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Into the Cloud: AMC's Digitisation Project

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Introduction:

The Australian Music Centre undertook a major digitisation project, which took about 18 months, starting with the planning stage in the last third of 2013, all through 2014, and completed in February this year.

I'm going to talk about the project – how it came about, the processes we went through and what we achieved.

Australian Music Centre

National service organisation for Australian music

Not for Profit

Established in 1976

Covers the spectrum of contemporary classical music, improvised jazz, experimental music and sound art

660 Represented artists

Promotion - Information – Documentation – Resources for sale – Advocacy

First of all, a little about the Centre for those of you who aren't familiar with what we do. The Centre exists to promote the works of Australia's composers and sound artists. The area we cover includes contemporary classical music, improvised jazz, experimental music and sound art – broadly speaking, art musics. We are a small not-for-profit organisation, with core funding from the Australia Council. The rest of our income comes from memberships and the sale of music resources.

We promote Australia's composers and their creative output, we collect sheet music and sound recordings of their works, we make these available for loan and for sale, we collect information about composers' works, we publish an online magazine, called 'Resonate', we maintain an online Calendar of Australian works being performed around the country, we act as an advocate on behalf of Australia's composers. Our library collection covers mainly works written in the last 50 years.

Composers can become 'represented' by the Centre – there is a formal application process – and once Represented they can lodge their works in the Library collection and have them documented on our website and promoted through our channels. If they are working in notated music, and their works aren't published elsewhere, they also have an option to have their print music reproduced for sale by the AMC, with royalties from any sales going back to the composer.

So, the library collection is not like the collection in a regular library – as well as being for our users to borrow from for study and perusal - it also acts as a collection of master copies for all the scores and sets of performance parts that we make available for sale.

There are currently just over 660 composers represented and the library collection numbers about 50,000 items: scores, sets of performance parts, sound recordings, a very small book collection, information files about Australian composers and photos.

Who uses AMC?

Education Sector: senior secondary teachers and students, tertiary students and academic staff, post-graduate students

Performers: soloists, ensembles, orchestras, choirs...

Arts organisations

Libraries

Broadcasters

General Public

Suppliers of music products

We have a very wide range of users - all around Australia, and all around the world.

We have 6 desks in the APRA building. Our physical collection is in storage several km away, but most of our library collection is now digital - our website, which we launched in 2010, is where we are located now.

Our collection has been moving towards a digital model for some years. This means the library collection exists in digital format, without the need for ever-increasing storage space, without the need for library loans to be taken from the shelf and parcelled up and posted to users spread around the country, and, for fulfilling the orders for purchased sheet music: without the need for the continual handling of physical master copies, being taken from the shelves to make a copy every time a customer orders a copy. It was a necessary direction to take if the Centre was to continue to be financially viable in a climate of decreasing government funding and decreasing staffing. It also reflected a major shift in the sector regarding music notation – hardly any composers handwrite their scores these days. Most use notation programs such as Finale or Sibelius.

The planning and development of our website took some years, and the website was launched in May 2010. It was entirely designed and built in-house, mainly by Simon Chambers. The catalogue uses a customised version of FRBR – customised to make it relevant to our collection of music resources, and especially for own needs – and those of our diverse users.

The catalogue includes a very high level of detail, for example we list every instrument required to perform a work (right down to every instrument in an orchestra), we include details of the commissioning history and first performance of a work, programme notes, how long a work is, how difficult it is to perform. This rich metadata puts the catalogue way ahead of other online catalogues.

Because of changes in the generation of print music – most composers by the 1990s using notation software instead of hand writing their scores - we ceased to accept new scores from our represented composers in hard copy format in 2007/8. From that time represented composers were asked to lodge their new scores as digital files. This was done through a portal specially designed for this purpose.

In early 2013 financial issues led to us losing about a third of our staff and relocating to the APRA building in Ultimo in Sydney. Our library collection – what's left of it, is in storage in a warehouse in Balmain, several kilometres away.

Having the library collection located offsite brings a range of difficulties – which I won't go into here – but the need to continue with digitisation was even more important after we relocated.

Then, in mid-2013, in the final weeks of the Gillard Government, we received a grant from the Federal Department of Education and Training for digitisation. The goal was set to complete digitisation of a major part of the library collection of print music and audio, as well as some of AMC's publications and photo archive.

The goal was to create 13,000 new digital objects and add these to our existing digital collection. The result would be to expand the available repertoire for student performance, and provide teachers with access to a range of resources on Australian music that were not previously available.

Prioritising Digitisation:

- Pre-existence of digital file (6 % of the total no. of digital objects created)
- Other criteria:
 - Proven usage: previous sales, loans, page views on the website
 - significant composers
 - inclusion on AMEB syllabus
- Technical considerations:
 - Future Proofing: archival standards for files
 - Copyright issues/watermarking

There were some big decisions to be made in the planning. Where do we start? What file format to use? How will the files be organised? How will we be able to find them again? What will we want to be able to do with the digital collection, in 2 years, 5 years, 10 years? For scores that are made available for sale: what we now want to print and bind so we can post it to the customer, we will one day only download to whatever device comes after the iPad.

There were two main things to consider during the planning phase:

Technical issues of file formats and data storage, and management.

And, where to start.

I'll talk about the 2nd issue first – where to start?

With a collection of approximately 18,000 items of sheet music, we had to have a plan of what would be a priority. We already had a lot of items that we had received from the mid-1990s and early 2000s that were print-outs of files that Represented composers had lodged with us. So it was safe to assume that a file may still be held by the composer.

Simon Chambers built an interface through which we could check our holdings, see if the score we held had been generated from a typeset file, and send each composer a request for them to upload the files for specific scores.

If a composer notified us that they didn't hold a file, then that score would become a candidate for hand-scanning.

We received about 780 scores through this interface. It saved a lot of time because we didn't need to scan each one of those scores page by page.

For the remainder of the collection, we assigned priorities based on how many times over recent years a score had been purchased, how many times it had been borrowed from the library, how

many times the information about it had been viewed on our website, works that were on an AMEB syllabus, works by major Australian composers, or works that were particularly significant for another reason.

The other major issue, or, rather, set of issues, that we considered in the planning phase was more technical. The file format we use is archival-standard PDF, or PDF/A 1(b). This is a format that will ‘future-proof’ the file – it will be able to be opened into the future, as platforms change. We have used this format for all scores lodged digitally since 2008.

There were 4 main phases in the work process

4 Phases of the Work Process

Scanning (or importing an existing file from the composer through the portal)

Creating a Digital Score Production Master (DSPM), Digital Library Loan file, online score sample, etc

Quality Control: File Checking and documentation of the digital object in the database

Creation of associated metadata and final verification

The challenge is not just to replace the physical item with an on-screen replica, but to create a new digital item, which fully utilises the possibilities of this new digital form. Fortunately, the AMC had been working on this process over the previous decade or so, in the development of our website.

The scores and the online catalogue form an integrated and sophisticated data structure, of which our website is the elegant ‘front end’- the tip of the iceberg. In order to make the most of this structure, digital scores need to inform and be informed by the catalogue.

A single score might exist in several different digital versions with different characteristics and purposes. The main file is the Master file. This we call the Digital Score Production Master or DSPM.

It is designed to be printed and bound at the click of a button (well, maybe not quite that simply, but almost). A separate file is used as a digital library loan copy. This is the one that will be used by personal members who want to borrow a score for personal purposes.

When a person requests a digital loan, the file is security stamped with their name and period of the loan. They download it from a digital locker and it destroys itself on their computer after the loan period. There are currently about 9400 scores in the Digital Score Library.

Another file is chosen and prepared to be used as an online score sample

This is also security stamped. Online samples are very important when people are using the site to select repertoire.

At some point in the future we will want to have scores available for sale as downloadable e-scores. So another file, with another set of digital qualities is required.

The whole process was very time-consuming and we didn’t have a lot of time – the grant had to be spent within a set timeframe. But we couldn’t speed up the process at the expense of diligence. So Simon Chambers built a new system which would automate as many of the trivial tasks as possible, leaving the digitisation team to concentrate on quality control.

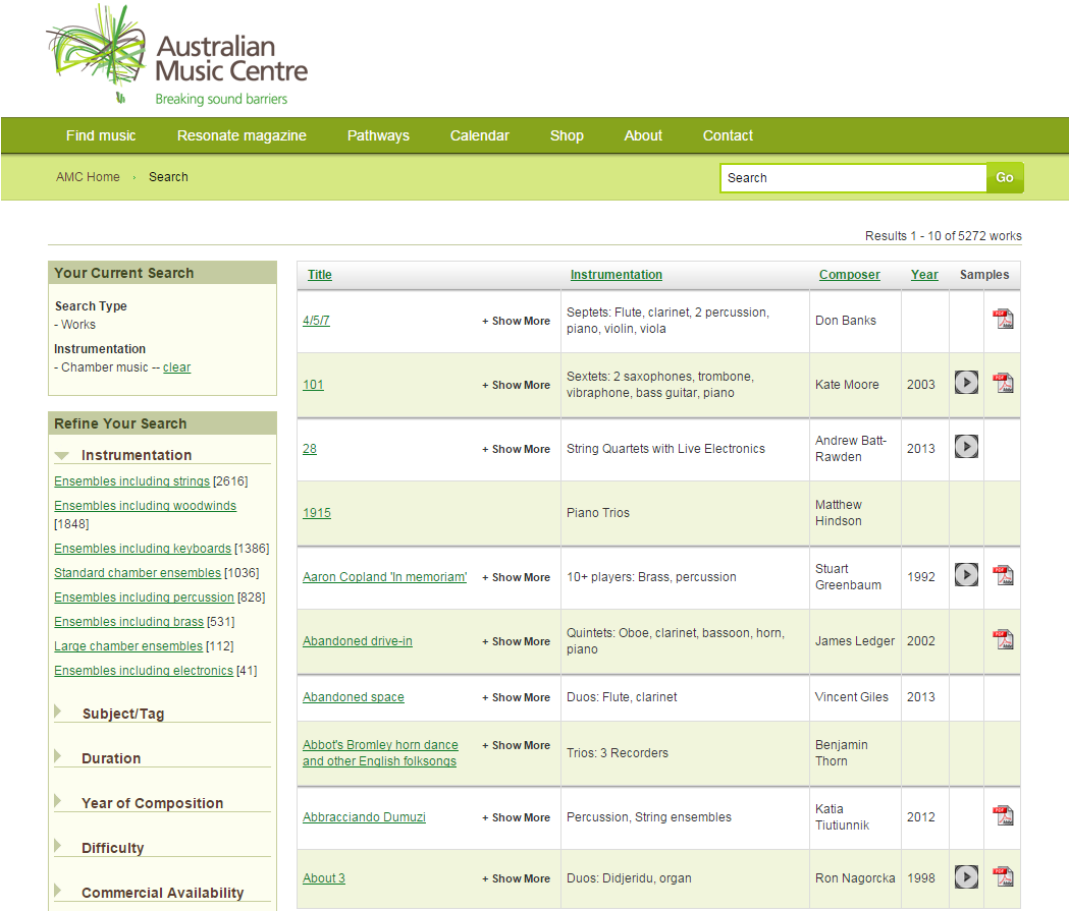
The system – called ‘Mog’ for some reason – identified newly scanned scores. It sourced data from the catalogue and then made templates for covers, disclaimer pages, score samples etc. It also updated the catalogue with information about the file and its location.

‘Mog’ increased output through this phase of the process by 2 or 3 times.

After this phase, the DSPM files all had to be checked. Another part of the team worked on this. The scans were checked in their various forms, connected to the catalogue, and sales information added. Forward compatibility is a major concern here as well. Making sure the files conformed to archival standard (PDF-A). This is the digital equivalent of making sure there is no damp in your library that will make your books unreadable in the future.

After this phase, the final phase involved the metadata. Information in the catalogue was expanded to utilise the FRBR data model which underpins the entire catalogue. Metadata in the catalogue record, imported from our previous system, was moved into searchable fields, more data was added to other fields and tags.

Repertoire Navigator



The screenshot shows the Australian Music Centre website interface. At the top is the logo with the text "Australian Music Centre Breaking sound barriers". Below is a navigation bar with links: Find music, Resonate magazine, Pathways, Calendar, Shop, About, Contact. A search bar is present with a "Go" button. The main content area displays search results for 10 of 5272 works. On the left, there are filters for "Your Current Search" (Search Type: Works, Instrumentation: Chamber music) and "Refine Your Search" (Instrumentation, Subject/Tag, Duration, Year of Composition, Difficulty, Commercial Availability). The search results table is as follows:

| Title | Instrumentation | Composer | Year | Samples |
|---|---|--------------------|------|---------|
| 4/5/7 | Septets: Flute, clarinet, 2 percussion, piano, violin, viola | Don Banks | | |
| 101 | Sextets: 2 saxophones, trombone, vibraphone, bass guitar, piano | Kate Moore | 2003 | |
| 28 | String Quartets with Live Electronics | Andrew Batt-Rawden | 2013 | |
| 1915 | Piano Trios | Matthew Hindson | | |
| Aaron Copland 'In memoriam' | 10+ players: Brass, percussion | Stuart Greenbaum | 1992 | |
| Abandoned drive-in | Quintets: Oboe, clarinet, bassoon, horn, piano | James Ledger | 2002 | |
| Abandoned space | Duos: Flute, clarinet | Vincent Giles | 2013 | |
| Abbo's Bromley horn dance and other English folksongs | Trios: 3 Recorders | Benjamin Thorn | | |
| Abbracciando Dumuzi | Percussion, String ensembles | Katja Tiutiunnik | 2012 | |
| About 3 | Duos: Didjeridu, organ | Ron Nagorcka | 1998 | |

[http://www.australianmusiccentre.com.au/search?type=work&sort=alphaTitleSort&wff\[ish\]=2](http://www.australianmusiccentre.com.au/search?type=work&sort=alphaTitleSort&wff[ish]=2)

The final steps in the processing allow all the work done at the previous stages to be made available and accessible both online and internally.

A scan is only be a scan, unless it is linked to the online resource of the website. The incredibly detailed documentation is what drives the sophisticated searching capabilities of the Repertoire Navigator on the website. Every record in the catalogue has a great many fields, including structured and non-structured fields. We have our own thesaurus of instrumental subject headings which drives the Repertoire Navigator. The Navigator drives the searching capabilities of the site and also optimises the content for external search engines.


The Navigator allows you to refine your search to look for works for a specific instrumentation, year of composition, duration, level of difficulty and so on. See the box on the lower left side. In addition to this, all names of parties associated with a work are also searchable.

It's this high level of rich metadata that makes the AMC site so unique.

I've mainly talked about print music side of the project. We also digitised over 1000 audio files. These were on cassettes and CDs, including some that have been commercially released and others that have not been released commercially – recordings from concerts, or radio broadcasts for example. Samples from these were extracted and loaded to the website.

Audio samples are linked to the metadata about the work, the score sample etc.

Record for *Nura* by Ross Edwards



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Home > Nura

WORK
Nura : for flute and piano
by [Ross Edwards](#) (2004)

Score Sample [View a sample of the score of this work](#)

Audio Sample [Performance by Lamorna Nightingale, Jocelyn Fazzone from the CD Eat chocolate and cry](#)

Selected products featuring this work — [Display all products \(2 more\)](#)

| | |
|---|---|
|  <p>CD Eat chocolate and cry : Australian flute music 1999-2009 / [performed by] Christine Draeger, Lamorna Nightingale, Jocelyn Edey Fazzone. Library shelf no. CD 2042 [On loan, due 4/11/15]</p> <p>\$POA</p> <p><input type="button" value="Info"/></p> |  <p>Score & Part Nura : for flute and piano / Ross Edwards Library shelf no. 788.32/EDW 2 [Available for loan]</p> <p>\$40.15</p> <p><input type="button" value="Add to cart"/></p> |
|---|---|

[Display all products featuring this work \(2 more\)](#)

Work Details

Year: 2004

Instrumentation: Flute, piano.

Difficulty: Advanced — AMEB Grade 8 - tertiary

Contents note: 1. Wild bird morning -- 2. Ocean idyll -- 3. Earth dance.

Commission note: Commissioned by [Eleonore Pameijer](#), [Marcel Worms](#). Commissioned by the Eduard van Beinum Foundation, the Netherlands

First performance: by [Eleonore Pameijer](#), [Marcel Worms](#) — 6 Apr 05. Lantaren, Rotterdam, the Netherlands.

see: <http://www.australianmusiccentre.com.au/workversion/edwards-ross-nura/22641>

So where does “the cloud” come in?

There are several stages in the workflow when our files are stored in the cloud.

The first is after the scan has been made – MOG transferred the scan file to the cloud, so that it was immediately stored elsewhere besides our server. This was done in real time.

Then, when the work team were converting the scan to a Digital Score Production Master file, the original scan was retrieved from the cloud and put through various processes to create a cover page, insert a disclaimer page, extract a sample to go online etc.

Then, once the final Master file was checked and verified it was transferred to the cloud again – this time to long-term storage – and this time in an overnight process.

Using the cloud wasn't just for the digitisation project. When a member of the AMC borrows a file as a digital loan – the system retrieves the file from where it is stored in the cloud, watermarks it and issues it as a loan.

All new scores that we receive from our represented artists are processed to convert them to archival-standard PDFs. And this processing involves the scans being stored in the cloud as well. Eventually our whole library will be in the cloud – and we won't need offsite storage any more – but that's a way off!

WHAT WAS DIGITISED

- 12,508 scores and sets of performance parts
- Including 5,425 Digital Production Masters
- 1,084 audio files digitised
- 508 images and photographs scanned
- 6 other publications digitised

So, what did we achieve through this project? The figures are on the screen.

There are still hundreds of scores waiting for final checking and verification, and for the metadata to be completed. Because we just have our regular staff hours now, this will take us quite some time. But we're working slowly and steadily through it.

We still have in the collection published scores which were not part of the digitisation project. And scores that were not considered a priority for scanning. What will happen to those long term is still being worked out.

BENEFITS FOR OUR USERS

- Over 8040 Score samples and over 7800 Audio samples online (and increasing every week)
- Digital Score Library :
 - Instant access to perusal loans
 - Over 9400 scores as at September 2015 and increasing every week
 - No geographical limitations on access
 - Online tutorial about accessing digital loans
- Detailed metadata increases searching capability
- Faster turnaround time for printing scores for sale

How does this affect our users?

Our digital collection is growing all the time, as new works are lodged by our Represented artists. We are adding new works to the collection: new scores, new audio files, new online samples and new titles added to the Digital Score Library.

Our members can access digital loans instantly – if you're a performer considering new repertoire for a concert, or a school teacher looking for a new work for your school choir, or a student studying an Australian composer, or an artistic administrator looking for a work for an orchestral concert - it doesn't matter if you live in inner city Sydney, or a town in regional Australia, or in Amsterdam – you have the same access to perusal loans.

As a result of the creation of all those Digital Score Production masters we can now fulfil orders for sheet music much more quickly. We print on demand, and often we will now have orders in the post to the customer within 2 or 3 days of receiving their order.

Website Usage:

214,304 visitors in the last 12 months

Average of 846 users per day

Average of 2880 page views per day

Usage of the website keeps growing. The website is used by more than 840 visitors per day. Usage has steadily increased since the website was launched. Our rich metadata means that we rank highly in Google rankings – our website will be in the first 3 or 4 results of a search for a composer name or unique work title.

Our reach is increasing – the number of international users has been increasing. We have new users contacting us every week as they discover the rich resource that is the AMC. We truly are the 'Go To' place for information and resources on contemporary Australian music.

We see the completion of the project as a major achievement for a small organisation and look forward to continuing to build the online resource of our website.

The collection is an important part of Australia's cultural heritage, and the digitisation of it all makes it more available, more accessible, more usable, more used.