



# Agenda

- Setting the scene
- Overview of DSpace
- Digital Preservation using DSpace practical tips for inclusion in your digital preservation strategy
- Conclusion



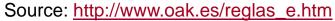
# **Digital Info**

- Modern computer technology barely 50 years old
- Few have seen/used digital objects more than 20 years old
- Lack of experience & consensus on how to proceed with digital preservation processes
- Preserve for 100 years & more "How old ... / from which era ...." (Jantz & Giarlo 2005)
- Lots of digital info lost already
- Work towards a digital preservation strategy



# Golden rules for wine preservation ...

- Total absence of vibrations
- Low temperature
- Relative humidity (65%-75%)
- Continuous/ consistent air circulation throughout cabinet/ cellar
- Store bottle horizontally cork must remain damp
- Absolute darkness
- Insulators to reduce leaks of hot or cold
- Greater concentration of tannin, the longer wine will last
- Exactly right temperature
- Choice of cabinet etc.







# What is an Institutional Repository?

"An institutional repository is a **set of services** that an institution offers to the members of its community for the **management and dissemination of digital materials** created by the institution and its community members.

It is most essentially an organizational commitment to the stewardship of these digital materials, including <u>long-term</u> <u>preservation</u> where appropriate, as well as organization and <u>access</u> or distribution."

(Lynch 2003)



# **Digital Preservation defined**

Managed activities necessary:

- For the long term maintenance of a byte stream (including metadata) sufficient to reproduce a suitable facsimile of the original document and
- For the continued accessibility of the document contents through time and changing technology

(Jantz & Giarlo 2005)



# **Trusted Repository defined**

"One whose mission it is to provide **reliable**, **long-term access** to managed digital resources to its designated community, now and in the future."

(RLG-OCLC Report 2002)



# 3 definitions ... What are we looking for?

Trusted Digital Institutional Repository for long-term preservation of all digital materials



# **Attributes of a Trusted Repository**

- Compliance with the Reference Model for an Open Archival Information System (OAIS)
- Administrative responsibility
- Organizational viability
- Financial sustainability
- Technological & procedural suitability
- System security
- Procedural accountability

Source: Trusted Digital Repositories: Attributes and Responsibilities

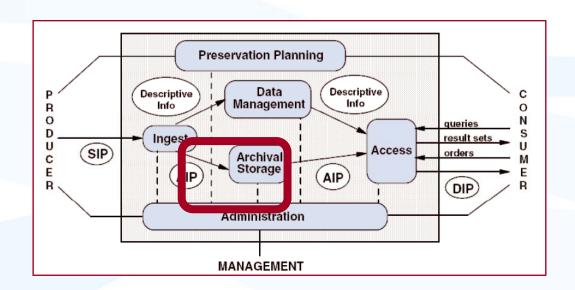
An RLG-OCLC Report

http://www.oclc.org/programs/ourwork/past/trustedrep/repositories.pdf



# **OAIS Functional Model – Archival Storage**

**CCSDS 650.0-B-1**: Reference Model for an Open Archival Information System (OAIS). Blue Book. Issue 1. January 2002. This Recommendation has been adopted as ISO 14721:2003.





# OAIS Reference Model provides ...

- Framework
  - Understanding & increased awareness of archival concepts
  - Describing & comparing architecture & operations
  - Describing & comparing long-term preservation strategies & techniques
- Terminology & Concepts
  - Common
- Guides identification & production of OAIS related standards



# Overview of DSpace

commercial institutions

Can be installed "out of the box"

http://www.dspace.org/

# Top Reasons to Use DSpace Largest community of users & developers worldwide more Free open source software more Completely customizable to fit your needs more Can manage & preserve all types of digital content more text, images, moving images, datasets Used by educational, government, private & more



more

# Why Open Source Software?

- Promotes collaboration and knowledge sharing between institutions who have the expertise, and the ones who do not have the expertise or necessary resources to start such a service
- All participants benefit, and not only the vendor
- Product belongs to all, and lots of support is available from the open source community
- No marketing is involved therefore there is not a clever salesman involved selling the product, only focusing on the stuff the program can do, and not the limitations



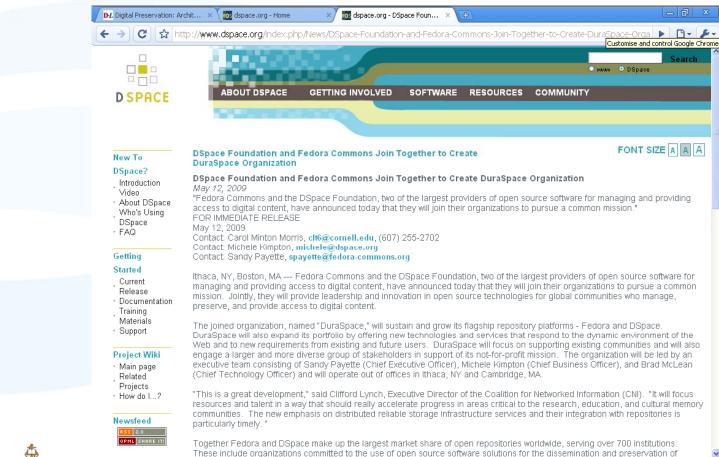
# Why Open Source Software? (cont.)

- What you see is what you get
- Open Source software is flexible
- It promotes openness and creative thinking
- It is open for scrutiny
- It is searchable and retrievable via the World Wide Web
- It can be used by institutions with minimal resources
- World standards and open standards are used, which make it a very favorable choice



# **DuraSpace Organization on 12 May 2009**

http://www.dspace.org/index.php/News/DSpace-Foundation-and-Fedora-Commons-Join-Together-to-Create-DuraSpace-Organization.html







- "By bringing together the technical, financial, and community-based resources of the two organizations, their communities gain a robust organization focused on solving the many challenges involved in storing, curating, and preserving digital data and scholarship" – James Hilton, CIO Univ. of Virginia
- DuraCloud hosted service that takes advantage of the cost efficiencies of cloud storage and cloud computing, while adding value to help ensure longevity and re-use of digital content

Read more:

http://en.wikipedia.org/wiki/Cloud\_storage#Storage





# http://www.up.ac.za/dspace/





# Digitally born & digitized material



### **SAMJ FORUM**

### CLINICAL IMAGES

### Awaking a sleeping epidemic

Riann van Coller, Elna van Reasburg , Clara Schutte, Delene Brink, Gerhard Welthagen, M.G. Dove

Two patients with African sleeping sickness (SS) presented to the neurology unit, Pretoria Academic Hospital, during 2004 and 2005. SS has shown a recent resurgence, with epidemics in the Sudan, Angela and the Democratic Republic of Congo. The number of infected people in Africa is currently estimated at more than 500 000. According to the World Health Organization (WHO), about 20 Trygmaserus brucei gentilesse and 30 T. b. rhadesiness infections are diagnosed yearly outside endemic areas in Africa. Migration, tourism, peacekeeping and military interventions and the re-emergence of SS epidemics might increase these numbers.<sup>1</sup>

The electroencephalogram (EBC) is often useful in the diagnosis of come and delirium, but has not been widely used in the diagnosis of St. The EBC is proposed as a novel way to follow disease progression, treatment response and treatment-induced encephalography.

### Case 1

A 27-year-old man presented with a 4-month history of fatigue, less of appetite, intermittent severe headaches, excessive daytime sleepiness, loss of concentration and insomnia. He had travelled to Malawi 8 months before admission. His temperature was 38.9°C, he had a palpable hepatomegaly and an unremarkable neurological examination although his cognitive response was slow. Diagnosis of African trypanomissis was made on a Gierma-stained blood smear (Fig. 1).

Shortly after admission the patient had a tonic-clonic seizure, with post-cital confusion. Treatment with surramin was started and repeat blood smears after 48 hours were clear of trypanosames. The cerebroopinal fluid (CSF) showed no trypanosames but a total protein level of 1.2 g/r, glucose 2.1 mmol/l, 4 polymorphs and 82 lymphocytes. WHD-recommended treatment with malansoprol was started:<sup>1</sup>

Since no trypanosomes were isolated from insculated mice the diagnosis of West African trypanosomissis (WAT) was made. Efforeithine was unavailable and treatment with melarsoprol continued. The patient recovered well and returned to the UK.

The authors are in the departments of Neurology and Clinical Microbiology, University of Pretoria. Five months after discharge he presented to the Hospital for Tropical Diseases in London with fever, sleepiness and an active CSE Diagnosis of a relapse was made which posed a diagnostic dilemma – recurring T. h. garabinus. Treatment with effornithing was given which cleared his condition.

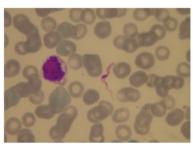


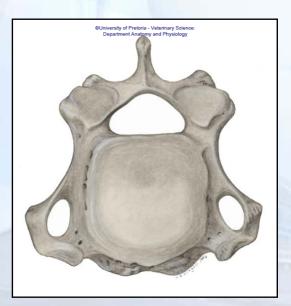
Fig. 1. Giennae smarr (case 1) skonsing extracellular trypamonomiesis permite in the peripheral blood.

### Case 2

A S5-year-old man presented with a 2-week history of fever, headache and epicodic confusion. He was a farmer from Kariba in Zimbabwe where he had been treated for malaria without any dinical improvement. He gave a history of multiple testes by bites but did not have a chancre. A Garma-stained blood smar showed frequences up. On administin his temperature was 39.4°C, but the general examination was unremarkable. He was very sleepy but early aroundle. The diagnosis of East African trypanosomiasis (EAT) was confirmed by isolating T. 5. rhedesires from inoculated mice. Treatment with suramin was started and repeated Gierma-stained blood ameters did not show any trypanosoms. The following day he had a fatal caediac arrhythmia, probably due to my occaeditis.

Our first patient had a series of EBG recordings. These indicated a low-voltage mixed-frequency background with episodic, generalised but frontally dominant irregular delta activity (Fig. 2). Follow-up showed a gradual improvement in the





# Digitally born & digitized material

S. Afr. J. Agric. Ext., 1993 : 47-54 S. Afr. Tydskr. Landbouvoori., 1993 : 47-54

THE ROLE OF EXTENSION IN TRADITIONAL AGRICULTURE:
EVIDENCE FROM THE FARMER SUPPORT PROGRAMME'

J F Kirsten<sup>2</sup>, J van Zyi<sup>3</sup> and HJ Sartorius von Bach<sup>4</sup>

### ABSTRACT

This paper evaluates the extension and training element of the FSP as implemented in the farmer support programmes of Venda and Lebowa. The importance and contribution of steension and training in the success of the programme can be judged from this paper. The general conclusion of the paper is that extension and training play an important role in FSPs. They are eleesly esseciated with increased production. However, to what extent it contributed towards increased production remains a point of contention. Some analysts and observers argue that only the rural elite has access to FSP related services. Results from the analyses in the paper, however, show that comparable households achieve higher yields when they get appropriate extension. Training and extension thus at least partly contribute to higher maize yields in FSP areas.

### UITTREKSEL

Hierdie artikel beskou die opleidings en voorligtingskomponent van die kleinboer ondersteuningsprogram ("Farmer Support Programme" - "FSP") soos dit in sekere gebiede van Vende en Lebowa geimplimenteer is. Die belangrikheid en bydrae van voorligting en opleiding in die suksees van hierdie program blyk duidelik uit hierdie artikel. Die gevolgtrekking word gemaak dat voorligting en opleiding een van die belangrikste elemente van hierdie program is en nou geassosieer word met verhoging in produksie. Tot watter mate opieiding en voorligting tot die verhoging in produksie bydra, biy egter 'n punt van dispuut. Ontdetings in die artikel toon egter aan dat vergelykbare huishoudings meer produseer indien hulle gepaste voorligting ontvang. Dit wil dus voorkom asof opleiding en voorligting ten minste gedealtelik bydra tot hoër opbrengste in die geblede waar die kleinboer ondersteuningsprogramme gelimplimenteer is

### I. INTRODUCTION

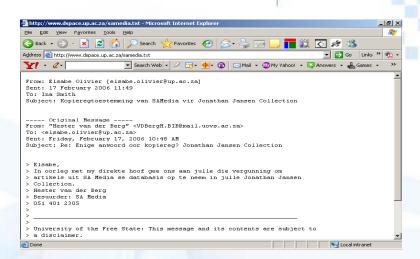
In response to the ineffective and costly large scale project approach in homeland agriculture, the Development Bank of Southern Africa introduced the concept of a small holder farmer support approach to aid the development of black agriculture in South Africa. Considering the various constraints faced by small farmers in the homelands (cf. Van Rooyen et al., 1987), the farmer support programme (FSP) was

by improving farmers' access to support services over a broad base in a sequential and evolutionary manner\* (Van Reeyen, 1003).

In order to reach this objective the FSP comprises six basic elements, i.e. the supply of inputs and capital to farmers, mechanisation services, marketing services, extension services, training and

>gi|73624990|gb|DQ103533.1| Botryosphaeria rhodina strain CMW9074 18S ribosomal RNA gene GGAAGGATCATTACCGAGTTTTTCGAGCTCCGGCTCGACCTTTTGTGAACGTACCTCTGTTGC TTTTGGCGGCCCCCAAAGGACTTCCAAACTACAACTCAAAACAAGTT AATAAACTAAAACTAAAACAAGTT AATAAACTAAAACTTCAACAACGCAACTCTGGATCAGAAACTGAGAAACTCAACAACTT AAGAAATTCAGGAATCACTGGAATCATTGAACGCACATTGCGCCCCTTGGTATTCCG GGGGGCATGCTGTTTGGAACTCAACCCTCAAACCTTCAAACCTTGGAATTGGGCACCGTCCTCACTGC GGGACGCGCCTCAAAGACCTCGGGCGCTGTTTCAGACCTCCAAGCGTAGTAGAATACACCTCGCTTTTGGAGCGCGCCTCAACGAGTTGGCGCCCCCCAAGAACACCTCCTGAACCTTCTGAACCTTCAACTTTTCTCAAGGTTCACCTCCGATT

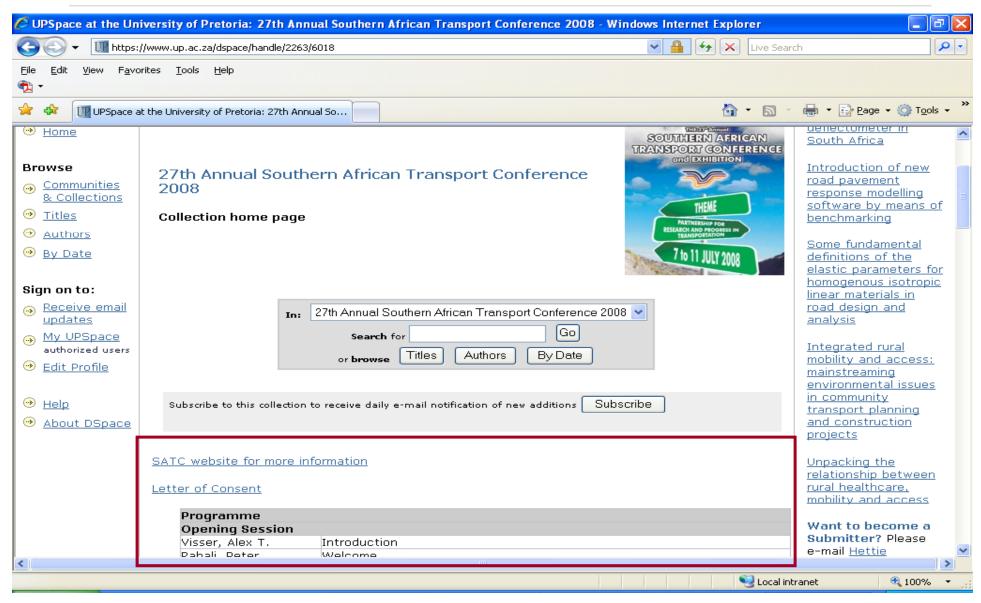




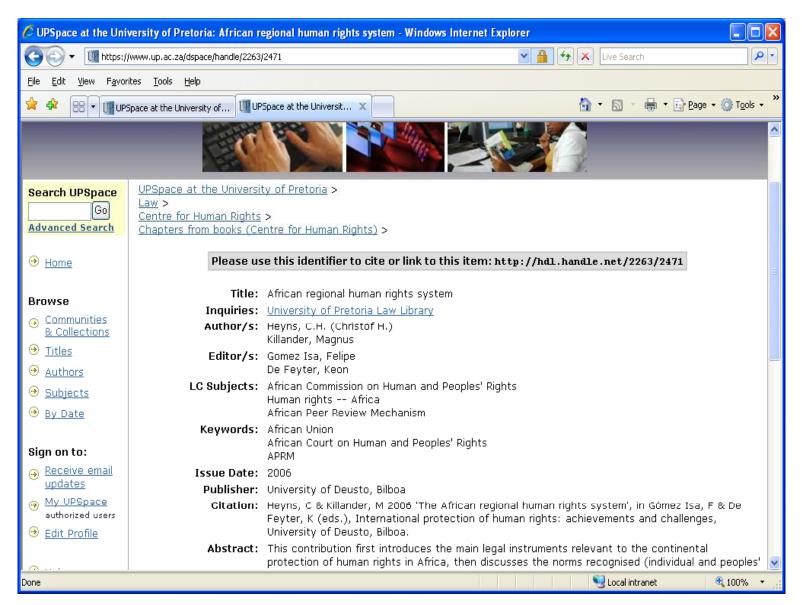
### Windows Media Player



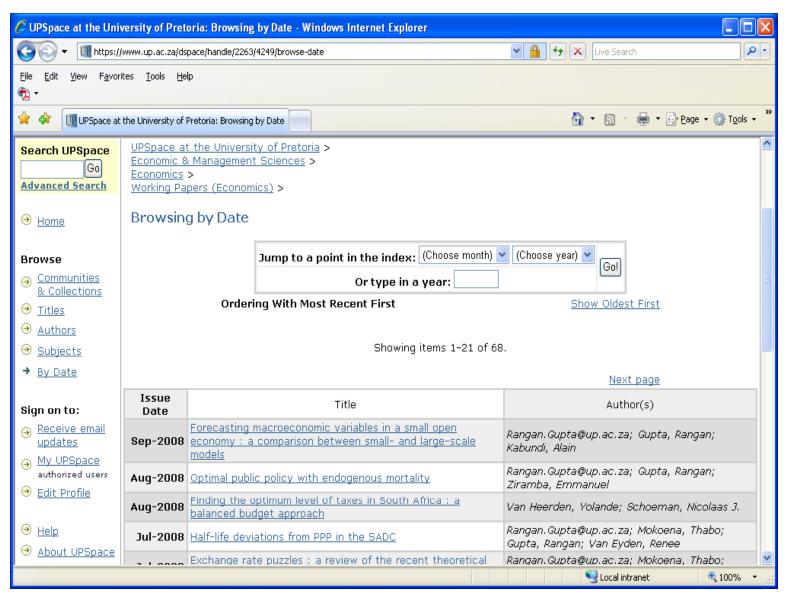
# Papers in refereed published conference proceedings



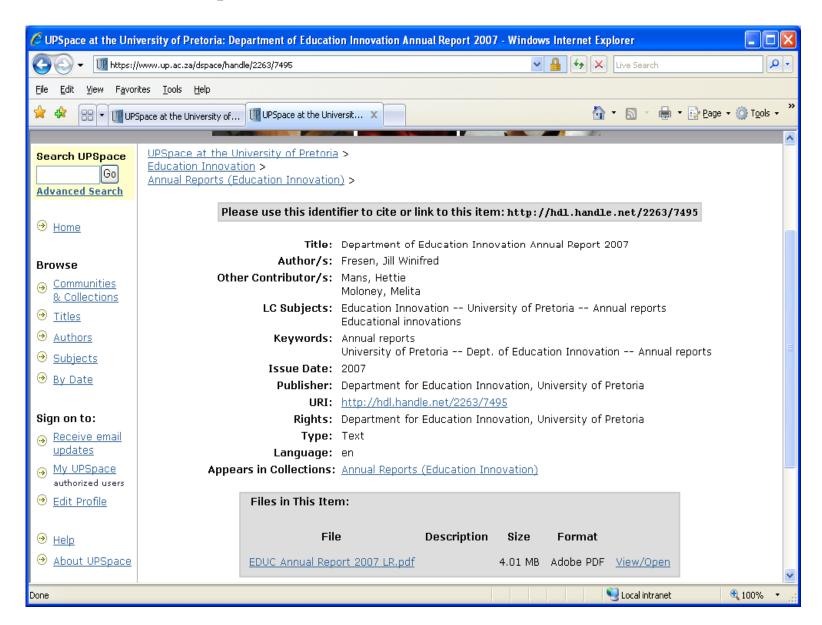
# **Chapters from Books**



# **Working Papers**



# **Annual Reports**



# **Journal Publication Platform**

Vision

# Verbum et Ecclesia Verbum et Ecclesia Community home page In: Verbum et Ecclesia Go Search for or **browse** Titles Authors Subjects By Date Verburn et Ecclesia is the academic journal of the Dutch Reformed Church at the Faculty of Theology, University of Pretoria. It is accredited by the South African National Department of Education, has an international board of editors, and all articles are peer reviewed. Previously published as Skrif en Kerk.

# **eBook**

# ADAMASTOR

Spirit of the Cape of Storms Espírito do Cabo das Tormentas Gees van die Stormkaap

O.J.O. FERREIRA

translated into the English by Roger C. Fisher

traduzido para Português por

Edna Peres, Giulia Picard-Boswel & Christina E. F. von Reiche

Title: Adamastor, Spirit of the Cape of Storms

Other Titles: Adamastor, Espirito do Cabo das Tormentas

Adamastor, Gees van die Stormkaap

Inquiries: nico.botes@up.ac.za

Author/s: Ferreira, O.J.O. (Ockert Jacobus Olivier), 1940-

Editor/s: Le Roux, Schalk

Illustrator/s: Botes, Nico

Other Contributor/s: Fisher, Roger C.

Botes, D.P.M. Peres, Edna

Picard-Boswel, Giulia Von Reiche, C.E.F. Van Aswegen, Henning

LC Subjects: Camoes, Luis de, 1524?-1580. Lusiadas

Epic poetry, Portuguese

Ferreira, O.J.O. (Ockert Jacobus Olivier), 1940-

Keywords: Adamastor

Camoes, Luis de, 1524?-1580

Cape of Storms Mythological beings

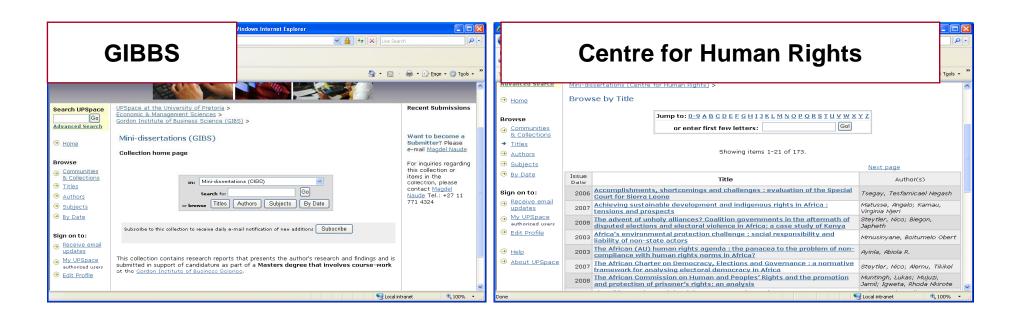
Epic poem Epic poetry

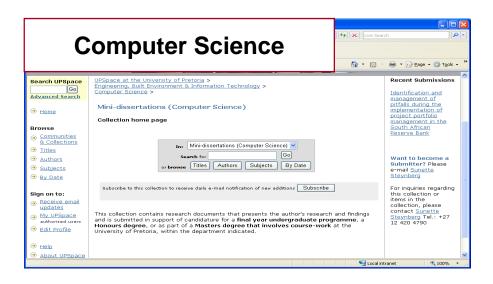
Gama, Vasco da, 1469-1524

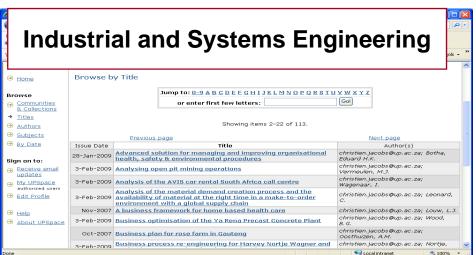
Voyages to India

Camoens, Luis de, 1524?-1580

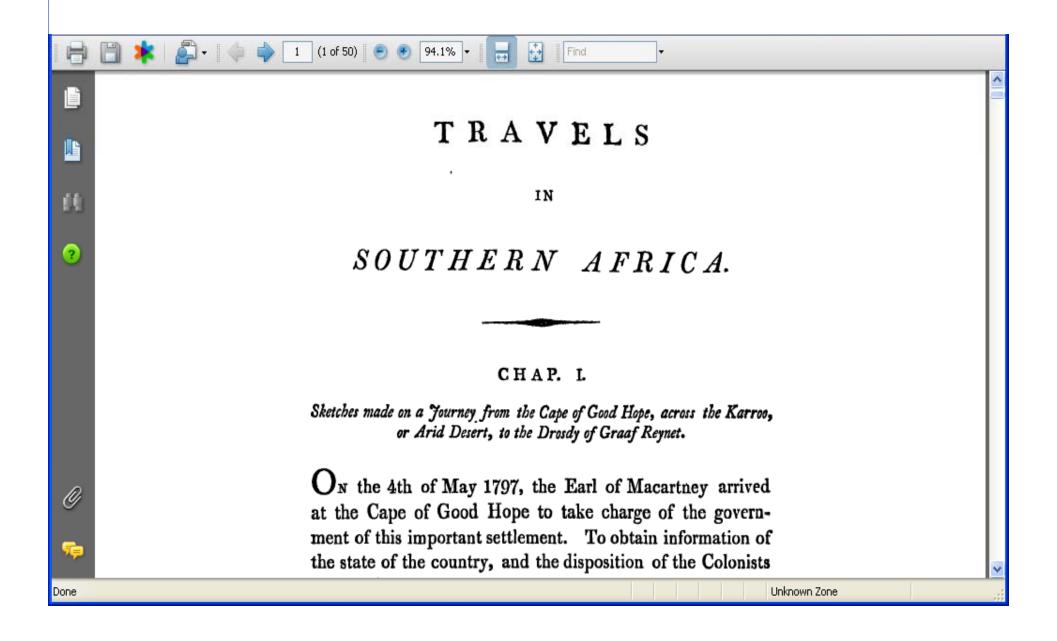
# **Mini-dissertations**



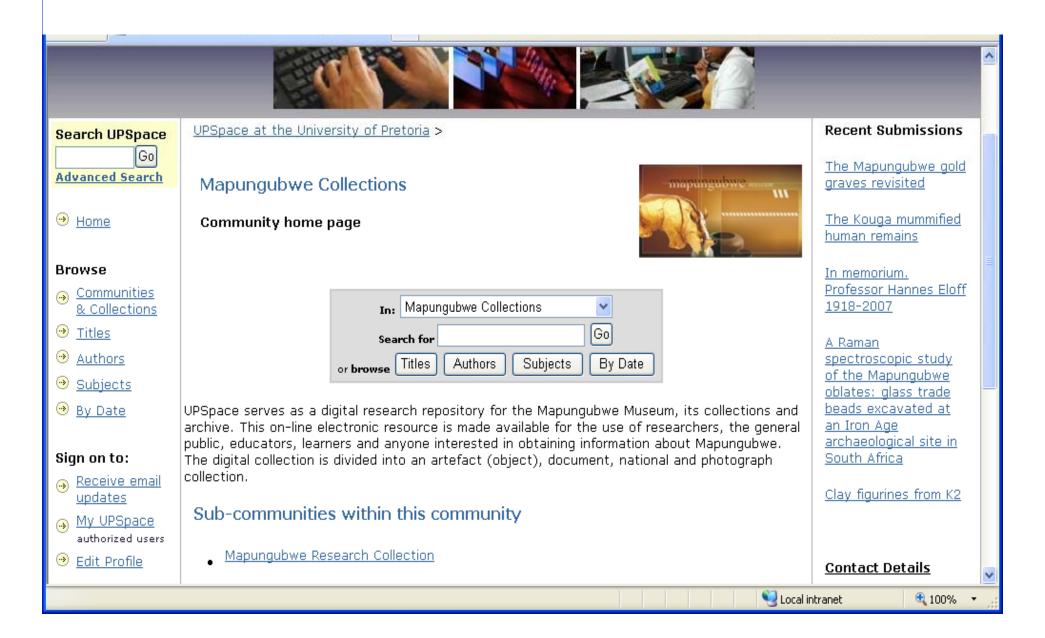


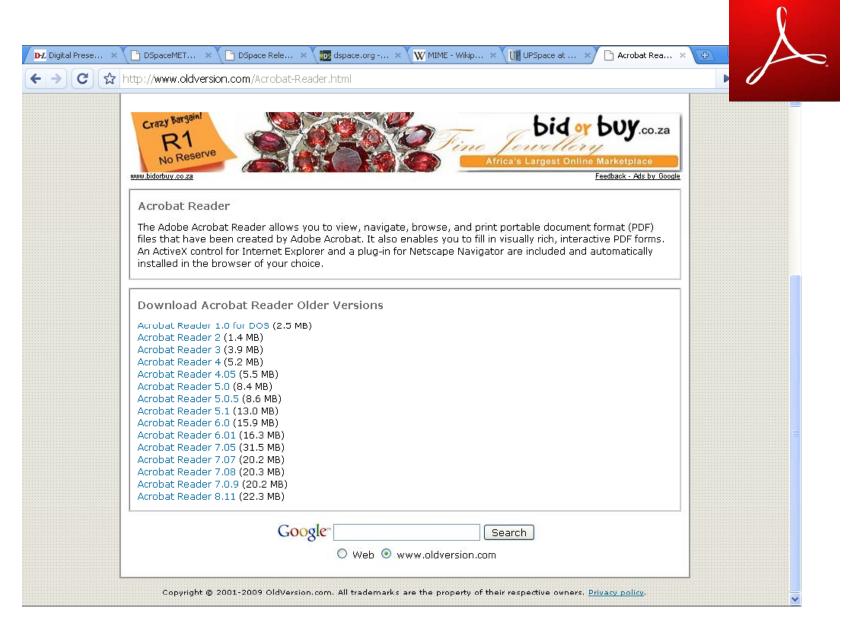


# **Digitised Out-of-Copyright Books**



# Mapungubwe





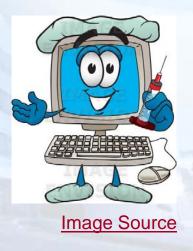






# Golden rules for digital preservation on an institutional repository

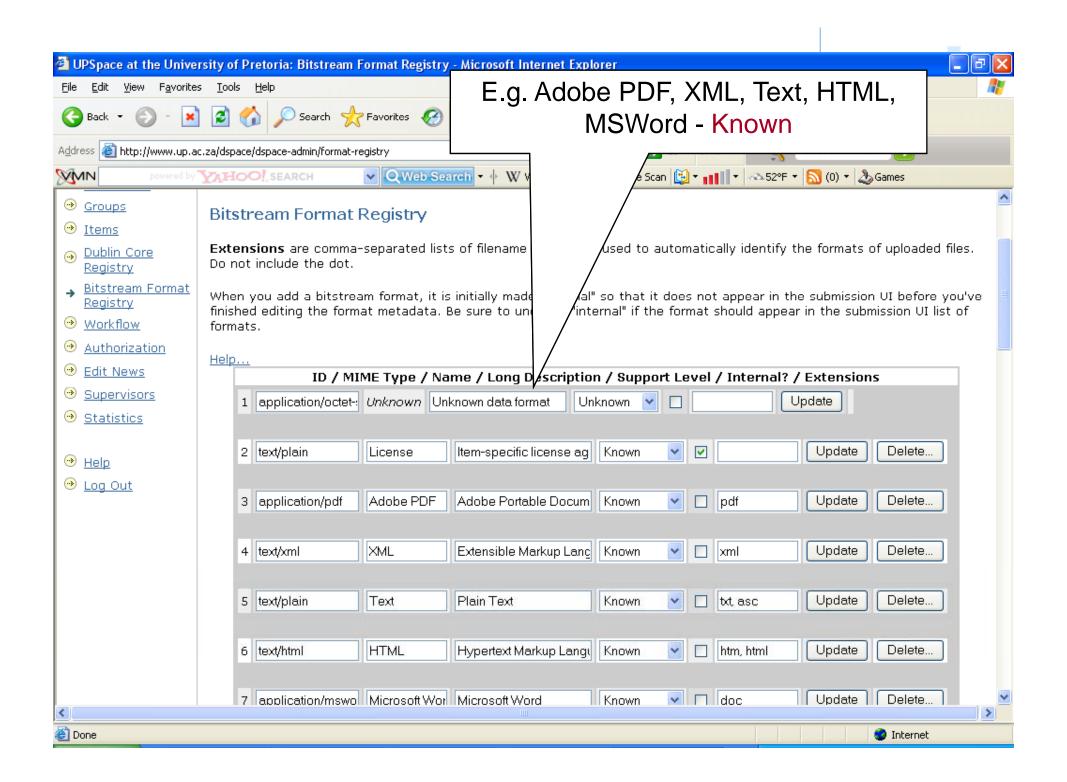




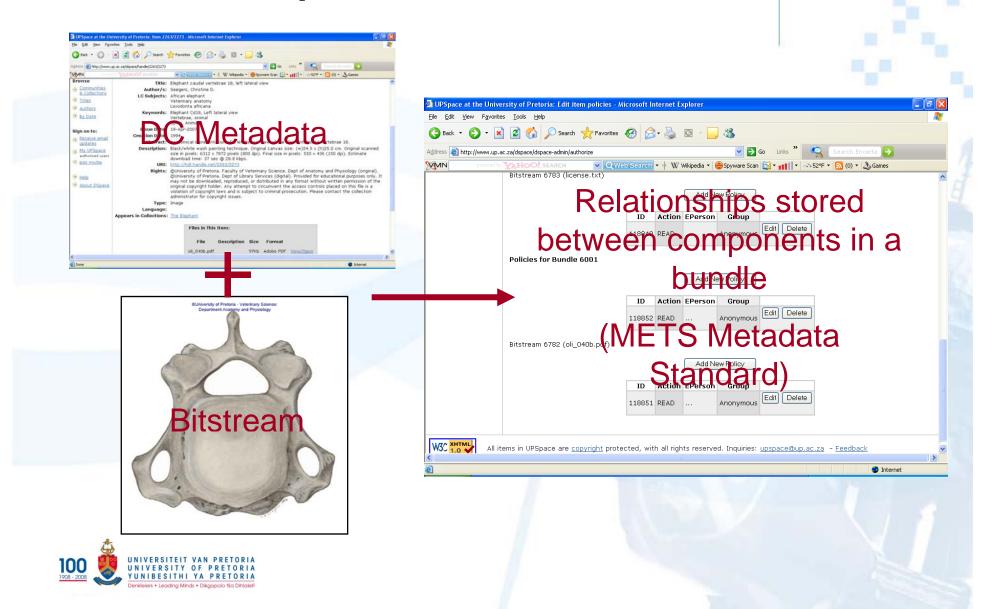
# **DSpace Commitment to Preservation**

- Three levels of preservation for a given file format:
  - Supported: The format will be fully supported and preserved using either format migration or emulation techniques
  - Known: The format can be recognised by DSpace, but full support cannot be guaranteed
  - Unsupported: The format cannot be recognised by DSpace; these will be listed as "application/octetstream", aka Unknown
- Bit-level preservation will be done so that digital archaeologists of the future will have the raw material to work with if the material proves to be worth that effort.





# **Items in DSpace**



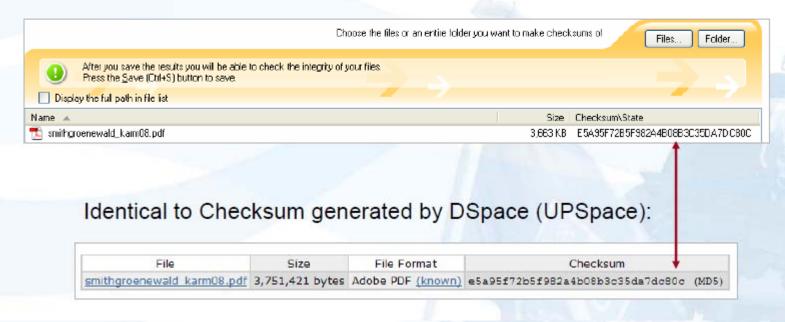
## File formats

- Recognise the preservation risks of file formats
- Store content in open format on IR pdf + additional
- Specify restricted range of deposit formats
- XML to describe data and metadata
- For verification purposes original copy are available on Archival Server (TIFF)
- Migrate rare and obsolete file formats when needed – "spot checks"
- Maintain file format information



# Checksums in DSpace

Checksum generated by Checksum software:





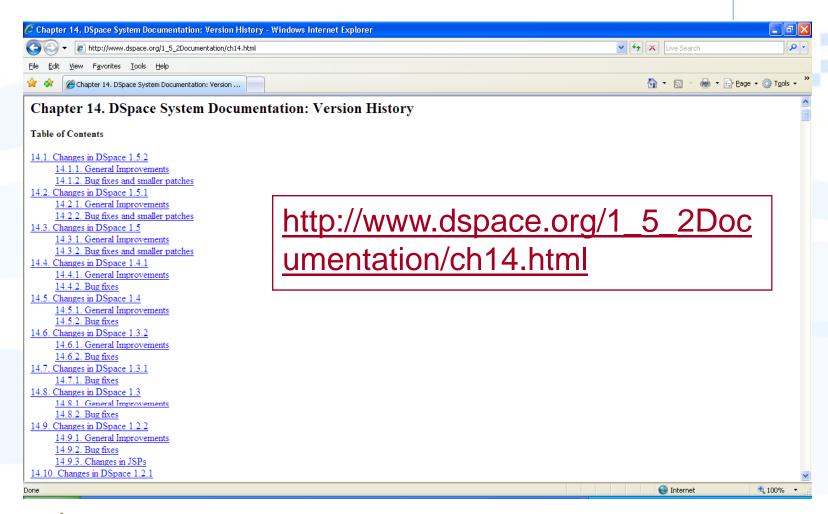
## **Storage Management**

- Storage hardware is a key component of a repository
- SAN (Storage Area Network) vs NAS (Network Attached Storage)
  - Increased scalability: up to 16 million devices can be added
  - All other participants on SAN can connect and see each other
  - High-speed throughput: carry traffic between devices at 2 Gb/s
  - Independent of other network operations functions separate from any LAN

# Back-up's



# Migration to new versions of DSpace





# Managing corrupt files etc.

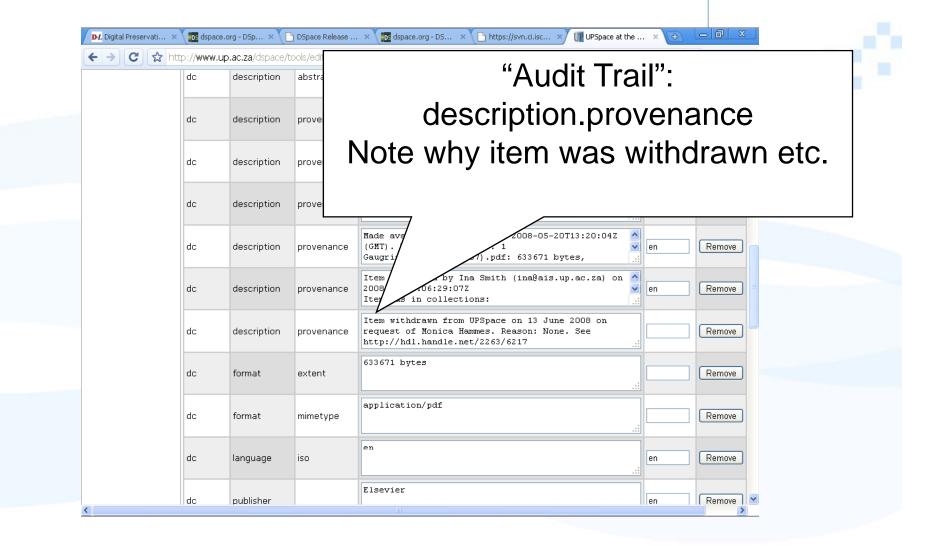














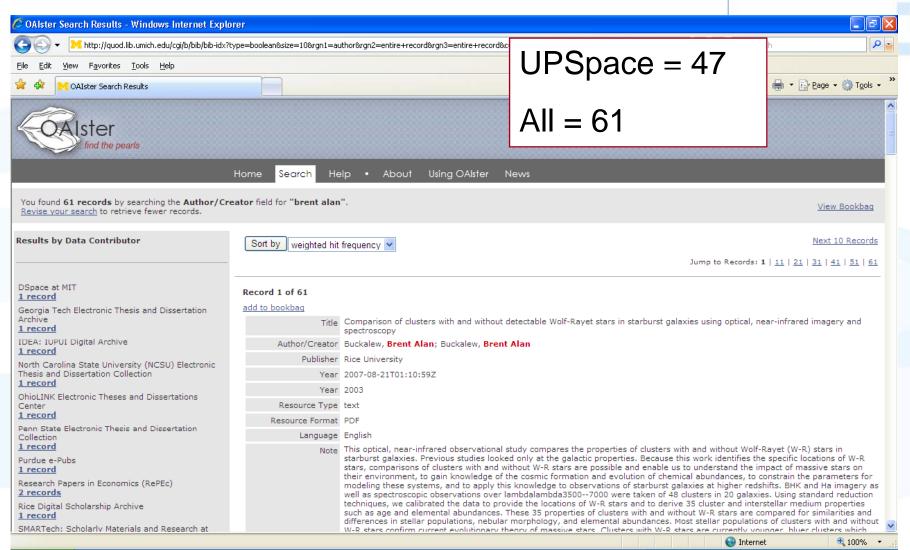
# **Preservation Metadata**

identifier	uri	http://hdl.handle.net/2263/4726	< >
description	abstract	In this paper, an attempt will be made to examine the concept ataraxia as it appears in the works of Pyrro of Elis, Sextus Empiricus and	<b>\</b>
description	provenance	Scanned in 24-bit descreened colour 100% on DigiBookRGB10000 scanner at 400 dpi.	<b>*</b> • • • • • • • • • • • • • • • • • • •
description	provenance	Submitted by Ina Smith (ina@ais.up.ac.za) on 2008-03-13T11:59:46Z No. of bitstreams: 1	<b>* * *</b>
description	provenance	Approved for entry into archive by Julene Vermeulen(julene.vermeulen@up.ac.za) on 2008-03- 14T06:03:00Z (GMT) No. of bitstreams: 1	>
description	provenance	Made available in DSpace on 2008-03-14T09:00:22Z (GMT). No. of bitstreams: 1 PHv1_Wilkinson-009.pdf: 145337 bytes, checksum:	>

format	extent	145337 bytes
format	mimetype	application/pdf



# **OAI-PMH Compliant**









### **Persistent Identifiers**

- Web references are untrustworthy; telephone numbers, IP addresses, Social Security numbers share properties of PID's – more trustworthy
- Persistent Identifiers: globally unique name assigned to a digital object that can be used in perpetuity, to refer to and to retrieve the digital object
- CNRI Handle System



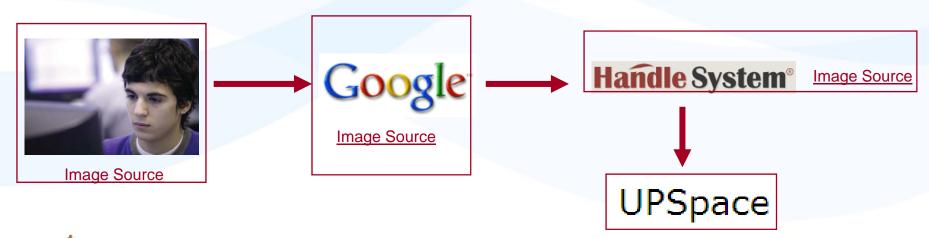
### **CNRI Handle Server**

"A system for assigning names to objects for name resolution"

"The Handle System is a general purpose distributed information system that provides efficient, extensible, and secure HDL identifier and resolution services for use on networks such as the Internet. It includes an open set of protocols, a namespace, and a reference implementation of the protocols. The protocols enable a distributed computer system to store identifiers, known as handles, of arbitrary resources and resolve those handles into the information necessary to locate, access, contact, authenticate, or otherwise make use of the resources. This information can be changed as needed to reflect the current state of the identified resource without changing its identifier, thus allowing the name of the item to persist over changes of location and other related state information. The original version of the Handle System technology was developed with support from the Defense RESITE AND MARCHA Research Projects Agency (DARPA)."

### **CNRI Handle Server**

- UP Handle: <a href="http://hdl.handle.net/2263/2882">http://hdl.handle.net/2263/2882</a>
- UJ Handle: <a href="http://hdl.handle.net/10210/622">http://hdl.handle.net/10210/622</a>
- DUT Handle: <a href="http://hdl.handle.net/10321/298">http://hdl.handle.net/10321/298</a>
- CSIR Handle: <a href="http://hdl.handle.net/10204/2091">http://hdl.handle.net/10204/2091</a>









### **UPSpace**



- & Collections
- Titles
- Authors
- Subjects
- By Date

#### Sign on to:

- Receive email updates
- My UPSpace authorized users
- Edit Profile
- About UPSpace

Title: The life and career of the South African dramatic soprano Marita Napier

Inquiries: eridine.roux@up.ac.za

Advisor/s: Van der Mescht, Heinrich Hermann

Author/s: Roux, Eridine Madeleine

Other Contributor/s: Roux, Hannaline

Zimmerman, Kim Groenewald, M.E.

University of Pretoria, Dept. of Music

LC Subjects: Napier, Marita

Sopranos (Singers) -- Biography Singers -- South Africa -- Biography

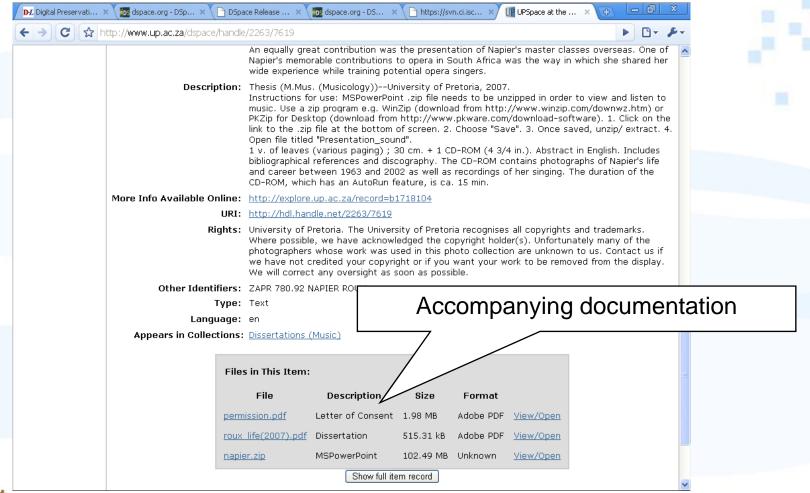
Keywords: Napier, Marita

Marita Napier

Lieder

Music education Richard Strauss

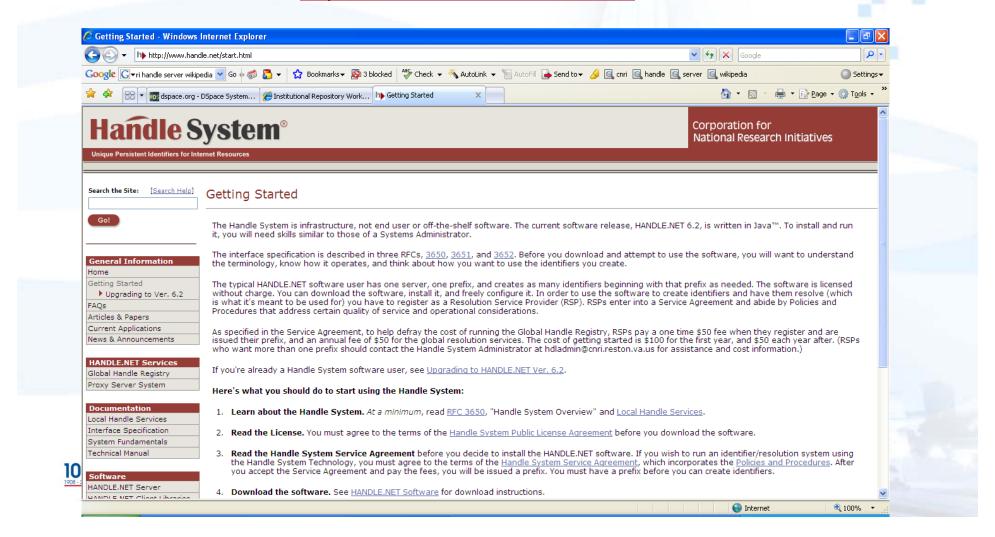




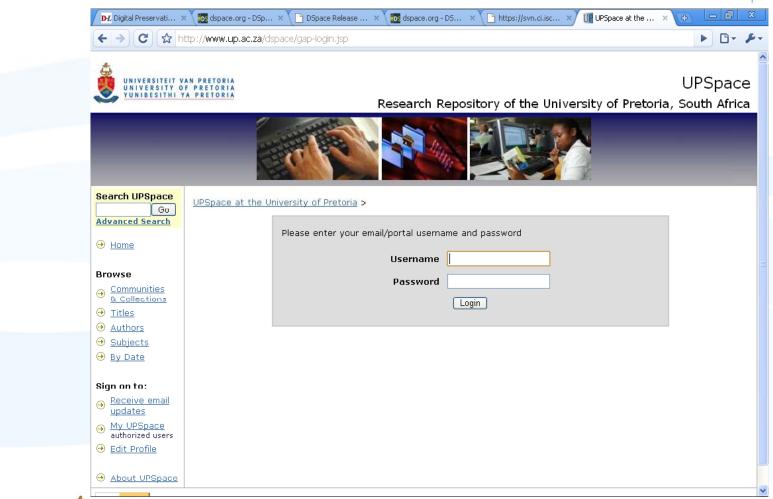


### Request a Handle Prefix from CNRI

http://www.handle.net/start.html



### **Controlled access**

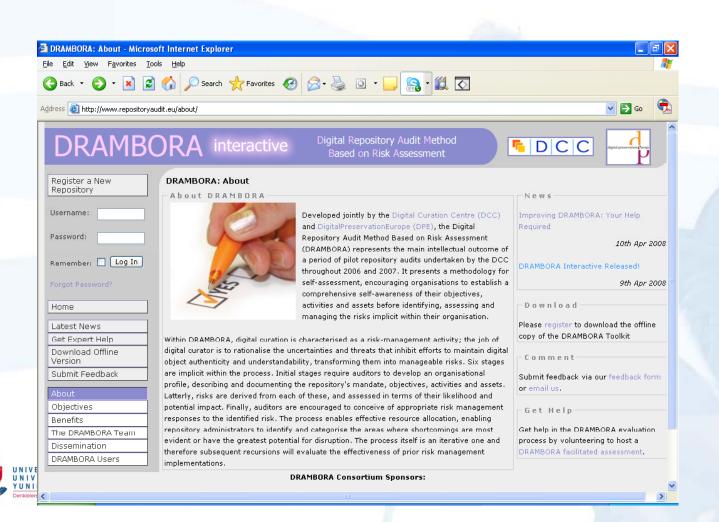




### **Tools**

DRAMBORA <a href="http://www.repositoryaudit.eu">http://www.repositoryaudit.eu</a>

Digital Repository Audit Method Based on Risk Assessment Toolkit



### Conclusion

- Old wine and old friends are best?
- Turn water into wine
- Only a few wines improve with age, and only a few of those accrue any significant value
- The older the wine the more precious/ valuable
- New cellar/ cabinet sometime in future?



#### Oldest bottle of wine

Unearthed during excavation for building a house in a vineyard near the town of Speyer, Germany, it was inside one of two Roman stone sarcophaguses that were dug up. The **bottle dates from approximately 325 A.D.** and was

found in 1867. Image Source



"Inventing the future requires giving up control. No one with a compelling purpose and a great vision knows how it will be achieved. One has to be willing to follow an unknown path, allowing the road to take you where it will. Surprise, serendipity, uncertainty and the unexpected are guaranteed on the way to the future."

George Land, Breakpoint & Beyond



### References

- Jantz, R. & Giarlo, M.J. (2005). Digital preservation: architecture and technology for trusted digital repositories. URL: <a href="http://www.dlib.org/dlib/june05/jantz/06jantz.html">http://www.dlib.org/dlib/june05/jantz/06jantz.html</a>
- Lynch, C. (2003). Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age. URL: <a href="http://www.arl.org/newsltr/226/ir.html">http://www.arl.org/newsltr/226/ir.html</a>
- Reference Model for an Open Archival Information System (OAIS). URL:
  - http://public.ccsds.org/publications/archive/650x0b1.pdf
- Trusted Digital Repositories: Attributes and Responsibilities. An RLG-OCLC Report. URL: <a href="http://www.oclc.org/programs/ourwork/past/trustedrep/repositories.pdf">http://www.oclc.org/programs/ourwork/past/trustedrep/repositories.pdf</a>



# Thank you!

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