Chapter 121
Towards a Rwandan NSDI:
An Update

Felicia O. Akinyemi
Kigali Institute of Science and Technology, Rwanda

ABSTRACT

Awareness of the importance of spatial data in achieving development strategies is high in Rwanda. Government and non-governmental institutions are aspiring to use Geographic Information Technologies (GITs) in their day-to-day activities. The non-existence of a National Spatial Data Infrastructure (NSDI) in Rwanda brings to light serious issues for consideration. Still lacking is a spatial data policy relating to spatial data use. A mechanism to ease spatial data access and sharing is imperative. This paper describes SDI related efforts in Rwanda in a bid to establish the NSDI. Employing a multi-stakeholder approach to drive the process is advocated. To support this, SDI models in some countries are presented that could be applicable to the Rwandan context. Key players with potential roles in the NSDI were identified.

INTRODUCTION

Spatial Data Infrastructure (SDI) denotes the relevant base collection of technologies, policies, standards and institutional arrangements necessary to acquire, process, store, distribute, and improve the utilization of geospatial data – from many different sources and for a wide group of potential users (White House, 1994). SDI provides a basis for spatial data discovery, evaluation and application for users and providers within all levels of government, the commercial sector, the non-profit sector, academia and citizens in general (Nebert, 2004). Nebert et al. (2006) proposed an extension to this definition to include services. Today's innovative SDI implementations provide data and service discovery and access as well as the ability to invoke and execute a growing number of geospatial analysis services. According to INSPIRE - Information for Spatial Information in Europe (European Union, 2007)

SDI is infrastructure for spatial information which means metadata, spatial data sets and spatial data services; network services and technologies;

agreements on sharing, access and use; and coordination and monitoring mechanisms, processes and procedures… (pp. 4-5).

The role of spatial data in national development, social and economic planning has been recognized in Rwanda as far back as 2000. Spatial data is seen as an essential input to implementing various development strategies and activities in Rwanda (Schilling et al., 2006; National Institute of Statistics of Rwanda – NISR, 2007). The non-existence of NSDI in Rwanda at present brings to the fore, issues needing urgent consideration. A look at the current situation reveals that more is needed to be done in order to meet the requirements of SDI implementation. These requirements are availability of fundamental datasets, technology, policy, institutional arrangement, human resources and standards (Nebert, 2004; Simbizi, 2007).

There is the need for a spatial data policy to take care of issues relating to spatial data use and sharing. A mechanism to link spatial data in the coffers of various organisations to people as users is imperative in order to ease access (Williamson et al., 2006). Data is easier to access with data sharing mechanisms in place for example (De Montalvo, 2002; Honda et al., 2002). Spatial data capture and maintenance of existing datasets are not systematic because efforts are not coordinated. Duplication of spatial data creation effort is a problem at present in Rwanda. For example, users are not always aware of existing datasets and when they are aware, the data access procedure is sometimes tedious. Consequently, the same type of data might be produced whenever it is needed by different users. A growing requirement for decision making and project implementation is the use of consistent and accurate spatial datasets (Akinyemi, 2007). Wastage of resources is better curtailed with SDI in Rwanda as it will promote spatial data access and dissemination. Thus, SDI is very necessary in order for all to benefit from the use of available data.

Stakeholder effort in SDI implementation is also needed in developing and adopting common contents and standards. Different organisations will make their data available using the same agreed specifications to the benefit of all stakeholders (Bulens et al., 2009). The need to involve key players, share experiences and encourage the formation of new partnerships is well recognised as SDIs evolve in different parts of the world. Building an effective NSDI requires a well-coordinated effort among a broad array of public and private sector data providers and users. Involving these stakeholders in the development of the NSDI addresses nationwide data needs of end-users (http://www.fgdc.gov/organization). The need for multi-stakeholder partnership is one of the three *pillars* on which the UK National Geospatial Data Framework (NGDF) is built (NGDF, 1998).

The layout of this paper is as follows; a brief chronological review of SDI related activities and events in Rwanda follows immediately after the introduction. Pressing issues critical to the establishment of the NSDI in Rwanda are raised. SDI models in some countries are examined with focus on their organizational and technical structures in order to draw inferences applicable to the Rwandan context. Lastly, major players and their potential roles in the Rwandan NSDI are identified.

SDI RELATED EFFORTS IN RWANDA

Rwanda as many other developing countries is faced with the challenge of establishing SDI. A major goal is providing access to spatial information and data in line with its numerous strategies to achieve sustainable development. Although the NSDI is not yet established, series of SDI related events have already taken place. In October 2006, the first SDI conference was organized by the Centre for GIS and Remote Sensing of the National University of Rwanda (CGIS-NUR) in collaboration with the NISR, the President

9 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/towards-rwandan-nsdi/70549

Related Content

Sharing Environmental Data through GEOSS
Gregory Giuliani, Nicolas Ray, Stefan Schwarzer, Andrea De Bono, Pascal Peduzzi, Hy Dao, Jaap Van Woerden, Ron Witt, Martin Benistonand Anthony Lehmann (2013). *Emerging Methods and Multidisciplinary Applications in Geospatial Research (pp. 266-281).*
www.irma-international.org/chapter/sharing-environmental-data-through-geoss/68264

From Print Formats to Digital: Describing GIS Data Standards
Ardis Hansonand Susan Jane Heron (2008). *Integrating Geographic Information Systems into Library Services: A Guide for Academic Libraries (pp. 114-150).*
www.irma-international.org/chapter/print-formats-digital/24022

Mobile Geographic Information Systems
Yang Liand Allan J. Brimicombe (2013). *Geographic Information Systems: Concepts, Methodologies, Tools, and Applications (pp. 151-174).*
www.irma-international.org/chapter/mobile-geographic-information-systems/70441

Assessing the Success of an Industrial Cluster
Neil Reidand Bruce W. Smith (2012). *International Journal of Applied Geospatial Research (pp. 21-36).*
www.irma-international.org/article/assessing-success-industrial-cluster/68854

Estimating Residential Carbon Footprints for an American City
Matthew H. Connolly, Ronald R. Hagelmanand Sven Fuhrmann (2012). *International Journal of Applied Geospatial Research (pp. 103-122).*
www.irma-international.org/article/estimating-residential-carbon-footprints-american/70661