Friend or Foe? Open Data Initiatives and National Spatial Data Infrastructure (NSDI)

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Abstract

While some still claim Africa is the continent of no data, others talk about a data revolution and hail data as the new oil. Not a year passes without new buzzwords being hyped, only to leave us wondering why – despite all the Data Cubes, Big Data, Open Data, and National Spatial Data Infrastructures – we still have difficulties accessing data we need for our daily work.

This paper compares data initiatives on the African Continent and particularly in Rwanda during the last decade, highlighting their origins, custodians, differences and complementarities, and their common challenge: Sustained funding.

Sub-Saharan African countries often receive funding for the development of data portals. Elaborating on the fundamental economies of data, the author will explain, why data needs operational expenditures by the African Governments and why generous investments into software developments, platforms and other kinds of capital expenditures by themselves will never be enough to ensure permanent access to all the data we need to develop our countries in a sustainable and ecological way.

While the paper will focus on spatial data and the examples given will be map-centric, the points made are applicable to most other types of data too.

Content

- Introduction
- Looking back
- Friend or Foe? Open Data Initiatives (ODI) and National Spatial Data Infrastructures (NSDI)
- Is Spatial Data available and accessible in Sub-Saharan Africa?
- The Economies of Investments into IT-Systems and Data
- Conclusion: Be Smart – Focus on Data

Open Data compliant?

- PDF containing tables of [illegible] Internet Portal
- Data only to be published on Internet Portals built using Open Source Software / Products
- Downloadable Excel Files restricted „for educational use only"
- The Military does not disclose locations of [illegible]
- The Land Office makes parcel boundaries and identifiers downloadable, but **not the owners of the parcels**

No: A PDF is not (easily) modifiable

Open Source is not a requirement for Open Data – as long as Data can be made available at reasonable costs (TOC)

No: Favoring or discrimination of a particular use is not allowed

Yes: Open Data stops where National Security…..

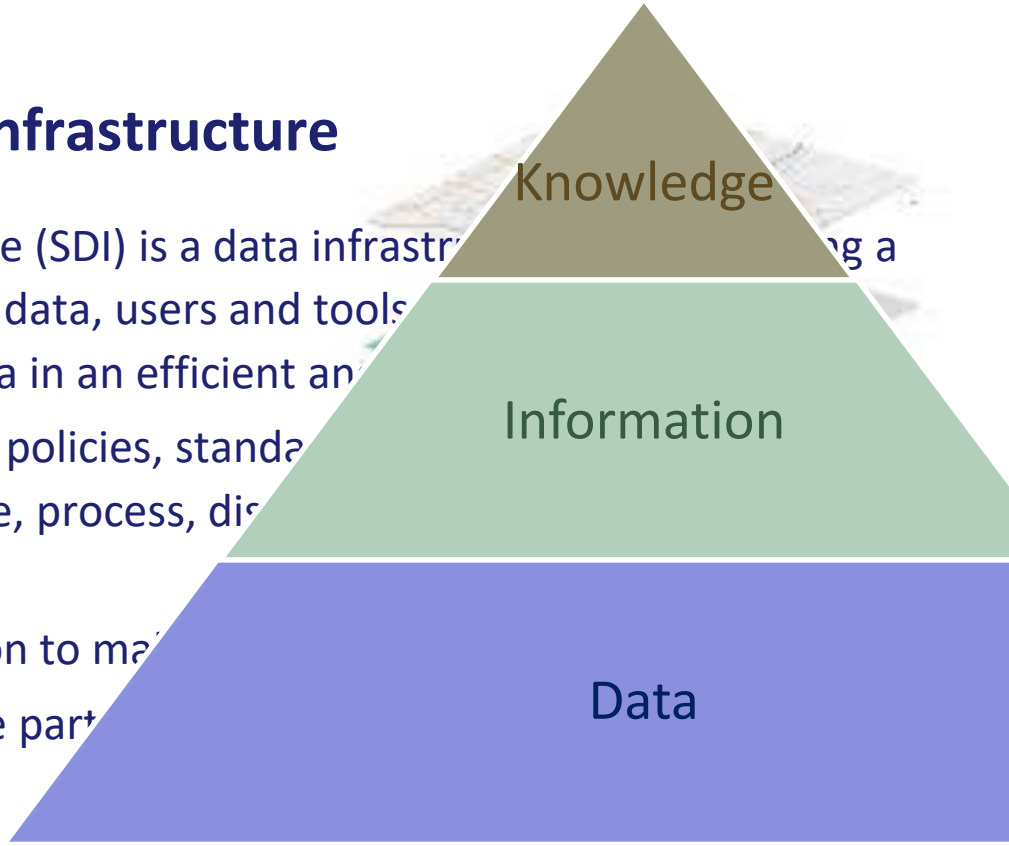
… or Privacy starts

Introduction II: Spatial Data Infrastructure

- A (national) spatial data infrastructure (SDI) is a data infrastr… …g a framework of geographic data, meta data, users and tools… connected in order to use spatial data in an efficient an…
- Another definition is the technology, policies, standa… related activities necessary to acquire, process, dis… preserve spatial data*

→ An SDI is about organizing Information to ma…

→ Data is Infrastructure (the descriptive part…



* http://en.wikipedia.org/wiki/Spatial_data_infrastructure

** while a GIS turns data into information (establishing context, spatial relationships)

August 2013: 1st National Geo-Information Committee Workshop in Rwanda

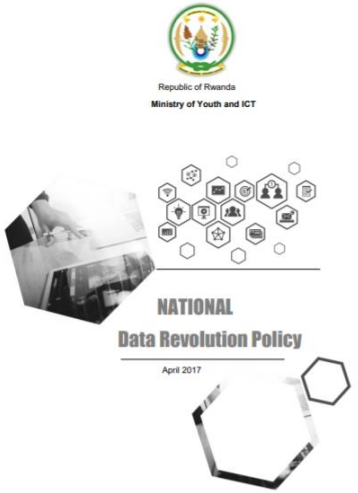
Looking back (I)

- October 2006: CGIS-NUR/NISR/President's Office: Towards a Spatial Data Infrastructure in Rwanda, Workshop
- April 2008: RITA: National GIS Portal, Workshop
- Fall 2009: Presentations and Meeting at President's Office re NSDI
- December 2009: Launch of Metadata Portal by CGIS-NUR
- August 21-23, 2013: 1st National Geo-Information Committee Workshop
- December 2013: Concept Paper / Roadmap defining 28 steps for the Establishment of NSDI in Rwanda is circulated and commented by Stakeholders
- February 2014: One Week Metadata Training in Musanze (by RCMRD)
- June 2014: Revised and corrected Concept Paper circulated by RNRA

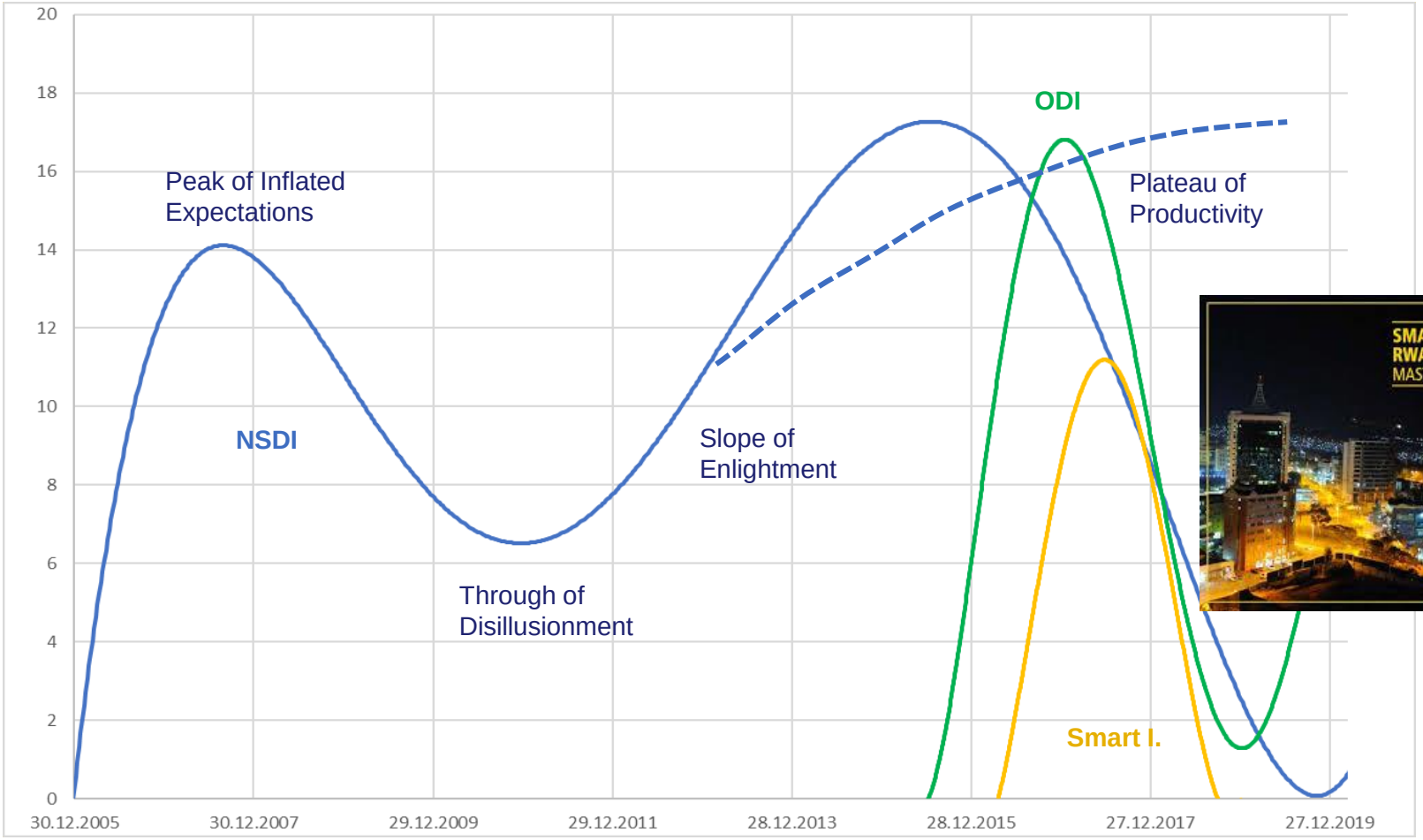
August 2013: 1st National Geo-Information Committee Workshop in Rwanda

Looking back (II)

- Nov. 26, 2014: RNRA (today RLMUA) launches National Land Use Planning Portal
- July 26/27, 2015: RNRA (today RLMUA) launches the first Rwanda Geoportal
- June 2016: Open Data Policy Consultative Workshop
- April 2017: Rwanda adopts the National Data Revolution policy
  - > Big Data and Open Data
  - > States that data is open by default
  - > To be implemented by the National Institute of Statistics
- Nov. 2016: Smart Rwanda Masterplan
- May 2017: Transform Africa Summit: Smart Cities Fast Forward
- Summer 2017: Sweden and since 2019 South Korea offer support t implementing an NSDI



The ODI / NSDI / Smart Initiatives Hype Curve*



* Own diagram according to the logic of the Gartner Hype Cycles for emerging technologies based on Rwandan Events

Friend or Foe (I): Some Differences

- Open Data: Not limited to Geographical (spatial) Data
- Open Data: Focus on Availability, (free) Access, Reuse, Distribution and Universal Participation.
- NSDI: Limited to (preoccupied with) Geographical (spatial) Data, free access not implied
- NSDI: Decentralized, standards-based approach, data at custodians, discovery services
- NSDI: Focuses (additionally) on organizing and curating data turning it into information and making it useful for gaining knowledge

Friend or Foe (II): NDSI started in the early 2000s...

- The Rwanda Concept Paper follows best practices for a NSDI as outlined in the SDI Cookbook published 2004 by GSDI (Global Spatial Data Infrastructure, www.gsdi.org)
- NSDI-Initiatives in Europe (Inspire) and the US have taken some 10 to 15 years to deliver data – i.e. tangible results
- In Rwanda we have done 2 and some of 28 steps, when will we have an NSDI?

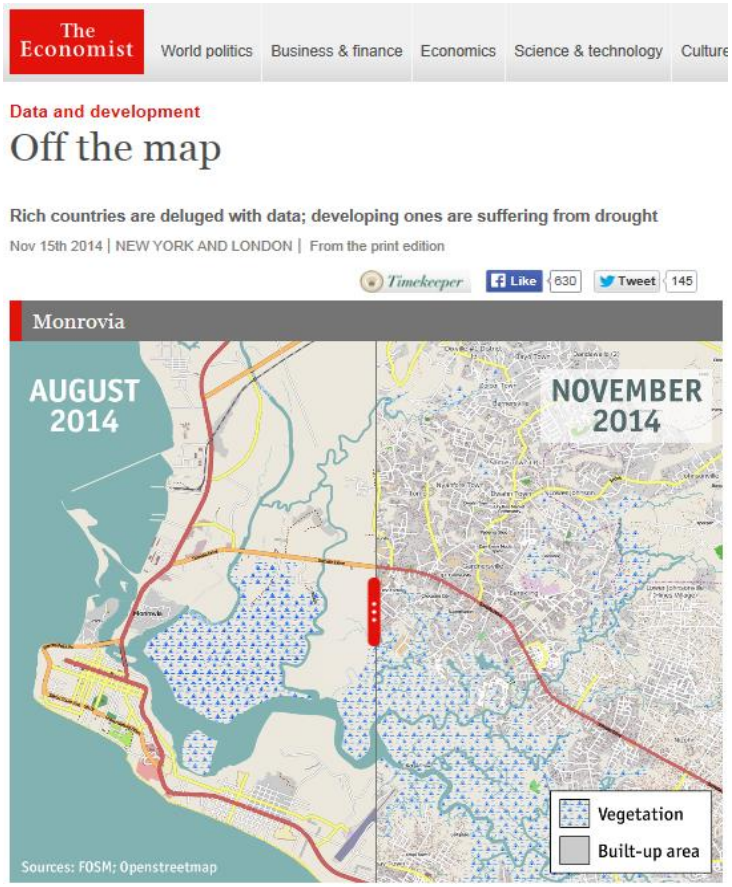
?DISRUPTION?
April 2017: The Cabinet approves the Data Revolution Policy to be implemented by NISR

No	Activity	Outcome	Indicator	Who
26	**Metadata training and education support**	On-line training module to support producers of spatial data in their creation of discovery metadata	On-line training module in place	NSDI Management Unit
21	Study / Report on required core datasets for Rwanda	Definitive list ….datasets should be produced ….	List of required core reference datasets	NSDI Mgmt Unit with external TA support
18	**Set up Pilot Examples**	Pilot example cases to demonstrates feasibility for specific applications	Pilot examples publicized as part of NSDI Communications Plan	NSDI Committee acting on recom-mendations from the TWG…..

Friends or Foes (III)**: An Open Data Policy is a blessing for the NSDI !**

No	Activity	Outcome	Indicator	Who
4	Data Policy agreed by government	Having a well communicated data policy creates clarity for all stakeholders	Published data policy (including metadata)	Government
8	Specification of the NSDI Management Unit	Agreed legal status, role, funding, staffing, funding, activities, etc	Final specification for the NSDI Management Unit	NSDI Implemen-tation Team
14	Adopt and use the draft Data sharing agreement	Data sharing between public sector bodies	Signed copies of the finalized Data Sharing Agreement	All public sector stakeholders in the NSDI Council
17	Public sector bodies to explore possi-bilities …to exploit location-related information available on the shared technical infrastructure	More "joined-up" data sharing will eventually promote the delivery of increased and better public services	Example cases of joint data sharing and service delivery	Working Group on governance & administration. Results should ….
18	**Set up Pilot Examples**	Pilot example cases to demonstrates feasibility for specific applications	Pilot examples publicized as part of NSDI Communications Plan	NSDI Committee acting on recom-mendations from the TWG. …
20	A set of data sharing licenses, suitable for use by public sector data providers will be produced and used	A simple and usable licensing system for public sector data	A set of data sharing licenses like Creative commons, suitable for use by public sector data providers	NSDI Mgmt Unit working on re-commendations from the Legal Working Group
21	Study / Report on required core datasets for Rwanda	Definitive list ….datasets should be produced ….	List of required core reference datasets	NSDI Mgmt Unit with external TA support
26	**Metadata training and education support**	On-line training module to support producers of spatial data in their creation of discovery metadata	On-line training module in place	NSDI Management Unit

…and still we hear: "There is no Data in Africa"



AFRICA is the continent of missing data. Fewer than half of births are recorded; some countries have not taken a census in several decades. On maps only big cities and main streets are identified; the rest looks as empty as the Sahara. Lack of data afflicts other developing regions, too. The self-built slums that ring many Latin American cities are poorly mapped, and even estimates of their population are vague. Afghanistan is still using census figures from 1979—and that count was cut short after census-takers were killed by mujahideen.

As rich countries collect and analyse data from as many objects and activities as possible—including thermostats, fitness trackers and location-based services such as Foursquare—a data divide has opened up. The lack of reliable data in poor countries thwarts both development

The Economist: Nov 15th 2014 | NEW YORK AND LONDON | From the international print edition

Is there really NO DATA in Africa ???

- It can't be stressed enough, how much money, effort and time has been invested by Governments, International Organizations, the Academia, Donors, NGOs and the private Sector for Decades
- Investments are made in Projects creating data as a collateral (e.g. surveyed terrains when a road is planned and constructed) or in Projects with data collection as their main purpose (e.g. parcel data in a Land Tenure project).
- There is data in Africa, but the end of many projects is often the end of the created data too,
- In many cases Data is still difficult to access.
- Data may not come in the form needed requiring creativity and work to make applicable

Where is Africa today on the Road to Open Data/NSDI?

South Africa: South African Spatial Data Infrastructure (SASDI)

- SDI act assented on 28 January 2004.
- Sections 1 to 11, 13 and 19 to 22 of the Act came into operation on 8 May 2006.
- The proclamation of the remaining Sections of the SDI Act were approved by the President in May 2015. This puts in place all sections of the Act.

SDI Act (No. 54, 2003)

8 May 2006

2015: Remaining sections of the Act

6. Powers and functions of Committee
7. Terms of office of members
8. Disqualification as member of Committee
9. Meetings of Committee
10. Establishment of subcommittees
11. Spatial information standards and prescriptions
16. Collaborative maintenance
17. Reporting on data quality
18. Security of spatial information
19. Delegation of powers
20. Regulations
21. Liability
22. Short title and commencement

SASDI Website: http://www.sasdi.gov.za/

SAEON: NSIF Meta-Data Catalogue: http://www.sasdi.net/
NB: New Website to be launched on the 11th of August 2015

Mauritius
- Carried out Situation Analysis – May 2014
- National Geo-Information committee – May 2014
- Gave out Technical training to support NSDI – May 2014 & May 2015
- Assisted in Development of data sharing/dissemination platform – July -

Challenges and lessons learnt in implementation of SASDI

Committee for Spatial Information (CSI) Issues
- Appointment process taking longer than anticipated

- Slow progress but improvements are being made
- Always push and emphasize the importance of putting certain things in place

- Gave out Technical training to support NSDI – October 2013, February 2015 & June 2014
- Assisted in Development of data sharing/dissemination platform – June –July 2015

Many – except maybe one – countries have done a few of the 28 steps recommended, how long will it take for the remaining 20+ steps?

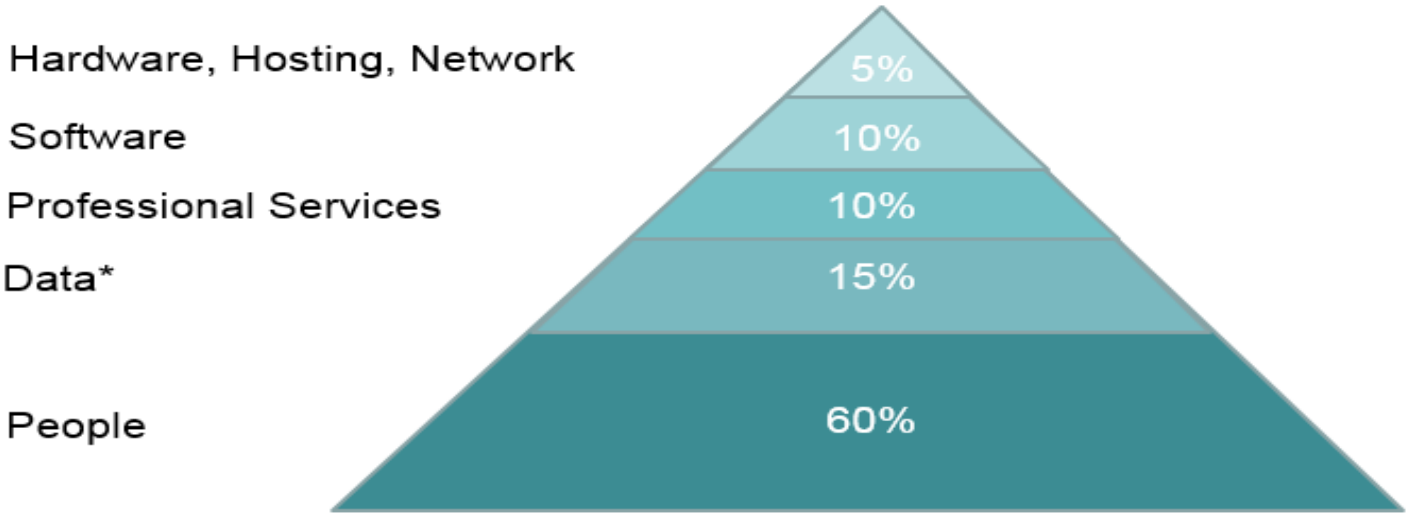
* As reported by RCMRD (www.rcmrd.org) and their member countries during the Regional Forum on National Spatial Data Infrastructures (NSDI) 27-28 July 2015 in Kigali, Rwanda

Mali	84	3.3	19	0	3	0	3.3	77	−7

Carville coined as a campaign strategist of Bill Clinton's successful 1992 presidential campaign against president George H. W. Bush.

The Economies of Data and IT Projects (in general)

Typical Life Cycle Costs of an IT Project



* Data costs proportionately reducing with increasing open data initiatives

ConsultingWhere
Maximising the value of location information

GSDI 2013

by Andrew Coote

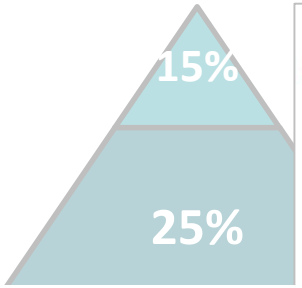
The Economies of Data and IT Projects (RW GIS Portals)

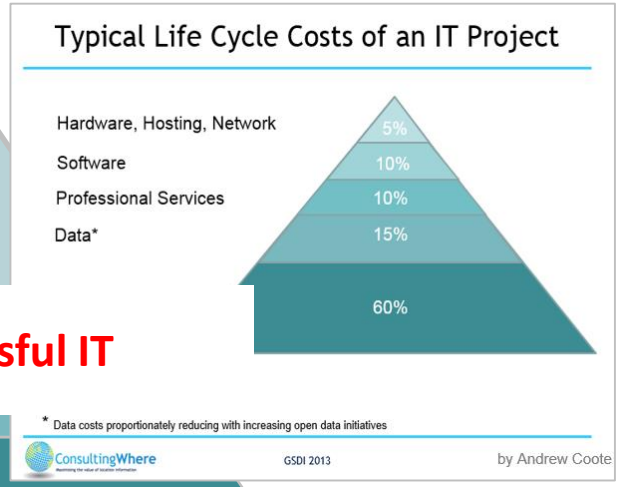
Operationalization

Software and Developments

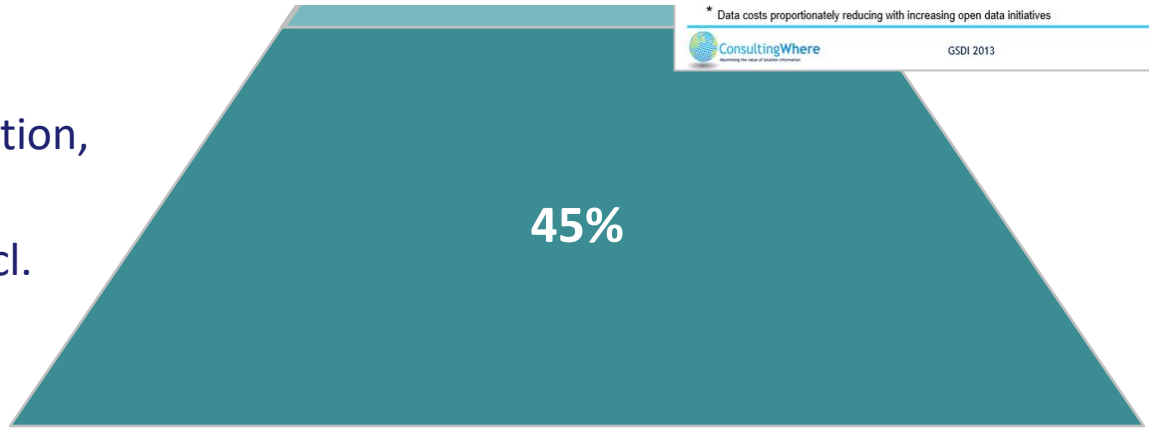
Data Val

Discovery, Identification, Harmonization and Cleaning of **Data**, incl. Training of Staff





Data and People are the Key to successful IT



The Economies of Data and People

- **Projects, Hardware, Software and Professional Services (incl. initial Trainings) are are tendered procured and implemented**
- **Data requires ongoing efforts** (in staff and/or external services) **not to lose, maintain and update it.**
- **There is Data in Africa, but too often Data does not remain accessible beyond the end of the initial project creating it and is not accessible to a wider audience than the few engaged in capturing it.**
- **Resources are wasted and the same data needs to be captured again.**
- **There are Open Data Portals with various degrees of relevance/topicality while the NSDIs have not yet evolved much beyond being a beautiful concept**

→ **There is (big) data in Africa like everywhere in the World, but not enough curated, easily accessible, «Open» data.**

Investments (CAPEX)

Maintenance (OPEX)

Data and IT needs ongoing funding mechanisms, just as the Roads have in Rwanda

And why is this often the case?

New geoportal to help investors, tourists

By: THEOGENE NSENGIMANA

PUBLISHED: July 30, 2015 | News | Print | Email

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Biruta logs in to Rwanda geoportal web site during the launch yesterday. (Theogene Nsengimana)

More in News

- Promoting environmental awareness through drama

The Rwanda Natural Resources Authority (RNRA) has launched Rwand
Geoportal, an online platform where spatial data such as maps can eas
accessed.

The geoportal, www.geoportal.rnra.rw, was launched in Kigali on Tues

New web portal to ease disaster management

By: DOREEN UMUTESI

PUBLISHED: April 01, 2015 | News | Print | Email

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