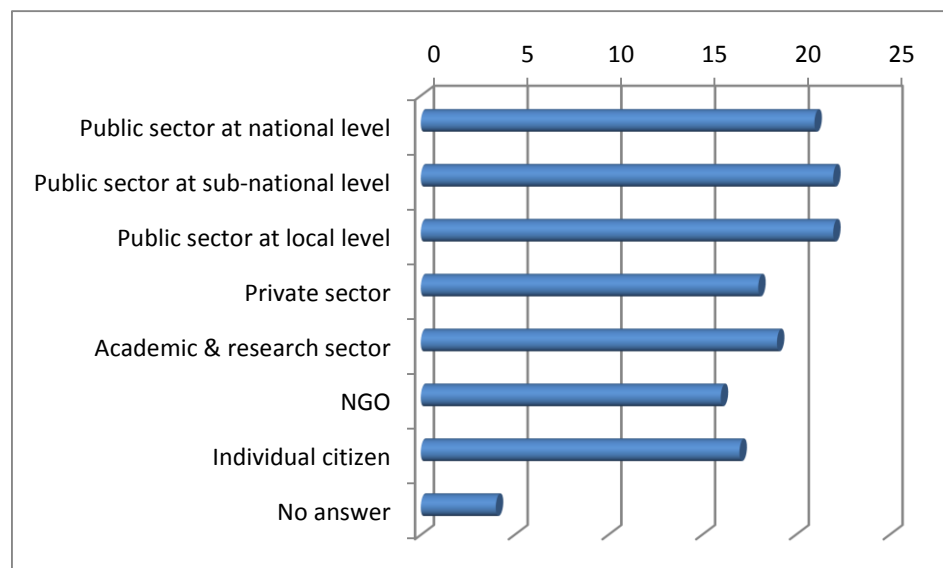


Figure 11: Types of organisations using the infrastructure in practice (22 responses)

### 3.3.4 Usage

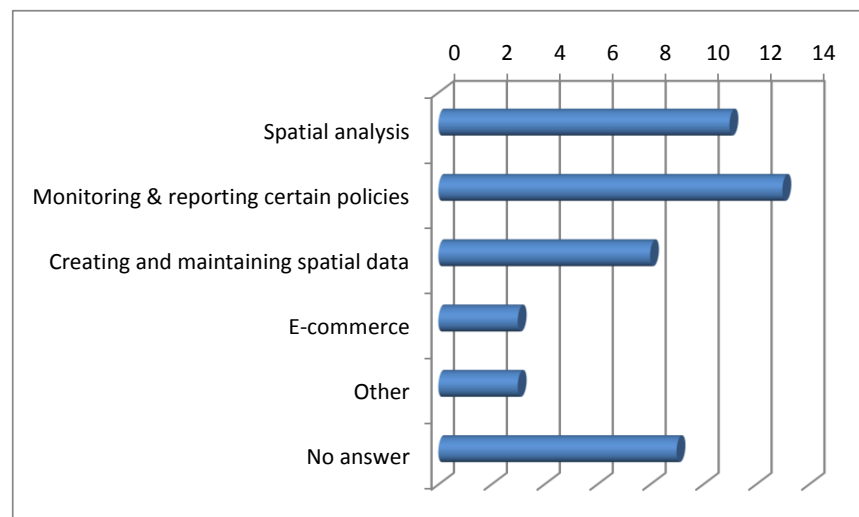
The last question on the users and the usage relates to the types of use. The question was split in two sub-questions, reflecting two perspectives. The first perspective refers to the usage according to the publish-find-bind paradigm. This includes activities such as the publication of spatial data by the producers or coordinating structure, the search for spatial data by the user (finding), the viewing of the data (visualisation), eventually the download and transformation before the ultimate usage in an application (see table 7). The second sub-question looks more from the perspective of the type of activity that is performed with the spatial data sets and services. Several options could be ticked: spatial analysis, monitoring & reporting, e-commerce, maintenance of spatial data sets, and "others" (see figure 12).

<sup>4</sup>Remarkably Bulgaria states that the public sector at the national level is not using the infrastructure.

Access	Population	Importance index <sup>5</sup>
Finding spatial data	NA	38
Visualisation of spatial data	NA	44
Downloading of spatial data	NA	72
Transforming spatial data	NA	102
Publishing spatial data and their metadata	NA	66
No answer	26	3

**Table 7: Use of the infrastructure according to the publish-find-bind paradigm (23 responses)**

From the 26 countries, 23 replied to the first sub-question. The countries could rank the importance of the use cases from 1 to 5 (from important to less important). The importance index in table 7 shows that finding spatial data is the most important use case, followed by visualisation, publishing, downloading and transformation.



**Figure 12: Type of activities for which the infrastructure is being used**

Only 17 countries replied to the second sub-question. From those, the majority (13/17) use the infrastructure in monitoring & reporting policies. Many countries (11/17) also use it to support spatial analysis. Other activities mentioned are: geo-reporting (CZ); visualisation of own spatial data sets and results from processing (FI); quality control and visual analysis (ES); education and cartography (LT) and support & service provision within organisations (SE).

### 3.3.5 Conclusions, assessment and recommendations

In this section we assess the major findings in relation to the type of users and usage of the infrastructure. The following conclusions and recommendations can be drawn:

- Most countries have no idea on who the users and user communities are. In general terms the major groups are known (e.g. universities, major public sector players). However, the exact usage and use cases are not very well known. It is acknowledged that it would be useful to know more

<sup>5</sup> The lower the index, the more important the use case.

about the users and the usage, but at the same time it is stated that it is difficult to collect that type of information. It is recommended that at least good examples of usage would be actively searched for since they can serve as show cases for other (potential) user communities and they also allow us understand better potential shortcomings in the infrastructure.

- The usage in some sectors is currently less important than expected: e.g. the use of the SDI for Coastal Zone Management. The use of the infrastructure should be more promoted in those sectors. Also, the use of the infrastructure will probably improve if specific existing applications integrate the network services or if new applications are build that make directly use of them.
- Finally, the type of organisations that currently make use of the infrastructure seems to be very broad which is what the INSPIRE Directive was aiming for.

## 3.4 Qualitative information on use and usability

The last topic focuses on examples of the usage of the infrastructure in day-to-day business processes, on the expected benefits and on how INSPIRE & NSDI implementation can be improved. Following questions were introduced:

- Can you describe two examples of business processes in which components of the INSPIRE & NSDI are used?
- What are the benefits of the infrastructure from the perspective of G2G, G2C and G2B?
- What are the improvements that can be made to the infrastructure?

### 3.4.1 Examples of business processes

The first question wants to collect examples of business processes in which the infrastructure is used: *"Is the infrastructure used in concrete business processes?"*; *"Can you describe briefly two such processes?"* and *"How does the infrastructure (INSPIRE & NSDI) support these processes in practice?"* A business process might be, in the field of policy (decision) making, or it might relate to service provision. Business processes occur in the public sector, but they can also be found in the in the private or academic sector. Eight countries did not provide an example, while 18 countries provided 33 examples (see table 8). Of these examples, only 14 can be considered examples of business processes. Other examples are rather demonstrations of the use of spatial data sets in particular domains, but without clearly indicating how the geoportal, the services, etc., are eventually used within that context (BG, LI).

Q4.1 - Examples of processes	Population	# countries	# examples
Number of examples given	26	18	33
Number of valid examples	26	18	14
No answer	26	8	0

**Table 8: Number of examples of business processes given by countries (18 responses)**

Good examples described by the countries:

- Belgium - Use of a WMS in the River Information System (RIS) to visualise large scale maps together with the position of the ships. Use of a pilot WMS to consult and identify parcel information. Other countries where similar examples are given include Spain, Poland and Sweden. In Sweden an example is given of the integration of WMS from different sources to provide permits for different types of activities.
- Estonia - Exchange mechanism for cadastre and utility data: the cadastre uses the utility data to map e.g. building restrictions, while the utility companies use the cadastre data to compute compensations. Other countries where similar examples are given include the Czech Republic and Slovenia.

- Czech Republic - Use of the infrastructure by software companies to test applications.
- The Netherlands - Refers to two good examples of cross-border cases described extensively in the official INSPIRE MR report: one is called "X-border GDI" offering access to spatial and related data on industrial and commercial parcels using web services (involving NL, DE, BE); another one aims to harmonise spatial data in view of the management of a cross border park as part of the Natura 2000 ecological network using parts of the NSDI.

Some additional examples were gathered by directly contacting the countries. They were further elaborated by interviewing the owner of the business process. For this purpose, a topic list was elaborated to conduct the interview. The topic list can be found in annex 6.3. A good example of the usage of services of the different European NSDI is given below. More extensive minutes of the interview are available as well.

#### Example of an added value process:

##### Goolzoom.com

This is an example of a group of people that has built an application to give easy access to existing network services through the Google interface. It is not a typical example of a work process within a public authority, but it is rather an example of an added value process that make use of the SDI service components.

- Process
  - *Goolzoom.com is a geographic information system based on Google Maps that facilitate access to the public geographic information through network services*
- Organisations involved
  - *Google: providing Google Maps platform*
  - *Organizations that provides data in WMS (Web Map Service) standard. Most of them are public organizations*
- Output / outcome
  - *The intended outcome is to facilitate to our users the access to all kind of public information using the Google Maps platform, already known to many users*
- Data/information flows
  - *The only flow required, is the one provided by the servers that contains the data repositories.*
- Input
  - *All kind of spatial data that is consideedr useful for a broad group of*

*users. First spatial data are searched for by looking at WMS servers on the Internet. Then the data are organized based on the following information: GetCapabilities document; response time of the server; area covered by the map; country of the information*

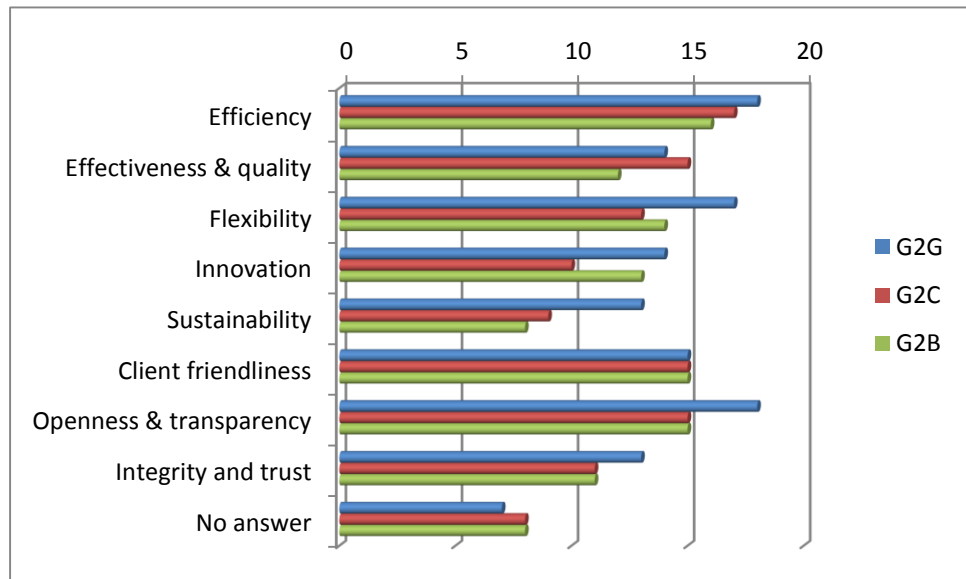
- Throughput
  - *Goolzoom reads the GetCapabilities document each 3 days, and reorganize data for the new updates*
  - *The data are always going directly from the WMS server to the user browser. GoolZoom only tries to organize the WMS servers in order to connect users to the information that he/she is looking for*
- Output
  - *No output - no new spatial data or any other product is created.*
- Experience and potential improvements
  - *To be improved for the WMS servers: 1. Response time: Many of the WMS servers stop responding after a few request, or it takes time to get a response; 2. Unification of the servers. Many servers to provide ortophotos from different areas might not be optimal. One server with all ortophotos is desirable in order to simplify access and facilitate organization. The main reason for the success of the spanish catastro WMS server, is because it provides much information from just one server combined with a good response time. 3. GetCapabilities document. Many WMS servers don't provide a descriptive capabilities document. Therefore it's not possible to catalogue the kind of data they provide. 4. Also improvements in the WMS standard could be suggested.*

### 3.4.2 Benefits of the infrastructure

The question "Does the infrastructure (INSPIRE & NSDI) help to improve the business processes they are supposed to support?" is seen from different business process perspectives: government to government (G2G), government to citizens (G2C) and government to businesses (G2B). Several aspects are taken into account. It estimates whether the infrastructure(s) contribute to the efficiency, effectiveness & quality, flexibility, innovation, sustainability, client friendliness, openness & transparency, and reliability & trust of the business processes in which they are used.

For the G2G perspective 19 countries replied, for the G2C and G2B 18 countries. The results are given in figure 13. For G2G processes, the contribution to the efficiency, flexibility, and the openness & transparency seem to be the most important. Gains in efficiency are also reported by the majority of the countries for the G2C and the G2B processes. Client friendliness is equally scored for the three perspectives. The contribution to the effectiveness & quality of the process is more important for G2C

processes, while the contribution to the innovation of processes is not only important for G2G, but for G2B processes as well.



**Figure 13: Benefits of the infrastructure for the exchange of information between G2G, G2C and G2B (18-19 responses)<sup>6</sup>**

In general terms, countries refer often to the gains in time for searching and accessing the necessary spatial data, and in consequence improve the efficiency of the processes. Access to the latest data and complete metadata that allows users to use the right data is mentioned by several countries as another positive contribution. Flexibility is said to increase because so many different types of users can make use of the same infrastructure. Since the infrastructure is open to citizens as well this contributes to openness & transparency, and to integrity and trust, also because the infrastructure is improved continuously. Although the benefits clearly prevail, some countries (PL, SI) indicate that initial investments are needed, business process need to change and awareness rising is needed. Some countries mention interesting examples of improvements:

- Bulgaria states that the spatial data help to establish efficient transportation schemes for public transport and therefore also help reducing air pollution.
- Switzerland made an inventory of historic transport routes of national and regional importance by using a thematic geoportal. They estimated that without the portal the cost for printing alone would have exceeded 2.0 million €.
- In the Czech Republic companies have used the infrastructure to create new businesses. For the citizen, the client friendliness can be guaranteed when services provide clear and simple information, rather than data (e.g. through the geo-reporting tool). Finally an example is given of the Building Act which is the basis for a lot of processes which use the same data and information, and which can be better integrated now. Also Norway refers

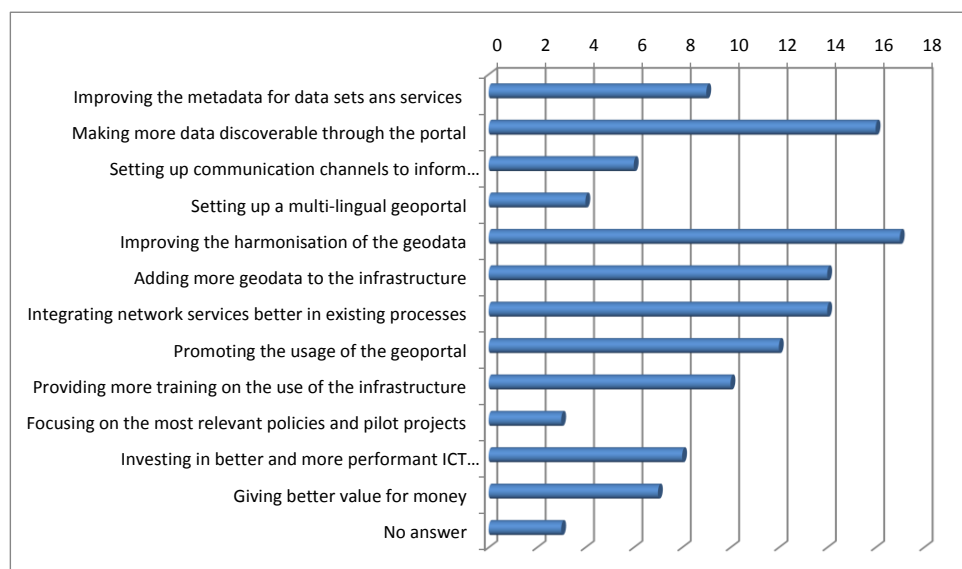
<sup>6</sup> Only an explicit "yes" or any indication of confirmation. An explicit no and a "no answer" (for particular aspects) are treated in the same way.

to the integration of the SDI components in the systems and in decision making processes.

- Germany gives several examples of the added value of the infrastructure for existing processes: planning of surface mining, promotion of renewable energy and information service on flood-prone areas.
- The Netherlands refers to the key register for addresses and buildings (BAG) which replaced many local registers resulting in better quality and lower costs. Citizens now only provide information once. This information is re-used by different public authorities. It prevents also fraud and raises tax revenues.
- Lichtenstein states that e.g. issuing a building permit is now faster, more transparent and more reliable.

### 3.4.3 Potential improvements

The last sub-question asked countries to indicate in which way INSPIRE and the NSDI could be improved. Almost all countries replied to this question (23/26). They could chose 5 areas from a list of 12, and eventually also add other areas of improvement. The results are summarised in figure 14. *"Improving the harmonisation of the geodata"* and *"Making more data discoverable through the geoportal"* score high (indicated by 17 and 16 countries respectively). *"Setting up a multi-lingual geoportal"* and *"Focusing on the most relevant policies and pilot projects"* are scoring low (indicated by 4 and 3 countries respectively). The latter is maybe a little bit surprising since focus on certain key policies and pilots could demonstrate the added value and therefore secure funding for the NSDI.



**Figure 14: Ways to improve INSPIRE and the NSDI (23 responses)**

Several countries mention other areas of potential improvements. Some examples:

- Motivate data providers to participate in the NSDI (CH);
- Use of new technologies like Web 2.0 and mobiles services for seamless integration in business and civil processes (CH);

- INSPIRE to become part of the mandatory education of employees (CZ);
- Improve dissemination of information about the national geoportal, clarification of the relevance of certain spatial data and use of less GI specific terminology (CZ);
- User friendly provision of reliable and qualitative services (DE);
- Stimulating the integration of the infrastructure with other non-spatial data (NL);
- Making more spatial data available for free, at least for the public sector (SI).

### 3.4.4 Conclusions, assessment and recommendations

In this section we assess the major findings in relation to the examples of usage of the infrastructure. The following conclusions and recommendations can be drawn:

- Most countries have problems in clearly describing how the infrastructure is currently used in existing work processes. This is partially related to the fact that the spatial data and service providers that play an important role in coordinating the NSDI and INSPIRE are not directly involved in these processes. Countries should be more pro-active in searching examples of work processes in which the use of components of the infrastructure (geoportals, network services) improves the efficiency and effectiveness of the process and the quality of the outcomes. Those examples could serve as demonstrators or show cases for (potential) new users.

## 4 CONCLUSIONS

Between January and June 2011 a detailed survey on *“the use and usability of INSPIRE and NSDI”* was conducted among the 34 countries studied in the INSPIRE & NSDI State of Play. For this purpose a questionnaire was elaborated covering four major topics: 1) the involvement of the users; 2) the use of the infrastructure; 3) the users and the type of usage and 4) examples of the use in business processes and the expected benefits. From the 34 countries, 26 countries replied: 21 EU member states, 1 candidate country and 4 EFTA countries.

From the survey it becomes clear that while in most countries the intended users and user communities of INSPIRE and the NSDI are the same, in some other countries the opposite is true: INSPIRE is considered to be a part of the NSDI. Often only the public sector is considered as the target user community, while the private sector, NGOs, individual citizens and even local authorities are not considered as part of INSPIRE. This might cause some concern since INSPIRE clearly targets all levels of authority, and the broader public as well.

In less than half of the countries, a user requirements survey was carried out. However, no relationship was found between having performed such surveys (or not) and the development stage (or maturity) of the NSDI as described by the degree of operability in the State of Play. While some developed NSDIs like the German or Spanish SDI did not perform a user requirements survey, others like the Dutch and French NSDI did so, while the four SDIs are quite mature. This probably relates to the fact that there are other ways to collect information about user needs. Indeed, it is striking and very positive that all the 26 countries have one or more user feedback mechanisms. Besides surveys and complaint mechanisms, new original approaches are mentioned including the use of twitter and Facebook, but also more traditional mechanisms like interactive workshops. It is also clear from the examples of complaints that reach the NSDIs that they provide useful information to allow focused improvements of the infrastructure.

There are many ways through which users are involved in INSPIRE and NSDI development, and although most countries apply several approaches, the large majority of the countries involve them through representatives in coordinating bodies. Specific user groups and forums are emerging in many countries with Poland having more than 48.000 registered forum users as a striking example.

The countries that monitor the use of services do so in several ways. While few countries only monitor INSPIRE conformant services, others monitor all services they consider INSPIRE services. An equal number of countries monitor other services as well. From those countries that monitor the use of geoportals, the majority is doing this only for the national geoportal. Finally, when countries register users of the infrastructure this happens mostly at the level of individual users and organisations.

The countries tend to agree with the statement that they do not know very well the number of users (and the use) of their infrastructure. Some countries mention that it is difficult to measure and know the usage because of the complexity of

SDIs. And even if this type of information is collected at the level of single organisations (data providers) or at the level of specific parts of the infrastructure, it is difficult to collect all the information and integrate this at the national level.

The majority of the countries do not yet monitor the use of their network services (14/26). This could already be observed by analysing the INSPIRE MR results of 2009, but is now confirmed by the results of the survey. This should deserve particular attention since the INSPIRE Directive and the specific implementing rules for monitoring and reporting requires such monitoring from the very beginning. Some countries refer to the lack of expertise to do so, others state it is not their current priority and they will develop tools in parallel with the development of the services. Countries that monitor the use of network services state that the results are in line with what they expected. The few countries that are able to compare the 2009 and 2010 figures observe an increase in usage.

Most countries have a national geoportal or are developing one. Specific INSPIRE geoportals are an exception. The figures on the usage of the national geoportal show a group of countries with low usage, while other countries show relatively high usage. France is somehow a special case with very high usage figures. It should be mentioned that the figures should be interpreted with care since the way the measurements are carried out vary.

The impact of the existence of network services to access the spatial data on the sales of these data can't be confirmed. Some countries state that the existence of services caused a decrease of the sales of the underlying data sets, while almost the same number of countries see rather the opposite. In case a decrease in sales is noticed, this is not necessarily seen as negative.

The level at which information is gathered with regard to the users is mostly the organisational level meaning that SDI coordinators know which organisations use the infrastructure, less so the individual users. Several mechanisms to know the users exist: surveys, logging and authentication, direct contacts and feedback, agreements, etc.

The sectors in which the infrastructure is mostly used are "environmental monitoring and management", "agriculture", "regional & spatial planning", "disaster & emergency planning" and "transport & mobility". The 'weaker' sectors are "tourism", "security" and "coastal zone management & fisheries".

The type of organisations that use the infrastructure in practice are mostly the public sector (at all levels) and the academic sector.

The types of usage was analysed from two perspectives. With regard to the publish-find-bind paradigm, the search for spatial data is the most important use case, followed by the visualisation of spatial data, the publishing, downloading and transformation. When looking at the type of activities, the infrastructure is mostly used for monitoring & reporting policies, followed by spatial analysis.

Several countries can't give an example of a business process in which components of the infrastructure is used. Even if it is true that INSPIRE implementation is at an early stage, it is considered feasible and useful to find such examples, or at least to wonder how the uptake of components of the infrastructure could/should happen. From the 18 countries that give examples, many of them describe the use of spatial data in business processes in general terms, rather than the use of the different components (services, geoportal, etc.).

Some interesting examples are given by a few countries including some cross-border applications.

All countries mention benefits of the infrastructure for the G2G, G2C and G2B processes. Most countries acknowledge clear gains in efficiency in the three different types of processes. Improved flexibility and openness & transparency seems to be important for G2G processes. Innovation seems to be more important for both G2G and G2B, while improvement of effectiveness and quality is more important for G2C processes. Several interesting examples are given on how INSPIRE and NSDI can make a difference.

Finally countries see further possible improvements of the infrastructure with “the harmonisation of spatial data” ranked first, followed by “making more spatial data discoverable through the geoportal”.

In general terms we can conclude that the knowledge about the use, the users and the usages should be further enhanced. Many countries do not have a clear idea on what their infrastructure is being used for. And although it should be noticed that the INSPIRE & NSDI implementation is still at an early stage, it is advisable for all countries to better understand the use and user satisfaction in order to streamline further development. In the summary report more specific recommendations will be made with regard to the results of this detailed survey.

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## 6 ANNEXES

### 6.1 Questionnaire on use and usability

#### 1. Involvement of the users in the INSPIRE & NSDI development

##### 1.1 What is the intended user community

What is the intended user community of INSPIRE in your country?

- Public sector
  - At national level
  - At sub-national level (department, region, ...)
  - At local level
- Private sector
- Academic & research sector
- NGO
- Individual citizen

Please name the most important one: .....

What is the intended user community of the NSDI in your country?

- Public sector
  - At national level
  - At sub-national level (department, region, ...)
  - At local level
- Private sector
- Academic & research sector
- NGO
- Individual citizen

Please name the most important one: .....

##### 1.2 User requirements study / analysis specifically related to INSPIRE<sup>7</sup>

Did you carry out such a study / analysis?

- Yes
- No

If yes, what kind of study / analysis and what were the topics of the study?

---

<sup>7</sup> Such analysis might relate to requirements regarding data, services, applications, training & support

.....  
.....  
.....

If yes, when did you carry it out?

- Long time ago, Independent from the INSPIRE process
- Once, prior to the INSPIRE transposition phase
- Once, during the INSPIRE transposition phase
- At several stages of the INSPIRE implementation process:

If yes, are the results of the study / analysis available?

- Yes  
Reference: .....
- No

1.3 The way users are involved

How do/did you involve users in the INSPIRE & NSDI implementation process (several approaches might apply)?

- Through representatives in the coordinating structure
- Through a specific user group for INSPIRE / NSDI
- Through cooperation with an existing user association
- Through the creation of a user forum where developers and users meet
- Through the organisation of focus or thematic groups
- Through other means:

Please explain further (e.g. which users / user communities are addressed) and give the necessary references to documents or portals where possible/applicable:

.....  
.....  
.....

1.4 Collecting feedback from users (e.g. regarding the quality and usability of data and services, regarding the accessibility, ...)

Do/did you organise any of the following:

- User surveys  
Yes/no  
If yes, how frequent: .....  
Topics: .....  
.....  
Which type of users are addresses:  
.....
- Does a complaint mechanism exist?  
Yes / No  
If yes, how does it work?

.....  
 .....  
 If yes, what are the major topics on which you received complaints?  
 .....

- .....  
 .....  
 Is there any other feedback mechanism? .....  
 If you do not organise surveys or have any form of feedback mechanism, do you intend to set-up one (when)?  
 .....

## 2. The use of the infrastructure(s)

### 2.1 The way the use of the infrastructure is monitored

How do you monitor the use of your infrastructure (INSPIRE & NSDI)?

- By collecting the number of user requests at service level (as required by INSPIRE)
- Only network services that are INSPIRE conformant
  - All network services that are considered INSPIRE services (including those that are not INSPIRE conformant)
  - Also other services (beyond the scope of INSPIRE)
- Number of users of geoportals (unique visitors)
- National geoportal
  - Sub-national geoportals
  - Thematic geoportals
- Do you have this information available at the national level:  Yes  
 No
- Number of registered users (e.g. using an authentication service)
- Registration is done at the level of an individual person
  - Registration is done at the level of an organisation
  - Registration is done at the level of user groups or specific communities
- Other mechanisms: .....

Please give additional explanation if necessary:

.....  
 .....  
 .....

### 2.2 Knowledge about the use of your infrastructure (INSPIRE & NSDI)

Please indicate to which degree you agree with the following statement

*“We do not have a very precise idea about the number of users of our infrastructure”*

- Strongly agree       Agree       Either way       Disagree       Strongly disagree

Please explain:

.....

.....

.....

### 2.3 Analysing the use of network services and the geoportal

Please use as a starting point the figures on the use of the INSPIRE network services as collected in 2009 and 2010 for the INSPIRE Monitoring & Reporting.

Do you have such figures?

- Yes  
 No

If no, why not?

.....

.....

If yes, please indicate to which degree you agree with the following statement  
*“The figures from the INSPIRE MR on the use of network services are in line with what we expected”*

- Strongly agree       Agree       Either way       Disagree       Strongly disagree

Please explain

.....

.....

If yes, do you see any (expected / unexpected) developments between 2009 and 2010?

.....

.....

Do you have one single national geoportal<sup>8</sup>?

- Yes      URL: .....  
 No

Do you have more than one national geoportal?

- Yes  
 How many: .....  
 URL: .....  
 No

<sup>8</sup> “A geoportal is a type of web portal used to find and access geographic information (geospatial information) and associated geographic services (display, editing, analysis, etc.) via the Internet” - (Wikipedia, 2010).

Do you have a dedicated (separate) INSPIRE geoportal that is different from your national geoportal?

- Yes URL: .....
- No

What is the number of unique visitors to your national geoportal?<sup>9</sup>

For 2009: .....

For 2010: .....

#### 2.4 Indicators on the sale of spatial data sets

Please indicate to which degree you agree with the following statement  
*“We see a rise in sales of spatial data sets which are made accessible through network services”*

- Strongly agree       Agree       Either way       Disagree       Strongly disagree

Please explain (e.g. by giving an example from an important data provider):

.....  
 .....

### 3. Who is using the infrastructure and what is it used for

3.1 Do you have information on who is using the infrastructure (INSPIRE & NSDI) in practice (so not who might use the infrastructure potentially or has the right to do so)?

- At sectorial level  
 At organisational level  
 At individual level (persons)

How are you collecting this information and how detailed (e.g. surveys)?

.....  
 .....

3.2 Are any of the following sectors using the infrastructure (INSPIRE & NSDI)?

- Environmental monitoring & management  
 Agriculture  
 Regional and spatial planning  
 Transport & mobility  
 Security  
 Urban planning  
 Disaster/Emergency management  
 Tourism  
 Coastal Zone Management & Fisheries  
 Utility management

<sup>9</sup> Please clearly indicate if these are figures for the year, averaged per month, etc. If you have more than one or if your INSPIRE geoportal is different.

- Research
- Education
- Other: .....
- Not known

3.3 Are any of the following types of organisations using the infrastructure (INSPIRE & NSDI)?

- Public sector
  - At national level
  - At sub-national level (department, region, ...)
  - At local level
- Private sector
- Academic & research sector
- NGO
- Individual citizen
- Not known

Which of those are currently the most important users:  
.....

3.4 What is the infrastructure (INSPIRE & NSDI) being used for?

Are the network services mainly used for (give a number from 1 to 5 – from very important to less important)

- Finding spatial data
- Visualisation of spatial data
- Downloading of spatial data
- Transforming spatial data
- Publishing spatial data and their metadata
- Not known

Are the network services and the data behind used within any of the following activities?

- Spatial analysis
- Monitoring & reporting certain policies
- Creating and maintaining spatial data
- E-commerce
- Other: .....
- Not known

Is the infrastructure used in other activities?

- No
- Yes

If yes, which ones:

.....  
.....:

#### 4. Qualitative information on the use and the usability of the infrastructure

##### 4.1 Examples on the use of the infrastructure (INSPIRE & NSDI) in business processes

Is the infrastructure used in concrete business processes? A business process might be, e.g., in the field of policy making (ex-ante, ex post), or for service provision. It might be also in the field of research or in the private sector.

Example of a business processes in the public sector and private sector:

- The delineation of flooding areas in view of a policy “space for water” (giving back certain areas to the water in case of flooding they are given up)
- The organisation of public transport by a bus company: management of bus-stops, preparation and maintenance of bus-routes, etc.
- The preparation of the renewal of utility infrastructure (water, electricity, gas) during the maintenance of a road by a private company in a specific area.
- The search for and selection of a site for a new shopping area

Can you describe briefly two such processes? How does the infrastructure (INSPIRE & NSDI) support these processes in practice (please use maximum 10 lines for each case)?

.....  
 .....  
 .....

##### 4.2 Benefits of the infrastructure

Does the infrastructure (INSPIRE & NSDI) help to improve any of the following from the perspective of the business processes they are supposed to support. Please consider Government to Government (G2G), Government to Citizen (G2C) and Government to Business (G2B) Also here, we are not interested in how it might improve, but if it does so in practice.

	G2G (Yes/No)	G2C (Yes/No)	G2B (Yes/No)
Efficiency <sup>10</sup>			
Effectiveness & quality <sup>11</sup>			
Flexibility			
Innovation			

<sup>10</sup> Efficiency relates to the input needed in a process as compared to the expected output – does the infrastructure achieve more, faster, ..., in the processes by using the infrastructure

<sup>11</sup> Refers to whether the objectives are better met (with more quality).

Sustainability			
Client friendliness			
Openness & transparency			
Integrity and trust			

Please explain:

.....  
 .....  
 .....

Can you give some facts - in the form of examples – that demonstrate how decision making has improved by the availability of new components in the infrastructure (INSPIRE & NSDI)? The improvement can be in terms of any of the criteria mentioned in the table above (efficiency, ...)

.....  
 .....  
 .....

#### 4.3 Improving the infrastructure

How could the use of the infrastructure (INSPIRE & NSDI) be improved (tick the five most important)?

- By improving the metadata for data sets and services
- By making more data discoverable through the portal
- By setting up communication channels to inform participants
- By setting up a multi-lingual geoportal
- By improving the interoperability and/or harmonisation of the spatial data
- By adding more spatial data to the infrastructure
- By integrating network services better in existing processes
- By promoting the usage of the geoportal
- By providing more training on the use of the infrastructure
- By focusing on the most relevant policies and pilot projects
- By investing in better and more performing ICT infrastructure
- By giving better value for money (cheaper and/or better quality and/or more frequent update cycles)

Do you see other improvements to be made: .....

#### 4.4 Organisation of two dedicated interviews (witnesses)

Building further on the answers of 4.1, we would like to organise two dedicated interviews with users of the infrastructure. Such interviews would take around 1 hour and would use a topic list to carry out a semi-structured interview. The aim is to better understand the processes described briefly in 4.1 and how the INSPIRE & NSDI infrastructure is used. We will contact you by phone in the course of January or February.

There are two options:

- Option 1: the country studied (NCP or any local person) is doing the interview themselves. They receive the topic list and provide the result of the interview (preferably the transcribed interview).
- Option 2: the INSPIRE & NSDI SoP team is performing the interview. The country is providing the contact information of the person/organisation. Skype or similar technology might be used to carry out the interview.

## 6.2 Results of the questionnaire per country

Q1 - User involvement		2	3	4	5	6	7	8	9	10	11	12	13	16	17	19	20	23	25	26	27	28	29	30	31	32	34	
	TOT	BE	BG	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GR	IE	IS	LI	LT	MK	NL	NO	PL	PT	RO	SE	SI	SK	UK	
Q1.1 - Intended user community																												
INSPIRE																												
Public sector at national level	25	25	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Public sector at sub-national level	25	18	1	0	0	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	0	1	1	0	1	0	0	1
Public sector at local level	25	16	1	1	0	1	1	1	1	0	1	1	1	1	1	0	0	0	0	1	0	1	1	0	1	0	0	1
Private sector	25	18	1	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	0	0	1
Academic & research sector	25	21	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	0	0	1
NGO	25	16	1	1	0	1	1	1	1	0	1	1	1	1	1	0	0	0	0	1	1	1	0	1	1	0	0	1
Individual citizen	25	13	0	0	0	1	1	1	0	0	1	1	1	1	1	0	0	0	0	1	0	1	0	1	1	0	0	1
No answer	26	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NSDI																												
Public sector at national level	26	25	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Public sector at sub-national level	26	24	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1
Public sector at local level	26	25	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
Private sector	26	25	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
Academic & research sector	26	23	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1
NGO	26	22	1	1	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	1	1
Individual citizen	26	25	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
No answer	26	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
Q1.2 - User requirements study																												
Existence																												
Yes	26	12	1	1	1	0	1	0	0	0	0	1	1	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1
No	26	14	0	0	0	1	0	1	1	1	1	0	0	0	1	0	1	0	1	0	1	1	1	1	1	0	1	0
No answer	26	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
When																												
Long time ago, independent from the INSPIRE process	12	4	1	0	0	NA	0	NA	NA	NA	NA	1	1	0	NA	0	NA	0	NA	0	NA	NA	NA	NA	NA	1	NA	0
Once, prior to the INSPIRE transposition phase	12	3	0	0	0	NA	0	NA	NA	NA	NA	0	0	1	NA	1	NA	0	NA	0	NA	NA	NA	NA	NA	0	NA	1
Once, during the INSPIRE transposition phase	12	2	0	1	0	NA	0	NA	NA	NA	NA	0	0	0	NA	0	NA	0	NA	0	NA	NA	NA	NA	NA	1	NA	0
At several stages of the INSPIRE implementation process	12	5	0	0	1	NA	1	NA	NA	NA	NA	1	0	0	NA	0	NA	1	NA	1	NA	NA	NA	NA	NA	0	NA	0
No answer	12	0	0	0	0	NA	0	NA	NA	NA	NA	0	0	0	NA	0	NA	0	NA	0	NA	NA	NA	NA	NA	0	NA	0
Q1.3 - The way users are involved																												
Representatives in the coordinating structure	26	23	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	1	1	1	1	1	1	1
Specific user group for INSPIRE / NSDI	26	10	1	0	0	0	1	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0
Cooperation with a user association	26	14	0	1	1	0	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	0	1	1	0	0	
User forum where developers and users meet	26	11	0	0	1	0	0	1	1	0	0	1	0	0	0	0	1	0	0	1	1	1	0	1	0	1	1	
Organisation of focus or thematic groups	26	12	1	0	0	1	0	1	0	1	0	1	1	0	0	1	0	1	0	0	1	0	1	1	0	0	0	1
Through other means	26	10	0	0	1	0	1	0	0	1	0	1	0	1	0	0	0	1	0	1	0	1	1	0	1	0	0	
No answer	26	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	
Q1.4 - User feedback																												
User survey	26	9	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	1	0	0	1	0	0	0	1	0	1	1
Complaint mechanism	26	14	0	0	1	0	1	0	1	1	1	1	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	1
Other feedback mechanism	26	14	1	0	1	0	1	0	0	1	0	0	1	0	1	0	1	0	1	0	1	1	1	1	1	0	0	1
Planned	26	9	1	1	0	1	1	1	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	
No answer	26	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	

Q2 - Use of the infrastructure			2	3	4	5	6	7	8	9	10	11	12	13	16	17	19	20	23	25	26	27	28	29	30	31	32	34	
		TOT	BE	BG	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GR	IE	IS	LI	LT	MK	NL	NO	PL	PT	RO	SE	SI	SK	UK	
Q2.1 - Monitoring the use																													
User request at service level																													
Only network services that are INSPIRE conformant		14	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	
All network services that are considered INSPIRE services		14	6	0	0	0	0	1	0	0	0	1	1	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	
Also other services		14	6	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
No answer		26	12	0	1	0	1	0	0	1	0	0	0	1	1	1	0	0	1	1	0	0	1	0	1	0	1	1	
Number of users of geoportals																													
National geoportal		13	12	0	0	1	0	1	0	1	1	1	0	1	0	0	1	1	0	0	1	1	0	1	1	0	0	0	
Sub-national geoportals		13	3	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Thematic geoportals		13	4	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
No answer		26	13	1	0	0	1	0	1	1	0	0	1	0	1	1	0	0	1	1	0	0	1	0	0	1	1	1	
Number of registered users																													
Registration at the level of an individual person		14	10	1	0	0	1	0	0	1	1	1	0	0	0	0	0	1	0	0	0	1	1	1	1	1	0	0	
Registration at the level of an organisation		14	9	1	0	0	1	0	1	0	0	0	0	0	1	0	1	1	0	0	1	0	1	1	0	0	0		
Registration at the level of user groups or specific communities		14	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0		
No answer		26	12	0	1	1	1	0	1	0	0	0	1	1	0	1	0	0	1	1	0	0	0	0	0	1	1	1	
Q2.2 - "We do not have a very precise idea about the number of users of our infrastructure"																													
Strongly agree		26	5	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	
Agree		26	9	0	0	0	0	1	0	1	1	1	1	0	0	0	0	1	1	0	1	0	1	0	0	1	0	0	
Either way		26	7	0	0	1	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	
Disagree		26	5	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	
Strongly disagree		26	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	
No answer		26	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	
Q2.3 - Use of services and geoportal																													
Figures use INSPIRE network services																													
Yes		26	11	1	0	0	0	1	0	1	1	1	1	1	0	0	0	0	0	1	0	0	0	1	0	1	1	0	
No		26	15	0	1	1	1	0	1	0	0	0	0	0	1	1	1	1	1	0	1	1	1	0	1	0	0	1	
No answer		26	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 figures from the INSPIRE MR on the use of network services are in line with what we expected"																													
Strongly agree		15	2	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Agree		15	8	1	0	0	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	0	1	0	0	
Either way		15	5	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	
Disagree		15	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	
Strongly disagree		15	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	
No answer		26	11	0	0	1	1	0	0	0	0	0	0	0	1	1	1	1	1	0	1	0	1	0	1	0	0	1	
Geoportal																													
Unique national geoportal		25	16	0	0	0	1	0	1	0	0	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1
Several national geoportals		25	5	0	1	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Dedicated INSPIRE geoportal		25	3	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
No answer		26	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Q2.4 - Sale of geospatial data sets																													
Strongly agree		15	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Agree		15	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	
Either way		15	8	0	0	0	1	1	0	1	0	1	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	
Disagree		15	3	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
Strongly disagree		15	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	
No answer		26	11	1	1	0	0	0	1	0	0	0	1	0	1	1	0	0	1	0	1	0	1	1	0	0	0	1	

Q3 - Users and usage		TOT	2	3	4	5	6	7	8	9	10	11	12	13	16	17	19	20	23	25	26	27	28	29	30	31	32	34	
			BE	BG	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GR	IE	IS	LI	LT	MK	NL	NO	PL	PT	RO	SE	SI	SK	UK	
Q3.1 - Information available																													
	At sectoral level	19	13	0	0	0	1	1	0	1	1	0	1	0	1	0	0	1	1	0	0	1	1	0	0	0	1	1	1
	At organisational level	19	18	1	0	0	1	1	0	1	1	1	1	0	1	0	0	1	1	1	1	1	0	1	1	0	1	1	
	At individual level (persons)	19	11	1	0	0	1	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0	1	1
	No answer	26	7	0	1	1	0	0	1	0	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	
Q3.2 - Sectors																													
	Environmental monitoring & management	19	19	1	1	1	1	1	0	1	1	1	1	0	1	1	0	1	1	0	1	1	1	0	1	0	1	1	0
	Agriculture	19	18	1	1	1	1	1	0	1	1	0	1	0	1	1	0	1	1	0	1	1	1	0	1	0	1	1	0
	Regional and spatial planning	19	18	1	1	1	1	1	0	1	1	1	1	0	1	1	0	1	1	0	1	1	1	0	0	0	1	1	0
	Transport & mobility	19	17	1	1	1	1	1	0	1	1	1	1	0	1	1	0	1	0	0	1	1	1	0	1	0	0	1	0
	Security	19	9	0	0	1	0	1	0	1	1	0	1	0	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0
	Urban planning	19	14	1	1	1	1	1	0	1	1	0	1	0	1	0	0	0	0	0	1	1	1	0	1	0	0	1	0
	Disaster/Emergency management	19	18	1	1	1	1	1	0	1	1	1	1	0	1	0	0	1	1	0	1	1	1	0	1	0	1	1	0
	Tourism	19	10	1	1	1	1	1	0	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0
	Coastal Zone Management & Fisheries	19	8	1	1	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0
	Utility management	19	14	1	1	1	1	1	0	1	1	1	1	0	1	0	0	1	0	0	1	1	0	0	0	0	1	0	0
	Research	19	15	1	1	1	1	1	0	1	1	1	1	0	1	1	0	0	1	0	0	1	1	0	0	0	0	1	0
	Education	19	15	1	0	1	1	1	0	1	1	1	1	0	1	1	0	1	1	0	0	1	1	0	0	0	0	1	0
	Other	19	7	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	1	0	1	1	0	0	0	0	0	0	0
	No answer	26	7	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	1	0	0	1	0	1	0	0	0	1
Q3.3 - Types of organisations																													
	Public sector at national level	22	21	1	0	1	1	1	0	1	1	1	1	1	1	0	1	1	0	1	1	1	0	1	1	1	1	1	1
	Public sector at sub-national level	22	22	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	0	1	1	1	0	1	1	1	1	1
	Public sector at local level	22	22	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	0	1	1	1	0	1	1	1	1	1
	Private sector	22	18	1	1	1	1	1	0	1	1	1	1	1	1	0	0	0	1	0	1	1	1	0	1	0	0	1	1
	Academic & research sector	22	19	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	0	1	1	1	0	0	0	0	1	1
	NGO	22	16	0	1	1	1	1	0	1	1	0	1	1	1	0	0	0	1	0	1	1	1	0	0	0	1	1	1
	Individual citizen	22	17	1	1	1	1	0	0	1	1	1	1	1	1	0	0	1	1	0	0	1	1	0	1	0	0	1	1
	No answer	26	4	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0
Q3.4 - Type of activities																													
	Access																												
	Finding spatial data	NA	38	4	1	1	1	1	0	1	3	2	1	1	1	0	4	1	0	2	3	2	1	2	1	1	2	1	1
	Visualisation of spatial data	NA	44	4	1	2	1	2	0	1	1	5	1	2	1	4	0	1	1	0	3	1	1	1	3	1	1	1	5
	Downloading of spatial data	NA	72	5	5	3	1	4	0	1	4	4	5	3	1	3	0	3	1	0	4	4	5	1	5	1	1	3	5
	Transforming spatial data	NA	102	1	5	5	5	5	0	1	4	1	5	5	5	5	0	5	5	0	5	5	5	5	5	5	5	5	5
	Publishing spatial data and their metadata	NA	66	5	5	4	1	3	0	1	1	3	5	5	5	2	0	2	5	0	1	2	3	1	1	5	1	4	1
	No answer	26	3	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
	Use																												
	Spatial analysis	17	11	1	0	1	1	1	0	0	1	0	0	0	0	1	0	1	1	0	1	1	0	0	0	0	0	1	0
	Monitoring & reporting certain policies	17	13	0	0	0	1	1	0	1	1	0	1	0	0	1	0	1	1	0	1	1	0	1	0	0	1	1	0
	Creating and maintaining spatial data	17	8	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	1
	E-commerce	17	3	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Other	17	3	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	No answer	26	9	0	1	0	0	0	1	0	0	0	0	1	1	0	1	0	0	1	0	0	1	0	1	1	0	0	0

Q4 - Qualitative information			2	3	4	5	6	7	8	9	10	11	12	13	16	17	19	20	23	25	26	27	28	29	30	31	32	34
	TOT	BE	BG	CH	CY	CZ	DE	DK	EE	ES	FI	FR	GR	IE	IS	LI	LT	MK	NL	NO	PL	PT	RO	SE	SI	SK	UK	
Q4.1 - Examples of processes																												
Number of examples given	18	33	2	2	0	2	1	2	0	2	1	2	2	0	0	0	2	2	0	2	2	2	0	2	2	1	2	0
Number of valid examples	18	14	2	0	0	0	0	0	0	2	1	0	2	0	0	0	0	0	0	2	0	2	0	0	2	1	0	0
No answer	26	8	0	0	1	0	0	0	1	0	0	0	0	1	1	1	0	0	1	0	0	0	1	0	0	0	0	1
Q4.2 - Benefits																												
G2G																												
Efficiency	19	18	1	0	1	1	1	1	1	1	1	1	0	0	1	0	1	1	0	1	1	1	0	1	0	1	1	0
Effectiveness & quality	19	14	1	0	1	1	1	0	1	1	0	1	0	0	0	0	1	0	0	1	1	1	0	1	0	1	1	0
Flexibility	19	17	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	0	0	1	1	0	1	0	1	1	0
Innovation	19	14	1	1	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	0
Sustainability	19	13	1	1	0	1	1	0	1	1	0	1	0	0	0	0	1	0	0	0	1	1	0	1	0	1	1	0
Client friendliness	19	15	1	0	1	1	1	1	1	1	0	1	0	0	0	1	1	0	0	1	1	1	0	1	0	1	1	0
Openness & transparency	19	18	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0	1	1	1	0	1	0	1	1	0
Integrity and trust	19	13	1	1	0	1	1	0	0	1	1	1	0	0	0	0	1	0	0	0	1	1	0	1	0	1	1	0
No answer	26	7	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	0	1	0	1	0	0	1
G2C																												
Efficiency	18	17	1	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	0	1	1	1	0	1	0	1	1	0
Effectiveness & quality	18	15	1	0	1	1	1	0	1	1	1	1	0	0	0	0	1	0	0	1	1	1	0	1	0	1	1	0
Flexibility	18	13	1	0	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	0	0	1	0	1	0	0	1	0
Innovation	18	10	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0
Sustainability	18	9	1	1	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1	0
Client friendliness	18	15	0	1	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	1	1	1	0	1	0	0	1	0
Openness & transparency	18	15	0	1	1	1	1	1	1	1	0	1	0	0	0	1	1	0	1	1	1	0	1	0	0	1	1	0
Integrity and trust	18	11	0	1	0	1	1	0	0	1	0	1	0	0	0	1	0	0	0	0	1	1	0	1	0	1	1	0
No answer	26	8	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	1	0	0	0	1	0	1	0	0	1
G2B																												
Efficiency	18	16	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	1	1	1	0	1	0	1	1	0
Effectiveness & quality	18	12	1	0	1	1	0	0	1	1	0	0	0	0	0	0	1	0	0	1	1	1	0	1	0	1	1	0
Flexibility	18	14	1	0	1	1	0	1	1	1	1	0	0	0	0	0	1	1	0	0	1	1	0	1	0	1	1	0
Innovation	18	13	1	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	0	1	0	1	1	0
Sustainability	18	8	1	0	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	0
Client friendliness	18	15	1	0	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	1	1	1	0	1	0	0	1	0
Openness & transparency	18	15	1	0	1	1	1	1	1	1	0	1	0	0	0	0	1	1	0	1	1	1	0	1	0	0	1	0
Integrity and trust	18	11	1	1	0	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	1	1	0	1	0	0	1	0
No answer	26	8	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	1	0	0	0	1	0	1	0	0	1
Q4.3 - Improving the infrastructure																												
Improving the metadata for data sets and services	23	9	0	0	1	0	1	1	0	1	0	0	1	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0
Making more data discoverable through the portal	23	16	0	1	1	1	1	1	0	0	0	0	1	1	0	0	1	1	1	1	1	1	0	1	1	0	1	0
Setting up communication channels to inform participants	23	6	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Setting up a multi-lingual geoportals	23	4	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Improving the harmonisation of the geodata	23	17	1	1	1	1	1	1	1	1	0	1	0	1	0	0	0	0	1	0	1	1	0	1	1	1	1	0
Adding more geodata to the infrastructure	23	14	1	0	0	1	1	0	0	0	1	1	0	1	0	0	1	1	0	1	1	1	1	0	1	0	1	0
Integrating network services better in existing processes	23	14	0	0	0	1	0	1	0	1	1	1	1	0	0	0	1	0	0	1	1	1	1	0	1	1	1	0
Promoting the usage of the geoportals	23	12	0	1	0	0	0	0	1	1	0	0	1	1	0	0	1	1	1	1	0	0	1	1	0	0	1	0
Providing more training on the use of the infrastructure	23	10	0	1	0	0	1	0	1	0	1	0	1	1	0	0	0	0	0	0	1	1	1	0	0	0	1	0
Focusing on the most relevant policies and pilot projects	23	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0
Investing in better and more performant ICT infrastructure	23	8	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	1	0	0	0	1	0	0	0	1	0
Giving better value for money	23	7	1	0	1	0	1	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
No answer	26	3	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1

## 6.3 Topic list interviews business processes

**Means:** interview preferably by Skype, otherwise by phone

**Length:** between 30' and 60' (maximum)

**Aim:** describe a concrete work process in public or private sector in which spatial data and services, and GIS or similar software are used; collect examples how INSPIRE components are used in this context.

**Topics:**

**[Topics are meant to be discussed in one or another way, not literal questions]**

1. General information on the organization and the person interviewed
  - a. Name of the organization and role in the process
  - b. Name of the person interviewed and role in the process
2. Can you describe the process in more detail
  - a. Brief description of the process.
  - b. Who is the owner of the process?
  - c. What are the most important other organizations that are involved? What is their role?
  - d. What is the most important output of the process (e.g. a spatial plan), what are the intended outcomes (these might be less tangible like an improved spatial planning process)?
  - e. What is the time frame of the process? Is there repetition; is it continuous?
  - f. Is the flow of information important for the process? If so, how is this happening: circulation of paper documents, digital flows, access to data repositories, ..., a combination of these?
  - g. How important would you rate spatial data and geographic information for the process: very important / important / "nice to have it"
3. Input to the process
  - a. What are the spatial data needed in the process (list them – preferably based on the themes of INSPIRE)? What are the sources of the data (own data, external data provider – direct or through the (N)SDI)?
  - b. How are external data accessed? Is the geo-portal used? If so does this happen occasionally (e.g. to find new versions of the data) or rather systematically? Is the search-find-bind pattern applied?
  - c. What are the steps and efforts needed to access and/or obtain the spatial data? Do you need to set-up specific agreements & licenses (payment procedures)? Do you need to re-engineer/harmonize the spatial data before you can use them in the process?

- d. How would you evaluate the overall access to external spatial data you need? What could eventually be improved?
4. Throughput of the process (i.e. the process itself)
- a. How are the spatial data used in the process: consultation (view, query, ...); analyzing & processing; editing; ...
  - b. Do you create new spatial data sets in the process: can you describe them briefly?
  - c. How intensively are the spatial data used: daily, weekly, ... How many people
  - d. Are you using network and spatial data services during the process (WMS, WFS, WPS, ...). How does this happen in practice (e.g. loading a service from your desktop GIS; using a separate application)
  - e. Are you invoking/chaining/orchestrating services?
  - f. How important is it to have the spatial data on your own computers? Why? Is the use of spatial data through services performing enough?
  - g. How would you evaluate the use of spatial data in the process? Which potential use of spatial data and services do you see?
5. Output of the process
- a. Are you publishing or disseminating the spatial data (and other information) that results from the process (if any)? Why/why not?
  - b. How are you doing this: e.g. publishing on own website as a map, creating metadata and publish that on a geoportal, distribution of the spatial data sets, create a service on top of the data and make that service accessible, etc.
  - c. How would you evaluate the dissemination of spatial data sets that are created in the process? What could be improved?