

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 in SDI initiatives over the last few years. Worldwide around €120 million each year is spent just on clearinghouse management (Crompvoets, 2006). The investment requirements for an Infrastructure for Spatial Information in the European Community (INSPIRE) at the European, national, regional and local levels is 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. SDIs therefore 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, implementing the European directive to establish an Infrastructure for Spatial Information in the European Community requires monitoring and regular reporting (European Commission, 2007).

However, the 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; 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 as a result of a lack of an agreed definition of an 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. 2007). This divergence makes it difficult to identify uniform criteria of merit for SDI inputs, utility, outputs and outcomes. An 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 similarly general way, as indicated by the directive, they will never be the same and will sometimes differ considerably depending on political, economic and cultural national circumstances.

With this in mind, this book attempts to arrive at a comprehensive assessment framework for SDIs, taking into account that assessments can be made for many specific reasons, for example to measure and account for the results and efficiency of public policies and programs, or to gain explanatory insights into social and other public problems, or to reform governments through the free flow of assessment information. Further to this, four possible assessment reasons/orientations to view SDI assessment efforts can also be considered, as distinguished by Georgiadou et al. (2006): SDI control assessment; SDI learning assessment; SDI sense-making assessment and SDI exploratory assessment.

This book is mainly based on the result of the international workshop 'Multi-view framework to assess National Spatial Data Infrastructures' held in Wageningen, The Netherlands, in May 2007 where contributions were solicited. The three day workshop formed part of the project extension of project 'Development of framework to assess National SDIs (RGI-005)' funded by the Dutch innovation program 'Space for Geo-Information' (Ruimte voor Geo-Information)' and project collaboration between this Dutch project and project 'Evaluating and strengthening Spatial Data Infrastructures

for sustainable development in Latin-America and the Caribbean' funded by Iberian-American program of Science and Technology for Development (CYTED IDEDES). The main objective of the workshop was to support the development of the multi-view SDI assessment framework taking into account the multi-faceted, dynamic and complex nature of SDIs and different views to assess SDIs. In order to achieve this objective a selected international SDI experts and SDI assessment practitioners were invited to present their SDI assessment approach, experience and/or demands. The results of this workshop are anchored by publishing this book.

The objective of this book is to promote a better understanding of SDI assessment by providing the concepts, demands and implications of SDI assessments, a compilation of existing approaches to assess SDIs and examples in practices in order to assist practitioners to develop more comprehensive and better evaluations that fits the assessment demands. The book is designed to be a professional resource to help build information resource management capacity in the context of SDI assessment. Although directed at spatial scientists, professionals, managers, policy makers and researchers, the book will have broader applications for other disciplines as the concept of SDI continues to adapt in response to the user needs in different societies. As summarised below, the book is divided into four parts with each comprising a number of chapters.

Part One – Theoretical background and framework to assess SDIs

The first part presents the theoretical background of the multi-view framework to assess SDIs necessary to understand the concepts behind it. The chapters of this part address the need for a broad understanding of the objectivity, complexity, multi-faceted nature and dynamics of SDIs in the context of SDI assessment, the demands for SDI assessments and the implications for developing a framework to assess SDIs. From all this, it appears that assessing SDIs remain problematic. The difficulty is that SDI is an evolving concept that sustains various perspectives or views depending on the user's interest and its role within the broader SDI community. Before proposing an appropriate assessment framework for SDIs, it is also necessary to address the different orientations to view SDI assessment, each with a specific purpose in mind. On the basis of all the background presented, the multi-view framework is introduced.

Part two – Approaches to assess SDIs

The second part presents nine approaches to assess SDIs: SDI-Readiness; clearinghouse suitability; INSPIRE State of Play; organisational; evaluation areas for SDI; performance based management; metaphor organisation; legal and effectiveness from a user's perspective. Each approach treats SDI from a different view and with a different objective in mind. Moreover, each approach covers at least one of the assessment reasons/orientations as mentioned above. In addition, each approach makes use of specific assessment methods such as case studies, surveys, key informants, and document studies. The combination of multiple approaches and their related methods generate more complete, more realistic and less biased assessment results.

Part three – SDI-assessment in practice

The third part presents practical examples of SDI assessment at different administrative levels (Developing world, European Union and The Netherlands). These examples represent real actions taken, and are partly based on our understanding of the knowledge and context for assessing SDIs.

Part four – Future view to SDI assessment

The book concludes with a discussion on future directions for SDI assessment. It is clear that SDI assessment is still in its infancy, and that assessment practices beyond the SDI domain should be strongly examined.

The SDI assessment community is multi-disciplinary and draws on a wide range of experiences from the geographic information systems, computer science, mathematics, land administration, geography, spatial planning, surveying and mapping, sociology, economics, legal and public administration disciplines. The editors are very grateful for the cooperation and input of authors from these disciplines to both individual chapters and to the overall concept of the book. It is hoped that the book achieves its objective of providing an introduction to the evolving domain of SDI assessment.

The Editors

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