

## INSPIRE: A Real Step Forward in Building an Interoperable and Unified Spatial Information Infrastructure for Europe?

**Catherine DOLDIRINA**, PhD Candidate and Boeing Fellow,  
 Institute of Air and Space Law, McGill University, Montreal, Canada

*The European Directive 2007/2/EC establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) obligated EU Member States to enact respective national regulations to implement its provisions not later than 15 May 2009, the date which is just around the corner. The laws and regulations adopted have to be supported by administrative measures that make their enforcement effective. This paper assesses the history of the Directive's adoption and the progress made so far in the task of making its provisions a European reality. It highlights the issues that have to be addressed by each Member State to properly set up its information infrastructure to be compatible with the European standards. While sketching these issues, it points out difficulties and the possible best practices leading to the establishment of a truly European spatial information infrastructure.*

### Political and de facto drivers for setting up a European spatial data infrastructure

Directive 2007/2/EC of the European Parliament and of the Council establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) was passed on 14 March 2007.<sup>1</sup> Prior to the decision to draft and adopt the INSPIRE Directive Europe was facing some problems with regard to the gathering, storage, management and dissemination of spatial (geographic) information. These included among others the restrictions imposed by data policies (copyright protection of data, licensing conditions and pricing); the lack of coordination among the European authorities on different levels; the lack of standards regarding modes of data storage and metadata; as well as difficulties to re-use existing data and data sets due to the lack of integration of fragmented information across Europe.<sup>2</sup>

These issues brought forward several major

needs that the infrastructure, which the INSPIRE Directive established the basis for, would satisfy.<sup>3</sup> First of all, it is the need to provide information in order to support policies and decision-making within the European Union. Secondly, it is the need to improve information flows among different institutions of the European Union and of the Member States. Thirdly, there is a need to consider that data are often gathered at regional and local levels creating a disparity in their type and quality. Lastly, it is the need of better processes and methods of sharing of information that can improve the procedure of reporting and monitoring both on the national and the European level.

The INSPIRE Directive is directly related to space activities due to several reasons. First of all, it concerns the set-up of a spatial information infrastructure, which nowadays is hardly possible without use of some space data (both earth observation and geographic positioning data). INSPIRE, if set up as planned<sup>4</sup> will establish the framework for the

<sup>1</sup> 25.04.2007 OJ L 108/1. Hereinafter INSPIRE Directive.

<sup>2</sup> Timo Makela. INSPIRE Directive of the European Parliament and the Council establishing an Infrastructure for Spatial Information in the European Community. Online: <[http://www.mmm.fi/attachments/5eWDNtABr/5s1jbFEt0/Files/CurrentFile/Makelan\\_INSPIRE-seminaari.pdf](http://www.mmm.fi/attachments/5eWDNtABr/5s1jbFEt0/Files/CurrentFile/Makelan_INSPIRE-seminaari.pdf)> (last accessed 06.02.2009).

<sup>3</sup> *Ibid.*

<sup>4</sup> Sec(2001) 993 of 16/06/2001 Commission Staff Working Paper – Joint document from Commission services and European Space Agency. Online: <<http://gmes.jrc.it/Documents/documents.htm>> (last accessed 06.02.2009).

timely and efficient delivery of GMES information,<sup>5</sup> one of priority themes of which is to contribute to the development of a European geographic information infrastructure.

**INSPIRE, if set up as planned will establish the framework for the timely and efficient delivery of GMES information, one of priority themes of which is to contribute to the development of a European geographic information infrastructure.**

Secondly, the INSPIRE Directive aims at creating an infrastructure for spatial data sharing to support environmental policies and decision making in environment related matters. In this regard, according to the European Space Policy "space represents a significant element of Europe's Sustainable Development Strategy and is relevant to the Common Foreign and Security Policy, supporting their goals by providing vital information on critical global issues such as on climate change<sup>6</sup> and humanitarian aid".<sup>7</sup> Therefore, INSPIRE will integrate space generated data, thereby tying together the two areas – the establishment of geographic information infrastructures and the relevant space activities.

### History of the drafting and scope

The three European Union institutions that were responsible for drafting the INSPIRE Directive and which are in charge of its implementation are the Directorate General (DG) Environment, Eurostat, and the Joint Research Centre (JRC). DG Environment has the capacity of the overall legislative and policy co-ordinator for INSPIRE. Eurostat is the coordinator of the overall implementation of the infrastructure. JRC is responsible for the overall technical coordination of INSPIRE.<sup>8</sup>

The origins of the initiative to adopt the INSPIRE Directive go back to April 2002 when

the cornerstones of a harmonised European spatial data infrastructure were set up.<sup>9</sup> INSPIRE addresses both technical and non-technical issues, ranging from technical standards and protocols, organisational aspects, data policy issues including data access schemes and the creation and maintenance of geographical information layers for a wide range of themes, starting with the environmental sector.<sup>10</sup>

The lengthy work on the drafting and implementation of the INSPIRE Directive involves consultations with and contributions from different interest groups. The logical explanation of this fact is that a lot of actors within the geographic information and decision-making communities have a stake in the development of INSPIRE and their opinion should be considered for the best implementation process. The participants are divided into Spatial Data Interest Communities (SDIC) and Legally Mandated Organizations (LMO). LMO represent those organizations at the local, regional, national, or international level that have a formal legal mandate over specific thematic data resources.<sup>11</sup> The lists of registered SDICs and LMOs are excessive and can be accessed online.<sup>12</sup> Consultations with these entities were conducted while drafting of the most crucial provisions of INSPIRE Directive.

It is not the aim of this paper to concentrate on the provisions of INSPIRE Directive in great detail, but the key issues it addresses should be pointed out.<sup>13</sup> First of all, the Directive has a limited subject-matter, as it only focuses on data in support of the environment held by public authorities, with some exceptions.<sup>14</sup> Another limitation the Directive embodies is the

<sup>5</sup> Communication from the European Commission, Global Monitoring for Environment and Security (GMES): We Care for a Safer Planet. COM(2008) 748 final.

<sup>6</sup> With reference to the recent report of the United Nations' Intergovernmental Panel on Climate Change and the significant contribution space-based information systems can provide in this context for the future of our planet

<sup>7</sup> Resolution on the European Space Policy, Council of the European Union. May 16, 2007. DS 471/07.

<sup>8</sup> Infrastructure for Spatial Information in Europe: INSPIRE Status report 2008-11-18. Online: [http://www.eurogi.org/SITE/UPLOAD/DOCUMENT/News\\_2008/Update\\_INSPIRE\\_status\\_20081118.pdf](http://www.eurogi.org/SITE/UPLOAD/DOCUMENT/News_2008/Update_INSPIRE_status_20081118.pdf) (last accessed 06.02.2009).

<sup>9</sup> Memorandum of understanding between Commissioners Wallström, Solbes, Busquin Infrastructure for Spatial Information in Europe (INSPIRE) (April 11, 2002). Online: <http://inspire.jrc.ec.europa.eu/reports/MoU.pdf> (last accessed 06.02.2009).

<sup>10</sup> Annex to it: INSPIRE, a new Commission initiative to contribute to sound knowledge for good governance through a European Spatial Information Infrastructure. Online: <http://inspire.jrc.ec.europa.eu/reports/MoU-annex.pdf> (last accessed 06.02.2009).

<sup>11</sup> Max Craglia, Karen Fullerton and Alessandro Annoni. INSPIRE: an Example of Participative Policy-making in Europe. 2005 *Geoinformatics* 43-47.

<sup>12</sup> See at <http://inspire.jrc.ec.europa.eu/ir/index.cfm> (last accessed 06.02.2009).

<sup>13</sup> For this the Digital National Framework (DNF) White Paper Implications of the INSPIRE Directive was used (April 2008). Online: [www.dnf.org/Papers/DNF\\_White\\_Paper\\_INSPIRE\\_V1%200c.pdf](http://www.dnf.org/Papers/DNF_White_Paper_INSPIRE_V1%200c.pdf) (last accessed 06.02.2009).

<sup>14</sup> This limitation may be considered as a negative aspect, but stems most likely from the limited competence of the European Union.

absence of a stipulation to collect new data, but rather the regulation of the sharing of the existing data, data sets and information within the Community. The aim of the Directive is to set up the European spatial information infrastructure that will be interoperable with respective national infrastructures within the Member States. The INSPIRE Directive only prescribes that the network services to discover, transform, view and download spatial data shall be provided at the Community level and that the same national services shall be coherent with the Directive's provisions.<sup>15</sup> Moreover, the Directive does not directly obligate the Member States to create national geographic information portals.

According to Article 24(1) INSPIRE Directive the Member States have an obligation to enact and enforce the laws, regulations and provisions that are necessary to comply with the Directive by May 15, 2009. In this regard it is worth noting that some MS do not have the legislation transposing the Directive's provisions into the national system of laws: in the UK, a team to work on the implementation procedure was set up only in August 2008.<sup>16</sup> In Poland, the Proposal on the INSPIRE Transposition Law should have been submitted to the parliament at the beginning of 2009.<sup>17</sup> In Spain, the first draft of the INSPIRE transposition law was prepared in October 2008.<sup>18</sup> The project "INSPIRE Atlas of Implementation Methods" aimed at the description of the implementation of INSPIRE in different Member States was launched by the EuroSDR, but is currently at the stage of development and provides no information.<sup>19</sup> Delays in transposition of the Directive's provisions may hamper the process of actual set-up of the INSPIRE infrastructure itself.

**The rules regarding the establishment of INSPIRE are provided in a Directive, which means that the Member States have to ensure its proper implementation in order to achieve the level of harmonisation the European document sets out.**

In addition to the implementation of the provisions of the Directive itself, it foresees the adoption of Implementing Rules and special Guidelines that contain more detailed rules regarding technical aspects of the establishment of the infrastructure.<sup>20</sup> These documents will regulate the issues concerning metadata, network services, data specifications, data and service sharing, as well as monitoring and reporting. The difference between the Implementing Rules (adopted in the form of Regulations) and the Guidelines lies in their legal nature. The former contain legally binding provisions and focus on stable elements of the infrastructure, while the latter provide recommendations regarding details of the technical implementation.<sup>21</sup>

### INSPIRE Metadata Regulation

The INSPIRE Metadata Regulation<sup>22</sup> is the first which has been adopted (unanimously by the European Parliament) and shall be applied by the Member States in the relevant implementation procedures. It contains the definition of metadata, of their elements, as well as the process of their creation and maintenance. Essentially, metadata is the description of the data contained in or accessible through an information infrastructure, as well as of the services that are deliverable through it.<sup>23</sup> According to the Regulation, the elements of metadata include their identification, classification of spatial data and services, keywords, geographic location, temporal reference, quality and validity, conformity, constraint related to access and use, organisation responsible for the establishment, management, maintenance and distribution of spatial sets and services, metadata on metadata.

<sup>15</sup> Article 11 INSPIRE Directive.

<sup>16</sup> UK Location Strategy Implementation. GIM International news (August 12, 2008). Online: [http://www.gim-international.com/news/id3246-UK\\_Location\\_Strategy\\_Implementation.html](http://www.gim-international.com/news/id3246-UK_Location_Strategy_Implementation.html) (last accessed 06.02.2009).

<sup>17</sup> Jerzy Gazdzicki, Adam Iwaniak. Towards SDI Legislation in Poland INSPIRE Conference (23-25 June 2008). Online: [http://www.ecgis.org/Workshops/inspire\\_2008/presentations/06\\_05\\_gazdzicki.pdf](http://www.ecgis.org/Workshops/inspire_2008/presentations/06_05_gazdzicki.pdf) (last accessed 06.02.2009).

<sup>18</sup> Sebastian Mas, Ignacio Duran. The Spanish NSDI: Spain National SDI & INSPIRE Implementation. EuroGeographics General Assembly (5-8 October 2008). Online: <http://egga2008.ancpi.ro/images/PDF/Tuesday%2006.10.2008/Implementing%20Inspire%20in%20Spain.pdf> (last accessed 06.02.2009).

<sup>19</sup> See online: [http://bono.hostireland.com/~euosdr/start/index.php?option=com\\_content&task=view&id=48&Itemid=72](http://bono.hostireland.com/~euosdr/start/index.php?option=com_content&task=view&id=48&Itemid=72) (last accessed 06.02.2009).

<sup>20</sup> Infrastructure for Spatial Information in Europe: INSPIRE Status report 2008-11-18 (Reference: IINSPIRE\_status\_20081118).

<sup>21</sup> Daniele Rizzi. INSPIRE Progress. INSPIRE Conference (23-25 June 2008). Online: [http://www.ec-gis.org/Workshops/inspire\\_2008/presentations/02\\_01\\_rizzi.pdf](http://www.ec-gis.org/Workshops/inspire_2008/presentations/02_01_rizzi.pdf) (last accessed 06.02.2009).

<sup>22</sup> Commission Regulation (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata. OJ L 326/12-30.

<sup>23</sup> Cf. Article 3(6) INSPIRE Directive.

The Metadata Regulation, as well as the rules governing other services<sup>24</sup> being prepared, take into account the developed European and international (including those adopted by the International Standardisation Organisation (ISO)) standards in order to make the European INSPIRE compatible with other national and international comparable infrastructures, and serve as the information platform for the GMES and subsequently for the Geographic Earth Observation System of Systems (GEOSS).

### Setting up the INSPIRE infrastructure: access and charging issues

According to the Directive, some data sets and services within INSPIRE, or any data sets and services under particular circumstances will be available only to public authorities.<sup>25</sup> Although Article 13 (2) Directive obligates Member States to restrictively interpret the exceptions of Article 13 (1), this situation may preclude the citizens of the European Union from exercising their right to receive information regarding the environment under the Aarhus Convention.<sup>26</sup> To avoid such a scenario, the exceptions of Article 13 INSPIRE Directive have to be laid down as precisely as possible in the national implementing regulations of the Member States.

Although the general principle of data distribution under the INSPIRE Directive is that data sets and services are provided free of charge,<sup>27</sup> there are some exceptions to it. Article 14(2) INSPIRE Directive allows producers of large volumes of frequently updated data to charge for the provision of their data, but does not clearly state that only such producers are granted this exception.<sup>28</sup> Therefore, in parallel with the “only public authority” scenario of access, this provision, when transposed into national legal systems, should be clarified as much as possible not to leave to much discretion as to who and under which circumstances may charge for the

provision of data for INSPIRE and for the access to it.

Furthermore, the INSPIRE Directive does not rule out the possibility of public authorities to return their investment (for the set-up and maintenance of data sets within INSPIRE, as well as for the provision of the relevant services), and the Commission is not expected to give any guidelines as to what constitutes “reasonable” investment in terms of the INSPIRE Directive. Some of the commentators believe that this provision should not be a hurdle in sharing the data, which is the primary obligation under the Directive.<sup>29</sup>

### Setting up the INSPIRE infrastructure: intellectual property issues

Another very important issue that the INSPIRE Directive left to the Member States is that of intellectual property rights of public authorities over the data they produce.<sup>30</sup> INSPIRE does not “define a new way of sharing, using and reusing geodata, away from an “all rights reserved” approach towards a “some rights reserved” approach.”<sup>31</sup> Moreover, intellectual property attached to data sets contained in the INSPIRE infrastructure or services delivered through it may serve as a ground to restrict access to such data.<sup>32</sup>

**Access, charging and intellectual property issues of INSPIRE establishment, details of the implementation of which are left to the Member States, should receive special attention not to override the fundamental principles of INSPIRE of widest sharing of and access to data sets.**

Such an approach can complicate the acquisition of data and their subsequent sharing. Therefore, both the providers of data and services and their users will have to, on one hand, to verify whether there are intellectual property rights attached to a data set or a service, and on the other, to establish whether there are rights over it that belong to any third party (providers), and to check the bundle of rights attached to a data set or service (end users).<sup>33</sup>

<sup>24</sup> Monitoring and reporting, discovery and view, download and transformation services, as well as access rights of use to spatial data sets and services for Community institutions and bodies and interoperability and harmonisation of spatial data sets and services for Annex I spatial data themes.

<sup>25</sup> The list of all exceptions regarding the access to data sets and services within the INSPIRE is contained in Article 13 INSPIRE Directive.

<sup>26</sup> Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters, 25.06.1998, (1999) 38 *ILM* 517.

<sup>27</sup> Article 14(1) INSPIRE Directive.

<sup>28</sup> Hugo de Groof. INSPIRE Legal Transposition. INSPIRE Conference (23-25 June 2008). Online: <[http://www.ec-gis.org/Workshops/inspire\\_2008/presentations/02\\_02\\_degr\\_oof.pdf](http://www.ec-gis.org/Workshops/inspire_2008/presentations/02_02_degr_oof.pdf)> (last accessed 06.02.2009).

<sup>29</sup> *Ibid.*

<sup>30</sup> Recital 9 INSPIRE Directive.

<sup>31</sup> *Ibid.* Means essentially “a business model for licensing geographic information, based on a set of rights associated with specific geospatial resources”.

<sup>32</sup> Article 13(1)(e) INSPIRE Directive.

<sup>33</sup> Roberta Lucà *et al.* Legal aspects about sharing geodata: a

## Perspectives regarding the unified geographic information system for Europe and recommendations

Although a lot is already done on the way to set up a functioning INSPIRE infrastructure, the practical steps towards its implementation are still to be made. According to Article 21 (2) INSPIRE Directive, by 15 May 2010 Member States have to submit to the Commission reports regarding the progress of implementing the INSPIRE infrastructure. These reports shall include the summary of the methods of coordination of the work of data providers and users, their relationships with third parties, the progress and contributions to the functioning of the infrastructure for spatial information, data-sharing agreements between public authorities, as well as costs and benefits of implementation of the INSPIRE Directive. These reports will provide all interested parties with the best practices as well as problems of the actual setting up of the INSPIRE infrastructure. Without doubt they will shed some light on how the “problematic” provisions<sup>34</sup> of the INSPIRE Directive will be transposed into national legislation and incorporated into the functioning infrastructures.

Certainly, such an infrastructure as INSPIRE will have its impact on different spheres of governance as well as on the relationships among actors involved regarding gathering and sharing data sets as well as delivering relevant services.<sup>35</sup> With regard to governance processes in this field the implementation of the INSPIRE Directive will lead to several different results or practices: firstly, to centralization, stipulated by the need for standards and formalization; secondly, to decentralization – through involvement of the Member States and their national and regional resources; and finally, to re-centralization – by virtue of re-alignment of the old structures and actors into new associations, as well as forming new relationships.

In essence, INSPIRE provides a legislative framework that promotes best practices of publishing data once and using them many times.<sup>36</sup> As a result, it can become a tool to

implement and monitor environmental policies within the European Union in a timelier and less expensive way that will have its beneficial effects on all levels of society. INSPIRE is a first step in forming a broader vision for a European Shared Environmental Information System which includes many applications for environmental management and reporting built on the INSPIRE foundations.<sup>37</sup> This will also include the activities within GMES and will help integrate European contribution to GEOSS.

**When undertaking practical steps of implementing the INSPIRE, the Directive Member States have to ensure its timeliness as well as strict adherence to the stipulations of the Directive. Only such strategy will enable the creation of a truly interoperable structure that will serve the purposes of the whole Community.**

Therefore, the process of implementing the INSPIRE Directive and particularly its success will have a direct impact on the functioning of the GMES initiative, as well as in European satellite earth observation activities in general. Due to this and other reasons discussed within the paper, it is important that every step of the implementation process is carefully weighed and coordinated among the Member States and centrally on the European level, not leaving potentially complicated issues unresolved until the functioning phase of the INSPIRE project.

Apart from the coordination of the implementation process, the Member States should ensure that the information and data available through INSPIRE are distributed not for environmental purposes only, but also, for instance, for the purposes of the GMES security pillar.

Moreover, access to data through INSPIRE should not be impeded by unnecessary restrictions. To ensure this, the Member States have to make sure that the stipulation of Article 13 INSPIRE Directive regarding restrictive interpretation of its restrictive provisions is properly implemented into the national laws regarding information infrastructures.

business model for licensing geographic information. INSPIRE Conference (23-25 June 2008) Online: <[www.ec-gis.org/Workshops/inspire\\_2008/presentations/21\\_01\\_luca.pdf](http://www.ec-gis.org/Workshops/inspire_2008/presentations/21_01_luca.pdf)> (last accessed 06.02.2009).

<sup>34</sup> For example those regarding the intellectual property issues, or charging the access to data sets and services.

<sup>35</sup> Roberta Luca, *ibid.*

<sup>36</sup> Niall Watson, David Lee, Ray Boguslawski & Stefan Carlyle. Seeing the bigger picture: mapping out a vision of

INSPIRE. INSPIRE Conference (23-25 June 2008). Online: <[http://www.ec-gis.org/Workshops/inspire\\_2008/presentations/06\\_02\\_watson.pdf](http://www.ec-gis.org/Workshops/inspire_2008/presentations/06_02_watson.pdf)> (last accessed 06.02.2009).

<sup>37</sup> Timo Makela, *ibid.*

Data sharing is one of the most crucial issues and the security of its enforcement should be carefully monitored. INSPIRE might end up being a collection of metadata only, which should be avoided.<sup>38</sup> Failure to do so may in the long run impede the enforcement of the principle to share information.

<sup>38</sup> Hugo de Groof. "INSPIRE Legal Transposition". INSPIRE Conference (23-25 June 2008). Online: [http://www.ec-gis.org/Workshops/inspire\\_2008/videos/INSPIRE\\_P2/VTs\\_01\\_4.wmv](http://www.ec-gis.org/Workshops/inspire_2008/videos/INSPIRE_P2/VTs_01_4.wmv) (last accessed 06.02.2009).



Palais Fanto  
Schwarzenbergplatz 6  
(Entrance: Zaunergasse 1-3)  
A-1030 Vienna, Austria  
Tel +43 1 718 1118 -0 / Fax -99

[www.espi.or.at](http://www.espi.or.at)

The mission of the European Space Policy Institute (ESPI) is to provide decision-makers with an independent view and analysis on mid- to long-term issues relevant to the use of space.

Through its activities, ESPI contributes to facilitate the decision-making process, increases awareness of space technologies and applications with the user communities, opinion leaders and the public at large, and supports researchers and students in their space-related work.

To fulfill these objectives, the Institute supports a network of experts and centers of excellence working with ESPI in-house analysts.

ESPI Perspectives are short and concise thought or position papers prepared by ESPI staff as well as external researchers.

**Available for free download from the ESPI website**

[www.espi.or.at](http://www.espi.or.at)

© ESPI 2009