

Towards a digital preservation policy



Presented by Ria Groenewald & Ina Smith
National Library IT Event

20 May 2008



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA

Agenda



Part I	Digitization & Preservation	Ria Groenewald <i>ria.groenewald@up.ac.za</i>
Part II	Preservation & Trusted Digital Repositories	Ina Smith <i>ina.smith@up.ac.za</i>



Part I: Digitization & Preservation

Ria Groenewald



- **The birth of the web site
6 August 1991 - 2:56:20 pm**
- The world's first website was made available on the public internet - a creation of Tim Bernes-Lee at CERN

Tim Berners-Lee: WorldWideWeb, the first Web client - Windows Internet Explorer

http://www.w3.org/People/Berners-Lee/WorldWideWeb.html

File Edit View Favorites Tools Help

Tim Berners-Lee: WorldWideWeb, the first Web client

Tim Berners-Lee

The WorldWideWeb browser

The first web browser - or browser-editor rather - was called *WorldWideWeb* as, after all, when it was written in 1990 it was the only way to see the web. Much later it was renamed Nexus in order to save confusion between the program and the abstract information space (which is now spelled *World Wide Web* with spaces).

I wrote the program using a NeXT computer. This had the advantage that there were some great tools available -it was a great computing environment in general. In fact, I could do in a couple of months what would take more like a year on other platforms, because on the NeXT, a lot of it was done for me already. There was an application builder to make all the menus as quickly as you could dream them up. there were all the software parts to make a wysiwyg (what you see is what you get - in other words direct manipulation of text on screen as on the printed - or browsed page) word processor. I just had to add hypertext, (*by subclassing the Text object*)

[This](#) is a (242kB) [screen shot of the browser](#), taken when things had got to the point that *Communications of the ACM* was interested in an article, in 1993. The differences between this and the first edition (Christmas 1990) were:

- The whole thing would have been grey scale as NeXTs were at the time just grey scale;
- The inline images such as the world/book icon and the CERN icon, would have been displayed in separate windows, as it didn't at first do inline images.

See also:

- [another screen shot](#), this one by JFG, later but grey scale

A quick tour of this screen to answer the FAQs:

In this shot I am making a link from the word "ATLAS" in the list of experiments to some web page.

The NeXTStep operating system put the menu for each application in the top left of the screen. The application is called WorldWideWeb. because the menus are in this block they windows are very unencumbered. A little like like the windows "start" menu later.

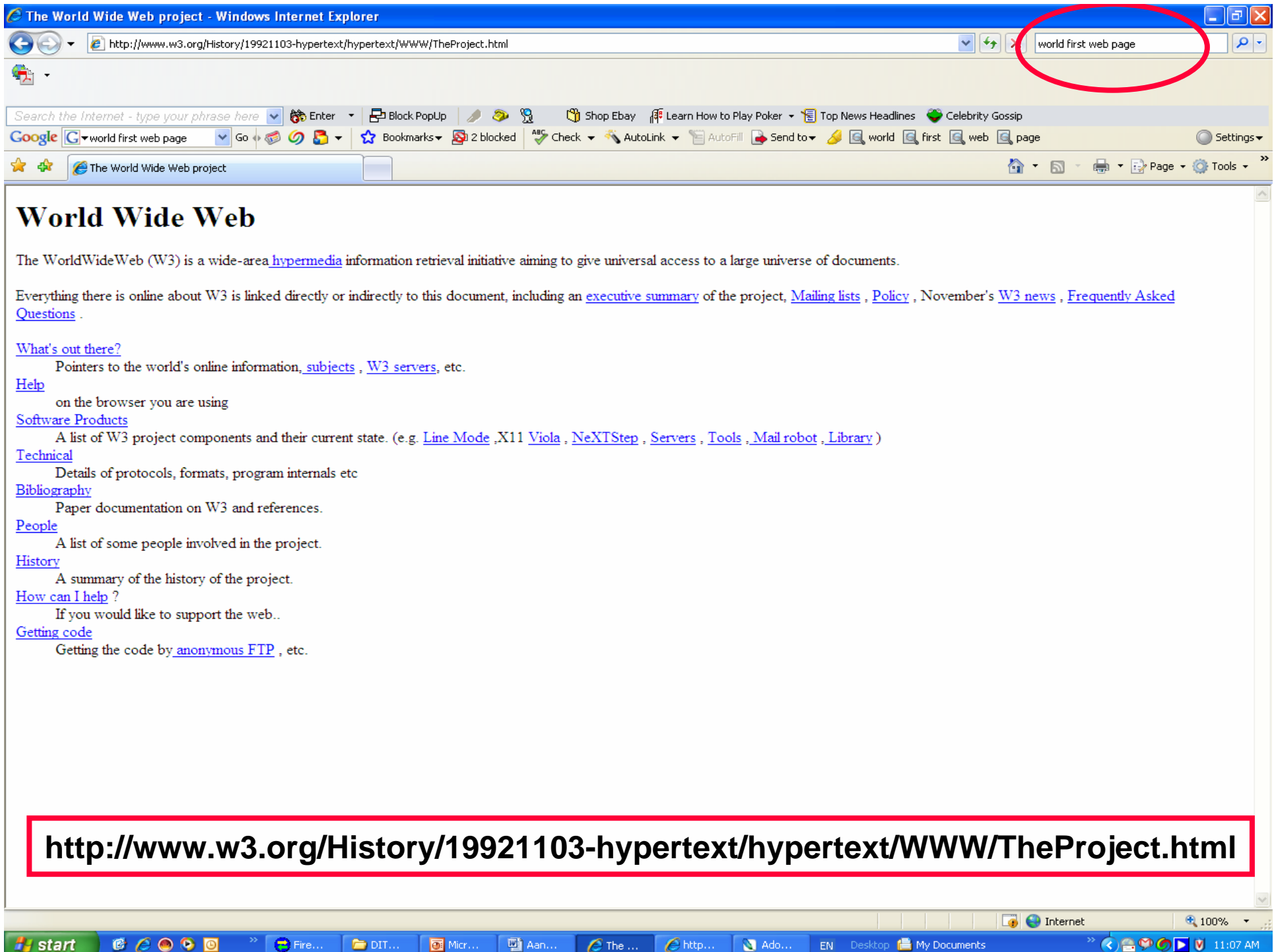
The Navigate menu had things like "back" and "next" and "previous". these last two were useful when you follows a link from a list of links- they meant "go back a step and then take the next link from the same page instead".

The document menu was like the "file" menu for windows I suppose. The "find" menu is fairly self-explanatory, as is "edit".

The "Link" menu you can see. "Mark all" would remember the URI of where you were. "MArk selection" would make an anchor (link target) for the selected text,

Internet 100%

start 5 Internet Explorer Adobe Photoshop Alb... I:\DITCHE Microsoft PowerPoint ... 6:00 PM



WWW Project History - Windows Internet Explorer

http://www.w3.org/History/19921103-hypertext/hypertext/WWW/History.html

world first web page

Search the Internet - type your phrase here

Google world first web page

WWW Project History

History to date

A few steps to date in the WWW project history are as follows:

March 1989
First [project proposal](#) written and circulated for comment ([TBL](#)). Paper "HyperText and CERN" (in [ASCII](#) or [WriteNow](#) format) produced as background.

October 1990
Project [proposal](#) reformulated with encouragement from CN and ECP divisional management. [RC](#) is co-author.

November 1990
Initial WorldWideWeb prototype developed on the NeXT ([TBL](#)).

November 1990
[Nicola Pellow](#) joins and starts work on the line-mode browser. [Bernd Pollermann](#) helps get interface to CERNVM "FIND" index running. TBL gives a [colloquium](#) on hypertext in general.

Christmas 1990
Line mode and NeXTStep browsers demonstrable. Acces is possible to hypertext files, CERNVM "FIND", and internet news articles.

Febraury 1991
[workplan](#) for the purposes of ECP division.

26 February 1991
[Presentation](#) of the project to the ECP group.

March 1991
Line mode browser (www) released to limited audience on priam vax, rs6000, sun4.

May 1991
[Workplan](#) produced for CN/AS group

17 May 1991
[Presentation](#) to C5 committee. General release of www on central CERN machines.

12 June 1991
CERN [Computer Seminar](#) on WWW.

August 1991
Files available on the net, posted on alt.hypertext (6, 16, 19th Aug), comp.sys.next (20th), comp.text.sgml and comp.mail.multi-media (22nd). [Jean-Francois Groff](#) joins the project.

October 1991
VMS/HELP and WAIS gateways installed. Mailing lists www-interest (now www-announce) and www-talk@info.cern.ch started. One year status report. Anonymous telnet service started.

December 1991
Presented poster and demonstration at [HT91](#). W3 browser installed on VM/CMS. CERN [computer newsletter](#) announces W3 to the HEP world.

15 January 1992
Line mode browser release 1.1 available by anonymous FTP. See [news](#). Presentation to AIHEP'92 at La Londe.

12 February 1992
Line mode v 1.2 annouced on alt.hypertext, comp.infosystems, comp.mail.multi-media, cern.sting, comp.archives.admin, and mailing lists.

May 1992
Presentation and [demo](#) at [JENC3](#) (Innsbruck). [Carl Barker](#) joins the project.

June 1992

Done

Internet 100%

start FireWa... DITCHE Microsoft... Aarbie... WWW Adobe... EN Desktop My Documents 11:12 AM

WorldWideWeb

- Info
- Navigate
- Document
- Edit
- Links
- Style
- Print...
- Page layout...
- Windows
- Services
- Hide
- Quit

Info

HyperMedia Browser/Editor

Pre-release beta of Version 0.1.3

An exercise in global information availability

by Tim Berners-Lee

Copyright 1990,91, CERN. Distribution restricted ask for terms. TEST VERSION ONLY

HyperText: Text which is not constrained to be linear.
HyperMedia: Information which is not constrained linear... or to be text.

This version of the WWW application can pick up hypertext information from files in a number of formats, from local files, from remote files using NFS or anonymous FTP, from hypertext servers by name or keyword search and from internet news. Hypertext files may be edited, and links made from hypertext files to other files or any other information.

For more help, use "Help" from the menu. If that doesn't work, then your application has been incompletely installed.

If you have any comments or have bugs, please mail timbl@info.cern.ch quoting the version number: (above)

Navigation

< Previous Back up Next >

Home Help

JFG Home

JFG's home page at InfoDesign

This home page demonstrates some simple concepts of the World-Wide Web [infrastructure](#) for global information sharing.

Today, I showed Tim's original Web browser to [Marc Weber](#). I just took some notes about him and I linked them to his name on the fly.

I use this World-Wide Web editor exactly like any word processor, with the power to create links from sensitive pieces of text to other pages, for instance to personal notes or to any information source in the world.

Style

Copy style 1

Apply style 2

Panel...

Style editor

Style name: list

<< style of selection >>

Apply style to selection

Apply style to all similar text

Find unstyled text

Format

First line indent: 100

Successive indent: 130

Font: Helvetica

Print size: 12

SGML tag: <L>

Set

Style sheet

Open

Save as...

130 300

HotWired: What's New

Welcome to York, the electronic neighborhood hits Wired, 24 May. v. 1 in On the R...

Flux: Ned hears rumors of a deal between GN...

Fatish Sola

Net Surf Pro

Jerry Holzer's truisms take a turn for the We...

If you feel a need for speed ... surf t...

N...

What's a week without a Bill Gates

Corporate recruiting form letters = t...

Alt. cynicism ... What's the Point?

Date: ...

WWW research stuff

- [Hypertext Resources](#) (IN-Box)
- [Geographical list of WWW servers](#) (at CERN) same list: Example: CERN phone book
- [WWW project documentation](#) (at CERN)

Links

- Mark all A
- Mark selection M
- Link to marked L
- Link to file...
- Link to New N
- Follow link
- Unlink Z
- Help

Weber -- /Hypertext

Marc Weber

A computer consultant, small publisher and freelance journalist who is currently investigating the early history of the Web, to be published in Wired. He loves [HotWired](#).

Welcome To HotWired!

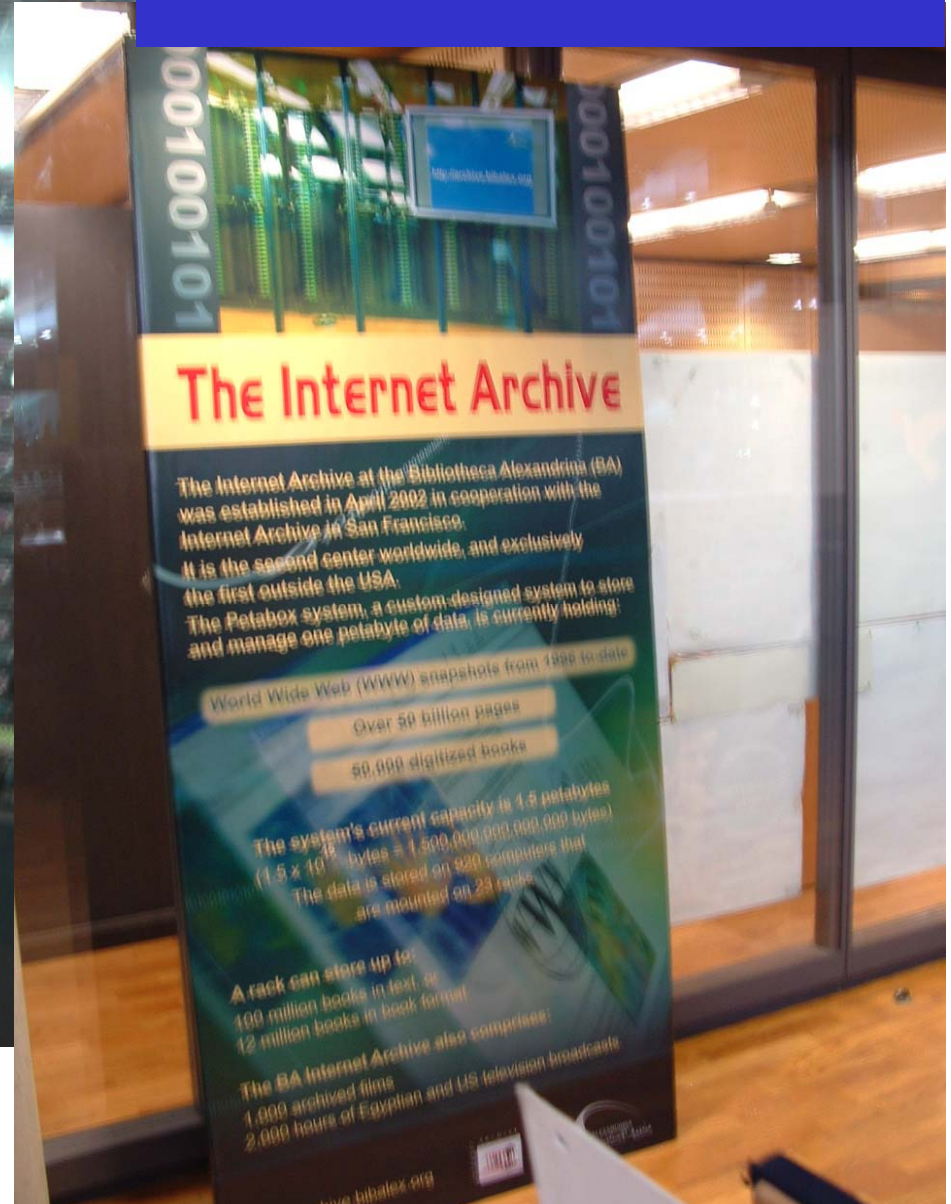
How to Join. Register Now Members Only.

Unguided Tour: Overview Need Help? What's New

Your View & Copy; 1996 HotWired Ventures LLC

Powered by Silicon Graphics

Internet Archive, Library of Alexandria (copy of the Internet) mirror site







- Introduction to UP
- UP publications
- UP Directories
- Faculties, academic departments & research
- Community services & RDP
- Academic support & administrative departments
- Study at UP
- Facilities
- Entertainment
- Academic Information Service (Library)
- Calendars, events, & conferences
- More about Pretoria, Gauteng and South Africa

Announcements Search UP Web About UP Web TO Student Site Internet Gateway

[Text version](#)

Comments and enquiries - UP Webmaster: webmaster@up.ac.za

University of Pretoria
0002 Pretoria
South Africa
Tel: +27 12 420-4111
Fax: +27 12 43-2185

Maintained: 1997-06-20





Enter Web Address: All [Adv. Search](#) [Compare Archive Pages](#)

Searched for <http://www.up.ac.za> 354 Results

Note some duplicates are not shown. [See all](#).

* denotes when site was updated.

Material typically becomes available here 6 months after collection. [See FAQ](#).

Search Results for Jan 01, 1996 - Nov 20, 2007

1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
0 pages	1 pages	3 pages	8 pages	12 pages	16 pages	21 pages	25 pages	60 pages	143 pages	4 pages	1 pages
	Jun 20, 1997 *	Jan 27, 1998 * Dec 02, 1998 * Dec 12, 1998 *	Jan 25, 1999 * Jan 25, 1999 * Jan 29, 1999 * Feb 08, 1999 * Feb 10, 1999 * Apr 23, 1999 * Apr 28, 1999 * Oct 02, 1999 *	Mar 04, 2000 * May 10, 2000 * May 11, 2000 * May 21, 2000 * Jun 14, 2000 * Jun 19, 2000 * Jun 21, 2000 * Aug 15, 2000 * Oct 06, 2000 * Oct 18, 2000 * Nov 10, 2000 * Dec 03, 2000 *	Jan 18, 2001 * Feb 01, 2001 * Feb 02, 2001 * Feb 14, 2001 * Feb 24, 2001 * Feb 26, 2001 * Mar 01, 2001 * Mar 02, 2001 * Mar 06, 2001 * Mar 31, 2001 * Apr 30, 2001 * May 16, 2001 * May 28, 2001 * Jul 07, 2001 * Sep 05, 2001 * Nov 26, 2001 *	Feb 02, 2002 * Apr 02, 2002 * May 25, 2002 * Jun 01, 2002 * Aug 02, 2002 * Aug 07, 2002 * Aug 12, 2002 * Aug 13, 2002 * Aug 20, 2002 * Aug 27, 2002 * Sep 28, 2002 * Sep 28, 2002 * Sep 30, 2002 * Oct 19, 2002 * Oct 25, 2002 * Nov 12, 2002 * Nov 21, 2002 * Nov 25, 2002 * Nov 29, 2002 * Nov 29, 2002 * Dec 26, 2002 *	Jan 24, 2003 * Jan 26, 2003 * Jan 29, 2003 * Mar 02, 2003 * Mar 19, 2003 * Mar 31, 2003 * Apr 07, 2003 * Apr 22, 2003 * Apr 23, 2003 * May 28, 2003 * Jun 08, 2003 * Jun 10, 2003 * Jun 13, 2003 * Jun 18, 2003 * Jun 25, 2003 * Jul 23, 2003 * Jul 25, 2003 * Aug 03, 2003 * Aug 07, 2003 * Oct 03, 2003 * Oct 10, 2003 * Oct 13, 2003 * Oct 19, 2003 * Dec 14, 2003 * Dec 27, 2003 *	Feb 20, 2004 * Mar 26, 2004 * Apr 17, 2004 * May 23, 2004 * Jun 03, 2004 * Jun 07, 2004 * Jun 09, 2004 * Jun 11, 2004 * Jun 16, 2004 * Jun 18, 2004 * Jun 19, 2004 * Jun 21, 2004 * Jun 24, 2004 * Jun 27, 2004 * Jun 28, 2004 * Jun 29, 2004 * Jun 30, 2004 * Jul 01, 2004 * Jul 07, 2004 * Jul 08, 2004 * Jul 12, 2004 * Jul 14, 2004 * Jul 15, 2004 * Jul 16, 2004 * Jul 20, 2004 * Jul 23, 2004 * Jul 25, 2004 * Jul 27, 2004 * Aug 15, 2004 * Aug 23, 2004 * Aug 24, 2004 * Aug 30, 2004 *	Jan 02, 2005 * Jan 05, 2005 * Jan 13, 2005 * Jan 14, 2005 * Jan 14, 2005 * Jan 18, 2005 * Jan 19, 2005 * Jan 20, 2005 * Jan 22, 2005 * Jan 23, 2005 * Jan 30, 2005 * Feb 03, 2005 * Feb 04, 2005 * Feb 04, 2005 * Feb 08, 2005 * Feb 09, 2005 * Feb 10, 2005 * Feb 11, 2005 * Feb 12, 2005 * Feb 17, 2005 * Feb 19, 2005 * Feb 24, 2005 * Feb 25, 2005 * Mar 01, 2005 * Mar 02, 2005 * Mar 03, 2005 * Mar 08, 2005 * Mar 09, 2005 * Mar 10, 2005 * Mar 11, 2005 * Mar 13, 2005 * Mar 14, 2005 *	Mar 15, 2006 * Sep 23, 2006 * Nov 18, 2006 * Dec 08, 2006 *	Jun 09, 2007 *

Use of digital information



- It took only 5 years for 50 million people to use the internet compared to 25 years for 50 million people to use phones
- Preservation or permanent availability of digital information is one of the processes affected by the evolution towards an all digital world

Definition of digital preservation



Digital preservation is a broad term used to describe the continued accessibility and maintenance of a digital resource safeguarding it into the foreseeable and the distant future. Digital preservation is a vital part of the creation and management of any digital collection.

<http://www.tasi.ac.uk/advice/delivering/digpres.html>

Joost sê sy handtekening is 'gecopy en gepaste'

Nellie Brand, Kaapstad

Joost van der Westhuizen se handtekening verskyn onderaan 'n brief van Progressive Investment Holdings (PIH) wat na bewering verkeerde inligting en 'n logo van 'n ander batebestuurder bevat en aan kliënte gestuur is.

PIH en drie verwante ondernemings is vandeeweek onder voorlopige kuratorskap geplaas weens onder meer die beweerde oortreding van die Wet op Finansiële Advies- en Tussengangerdienste (Fais).

Die Raad op Finansiële Dienste (RFD) het die aansoek om kuratorskap ingedien ná 'n jaarlange ondersoek na PIH se sake. Finansiële dienste is na bewering onregmatig gelever.

Van der Westhuizen is sedert begin Maart bedryfshoof by PIH.

By navraag het hy aan *Sake24* gesê dat dit wel sy handtekening is wat onderaan die brief verskyn, maar bygevoeg dit is 'n afskrif daarvan wat op die brief "gecopy en gepaste" is.

Volgens hom het hy toestemming gegee dat sy handtekening gebruik mag word solank hy ingelig word waarvoor dit gebruik word.

Oor die betrokke brief, gedateer 5 Mei, het Van der Westhuizen gesê die bemarkingsdepartement van PIH het dit uitgestuur om aan mense te wys hy is "aan boord".

Volgens hom het hy nie geweet dit word "namens hom uitgestuur nie".

Van der Westhuizen het gesê hy weet nie wat die inhoud van die brief beteken nie. Hy het volgehou dat hy nog opgelei word en net 'n "student" is en niks van die onderneming se sake weet nie.

Hy ontvang opleiding van 'n persoonlike opleier, mnr. Murray Kilgour, sodat hy in Januarie volgende jaar as uitvoerende hoof van die maatskappy kan oorneem.

Die pos van bedryfshoof is intussen vir hom geskep deur mnr. Freddie Andalaft, huidige uitvoerende

markingsdoeleindes, nie vir kontrakte nie," het hy gesê.

Volgens hom word dit ook op pamflette en penne gebruik, asook bemarkingsbriewe soos die betrokke een.

Dié brief bevat ook 'n handelsmerk van die batebestuurder Dynamic Wealth wat volgens mnr. Phillip Hattings, besturende direkteur van die onderneming, onwettig gebruik is.

Hattings het gesê hulle gaan regstappe doen daarvoor. Volgens hom word alle briewe waarop hul handelsmerk verskyn, deur hul nakomingskantoor goedgekeur vanweë die streng vereistes wat deur die Fais-wet gestel word vir inligting wat aan kliënte gestuur word.

Dié brief se inligting is ook verkeerd, volgens Hattings.

In die brief word onder meer gesê dat van Dynamic Wealth se "aandeleplatform" gebruik gemaak word.

Volgens Hattings het PIH nog nooit 'n aandelerekening by Dynamic Wealth gehad nie.

Andalaft het gesê dié logo is gebruik na aanleiding van 'n brief van 'n direkteur van Dynamic Wealth.

In daardie brief, gedateer April, skryf mnr. Kobus Zietsman, 'n direkteur van Dynamic Wealth, dat hulle die effektrusts van Progressive Asset Management (PAM) so spoedig moontlik gaan oorneem.

Hattings het egter gesê niks is deur die direksie goedgekeur nie.

Hattings het gesê dit is nie die eerste keer dat sulke ondernemings probeer om uit Dynamic Wealth se goeie naam munt te slaan nie.

Dit het ook al met ander bekende batebestuurders gebeur, het hy gesê.

Die RFD het intussen 'n verklaring uitgereik waarin gesê is die betrokke effektrusts word deur Metropolitan Collective Investments besit.

Die RFD het gesê dié effektrusts is nie onder kuratorskap nie. Dit is in volle bewaring by die trustee



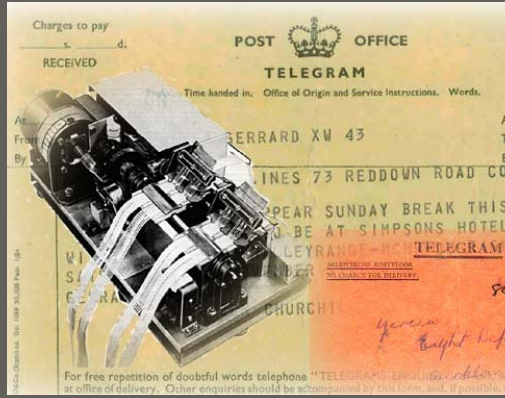
Joost van der Westhuizen (links) verskyn hier saam met mnr. Freddie Andalaft op 'n foto wat onlangs by 'n ontbytgeselligheid in Bloemfontein geneem is. Foto: VIDA BOOYSEN

U kan 'n oproep verwag vanaf een van ons gekwalifiseerde professionele adviseurs by Finshare om al u vrae wat dierig nog met tuisaan te beantwoord en alle uitstaande papierwerk te finaliseer



Joost van der Westhuizen





Future of academic libraries

No.1 assumption (ACRL, March 2007)



There will be an

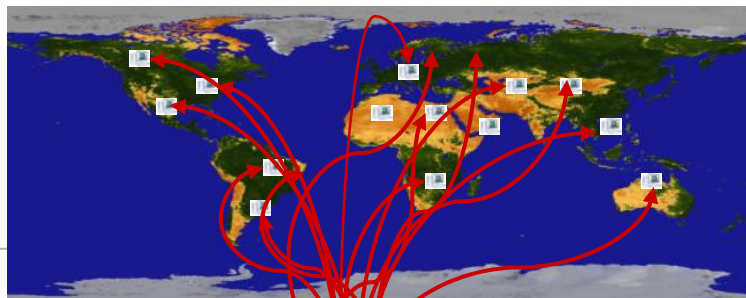
- preserving digital archives, and*
- increased emphasis on digitizing collections*
- improving methods of data storage and retrieval*
- The digitization of unique print collections may emerge as one of the primary missions of academic libraries in the 21st century*
- Librarians should collaborate with disciplinary colleagues in the **curation** of data as part of the research process*

<http://www.ala.org/ala/acrl/acrlpubs/crlnews/backissues2007/april07/tenassumptions.cfm>

Digital Books workflow



Digital workflow of the Alexandria Library.
Software for this workflow is available at
http://wiki.bibalex.org/DAFWiki/index.php/Main_Page



QA

QA

Metadata Editor

Unique URI created for object

UPSpace | R

QA

QA

Send to submitters via

- email
- External hard drive
- DVD/CD/Flashdrive
- Internal server

Reviewer

UPSpace | R

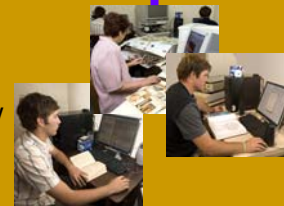
QA

QA

• Scan directly to archival server

Archival server

- Copy from AS
- Quality Control
- Deskew/cleaning/derivating/filter
- Safe webready
- Final QC + Storage



100
1903 - 2008



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Denkeleers • Leading Minds • Dikgopolo lsa Dinidisi

Standards (1)



- Preservation Metadata Framework Working Group (OCLC, 2003)
- PREMIS (2005)
- OAIS (Open Archival Information System)
- Z39.87 - Standard for Technical Metadata for Digital Still Images(ANSI/NISO)

Standards (2)

- ISO (International Standards Organisation) defines “quality as the totality of characteristics of an entity that bear on its ability to satisfy stated or implied needs” (ISO8042:1994)
- or “the degree to which a set of inherent characteristics fulfils requirements” (ISO9000:2000)

Preservation Metadata Framework Working Group (Report 2003)



Framework for research

- Outline the types of information that should be associated with an archived digital object
- The use of metadata to support the digital preservation process

http://www.oclc.org/research/projects/pmwg/presmeta_wp.pdf

PREMIS Working Group (2005)



The PREMIS (Preservation Metadata: Implementation Strategies Working Group -

- Develop a data dictionary of core elements for archived objects
- Guide the implementation of element sets in preservation systems
- Suggest best practice for populating the elements

http://www.oclc.org/research/projects/pmwg/pm_framework.pdf

OAIS

(Open Archival Information System)



- The OAIS (Open Archival Information System) reference model was developed under the auspices of NASA's Consultative Committee for Space Data Systems (CCSDS)
- The OAIS reference model is a conceptual framework for a digital archive
- Regarded as the “standard” for digital object repositories

Z39.87 - Standard for Technical Metadata for Digital Still Images (NISO & AIIM)



Z39.87 is a standard which defines a set of metadata elements for raster digital images

The purpose is to help in the development, exchange and interpretation of digital images

The original DIG35 goals were adapted by the NISO group

Scanning



- No set resolution can be selected for all projects
- Resolution for a master image range between 300 - 600 dpi
- Colour settings 8-bit greyscale; 24-bit colour
- The most widely adopted format for storing a preservation quality digital master is uncompressed TIFF

Derivative image



- A derivative is a manipulated image derived from the master image, to produce smaller file sizes
- Lossy file formats such as JPEG are used for derivative images
- Resolution ranges between 72 dpi and 150 dpi and up to 800 pixels in width
- ICC (International Colour Consortium) profiles

Reasons for preservation



- Updated versions of the file format
- Reading device become obsolete
- Updated versions of the software used to create, manage, or access digital content
- Changes in computers
- Movement at vendors level
- Unforeseen errors

Requirements of data protection



- Visibility/accessibility
- Regular quality control
- Authenticity
- Security
- Performance
- Ease of use
- Interoperability
- Cost of ownership
- Automation

Web Buyers Guide, 31-03-08

Preservation methods



- **Refreshing:**
Copy the same type of digital information from one long-term storage medium to another
- **Modified refreshing:**
Copy information to another medium of a similar type
- Refreshing is part of a process or program
- Refreshing address issues such as decay and obsolescence

Migration and Emulation



- **Migration:**
Move or adapt the objects to another platform
- **Emulating:**
Environment will be adapted to new platform (the objects themselves will not be tampered with)

Preserve the usability of a .TIFF file



- A **TIFF viewer**, plus its formal specification and sufficient subsidiary documentation to explain how it work in practice must be preserved
- To run the TIFF viewer - an **operating system** must be preserved
- To run the operating system -
 - the **original hardware** will need to be preserved, or
 - **emulation software** that allows the old hardware to be emulated on new machines needs to be developed



The technical registry PRONOM

- Welcome
- About
- Add an entry
- Search
- Help
- Information resources

Welcome to PRONOM

The online registry of technical information. PRONOM is a resource for anyone requiring impartial and definitive information about the file formats, software products and other technical components required to support long-term access to electronic records and other digital objects of cultural, historical or business value.

[Search PRONOM](#)

Tools and Services

Free PRONOM tools and services to support digital preservation, including DROID, the automatic file format identification tool, together with links to relevant external tools and services. [Tools and Services](#)

Contribute to PRONOM

Contribute new information to PRONOM via our online [submission form](#). Find out more about [PRONOM's creators](#).

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- [How do I search PRONOM?](#)
- [Who is PRONOM for?](#)
- [How do I find out more?](#)



You are here: Home > Services for professionals > Preservation > PRONOM > Search: PRONOM



The technical registry PRONOM

- Welcome About Add an entry Search Help Information resources

Search : Simple Search

Help : Simple Search

- Simple search File format PRONOM Unique Identifier Software Vendor Lifecycles

1. Search

Enter a simple search string and then click 'search'.

JPEG Search

You searched for: ".JPEG"

Save as... XML | CSV Print

page 1 2

[JPEG File Interchange Format \(1.00\)](#)

The JPEG File Interchange Format (JFIF) is a file format for storing JPEG-compressed raster images. It was developed by the Independent JPEG Group and C-Cube Microsystems, in the absence of any such format being defined in the JPEG standard, and rapidly became a de facto standard; this is what is commonly referred to as the JPEG file format. A JFIF file comprises a JPEG data stream together with a JFIF marker. It begins with a Start of Image (SOI) marker, immediately followed by a JFIF Application (APP0). This is followed by the JPEG image data, which is terminated by an End of Image (EOI) marker. JFIF supports up to 24-bit colour and uses lossy compression (based on the Discrete Cosine Transform algorithm). Other types of compression are available through JPEG extensions, including progressive image buildup, arithmetic encoding, variable quantization, selective refinement, image tiling, and lossless compression, but these may not be supported by all JFIF readers and writers.

[JPEG File Interchange Format \(1.01\)](#)

The JPEG File Interchange Format (JFIF) is a file format for storing JPEG-compressed raster images. It was developed by the Independent JPEG Group and C-Cube Microsystems, in the absence of any such format being defined in the JPEG standard, and rapidly became a de facto standard; this is what is commonly referred to as the JPEG file format. A JFIF file comprises a JPEG data stream together with a JFIF marker. It begins with a Start of Image (SOI) marker, immediately followed by a JFIF Application (APP0). This is followed by the JPEG image data, which is terminated by an End of Image (EOI) marker. JFIF supports up to 24-bit colour and uses lossy compression (based on the Discrete Cosine Transform algorithm). Other types of compression are available through JPEG extensions, including progressive image buildup, arithmetic encoding, variable quantization, selective refinement, image tiling, and lossless compression, but these may not be supported by all JFIF readers and writers.

[JPEG File Interchange Format \(1.02\)](#)

The JPEG File Interchange Format (JFIF) is a file format for storing JPEG-compressed raster images. It was developed by the Independent JPEG Group and C-Cube Microsystems, in the absence of any such format being defined in the JPEG standard, and rapidly became a de facto standard. A JFIF file comprises a JPEG data stream together with a JFIF marker. It begins with a Start of Image (SOI) marker, immediately followed by a JFIF Application (APP0) marker and one or more optional application extension markers. This is followed by the JPEG image data, which is terminated by an End of Image (EOI) marker. JFIF supports up to 24-bit colour and uses lossy compression (based on the Discrete Cosine Transform algorithm). Other types of compression are available through JPEG extensions, including progressive image buildup, arithmetic encoding, variable quantization, selective refinement, image tiling, and lossless compression, but these may not be supported by all JFIF readers and writers.

<http://www.nationalarchives.gov.uk/PRONOM/Format/proFormatSearch.aspx?status=detailReport&id=7!>

[PRONOM | Search by format](#)

Details for: JPX (JPEG 2000 Extended)

[Save as...](#) [XML](#) | [CSV](#) [Print](#)

Go to: [Summary](#) | [Documentation >](#) | [Signatures >](#) | [Compression >](#) | [Character encoding >](#) | [Rights >](#) | [Reference files >](#) | [Properties >](#)

Summary

Name	JPX (JPEG 2000 Extended)
Version	
Other names	JPF
Identifiers	PUID: fmt/151
Family	
Classification	
Disclosure	
Description	<p>JPEG 2000 Extended File Format is an optional, lossless, extension of the JP2 format, the main file format for the JPEG 2000 international standard for image coding, created by the Joint Photographic Experts Group in 2000 for the compression of photographic images for storage or transmission. The standard specifies how an image and its metadata is transformed into byte stream data. This format is widely used for storing and transmitting photos and other compressed image data online. Although it is based on JP2 it can support multiple layers, animation and other features, and is a lossless image compression file. Like JP2 the format is made up of a contiguous sequence of boxes, beginning with a signature box and a file type box, which provides version and file type information.</p>
Orientation	Text
Byte order	Big-endian (Motorola)
Related file formats	None.
Technical Environment	

Internet 100%

Preservation of the format



Digital formats contain texts, databases, still and moving images, audio, graphics, software and web pages. They are fragile and require purposeful production, maintenance and management to be retained

- *Viability* - maintenance of the bitstream
- *Renderability* - viewable by humans and processible by computers
- *Understandability* - interpretable by humans

<http://www.icpsr.umich.edu/dpm/dpm-eng/terminology/preservation.html>



Part II: Preservation & Trusted Digital Repositories

Ina Smith

Institutional Repository



“A university-based institutional repository is a **set of services** that a university 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 **long-term preservation** where appropriate, as well as **organization** and **access** or **distribution**.”

Clifford A. Lynch,

["Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age"](#) ARL, no. 226 (February 2003): 1-7.

Digitally born & digitized material



CLINICAL IMAGES

Awaking a sleeping epidemic

Riaan van Colfer, Elna van Raasburg, Claz Schutte, Delese Brink, Gerhard Wulthgen, 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, Angola 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 *Trypanosoma brucei gambiense* and 30 *T. b. rhodesiense* 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.¹

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

Case 1

A 27-year-old man presented with a 4-month history of fatigue, loss 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 38.8°C, he had a palpable hepatomegaly and an unremarkable neurological examination although his cognitive response was slow. Diagnosis of African trypanosomiasis was made on a Giemsa-stained blood smear (Fig. 1).

Shortly after admission the patient had a tonic-clonic seizure, with post-ictal confusion. Treatment with suramin was started and repeat blood smears after 48 hours were clear of trypanosomes. The cerebrospinal fluid (CSF) showed no trypanosomes but a total protein level of 1.2 g/l, glucose 2.1 mmol/l, 4 polymorphs and 82 lymphocytes. WHO-recommended treatment with melarsoprol was started.¹

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

Five months after discharge he presented to the Hospital for Tropical Diseases in London with fever, sleepiness and an active CSF. Diagnosis of a relapse was made which posed a diagnostic dilemma – recurring *T. b. gambiense*. Treatment with eflornithine was given which cleared his condition.

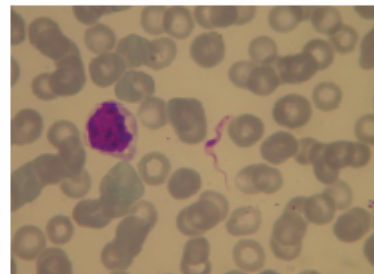


Fig. 1. Giemsa smear (case 1) showing extracellular trypanosomes present in the peripheral blood.

Case 2

A 53-year-old man presented with a 2-week history of fever, headache and episodic confusion. He was a farmer from Kariba in Zimbabwe where he had been treated for malaria without any clinical improvement. He gave a history of multiple tsetse fly bites but did not have a chancre. A Giemsa-stained blood smear showed *Trypanosoma* spp. On admission his temperature was 39.4°C, but the general examination was unremarkable. He was very sleepy but easily arousable. The diagnosis of East African trypanosomiasis (EAT) was confirmed by isolating *T. b. rhodesiense* from inoculated mice. Treatment with suramin was started and repeated Giemsa-stained blood smears did not show any trypanosomes. The following day he had a fatal cardiac arrhythmia, probably due to myocarditis.

Our first patient had a series of EEG 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 frequency of the background. The second patient had an EEG



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Department Anatomy and Physiology

Digitally born & digitized material

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

**THE ROLE OF EXTENSION IN TRADITIONAL AGRICULTURE :
EVIDENCE FROM THE FARMER SUPPORT PROGRAMME¹**

J F Kirsten², J van Zyl³ and HJ Sartorius van Bach⁴

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 extension 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 closely associated 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 Venda en Lebowa geïmplementeer is. Die belangrikheid en bydrae van voorligting en opleiding in die sukses 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 opleiding en voorligting tot die verhoging in produksie bydra, is egter 'n punt van dispuut. Ontledings 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 gedeeltelik bydra tot hoër opbrengste in die gebiede waar die kleinboer ondersteuningsprogramme geïmplementeer is.

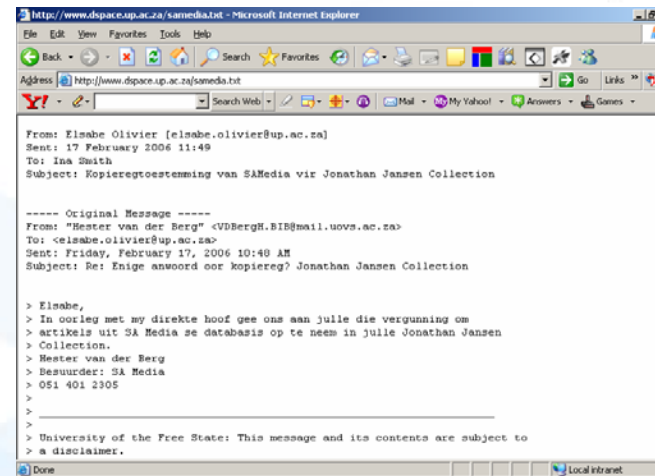
1. INTRODUCTION

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 Rooyen, 1993).

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 CHW9074 18S ribosomal RNA gene
GGAAGGATCATTACCGAGTTTTCGAGCTCCGGCTCGACTCTCCACCCCTTTGTGAACGTACCTCTGTTGC
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```



http://www.dspace.up.ac.za/samedia.txt - Microsoft Internet Explorer

Address http://www.dspace.up.ac.za/samedia.txt

From: Elzabe Olivier [elzabe.olivier@up.ac.za]
Sent: 17 February 2006 11:49
To: Ina Smith
Subject: Kopieregtoestemming van SA Media vir Jonathan Jansen Collection

----- Original Message -----
From: "Hester van der Berg" <VDBergH.BIB@mail.uovs.ac.za>
To: <elzabe.olivier@up.ac.za>
Sent: Friday, February 17, 2006 10:40 AM
Subject: Re: Enige antwoord oor kopiereg? Jonathan Jansen Collection

> Elzabe,
> In ooreg met my direkte hoof gee ons aan julle die vergunning om
> artikels uit SA Media se databasis op te neem in julle Jonathan Jansen
> Collection.
> Hester van der Berg
> Besuurder: SA Media
> 051 401 2305

>
> University of the Free State: This message and its contents are subject to
> a disclaimer.

Done Local intranet



SA Media - The University of the Free State

Source: FINANCIAL MAIL Date: 13-May-2005 Page: 1
Topic: 19 Ref No: 3041
ID: 03214184-01 Source Page: 34

By Invitation **PROTECTION UP TO A POINT**

John van Kesteren

The row between wheat farmers and large buyers of grain over an application for a tariff on imported wheat has inspired the debate on whether we need to protect our farmers against foreign competition. Already a heated issue, the row erupted again after OMA's application to the International Trade Administration Commission recently.

With the advent of democracy in 1994, SA adopted a liberalised trade policy regime in line with the World Trade Organisation's (WTO) philosophy of free trade. These free trade principles were implemented quite rapidly after the 1994 Marikopa agreement.

By 2004 the majority of SA's tariff lines were zero or below 10% ad valorem, reflecting our liberalised trade regime.

Many argue that SA was too quick in freeing trade and failed to take into account the shedding of jobs and other negative because not all major trading nations followed similar reform schedules. As a result, today SA has one of the most open economies in the world.

In the WTO the battle for free trade in agricultural commodity markets has not been won, and high levels of agricultural subsidies and protection remain in the European Union and the US. This creates an uneven playing field, which is the main reason why SA farmers say they should be protected.

Various studies argue that the removal of trade-distorting international policies of developed countries would result in higher world agricultural commodity prices. For example, the world wheat price would increase by 14% if global export subsidies and domestic support were removed and import tariffs reduced.

Others, through the land reform programme, is trying to establish a group of farmers which does not have much experience in agriculture or world agricultural markets. If could, therefore, well be asked whether it is fair to expose these emerging black farmers to this unfair playing field. Why should they not enjoy some form of protection against their world focus as they try to get their farming enterprises up and running? While commercial farmers had this protection for years and though it protected inefficiencies, it at least provided a cushion to start competing effectively.

In terms of WTO rules SA's tariff-bound rates are much higher than our current tariff levels, having substantial room for tariff increases without compromising WTO commitments.

It is important to note the welfare effects of tariff protection: producers enjoy high price guarantees but consumers are worse off since they have to pay more for the product. With high poverty levels in SA, this would be a major concern. It is to be weighed against potential job losses and farm bankruptcies.

But if we depart from the assumption that tariffs do have an impact on the domestic price of imported commodities, the critical question to answer is what is the real impact of this increase on consumer prices? In a recent study conducted by the University of Pretoria's Bureau for Food & Agricultural Policy Research, it was found that an increase in the wheat import tariff from the current level of 7% of the world price of wheat to 10% would increase the domestic wheat price by R137. Linking this increase to a price transmission model showed an increase in the cost of bread of 1.6c, which would result

<https://www.up.ac.za/dspace/>

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Items archived since January 2006: 3 474

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[OAISTER](#)
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[SHERPA RoMEO](#)
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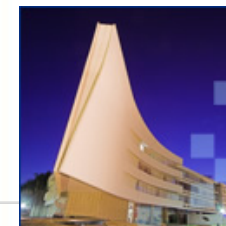
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Benefits of an open access IR

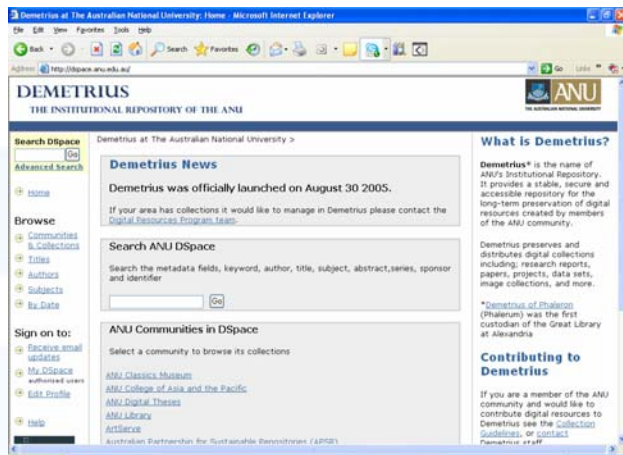


- Research out quickly, worldwide
- Increases visibility, usage, impact of research
“open access [material] are **read more widely**, and, therefore, **cited more frequently**. The consequence of this is that they have **greater impact**” (Jones, Andrew and MacColl 2006)
- Open access to all – also those who cannot afford subscribing
- Persistent URL
- Decentralised/ Distributed input
- E-workflow for quality control
- Full text - searchable
- Central archive of research
- Preservation function

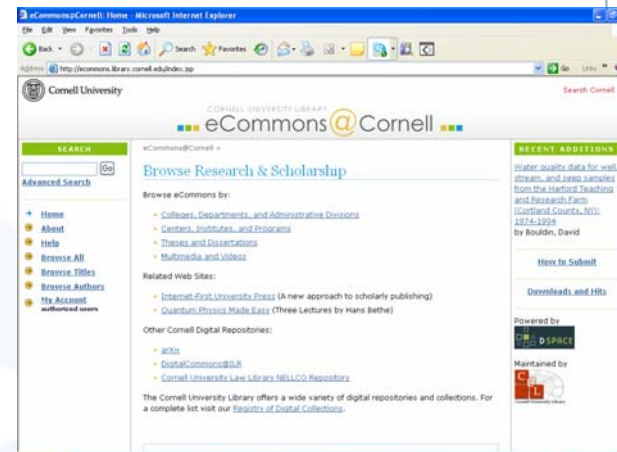
11 Repositories National (ROAR)

- African Higher Education Research Online
- CSIR Research Space
- Durban University of Technology Institutional Repository
- Rhodes eResearch Repository
- Stellenbosch University Electronic Theses & Dissertations
- University of Cape Town Computer Science Research Document Archive
- University of Cape Town Lawspace
- University of Johannesburg Electronic Theses & Dissertations
- University of Pretoria Electronic Theses & Dissertations
- University of Pretoria Institutional Repository (UPSpace)
- University of the Western Cape Electronic Theses & Dissertations

1 200 Repositories Internationally



Univ. of Australia



Cornell University



And many more

Trusted Repository *Defined*



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

(RLG-OCLC Report 2002)

Attributes of a Trusted Repository

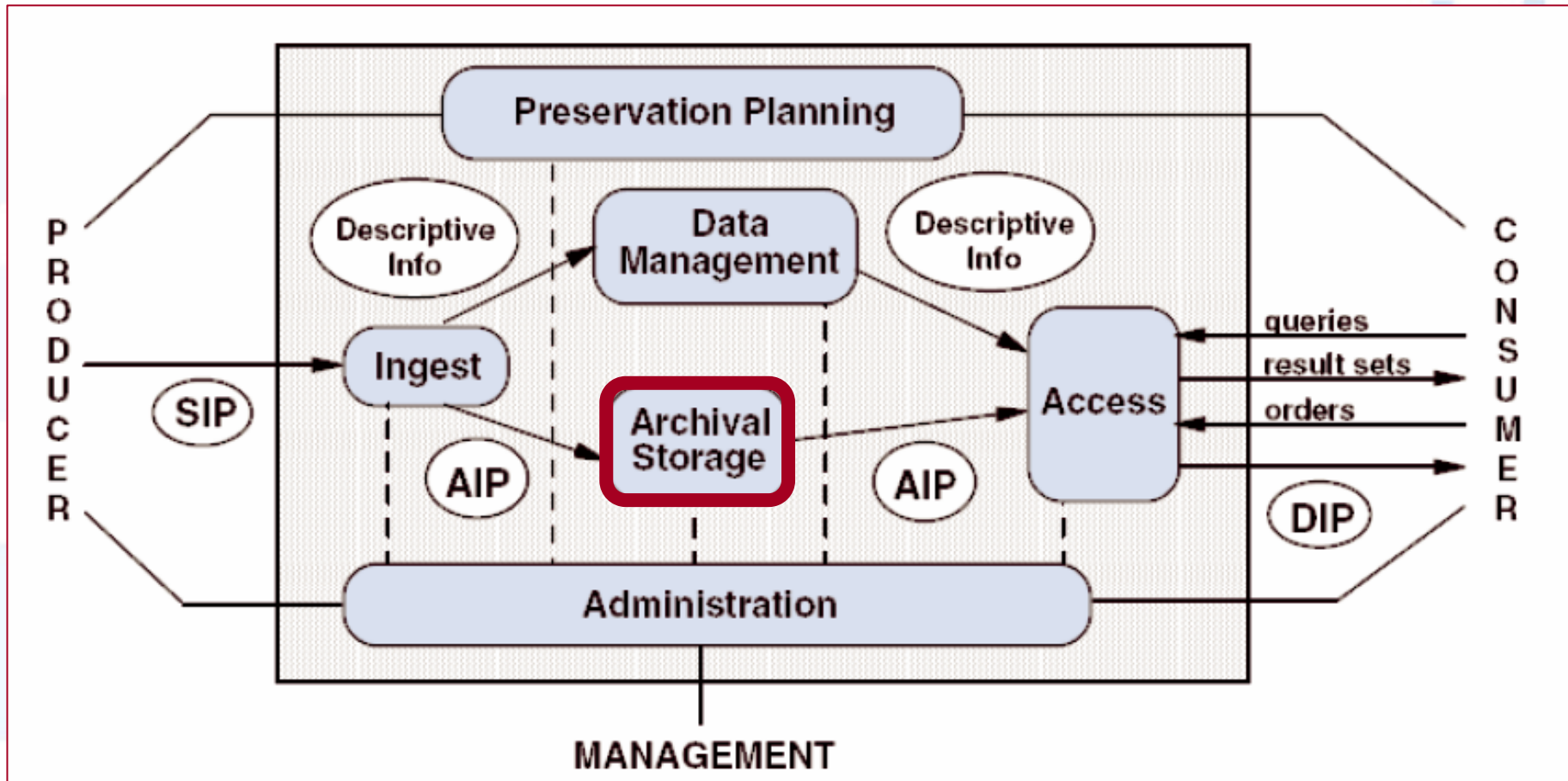


- Compliance with the *Reference Model for an Open Archival Information System (OAIS)*
- Administrative responsibility
- Organizational viability
- Financial sustainability
- Technological & procedural suitability
- System security
- Procedural accountability

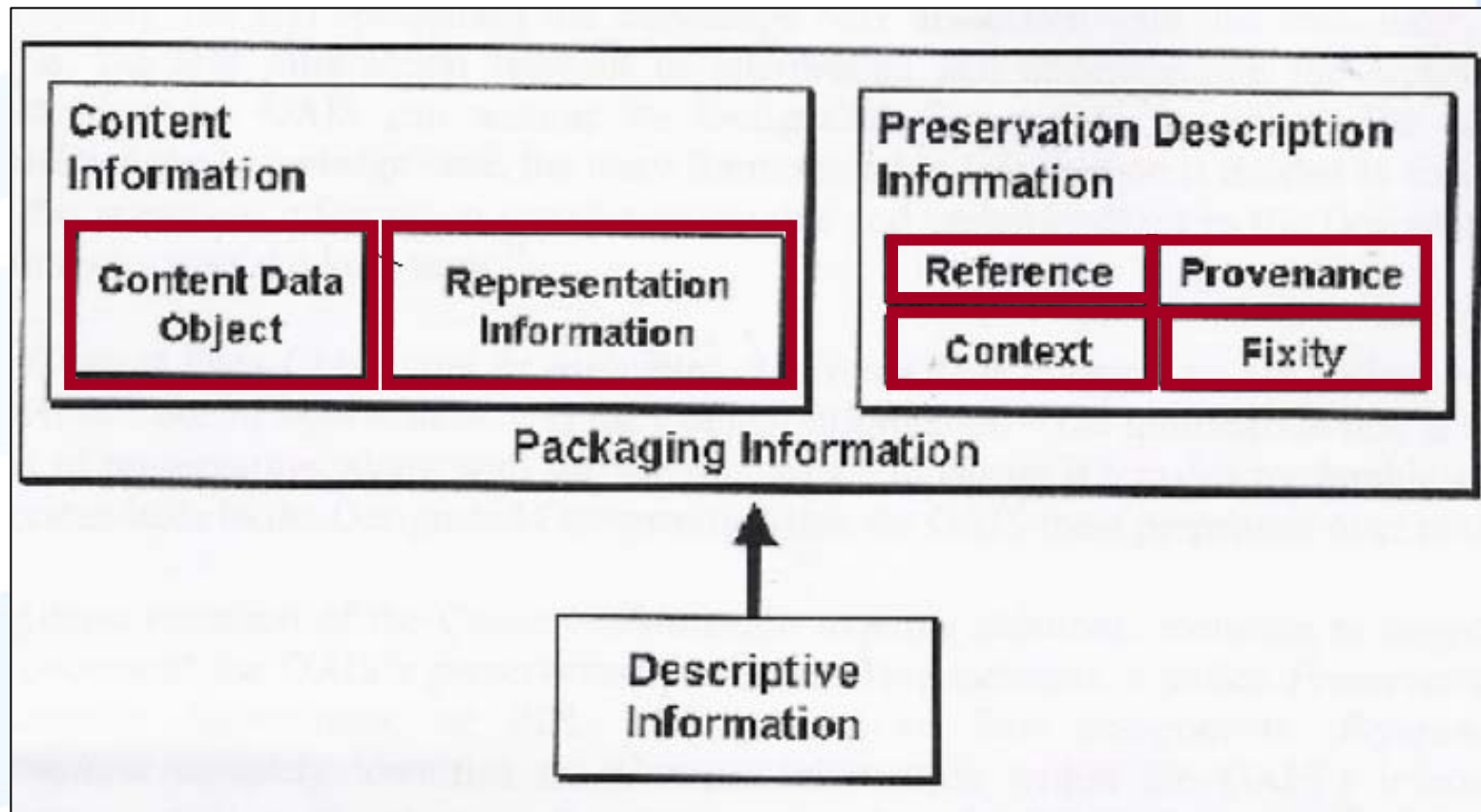
Source: Trusted Digital Repositories: Attributes and Responsibilities
An RLG-OCLC Report

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

OAIS Functional Model – Archival Storage



Archival Information Package *(Digital item submitted)*





Technologies for enabling trust & preservation

Digital Repository Software



- Proquest Digital Commons (*proprietary*)
- DSpace (*open source*)
- Content^{DM} (*proprietary*)
- Fedora (*open source*)
- E-Prints (*open source*)
- Greenstone (*open source*)

File formats



- Proprietary e.g. MSWord
- **Open formats** e.g. ASCII plain text – no restrictions
- **Industry standard formats** e.g. HTML, PDF
- Industry/ Open standard format with proprietary extension e.g. Microsoft Version of XML

DSpace Commitment to Preservation



- 2 levels of preservation: Bit & Functional
- 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/octet-stream", 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.

- Groups
- Items
- Dublin Core Registry
- Bitstream Format Registry
- Workflow
- Authorization
- Edit News
- Supervisors
- Statistics
- Help
- Log Out

Bitstream Format Registry

Extensions are comma-separated lists of file extensions. Do not include the dot.

When you add a bitstream format, it is not immediately visible. After you've finished editing the format metadata. Be sure to update the format. The format should appear in the submission UI list of formats.

[Help...](#)

E.g. Adobe PDF, XML, Text, HTML, MSWord - **Known**

ID	MIME Type	Name	Location	Support Level	Internal?	Extensions	Actions
1	application/octet-stream	Unknown	Unknown data	Unknown	<input type="checkbox"/>		Update
2	text/plain	License	Item-specific license agreement	Known	<input checked="" type="checkbox"/>		Update Delete...
3	application/pdf	Adobe PDF	Adobe Portable Document Format	Known	<input type="checkbox"/>	pdf	Update Delete...
4	text/xml	XML	Extensible Markup Language	Known	<input type="checkbox"/>	xml	Update Delete...
5	text/plain	Text	Plain Text	Known	<input type="checkbox"/>	txt asc	Update Delete...
6	text/html	HTML	Hypertext Markup Language	Known	<input type="checkbox"/>	htm html	Update Delete...
7	application/msword	Microsoft Word	Microsoft Word	Known	<input type="checkbox"/>	doc	Update Delete...

UPSpace Policy for file formats



- **Everything** put in UPSpace will be **retrievable**
- As many **files formats** as possible will be **recognised**
- As many known **file formats** as possible will be **supported** through UPSpace
- **Formats and techniques** will be continuously **monitored** to ensure needs can be accommodated as they arise
- The **size of a bitstream** allowed for submission is currently **unlimited**, but this will be revised over time
- The same **file** can be submitted in **more than one format**, of which one must be **pdf** (does not apply to media files)

Preserving items in DSpace



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Address: <http://www.up.ac.za/dspace/handle/22632273>

Metadata

Title: Elephant caudal vertebrae 18, left lateral view

Author/s: Seegers, Christine D.

LC Subjects: African elephant
veterinary anatomy
Loxodonta africana

Keywords: Elephant C018, Left lateral view
Vertebrae, Animal
Spine, Animal

Issue Date: 2008-01-01

Creation Date: 2008-01-01

Abstract: Black/white wash painting technique. Original canvas size: (w)24.5 x (h)25.0 cm. Original scanned size in pixels: 6312 x 7872 pixels (800 dpi). Final size in pixels: 550 x 436 (150 dpi). Estimate download time: 37 sec @ 28.8 kbps.

URI: <http://hdl.handle.net/22632273>

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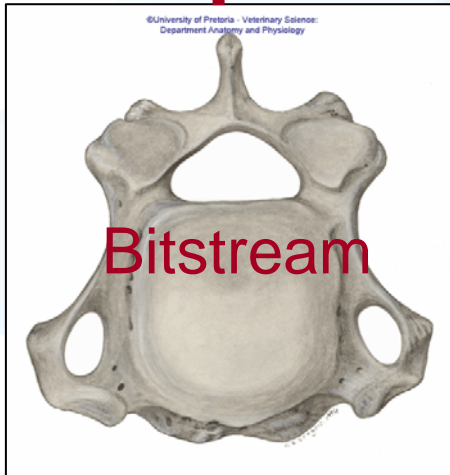
Type: Image

Language: English

Appears in Collections: The Elephant

Files in This Item:

File	Description	Size	Format
ol_040b.pdf		97kb	Adobe PDF



Bitstream

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Address: <http://www.up.ac.za/dspace/dspace-admin/authorize>

Bitstream 6783 (license.txt)

Relationships stored between components in a bundle

Policies for Bundle 6001

ID	Action	EPerson	Group		
118849	READ	...	Anonymous	Edit	Delete

Bitstream 6782 (ol_040b.pdf)

ID	Action	EPerson	Group		
118851	READ	...	Anonymous	Edit	Delete

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Metadata

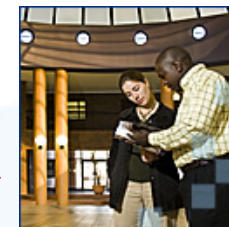


- Data about data
- Qualified Dublin Core Metadata Schema
- DSpace supports the Open Archives Initiative's Protocol for Metadata Harvesting (OAI-PMH) v2.0 as a data provider
- Enhance **Descriptive Metadata**
- Capture **Administrative Metadata** (incl. preservation metadata)

“Preservation metadata is the information necessary to maintain the viability, renderability, and understandability of digital resources over the long-term.”

Source: Feasibility and Requirements Study on Preservation of E-Prints/ Hamish et al.

Preservation Metadata



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

Generated by User

Generated by System

Checksums in DSpace



Checksum generated by Checksum software:

Choose the files or an entire folder you want to make checksums of

Files... Folder...

After you save the results you will be able to check the integrity of your files.
Press the **S**ave (Ctrl+S) button to save.

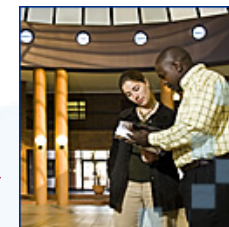
Display the full path in file list

Name	Size	Checksum\State
smithgroenewald_karm08.pdf	3,663 KB	E5A95F72B5F982A4B08B3C35DA7DC80C

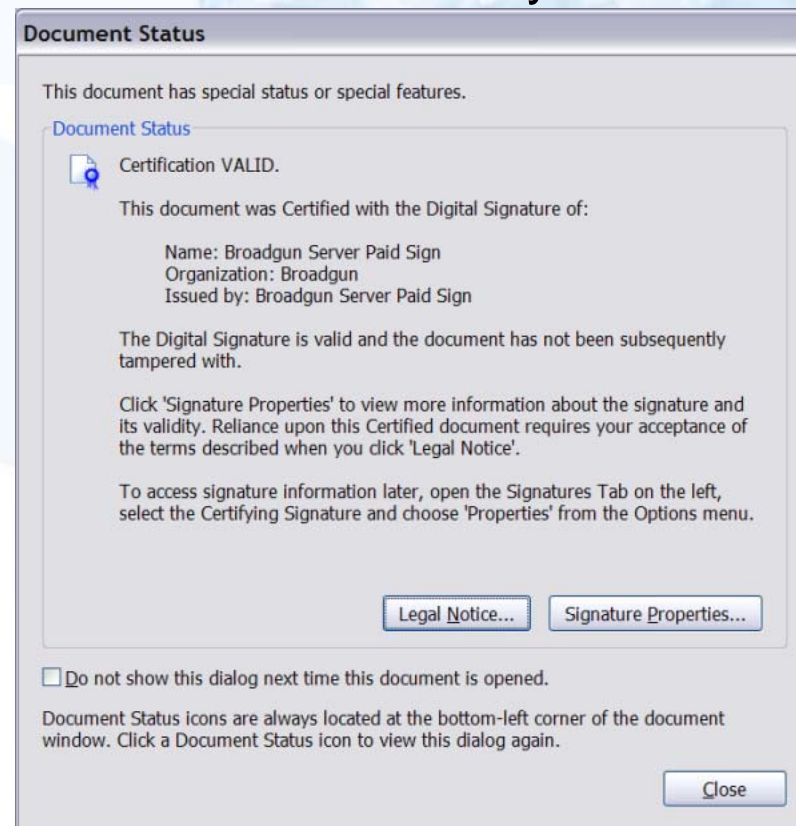
Identical to Checksum generated by DSpace (UPSpace):

File	Size	File Format	Checksum
smithgroenewald_karm08.pdf	3,751,421 bytes	Adobe PDF (known)	e5a95f72b5f982a4b08b3c35da7dc80c (MD5)

Digital Signatures



- **Digital signatures** added to full text
- Compute a digital signature for digital masters & store signature in technical metadata of object
- Compute signature for complete item and store externally to repository



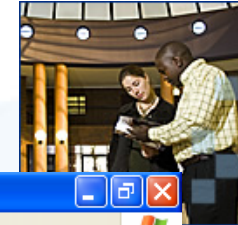
AIP – Preservation Info – Fixity

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

Persistent Identifiers




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Title: Eustachian tube diverticulum chondroids and neck abscessation in a case of *Streptococcus equi* subsp. *equi*

Inquiries: ann.carstens@up.ac.za

Author/s: Furniss, C.
Carstens, A.
Cilliers, I.

LC Subjects: *Streptococcus equi*
Radiology
Horses -- Surgery

Keywords: Carrier
Chondroids
Equine
Streptococcus equi subsp. *equi*

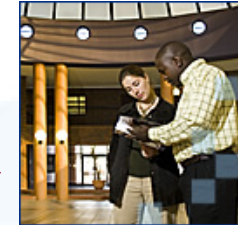
Issue Date: Sep-2007

Publisher: South African Veterinary Association

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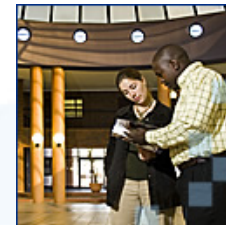
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Storage Management



- 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

Preservation Policies & Tools



- PADI – Digital Preservation Policies
www.nla.gov.au/padi/topics/172.html
- erpaTool – Digital Preservation Policy Tool
- Cornell Digital Preservation Tutorial
www.icpsr.umich.edu/dpm/dpm-eng/contents.html
- DRAMBORA <http://www.repositoryaudit.eu>
Digital Repository Audit Method Based on Risk
Assessment Toolkit

Institutional Repository Workshop



A to Z of digital preservation within an Institutional Repository
Business Plans, Policies, Digitization, Metadata, Implementation,
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Questions?

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