Managing Digital Records in a South African Public Sector Institution

Dr Shadrack Katuu[1] (International Atomic Energy Agency)

Prof Mpho Ngoepe (University of South Africa)

[1]The views expressed herein are those of the author and should not be attributed to either his current or any of his previous employers

Outline

- Introduction
- Legislative and regulatory framework
- Technological terrain
- Conclusion

Introduction

- South Africa's public sector institutions generate public records that need to be managed in compliance with the country's legislative and regulatory instruments.
- For instance, national archival legislation dictates that public records that are older than 20 years and that have enduring value should be physically transferred into the custody of the National Archives.
- Recent technological developments that have impacted how public records are created and managed such as mobile computing and cloud computing have raised a number of challenges to the traditional means of recordkeeping.
- The identification and transfer of digital records from public institutions into archival custody has not happened in any systematic manner because the national archival system has struggled to effectively manage such records and facilitate their long-term preservation (Ngoepe and Keakopa, 2011).

Introduction

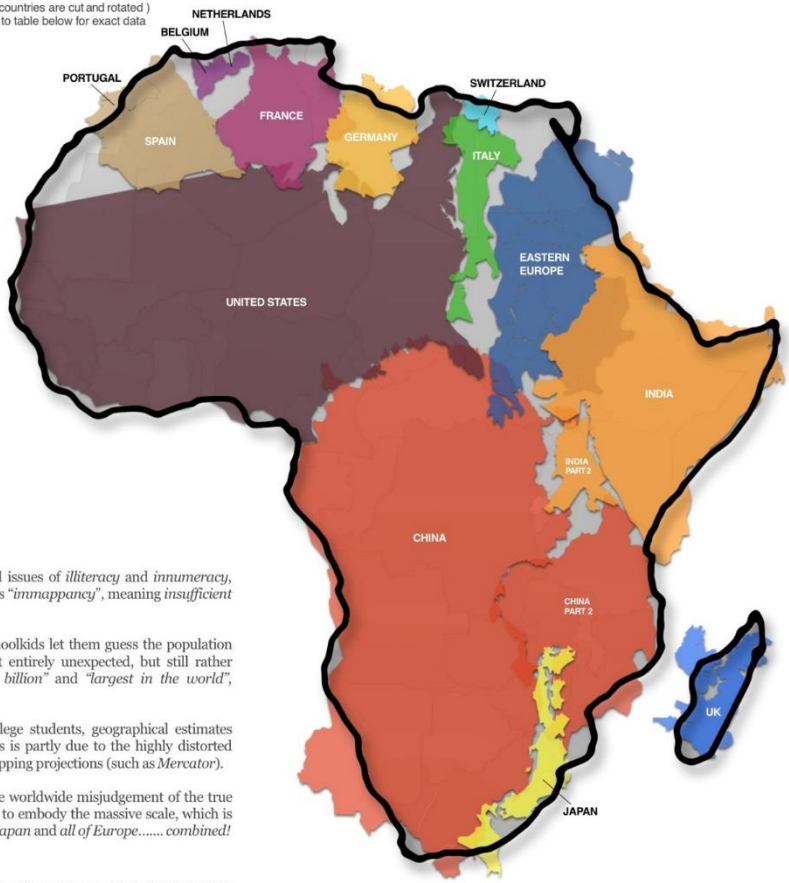
- As a result, these records are left to the creating agencies to manage and preserve them even though they lack the infrastructure as well as knowledge and skills to preserve digital records in the long-term.
- It is against this background that a research study by Team Africa of the InterPARES Trust project is exploring the management of digital records.
- The aim of the research study is to assess the recordkeeping environment in a public enterprise known as Rand Water which is the largest bulk water utility institution in South Africa.
- Rand Water supplies water to 12 million people in several metropolitan and local municipalities as well as large industries.
- The research study is assessing both the legal terrain as well as the technological requirements for the management of digital records in the custody of the institution.

The **True Size** of **Africa**

A small contribution in the fight against rampant *Immappancy*, by **Kai Krause**

Graphic layout for visualization only (some countries are cut and rotated)
But the conclusions are very accurate: refer to table below for exact data

COUNTRY	AREA x 1000 km²
China	9.597
USA	9.629
India	3.287
Mexico	1.964
Peru	1.285
France	633
Spain	506
Papua New Guinea	462
Sweden	441
Japan	378
Germany	357
Norway	324
Italy	301
New Zealand	270
United Kingdom	243
Nepal	147
Bangladesh	144
Greece	132
TOTAL	**30.102**
AFRICA	**30.221**



In addition to the well known social issues of *illiteracy* and *innumeracy*, there also should be such a concept as "*immappancy*", meaning *insufficient geographical knowledge*.

A survey with random American schoolkids let them guess the population and land area of their country. Not entirely unexpected, but still rather unsettling, the majority chose *"1-2 billion"* and *"largest in the world"*, respectively.

Even with Asian and European college students, geographical estimates were often off by factors of *2-3*. This is partly due to the highly distorted nature of the predominantly used mapping projections (such as *Mercator*).

A particularly extreme example is the worldwide misjudgement of the true size of *Africa*. This single image tries to embody the massive scale, which is larger than the *USA, China, India, Japan* and *all of Europe..... combined!*

Top 100 Countries

Area in square kilometers, Percentage of World Total
Sources: Britannica, Wikipedia, Almanac 2010

		AREA km²	%
1	Russia	17.098.242	11,50
2	Canada	9.984.670	6,70
3	China	9.596.961	6,40
4	United States	9.629.091	6,40
5	Brazil	8.514.877	5,70
6	Australia	7.692.024	5,20
7	India	3.287.263	2,30
8	Argentina	2.780.400	2,00
9	Kazakhstan	2.724.900	1,80
10	Sudan	2.505.813	1,70
11	Algeria	2.381.741	1,60
12	Congo	2.344.858	1,60
13	Greenland	2.166.086	1,50
14	Saudi Arabia	2.149.690	1,40
15	Mexico	1.964.375	1,30
16	Indonesia	1.890.360	1,30
17	Libya	1.759.540	1,20
18	Iran	1.628.750	1,10
19	Mongolia	1.564.100	1,10
20	Peru	1.285.216	0,86
21	Chad	1.284.000	0,86
22	Niger	1.267.000	0,85
23	Angola	1.246.700	0,85
24	Mali	1.240.192	0,83
25	South Africa	1.221.037	0,82
26	Colombia	1.141.748	0,76
27	Ethiopia	1.104.300	0,74
28	Bolivia	1.098.581	0,74
29	Mauritania	1.025.520	0,69
30	Egypt	1.002.000	0,67
31	Tanzania	945.087	0,63
32	Nigeria	923.768	0,62
33	Venezuela	912.050	0,61
34	Namibia	824.116	0,55
35	Mozambique	801.590	0,54
36	Pakistan	796.095	0,53
37	Turkey	783.562	0,53
38	Chile	756.102	0,51
39	Zambia	752.612	0,51
40	Myanmar	676.578	0,45
41	Afghanistan	652.090	0,44
42	Somalia	637.657	0,43
43	France	632.834	0,43
44	C. African Rep	622.984	0,42
45	Ukraine	603.500	0,41
46	Madagascar	587.041	0,39
47	Botswana	582.000	0,39
48	Kenya	580.367	0,39
49	Yemen	527.968	0,35
50	Thailand	513.120	0,34
51	Spain	505.992	0,34
52	Turkmenistan	488.100	0,33
53	Cameroon	475.442	0,32
54	Papua New Guinea	462.840	0,31
55	Uzbekistan	447.400	0,30
56	Morocco	446.550	0,30
57	Sweden	441.370	0,30
58	Iraq	438.317	0,29
59	Paraguay	406.752	0,27
60	Zimbabwe	390.757	0,26
61	Japan	377.930	0,25
62	Germany	357.114	0,24
63	Rep o.t. Congo	342.000	0,23
64	Finland	338.419	0,23
65	Vietnam	331.212	0,22
66	Malaysia	330.803	0,22
67	Norway	323.802	0,22
68	Côte d'Ivoire	322.463	0,22
69	Poland	312.685	0,21
70	Oman	309.500	0,21
71	Italy	301.336	0,20
72	Philippines	300.000	0,20
73	Burkina Faso	274.222	0,18
74	New Zealand	270.467	0,18
75	Gabon	267.668	0,18
76	Western Sahara	266.000	0,18
77	Ecuador	256.369	0,20
78	Guinea	245.857	0,17
79	United Kingdom	242.900	0,16
80	Uganda	241.038	0,16
81	Ghana	238.539	0,16
82	Romania	238.391	0,16
83	Laos	236.800	0,16
84	Guyana	214.969	0,14
85	Belarus	207.600	0,14
86	Kyrgyzstan	199.951	0,13
87	Senegal	196.722	0,13
88	Syria	185.180	0,12
89	Cambodia	181.035	0,12
90	Uruguay	176.215	0,12
91	Suriname	163.820	0,11
92	Tunisia	163.610	0,11
93	Nepal	147.181	0,10
94	Bangladesh	143.998	0,10
95	Tajikistan	143.100	0,10
96	Greece	131.957	0,09
97	Nicaragua	130.373	0,09
98	North Korea	120.538	0,08
99	Malawi	118.484	0,08
100	Eritrea	117.600	0,08
	TOP 100 TOTAL	132.632.524	89,34


United States


Europe


India


Japan


China

Introduction

(Ref: https://en.wikipedia.org/wiki/List_of_African_countries_by_population and https://en.wikipedia.org/wiki/List_of_European_countries_by_population)

Rank	Country (or dependent territory)	July 1, 2015 projection[1]
1	Nigeria	184,264,000
2	Ethiopia	90,076,000
3	Egypt	88,523,000
4	Democratic Republic of the Congo	77,267,000
5	South Africa	54,957,000
6	Tanzania	48,829,000
7	Kenya	44,234,000
8	Algeria	39,903,000
9	Sudan	38,435,000
10	Uganda	35,760,000

Rank	Country (or dependent territory)	July 1, 2015 projection[1]
1	Russia[5]	144,031,000
2	Germany	81,276,000
3	Turkey	78,214,000
4	France	67,063,000
5	United Kingdom	65,081,276
6	Italy	60,963,000
7	Spain	46,335,000
8	Ukraine[6]	42,850,000
9	Poland	38,494,000
10	Romania	19,822,000


Algiers
Tunis
Rabat
Fez
Casablanca
MADEIRA (PT)
TUNISIA
Tripoli
MOROCCO
Banghazi
Alexandria
Cairo
CANARY ISLANDS (SPAIN)
ALGERIA
LIBYA
EGYPT
WESTERN SAHARA
MAURITANIA
CAPE VERDE
Nouakchott
MALI
NIGER
CHAD
SUDAN
Khartoum
ERITREA
Asmara
Praia
Dakar
SENEGAL
THE GAMBIA
Banjul
Bamako
Niamey
Ouagadougou
BURKINA FASO
Kano
Ndjamena
DJIBOUTI
Djibouti
SOMALILAND
Hargeysa
Bissau
GUINEA-BISSAU
GUINEA
BENIN
NIGERIA
Conakry
Freetown
SIERRA LEONE
IVORY COAST
Yamoussoukro
GHANA
TOGO
Abuja
Ibadan
Ikare
Lagos
Addis Ababa
ETHIOPIA
SOUTH SUDAN
CENTRAL AFRICAN REPUBLIC
Monrovia
LIBERIA
Kumasi
Abidjan
Accra
Lome
Cotonou
Port Harcourt
Douala
Yaounde
Malabo
CAMEROON
Bangui
Juba
SOMALIA
Mogadishu
UGANDA
KENYA
EQ. GUINEA
Libreville
GABON
Sao Tome
SAO TOME AND PRINCIPE
CONGO
DEMOCRATIC REPUBLIC OF THE CONGO
Kampala
RWANDA
Kigali
Nairobi
Bujumbura
BURUNDI
Brazzaville
Kinshasa
Victoria
SEYCHELLES
Mbuji-Mayi
TANZANIA
Dar es Salaam
Atlantic Ocean
WWW.FREEWORLDMAPS.NET
Luanda
Indian Ocean
Lubumbashi
MALAWI
Moroni
COMOROS
Huambo
ANGOLA
ZAMBIA
Lilongwe
Lusaka
Harare
MOZAMBIQUE
ZIMBABWE
Antananarivo
MAURITIUS
Port Louis
NAMIBIA
BOTSWANA
Windhoek
MADAGASCAR
RÉUNION (FR)
Gaborone
Pretoria
Johannesburg
Maputo
Mbabane
SWAZILAND
Bloemfontein
Maseru
Durban
SOUTH AFRICA
LESOTHO
Cape Town
Port Elizabeth

South Africa's legislative and regulatory framework

- Many countries largely follow one or other legal tradition.
- South Africa has a hybrid legal system with three distinct legal traditions
  - Civil law system inherited from Roman Dutch Law
  - Common law system inherited from the British administrative legacy
  - Customary law system from indigenous cultures and is termed as African Customary Law (Du Bois 2004)
- There are complex interrelationships between the traditions which often leads to areas of considerable legal strain (Toufayan 2014)

Legislative and regulatory framework/contd

- There are several legal and regulatory instruments that control the management of information in public institutions
  - National Archives Act (NAA) of 1996 whose mandate is the proper management and care of records of “governmental bodies”
  - Promotion of Access to Information Act (PAIA) of 2000 that facilitates public access to records
  - Protection of Personal Information Act (POPIA) of 2013 whose key objective is the protection of personal information
- Other legislative instruments
  - Electronic Communications and Transactions (ECT) Act of 2002 that facilitates electronic communication and transactions by promoting legal certainty whenever public administration and private business activities need to be conducted in digital form.
  - Regulation of Interception of Communications Act (RICA) of 2002 that regulates the interception of telephonic and internet communication.

Legislative and regulatory framework/contd

- There are number of Advisory Pamphlets (AP) and policy documents that address the management of digital records
  - AP 1 Managing Public Records and the Law – addresses issues such as metadata requirements , records management policy, registry procedures etc
  - AP 2 Electronic Records and the Law – defines electronic records, outlines how they should be managed and endorses international standards
  - AP 5 Managing Email and the Law – highlights the importance of managing email, the challenges of disposing such records and how to manage them for them to be legally admissible in accordance with the ECT Act
  - Guidelines for Managing Electronic Records
- Even though these instruments exist they are unable to adequately address the challenge of distinguishing between the original record from a copy

Technological terrain

- The technological challenges of managing digital records in South have been discussed in research projects since the late 1990s and throughout the 2000s (Abbott, 1999, Kwatsha, 2010).
- In 2010 a survey of South African institutions was conducted investigating their implementation of EDRMS/ECM software applications used to manage digital records. It revealed that by the time the research was conducted, more than 40% of the institutions had five or more years of practical experience (Katuu, 2012, p. 48-49).
- However, records professionals often overlook the wider technological environment within which EDRMS/ECM applications are utilised. The enterprise architecture of such an environment often includes many other information systems.
- Lappin (2010, p. 254) noted that organizations “have an information archaeology, not an information architecture. New applications are brought into the organizations’ information estate, but old applications persist rather than disappear.”

Technological terrain

- A South African example can be drawn from the public healthcare sector. The National Health Act (61 of 2003) makes specific reference of the need for a National Health Information System (NHIS) with each of the nine provincial governments responsible for contributing to the management and consolidation of health information.
- However, the presumption of a single system is not the reality and the Department of Health (2012, p. 5) acknowledges in its eHealth Strategy that the existing information systems are fragmented, lack coordination and are not interoperable.
- This is mostly aptly demonstrated in the secondary and tertiary health institutions where there are at least 15 different patient management or hospital information systems in use within different provinces of the country (Department of Health [South Africa], 2012, p. 14).
- This means there is no integrated information system for health institutions within provinces let alone country-wide.

Technological terrain

- Among the aspects identified by the Department of Health towards its goal of a single National Health Information System (NHIS) are
  - Implement the foundation of the Electronic Health Record (EHR) and particularly a national patient registry and Patient Master Index (PMI).
  - Implementation of primary health care patient management and Electronic Medical Record (EMR) system/s at clinics.
  - Implementation of Pregnancy and Neonatal EMR system to record clinical details with link to EHR.
  - Implementation of EMR system/s to monitor anti-retroviral treatment (ART) and tuberculosis treatment.
  - Pharmacy systems interface to EMR systems.
  - Implement a uniform Integrated Document and Records Management System (EDRMS) at all levels.

Technological terrain

- This health sector example demonstrates that efforts in the identification and management of digital records within the public institutions would have to acknowledge
  - EDRMS/ECM applications are only part of an archaeology of information systems within health institutions. In other words there are likely records in business systems other than just EDRMS/ECM applications
  - The management of records that exist in disparate business systems should ideally follow ***similar principles*** but these will likely be ***different tactics.*** That is because they tend to be legacy systems and are often not designed using interoperable standards nor the same technology tools.
- While technical barriers are the ones most apparent, it is likely that legal and regulatory barriers contribute just as significantly to the procedural challenges.

Conclusion

- The purpose of this presentation was to outline emerging issues that provide contextual background on the current situation within the public sector in South Africa.
- The presentation has demonstrated that the country has a complex legal and regulatory environment where determining original digital records from copies is an ongoing challenge.
- In addition it has outlined, using the example of the health sector, that public institutions often have an extensive information system archeology.
- Therefore the management of digital records should not be just of those originating from EDRMS applications but from other disparate information systems in the enterprise architecture.

Thank you