

# Reviewing the status of National Spatial Data Infrastructure in Southern Africa countries.



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## INTRODUCTION

For many years, SDI has been a reliable platform that facilitates the exchange and integration of geospatial data among citizens, government and private agencies.

Regardless of the progress in SDI, the implementation of National Spatial Data Infrastructures (NSDI) has been slow in developing countries, particularly in Southern Africa countries [1].

This study reviewed the status and constraints associated with SDI developments within five Southern Africa countries. In addition, an implementation of open source tools (Geodjango) was developed to showcase scalability of the NSDI platform.

## RECENT NSDI ACTIVITIES IN THE SELECTED COUNTRIES.

Few SDI activities have taken place at the national level, mainly due to slow implementation phase. Some of the NSDI activities includes:

### South Africa:

- Map design and layout of national land cover classes (July 2020)
- Review of the Spatial Data Infrastructure Act, 54 of 2003 (Dec 2019)

### Botswana :

- Cabinet Approval of Digital Information Policy (Mar 2015)
- Implementation of GIS cluster and land information initiatives (Nov 2014)

### Malawi:

- A three-day workshop to present the GIS and the atlas database (2015)
- Establishment of a national geospatial data center (2008)

### Tanzania:

- Creation of a geospatial network (Nov 2015)
- Implementation of mapping software and equipment (Nov 2015)

### Zimbabwe:

- Implementation of the Zimbabwe Geospatial Tool (July 2015)
- Maintenance of the national geodetic control network (Mar 2014)

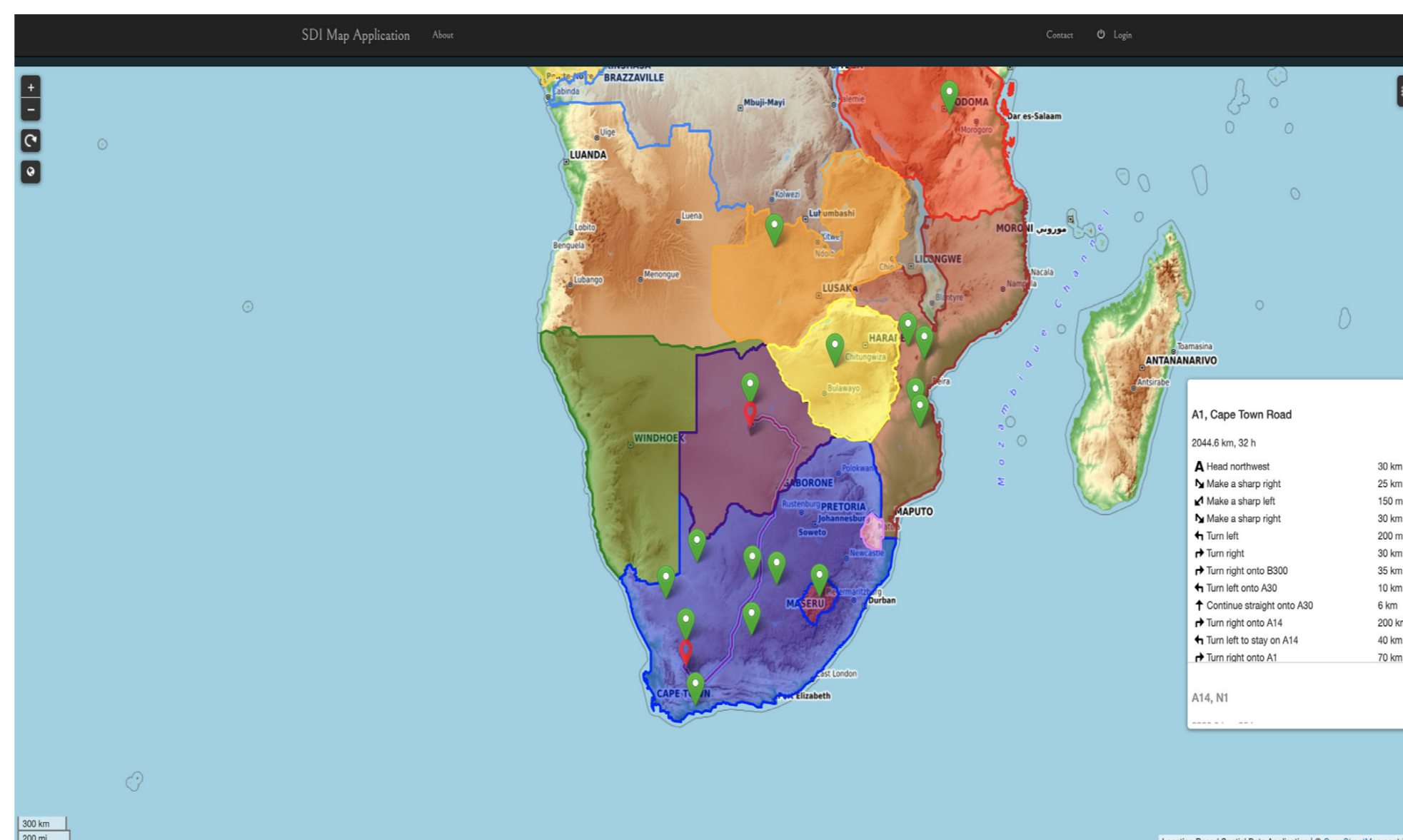


Figure 1: Location-based distribution of International Organization across Southern Africa Countries using Geodjango Platform.

<https://geoapplication91.herokuapp.com/>

## METHODOLOGY

The study used a multi-view assessment framework (Grus et al., 2011) and explored an open-source geoportal (Geodjango) to support SDI development in Africa.

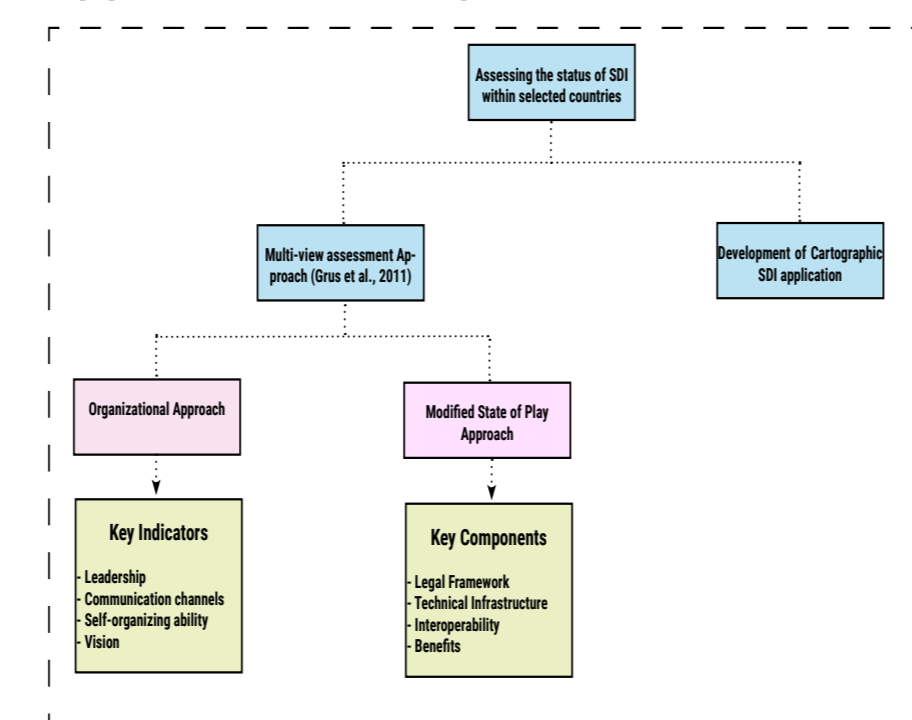


Figure 2: An overview on the methodology flowchart

## SPATIAL DATA INFRASTRUCTURE DESIGN

Open source and commercial tools provide a great opportunity to display spatial data (Sadeq 2020). The prototype SDI application is based on a client-server model, as shown in Fig. 3. The Geodjango platform allows on-demand scaling of computing resources and includes all map functionalities.

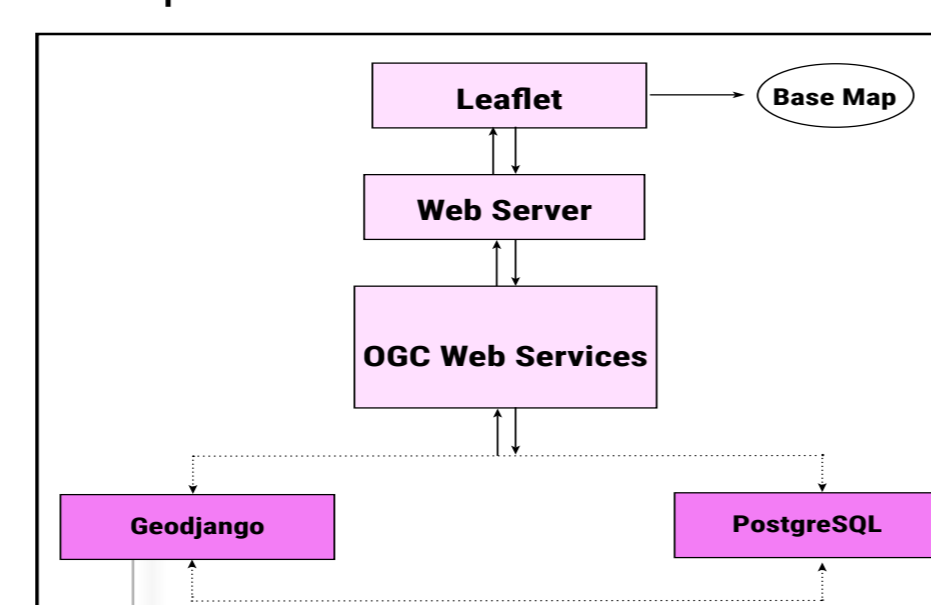


Figure 3: Overview of the SDI Application Design

## RESULT

The results of the multi-view assessment shows that access to and sharing of datasets within NSDI departments remains one of the main challenges.

Legal framework, technical infrastructure, strategic policy implications, national security and privacy issues are also barriers in the selected countries.

The technical means to achieve interoperability are still in the early stages in Southern African countries, while human and political problems exist.

The desire of government agencies to implement their mandates hinders mechanisms for sharing and effectively distributing spatial data infrastructure in developing countries (UN-GGIM 2020).

## CONCLUSION

In conclusion, the study suggests that more attention should be given in the following areas:

- Redefining the metadata of spatial data resources and their provenance in developing countries.

- Increasing the visibility of spatial data infrastructure on the web and developing a national framework for access to open public data such as spatial datasets.

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## KEYWORDS

SDI , multi-view assessment

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