

University of Wollongong

Research Online

Senior Deputy Vice-Chancellor and Deputy Vice-Chancellor (Education) - Papers Senior Deputy Vice-Chancellor and Deputy Vice-Chancellor (Education)

1-1-2014

Embed and engage! Delivering a digitisation program at the University of Wollongong Library

Rebecca Daly

University of Wollongong, rdaly@uow.edu.au

Michael Organ

University of Wollongong, morgan@uow.edu.au

Follow this and additional works at: <https://ro.uow.edu.au/asdpapers>



Part of the [Arts and Humanities Commons](#), and the [Social and Behavioral Sciences Commons](#)

Recommended Citation

Daly, Rebecca and Organ, Michael: Embed and engage! Delivering a digitisation program at the University of Wollongong Library 2014, 220-237.

<https://ro.uow.edu.au/asdpapers/476>

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

Embed and engage! Delivering a digitisation program at the University of Wollongong Library

Abstract

The digital environment is growing rapidly, through ubiquitous and increasingly powerful personal computing devices, and the demand for information to be accessible. Libraries and archives, as traditional providers and storehouses of content, are adapting to this changing environment by adopting new and innovative digital content delivery mechanisms to unmask their special collections. In 2012, the University of Wollongong Library implemented a comprehensive digitisation program for its unique archival and research collections. Film, photographs, documents, artworks and audio are being made available online through several platforms and delivery tools in combination, complementing the increasingly important role played by the library in supporting research, education, and community engagement. The implementation of a Digital Collections Portal has channelled Australian and international audiences to the library's digital content. Open access to collections is a key library goal, with success measured in part by the amount of material made available and the number of times it is downloaded. With a focus on building collections, prominent issues such as format shifting, metadata production, and methods of open communication have been resolved as the library develops expertise and knowledge in managing an embedded digitisation programme.

Keywords

embed, library, wollongong, university, program, digitisation, delivering, engage

Disciplines

Arts and Humanities | Social and Behavioral Sciences

Publication Details

Daly, R. & Organ, M. 2014, 'Embed and engage! Delivering a digitisation program at the University of Wollongong Library', *Australian Library Journal*, vol. 63, no. 3, pp. 220-237.

Embed and engage! Delivering a digitisation program at the University of Wollongong Library

REBECCA DALY AND MICHAEL ORGAN

The digital environment is growing rapidly, through ubiquitous and increasingly powerful personal computing devices, and the demand for information to be accessible. Libraries and archives, as traditional providers and storehouses of content, are adapting to this changing environment by adopting new and innovative digital content delivery mechanisms to unmask their special collections. In 2012, the University of Wollongong Library implemented a comprehensive digitisation program for its unique archival and research collections. Film, photographs, documents, artworks and audio are being made available online through several platforms and delivery tools in combination, complementing the increasingly important role played by the Library in supporting research, education, and community engagement. The implementation of a Digital Collections Portal has channelled Australian and international audiences to the Library's digital content. Open access to collections is a key Library goal, with success measured in part, by the amount of material made available and the number of times it is downloaded. With a focus on building collections, prominent issues such as format shifting, metadata production, and methods of open communication have been resolved as the Library develops expertise and knowledge in managing an embedded digitisation program.

Introduction

The transformation of Australian academic libraries from storehouses of paper-based resources to distributors of digital content has occurred in a relatively systematic manner since the late 1990s (Novara 2009, Tharani 2013, Charlton 2013). The advent of in-house CD-stacks of journal articles such as GPO (General Periodicals Online) and the first online indexing databases around that time was quickly replaced during the first decade of the new millennium with full text and citation databases, along with the internationalisation of online Interlibrary Loan networks able to supply almost any research publication in an ever diminishing timeframe (Ianello 1996).

Whilst the vast majority of such digital library products were produced by external publishing houses and suppliers, local digitisation projects were, in comparison, slow to appear (Allen 1998, Anonymous 2004 and 2008). Technological constraints such as limited storage capacities, slow internet speeds and platform development inhibited innovation and takeup, alongside contingent policy development by the library sector (Waller and McShane 2008).

One significant marker of the gradual adoption of in-house digitisation programs by Australian university libraries was the implementation of the Australasian Digital Theses (ADT) initiative in 1998, whereby the majority of Australian and New Zealand universities participated in the creation of a federated collection of digitised higher degree research theses (Council of Australian University Librarians 2013). The University of Wollongong (UOW) Library was a participant in ADT and mandated the collection of digital copies of research masters and PhD theses from 2002. Library staff were often required to reformat theses supplied by student authors and digitise

supplementary thesis material. This was the first tentative step down the path of an internal digitisation program.

Around this time the open access movement gained traction, largely as a result of concerns by the academic community that their published research outputs were being locked away behind the password protected firewalls of the new publisher online databases (Suber 2013). The idea of a local, open access repository of institutional research outputs was adopted world-wide. The open access movement in Australia received an additional impetus in May 2004 when Prime Minister John Howard announced the development of a Research Quality Framework (RQF) assessment exercise across the higher education sector, to take place in 2006. Open access repositories would form a core piece of RQF infrastructure, supporting the initiative and funded under the Australian Scheme for Higher Education Repositories program (Organ 2010).

The digital prerogative

In anticipation of the RQF, in 2005 UOW set up a campus-wide Content Management System project team to consider the necessary platforms and software to accommodate local research outputs. The Library played a key role in this project which resulted in 2006 in the adoption of the Bepress Digital Commons platform for the open access repository – locally branded Research Online (University of Wollongong 2006).

A Manager Repository Services and Repository Officer were employed within the Library to manage Research Online. These two staff populated the repository with digital files obtained from authors and externally. The phasing out of the ADT program in 2007 saw the transfer of the Library's digital theses to Research Online

the following year and the mainstreaming of that process to ensure all new higher degree research theses passed into the repository (Figure 1).

By 2008 the Library had increased engagement with the Research Services Office who had put in place support for campus-wide research infrastructure. This brought about a strategic rethink by the Library Executive team; a group comprising the Director Library Services, and Associate Directors of Resources, Clients Services, and Technology. The Executive became increasingly attentive to the fact that research support and visibility in the research space were desirable for stakeholders such as the University executive and faculty. An element of this was active participation, and in certain instances ownership of, Higher Education Research Data Collection (HERDC) and RQF/Excellence in Research Australia (ERA) related processes, plus an enhanced outreach program and, finally, the digitisation of unique collections. The latter were held locally (e.g. within the University Archives) or sourced externally. A formal digitisation program would be required to manage all of these initiatives.

During 2009, the Library was asking itself the question: “How do we manage the increasing number of digital files we have?” Cataloguing expertise in the Library had historically focused solely on providing access to non-UOW content acquired in the collection development space and made accessible via the Library catalogue, using cataloguing standards such as Marc, AACR2, Dewey, and Library of Congress subject headings. The Library’s cataloguers had little input in cataloguing non-traditional, Archives collections (except Rare Books), or content held in Research Online. These areas had developed their own methods of description, such as using Finding Aids in Archives, and basic Dublin Core metadata in Research Online. In

terms of housing digital files, Research Online began to collect a variety of materials, though the University's primacy was for the system to represent its research output.

Expanding the Library's scope to present other types of UOW digital content drove a rethink of the Library's capacity to support a diverse digitisation program. A new role was created in the Library: the Copyright and Digitisation Officer, merging ownership of Copyright advice for University clients, and the new agenda of coordinating Library digitisation activities which, at that time, were planned as future projects.

Necessity drove the first digitisation initiatives. The initial projects undertaken by the Copyright and Digitisation Officer were the digitisation of the University's corporate publications and print theses held in the University Archives, located in the Library. This material was highly referenced by current and past students and other clients, resulting in high levels of intervention by Archives staff. Due to a lack of internal digitisation infrastructure and staff resources, an investigation of document digitisation vendors was undertaken, resulting in the selection of CAVAL, an Australian company providing services for libraries across the Asia Pacific (CAVAL 2014). A program of gradual digitisation of the more than 2000 print theses was undertaken, with digitisation priority based on usage and local interest. This program is still continuing, resulting in upwards of 200 retrospective theses digitised per year. Corporate publications were also outsourced to CAVAL. Without a suitable platform for making these documents available online, the Library listed them by date and title within the UOW Archives website. The files could be found through Google searching and began to be regularly accessed, although it was recognised by the Library that use of the University's internal content management system was not an ideal hosting solution.

Targeting Archives

In 2010, the institutional repository hosted several UOW journals, a moderate number of research publications, and UOW higher degree research theses. Several hundred corporate publications were listed on the Archives website. A wealth of other content was held in the Archives, inaccessible to all those unable to make an appointment and visit the Archives in person. At the beginning of 2010, the new Library Director, Margie Jantti, was appointed. The Director shifted the strategic focus, projecting the Library vision for a stronger online presence, catering to clients globally and emphasising the availability of UOW content as the Library's unique offering in the digital space. A new direction for digitisation was forecast, centring on UOW Archival collections (University of Wollongong 2010). The transformation of services for the digital era became a compelling vision for the Archives.

The Archives collection is singular in its physical access restrictions, usually requiring an appointment and on-site visit to view material within the parameters of the Archives Reading Room. Collections within the Archives have a distinctly local edge to them, often comprising material either related to UOW or the Illawarra region. In some instances, collections unrelated to the Illawarra locale may have been donated by a researcher with an affiliation to the area. The majority of holdings comprise collections of local cultural, political, industrial and educational content, of intrinsic historical interest. Much of this material has long been of research interest to a range of clients, both locally and more broadly. Still, the Library was not in a position to begin a program of digitisation. A framework for undertaking the logistics of digitisation and integrating key Library expertise was needed.

Developing a digitisation framework

At the instigation of the Library Executive, a project team was formed within the Library to establish a framework for progressing digitisation projects and making UOW content and collections available in a digital form. The seven member team comprised key stakeholders from Archives, Technology Services, cataloguing, the repository, and the Copyright and Digitisation Officer. The terms of references for the project team were defined as follows:

- Identifying potential Library projects for digitisation;
- Identifying suitable platforms and methods for storage, preservation, and discovery, including capacity to interoperate with existing systems used;
- Recommending metadata standards and schema;
- Determining digital access requirements to ensure copyright compliance;
- Determining logistical arrangements regarding communication, workflows and resourcing across Library teams.

The project team were given a two month window to complete their intensive investigations and produce recommendations for the Library Executive to inform a consolidated strategy for developing a digital collections program.

The project team's assessment of collections where some degree of digitisation had been completed showed an absence of standard practices in the Library regarding the quality of digitisation, the preservation and the storage of digital items, and discoverability. The only vendor that provided permanent preservation of objects and long-term storage with regular back up was Bepress, proprietor of the software supporting Research Online.

The project team's recommendations were thorough and the test of time has shown that not all were relevant or necessary and, therefore, not implemented. For

example, the group recommended that a Data Management Policy be developed, though the Library Executive felt that the basic digitisation program needed to be embedded before the Library developed policy material identifying its approach to managing digitised content. The group also recommended the creation of new staff positions and a team dedicated to digitisation. This recommendation was taken under advisement, requiring consideration of larger workforce planning issues. Staff support of digitisation processes was later planned as part of a larger review of services in the Library (discussed below), and resulted in the allocation of existing staff across services. The following recommendations were addressed due to their necessity to building a sustainable program of digitisation within the Library:

- Establish a Digital Collections Advisory Group comprising internal expertise related to digitisation activities, to provide advice and oversee the projects related to the availability of UOW content and collections in a digital form.
- Commitment of funds and dedicated staff to undertake digitisation projects. This included the suggestion that external funding sources be investigated as a supplement to those possibly contributed from the Library budget.
- Establish workflows.
- Acquire dedicated scanning and file manipulation equipment.
- Introduce appropriate metadata standards.
- Introduce preservation and delivery systems and storage.

During the two-month period, the project team produced deliverables that contributed to the establishment of the digitisation program. These included:

- A Digital Collections Significance Register. This document records the collections and scores them based on organisational priorities. The three tier register is

shown in Table 1. Based on a scoring system, the register provides a matrix for determining order of priority in planning digitisation activities. Development of the register was founded on the complete listing of collections within UOW Archives.

- A basic workflow map to identify the steps involved in digitisation, including decision points regarding funding and outsourcing of digitisation.
- A Service Provider Register created by the Copyright and Digitisation Officer, outlining the digitisation services available through each provider and their performance to date.

Table 1. Three tier Significance Register

Assessment tier	Criteria
Significance assessment of broad collection	<ul style="list-style-type: none"> • Overall relevance to research or teaching for UOW clients • Contains unique material • Preservation (at risk) condition
Score	/12
Significance assessment of individual collection	<ul style="list-style-type: none"> • Overall relevance to research or teaching for UOW clients • Contains unique material • Preservation (at risk) condition
Score	/12
Feasibility assessment of individual collection	<ul style="list-style-type: none"> • Number of requests over previous 10 years • Shelf quantity • Amount of material

	<ul style="list-style-type: none"> • Range of physical format • Contents listed • Access restrictions • Geographic relevance • Item uniqueness • Preservation condition • Copyright status • Anticipated time to complete • Overall priority (Low/Medium/High)
	/12

Not all collections were thoroughly assessed against the Significance and Feasibility criteria, as there remained a range of collections that were either too sensitive to release to the public, or for which copyright ownership was problematic, or the scale of the collections was uncertain due to a lack of resources in Archives to assess them. Table 2 shows a snapshot of the tier 2 Significance Assessment for Individual collections that was undertaken by the project team for research records held in the UOW Archives and for which a complete assessment was performed.

The Feasibility Assessment was a more detailed analysis of each collection. Table 3 shows the assessment made for the Percy Cochrane Papua New Guinea Collection, which later became one of the most accessed digital collections made available as a result of the program.

Table 2. Detail of Significance Assessment Summary Register for Individual Archival Collections at UOW Library

Accession No.	Collection title	Relevance to research or teaching for UOW? Low=0 Med=2 High=4	Contains unique material? Low=0 Med=2 High=4	Preservation (at risk) condition? Low=0 Med=2 High=4	Overall assessment rating /12	Copyright, access permission issues?
D55	John Robertson Hawke - WW1 letters	4	4	4	12	no
D153	Winifred Mitchell & Geoffrey Sherrington - Growing Up in the Illawarra	4	4	4	12	some
D75	WIN 4 (TWT)	4	4	4	12	yes

	Television					
D235	Theatre South	4	4	4	12	yes
D206	Bomaderry Rest Home	4	4	3	11	no
D94	William Peascod Drawings	3	4	3	10	yes
D68	James Seymour Hagan	4	3	2	9	no
C27	Illawarra Historic Photographs, 1880-1920	3	2	2	7	yes

Table 3. Feasibility Assessment of the Percy Cochrane Papua New Guinea Collection

Feasibility Assessment Detailed Register for Individual Archival Collection
FEASIBILITY INVESTIGATED

Accession No.	D160
Collection title	Percy Cochrane Papua New Guinea
Content type	Research Records
Archivist's comments regarding digitisation	Selected digitisation currently in progress: Audio reels only outsourced to Paradisec. No completion / return date available at this stage (Paradisec have equipment problems / delays). Possibility that material may now need to be transferred to third party for completion.
No. of requests in previous 10 years. low 0-3 med 4-6 high 7+	High
Shelf metre quantity	4 metres
Amount of material	24 boxes
Range of physical formats included	Manuscripts, correspondence, publications, photographs (500+ col. and B&W), slides (500 col.), audio reels (x73), film reels (x2).
Contents listed	Yes

Access (viewing) restrictions	Only on audio reels (due to fragility)
Geographic relevance (UOW/Illawarra/Aust/International)	International
Uniqueness	Unique items: manuscripts, audio reels and some photos. Not unique: slides copies previously and a set also held at QUT
Preservation condition	Paper items – good. Images – excellent. Audio – fair/good.
Copyright status: Unknown Third party Clear Mix of above	Mix: Some recordings are PNG radio broadcasts done for BBC/ABC. Others are Cochrane's own PNG music recordings. Photos taken from Comet Press and Australian Govt. News Bureau.
Overall assessment/priority rating	High

From cataloguing to metadata management

Cataloguing staff expertise was also required in the project team to determine standards of description of content, and to foreshadow interoperability issues that may arise when future collections are digitised and harvested in national databases, such as the National Library of Australia's future Trove database.

The first interoperability trial involved digitising ten historic photos from the Archives collection, and loading them into Research Online, the Library's only system capable of housing this type of material at that time. Cataloguing staff considered three issues: metadata compatibility with other relevant systems, the metadata standard to be used, and creation of metadata content.

Research Online uses the Dublin Core schema for description of content.

Cataloguing staff gained knowledge of this schema and mapped it to their understanding of cataloguing video, image, sound and composite media, undertaking an environmental scan of how the fields had been used by other organisations for similar purposes to determine their recommendations. In providing their recommendations to the project team, cataloguers decided not to include abbreviations, in line with the then upcoming RDA (Research Description and Access) standard. Table 4 shows the Metadata Fields Guidelines developed for digital materials with Dublin Core fields. All fields were deemed repeatable.

Table 4. Metadata Fields Guidelines developed for use with the ContentPro system, UOW Archives Online

DC FIELD	DESCRIPTION & INSTRUCTIONS
DC.Title	Enter the name given to the work by the creator, publisher or

	<p>UOW staff.</p> <p>Enter: Archival number Title : sub-title</p> <p>Use an initial capital on the first word of the title and lower case for the rest of the words, except for proper nouns which are capitalised; do not include initial articles A, An, The</p>
DC.Creator	<p>Enter the entity primarily responsible for creating the work. e.g. photographer</p> <p>Use authorised version of personal or corporate name from UOW catalogue, Libraries Australia or Library of Congress name authorities.</p> <p>If no authority enter: Surname, Forename/s, Dates</p>
DC.Subject	<p>Controlled vocabulary.</p> <p>Take appropriate heading/s from the collection record in the catalogue.</p> <p>Subject heading/s are from the Library of Congress and describe the subject of the collection.</p> <p>Personal names and corporations may be entered in this field as described under 'Creator'</p>
DC.Contributor or	<p>Enter another entity that has made a significant contribution to the work e.g. person responsible for creating the collection.</p>

	Enter personal or corporate names as described under 'Creator'
DC.Description	Enter details about the work, which can include summary or descriptive elements that were not covered by Subject. It can also include aspects of physical description that are significant.
DC.Rights	<p>We have 5 different rights statements which are added at collection level. Choose the most applicable statement for each item [statements omitted from table].</p> <p>For UOW Corporate Publications; items where copyright has been transferred to UOW; printed ephemera; photos taken after 1955; and recordings.</p> <p>For UOW theses supplementary material.</p> <p>For non-UOW items which are in the public domain or out of copyright.</p> <p>For non-UOW items still in copyright where the creator has given permission to reproduce.</p> <p>For non-UOW items where copyright has not been cleared.</p>
Date (DC.Coverage)	<p>Enter the date or span of dates over which the item was originally created.</p> <p>Enter the month in full</p> <p>If the day is not known only enter the month and year.</p>

	<p>If the whole date is guessed add '?' to the end</p> <p>If any part of the date is guessed add a '?' to the end of the part</p>
DC.Type	<p>Controlled vocabulary</p> <ul style="list-style-type: none"> • For film enter: Moving image • For audio enter: Sound • For works where the image is the feature enter: Image • For works where what is written is the feature enter: Archives
DC.Format	<p>Controlled vocabulary</p> <p>We use the Powerhouse Museum's Object Name Thesaurus located: http://www.powerhousemuseum.com/collection/database/thesaurus.php</p>
DC.Identifier	<p>Insert the archival number only.</p> <p>We want to be able to sort with this field so extra 0s may need to be added so they index correctly (same as current practice in title field).</p>
DC.Source	<p>Enter 'University of Wollongong Archives, collection' followed by the archival number. The archival number is made: collection number/series number/item number</p>

Controlled vocabularies were applied to three fields: DC.Subject, DC.Type, DC.Format. The vocabularies were chosen based on a scan of existing tools, ease of use, and interoperability purposes. Table 5 shows the controlled vocabularies used in describing archival digital collections and the reasons for their selection.

Table 5. Controlled vocabularies for digital archival collections at UOW Library

Dublin Core Field	Controlled vocabulary used	Reasons for using selected vocabulary
DC.Subject	Library of Congress subject headings	Familiarity. Subjects already created in catalogue for some collections.
DC.Type	Powerhouse Museum's Object Name Thesaurus (Powerhouse Museum 2009)	Large in scope, well maintained continuously, flexibility, capacity for user institutions to contribute terms. For example, UOW has contributed 'radio scripts'.
DC.Format	In-house option. Four fields only.	This was adopted to ensure accurate harvesting of data into external databases.

In 2011, through consultation with the Copyright and Digitisation Officer, and the University's Legal Services and Planning and Governance units, the Library received confirmation to apply the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Australia License, where appropriate, to some Archival material, such as:

- UOW corporate publications and printed ephemera, and photos and recordings taken after 1955.
- Non-UOW items where copyright has been transferred to UOW in writing by the copyright owner.

Embedding digitisation

In 2011, with a basic framework in place, senior managers within the Resources Division of the Library began to consider staff resourcing of digitisation activity. The Digital Collections Advisory Group (DCAG) was formed as a result of the project team, and comprised the Copyright and Digitisation Officer, and staff from cataloguing, Repository Services and Archives (Figure 1). The group initially coordinated whatever casual or other staff assistance was available to digitise small projects, and outsource small collections of materials. As standalone services not integrated into established workflows, repository and digitisation services suffered from inefficiency and lack of support. Without embedded staff resources to own and undertake a definitive plan for digitisation, the growth of the Library's digital collections was both piecemeal and slow.

Figure 1. Timeline of digitisation events at UOW Library.

2002	2006	2007	2009	2010	2011	2012	2013
UOW mandate collection of higher degree research theses in ADT.	UOW introduces institutional repository, Research Online.	ADT closed. All UOW higher degree research theses stored in Research Online.	Copyright and Digitisation Officer recruited. Digitisation of Corporate publications archive. Commenced digitisation of older print theses with CAVAL.	New Library Director appointed. Digital Collection project team. First interoperability trial of image metadata between RO and Trove.	Library adopts use of Creative Commons. Digital Collections Advisory Group (DCAG) formalised. ContentPro introduced. Review of Resources Division initiated.	Scholarly Content Team formed. Implement first Digitisation Plan.	Digitisation budget allocated. Digital Collections Portal introduced.

The Library Executive had also recently supported the acquisition and implementation of the Innovative Interfaces ContentPro system. ContentPro is a digital asset management system which stores files on a local server (Innovative Interfaces 2012). The decision to use ContentPro was based on the Library's use of other Innovative Interfaces products. In hindsight, a more rigorous assessment of the Library's requirements and the range of products on the market would have been beneficial, as problems surrounding the ContentPro product arose. The platform was rebadged and renamed UOW Archives Online (for fluency, UOW Archives Online will continue to be referred to as ContentPro in this article). Administration of this system was placed with the Manager Repository, who would then combine oversight of both the archival and research digital repositories.

Library Director, Margie Jantti, initiated a review of the Resources Division within the Library in 2011 (see Daly and McIntosh 2013). The review (which was led by senior managers in the Resources Division in consultation with staff) comprised assessment of all the Division's core functions. A key goal of the review was to

embed digitisation workflows for UOW archival and research materials within the Division. Further, the need to consolidate the Division's capability and knowledge in applying metadata standards in the management of archival and research collections was identified. This is a challenge that other Universities have also faced when developing a digitisation program (Chimielewska and Wrobel 2013).

As a result of the review, a new Scholarly Content team was formed with the purpose of sourcing, preserving and providing access to UOW content, comprising research and archival collections (Figure 1). The new team, which was implemented in April 2012, consisted of:

- A Metadata Officer (Higher Education Worker Level 5) responsible for managing metadata for UOW digital collections;
- A Team Leader (Higher Education Worker Level 6) responsible for liaising with the Repository Manager (Higher Education Worker Level 7) and Copyright and Digitisation Officer (Higher Education Worker Level 6) on the assignment of staff resources to these functional areas;
- Six Scholarly Content Officers (Higher Education Worker Level 4), also known as SCOs, responsible for undertaking publication management and digitisation processes. (Daly and McIntosh, 2013)

Within this structure all Level 4 and 5 staff reported to the Team Leader. Level 6 and 7 staff reported to the Manager Scholarly Content.

With the new team in place, the task of embedding a digitisation program commenced. The Digital Collections Advisory Group, meeting once a month, became the forum for planning and coordinating these activities. They assumed responsibility for developing the annual digitisation plan which was implemented at

the end of 2012. The plan works as a summary and report for the Library Executive of digitisation projects that occurred in the past year, and identified target collections for the coming year based on the Significance Register produced by the project team. The plan also includes recommended methods of digitisation - either in-house or outsourced - and project owners within Archives and the Scholarly Content team. Table 6 shows an excerpt of a project line from the 2012-2013 plan for projects carried over across years.

The Copyright and Digitisation Officer role was consolidated to focus on coordination of digitisation software, training of staff, liaison with Archives and the Team Leader regarding deployment of staff to projects, and management of vendor relationships.

Two levels of responsibility were devised for coordination of projects: the Team Leader became responsible for working with SCOs to determine preferred projects they would like to work on and the amount of time they could commit to the project per week. This information was then passed to Archives. The Archives Content Officer took responsibility for contacting and working with individual SCOs to determine and facilitate any training needs they may need to receive, develop supporting documentation, and work through the logistics of the project. The Archives Content Officer became a touch point for SCOs in troubleshooting issues that arose during each project; they also assumed responsibility for updating DCAG on the progress of projects.

The value of the DCAG forum increased over time as a medium for identifying and problem-solving issues that arise in digitisation projects. It also became a place to table, discuss and implement new technologies and ideas. With the Scholarly Content and Archives teams physically located in different sections of the Library,

the DCAG forum was a necessary tool for maintaining communication among key stakeholders in the digitisation program.

Allocation of a dedicated digitisation budget occurred in 2013 after the experience of managing vendor outsourcing projects showed the need for financial planning of this costly area. As the Digitisation Plan in Table 6 shows, planning the cost of outsourcing a particular project was necessary for budget management. This was often difficult and based on estimates, though the Copyright and Digitisation Officer has developed this skill over time with experience.

Table 6. Detail from the Library’s Annual Digitisation Plan 2012-2013

2012 Digitisation Plan	2012	Outsourcing 2012	2013	Outsourcing 2013 estimates
1. Tertangala 400 issues	Owner: Helen 1962 (09) – 1975 (09): 48 issues scanned. 19 files already on ContentPro	In-house	Priority collection recommended for continued digitisation in 2013.	Nil (in-house)
2. Cochrane (Papua New Guinea) Collection	Owner: Clare 40% completed Approx. 370 images and 2 audio files available. 200 photos to be uploaded in 2012-13. Approx. 500 slides outsourced. Awaiting	Vendor: DVD Infinity Cost: \$1,500	Priority collection. Carry over 2013: Loading 500 slide images; Carry over loading 200 Catholic Mission	Max \$3,200 (for 24hrs of content if maximum content outsourced for transcription. We are aware partial is already transcribed so real max cost

	receipt. Archives staff still to complete majority of collection descriptions to enable population of metadata in ContentPro		photos; Digitising and transcribing radio scripts (in-house)	would be slightly lower)
--	--	--	--	--------------------------

Configuring Delivery Methods and Processes

Storage for preservation of digital files, though initially an issue has with time become less so. Outsourced material was often received from vendors on external storage devices, later to be transferred to longer term internal storage solutions provided by UOW Information Technology services. Internal storage also provided inbuilt preservation measures, such as secure and regular backup, and enabled the Library to store high quality preservation copies.

PDF was the preferred archiving format for print materials – published or manuscript. This is an easy format to move between systems, if needed, and is widely used for preservation of documents. Research Online was selected to house the corporate publication archive, PDFs being transferred from the Archives website for this purpose. The Library’s ContentPro was not being indexed by Google at the time, and numerous problems had been encountered in presenting text documents in this system. The success of Research Online in exposing material to Google and in allowing indexing of OCR’d PDFs, plus presentation and ease of batch upload were the deciding factors in moving these materials into Research Online.

For the digital archiving of images, TIFF was accepted as it is a standard image preservation format. The JPEG and PNG formats were selected for presentation online in ContentPro. Both JPEG and PNG are standard image formats for the

display of low- to high-resolution photograph and graphical images on the web, and are recommended by NSW State Records for digital archiving of images (NSW State Records 2008) .

A major problem faced when dealing with images was the lack of metadata associated with image collections . Figure 2 shows fulsome metadata and image presentation for an item from the Broken Hill Strikes Postcards collection, though not all images from the Archives were accompanied by such descriptive metadata. Where an image collection lacked any descriptive information, the Library has made use of Flickr to source user comments, to some success particularly with the UOW Photographs collection which is a very large collection of images containing very little metadata. The Flickr site was especially useful during the University of Wollongong's 60th anniversary celebrations in 2011 when an active program of engagement with alumni was instigated to identity the subjects of many of the photographs.

Figure 2. Complete record and digital object in UOW Archives Online (Content Pro) from the William J. Harris: Broken Hill Strikes 1909-1911 Postcards collection.

D82/01 The Strike 1909

1 of 2 items



Broken Hill 4-2-09
After the Riot Police returning
to Quarters.
On duty under the verandah
of the Hotel verandah
probably that is your humble servant
to be seen under the verandah. W.J.H. Sub.
Inspector Millar returned
home left here last Sunday night.
He has been in Hospital
most of the time he was here.
Broken Hill
4-2-09



D82_1.jpg



Title: D82/01 The Strike 1909

Creator: Harris, William J., Sub inspector

Date: 1909

Subject: Strikes and lockouts -- New South Wales -- Broken Hill
Labor disputes -- New South Wales -- Broken Hill
Police -- New South Wales -- Broken Hill

Description: Photographic sepia postcard titled '15 The Strike 1909. Copyright B.'. Image depicts police and crowd outside W.J. Player's Australian Club Hotel, Broken Hill. This postcard was produced by the Brokenshire Brothers Photographers, Broken Hill. Inscription on rear: 'Broken Hill 9-1-09. After the Riot Police returning to Quarters. On duty under the Australian Club Hotel verandah, probably that is your humble servant to be seen under the verandah. W.J.H. Sub. Inspector Millar returned home left here last Sunday night. He has been in Hospital most of the time he was here. Broken Hill 4-2-09.'

Contributor: Brokenshire, Joseph, 1877-1947

Identifier: D82/01

Source: University of Wollongong Archives, collection D82/1

Type: Image

Format: Postcards

Rights: This item is no longer in copyright. You are free to copy and re-use. Attribution to the University of Wollongong as the source is appreciated.

For audio files, the uncompressed WAV file format is used for preservation, and compressed MP3 files are included within ContentPro, sufficient for web access by the majority of users. The WAV format is recommended for digital audio preservation by NSW State Records (NSW State Records 2009). With the availability of audio files, the Library has made a move to include images with the sound files to improve the presentation of the record. The Library has also recently outsourced a large number of audio files for transcription, especially in regards to oral history interviews, which will accompany audio files for the benefit of searching and access to content. The added time and effort involved in enhancing the presentation and visibility of audio files is warranted in increasing engagement with the content by a variety of users.

The most complex material to handle has been video and film footage, both in regards to physical management and digital conversion and presentation. The Copyright and Digitisation Officer in liaising with service providers and IT professionals has ensured that any film or video material digitised is completed to the optimum preservation standard using frame by frame scanning, and archived in the MPEG2000 and high resolution MOV formats. These files are then stored locally and a lower quality MOV presentation format is made available through ContentPro.

The management of digital formats has been a lesson in serendipity: starting with ADT and Research Online for research materials, adopting ContentPro for archival content, and then expanding delivery options with Flickr. The ISSUU online document publishing tool has also been included in the Library's set of presentation options, supporting dynamic delivery of documents through Research Online (ISSUU 2014). The Library's file storage and delivery arrangements across its different systems are as follows:

- Research Online (Bepress Digital Commons) holds copies of all UOW research outputs entered in the system. Research Online's strength is in document presentation. For this reason, UOW journals, conferences, and corporate publications are also added, as well as some archival document collections that do not display well in ContentPro. ISSUU is used to present some documents that contain significant visual elements, such as books and magazines.
- UOW Archives Online (ContentPro) holds web-ready digitised files of archival material for user access. This includes images, video and audio, and some documents. As ContentPro displays video in Flash, UOW Library also use:
 - YouTube for some video content; mostly digitised archival footage of wide interest and appeal.
 - UOW IT internal storage holds high-resolution, preservation copies of all items either digitised in-house or outsourced. These files are not openly available. Preservation copies of UOW research outputs are not archived in internal storage as definitive copies of publications are commonly archived by publishers.

Engage!

A digitisation program is only as effective as its capacity to make content widely discoverable and accessible. The Library's experience with Research Online has revealed the importance of exposure through internet search engines, principally Google, and federated databases. Though use of Google as a research tool was for a long time discouraged by academic librarians, it is now vital for the visibility of digitised materials. Whether or not a metadata record or digital object is discovered

by Google is the result of a variety of technical issues generally classified under the sobriquet Search Engine Optimisation (SEO). The UOW Library was fortunate in securing the Bepress Digital Commons platform to host Research Online, as Bepress has worked closely with Google to ensure that their content is visible for harvesting. Research Online has successfully pushed UOW content out to the world, achieving over 8 million downloads since its introduction in 2006.

Key to this achievement has been the Library's ability to monitor, assess, report and promote this visibility to UOW stakeholders. The term "full-text downloads" has entered our everyday vocabulary and formed a basic measure of system and process performance. The Library has monitored Research Online from the outset (January 2006), recording uploads and downloads i.e. the amount of material put on the site and how often it was downloaded and, we assume, read and potentially referenced in further research.

The ContentPro system hosting UOW Archives Online has been less successful, being virtually invisible to Google for many years. In seeking to address this "invisibility" prior to an upgrade of the system by the vendor mid-2013, the Library sought to have ContentPro harvested by sites such as TROVE, OCLC's WorldCat and Digital Collections Gateway, and the Library's federated search tool Summon. Only TROVE was harvested by Google, thereby allowing some exposure of the collections to a wide audience.

ContentPro is now accessible and visible, however, the lack of a usable, timely statistical package remains a limiting characteristic of the system. ContentPro statistics are provided in a single, on-screen table which cannot be downloaded for further analysis and does not differentiate between trawling bots, local downloads

and external traffic. This has been problematic as Library staff use of metadata pages and content during the upload and record refinement stages can be significant, yet they cannot be differentiated from usage by bona fide external audiences.

Visibility leading to usage, and capacity to effectively report this usage, are very important where significant funds and effort have been expended on digitisation. It was quickly recognised by the Library Executive that the valuable and unique outcomes of the digitisation program at UOW need to be showcased to encourage access and use. Providing unified and cohesive access to all digital collections, regardless of location, was also an issue. The Library engaged a local web development firm to help build a portal through which clients from around the world could access the Library's complete collection of digital content (for more information on the portal project see the paper by Daly and Morgan 2014). The portal was created to accommodate three 'streams' of content: Archival and Research Collections, and Online Exhibitions. Figure 3 shows the Archival Collections page which, through thumbnail entry points, provides access to those collections within ContentPro. With Google Analytics statistics tracking embedded in the site, the opportunity to review and report on traffic through to the myriad digitised collections is now a possibility. Over 10,000 visits to the portal have occurred in under twelve months, with visitors accessing the site from across Australia, the Asia-Pacific, United States and Europe.

Figure 3. The Archival Collections stream in the UOW Library Digital Collections Portal.

ARCHIVAL COLLECTIONS

The University of Wollongong Library's digital Archival Collections feature a range of material from the University Archives, reflecting the corporate and social history of the University, as well as its connections to the broader Illawarra region. The digitisation of historical content is an ongoing strategy by the Library to unlock the rich and unique material held within the Archives. For information on the complete range of archival collections browse the [UOW Archives](#) website.



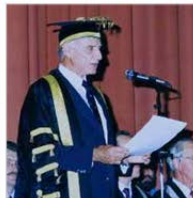
DAVID CAMPBELL



CARL WEBER



COCHRANE PAPUA NEW GUINEA



UNIVERSITY RECORDINGS



UNIVERSITY PHOTOGRAPHS



STUART PIGGIN

FEATURED COLLECTION:



This collection comprises images from the Bomaderry Soldiers Rest Home, also known as the South Coast Red Cross Convalescent Home or the South Coast Red Cross Soldiers Home. Taken at the close of the First World War, they show patients and nursing staff at the home and enjoying social outings in the surrounding Shoalhaven area. [View Collection »](#)

Conclusion

The development of a digitisation program at UOW Library has focused on a major review of the services, systems, processes, staff roles, and structures within the Library. Realigning and redirecting existing expertise to building and maintaining the program have been key to creating a sustainable structure that will increase the visibility and access pathways to the UOW Archives in their digital form. The global visibility and effective delivery mechanisms of the Library's principal digital platforms, Research Online and ContentPro, are important in an increasingly large online environment in which the University's unique collections are showcased. Further review of these systems will be necessary as the Library's digital collections grow and client access methods expand to new and more sophisticated devices. The rise

of born-digital content produced by the University is one area where the Library's digitisation and Archival practices may be extended to impact and support the activities of other groups within the organisation. The Library's commitment to contributing to the wealth of content in the rapidly expanding digital environment will necessitate consideration at UOW Library of a supporting policy framework for its digitisation activities. Engaging UOW and external audiences in new ways, such as through user-generated content tools or interactive displays, will also grow in importance as the expectation of the Library to demonstrate the value of its digital service offerings increases.

References

Allen, Nancy S. 1998. Institutionalizing Digitization, *Collection Management*, 22 (3-4), 217-223.

Anonymous. 2004. Managing Digitisation, *Library Technology Reports*, 40 (5), 13-21.

Anonymous. 2008. National Library of Australia's Digitisation Program, *Meanjin*, 68 (2), 16.

CAVAL. 2014. *CAVAL: Support for leading libraries* [cited 27 March 2014]. Available from <http://www.caval.edu.au/>.

Charlton, John. 2013. Digitization across the globe, *Information Today*, 30 (10), 14-15.

Chimielewska, Barbara and Wrobel, Agnieszka. 2013. Providing access to historical documents through digitization, *Library Management*, 34 (4/5), 324-334.

Council of Australian University Librarians (CAUL). 2013. *History of the ADT, the Australasian Digital Theses Program* [cited 22 February 2014]. Available from <http://www.caul.edu.au/caul-programs/australasian-digital-theses/adt-history>.

Daly, Rebecca, and McIntosh, Lisa. 2013. Heresy or Innovation? Transforming culture and services for impact. *Proceedings of the THETA: The Higher Education Technology Agenda conference*. Hobart, 7-10 April [cited 12 March 2014]. Available from <http://eprints.utas.edu.au/16316/>.

Daly, Rebecca, and Organ, Michael. 2014. What's on the telly?: Streaming the archives to new audiences. *Proceedings of the VALA2014 conference*. Melbourne, 3-6 February 2014 [cited 28 March 2014]. Available from <http://www.vala.org.au/vala2014-proceedings/815-vala2014-session-11-organ>.

Innovative Interfaces. 2012. Content Pro [cited 18 March 2014]. Available from http://www.iii.com/products/content_pro.shtml.

Iannello, R. 1996. Australian Digital Library Initiatives. *D-Lib Magazine*, December 1996 [cited 6 May 2014]. Available from <http://www.dlib.org/dlib/december96/12iannella.html>.

ISSUU, Inc. 2014. *ISSUU* [cited 18 March 2014]. Available from <http://issuu.com/>

Novara, Elizabeth A. 2009. Digitization and researcher demand: digital imaging workflows at the University of Maryland Libraries, *OCLC Systems & Services*, 26 (3), 166-176.

Organ, Michael. 2010. Leveraging research quality assessment exercises to increase repository content: an Australian case study. Paper presented at the CAIRSS (Council of Australian University Librarians Institutional Repository Support Service) Community Day, Royal Melbourne Institute of Technology University, Melbourne, 10 September 2010. Available from <http://ro.uow.edu.au/asdpapers/253/>.

Powerhouse Museum. 2009. *Powerhouse Museum Object Name Thesaurus*, [cited 28 March 2014]. Available from <http://www.powerhousemuseum.com/collection/database/thesaurus.php>.

NSW State Records. 2009. Guideline 22 – Managing Digital Records [cited 5 May 2014]. Available from <https://www.records.nsw.gov.au/recordkeeping/government-recordkeeping-manual/guidance/guidelines/guideline-22>

NSW State Records. 2008. Standard on Digital Recordkeeping [cited 5 May 2014]. Available from <https://www.records.nsw.gov.au/recordkeeping/government-recordkeeping-manual/rules/standards/digital-recordkeeping>

Suber, Peter. 2013. *Open Access Overview* [cited 22 March 2014]. Available from <http://legacy.earlham.edu/~peters/fos/overview.htm>.

Tharani, Karim. 2012. Collections digitization framework: a service-oriented approach to digitization in academic libraries, *Partnership – The Canadian Journal of Library and Information Practice and Research*, 7 (2), 1-14.

University of Wollongong. 2006. *Research Online*, <http://ro.uow.edu.au>.

University of Wollongong . 2010. *UOW Archives*, University of Wollongong Library, <http://www-library.uow.edu.au/archives/index.html>.

Waller, V. and McShane, I. 2008. Analysing the challenges for large public libraries in the twenty-first century: a case study of the State Library of Victoria in Australia, *First Monday*, 13 (12), 1 December 2008 [cited 6 may 2014]. Available from <http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/2155/2060>.