

Main Articles

South African Repositories: Bridging Knowledge Divides

[Martie van Deventer](#) and [Heila Pienaar](#) provide us with background to recent South African repository initiatives and detail an example of knowledge transfer from one institution to another.

[Main Contents](#)[Section Menu](#)[Email Ariadne](#)[Search Ariadne](#)

Introduction

Knowledge exchange is critical for development. 'Bridging the knowledge divide' does not only refer to the North-South divide. It also refers to the divide between richer and poorer countries within the same region as well as to the divide between larger and smaller organisations within one country. Lastly it refers to the divide between those individuals who have access to an environment that allows for rapid knowledge creation and those less fortunate. Developing countries, such as South Africa, tend to think that they themselves have very little to offer in terms of knowledge creation and transfer. This is not entirely true. Creating and maintaining repositories have created, for us, the opportunity to learn but also to teach. It has also provided us with a foot in the door when it comes to participating in eResearch. In this article we give a brief overview of the background to the South African repository development initiatives and then mention the existing repositories. We discuss the e-strategies implemented at the University of Pretoria (UP) and elaborate upon the transfer of their knowledge to the Council for Scientific and Industrial Research (CSIR). We mention the technologies used, and reflect on the perceived opportunities and challenges of the knowledge transfer project. In the last instance we elaborate upon the initiatives now being implemented to ensure that effective knowledge transfer takes place – in the hope that South Africa will soon show an abundance of institutional repositories. Ultimately the aim is to bridge knowledge divides that hamper progress and stifle development.

Worldwide, the research paradigm is in the process of expanding into eResearch and open scholarship. This implies new ways of collaboration, dissemination and reuse of research results, specifically via the Web. Developing countries are also able to exploit the opportunity to make their knowledge output more widely known and accessible. In the South African context the implication of eResearch is not yet being fully supported in any co-ordinated way. One initiative to make key stakeholders aware of the changing needs in research, the SARIS (South African Research Information Services) research project report, recommended that South Africa should position itself in the forefront of the new research paradigm [1]. This implied that individual research institutions should take the necessary steps to implement such strategies, collaborate amongst one another and lobby Government to support open access initiatives.

The most recent but perhaps most noteworthy of such open access initiatives is the inaugural meeting of the Academy of Science of South Africa's (ASSAf's) Journal Editors' Forum that took place in late July 2007. Gray [2] reported that the event marks the first step in implementing the recommendations of the Academy's study of the state of scholarly publication in South Africa. Although the study focused primarily on the strengthening of both the quality and the volume of scholarly publishing, it specifically mentions the use of an open access model to increase the output and reach of South African research publishing. It is anticipated that open access would greatly enhance the impact, reach and speed of the dissemination of South African scholarship – just as it is doing for other developing countries.

Open scholarship, open-access scholarship and open-access scholarly publication all refer to approximately the same phenomenon, viz. the free and unrestricted access to scholarly publications via the Internet [3][4] [5] [6][7]. Based on the Budapest Open Access Initiative, the Bethesda Statement on Open Access Publishing and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, Bailey [7] lists the following characteristics of open access literature:

- It “is freely available”;
- It “is online”;
- It “is scholarly and royalty free”; and
- It “can be used with minimal restrictions”.

Bailey states that open access can be achieved through self-archiving and open access journals. Self-archiving typically occurs in open archives or open digital repositories, managed by research institutes or by universities. Clifford Lynch defines his view of an institutional repository as:

‘...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’ [8].

This shift in scholarly publishing is accompanied by a transformation in research practice.

‘Research is becoming more multidisciplinary, more collaborative, and more global. The term e-science has been used to describe large-scale, distributed, collaborative science enabled by the Internet and related technologies. eResearch is a broader term that includes non-scientific research but that also refers to large-scale, distributed, national, or global collaboration in research. It typically entails harnessing the capacity of information and communication technology (ICT) systems, particularly the power of high capacity distributed computing, and the vast distributed storage capacity fuelled by the reducing cost of memory, to study complex problems across the research landscape.’ [9]

The fact is that until 2004 much of this activity was obscured to the average South African information worker. The University of Pretoria (UP) and the Council for Scientific and Industrial Research (CSIR) formed an alliance specifically to investigate new trends. This alliance soon led to a project wider in scope than just the two organisations.

South African Research Information Services (SARIS) Project

A national research and development strategy for South Africa was published in 2002. It invited all players in the national innovation system to rethink their role and to find opportunities to face the challenge of increasing economic growth and improve the quality of life for all South Africans. It was clear that the strategy called for a renewal in the information services sector. The SARIS Project was started *inter alia* because of the extremely high costs to South African research institutes and university libraries to access the global research literature. From the research it was very soon clear though that a new research paradigm, sometimes called eResearch, was emerging and that this paradigm presented ‘a broader range of information support service challenges’ [1]. The project team established that ‘activities making up the family of eResearch were to be found in various stages of development in the research life of South Africa in 2004 but, typically, a “Team South Africa” approach was not evident’. It was therefore recommended that a framework for eResearch services to the entire South African research community should be created - as depicted in Figure 1.

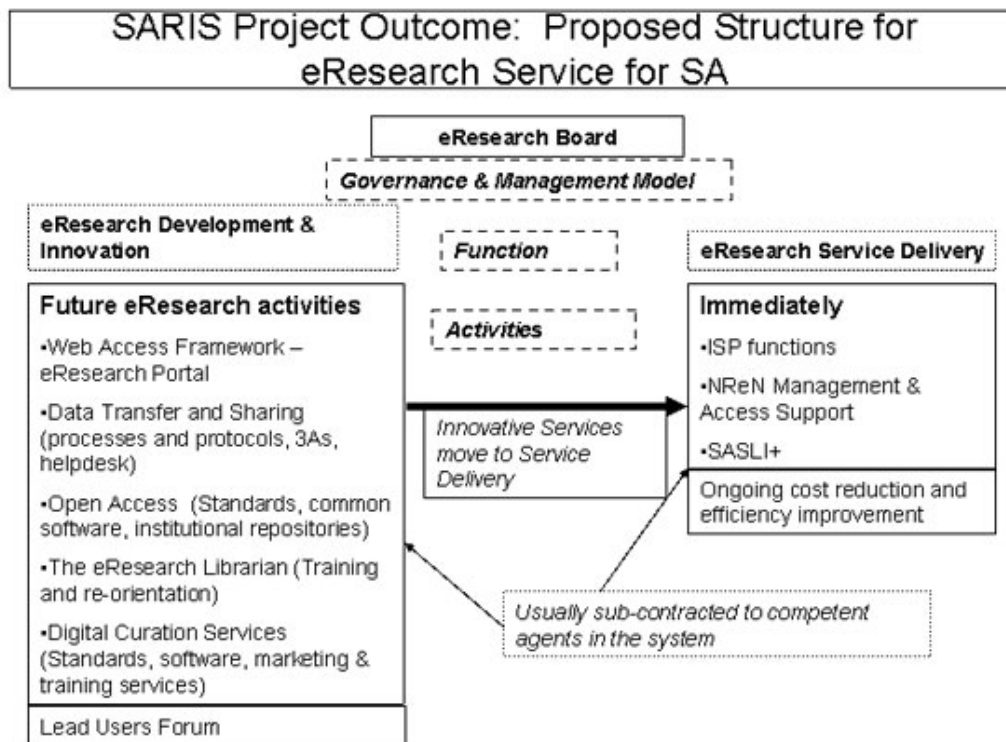


Figure 1: 2004 version of a proposed structure for eResearch support service for SA – a governance and management model [1]

The intention was that the ‘eResearch development and innovation services’ would be jointly funded as projects (conducted by competent agents in the system). Those projects that proved to be essential would then be transferred to the ‘service delivery’ arm (see Figure 1), where sustainable funding would be generated by those who made use of the service. The whole system was to be co-ordinated at country level.

However, it soon became evident that there would be no national co-ordination of these efforts in the near future, and that individual institutions would have to start their own initiatives. Fortunately organisations such as eIFL and the Mellon Foundation have been playing an important role in the development of the South African information industry and with their assistance several initiatives were kick- started.

Established South African Repositories and Their Associated Content

eIFL in particular has been very supportive of open access and the development of repositories in South Africa – especially at the academic institutions [10] [11]. At a 2007 workshop, to review progress, several institutions were able to share their learning [10] [12] [13] [14]). South Africa currently gives access to at least nine open access repository collections at several of its academic institutions. In addition the Council for Scientific and Industrial Research (CSIR) has also established its repository. Obviously these repositories, as a collection, have become a vehicle through which South African collections could be made accessible to the rest of Africa and ultimately to the rest of the world. Detailed information about each of the repositories is available from OpenDOAR [15].

Institution	When established	Typical content	Application

UP	2000	Electronic theses and dissertations.	ETD-db
University of Johannesburg	2003	Electronic theses and dissertations	ETD-db
University of the Western Cape	2004	Electronic theses and dissertations.	ETD-db
Rhodes University	2005	Publication output of the university	ePrints
University of Cape Town	2005	Subject based university repository. Publication output and theses and dissertations from its Computer Science department are provided.	ePrints
UP	2006	Publication output of the university as well as digitised historical and archival materials donated to the university.	DSpace
Stellenbosch University	2006	Theses and dissertations but also contains maps and items from the university's special and manuscript collections.	DSpace
University of the Western Cape	2007	Materials related to the study, practice and governance of higher education in South Africa .	AHERO platform
CSIR	2007	Research outputs (publication and reports) of the institution.	DSpace
Durban University of Technology	2008	Electronic theses and dissertations.	DSpace

Table 1: South African institutional repositories

The majority of these repositories were apparently established in isolation with very little known interaction amongst those who were actively involved. The situation changed drastically early in 2007. Many more institutions are investigating the development of repositories and a large number of special collections has been identified to digitise and bring online. Funding remains a concern. An informal mailing list [16] was created for members from African and South African institutions with a common interest in institutional repositories. The list is hosted by UP and is actively used by the community. Individuals are starting to collaborate, to share ideas, find solutions, and come up with innovative ideas regarding the use of their institutional repositories.

Electronic theses and dissertations was clearly the initial focus. More and more of the institutions are now investigating the possibility of making their special collections accessible to the wider South African community and researchers internationally.

Repository Establishment at the University of Pretoria

Bothma, Pienaar and Hammes [17] provide a full description of the process followed. In essence the University decided to align itself with the proposals put forward by the SARIS project team. This decision was captured in various strategic plans of the University and the Department of Library Services. The Strategic Plan of the University for 2007-2011, for example, states:

'[w]e believe it to be essential that the opportunities afforded us by these developments [the development of new technologies] should be fully exploited. We intend ensuring that this is the case' and '[t]he University of Pretoria will enhance the impact of its research and leverage the potential of its academic staff, students and networks of cooperation' [18]

Based on this the Department of Library Services (previously known as the Academic Information Service or as AIS) developed its own e-strategy, which has as its goal the creation of an integrated seamless eService for the University of Pretoria. The objectives of the e-strategy are:

- To support education innovation and research excellence at UP;
- To deliver optimal e-information portal services (workflow) to our clients, and
- To take part in and make a contribution to international and national e-information phenomena, e.g. open access, digital preservation, e-Science, content management. [19][20][21]

Key projects were initiated to support these objectives. This paper focuses on only two of these projects, viz. the UP electronic theses and dissertations database and the UP digital repository, with a number of collections, such as a repository of all UP research articles and special collections.

UPeTD: The UP Electronic Theses and Dissertations Database

The University decided in 2000 to start with a pilot project to make theses and dissertations available online. 'Our theses and dissertations are proof of excellent research work done at high cost for the university as well as for the country: they deserve to be read widely' [22]. Within the IT framework of the UP it was decided to use open source software and open standards. At the time the ETD-db software developed by researchers at Virginia Tech was the only real solution for theses and dissertations and was chosen as platform. It is freely available through the NDLTD (Networked Digital Library of Theses and Dissertations), an 'international organization dedicated to promoting the adoption, creation, use, dissemination and preservation of electronic analogues to the traditional paper-based theses and dissertations'. In the near future however, the database will migrate to one of the newer platforms.

The required policies and procedures were developed, and detailed workflow was documented, as indicated in Figure 2. In 2003 the first manuscripts were uploaded. Initially submission was voluntary, but a decision was taken by Senate that all students registered for a Masters or a doctorate from January 2004 had to submit their research in electronic format, either directly to the repository or on CD to Faculty Administration, before graduation. Minimum specifications [23] for ETDs were set and detailed guidelines and tutorials [24] were made available to students to simplify the process.

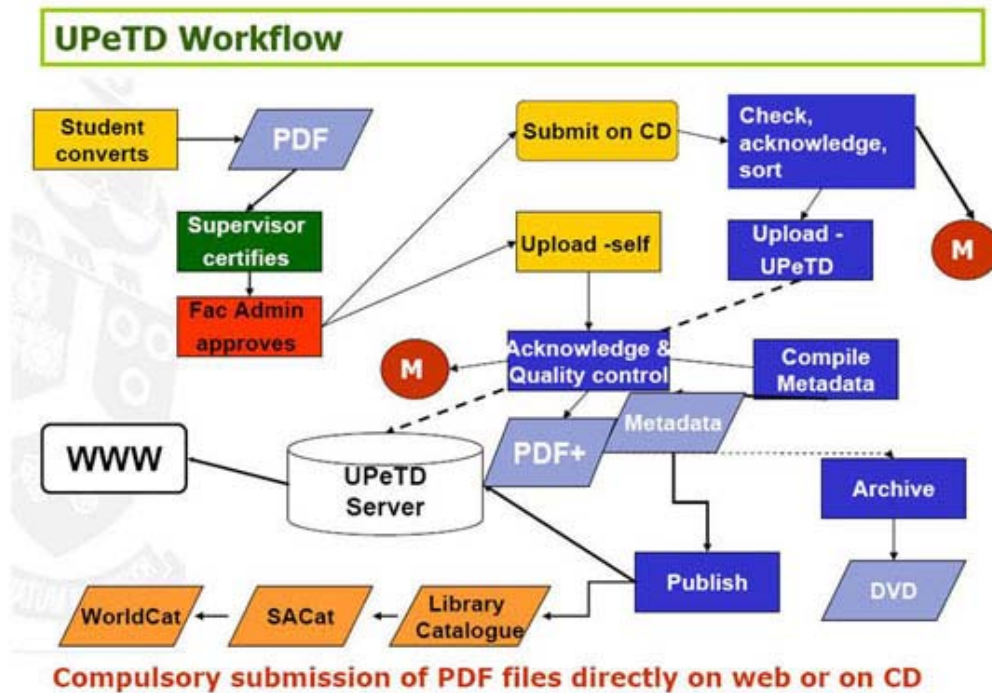


Figure 2: UPeTD workflow [22]

Titles and abstracts of all theses and dissertations at the UP have been retrospectively added to the database, even though not all theses and dissertations are available in full text. Currently there are 3,226 titles in the database, of which 3,108 are available in full text. Once the data has been submitted to the database it is automatically harvested by various harvesters, *inter alia* Google Scholar.

A recent survey of doctorate holders whose theses are available in the database indicated a number of very positive outcomes for their careers and scholarly collaboration [25]. It is evident that the UPeTD has made theses and dissertations at the University of Pretoria much more accessible and widely read. This then led to a decision also to investigate the possibility of expanding the service to other collections and the digital repository project team was established.

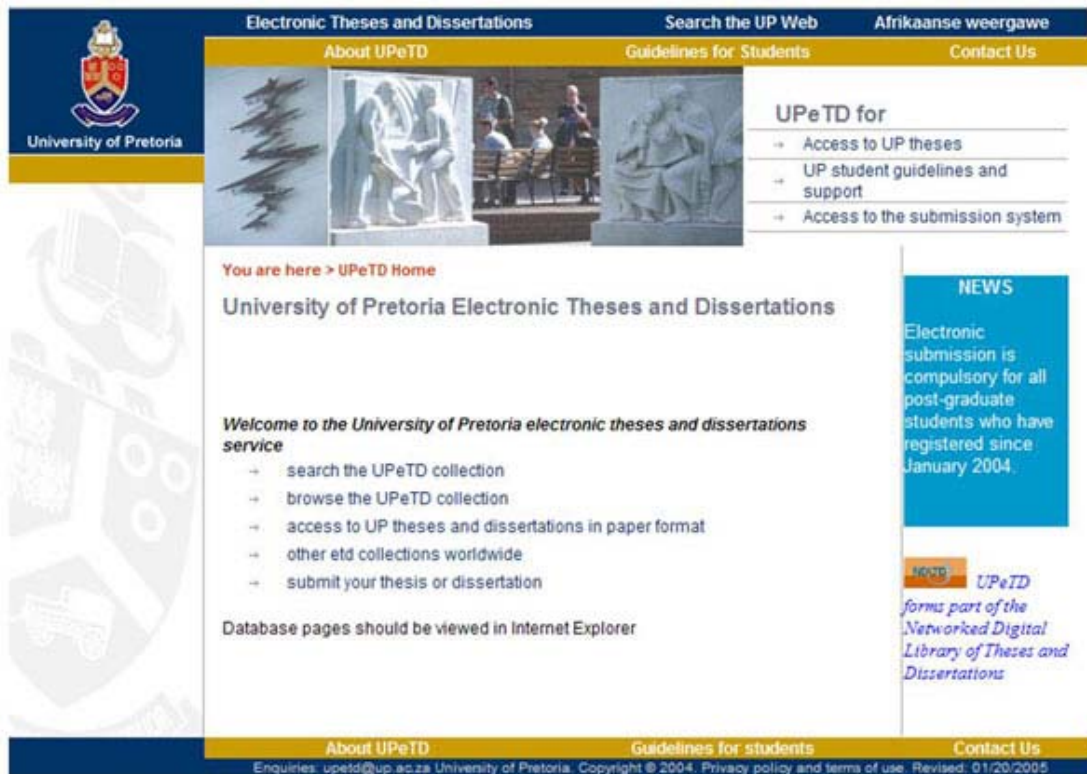


Figure 3: The home page of UPeTD [26]

UPSpace: The UP Digital Research Repository

The UP digital repository project team evaluated, over a six-month period in 2004, several open source and commercial software platforms, e.g. Greenstone, Innovative, Fedora, E-prints, DSpace, and I-Tor. DSpace was eventually chosen because it fitted the UP IT architecture and supports a distributed approach to an institutional digital repository.

The DSpace digital repository model is illustrated in Figure 4. DSpace is modular and therefore supports the creation of different repositories, even across institutional boundaries [27].

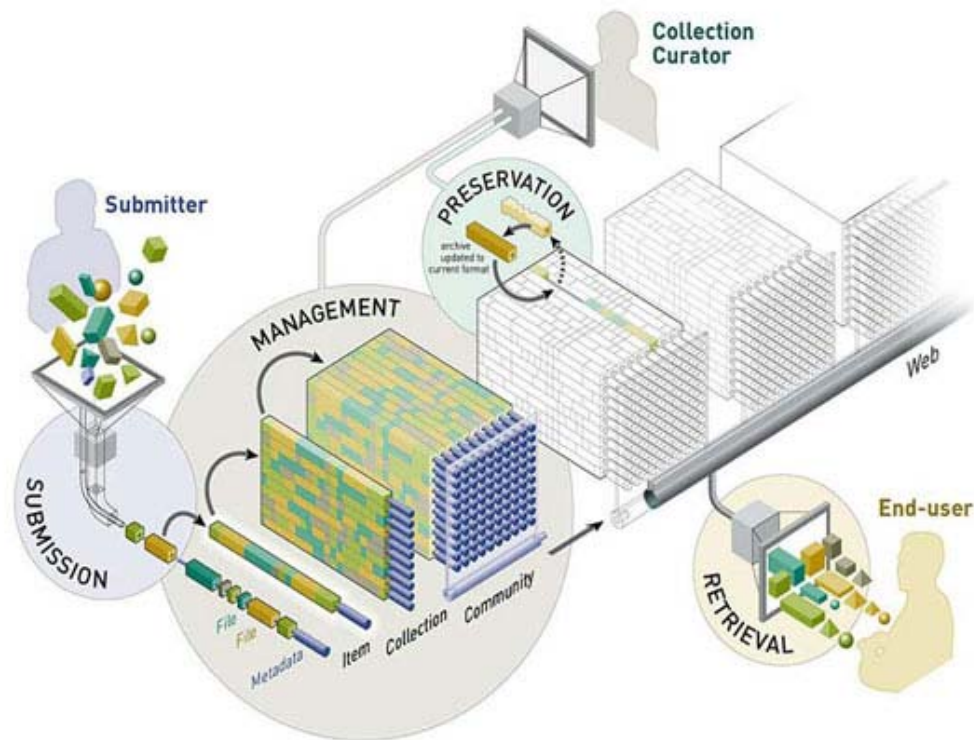


Figure 4: The DSpace digital repository model [27]

DSpace was further developed in 2005 to support UP requirements, e.g. authentication via the UP portal and extensions to the metadata. A UP digital repository management team was created with specific areas of responsibility; see Figure 5. Specialist roles were identified and allocated to individuals to manage. Collection managers were appointed for different focus areas, e.g. scholarly communication (including e-prints), special and Africana collections, Veterinary Science Faculty, Department of Architecture, Education Faculty and the Mapungubwe Museum. The collection of scholarly articles is known as openUP, and comprises a sub-collection of the larger UPSpace collection.

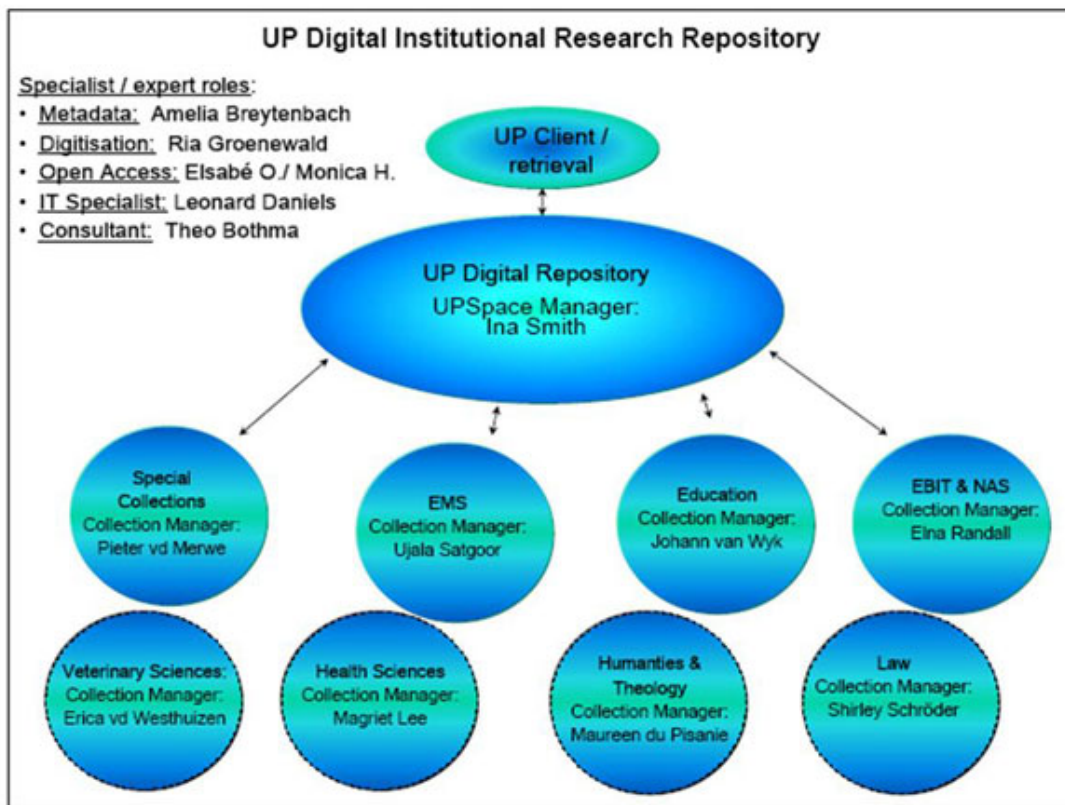


Figure 5: UP digital research repository management team

At the time of writing 2,845 full-text items had been uploaded to UPSpace.

Figures 6-8 provide screen captures of examples from the different collections, viz. the general home page of UPSpace (Figure 6), a research article in openUP (Figure 7), and a compilation of images from various cultural collections in UPSpace (Figure 8).

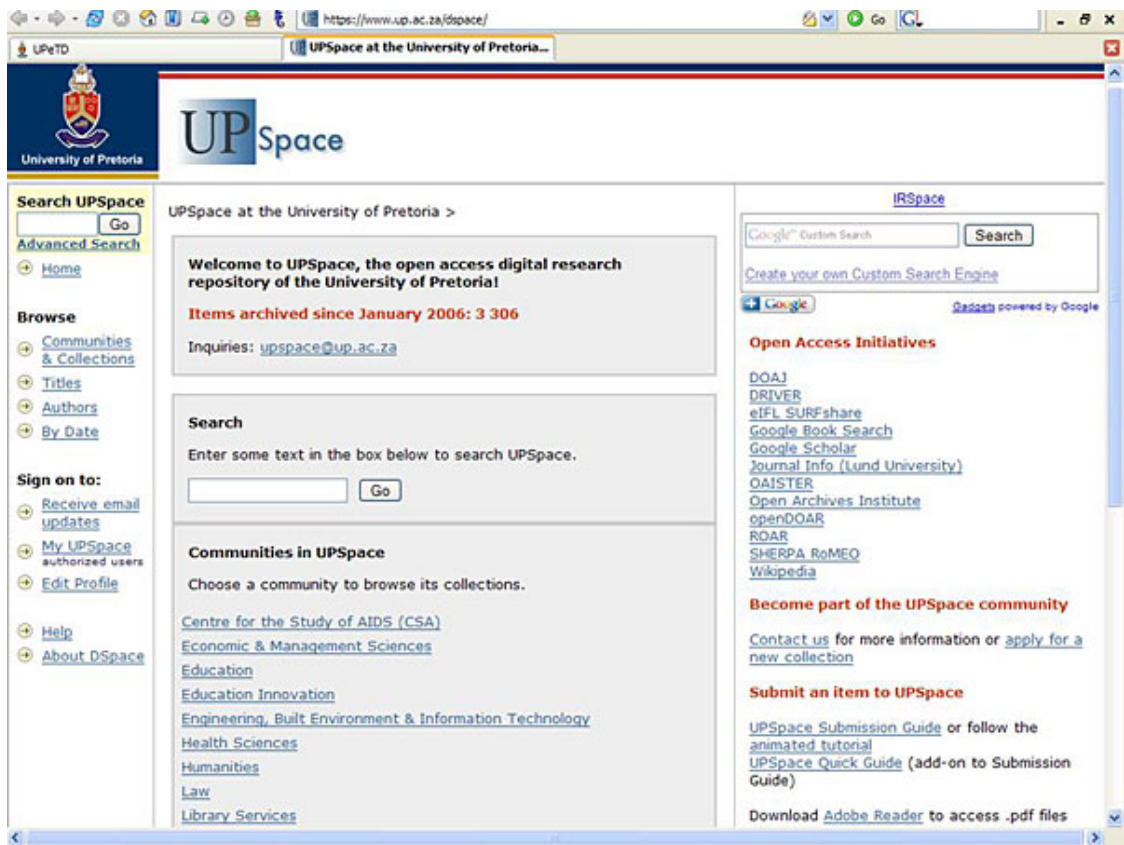


Figure 6: The home page of UPSpace [28]

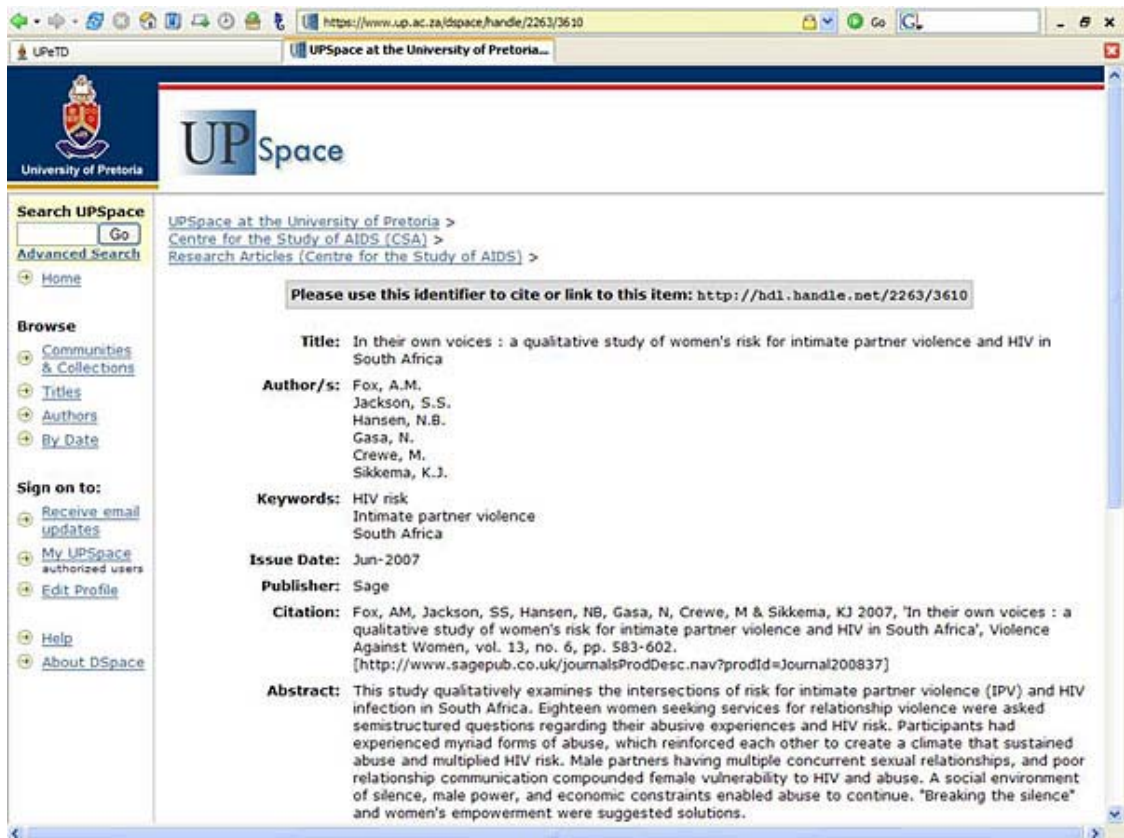


Figure 7: UPSpace – example of a published article

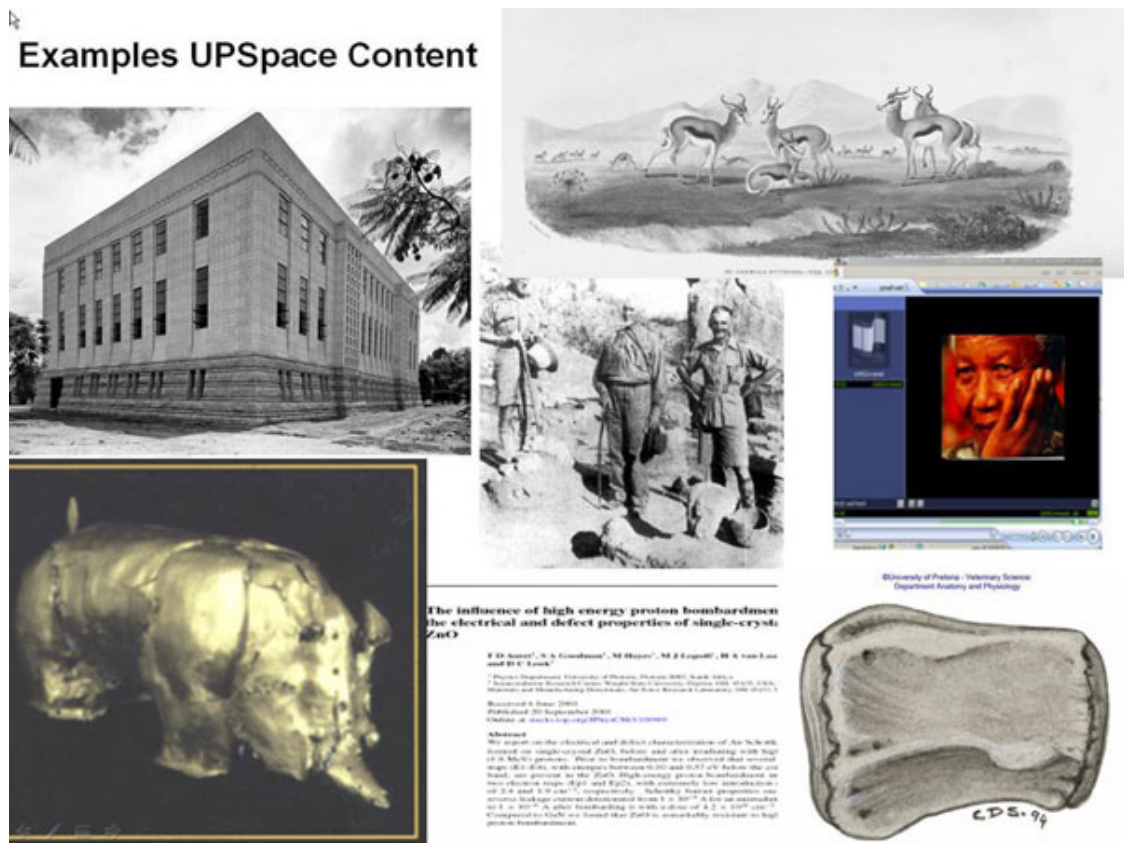


Figure 8: A compilation of images from various cultural collections in UPSpace

The ideal is to create an integrated view of UP research and researchers, by linking researchers' CVs, the University's annual research report and the full-text articles:

- Researchers can, at present, provide links from their CVs on their personal and/or departmental Web pages to their full-text articles in UPSpace.
- The Research Office of the University is tasked to compile a full bibliographic list of all research at the University, and this is published in the annual Research Report. These annual reports are available online [29]. At present there is no direct link between the bibliographic listings in the annual research reports and the repository but it is envisaged that this will be in place for the 2008 report.

Initially researchers were very hesitant to have their research archived in the UP repository. Many reasons were offered for this reluctance, which included issues about copyright and the extra work it entailed. However, more and more researchers are being convinced that the effort is worthwhile because their research is becoming much more visible to the international scholarly community. Top management at the University has also been convinced of the value of the digital repositories, and a strategy is being developed to make submission of full-text articles in the repository compulsory, as in the case of theses and dissertations.

Transferring Experience and Knowledge to the Special/Corporate Library Environment: The CSIR Experience

Although its core activity is research, the CSIR, in South Africa, falls outside the academic environment and functions rather as an implementation arm for government. The CSIR turned 60 in October 2005. This event marked major changes in the organisation. The two most relevant aspects here, are that the CSIR was given the responsibility to drive South Africa's **Open Source** initiative and that the organisation started investigating **Open Access** as a way to make its research accessible.

In October 2006 the CSIR Information Services (CSIRIS) was formally assigned the responsibility and mandate to establish an institutional repository for the organisation. CSIRIS staff members were already familiar with the issues associated with open access and institutional repositories and UP agreed to assist in the practical implementation and to support the fast-tracking the learning required. It was therefore seen as feasible to have a repository set up by January 2007!

From the outside it appeared that a repository is just another database and that the knowledge gained at UP could easily be transferred to the CSIR staff. For example it was necessary to know:

- Which is the best repository software to use? *UP shared their research results and CSIRIS also decided to adopt DSpace*
- Is the 'vanilla version' sufficient or are enhancements really essential? *UP facilitated meetings with their information technology consultants and it was decided not to make enhancements to the latest version of DSpace.*
- What is the server set-up, how much computational power is required and how is security managed? *The discussions that followed convinced the CSIR staff that it would be better to establish a separate server and the necessary server was ordered.*
- What items could be selected and under what circumstances may these items be placed in the repository? *UP gave directions to SHERPA and shared their experience. CSIRIS developed a three-phase implementation plan to ensure that any and every suitable artefact could be uploaded to the repository.*
- Why use handles? *An introduction to Handles.net was provided and it was also decided to subscribe to the service.*
- Even ... "How does the metadata-data 'thing' really work and why Dublin Core?" was asked. *A Demonstration and notes on the use of metadata and metadata standards were provided.*
- What formats should be used? *Oops ... UP introduced the system help file!*
- What documentation needed to be prepared? *UP provided its templates and the CSIRIS staff were able to adapt these for own use.*

Fortunately the selection of content was less problematic than was expected. CSIRIS had been managing the CSIR's internal database (which was established in the early 1980's) since 2004. It was therefore not necessary to approach researchers to find appropriate content.

However, the January 2007 date proved to be totally unrealistic – mainly because the CSIR had also adopted a shared services management model which had removed all information technology (IT) expertise (as well as all servers) out of the library and into a central pool. This meant that CSIRIS had to queue its request for repository installation and technical assistance.

Rather than halting all activity, the collaboration history between UP and the CSIR libraries came to the rescue. It was agreed that CSIRIS staff would create a collection within the UP repository and that items would be added there. This procedure ensured that it was at least possible to gain the necessary skills in creating communities and submitting contributions on a daily basis.

Simultaneously it was decided to soften the urgent need to have a repository up and running immediately and instead to take some time to learn and to experiment. There was, for example, at that stage, no clear-cut proof that a repository would be the right tool for the CSIR. CSIRIS staff therefore identified a collection of 450 documents with which to experiment.

These documents were manually uploaded to UPspace, the UP's repository. Simultaneously our IT department revived the CSIR's eShop software which was previously used to sell documents. The same set of documents was uploaded to the eShop mainly to compare effort and system functionality. It was not communicated that open access content had been added to the CSIR site. Fortunately the fact that the CSIR site is indexed by Google was overlooked.

CSIRIS staff members were still in the process of uploading documents when the IT department became aware of additional activity on their server. By the end of April 2007 just fewer than 6,000 copies of documents had been downloaded from the eShop site. By the end of June, this figure had become more than 28,000 documents. After several presentations and discussions it was as if the organisation suddenly saw the potential of the initiative and a formal decision was taken to make the repository part of the integral design of the organisation's new Internet site. By this time the additional functionality available through repository software was clear and the decision to move to DSpace was widely supported. The repository became known as CSIR Research Space. Obviously the look and feel of the

repository design was influenced by that of the University.

When it came to populating Research Space [30], the CSIR's repository started deviating considerably from that of UP's. Although CSIRIS is the owner, the responsibility for the repository is now shared equally by three departments (Communications, IT and CSIRIS). The repository is currently in phase two of its development where it mainly contains copies of published material but where the organisation is actively identifying research report content that could be placed in open access. A good example of such report collections is visible in its deep level mining collection where especially mine health and safety reports have already been uploaded. From the usage statistics, researchers from around the world appear to find these reports useful.

Obviously the key stakeholders, government departments, are also pleased because, in support of the CSIR's core mandate (to improve the quality of lives of ordinary South Africans), publicly funded research has become more accessible to a wider community.

Full-scale digitisation of collections is not currently a realistic option. Digitisation forms part of phase three activities and is planned to take place once the backlog of all born digital items have been uploaded. Currently a 'scan-on-demand' option is followed where, once a paper copy is identified and requested by any client, the item is digitised and uploaded to the repository. Although the repository does also contain isolated instances of video, sound and data files, it will for the next three years, at least, contain predominantly textual artefacts.

CSIRIS' activity is initially focused on adding content but it is also starting to do analysis of use. Previously impossible statistics, regarding the use of material created by the organisation is suddenly possible and the availability of such information would in future become very useful.

Opportunities and Challenges of the Knowledge Transfer Exercise

The majority of the challenges could be linked to change management issues although there were also technical constraints. The opportunity to collaborate and to fast-track the development of at least one repository, we believe, has suddenly made the activity a viable option for other institutions. UP is currently in the process of assisting two academic institutions in their endeavours while the CSIR is influencing other science councils to follow a similar route.

Some of the obvious opportunities from this knowledge transfer process were that:

- The standard time that it takes to set up a successful repository could be considerably reduced.
- Every new installation is unique and therefore every installation will bring about further learning that could be applied to the benefit of the community as a whole. Learning gained while creating linkages to the CSIR's Internet site led to new linkages between UPspace and the UP's CV database.
- Every installation allows for new experimentation and further skills development – an aspect which is extremely important in the South African context. This initiative led to the employment of several newly graduated interns at the CSIR. All of them have since been employed full time at a variety of employers - releasing new skills to the wider community.
- Being within a community of peers (not isolated and struggling) gave practitioners considerably more confidence – especially to experiment with new ideas.
- The library is now also seen as a 'publisher' of information and knowledge and not only as a user and conduit of published information.
- Open source and open access accelerate learning. Tips and techniques are available from a wide variety of Internet sources! The more people actively seeking them out with the intention of improving the repository system as a whole, the better!
- Commitment from organisation leadership is extremely important - also when developing repositories. Sometimes activities work serendipitously, and when such opportunities become visible, they have to be exploited for what they are worth. The fact that CSIRIS staff could use IT's statistics and convince management of the importance of the endeavour is a prime example.
- The first step in exploiting new opportunities is to establish trust and to honour the trust amongst all participants. Only then does the learning, the experimentation, the hard work and the sheer pleasure of accomplishment become a reality.

The most important challenge is not to plan the perfect repository! Repositories should not be equated to

brain surgery – no one will die if the repository is not perfect with all possible bells and whistles. Other key challenges are that:

- One should not expect to have the same *in-depth* understanding of the inner workings and the background as the original investigator. It often feels as if this approach is a continuous process of 'catch-up'. It is only when one is able to start contributing small tidbits of additional learning that the process starts becoming manageable.
- Much patience and time is needed when knowledge is 'action' transferred – often when it is least available! Interaction needs to be planned and managed or the teaching process could become all-consuming!
- If one allows IT infrastructure and/or software to be stumbling blocks ... they will be. The repository software is not the issue. The repository is. It is much more important to make the content available than using what constitutes the state-of-the-art technology.
- Knowledge transfer is not the same as playing a game of catch-up. There is the added responsibility of putting back into the system any new learning. It is important not to disregard what may appear to be trivial learning since this hinders the interchange of ideas and encourages distrust.
- Personal knowledge transfer and personal networks remain key to ensuring successful learning partnerships. Ultimately people make the initiative successful and therefore people skills are extremely important!
- It could be necessary to invest new time and resources. CSIR had to invest in a new server and it employed extra hands (interns) to cope with the additional workload.

Notwithstanding these challenges – South Africa's knowledge needs to be set free and launching a repository is one step closer to that goal. Once the organisation and the researcher become aware of the benefits, there is no back-tracking - it is just a question of getting past the initial hurdle!

Sharing Knowledge to Encourage Repository Activity in Southern Africa

The creation of the various digital repositories has had a huge influence on the working lives of many librarians / information specialists. Many had to be retrained (or had to retrain themselves) to adapt to the new environment, to become collection managers, digitisation specialists, metadata specialists, open access managers, etc. There are many new challenges for information specialists as well, which include the following; they have to:

1. support the strategies and objectives of the institutional repository projects;
2. influence the mindsets of colleagues in the library and also of researchers that may be hesitant to accept these new ideas;
3. encourage knowledge transfer;
4. motivate others to share, learn, apply their new knowledge;
5. communicate new ideas and new ways of working effectively to their colleagues;
6. identify new opportunities; and
7. mentor others that may be struggling in the new work environment [31].

A number of communities of practice emerged spontaneously to share the required knowledge to work effectively in the new environment. Many are willing to share their experience in public forums. For example the process to assist the CSIR was documented and presented at the IFLA Knowledge Management Workshop in Durban in 2007 [32].

The expertise that the UP team has developed is starting to have a wider influence as well. Representatives from SARUA (the Southern African Regional Universities Association, an umbrella organisation for universities in the southern part of Africa) visited UP in October 2007; they were most impressed with what the team at UP has accomplished and they are looking forward to working with UP on the development of institutional repositories at all universities in the region [33]. This sharing of knowledge is happening across institutional boundaries within South Africa as well. Members of the UPSpace team now work closely with information specialists from a number of academic institutions to help them develop digital repositories as well.

Many additional initiatives for sharing knowledge about institutional repositories are envisaged. This includes the creation of UP's 'The Institutional Repository Toolbox' workshop which will guide information specialists to set up institutional repositories in their own organisations. A wiki with

references and links to articles on institutional repositories is being developed.

Conclusion

Initially it took a huge amount of time and effort to initiate an institutional repository – this was evident both at UP and also at the CSIR. Many people, *inter alia* senior management, had to be convinced that these are worthwhile efforts. Hardware and software had to be evaluated, bought and installed, policies and procedures had to be put in place; information professionals had to be retrained; the mindsets of researchers (and a number of information professionals!) had to be changed. Only then could the real work of populating the repositories be started.

However, as the collections grew, the enthusiasm for the digital repositories also grew, and senior management realised that their support for the endeavours was justified. More and more researchers are becoming convinced that open access and open scholarship work to their advantage. The skills that the information professionals have acquired have empowered them to work effectively and efficiently in this new digital environment. They have acquired new skills and new confidence. Through communities of practice, listservers, presentations, personal interaction and consultation, they have been able to share their knowledge and expertise with information specialists from many institutions in South Africa and further afield.

Through the direct involvement in this project we are convinced that the hard work of transferring the knowledge to set up the CSIR's repository was worth every second spent on the process. It is clear that:

- UP, CSIR and research from the other South African repositories have become much more visible to the rest of the world. This combined effort has also made South African research more visible. (The downloaded dissertations and research articles provide silent testimony.);
- Researchers, who were originally rather reluctant to participate in the different projects, have become enthusiastic supporters. (Once they realise that their research is being accessed by a much wider international audience they become very active supporters.);
- Information professionals feel empowered through the process of re-training. The spontaneous establishment of various communities of practice is but one manifestation of new-found confidence; and that
- The skills and expertise of the information professionals keep on growing. This growth in knowledge and professionalism is essential once we start consulting each other to set up more repositories.

In short: the gains outweigh the problems by far. All that is needed is the gumption to identify a learning partner and to start experimenting. We are very positive about the future of repositories in South Africa. True: repositories will not totally eradicate the many knowledge divides that exist in the country but they, at least, will continue to provide a narrow bridge that could be used to access knowledge that could change lives.

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[Return to top](#)

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[Section Menu](#)

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