

ENABLING EXCELLENCE



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From the Wisdom of the Ages to the Challenges of the Modern World

Africa Regional Network

**Challenges and Opportunities in Facing the SDG's:
Generational Diversity in Land Professionals Sector**

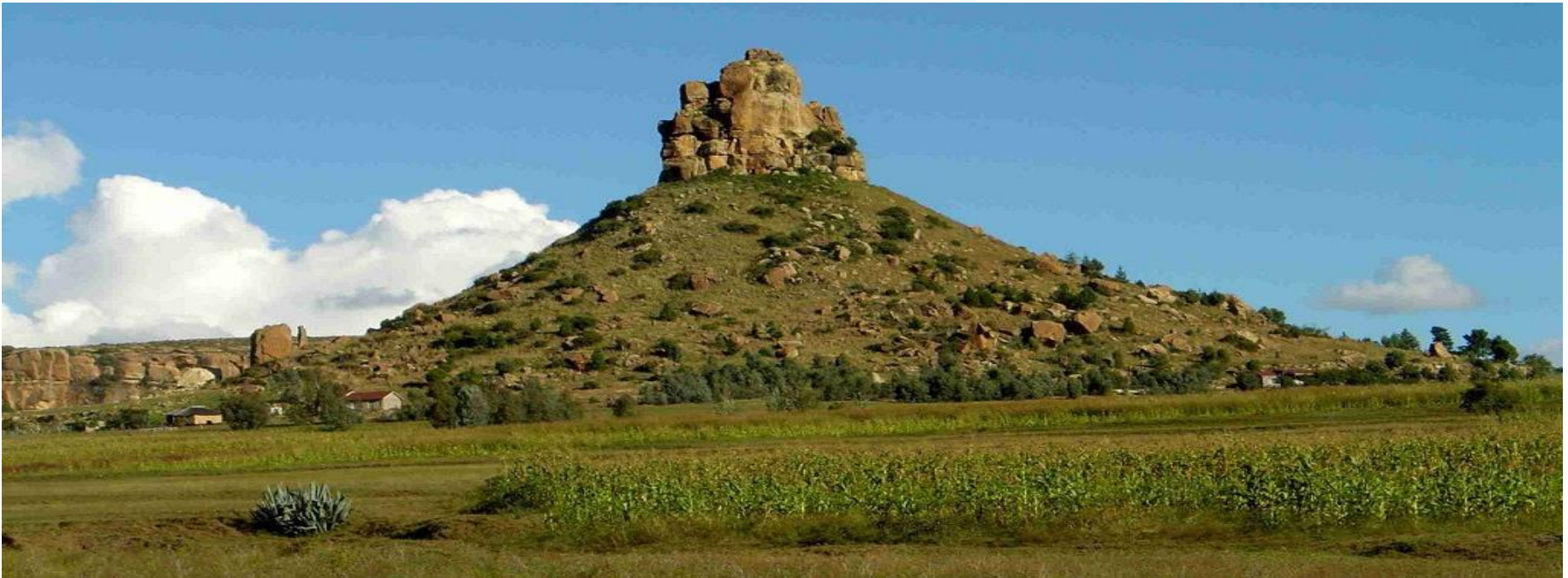
Getaway Lodge, Nairobi, Kenya

9th–10th November 2015

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From the Wisdom of the Ages to the Challenges of the Modern World

Big Data & Technology:

The Impact on the Surveyor Profession

Gasant Jacobs: Director Business Development



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Problem Statement



Developments in technology take the skills out of measurement and the processing of data. Anyone can press buttons to create survey information and process this information in an automated system.

In the same way, technological developments make GIS a tool available to all.

The skill of the future lies in the interpretation of the data and its management to meet the needs of customers, institutions and communities

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Brokers bribed for land search - study

Brokers are corruptly facilitating land transactions after the ministry failed to automate records, a study has indicated. 41% of respondents said corruption, especially at the lands registry, is high. The Land Development and Governance Institute released the scorecard in Nairobi yesterday. Despite the ministry closing some registries for re-organisation and digitisation, 63% of respondents were unaware of the online land search system. LDGI executive director Mwenda Makathimo said the so-called digitisation is “just scanning of documents and loading them on a website”. “What has been done is orderly manual filing, which is a good start,” he said. “What we need now is automation of survey, planning, registry and training of personnel.” Makathimo said Kenyans cannot register and get information instantly because the system lacks back office and field systems. He said brokers collude with corrupt land registrars to exploit Kenyans. They are now facilitating services within a day, while those who do not bribe get services between three weeks to a month, Makathimo said. The study was carried out between September 16 and October 2. A total of 913 respondents were interviewed in 29 land offices in 26 counties. Land search was the most sought-after service, with 42% of respondents seeking it. – See more at: <http://www.the-star.co.ke/news/brokers-bribed-land-search-study#sthash.>

BY GILBERT KOECH October 29, 2015



Brokers bribed for land search - study 1 of 1 President Uhuru Kenyatta and Lands CS Charity Ngilu tour the Lands ministry registry to inspect improvements on May 23 last year.

Key Focus:

- Define and use the insight gained by participants from across Africa to explore the implications that our sector is likely to see in the work place
- Devise appropriate tools that will be helpful to member Associations to help their own members to ensure inter-generational diversity in the work place, and
- ***Deliberate on the technological application of comprehensive management of big data.***

To identify priority areas for land professionals to be aware of inter-generational diversity as it affects the work place through the lens of Big data & Technology and ultimately the impact on society as measured by the SDGs.

Agenda



- Introductions
- Setting the Scene
 - Evolution of Land Administration As a Discipline
 - The role of the Surveyor
 - The tools of the surveyor
- The Challenges for Surveyors
 - Big Data
 - Technology Interruption
 - Crowd sourcing
- Educational Trends
 - The Educational Challenges for Surveyors
 - Professional Competence
- Interventions Required
- So What is Big DATA

Setting the Scene

Modern Surveying, as a defined activity involving scientific and rigorous collection of land information through precise boundary and parcel identification, has a long history of more than 400 years.

The introduction of surveying led to coherent, adaptable land distribution systems which formed the basis of efficient land taxation, formal land registration and transaction tracking.

As technology developed, and GIS sciences exploded we witnessed how land management interfaced or criss crossed computer science, and we saw how surveying became spatial technology.

The Tools of the Surveyor.

- Digitising & Scanning
 - GPS/GIS
 - Graphic and Imaging
 - Orthophotography
 - Photogrammetry
 - Satellite Mapping
 - Oblique Imagery
-
- Deliberate on the technological application of comprehensive management of big data.

Educational Trends

- Management Skills vs. Specialist Skills
- Define and use the insight gained by participants from across Africa to explore the implications that our sector is likely to see in the work place
- Devise appropriate tools that will be helpful to member Associations to help their own members to ensure inter-generational diversity in the work place, and
- Deliberate on the technological application of comprehensive management of big data.

Educational Trends

- Management Skills vs. Specialist Skills
- Project-organised education vs. Subject-based education
- Virtual academy vs. Classroom lecture courses
- Lifelong Learning vs. Vocational Training



The Educational Challenges for Surveyors

- There's a growing need to redirect focus away from the traditional surveying discipline towards a more multi-disciplinary/interdisciplinary model
- The strength of the surveying profession lies ultimately in its multi-disciplinary approach



Professional Competence

- The term “professional competence” refers to an individual’s status as an expert.
- This status cannot be achieved through university education alone, nor can it be achieved solely through professional practice
- The idea of “Learning for Life” is replaced by the concept “Lifelong Learning”
- No longer is keeping up to date an option, it is essential.

Part Two

So What is Big DATA

The South African Case Study





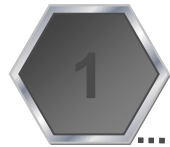
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The Age of Big Data



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Introduction: Explosion in Quantity of Data



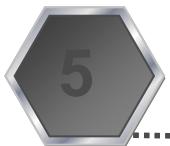
Surveying and Big Data



Big Data Characteristics



Importance of Big Data



Usage Example in Big Data



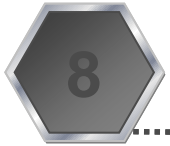
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Some Challenges in Big Data



Other Aspects of Big Data



Implementation of Big Data

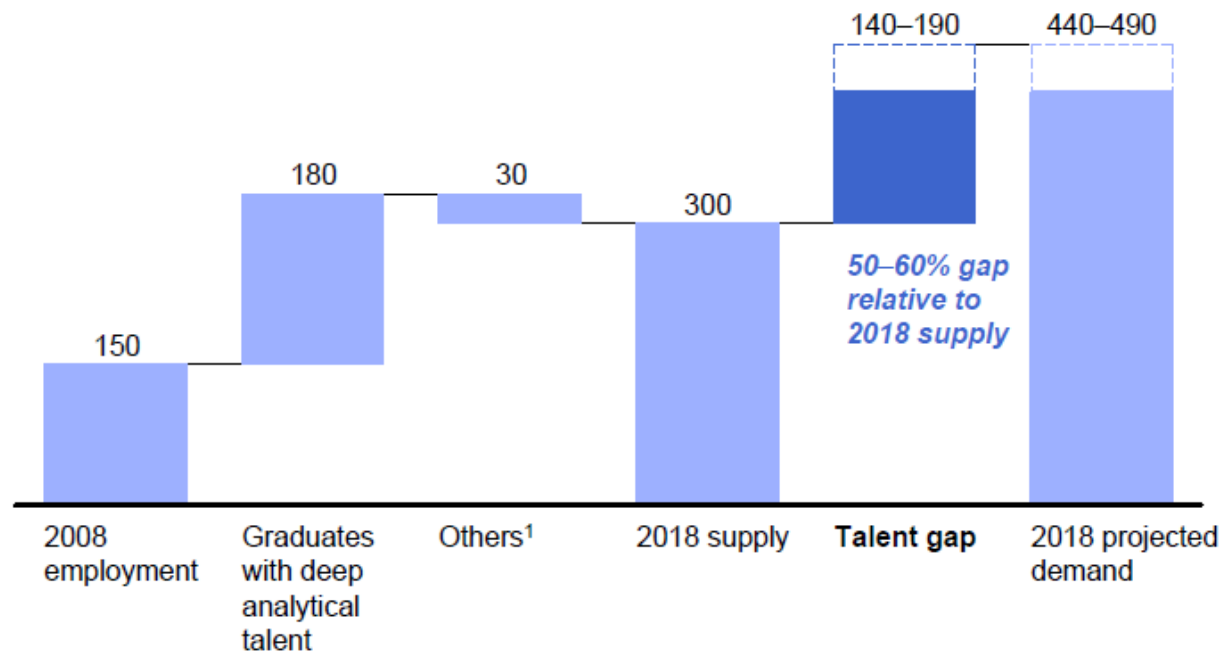


Zeta-Byte Horizon



Book Review

McKinsey Institute on Big Data Jobs



- There will be a shortage of talent necessary for organizations to take advantage of big data. By 2018, the USA alone could face a shortage of 140,000 to 190,000 people with deep analytical skills as well as 1.5 million managers and analysts with the know-how to use the analysis of big data to make effective decisions.
- IU Data Science **Decision Maker Path** aimed at 1.5 million jobs. **Technical Path** covers the 140,000 to 190,000

Introduction: Explosion in Quantity of Data

Air Bus A380

- 1 billion line of code
- each engine generate 10 TB every 30 min

640TB per
Flight

Twitter Generate approximately 12 TB of data
per day

New York Stock Exchange 1TB of data
everyday

storage capacity has doubled roughly every
three years since the 1980s

Introduction: Explosion in Quantity of Data

Our Data-driven World

- Science
 - Data bases from astronomy, genomics, environmental data, transportation data, ...
- Humanities and Social Sciences
 - Scanned books, historical documents, social interactions data, new technology like GPS ...
- Business & Commerce
 - Corporate sales, stock market transactions, census, airline traffic, ...
- Entertainment
 - Internet images, Hollywood movies, MP3 files,
- Medicine
 - MRI & CT scans, patient records, ...

Big Data Characteristics

How big is the Big Data?

- What is big today maybe not big tomorrow
- Any data that can challenge our current technology in some manner can consider as Big Data
 - Volume
 - Communication
 - Speed of Generating
 - Meaningful Analysis

Big Data Vectors (3Vs)

"Big Data are **high-volume**, **high-velocity**, and/or **high-variety** information assets that require new forms of processing to enable enhanced decision making, insight discovery and process optimization" Gartner 2012

Big Data Characteristics

Big Data Vectors (3Vs)

- high-volume
amount of data
- high-velocity
Speed rate in collecting or acquiring or generating or processing of data
- high-variety
different data type such as audio, video, image data (mostly unstructured data)

Importance of Big Data

- Government
 - In 2012, the Obama administration announced the Big Data Research and Development Initiative
 - 84 different big data programs spread across six departments
- Private Sector
 - Walmart handles more than 1 million customer transactions every hour,
 - Facebook handles 40 billion photos from its user base.
 - Falcon Credit Card Fraud Detection System protects 2.1 billion active accounts world-wide
- Science
 - Large Synoptic Survey Telescope will generate 140 Terabyte of data every 5 days.
 - Large Hardon Colider 13 Petabyte data produced in 2010
 - Medical computation like decoding human Genome
 - Social science revolution
 - New way of science (Microscope example)

Importance of Big Data

- Job

- The U.S. could face a shortage by 2018 of 140,000 to 190,000 people with "deep analytical talent" and of 1.5 million people capable of analyzing data in ways that enable business decisions. (McKinsey & Co)
- Big Data industry is worth more than \$100 billion
growing at almost 10% a year (roughly twice as fast as the software business)

Some Challenges in Big Data

- Big Data Integration is Multidisciplinary
 - Less than 10% of Big Data world are genuinely relational
 - Meaningful data integration in the real, messy, schema-less and complex Big Data world of database and semantic web using multidisciplinary and multi-technology methods
- The Linked Open Data Ripper
 - Mapping, Ranking, Visualization, Key Matching, Snappiness
- Demonstrate the Value of Semantics: let data integration drive DBMS technology
 - Large volumes of heterogeneous data, like link data and RDF

Other Aspects of Big Data

Six Provocations for Big Data

- 1- Automating Research Changes the Definition of Knowledge
- 2- Claim to Objectively and Accuracy are Misleading
- 3- Bigger Data are not always Better data
- 4- Not all Data are equivalent
- 5- Just because it is accessible doesn't make it ethical
- 6- Limited access to big data creates new digital divides

Other Aspects of Big Data

- Five Big Question about big Data:
 - a) What happens in a world of radical transparency, with data widely available?
 - b) f you could test all your decisions, how would that change the way you compete?
 - c) How would your business change if you used big data for widespread, real time customization?
 - d) How can big data augment or even replace Management?
 - e) Could you create a new business model based on data?

Zeta-Byte Horizon

- As of 2009, the entire World Wide Web was estimated to contain close to 500 exabytes. This is a half zettabyte
- the total amount of global grew to 2.7 zettabytes during 2012. This is 48% up from 2011



Wrap Up

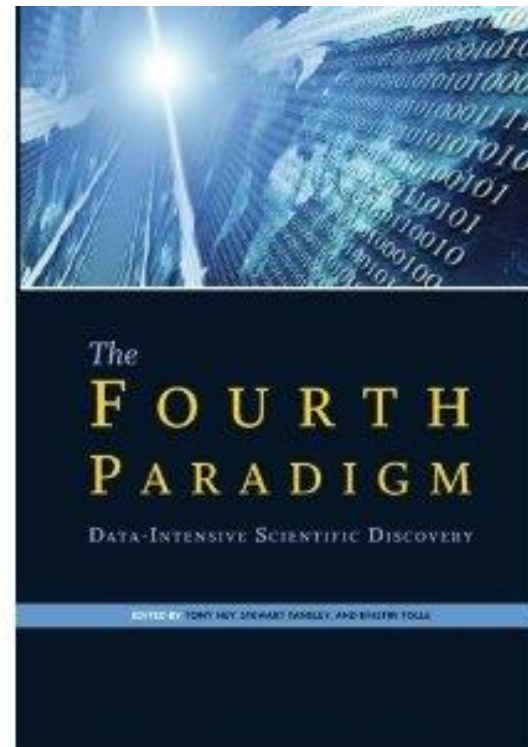
The implications of Big Data for the Surveyor

- Technology advancement means that the world of the surveyor as we know it today will change

Book Review

The Fourth Paradigm Data-Intensive Scientific Discovery

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Thank You

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