

Books for SDI Education and Training in South Africa

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Spatial Data Infrastructure (SDI)

In the early 1990s the concept of a spatial data infrastructure (SDI) emerged when the emphasis moved from stand-alone geographic applications towards a **networked and collaborative information infrastructure** that coincided with the development of the World Wide Web.

A spatial data infrastructure (SDI) is a platform which **facilitates and coordinates the exchange and sharing** of spatial data between stakeholders.



Spatial Data Infrastructure (SDI)

A collection of technologies, systems (hardware and software), standards, policies, agreements, economic and *human resources*, institutions and organisational aspects that have to be orchestrated to make it possible for users to access data.

SDIs are complex, dynamic and multifaceted and *success relies heavily on people*.

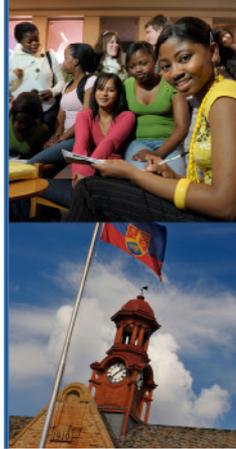


South African Spatial Data Infrastructure

The South African Spatial Data Infrastructure Act was promulgated in 2003 (Act 54 of 2003) and the Committee for Spatial Information (CSI), as described in the Act, was established in 2010.

Main objectives of the SDI Act:

- establish the **South African Spatial Data Infrastructure (SASDI)**, the **Committee for Spatial Information (CSI)** and an **electronic metadata catalogue**;
- to provide for the determination of **standards and prescriptions** with regard to the facilitation of the sharing of spatial information;
- to provide for the **capture and publishing of metadata** and the avoidance of duplication of such capture; and to provide for matters connected therewith.



Committee for Spatial Information (CSI)

The CSI consists of a principal committee, established according to the Act, and six sub-committees:

- Data,
- Systems,
- Standards,
- Policy and legislation,
- Education and training, and
- Marketing and communication.

The CSI was established to achieve the objectives of SASDI.

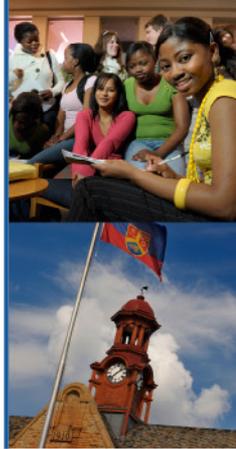


Importance of Education

Education has been identified as an **essential component** in the successful development and maintenance of a national SDI.

Education and training programs for GIS professionals and other individuals involved in the development of an SDI are important.

Globally a lot of effort has gone into **understanding and implementing SDIs** and other types of data infrastructures. From these efforts a collection of **education and training material** has been produced.



Importance of Education

Ignorance and relevant skills shortages are potential impediments to the realization of the SASDI objectives.

Concerns have been expressed over the lack of SDI expertise in the country and its negative effect on the successful development of a SASDI.

In South Africa we need to **leverage the international knowledge** on SDIs and their implementation to ensure the success of SASDI.



Methodology

The objective is to present the results of a survey of books for potential use in SDI education and training in South Africa.

To achieve the objective:

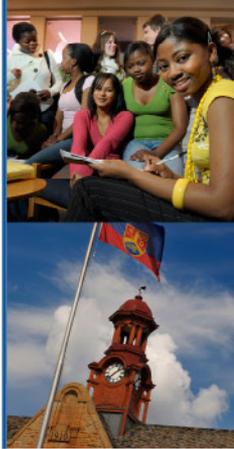
- the needs for SDI education and training were identified;
- available material was surveyed; and
- available material was matched to the identified needs.



Identifying the needs for SDI education and training

GSDI Small Grant Award, titled '*Developing a framework for South African SDI education and training*'.

Two open workshops were held at the University of Pretoria in November 2011 and July 2012.



SDI Target Audiences

CSI members

Decision makers, funders, and policy makers

Custodians of SASDI identified base data sets

Producers of SASDI non-base data sets

Producers of SASDI services

Providers of SASDI base data sets and services

End users and consumers



SDI Knowledge Areas

The value of spatial information for their respective purpose or job in SASDI

Spatial data and the principles of geographic information systems (GIS)

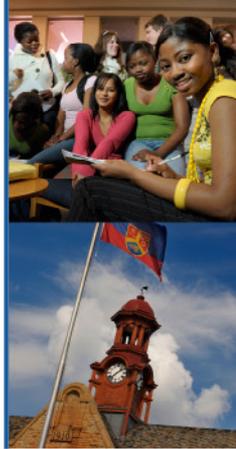
Overview of SDI, SDI principles and its benefits

SDI component: data and metadata

SDI component: standards and specifications

SDI component: web services

SDI component: institutional agreements



Level of specialization

Level of specialization	Media	Example
Research (contribution)	Postgraduate degree or research project	PhD / MSc Geomatics Research project by CSIR
Design solution: Independent problem solving (use own research and ideas)	Four year degree or certificate course at appropriate level	BSc (Hons) Geoinformatics Registered GISc Practitioner
Select solution: Formulation of sol to problems	Three year degree or certificate course at appropriate level	BSc Geoinformatics B Tech Geomatics Registered GISc Technologist
Apply solutions: Apply predefined sol/methods to problems (solve familiar problems)	Diploma or certificate course at appropriate level	Diploma in Cartography CE at UP Intro GIS-certificate Registered GISc Technician
Skills (how?)	Attendance course, workshop, material	CE at UP 3-day GIS (hands-on training)
Knowledge (what?)	Attendance course, workshop, material	SDI workshop (presentations)
Awareness	One-on-one discussion, presentation, material	PositionIT article NSIF brochures

Book Survey

The survey of SDI education and training material was performed on two sources:

1. search for books on **Amazon.com**; and
2. **sending a request** for education and training material to a number of mailing lists in the geospatial community.



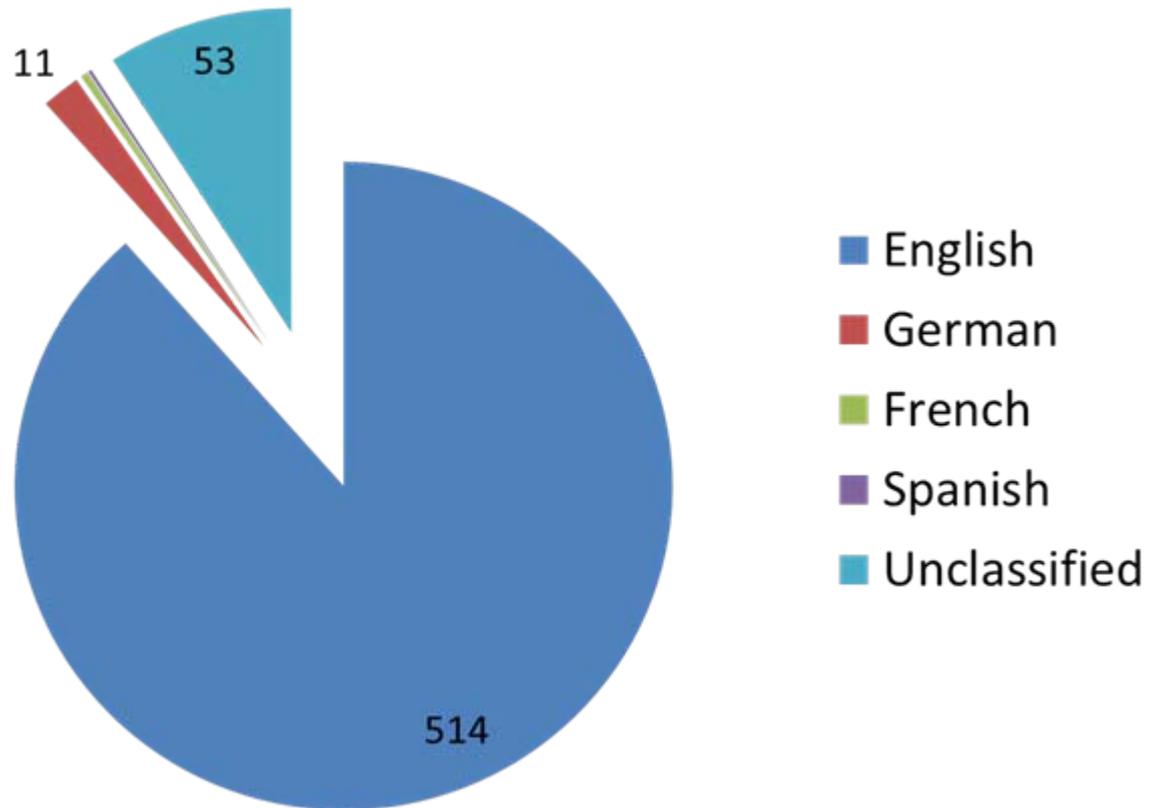
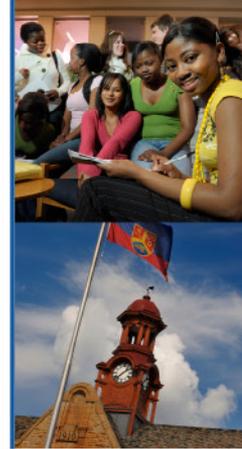
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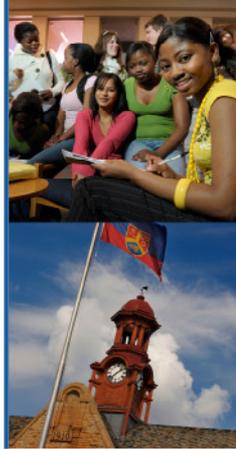
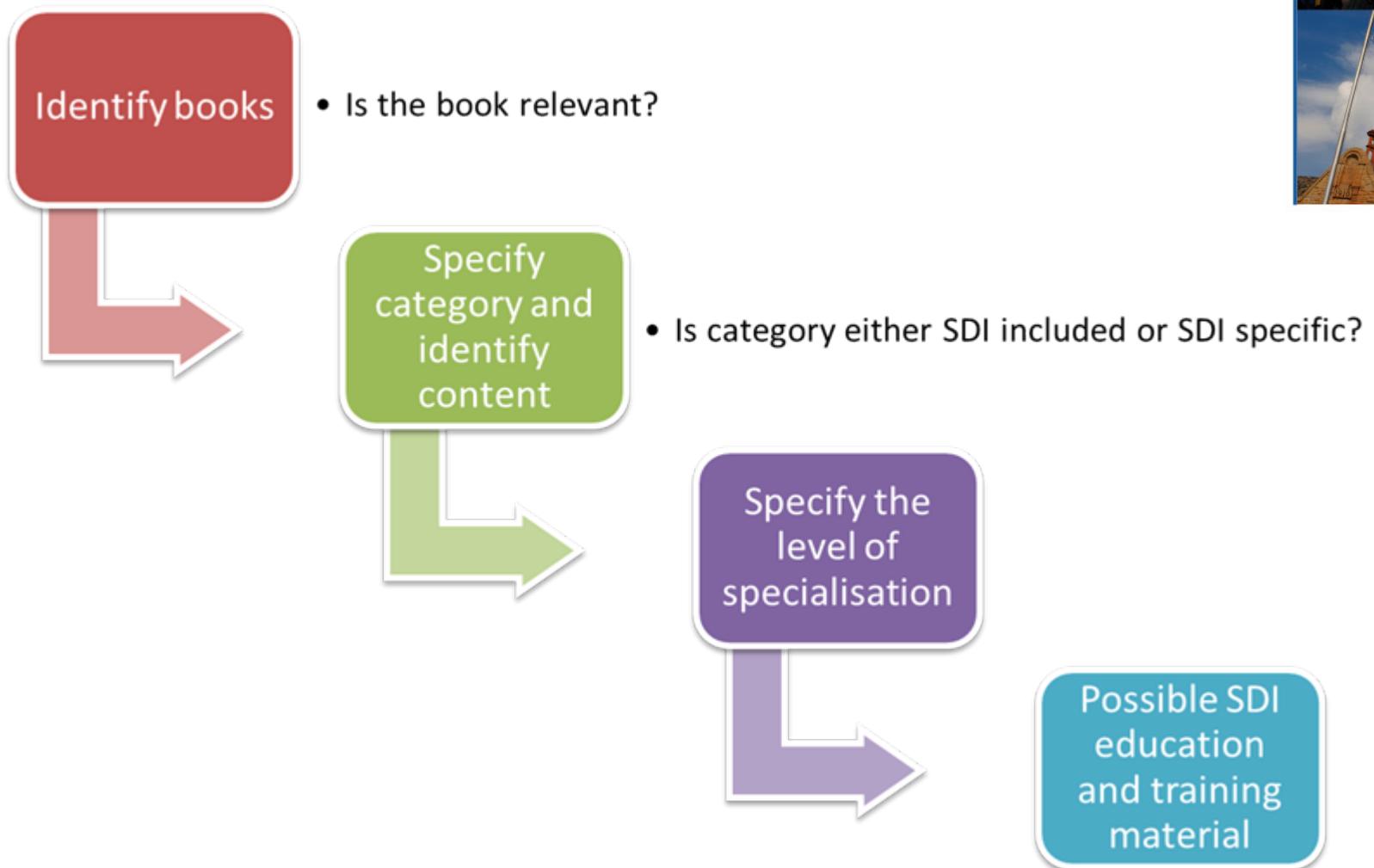
Survey Results

A search for books on Amazon.com with the keyword '*spatial data infrastructure*' (without quotes) returned 572 books.

From the email survey 9 responses regarding books were received.



Process followed



Survey Results

Basic information for each book was recorded, such as the title, authors, etc.

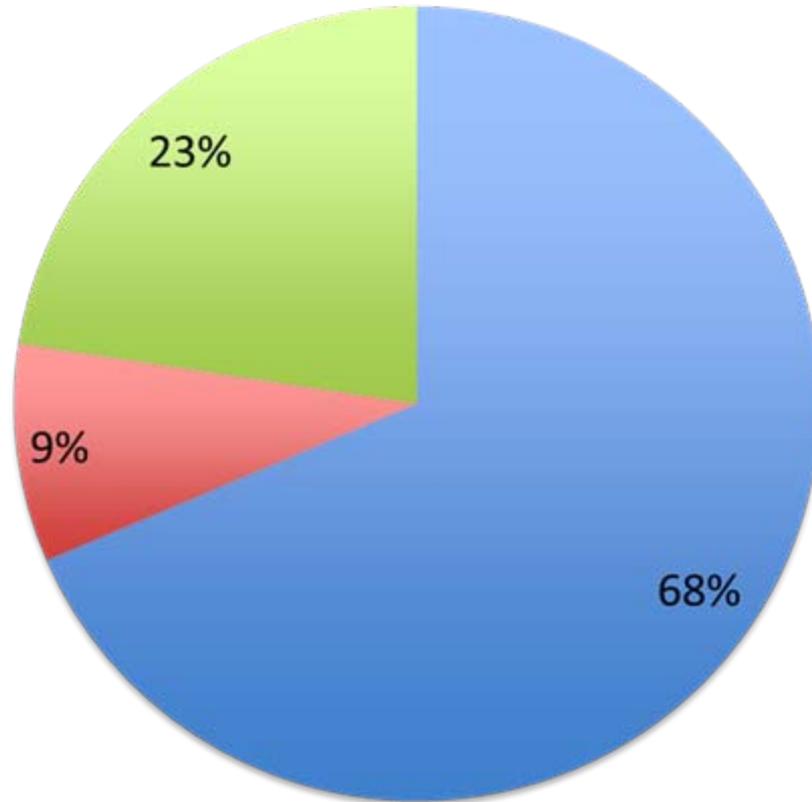
In the first phase, the following books were removed:

- duplicates,
- earlier editions (only the latest edition of a book was considered),
- research articles, and
- books that are irrelevant at first glance.

After completing the first phase, **124 books** remained to be surveyed in the next phase.



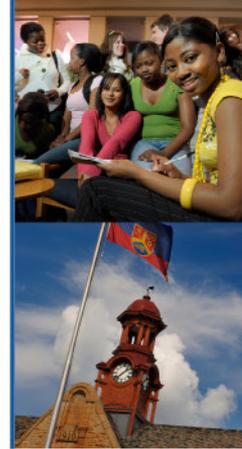
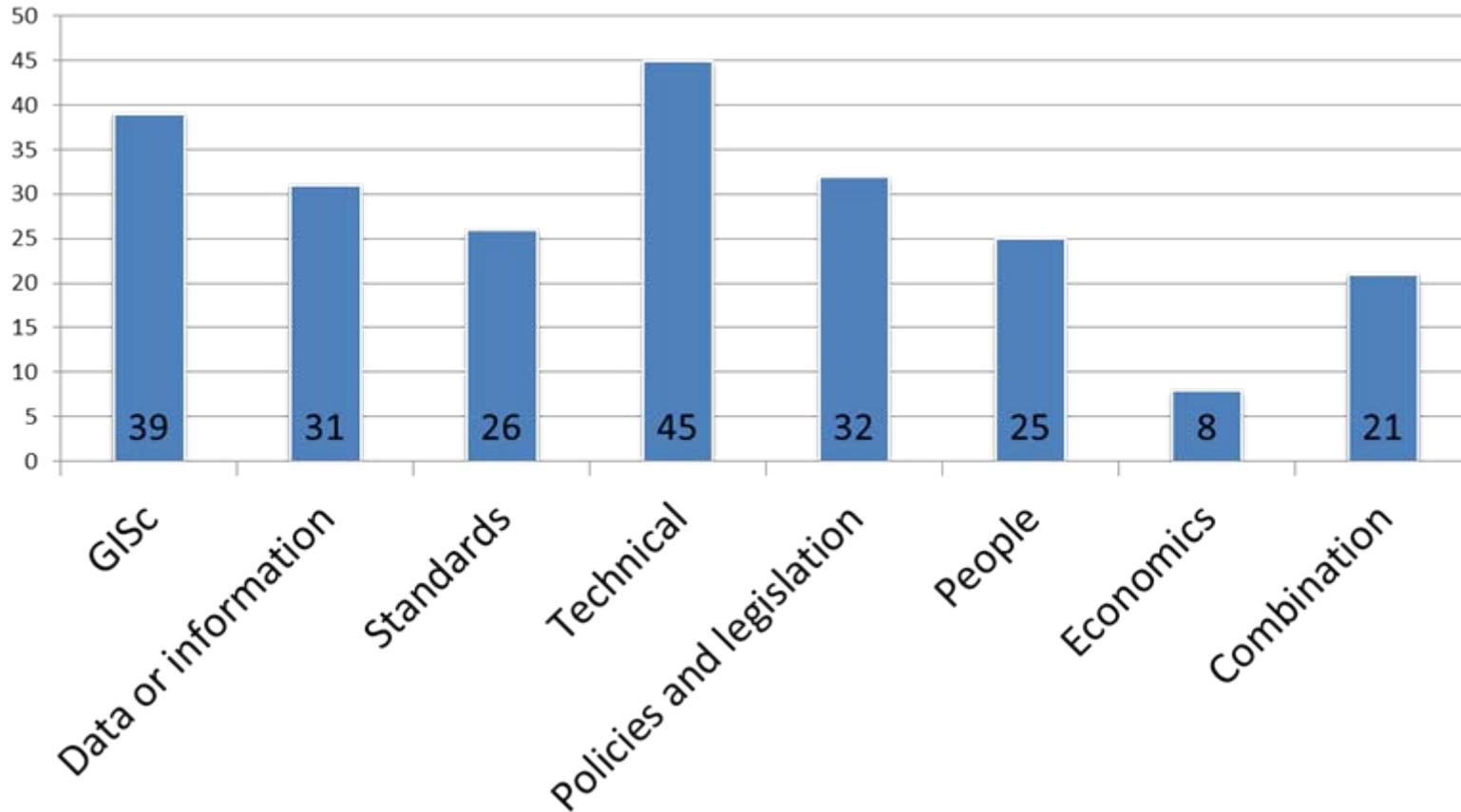
Survey Results



- Related
- SDI included
- SDI specific



Survey Results



Matching Book Survey Results to Identified Knowledge Areas



Knowledge area	Awareness	Knowledge	Skills	Apply solution	Select Solution	Design solution	Research
The value of spatial information for their respective purpose or job in SASDI	X	X					
Spatial data and the principles of geographic information systems (GIS)	X	X		X			
Overview of SDI, SDI principles and its benefits	X	X	X				



Matching Book Survey Results to Identified Knowledge Areas



Knowledge area	Awareness	Knowledge	Skills	Apply solution	Select Solution	Design solution	Research
SDI component: data and metadata		X	X			X	
SDI component: standards and specifications		X			X		X
SDI component: web services		X				X	X
SDI component: institutional agreements					X	X	X

Matching Book Survey Results to Identified Knowledge Areas



Knowledge area	Matching content category from the survey
The value of spatial information for their respective purpose or job in SASDI	GISc Economics
Spatial data and the principles of geographic information systems (GIS)	GISc Technical
Overview of SDI, SDI principles and its benefits	Combination

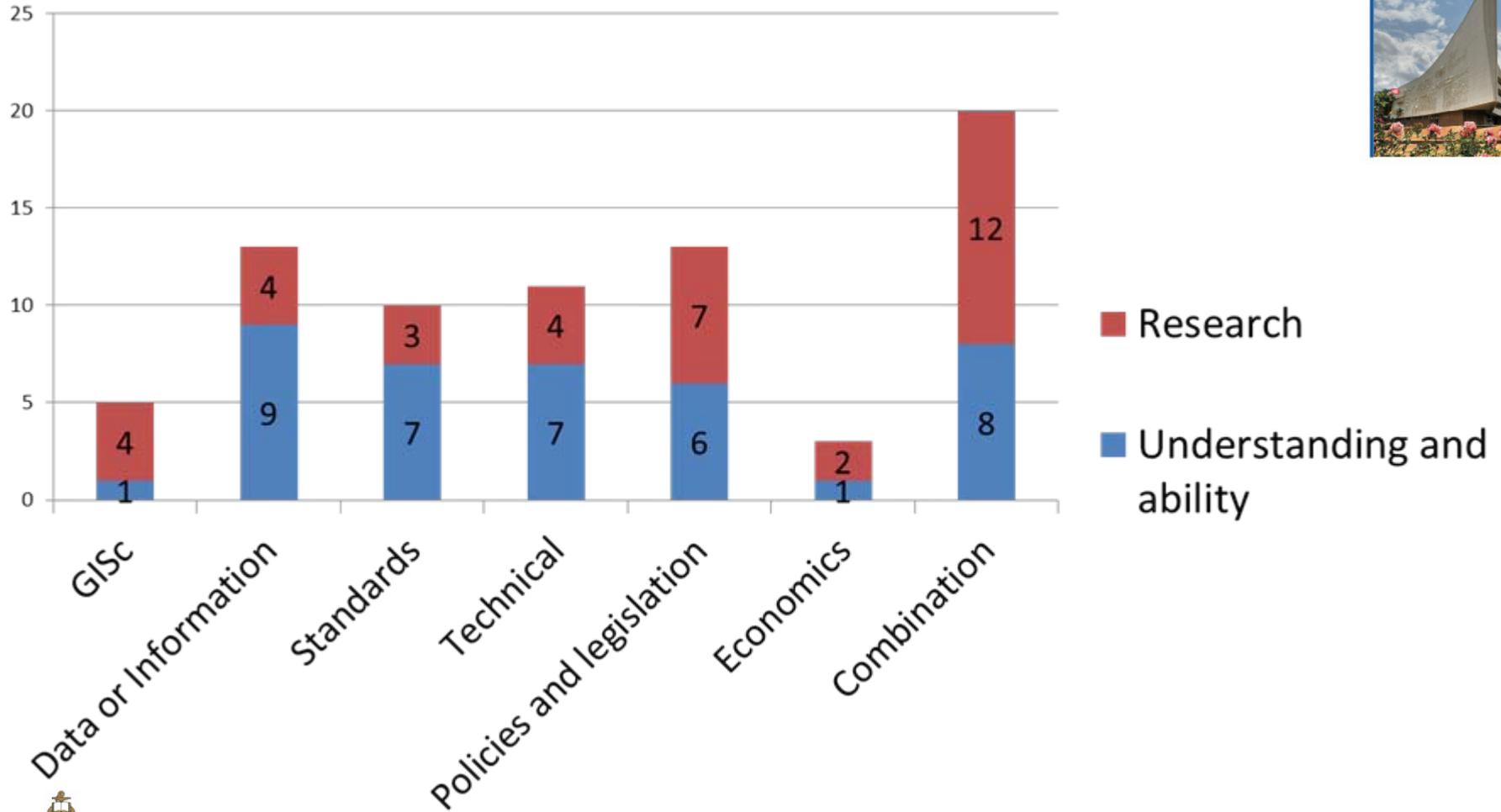


Matching Book Survey Results to Identified Knowledge Areas



Knowledge area	Matching content category from the survey
SDI component: data and metadata	Data and information
SDI component: standards and specifications	Standards
SDI component: web services	Technical
SDI component: institutional agreements	Policies and legislation

Matching Book Survey Results to Identified Knowledge Areas



Conclusion

The survey shows that educational books on SDIs are available, but a **more in-depth study of books is necessary** to establish whether they meet the needs of the specific target audiences identified for SDI education and training in South Africa.

The survey results further show that numerous SDI publications are available in a variety of formats.

This material is full of relevant information, but **needs to be synthesized into material that is useful for education and training purposes**: the focus needs to move from research finding to knowledge for practical application.



Conclusion

In future work we plan to review the 39 books identified in this survey in more detail to evaluate their appropriateness for the specific target audiences identified in South Africa



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Thank you.



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Thank you!

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