

## **“GSDI Business Plan – A need for coordinated efforts”**

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### **1 Introduction: SDI status**

In the USA decisive political decisions in the early nineties, based on a strong commitment from the highest levels of the Federal State, have greatly helped the fast development of a National Spatial Data Infrastructure (NSDI). The NSDI model has spread out to other countries and regions, however not necessarily with the same level of political commitment. Typically, European governments have taken various positions, from very low profile, to an emerging trend towards more interest during the last ten years, while the European commission has been unsuccessful in proposing to the European Council to endorse its GI 2000 proposal.

Further, insofar the main rationale for many SDI projects has been to make existing data sets more accessible, more or less as such as they are, particularly by providing catalogue services. The main achievements in this respect are:

- The development of a first metadata content standard, now evolving towards the emerging international ISO standard, and
- The launch of a series of SDI metadata nodes.

However, although such achievements result from significant efforts, and bring in many operational advantages for professional users, we must acknowledge that users need more. They need more data, consistent data sets that can easily be used with each other (either overlaid, or adjacent), and easier to access. The current effective situation can even lead to some researchers to discuss environmental modelling in “sparse data environments” (1). In other words, facilitating global access to existing data sets (most often local data sets, as opposed to regional, or global data sets) is highly desirable and challenging objective, but cannot be the ultimate one. GSDI, and regional or national counterparts, as well as content focused organisations such as the International Steering

Committee for Global Mapping (ISCGM), and solutions focused organisations (ISO TC 211, Open GIS Consortium - OGC), still have to contribute to:

- The development of harmonised content,
- The availability of access facilitators (technical: systems and standards, and organisational),
- An improve understanding on the users and needs side (training and education, awareness of end users dedicated applications etc.),
- A commitment from national administrations level down to agencies and local players.

In addition, we have to cope with the fact that GSDI is not only a global body, but also intrinsically a system of systems, some of which are local, other global. Co-operation, task sharing work well, but may need more formal definitions to improve effectiveness. The information continuum applies not only to geographic information but to our organisations as well!

The resulting issues that may be identified could be summarised as follows:

1. Develop and strengthen GSDI (as well as regional, national or local SDIs) as an organisation that will raise awareness, identify and help devise global solutions (organisational, technical, etc.),
2. Develop the content offer (based on ISCGM and RSDIs efforts),
3. Develop acceptance and awareness *and usage*
4. Develop commitment
5. investigate how to best share efforts between public sector and private sector partners.

## **2 Potential directions**

### **2.1 GSDI and Regional/National SDIs strengthening**

Several actions are underway to develop technical and organisational guidance, to be shared among SDI organisations (such as the forthcoming GSDI case study). On going case studies will certainly bring in fruitful contributions in this respect, by learning from previous experiences. We undoubtedly can benefit from successful and unsuccessful experiences, be they related to geographic information or not, or even to SDIs or not. In this last respect, there are clearly lessons to be learnt from OGC growth and development.

We may benefit too from concerted actions that would associate GSDI, ISCGM and regional SDI. Insofar liaisons are established, exchange of views take place with respect to objectives, goals, or programmes. We may go further and look at 'operational synergies'.

Formal partnerships, or, as stated above, concerted actions would certainly help alleviate the lack of resources these various organisations are faced with. This may apply from WGs activities (e.g., concerted actions and/or formal partnership between the EuroGeographics WG on Legal issues, and the GSDI Legal and Economic WG, e.g. on data sharing policies, pricing and copyright policies etc.) to lobbying activities.

The last is undoubtedly the most critical one. As for 'technical issues' (in a broad sense, including such technical issues as legal issues), many issues are well advanced or taken into account by dedicated organisations. This applies to geodetic harmonisation, data or metadata related standards (keeping in mind that profiling abstract standards is still ahead, which implies that devising and harmonising profiles should play a role in SDI organisations' future activities). However, many SDI organisations are lacking resources to plainly fulfil all of the tasks entailed by their missions. If they are to expand, they must raise the level of commitment in their surrounding environment. Such an objective will be better reached by lobbying actions concerted. The players to consider are the various SDI organisations (e.g., have GSDI and RSDIs develop concerted lobbying actions at the regional level), or SDI organisations and international bodies (e.g., have formal partnered actions associating GSDI and UNGIWG, or GSDI and GISCO).

In any case, raising GSDI's and other SDI organisations' "standing" is crucial for SDIs to develop.

## ***2.2 Develop the content offer***

Today's SDI are most often firstly Spatial Metadata Infrastructures. The corresponding services should not be undervalued. Metadata services are the first services to provide for users to get advantage of existing geographic information. They are definitely needed in any case, or information may be kept unknown. There are already strong achievements in this respect, starting with the NSDI network in the US. As the use of digital information expands, so will such services have to expand. New data sets become available, which makes maintenance of these metadata infrastructures critical, while users expectations grow from mere discovery of 'simple' catalogues to information exploration, so that service expansion will be needed. These areas of maintenance, and of service expansion have to be addressed, from a technical and an organisational point of view. Further, new organisations engage in the development of metadata services, which should strengthen the need for sophisticated services.

However, the most important deficiency is still the lack of geographic data infrastructures. As long as most of SDI nodes most often record metadata on existing local data sets, we can't state that we are dealing with truly global, or regional (or even national, in some instances) SDIs. In the first place, SDIs should at some point in time provide direct access to data sets, as opposed to informing about data sets existence. Besides, if the mentioned data sets are not integrated in any way, either because they can't be overlaid nicely enough, or because they bear different semantic choices and don't match with each other at their common borders. It is clearly desirable that an SDI provides some horizontal and vertical integration:

- RSDIs and GSDI should lead to interoperable shared data sets. If cross borders and cross regions integration is not provided, then we are still not far from having a mere collection of local data sets at hand
- 'Vertically' - if data sets do not overlay 'properly enough', there are strong impediments to many usages. The users are left with the need to define what data are to provide the base reference, onto which other data can be superimposed, and to align data were needed.

If integration is not provided, only professional users can possibly take advantage of the data infrastructure. This last assumption itself precludes that the cost of editing the data sets to make them more integrated would not overcome the expected benefit of using these data sets.

The point is not that the SDI organisation itself should leverage the data sets, or endorse all the costs to integrate data sets. Rather we must acknowledge the different objectives along the time line, their limitations, and try to make the point understood by decision makers at various levels, so that overcoming these limitations, progressing from one step to the next one, become global objectives they endorse. This is essentially a lobbying issue not a technical one, that is further discussed below (2.4). The starting point consists obviously in making more data available

### ***2.3 Develop acceptance and awareness, and usage***

Most SDI organisations have identified the need to raise awareness with respect to geographic information, either as an intrinsically educational purpose, or as a basically lobbying activity, or both. Case studies are again a most chosen tool, while quantifying benefits of the use of GI has been envisaged in some instances (e.g. the Scoping Study into the Business Case for SDI development). The latter target is certainly important to convince decision makers, but a research task that is not be ended in the very short term, although some more recent studies show that demonstrating results can be gathered (2). Further, such studies have to demonstrate not only the benefit of using GI, but the benefit brought in by the SDI itself.

Another approach to develop acceptance and awareness, if not directly usage, could be to develop availability of some end user applications within the SDI environment. This is not meant to be the provision for many professional applications, but examples with some level of interactivity, as opposed to textual argumentations.

### ***2.4 Develop commitment***

Develop commitment is the top priority building block. Again, commitment means more resources to develop and expand SDIs, which is the only way to address the accelerating pace of geographic information use. Commitment can be looked for in a bottom up, or in a top down approach, as it has been identified from the beginning. However many efforts have addressed the bottom up approach, in an organised way, while the top down approach, although not forgotten, has may be not motivated enough concerted actions from the part of the various SDI organisations.

Top level commitment is certainly to be looked for in a concerted way. National or regional authorities, when approached by national or regional bodies may tend to evaluate decision only on the basis of 'local' considerations, expected benefit etc. Experience shows that depending upon priorities of the time, and/or perceived ('local') mission, they may quite often disregard the proposed actions. Similarly, but at a greater extent, national agencies or actors (as opposed to SDI organisations) don't often engage in actions and development that they perceive as being beyond their mandate, and not supported by higher level authorities.

Conversely, approaches by more global organisations may fail if they don't build upon knowledge of 'local' actors, 'local' context and so forth, unless the global organisation can take advantage of some decision power. Indeed, we may think of international bodies such as the United Nations or the European Commission requesting support from member states, e.g. the development of specific SDI nodes, or common data sets, by means of resolutions or directives. This may come later, and would be in accordance with some general rules, but is unlikely to happen in the very short term. Besides, such an approach would not accommodate existing lacks of local infrastructures, wherever such a lack exist (only existing resources can easily be called for). Prepared and concerted approaches could be a more promising way to progressively combine top down and bottom up lobbying.

It is therefore proposed that existing SDI organisations, depending upon their focus and geographic extent, examine plans for concerted lobbying actions aimed at raising awareness with respect to GI and SDIs in decision making circles, and promoting the commitment of resources for their development.

### ***2.5 Private Players Public Players - Respective roles and potential for collaboration***

A last issue we can think of, is the level of public private partnership that can be involved in SDIs development. This issue is developing at the moment in many respects. In terms of SDI implementation, SDI organisation development, and lobbying activities, we may wonder how far, and how we can proceed based on such partnerships. The first step is to clarify the respective roles public and private actors may have in this respect, and how far SDI stakeholders are ready to go such a way. However, private consortia and private companies play a significant role in issues that pertain to SDI, while they have demonstrated for long how efficient and experienced they can be at setting up lobbying actions.

## **3 Conclusion**

To some extent, SDI organisations may be considered to be at a crossroad. They are developing progressively, but at a pace that most likely does not match the one of their environment. Outstanding achievements have been reached over the last decade, benefiting from a strong political impulse. This political momentum has not always spread away, and its permanence now may be found questionable. Still, more developed SDIs are needed, that incorporate data as well as metadata, integrated data wherever possible.

For such facilities to develop, many ways are to be considered, but the first to tackle is to gather resources, and in this purpose to foster lobbying at the political level. Then co-operation between the different players, firstly between GSDI and RSDIs or NSDIs is to be developed, particularly in the abovementioned direction, and organised.

- (1) G.C. Nelson. Modeling Deforestation and Land Use Change; Sparse Data Environments. XXIVth IAAE International conference, Spatial Analysis Learning Workshop, Berlin August 12, 2000.
- (2) A. Bonfour, E.F. Lambin. How valuable is remotely sensed information? The case of tropical deforestation modelling. Space Policy 15 (1999) 149-158.

## Abstract

Since the mid-nineties Spatial Data Infrastructures, be they national, regional or global, have progressed in various areas but at strikingly different paces. Further, it must be acknowledged that in many areas local SDI organisations are still busy working on raising awareness to the need for SDIs, while trans-national data sets are still widely missing. The main achievements could be seen as being the creation of a series of catalogue services based on the American SDI model, and the development or strengthening of regional SDI organisations. There is still a long way to go before citizens can truly take advantage of geographic information infrastructures.

As identified some years ago, global, regional and national SDIs are to be comprised of networks, policies, procedures, technical means and framework data.

1. Technical means, particularly in the sense of common standards, are progressing well. We still need to develop many implementations for the emerging ISO family of standards, but solutions are clearly nearby at hand. What is needed is to develop, and share working implementation profiles of the standards.
2. As for networks, they are now well established and engaged into consolidation, along with the development of networks within international bodies, such as the UNGIWG, as for the United Nations, and the COGI, as for the European Commission. More could be done in terms of cooperation between these SDI organisations, but today's level is already reaching the limits of available resources. This is where we can see that the level of involvement is may be still below current needs.
  - a. As a result, organisations, organisations' procedures, and policies are still not developed enough.
  - b. Further, the relatively new emergence of SDI working groups within international "political" bodies may witness the first success of lobbying from the part of existing SDI organisations at the political level, but also shows that the top-down actions (intended to raise awareness at the political level, hence to foster decisions to develop RSDIs and GSDIs) may still have a long way to go and need to be developed further.
  - c. Similarly, if we can be satisfied of the fact that some international data sets have been made available during the last ten years (administrative boundaries of Europe – SABE – , or the first release of Global Map last November, or GlobalGIS and Vmap 0), we must recognise that the basket is still relatively empty with respect to the global community needs. There is a strong lack of harmonised medium scale data, the available small scale data is often not up to date or harmonised, thematic data is still largely missing etc. We are far from general availability of harmonised international data sets, edge matched or that can be properly overlaid. Even catalogue nodes are still in the early phase in many places.

Developing decision makers' awareness, organising concerted "marketing" actions, particularly geared toward the top levels of the political world are key issues to make more resources and stronger commitments available.