

Future directions for SDI-assessment

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INTRODUCTION

Over the last few years development of Spatial Data Infrastructures (SDIs) have become an important subject and platform in Geo-Information Science to facilitate and coordinate the exchange and sharing of spatial data between stakeholders in the spatial data community. Its significance was demonstrated by numerous initiatives all over the world at different jurisdictional levels (global, regional, national and local levels). Large sums of money have been invested into SDI initiatives over the last few years. Worldwide around €120 million is spent each year just on clearinghouse management (Crompvoets, 2006). The investment requirements for an Infrastructure for Spatial Information in the European Community (INSPIRE) at European, national, regional and local levels are estimated to be from €202 to €273 million each year (INSPIRE, 2003). Given this expenditure and society's interest in the proper and effective use of public funds, it is imperative that these SDI initiatives should be assessed. The assessment of SDIs can help to better understand the issues, to find best practice for certain tasks, and to improve the system as a whole and therefore it play a crucial role in the management of our spatial data and that pertaining to the administration of our societies. In addition, SDI assessment is increasingly attracting the attention of both public sector bureaucrats seeking justification for providing public sources to SDI, and SDI practitioners requiring a measure of success of their SDI strategy. For example, the implementation of the European directive establishing an Infrastructure for Spatial Information in the European Community requires monitoring and regular reporting (European Commission, 2007).

However, assessment and evaluation of SDI initiatives is difficult due to a number of reasons. Even within the SDI community there are differences in the understanding of SDI and its potential benefits. Craglia and Nowak (2006) raise this issue when reporting on the key findings of the International Workshop on SDI's Cost-Benefit. Many researchers have tried to assess SDIs (Crompvoets, 2006; Delgado-Fernandez and Crompvoets, 2007; Delgado-Fernandez et al, 2005; Kok and van Loenen, 2005; Masser, 1999; Onsrud, 1998; Rodriguez-Pabon, 2005; Vandenbroucke, 2005; Steudler et al, 2004). All these attempts, however useful and valuable, either concentrate on one aspect of SDI, or are bounded by one region, or describe SDI development in few particular countries, or are still conceptual in nature.

There is much confusion resulting from the lack of an agreed definition of SDI, its components and the relationships between them. Moreover, different studies on SDI assessment identify different benefits and assign them to different categories. Similar conclusions were also reported at the international workshop 'Exploring Spatial Data

Infrastructures' (Grus et al, 2006). This makes it difficult to identify uniform criteria of merit for SDI inputs, utility, outputs and outcomes. SDI is also difficult to assess because of its complex, dynamic, multi-faceted and constantly evolving nature, and vaguely defined objectives. SDIs also differ between countries as the same implementing rules may cause different results. For example, at the European level, the INSPIRE directive lays down general rules for establishing an SDI for the European Community (European Commission, 2007). Nevertheless, despite the fact that SDIs in the member states will behave and operate in a similar general way as indicated by the directive, they will never be the same, and sometimes will differ considerably depending on political, economic and cultural national circumstances.

FUTURE SDI-ASSESSMENT ISSUES

Following are some future issues that practitioners may need to consider when assessing SDIs in the long-term in order to achieve sustainable and ongoing development of SDIs. These issues are mainly derived from a body of knowledge and experiences relating to performance assessment activities in the public sector (e.g. public health and social security) which has already some history. From this it appears that certain temporal patterns or sequences are quite common that might be also applicable for SDI-assessment.

It is likely that SDI-assessment will become a "performance" focus for public management and policy. However, the way in which SDI-assessment will be performed is uncertain. Will there be a way that is the most dominant? How are the strategies in the different countries evolving? According to Ingraham et al, (2000) 'performance must become a way of life and a critical part of the culture' of the public sector in the future. On the other hand, the question is not how useful is SDI-assessment? The research has become: how tenable is the management cycle that underlies the management by assessing SDI-development? In any case, implementing assessment approaches requires time for 'building a track record' (Broom, 1995). It appears that several performance challenges (mixed responsibilities, varied objectives and indicators) and implementation problems have resulted in considerable suspicion about performance as a driver for public management (Bouckaert and Halligan, 2007).

If we consider SDI-assessments just as another new example of performance management, then we can expect the following based on Pollitt (2007):

- the community of SDI-assessors will be bigger.
- the growing SDI-assessment community will include a wide range of disciplinary approaches. The community of discourse will contain inter alia spatial scientists, political scientists, generic management specialists, sociologists, economists, statisticians and public administration scientists.
- the foci of the specific interest will broaden. The SDI-assessment will range from high level studies of how politicians use the results, through middle level accounts of how managers address frameworks of assessment indicators to detailed studies of how staff may game and pervert or suffer stress and alienation from indicators. The SDI-assessments will also stretch from rather prescriptive advice on 'how to do it better' to highly detached academic interpretations and deconstructions. It will be very difficult for any single individual to command expertise right across this tremendous panorama of literature.
- information and communication technologies will support and sometimes shape the assessments. For example, there are studies of how new ICTs may facilitate the collection and dissemination of SDI-assessment information (Viganó and Millot, 2008a;b;c).

- the current assessment studies will be complemented with field studies of how the assessment approaches are used (or not used) by practitioners.
- the need of SDI-assessment should be closely coupled to significant community incentives (rewards and/or punishments) before it will have much effect on operational decision-making
- the community continues to focus on better approaches that are more valid and reliable. Another important topic that the assessment community will deal with is the need to shift from input and process assessment to output assessment, and beyond that, to outcome assessment, and to citizens' reaction to those outcomes in the form of satisfaction and/or trust (Bouckaert, 2006). The community will also worry about the preserve incentives which assessment approaches can inadvertently create, and the political environment which take place around these approaches.
- it remains difficult to demonstrate that investments in SDI-assessment improve the SDI-development. This does not mean that SDI-assessment will fail to generate improvement rather it suggests that many of the investments in SDI-assessment will be acts of faith rather than rational calculations.

So far this section looked at how the SDI-assessment community is expected to develop over time, the next question is how the SDI-assessment approaches are expected to evolve? On the basis of literature (Bouckaert and Halligan, 2007; Pollitt, 2008; Pollitt et al, 2008) and experiences relating performance management activities in the public sector we might expect both cycles (issues which go round and round, or alternate) and arrows (issues which fly forward on a particular trajectory), or might expect some quite stable paths but also sudden punctuations or windows of opportunity. In short, various combinations of all of the following can be expected:

- *Culturally-shaped 'paths'*. The administrative culture may shape how assessments are used or indeed whether they are used at all. In countries such as Australia, Canada, USA SDI-assessments are widespread and aggressively used linked to various types of incentives and sanctions, meanwhile in other countries they do not exist.
- *Steady, incremental development*. This refers to gradual assessment shifts of focus on inputs and processes to outputs and finally outcomes. The Geoconnections Logic Model (Canada) is one of the first SDI-assessment examples that already include outcomes in the assessment.
- *Patterned alternations*. This refers mainly to regular changes within the indicator sets of the approach. Sometimes the changes are small (the technical definition of an indicator is changed slightly) or bigger (indicators are dropped altogether and new ones introduced). Either way, such changes degrade the possibility for time series. An example of this change happened in the INSPIRE State of Play approach which introduced two new indicators in 2006: Transformation services and Middleware services.

It will be no surprise that future SDI-approaches will change their indicators, since there are a number of reasons why indicators may be altered. One good reason is that the experts learn from their attempts to assess, and frequently want to replace an existing indicator with one that it is more comprehensive. Another reason is that shifts in public and political attention may lead to indicators being added. A third reason is that new procedures or technologies are introduced which require new measures for assessment (no one was assessing web services in the 1990). A fourth reason is that an indicator just becomes irrelevant, and it is altered or dropped. Future examples of this might be the legal indicators of the INSPIRE State of Play. A fifth reason is that there may be a tendency to cycle from many indicators to few. As assessment approaches become increasingly sophisticated more and more indicators are added, in an attempt to capture the full (extent of the) infrastructure.

But then the whole of approaches becomes very complex and opaque, and reformers will appear to simplify on a few key (complex and composite) indicators.

CONCLUSIONS

It is likely that what is valid for performance management in other public domains will be applicable for SDI-assessment as well. The assessment of SDI is also likely to be shaped by prevailing cultures and by accidents and scandals, and other foreseen events. In addition, SDI-assessment will likely have developmental trajectories over time. Some approaches and their indicators will wear out, or become obsolete, for a whole variety of reasons. Behaviours will adapt to the presence of particular assessment regimes, not only to game with them, but also by learning to live with them. In virtually every case, however, we observe that SDI-assessment regimes cannot stand still. They are subject to endogenous and exogenous pressures, which lead to change. Sometimes this is incremental, sometimes transformational. Accordingly, also the objectives of SDI and the relevant indicators of SDI-assessment may change.

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