DEADLINE2025

COLLECTIONS AT RISK

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NATIONAL FILM & SOUND ARCHIVE

australia's living archive

THERE IS NOW CONSENSUS AMONG AUDIOVISUAL ARCHIVES INTERNATIONALLY THAT WE WILL NOT BE ABLE TO SUPPORT LARGE-SCALE DIGITISATION OF MAGNETIC MEDIA IN THE VERY NEAR FUTURE. TAPE THAT IS NOT DIGITISED BY 2025 WILL IN MOST CASES BE LOST FOREVER.

DEADLINE 2025: COLLECTIONS AT RISK

Governments past and present have invested in Australia's audiovisual culture and industries, and supported the various sectors involved in the production, distribution, and preservation of recorded sound and broadcast media. Much of what is now this nation's heritage originated in the analogue era of the 20th century and has been handed down on various magnetic tape formats.

WE NEED TO UNLOCK OUR AUDIOVISUAL HISTORY AND ALLOW IT TO CONTINUE TO CREATE VALUE AND BENEFIT FOR ALL AUSTRALIANS. WE NEED A NATIONAL FRAMEWORK FOR DIGITISATION OF AUDIOVISUAL COLLECTIONS – A COLLABORATIVE APPROACH TO THE MASS-DIGITISATION OF OUR HERITAGE.

All tape-based formats created in the 20th century are now obsolete. Tape that is not digitised by 2025, we risk losing forever. This creates a deadline, and a dilemma, for those entrusted with the care of these precious memories.

At current rates of investment in digitisation, only about 30% of magnetic tape can be saved in time, meaning tens of thousands of hours will be lost to future generations.

Considerable resources are required to ensure all surviving tape-based media is digitised and managed for long-term digital storage and access. Without this work, we will lose a significant part of Australia's public memory, currently threatened by magnetic tape obsolescence.

We need to unlock our audiovisual history and allow it to continue to create value and benefit for all Australians. We need a National Framework for Digitisation of Audiovisual Collections – a collaborative approach to the mass-digitisation of our heritage.

We refer to the NFSA's magnetic tape collection throughout this paper to illustrate the situation and extrapolate to this national collaborative approach.

THE DIGITAL UTOPIA VS THE ANALOGUE REALITY

More than any other medium, moving image and sound recordings can bring the memory of a nation to life. Time, place and actions are invoked more vividly than through any text-based documentation.

The NFSA's national collection records every aspect of Australian life and endeavour. While the greatest concentration of audiovisual materials is looked after by the National Film and Sound Archive of Australia (NFSA), other institutions are also responsible for preserving and providing access to a vast range of formats. There are substantial collections stored at the National Archives of Australia and the National Library of Australia. Commonwealth organisations such as AIATSIS, the Australian War Memorial, and the national broadcasters ABC and SBS are keepers of other important materials. Significant holdings exist in State Libraries, research and educational institutions, and community organisations across states and territories. **Our national estate is subdivided into many locations, and until now there has not been a joint management plan in place to unlock it for the public.**

Digital technology is the most convenient answer for a 'distributed' national collection. The walls of our galleries, libraries, archives and museums become 'genuinely more porous' as we shift to 'open access, open sharing, and greater collaboration with the public'[1]. It brings us closer to a digital utopia where Australia's audiovisual history is available for all Australians and the world to find, access, and use effortlessly.

At this stage we are still living in an analogue archival reality. It encapsulates celluloid film negatives and prints; sound recordings on magnetic tape, acetate and vinyl disc; and radio, film and television broadcast on various magnetic tape formats.

While original film and record formats will remain largely stable for the foreseeable future, all tape-based formats created in the 20th century are now obsolete.

The ability to successfully replay magnetic tapes depends on the interplay of equipment, skills and technologies. This once healthy ecosystem is collapsing due to the removal of tape from the marketplace as broadcasters have shifted to file-based workflows.

There is now consensus among audio-visual archives internationally that we will not be able to support large-scale digitisation of magnetic media in the very near future. Tape that is not digitised by 2025 will in most cases be lost forever as:

- Analogue video and audiotape, as well as early digital tape formats, will be effectively inaccessible due to the practical inability to maintain playback systems.
- The last generation of fully experienced analogue-to-digital-transfer broadcast engineers will be retired. Their practical technical skills will either have been strategically shared with the newer generations of digital engineers or lost forever.

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WHERE IN THE WORLD?

Large-scale digitisation of audiovisual materials has been undertaken in several European countries, most notably in the Netherlands with their seven-year, **€115M ($177M)** initiative *Images for the Future*. Several Dutch heritage organisations digitised their at-risk collections in bulk: 90,000 hours of video, 20,000 of film, and more than 100,000 of recorded sound. Public access has increased dramatically, and the project encouraged the educational, creative and commercial re-use of the content – a cultural and financial outcome for both the archives and their sponsors and partners.

WHAT IS MAGNETIC TAPE?

Magnetic tape technology has been used for audio from the mid 1940s and video from the mid 1950s. Many Australians would certainly have owned music cassette tapes and VHS videotapes. Perhaps they recorded 'home movies' on a camcorder or had an 8-track machine, but that is just the tip of the iceberg. Magnetic tape was used professionally as well as in the home and the NFSA holds over 40 different magnetic formats across video and audio.

AUDIO TIMELINE: **1/4" REEL TO REEL** 1934 **TALKING BOOK METAL CARTRIDGE** AS EARLY AS 1953 **MAGNETIC FILM** MID 1950S (USA), EARLY 1960S (AUS) **1/4" TAPE** 1958–1964 **ANALOG COMPACT CASSETTE** 1963 **8 TRACK TAPE CARTRIDGE** 1965 **MICRO CASSETTE** 1969 **1/2" BETA DOMESTIC HIGH FIDELITY AUDIO** 1975 **BETA PCM AUDIO ONLY** 1980 **BETA PCM AND HI-FI AUDIO** 1983 **BERNOULLI BOX** 1983 **VHS PCM AUDIO ONLY** 1984 **VHS PCM AND HI-FI AUDIO** 1984 **AUDIO VIDEO8 (PCM AUDIO ONLY)** 1985 **DIGITAL AUDIO CASSETTE** 1987 **DIGITAL 8 TRACK AUDIO (HI-8)** LATE 1980S **U-MATIC AUDIO ONLY (1630 OR 1610)** LATE 1980S **DIGITAL COMPACT CASSETTE** 1992 **VIDEO TIMELINE:** **2" QUADRUPLEX LOW BAND** 1956 **LOW BAND COLOUR** 1960 **2" QUADRUPLEX HIGH BAND** 1963 **1" A FORMAT** 1965 **OPEN REEL JAPANESE 'J' STANDARD** 1969 **CARTRIDGE JAPANESE 'J' STANDARD** 1969 **PHILLIPS 2000** 1970 **U-MATIC HIGH BAND (BVU)** 1971 **BETAMAX** 1975 **1" B FORMAT** 1976 **1" C FORMAT** 1976 **VHS DOMESTIC** 1976 **BETACAM** 1984 **STANDARD 8 VIDEO** 1984 **U-MATIC SP HIGH BAND (BVU)** 1986 **D1 4:2:2 19MM DIGITAL VIDEO CASSETTE** 1987 **BETACAM SP** 1987 **SUPER VHS (S-VHS)** 1987 **D2 19MM DIGITAL VIDEO CASSETTE (COMPOSITE)** 1988 **HI8 (HIGH EIGHT) PROFESSIONAL 8MM (METAL-E TAPE)** 1989 **D5 HIGH DEFINITION DIGITAL VIDEO CASSETTE** 1993 **DIGITAL BETACAM** 1993 **MINI SIZED DIGITAL VIDEO 6MM (CONSUMER TAPE)** 1995 **BETACAM SX** 1996 **DVCAM DIGITAL** 1996 **DVCPRO 25 DIGITAL** 1997 **DVPRO 50 DIGITAL** 1997 **HDCAM** 1997 **DIGITAL VIDEO CAMERA CASSETTE (DD8)** 1999 **HDCAM SPECIAL RESOLUTION** 2003

OUR AUDIOVISUAL HERITAGE IS TOO PRECIOUS TO LOSE

The recordings, radio broadcasts and TV programs held in our archives represent a small fraction of what was actually produced, as much has already been lost. For many years programs and recordings were discarded or destroyed once their immediate broadcast life was deemed over. Audio and videotape recordings were erased to be reused, and some radio and television programs which went live to air were not recorded at all.

Decades of Australian Government funding has enabled the NFSA and other institutions to locate and build collections that tell the Australian story from many different perspectives, representing the richness and variety of the Australian experience. At the NFSA and sister institutions, highly skilled staff are committed to digitising audio and videotape to international best practice, and we are constantly improving our systems to increase our capability and capacity.

Yet we stand to lose much of this vital cultural memory. **Unless we act swiftly to invest in digitisation infrastructure and capability, we will be facing a 'second mass extinction' when tens of thousands of hours of music, spoken word, news and current affairs, drama and comedy become inaccessible only a decade from now.**

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WHAT'S ON THE TAPE?

NFSA collection examples

The NFSA holds over 30 years of comprehensive television news and current affairs coverage along with significant and long-running series such as *60 Minutes* (1979–present), *Homicide* (1964–76), *Prisoner* (1979–86), *The Mike Walsh Show* (1969–71, 1973–84), *Young Talent Time* (1971–88), *Neighbours* (1985–present) and *Offspring* (2010–14). In its collection of recorded sound, the NFSA holds master tapes by artists like Cold Chisel, Midnight Oil, Mental as Anything, The Angels and Hoodoo Gurus. The NFSA radio collection covers a wide variety of commercial and community stations from around Australia. It includes analogue recordings of broadcasts of significant news events, election campaigns and advertising jingles, drama serials like *Night Beat* and *Portia Faces Life*, interviews with celebrities and newsmakers, comedy sketches and current affairs.

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QUITE A LOT OF OUR HISTORY ON TAPE FINISHES UP IN LANDFILL JUST BECAUSE IT IS SELDOM VALUED AT THE TIME THAT DECISIONS ABOUT ITS PRESERVATION ARE BEING MADE.

Don Walker, guitarist Cold Chisel, 2015

WHAT WILL BE LOST?

NFSA collection example

Television

As we reach the horizon for digitisation of magnetic tape in 2025, the Australian television industry will be just one year short of its 70th anniversary. The NFSA catalogue lists over 60,000 programs on videotape that need to be digitised before 2025, and this number will continue to grow as we retrospectively acquire more archival TV content. An increase of 100% on the current rate of digitisation is required to ensure our small screen history remains accessible into the future.

Radio

Australian commercial radio broadcasting celebrates its centenary in 2024, and the NFSA holds a rich selection of around 80,000 radio programs on audiotape as well as vinyl and acetate discs. Examples include news, talkback and radio documentaries, as well as drama, radio serials and live-to-air performances. We need to increase our current audio digitisation efforts by more than 50% to ensure our collection is safe.

Recorded sound

The Australian recorded music industry will also be approaching its centenary in 2025. The NFSA is the custodian of the published works of our iconic performers, in addition to a multitude of hours of nreleased or out-of-print – and sometimes out of copyright – music and spoken word recordings which are not available elsewhere. Thousands of master tapes, the highest quality recordings of our artists' musical achievements, are at risk from magnetic tape obsolescence. Countless recordings of live performances and other unpublished materials will only survive if we can greatly increase our capacity to digitise.

WHAT CAN WE GAIN?

Digitising the analogue-based era of our audiovisual heritage benefits all Australians as:

- **It connects us to who we were, and who we are.** The historical record of many decades of our diverse Australian experience is referenced in its most effective form through sound and vision, fostering understanding and identification.
- **It creates knowledge.** The as yet unexploited wealth of original content held in so many collections becomes instantly accessible to both Australian and international audiences, and ideally through a national aggregation portal.
- **It protects Australia's investment.** The Commonwealth (and in fact all three tiers of government) have invested in building and maintaining massive audiovisual collections. Rendering them discoverable and accessible offers a tangible return on this investment.
- **It allows the creation of new content.** Unlocking a treasure trove of images and sounds of the past will inspire creators of new works, and encourage entrepreneurs to bring on new dissemination models and explore revenue outcomes.
- **It creates employment opportunities.** Large-scale digitisation is a big job, and managing digital information a vital part of the innovative and nimble industries of the future. Projects of scale will promote specialised skills development and help retain expertise within the cultural sector and the audiovisual industries.
- **It makes us proud.** As a nation we punch above our weight in so many disciplines. Let's not only play catch-up with others – let's be leaders in creating digital access to our collections via broadband.

LARGE-SCALE DIGITISATION

has the potential to rewrite the book – in terms of the size of the practical dividend that support for arts and culture can pay.

To measure its potential impact requires us to look beyond existing performance indicators, such as site visits or attendance numbers, and consider a broader scope of return. This broader view encompasses effects that the increased participation in our 'national estate' has on us as a people at large.

Examples include the benefits to community identity and wellbeing through increased intergenerational dialogue; stimulating creative and intellectual property industries; supporting cultural maintenance and exploration in a globalised marketplace; and fostering curiosity and digital literacy.

Mapping a path through the sea of information is the great exploratory mission of the digital millennium, and ensuring the Australian voice in all its richness and diversity can be seen, heard, and mined for new purposes will result in uses we can't even imagine today. It is an exciting journey to embark on.

IF WE WAIT UNTIL THE METRICS ARE DEVELOPED WE WILL HAVE MISSED THE BOAT. THE DIGITAL HORSE WILL HAVE WELL AND TRULY BOLTED.

Frank Howarth, Museums Australia, 2015

WHAT'S THE BENEFIT?

We are now in a better position to measure the positive impacts of digitising our collections. A new model for measuring the impact of digital heritage resources has been developed by researchers at King's College, London[1].

The Balanced Value Impact Model developed by Simon Tanner at King's College looks beyond the benefits resulting in the heritage sector to the health, environment, transport and communications sectors. The model balances tangible gains from economic, social and innovation perspectives with harder to measure cultural values and is being adopted by organisations such as the Europeana Impact Task Force.

[1] www.kdcs.kcl.ac.uk/innovation/impact.html

WHAT'S THE COST?

NFSA magnetic tape-based holdings example

The additional funding required to increase the NFSA's capacity to meet 'Deadline 2025' is estimated at $10 million.

VIDEOTAPE

There is approximately 45,000 hours of content on analogue videotape in the NFSA collection awaiting digitisation. To deal with this large amount of content in a short time requires a combination of in-house specialised work, for items requiring manual conservation treatment, and the outsourcing of 'bulk' tape. Approximately 8,000 hours of content requires specialist attention and work on the remaining 37,000 hours of 'bulk' tape could be outsourced at an average cost of $160 per hour of content. Competitive market approaches may result in lower rates, at least while there is still a market for such services.

Therefore the cost of videotape digitisation is estimated to be nearly $6M.

AUDIOTAPE

Within the audiotape awaiting digitisation in the NFSA's collection is about 12,000 hours of sound content on magnetic tape, 30,000 hours of audio content on obsolete disc formats and 12,000 reels of audio content on perforated magnetic film.

The average cost for magnetic audiotape digitisation is $100/hour. Discounting rare magnetic film and disc formats, the cost for bulk-digitising the audiotape holdings can be estimated at $1.2M. As perforated magnetic film rapidly becomes obsolete in the marketplace it becomes more and more precarious and the cost of digitisation per hour is likely to be much higher. The total cost for digitising all preservation-status sound material is estimated to be close to $4M.

WHAT MORE CAN BE DONE?

The additional funding required to increase the NFSA's capacity to meet 'Deadline 2025' is estimated at $10 million. It will ensure all surviving tape-based media in the NFSA collection is digitised and ready for long-term digital storage and access.

The NFSA example is core to this argument but it doesn't end here. Our national estate is bigger than just the NFSA collection; Australia's other national collecting institutions and commercial and not-for-profit networks face similar issues requiring similar technical and administrative solutions. A collaborative approach in the form of a National Framework for Digitisation of Audiovisual Collections is preferable to each organisation charting its own course through the digitisation agenda. A consistent unified means would ensure that the economies of scale that can be achieved in large projects are identified, implemented and the benefits realised and that opportunities for private-public partnerships are fully considered and utilised. Our proposed course of action is premised on a joint approach across government and the private sector, extending activities to other relevant collections at risk, and offering economies of scale beyond the NFSA's specific needs and collection holdings.

We therefore call for the establishment of a National Framework for Digitisation of Audiovisual Collections for the targeted quality digitisation of magnetic tape formats, to meet 'Deadline 2025'.

IN CONCLUSION

The development of a National Framework for Digitisation of Audiovisual Collections supported by sufficient investment over the next ten years is vital to ensure future access to and celebration of Australia's at-risk collections.

In relation to the investment already made in the production, collection, storage and preservation of our audiovisual heritage, this additional cost is not disportionate. Through digitisation we will bring this content to life and deliver benefits which ultimately repay the cost many times over.

If we act swiftly today, we will all enjoy the advantages that digitisation of our collections can bring. There is still time to avoid a cultural calamity affecting future generations of Australians: the preventable loss of an irreplaceable part of our heritage.

[1] Mansfield, T., Winter, C., Griffith, C., Dockerty, A., Brown, T. *Innovation Study: Challenges and Opportunities for Australia's Galleries, Libraries, Archives and Museums*, Australian Centre for Broadband Innovation, CSIRO and Smart Services Co-operative Research Centre, August 2014, pp vi

[2] www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/mow/unesco_ubc_vancouver_declaration_en.pdf

[3] www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/mow/unesco_ubc_vancouver_declaration_en.pdf

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FOR ANALOGUE DOCUMENTS, DIGITIZATION CAN PROTECT VALUABLE DOCUMENTS FROM DETERIORATION BY REDUCING HANDLING. IN THE CASE OF AUDIO-VISUAL DOCUMENTS, DIGITIZATION IS THE ONLY MEANS OF ENSURING THEIR SURVIVAL.[2]

UNESCO Vancouver Declaration

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DIGITAL PRESERVATION SHOULD BE A DEVELOPMENT PRIORITY, AND INVESTMENTS IN INFRASTRUCTURE ARE ESSENTIAL TO ENSURE TRUSTWORTHINESS OF PRESERVED DIGITAL RECORDS AS WELL AS THEIR LONG-TERM ACCESSIBILITY AND USABILITY.[3]

UNESCO Vancouver Declaration

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The NFSA has Access Centres available in State Libraries in Hobart, Brisbane, Adelaide, Darwin and Perth.

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