Issue 2, September 2012

AV INSIDER

Preservation in Times of Precarity

Free and Open Source Tools

for AV Digitisation Preservation Workflows

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Fundraising During Crisis

Learning a New Language

Power to Serve

Green Archiving

Gaby Wijers

A New Start for Media Art

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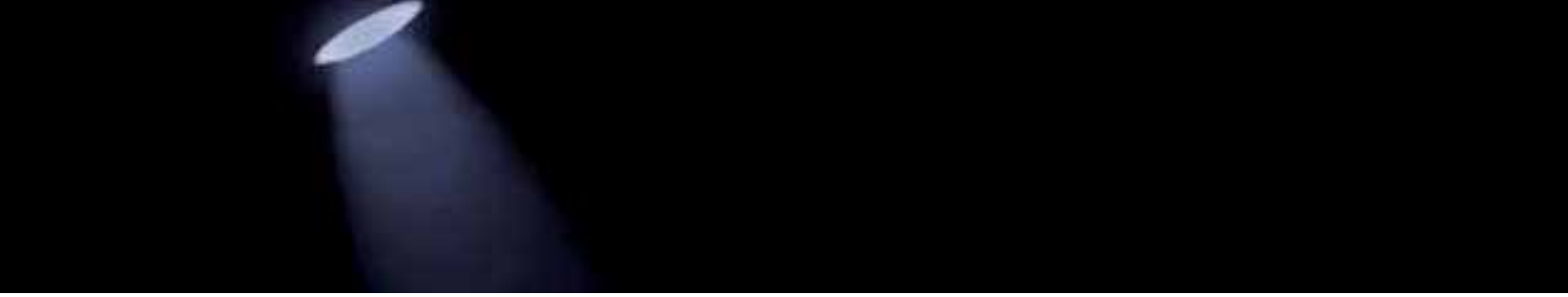

In this Issue

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PrestoCentre
The PrestoCentre Foundation is a membership-driven organisation that brings together a global community of stakeholders in audiovisual digitisation and digital preservation to share, work and learn. Using free tools and simple strategies we save you money and time, whilst improving long-term access to audiovisual collections. PrestoCentre works with experts, researchers, services providers and technology vendors, advocates, businesses, public services, educational organisations and professional associations to enhance the audiovisual sector's ability to provide long-term access to cultural heritage.

Membership is open for organisations across all user communities of practice, including broadcast archives, sound and film archives, national libraries and archives, regional archives, subject-specific archives and special collections, museums, educational institutions, corporate archives, production companies and studios, filmmakers and independent producers, research organisations, commercial providers, as well as funding bodies, standards organisations, and other organisations concerned with audiovisual archiving.

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PRESTO CENTRE

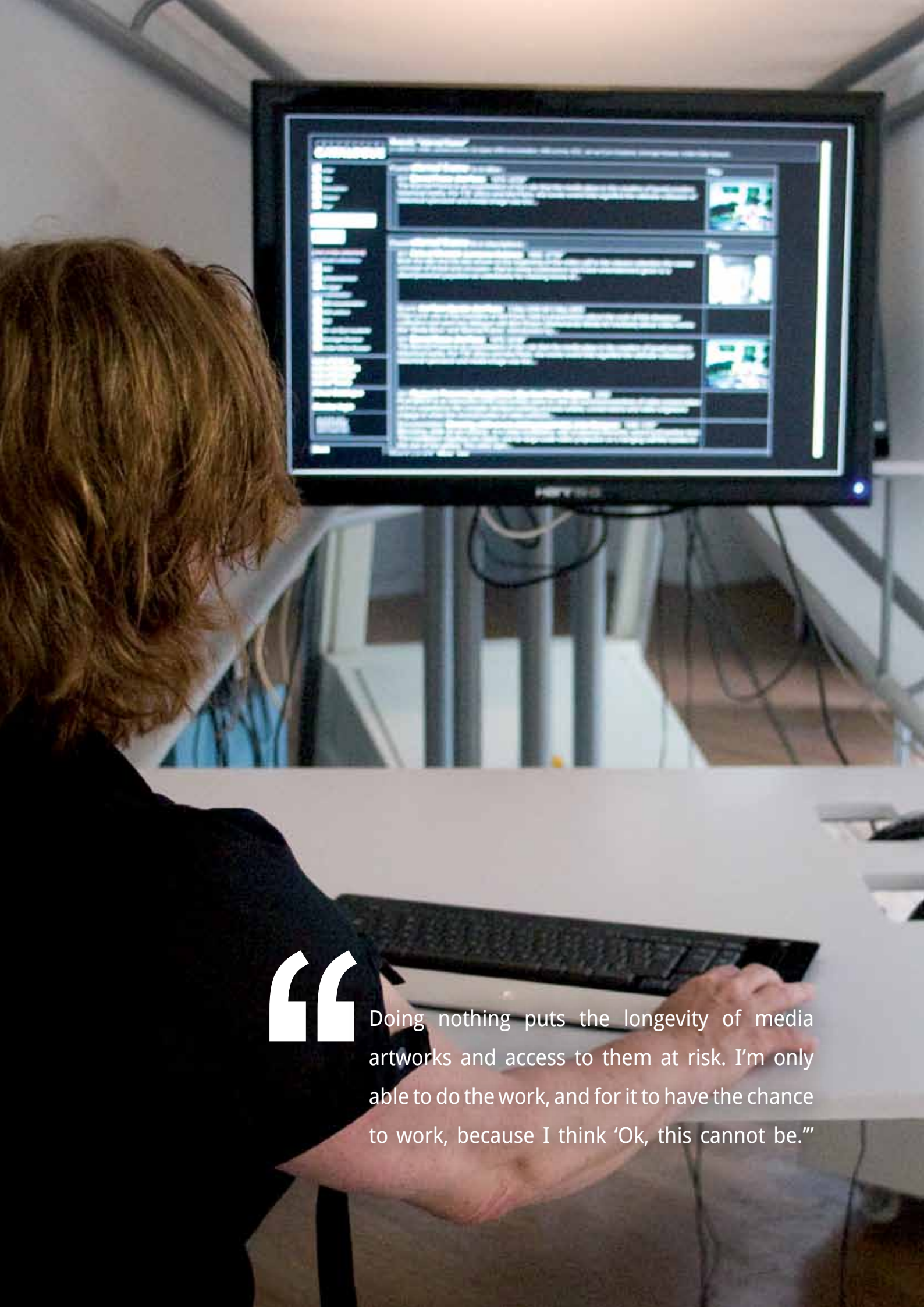
Money Talks

The first half of 2012 has brought only good for PrestoCentre. We've grown from nothing to 65 members which is a promising result when thinking of how we started from scratch, only a year ago. It has shown that many of you believe in following a different approach. The support we have received so far allows us to prepare a whole series of services for improving the exchange of knowledge around audiovisual digitisation and digital preservation. This magazine is probably the most informal and tangible one so far and we would love to hear your initial responses now that this second issue is on your doormat.

At the same time, in my other life as a director of a national audiovisual institute, I am wondering how all of us are being affected by the economic slow down? It's starting to look pretty alarming. It doesn't quite hit until you hear stories of public funds evaporated and some AV institutions or departments already closed down. It made me realise how even more relevant the mission of PrestoCentre has become. Now that money has become a main concern for all of us, the greater the need for guidance and tools: What is the position of your archive in the overall content market? How do you estimate your long-term storage costs? Where can you make the necessary savings? How do you turn cutbacks into new opportunities? How do you go forward when everything seems dim? This issue of AV Insider doesn't intend to have all the answers but it will certainly bring some inspiration and spirit to many of you. That too is one of the goals of PrestoCentre.

Meanwhile, we continue working with you to extend what was basically a website and some incidental workshops into a fundamental set of services that will help you continue to keep audiovisual content alive — especially in times of crisis. This month's issue presents some of those new services. I hope you will enjoy the read!

Jan Müller
President, PrestoCentre Foundation



> Doing nothing puts the longevity of media artworks and access to them at risk. I'm only able to do the work, and for it to have the chance to work, because I think 'Ok, this cannot be.'"

Cover Story:

Sustaining Preservation During Tough Times for Media Art

In conversation with Gaby Wijers
Head of Collections, Preservation and Related Research at the Netherlands Media Art Institute

Amongst a climate of economic austerity and drastic cuts to cultural funding in the Netherlands, in June 2011 it was announced that the Netherlands Media Art Institute (NIMk) based in Amsterdam,[1] along with other established art institutions and initiatives, were to lose the entirety of their national government's structural funding at the end of 2012.[2] As a consequence, the local structural subsidy will also be discontinued. With 65% of their overall annual budget slashed, how would NIMk, with its extensive collection of media artworks, its research and expertise in preservation, its support and digital storage services for media artworks of both artists and Dutch museums, as well as its established exhibition, education and Artlab, persevere?

With the institution's head on the chopping block, Gaby Wijers, the Head of Collections, Preservation and Related Research, along with her colleagues in different departments of the organisation, the Directors and the Board, were charged with the task of rethinking the institution's options.

For Gaby it became clear that to protect NIMk's growing collection and its immense body of preservation expertise, and to continue to support the collections of artists and other institutions, a new life needed to emerge. From the history of NIMk, to the specifics of media art preservation and its importance to AV cultural heritage, and the challenges and strategies the institute devised, Gaby paints a picture of how they'll be realising this in these uncertain times.

From Humble Beginnings

"NIMk grew from humble beginnings," she says, having transformed extensively over the years since it came into being in 1978. Beginning as Monte Video, it joined with Time Based Arts in the 90s, combining their collections and spirit, and coming to be known as Netherlands Media Art Institute (or NIMk, from its Dutch name as the Nederlands Instituut voor Mediakunst).

As the "heart of the institution," Gaby says, the NIMk collection actually encompasses a number of collections, and is not only audiovisual works, but includes a spectrum of different "types" of media art.

There is the distribution collection, which actively takes in, presents, loans, sells and preserves the works of artists, totalling about 2000 titles at present. "Two hundred of these," she points out "are not video-based, such as net art, computer-based art or video with no carrier like with closed-circuit installations. And within the 1800 video-based works, there are numerous multi-channel installations, which could also be interactive." Composed of Dutch and international artists, the works range from the early inception of video to the newest of the new with artists pushing technological limits of all kinds. "All artists in the distribution collection retain sole rights to their work. We are working as their >

agent to promote, present and care for their media artworks." On top of this, the institute also manages the collections of a number of other museums and organisations as de Appel and the Cultural Heritage Agency of the Netherlands (RCE).

There is also NIMk's own archive chronicling 30 years of media art history offering 1000 media artworks and documentation of events and projects produced and presented by NIMk. And if someone wants to know more about the media art scene, there is a reference collection of 6500 titles that can be viewed in the mediatheque.

Alongside the collection and distribution departments is preservation, whose activities are initiated and coordinated by Gaby. This includes not only in-house preservation for its distribution collection, which is "currently in the form of uncompressed AVI files stored on LTO tapes housed at NIMk, with Mpeg2 and Mpeg4 access files for viewing," but also support services for artists and museums to digitise, preserve and store their AV and media artworks (analogue and born-digital).

With a history of advocacy and knowledge exchange in media arts, NIMk has been working at the forefront of research, initiating and collaborating in numerous national and international preservation and online access projects, such as Inside Installations, Obsolete Equipment, Digitising Contemporary Art and Gateway to Archives of Media Art (GAMA),[3] and is also called on internationally for its expertise, working with the RCE and the Dutch Foundation for the Conservation of Contemporary Art (SBMK) in the International Network for the Conservation of Contemporary Art (INCCA) and with Tate, PACKED, and the University of Bern for example.

NIMk is chief initiator and technical executor of the Preservation of Media Art Collections in the Netherlands[4] project, working to preserve video artworks from Dutch public media art collections, including those of the Van Abbemuseum, V2_Institute for Unstable Media, Museum Boijmans van Beuningen and Stedelijk Museum Amsterdam. The project is now in its third iteration, the first phase from the early 90s dealing with obsolete tape formats like open reels and transferring them to analogue Betacam, and the second (working together with the SBMK since) involving digitisation, ending in 2002 with works in digital Betacam. Over the years more and more collections have participated in this national and international exemplary project. Next to preservation access is key, and research into the needs for born-digital art is executed.

"In the late 90s there was a discussion in the museum world on how, and if, digitisation or transferring the signal of a video work to another >

About

Who: Gaby Wijers

Where: Netherlands Media Art Institute

What: Head of Collections, Preservation and Related Research

If Gaby was to tell someone to check out one video: "It would be *The Eternal Frame* by Ant Farm, a video art piece from 1976. I love fake documentaries, re-enactment and examinations of the role media plays in the creation of (post)modern historical myths. The grotesque juxtaposition of circus and tragedy in the piece calls our media 'experience' and collective memory of the actual event, the assassination of JKF, into question. Doug Hall, in his role as the Artist-President, addresses his audience with the ironic observation that 'I am, in reality, only another image on your screen.'" You can watch a fragment at http://catalogue.nimk.nl/site/art.php?id=5131.

carrier would effect the integrity, authenticity, uniqueness and value of the artwork. Now a similar discussion is going on for born-digital artworks. How to sustain a computer-based work, a net art piece, a participatory work? And research, techwatch to stabilise a workflow and documentation for new technical art forms, is always crucial." To bridge this gap between museum preservation practice and media art preservation practice NIMk, as a knowledge institute for the preservation of media art, provides institutions with services and advice, acting as a supporting institution. "We're also a national repository for media art. Almost all contemporary art museums in the Netherlands, amongst others, store their media artworks here, and we take care of them," with the repository dating back to the early 90s.

NIMk's preservation and technical experience has grown from its position as a distributor and presenter of electronic artworks, as well as a producer, being repeatedly set with the task of showing works in different circumstances. "We're presenting and re-executing these artworks all of the time, following the wishes of the artists, which offers the challenge of learning by doing, of constantly having to question how to re-present this work, in this new situation, maybe new equipment, new needs, new possibilities and so on. So preservation isn't just a bookend to the other work we're doing, but an active part of our activities."

Matters of Media Arts

While media arts, particularly works that have a video component, share similar technological concerns in terms of analogue digitisation and digital preservation and are an important part of audiovisual cultural heritage, what is especially at stake is the complex nature of its objects and the presentation requirements for most works. "There are challenges in the quality of digitisation; this is no mass practice, but a one-by-one high-quality activity. There are also challenges in the variation of possible presentations, like those of installations, where the video material is part of a larger construction or presented in a specific way in a space, with certain equipment, and depending on the requirements, can occur in different formations, interactive, participatory." This is often neglected, "it's not only the carrier, the tape of each work, but also how to present it. Much of the work is not in a single television set, for example, but has distinct recommendations on presentation, which also requires a high level of documentation," one of the significant reasons it differs from the work of more traditional AV archives.

We're presenting and re-executing these artworks all of the time, following the wishes of the artists, which offers the challenge of learning by doing, of constantly having to question how to re-present this work, in this new situation, maybe new equipment, new needs, new possibilities and so on.

Not only is much of this knowledge and expertise missing in larger museums, but "a big part of our cultural heritage in media art is never finding its way there." After a sordid history of finding its place in museums, video art is now well-accepted, "but net art, for example is now the new, and there will always be the newest new, the newest way that will be alienated from the traditional art scene. The highly process-based or performative character of media arts is quite a challenge to the museum system, like how to buy a performance or how to buy a net artwork, and requires a different model."

"This is why we, from both the practical field and our deep knowledge of the concept, context and process of these kinds of artworks, have become >

more and more a knowledge and expertise centre, on the one hand providing services to artists, and on the other, even more to museums and other collections both nationally and abroad."

The Path to Preservation

Joining NIMk 10 years ago Gaby has seen the organisation, the media arts landscape, and possibilities for documentation and preservation transform.

Prior to NIMk, Gaby was trained and working as a librarian, also investing much of her time in theatre researching and publishing on how to document performances, how to re-enact and describe theatre, and developing different models to do so.

Her interest in theatre merged with that of technology when she took up a post at the Theatre Institute of the Netherlands working in ICT, databases, and documentation, tackling the immense job of making order of the thousands of objects that make up its extensive collection. But here her work was largely managerial, which over time lost its appeal and encouraged her to look for something more.

Over the course of 10 years she freelanced, while at the same time studying informatics. Here her interests in arts and culture merged further with that of technology, project management and systems, doing a number of projects focused on databases for music and artist residencies, and worked with the Stedelijk Museum amongst others. "I like to initiate and mobilise and I'm a networker," she says speaking of the numerous networked cooperative projects she's worked on, "I've always loved these kinds of projects, with all different 'blood groups', and deeply believe this is the most beneficial way in a changing environment where you cannot predict the future but have to enact one, have to find a network to exchange challenges and knowledge, and find a platform to support actions."

She became involved with NIMk in the mid-to-late 90s while freelancing, coordinating the development of their online catalogue "with moving image!" and technical research on digitisation, which was no small feat for the time.

Employed by the SBMK, Gaby acted as the coordinator of the second phase of the Preservation of Media Art Collections in the Netherlands project, working with NIMk as well as other collections involved. At the project's end in 2002, NIMk was in transition, she tells, and ready to explore and grow the preservation knowledge it had developed thus far. Gaby was brought in, and over the course of 10 years has worked with others to transform NIMk's preservation actions, advocacy and initiatives into a full-fledged department, whose work, expertise and knowledge has become internationally recognised.

Being instituted as the person to run preservation at NIMk, Gaby initiates, builds and coordinates programmes and activities. But of course "this was only possible because NIMk already had a vast body of knowledge around preservation, and a digitisation and digital preservation workflow."

The Cultural Climate of Cuts

With such an extensive collection and an important roster of exhibitions, production, presentation and preservation activities, why then would such an institution, a museum, be closed?

In terms of the cultural climate, "there feels to be a number of things going on. Of course there are the budget cuts, that's a general action. But there is also a very conservative feeling arising. Whereas 10 years ago the funding selection embraced and saw experience, talent, development and 'new' as positive, nothing that seems to challenge or is experimental is encouraged now. It feels to be the opposite, with 'safe' being the only supported way." >

Where funding used to be invested in various service institutions, like NIMk who support museums and artists, this entire line was cut. “It was the kind of stability that structural funding provided, that gave us grounds to experiment, allowing us to be early adapters of new technologies in terms of artworks and their preservation, and being able to be open and embrace the new, even with a level of uncertainty about what this new might mean.”

“Of course we knew our budget would be cut, but I don’t think we expected it to go down to zero when the announcement was made in June 2011. Our preservation tasks were always evaluated quite well, but then the government decided that financial support for institutions who offer support services to other institutions was to be removed. Now these other institutions have to do it all by themselves or we work on it together in a different way.”

“Our collection isn’t a national or governmental collection,” another possible reason for the removal of funding, “but it’s not correct that all works of value would already be in the museums because there is always more technical and experimental work that isn’t held there, similar to that of video art which was initially alienated.”

Together or Separate?

Between the time the cuts were announced in June of 2011 and December of the same year, NIMk actively went through various plans trying to determine the best route to take, from thinking of closing its doors at year’s end, to looking for ways for the institution to stay together, or merge with others. Over the year staff has been cut down by more than half, but this will be 100% by the end of 2012, and activities therefore have to be scaled back.

“Of course we also tried to cooperate and have a fusion with bigger institutions in the Netherlands to find stability. But that didn’t work out so well since we wanted to keep the combination of producing, presenting, and preserving media art together in an art context, especially because of the specific preservation considerations video >

and media artworks require, and also in terms of them taking on part of NIMk's staff who have the expertise to help care for the collection." As December 2011 rolled around, NIMk started thinking about other possibilities.

One of the key challenges, and a question that had been on the table for a while, was determining what NIMk's core business was. With a collection and its distribution, exhibitions that are both related and unrelated to the collection, an Artlab that produces works that may or may not be in the collection, and preservation services and activities for both in-house and external parties, "a rich and very fruitful mix," the question of "how do you start a new business and move ahead, when these kinds of challenges already exist" came to the fore.

"In addition to speaking with bigger, longer-funded foundations to discuss possibilities for merger, we also had conversations with a number of smaller organisations." In particular, Amsterdam-based SMART Project Space, a centre for contemporary art and cinema, came to the table "and we saw that their creation of New Art Space Amsterdam, or NASA, which could incorporate some of the experience of NIMk and to be housed at SMART's current location, offered possibilities."

"With a 65% cut, we wouldn't have been able to operate at the same capacity and would have been compared to the image of what NIMk used to be. In a way, it's better to stop and start something really new, that's the idea behind it, use the challenge presented to us to forge ahead and create a new life for part of the functions of the organisation."

With a focus on contemporary art for exhibitions and education in this new institution, Gaby was concerned that the collection and preservation knowledge, based in media arts, would relate less specifically to NASA's work.

"At a certain point over the Christmas holidays of 2011, I realised that in the new plans, preservation and the collection would take a backseat and it had to be significantly scaled-down. So I made a plan to create a new foundation for the digital sustainability of media art. It was immensely important to me that the collection together with the knowledge built up around preservation persisted."

"Doing nothing puts the longevity of media artworks and access to them at risk. I'm only able to do the work, and for it to have the chance to work, because I think 'Ok, this cannot be.'"

A New Foundation

On January 1, 2013, the collection and distribution work of NIMk, its digital preservation shared services for artists, museums and galleries, its place as a knowledge centre, as well as a number of research projects currently on the go, will stop. At the beginning of 2013 the newly formed VH MV (Formerly Known as Montevideo, the current working title for the new foundation) will start to function. Gaby is also looking to develop what is being called the Sustainability Lab, an entity within the foundation "to further develop practice-based research into media arts preservation. But these plans are of course still being worked on as we're further developing the model for the new foundation, striving for the best possible configuration for the work we want to do."

While the option of transferring the collection and mediatheque to a university or academy to care for could have been a possibility, Gaby explains, "I find it very important that such a collection and an archive is not an invisible, dead collection, something that would just go into storage somewhere, but rather, a living archive with known and new talents. The preservation work we want to do, and to be done, is innovation by sustainability, a living archive, that through its sustainability is the inspiration for new work." >

"VH MV will be a new identity and entity, it's not the next NIMk. And although it will be housed in the same location as NASA, it's autonomous with its own activities, financial configuration and Board, but located in a shared art space." In terms of cooperating with NASA, "there is definite potential and we're exploring different ways of how this could work. We have access to an exhibition and screening space and they have access to a collection, both with the potential of being used, rented, etc., and also possibilities of presenting works together, but this would be on more of an agreement basis around particular works or events." Such questions are still on the docket Gaby says, as NIMk along with all other organisations facing the same cuts, had to very quickly turn over plans in 2012 of how they would act after this final year of funding will have dried up.

"We didn't have time to figure it all out, there was a new director, and we're a small organisation who was deeply hurt both financially and emotionally. So we thought for the time being this is the best option: new and separate initiatives but still with the possibility of collaboration and access to each other and others. But first we each have to find stability and grow again, and then see if we become together, or not together, as a new big hub."

In the new foundation, Gaby will be the director, participating in similar work, but acting more outside the building, making connections and networking, finding stability for this new formation, getting its services and research programmes up and running, and initiating: "Developing its identity and its growth, that's the exciting challenge."

"The thing is, we will have to start small in a landscape where big is beautiful and we have to see how we're still recognised as one of the international key players, that we're not so small that no one notices us anymore. Certainly we also have to do much more in terms of promotion or branding as an expertise centre." This could be a paradoxical position that cultural institutions have to acquaint themselves with after many years of public funding.

For the time being, Gaby's sights are set first and foremost on settling the ground with the move-in at the end 2012, attacking a business plan for the sustainability of the foundation and the shared preservation services, then access to the collection, and continuing research projects.

Building a Model for Sustainable Media Art Preservation

"The crux of our business model will be based in the shared preservation services for museums, artists and galleries, and storage," which has proven fruitful. "We've re-formulated that model into one that can support itself in terms of the new foundation, and answers questions like what would it cost to sustain a system for media art preservation for Dutch collections. Sustaining the collection and research can never be a commercial business," Gaby adds, "the shared services has to be not-for-profit."

"We can, for instance, deliver services and expertise for storage and related preservation activities. A major part of it will be possible to carry out, paid for by the institutions we support. To sustain high-quality research, however, we are more-than-ever in need of cooperation with big supported institutes and looking for productive collaborations. For example, joint-applications for research funds with SBMK, other national custodians of AV collections and universities."

"There are many different possibilities," Gaby says, having actively researched the models of organisations in different domains, from audiovisual preservation institutions and contemporary art museums, to artlabs, e-culture groups and media art support organisations in other countries, to find a sustainable model and "to see where to connect, to share, and find ways to sustain our collection, our knowledge, ourselves." >

"In 2012 there will be a reality check after we present the business model with its global pricing scheme to museums and get feedback. Until now the feedback has been positive and museums and other collections, galleries and artists see the benefit of outsourcing this part of their digital sustainability: the management, storage and access of their media art tapes and files to VH MV. We're looking forward to setting up a national platform for sustainable access to media art in 2013 and hope in the near future to develop that further into an international one."

The distribution of the collection will also continue as the foundation intends on taking over all contracts with artists, if they agree. "Changing this into a more self-sustainable model is the next challenge since open data, fair led and online business is now key, so we're actively finding different ways to do this by researching new online possibilities and crowdsourcing for example."

"We're being pushed quite a lot into a position of very seriously having to consider the commercial," which becomes somewhat complicated coming from an organisation whose background is in open source sharing culture. "We're having to find a way that's not the complete opposite of the spectrum, where people can't afford it anymore," with an assessment of the balance of this equation coming during the foundation's first year.

"It's not just about the money," Gaby says in terms of the possibilities for future national funding, "but basically about the fact that money stands for recognition and an acknowledgement of the fact that the work we do, the collection and the artists who create the work we deal with, is important and needed, and is of national importance. I think when everything is totally re-shuffled, then national funding can be re-shuffled as well."

In terms of the foundation's future, Gaby is enthusiastic: "I'm really positive. Especially in times of budget cuts we are in need of a national network, platform and infrastructure to sustain high quality digital preservation and access to media art, and are exploring ways to advocate and realise this. VH MV is ready to explore and grow the preservation knowledge NIMk has developed thus far. Let's see whether time is on our side in working together to realise high quality and innovative practice-based research into the preservation of media art."

"The thing now, is how to become sustainable as a rather little hub in the national infrastructure working together with others: RCE, SBMK, the Dutch Cultural Coalition for Digital Sustainability (CCDD), national AV archives and NASA etc. How to keep your status and standards, and push the limits both in terms of what you can do as an organisation, for your own collection, for media arts, and for the wider community of artists, museums and audiences."

"We are ready. At the moment the whole national cultural infrastructure in arts and heritage is changing. In media art preservation, change over time is the challenge. The constant is the need to change. Sometimes it's tough and insecure, waiting to see if it works out, dealing with an often too big workload. But I'm always hopeful that from our shared point of departure with other organisations and institutions, we can work together to further the preservation of media arts and access, and continue to push the importance of arts and cultural heritage." **RSM**

1. http://nimk.nl/eng/
2. http://nimk.nl/eng/letter-to-mr-zijlstra-and-members-of-the-lower-house
3. http://www.inside-installations.org; http://nimk.nl/eng/obsolete-equipment; http://www.dca-project.eu; http:// www.gama-gateway.eu
4. http://nimk.nl/eng/preservation-media-art-collections-in-the-netherlands

Tools for Smaller Budgets

Using Open Source and Free Tools for AV Digital Preservation Workflows
By Kara van Malssen

Digital preservation of audiovisual material is a complex, resource intensive undertaking. The essential functions of audiovisual archives demand skilled staff, specialised hardware and software, and carefully managed workflows. In an era of constraint and austerity, it is harder and harder to argue for the necessary funds for equipment, services, and staff. For smaller archives, finding a sustainable approach to long-term digital AV preservation is especially tricky.

Archiving and preservation consists of technology, people and policies. For technology in particular, digital AV archives are largely indebted and beholden to a few sizable industries: cinema, broadcast, and information technology. Commercial interests catering to the aforementioned industries have produced a seemingly attractive toolset that has the potential to provide archives with the ability to apply their policies in service of preservation-oriented workflows. Yet, even in the hands of larger well-resourced organisations, employing these tools can be challenging and resource intensive. How can smaller, resource-constrained AV archives efficiently apply cost effective tools and technologies to their workflows?

Though at first glance all tools of the heavy-weight industries mentioned above appear very expensive and proprietary, this is not necessarily the case. Often, simple, free and open source tools make up an important part of the landscape. Large hardware manufacturers, software developers, and IT experts regularly utilise various forms of open source technology. Common uses include operating systems (such as Linux in server environments) and databases (such as MySQL). Fundamental IT tasks are often performed using commands built into open source operating systems or small open source tools. When integrated into large systems or used in combination these simpler options can become powerful, automated systems. Open source technologies often form an important part of the backbone of many sophisticated tools of larger, related industries. When employed individually and applied using archival policies to preservation workflows, these simple tools can also be very useful, and often less costly than the alternatives.

There are a number of reasons why archives might be attracted to the idea of open source, such as support from a community of users rather than a commercial vendor, the promise of free downloads and licenses, or the availability of source code for modification (the definition of open source). There is, however, often a misconception of the meaning of the word "free" frequently heard along with open source. As Richard Stallman, founder of Free Software Foundation[1] and the GNU Project[2] notes, "When we call software 'free,' we mean that it respects the users' essential freedoms: the freedom to run it, to study and change it, and to redistribute copies with or without changes. This is a matter of freedom, not price, so think of 'free speech,' not 'free beer.'"[3] Technologies that are "free" as in "free beer" but do not adhere to these principles (i.e. they do not provide access to source code, and/or do not allow modification and reuse of code) would be considered freeware rather than open source. Freeware tools, however, may also be of use to AV archives.

While free and open source software is often free to use, as in the developers don't charge >

users a fee, this doesn't always mean it doesn't require other resources to effectively implement and use. For AV archives in particular, the successful utilisation of open source software to solve day-to-day operational challenges related to preservation and access still necessitates human resources in order to successfully support archival goals.

Open Source Tools in AV Archives

Funding may be the resource most obviously limited in smaller archives, but these institutions may be rich in other resources. Skilled staff, access to partnerships and training are valuable resources that can be leveraged to help an archive improve its digital preservation and access initiatives. These resources can be applied to help the audiovisual archive perform its essential functions — ingest, storage, data management, preservation planning, access, etc. — with the help of open source tools.

Open source tools are typically accessible two ways: through a graphical user interface (GUI) or via the command line (CLI). We are all familiar with GUIs, which are the desktop, mobile, or web applications we interact with every day. CLI tools are more familiar to computer programmers, systems administrators, and other IT professionals. The command line interface, sometimes known as the Terminal (Mac OS),[4] Command Prompt (Windows),[5] or shell (Linux and UNIX),[6] allows users to directly access the operating system and installed programs by typing commands, without the intermediary of a GUI. Running tools on the command line can be flexible, powerful, and allow for increased automation of tasks. This is not to say that all tasks can or should be performed on the command line; video editing, for example, as an inherently visual task, is certainly more suited to a GUI.

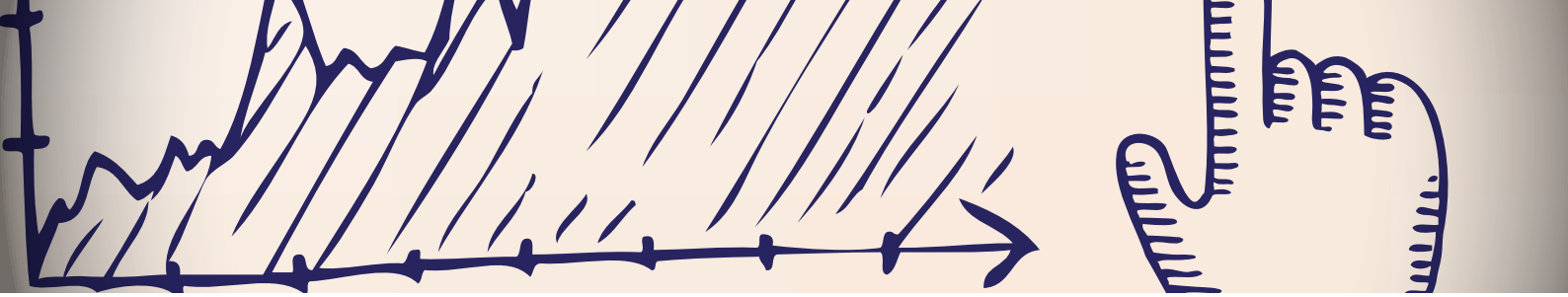
Maximising the use of many open source tools requires some knowledge and skills on the command line. Learning, then applying these skills, can be obtained for relatively low cost. Ultimately, armed with the technologies of the digital landscape, AV archivists will be better equipped to contribute to the discussion of digital preservation tools for audiovisual materials by contributing to community efforts to document needs of the field, develop and improve applications, and become a beta tester for new tools. Only the AV archivists can articulate their requirements; if we remain silent, how can we expect the tools to be developed for us?

Open source technologies often form an important part of the backbone of many sophisticated tools of larger, related industries. When employed individually and applied using archival policies to preservation workflows, these simple tools can also be very useful, and often less costly than the alternatives.

Example Workflows Using Open Source Tools

The following explores a few typical scenarios for audiovisual archives, and describes how open source tools may be used to facilitate all or part of a workflow. Many of the tools described below are from the digital preservation community, and can easily be applied to AV media, and others were specifically developed for digital AV preservation. Some tools come from the broader audiovisual production and distribution communities.

For each workflow or task identified, examples of GUI and CLI tools are provided. The focus here is on tools that facilitate smaller, more specialised tasks, rather than larger systems that can perform multiple functions. >



Tools to Support Activities Related to Digitisation

Digitisation is inherently an expensive process. It requires expensive hardware: playback decks for source media, analogue to digital converters, monitors and scopes, fast computers, and more. When creating archival quality digital audio and video, this equipment is mandatory.[7] If your archive has a relatively small collection, or is cash-strapped, it will not be worth investing in this equipment, and instead will be more cost effective to outsource the digitisation to an experienced vendor.

Essential archival functions surrounding digitisation, however, need not be so pricey. For instance, a number of free and open source tools exist to support the different points of a digitisation workflow where either embedding or extraction of metadata should occur.

Embedding Provenance Metadata

Documenting provenance is an important function of archives. For content that was digitised from analogue material, it can be particularly useful for end users to understand that a digital media file looks or sounds a particular way because it was digitised from an analogue source. For technicians, it is important to understand what device in the digitisation chain created an artefact in a set of digital files. For a few AV file formats, embedding provenance information directly into the file can be achieved using open source tools.

The Broadcast Wave file format (BWF), the standard format for audio preservation, provides a location within the file header to embed provenance metadata. Known as the Bext chunk, this area of the file was explicitly designed to store metadata about the originator and file creation process. BWF MetaEdit,[8] a free and open source tool developed by the U.S. Federal Agencies Digitization Working Group (FADGI) with AudioVisual Preservation Solutions (AVPS), allows archives to easily embed metadata about the ownership, origination, and coding history of the files. Coding history, as described by the FADGI guidelines for embedding metadata, is "Designed to hold data on the digitising process including signal chain specifics, sample rate and bit depth, and other elements [...] The first line documents the analogue source recording, the second line contains data on the capture process, the third line of data records information on the storage of the file."[9]

Example tasks using BWF MetaEdit include embedding metadata into a batch of files following digitisation, examining existing embedded metadata in files, importing metadata into audio files from external sources, and outputting metadata from files as CSV or XML for use in other environments. BWF MetaEdit can be used to process single or groups of files.

A similar tool for AVI files, AVI MetaEdit[10] was recently developed by the U.S. National Archives and Records Administration and AVPS, along with a metadata schema called reVTMD,[11] for capturing and embedding coding history metadata about AVI files. Both tools are available as GUI and CLI applications for Windows and Macintosh operating systems.

Technical Metadata Extraction (i.e. Characterisation)

Knowing the properties or characteristics of your digital files facilitates collection management goals including storage planning, obsolescence monitoring, collection growth, migration, and more. By performing characterisation, or technical metadata extraction, from files after digitisation (or after acquisition of born-digital files), collection managers can create a comprehensive collection profile of their digital media. This information is also useful to provide to a digital preservation repository as part of a Submission Information Package (SIP).

There are a number of tools available from the digital preservation community that support >

characterisation and validation of common image and text formats, including JHOVE[12] and DROID.[13] To date, these tools have not had very good support for AV media. In the meantime, archives with AV collections often use MediaInfo[14] to perform characterisation, and more recently Exiftool,[15] as its support for AV files has been expanding. MediaInfo is available as both a GUI and CLI tool for nearly all operating systems. Exiftool is primarily a CLI tool for all operating systems, although there is a simple GUI available for Windows only.

MediaInfo reads the technical metadata embedded in media files, and presents those as text. It can read a directory of assets, but the output is text on the screen. There are some limited options for saving and making this information usable in other applications (including PBCore, and MPEG-7 XML output for Windows GUI users), however it can provide a useful understanding of the media.

The MediaInfo and Exiftool CLI applications offer much more powerful options. Both allow XML and HTML output (and even JSON and tab-delimited output from Exiftool), which allows you to potentially import into databases, display on web pages, and script processes using the data. You can even combine this output with other open source tools for extremely useful results.

As an example, try exporting metadata for a directory of files in JSON from Exiftool using the command:

```
$ exiftool -r -j [DIRECTORY] > output.json
```

Then convert the output into csv using the in2csv tool from csvkit, "a suite of utilities for converting to and working with CSV,"[16] by running:

```
$ in2csv -f json output.json > output.csv
```

Now you can sort, visualise and manipulate technical metadata about your AV collections in common applications such as Microsoft Excel, Google Docs, and more.

In addition to reading a wider range of files than MediaInfo (primarily image formats), Exiftool can both read and write metadata to files in standards including EXIF, IPTC, and XMP. It includes numerous other features,[17] such as presenting output in over 15 languages, and >

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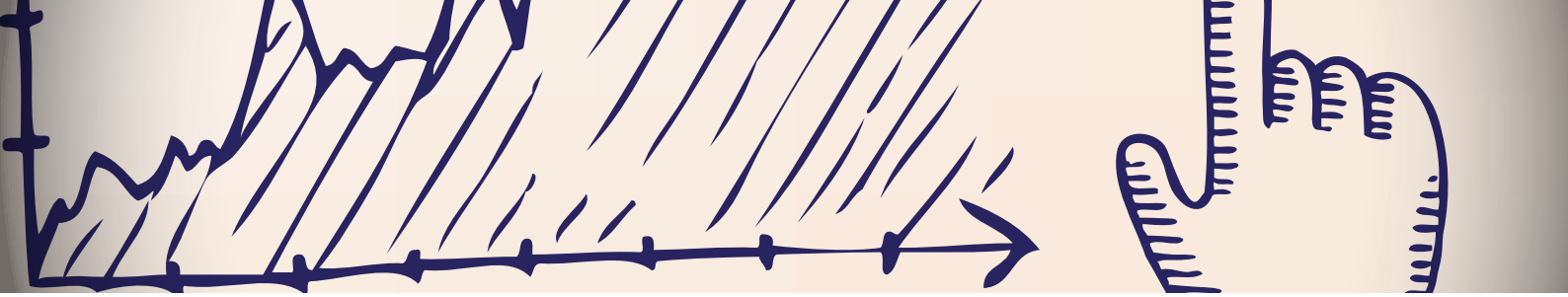


outputting RDF XML, offering potential for linked technical metadata!

Tools to Support Activities Related to Ingest and Archival Storage

A fundamental task of any digital repository is to ensure the integrity and authenticity of data over time. Caretakers of digital collections are concerned with this during data transfer, which is a common time for digital files to become corrupt, and also while in long-term storage over time. This requirement is common to all digital archives, whether they manage research data, still images, or audiovisual media.

In order to monitor and manage the integrity of digital files, archives often generate checksums or hashes of the data. Checksums apply algorithms to data, and produce a unique string of characters that serve as a representation of the data in its current state. If anything about that data were to change, whether through corruption or human error, the checksum value would also change. As long as the systems creating and auditing checksums are using the same standard (such as MD5 or SHA-256), the output of a checksum function with one tool should be the same as the output in another environment using a different tool.
Using these principles, checksums may be generated by the submitter, then verified by the receiver. Checksums are ideally generated and documented as early in the creation process as possible (i.e. immediately after digitisation or production).

Consistent packaging of files along with their checksums (as a Submission Information Package or Archival Information Package) according to a documented specification is a very common strategy in the digital preservation community. There are a number of open source tools available to support workflows that involve the packaging of digital content along with checksums, as well as those for verification (auditing) of checksums at intervals which would be applicable to digital AV collections. A few of these are described below.

Packaging

BagIt,[18] developed by California Digital Library and the Library of Congress, is a "hierarchical file packaging format designed to support disk-based storage and network transfer of arbitrary digital content. A required tag file contains a manifest listing every file in the payload together with its corresponding checksum."[19] In other words, "Bags" (the product of the BagIt utility) are directories of files, with an inventory of the files contained, and checksums for each object in the bag.

For AV archives in particular, the successful utilisation of open source software to solve day-to-day operational challenges related to preservation and access still necessitates human resources in order to successfully support archival goals.

Bags are either generated before a group of files are moved to long-term storage, to provide a consistent structure for content and metadata files, or before transfer to a repository or users. They are then verified after they are received in their new storage location. Bags are generally not created by hand; instead, creation and verification of bags according to the specification is typically done by one of a number of open source tools.

For those more comfortable with GUI applications, and/or who don't have a large number of bags to create and/or verify, the Bagger tool can be used. As defined in its documentation, "The Bagger application was created for the U.S. Library of Congress as a tool to produce a package of data files according to the BagIt specification."[20]

>

Ultimately, armed with the technologies of the digital landscape, AV archivists will be better equipped to contribute to the discussion of digital preservation tools for audiovisual materials by contributing to community efforts to document needs of the field, develop and improve applications, and become a beta tester for new tools. Only the AV archivists can articulate their requirements; if we remain silent, how can we expect the tools to be developed for us?

Bagger is a cross-platform Java application and offers easy creation of bags, verification of bag contents and bag completeness, specification of checksum algorithm (i.e. MD5 vs SHA-1), retrieval of bags from a web server, updating of bags and more.

For those who prefer CLI applications, a command line interface is also available for the Bagit Library. This utility offers the same functionality as Bagger, and additional features such as the ability to split bags by file type or size. Combining BagIt with a transfer protocol such as rsync[21] allows archives to move bags (even those containing large AV files) between storage locations or to a repository in a reliable and efficient manner.

Checksum Creation and Validation

Another way to create and validate checksums for files is to use a simple checksum tool that can create and document checksums for individual or batches of files. There are a number of tools available; using these, it is fairly easy to create and/or validate checksums for your entire collection.

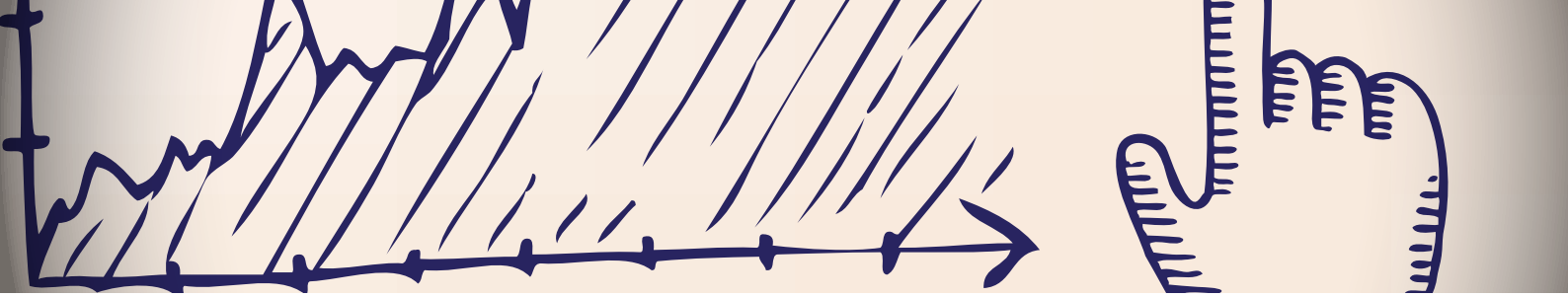
For Windows GUI users, one example is Karen's Hasher,[22] which allows for the creation of checksums (output as a text file) for either individual or batches of files, using a variety of checksum algorithms. For Mac users, MD5 by Eternal Storms Software[23] is a similar tool, though it is limited to the MD5 algorithm.

Command line users can get more sophisticated with checksum creation and validation. Using md5deep and hashdeep,[24] one can compute checksums using a variety of algorithms, recursively scan entire directories, compare values and display only checksum mismatches, and create checksums at the block level (rather than entire file level). fixi,[25] another command line utility, offers similar features with the addition of being able to create and verify bags. Both tools are cross-platform. By scheduling regular audits of checksums (using the UNIX cron[26] command, for instance) with these tools, files can be checked for change or corruption behind the scenes.

Tools to Support Activities Related to Access

Providing access to digital collections should be the goal of every archive. Often, providing access means converting, or transcoding, large AV files to a smaller file size or different encoding format for ease of use and distribution.

Transcoding is a very common activity in AV archives, for a variety of reasons. AV archives are often responsible for the digitisation and preservation of very large files, which are too unwieldy for many users (including archivists themselves) to open and playback. Additionally, archives regularly distribute digital files to a variety of platforms, each of which may require that files be delivered according to their specifications (i.e. file format, encoding format, data rate, etc.) Transcoding may be required to meet these specifications as well as create smaller files from high resolution originals. There are several useful open source and freeware tools to help support transcoding, no matter when the need for access falls into your workflow. Two such examples are described below. >



Transcoding
MPEG Streamclip[27] is an excellent video transcoder and editor GUI for Windows and Mac. As described by the developer, "MPEG Streamclip lets you play and edit QuickTime, DV, AVI, MPEG-4, MPEG-1; MPEG-2 or VOB files or transport streams with MPEG, PCM, or AC3 audio (MPEG-2 playback component required); DivX (with DivX 6) and WMV (with Flip4Mac WMV Player). MPEG Streamclip can export all these formats to QuickTime, DV/DV50, AVI/DivX and MPEG-4 with high quality encoding and even uncompressed or HD video." Users can also easily create sub-clips from longer video files, export audio only or individual frames. The player allows easy viewing to support clipping and transcode review. It supports single and batch processing, in case you need to convert a number of files using the same transcoding specifications. While not open source (i.e. there is no access provided to the source code), MPEG Streamclip is freeware, and as such there is no charge for its use.

A CLI option, available for nearly all operating systems is FFMPEG,[28] a powerful command line transcoder commonly found behind the scenes of larger applications due to its inclusion of the leading codec library, libavcodec. Open source applications employing FFMPEG include VLC Player, MPlayer, Handbrake, and Miro. It is also used by Google Chrome, Facebook, and YouTube.

While FFMPEG has a steeper learning curve than many of the other applications mentioned here, it offers a dizzying array of options, and precise control over the output file or files being created. FFMPEG is also responsible for the development of the FFV1 lossless codec, which is gaining support by audiovisual archives for its ability to reduce file size (from uncompressed) while maintaining mathematical reversibility (i.e. ability to fully restore the file to uncompressed) and can be opened and decoded using free and open source tools.

Voicing the Needs of AV Archives

The sample tasks and associated tools described offer just a few of the options for employing open source and free tools in audiovisual archives. When used in combination, the day-to-day workflows surrounding a digital collection can become even more simplified, automated, and effective. For instance, creating a workflow that combines FFMPEG, Exiftool and csvkit, fixi, then rsync could allow for the creation of access copies from a high-resolution original, extraction of technical metadata from master and access copies, then bag the content files along with any metadata for transfer to secure storage. By adding more tools or commands to the mix, an even wider range of options opens up.

As mentioned at the beginning of this piece, open source tools are often found under the hood of larger, more complex applications, many of which are open source themselves. CollectiveAccess, for instance, is an open source >

web-based collection management application that supports cataloguing and management of AV collections on the backend, and public access on the frontend. CollectiveAccess[29] utilises a number of open source utilities, including FFMPEG. Another example is Archivematica,[30] a free and open source digital preservation system that combines many of the tools described in this article and more into an integrated micro-service architecture, allowing archives a low-cost entry into preservation OAIS[31] repository development. Both of these applications support AV collections, but with the input of audiovisual archivists, could become even more suited to the community's needs.

The list below provides links to a number of open source tools, many of which will be applicable to the audiovisual community. This is just a start, so follow the links and explore. And if you can't find a solution for a particular need within these toolsets, be sure to document your challenge on the PrestoCentre forum where you can engage with others about issues and offer insights, or comment directly on a tool's page in PrestoCentre's library. Still searching for a tool? Email editor@prestocentre.org.

Voicing the needs of audiovisual archives is crucial to the further development of tools to suit our varying needs, challenges and budgets, and should certainly be added to this list!

Tool registries:

- PrestoCentre Library Tools: http://www.prestocentre.org/library/tools
- Open Planets Foundation Digital Preservation Tool Registry: http://wiki.opf-labs.org/display/SPR/Digital+Preservation+Tools
- NDIIPP Partners Tool Registry: http://www.digitalpreservation.gov/tools/
- CDL Micro-services: https://wiki.ucop.edu/display/Curation/Microservices

For more information on many of these tools, please see the Reading Room on page 33.

[Thank you: Chris Lacinak, Josh Ranger and Seth Anderson (AVPS), and Dave Rice (CUNY).]

1. http://www.fsf.org
2. http://www.gnu.org
3. Richard Stallman, "Why Open Source Misses the Point of Free Software." GNU Operating System/Free Software Foundation website, updated 2012-05-18, accessed 1 August 2012 from http://www.gnu.org/philosophy/open source-misses-the-point.html.
4. http://en.wikipedia.org/wiki/Terminal_(OS_X)
5. http://en.wikipedia.org/wiki/Command_Prompt
6. http://en.wikipedia.org/wiki/Shell_(computing)
7. Note that digital tape-based formats, such as DAT, Mini DV, DVCAM, and DVC Pro are already digital and do not require analogue to digital conversion. Migrating these formats to digital files can be performed by capturing directly to the computer using FireWire. The hardware costs are ultimately much lower, and more likely to be in the reach of a smaller archive to acquire in-house.
8. http://sourceforge.net/projects/bwfmetaedit
9. Federal Agencies Audio-Visual Working Group, "Embedding Metadata in Digital Audio Files," version 2, approved April 23, 2012. Accessed 1 August 2012 from http://www.digitizationguidelines.gov/audio-visual/documents/Embed_Guideline_20120423.pdf.
10. https://github.com/usnationalarchives/AVI-MetaEdit
11. http:// www.archives.gov/preservation/products/reVTMD.xsd
12. https://bitbucket.org/jhove2/main/wiki/JHOVE-2.0.0_Download
13. http://www.nationalarchives.gov.uk/information-management/our-services/dc-file-profiling-tool.htm
14. http://mediainfo.sourceforge.net/en
15. http://www.sno.phy.queensu.ca/~phil/exiftool
16. http://csvkit.readthedocs.org/en/latest/index.html
17. http://www.sno.phy.queensu.ca/~phil/exiftool/#features
18. Current specification (v0.97 as of July 30, 2012) is available from http://www.digitalpreservation.gov/documents/bagitspec.pdf.
19. http://en.wikipedia.org/wiki/BagIt#cite_note-ENCDEP-0
20. From the README.txt file contained in the Bagger v2.1.2 available from http://sourceforge.net/projects/loc-xferutils/files/loc-bagger.
21. http://en.wikipedia.org/wiki/Rsync
22. http://www.karenware.com/powertools/pthasher.asp
23. http://www.eternalstorms.at/md5/index.html
24. http://md5deep.sourceforge.net
25. https://github.com/cwilper/fixi
26. http://en.wikipedia.org/wiki/Cron
27. http://www.squared5.com
28. http://ffmpeg.org
29. http://www.collectiveaccess.org
30. https://www.archivematica.org/wiki/Main_Page
31. http://en.wikipedia.org/wiki/Open_Archival_Information_System

Assessing the Audiovisual Archive Market

By Peter B. Kaufman

Around the world every hour, audiovisual archival materials are being used in television programmes, films, and media online. In the same way that oil, pumped from the ground, is refined and then used to fuel transportation and industry, or iron, mined from the ground, is smelted into steel and used in construction, so audiovisual materials mined from the archives form part of the backbone of information, communication, and our creative knowledge economy, worldwide.

How do we estimate the value of the audiovisual archive industry? In the gold, steel, oil, and gas industries, which have been around for longer than film and television, various metrics have been devised to measure the size of asset reserves and materials that remain to be pulled out of the ground. As estimated 1.3 to 1.4 trillion barrels of oil lie still buried in the earth, for example; and at a price per barrel of 95 USD, those reserves are worth 124 to 133 trillion dollars.[1] Gas reserves are estimated to amount to 185 trillion cubic metres, also valued in the trillions.[2] Gold reserves still remaining underground are estimated today at 50,000 metric tonnes, for an August 2012 valuation, at 1,615 USD per Troy ounce, of approximately 3 trillion dollars.[3]

The size of the audiovisual archive asset base — and its corresponding value — is less well known. While cultural heritage materials and economic and commercial valuations of the same are uttered in one breath here — some professionals may object to this — culture has long been a business: film studios, recording companies, and publishing houses, among others, are routinely traded — in equity and bond markets and in private transactions — on the strengths of the commercial potential their assets possess. Archivists themselves readily compare their assets to natural resources — predicting, for example, that digitising and making accessible audiovisual archives will ignite a "creative revolution" comparable to the industrial revolution that coal mining catalysed in the 19th century. Advocates for digitisation — including policy-makers — likewise have described the cultural heritage industries as revenue-drivers, not just for the economic future of their largest custodial institutions — museums, libraries, archives and the like — but as fuelling an economic stimulus for surrounding national and regional industries and society at large.

Indeed, one EU-funded study maintains that, "[O]ver the next decade DP [digital preservation] could create between €10 and €20 billion in added value per year if it becomes mainstream practice."[4] This is not unusual — various industries make such arguments. The World Steel Association, for example, maintains that "The industry directly employs about more than two million people worldwide, with a further two million contractors and four million people in the supporting industries. Considering steel's position as the key product supplier to industries such as automotive, construction, transport, power and machine goods, and using a multiplier of 25:1, the steel industry is at the source of employment for more than 50 million people."[5] The European policy argument for digitising intellectual property often comes couched in the >

benefits of opening not only cultural heritage assets but public data generally. For example, European Commission documents maintain that "One of [our] resources is public data — all the information that public bodies in the European Union produce, collect or pay for. Examples are geographical information, statistics, weather data, data from publicly funded research projects, and digitised books from libraries. This information has a significant — currently untapped — potential for re-use in new products and services and for efficiency gains in administrations. Overall economic gains from opening up this resource could amount to €40 billion a year in the EU."[6]

We do know that the size of this audiovisual archive market — or even more broadly, its political economy — is significant. Research reports, even European Union financed endeavours that focus on access to audiovisual heritage, have only touched the surface with their approximate appraisals. A July 2012 report on access to European audiovisual heritage, for example, cites a 2012 study estimating that "the worldwide footage industry" is "worth $394 million" and an earlier work pegging "the global trade in audiovisual archives" at "364 million Euros."[7] Sizable as these figures may seem, they represent only a fraction of the whole picture. Comprehensive valuations of "the worldwide footage industry" and "the global trade" in film and television moving images, necessarily would involve multiples of such annual revenue; that annual revenue, to be calculated in full, would require factoring in advertising dollars, co-investments, and other income-generators for such content, whether or not it was licensed, sold, or provided intentionally by its owners; it would need to include not just public-sector but public- and private-sector institutions (worldwide); and various force multipliers, on the order of steel industry's estimates or the EC's estimates about public data, would need to be factored in too.

The material assets of this "industry" — its exploitable property, if one allows — have only recently begun to be inventoried. The European Commission's Comité des Sages, for its 2011 publication "The New Renaissance," commissioned the Collections Trust to estimate the number of moving image and sound assets in museums, libraries, and archives across Europe. The Trust, a non-profit UK consultancy, averred that it had "adopted as rigorous a methodology as possible," while acknowledging throughout the report mainly exogenous limitations to that methodology. Discoveries included:

- There are approximately 10.81 million hours of Audio material in European cultural institutions.
- There are approximately 12.14 million hours of Video in European cultural institutions.
- There are approximately 1.03 million hours of Film in European cultural institutions.
- The total cost of digitising the eligible AV material in European cultural institutions would be approximately 4.94 billion Euro.

The report was missing key elements of interest here. "This Report features completed data for the Digitisation of collections in Libraries, Museums, Archives and Audiovisual Archives. It does not include data concerning the broader AV collections held by Broadcasters, although we would recommend the inclusion of these in a future investigation."[8] Moreover, many of these key surveys of audiovisual collections to date have been conducted on a voluntary or opt-in basis; as the Collections Trust study states, "figures are hampered [as are...statistics] by their relatively low response rate." The "Global Trade in Audio-Visual Archives" tabulates from a survey mailed to 230 companies that 42.7 million hours of content are held in audiovisual archives worldwide, but acknowledges the project survey's "responding companies represent [only] 25 percent of the global trade in archives."

If audiovisual archives were evaluated as Hollywood studios were evaluated, or as television networks that are bought and sold are evaluated, rather than by GLAM-ordained con- >

sultancies or a series of self-administered questionnaires, the size of the audiovisual archives "industry" would be recognised more appropriately as in the billions — yes, billions — of U.S. dollars. In a period where BBC Worldwide generates sales of 1.1 billion GBP in 2011; France's INA licensing generates hundreds of millions of Euros in advertising revenue; and Getty Images, a static image licensor mainly, and one that controls a great number of rights — but still only one piece of a portion of this trade — was appraised and sold for 3.3 billion USD, it may be more appropriate to begin an industry assessment another way.

Indeed, it may be more appropriate, rhetorically and in fact, to commence an appreciation of the audiovisual archive market by recognizing that it is part of the worldwide media and information market, one recent private (by PricewaterhouseCoopers LLC) evaluation placing that market size at 1.3 trillion USD. This valuation — by global teams of accountants — looks beyond three-screen (TV, internet, mobile) forecasts to study in detail all markets for audiovisual content, including all those where film and sound assets could be valorised:

- Internet access: wired and mobile
- Internet advertising: wired and mobile
- TV subscriptions and license fees
- TV advertising
- Recorded music
- Filmed entertainment
- Video games
- Consumer magazine publishing
- Newspaper publishing
- Radio
- Out-of-home advertising
- Consumer and educational book publishing
- Business-to-business[9]

Every film and television asset that is produced, every online video asset and videogame property involving moving images and recorded sound, and every outtake from the production of each of these assets, becomes, immediately upon the publication of said asset, an element of someone's — someone's private, or someone's public — audiovisual archive, and thus an element of this global marketplace of archival audiovisual content. Furthermore, unlike gold, oil, gas, coal, or iron, audiovisual archives' assets grow — and grow fast; indeed, they grow at a rate never before seen in the history of information. Statistics about this growth in audiovisual information abound, but as a 2012 EUscreen report puts it most memorably, "More video is uploaded to YouTube," to say nothing of other platforms like Netflix, Amazon/LoveFilm, Hulu, Vimeo "in one month than the 3 major US [television] networks created in 60 years."[10]

If audiovisual archives were evaluated as Hollywood studios were evaluated, or as television networks that are bought and sold are evaluated, rather than by GLAM-ordained consultancies or a series of self-administered questionnaires, the size of the audiovisual archives "industry" would be recognised more appropriately as in the tens, possibly hundreds, of billions of U.S. dollars.

Can public sector and philanthropic funds alone enable us to digitise this wealth in a timeline that matters to the current generation reading these words? This too is a question of some open-endedness. Maximising this creative potential of audiovisual archives worldwide, however, remains one of the great business and creative challenges in this, the second century of film. ■

In November 2012, PrestoCentre will publish a white paper for AV archives with lessons on content exploitation and business models for monetising their holdings.

1. http://en.wikipedia.org/wiki/Oil_reserves; https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html; http://www.nationmaster.com/graph/ene_oil_res-energy-oil-reserves
2. http://en.wikipedia.org/wiki/List_of_countries_by_natural_gas_proven_reserves
3. http://www.galmarley.com/framesets/fs_commodity_essentials_faqs.htm. Interestingly, all of the gold mined since the dawn of man amounts to only some 165,000 metric tonnes — about the size of a cubic tennis court, or, in the words of one historian, only enough to fill a modest two-story townhouse. Liaquat Ahamed, *Lords of Finance: The Bankers Who Broke the World,* New York: Penguin, 2009, p. 13. In any event, investors seeking to bring this gold archive to the surface have a good and clear sense of their ultimate reward.
4. "DP Impact: Socio-Economic Drivers and Impact of Longer-Term Digital Preservation," Inmark Estudios, June 2009, online at: http://cordis.europa.eu/fp7/ict/telearn-digicult/dpimpact-final-report.pdf.
5. http://www.worldsteel.org/media-centre/key-facts.html
6. "Open Data: An Engine for Innovation, Growth and Transparent Governance," European Commission, 2011, on line at: http://ec.europa.eu/information_society/policy/psi/docs/.../open_data.pdf.
7. Erwin Verbruggen and Johan Oomen, "Online Access to Audiovisual Heritage Status Report," EUscreen Deliverable D7.6.2, July 23, 2012, online at: http://blog.euscreen.eu/?p=3235, p. 11, cite Claire Harvey, "The Global Trade in Audio-Visual Archives," London: Screen Digest, FOCAL International, and FIAT/IFTA, August 2010, with info online at: http://www.screendigest.com/reports/201074c/10_08_the_global_trade_in_audio_visual_archives/view.html and http://www.focalint.org/industry-news/news/243/audio-visual-archives-see-opportunities-for-growth.
8. Nick Poole, "The Cost of Digitising Europe's Cultural Heritage: A Report for the Comité des Sages of the European Commission," London: The Collections Trust, November 2010, online at http://ec.europa.eu/information_society/activities/digital_libraries/info_centre/cultural/index_en.htm
9. "Global Entertainment and Media Outlook," 2012-2016, New York: PWC, 2012, info online at: http://www.pwc.com/us/en/industry/entertainment-media/publications/global-entertainment-media-outlook.jhtml.
10. Verbruggen and Oomen, "Online Access to Audiovisual Heritage Status Report," p. 8. It should be remarked upon that professional film and television productions often shoot at a ratio of 50 to 70 up to 300:1, meaning (not news to our readers) that scores more audiovisual content exists in the world than just what is shown as finished on a film or television or computer screen. For comprehensive statistics on the explosive growth in audiovisual media, see: http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/VNI_Hyperconnectivity_WP.html; http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-481360_ns827_Networking_Solutions_White_Paper.html.

Peter B. Kaufman is President and Executive Producer of Intelligent Television (www.intelligenttelevision.com) and the Intelligent Channel (www.youtube.com/intelligentchannel). He previously served as Associate Director of Columbia University's Center for New Media Teaching and Learning (ccnmtl.columbia.edu). Educated at Cornell and Columbia, he is the author of numerous articles on media and education and the forthcoming book, *The New Enlightenment: Film, Sound, and Knowledge in the 21st Century.*

Learning a New Language: Grant Schemes for Digitisation and Lessons from Europe

One and a half years ago, the European Commission (the executive body of the European Union) estimated the cost of digitising Europe's most important libraries, archives and museums at a total of around 100 billion Euro. Though calculating that number never seriously implied that a budget this size will ever become available — let alone be desired — Europe's member states are nevertheless counted on to invest a good amount in digitising their national treasures, whereas the European Commission agreed to match those efforts by measures to support new digitisation technology and innovation, promote cross-sectoral and cross-border collaboration, and tackle some of the thornier legal issues around copyright and public-private partnerships.

The case for digitisation in Europe has been carefully prepared since 2005, when the European Commission kicked off a multi-year support initiative for making European cultural resources easier and more interesting to use in an online environment. Since then, European leaders have repeatedly voted clearly in favour of a larger public responsibility for making Europe's cultural heritage accessible and preserving it for future generations. Private partnership in digitisation is encouraged but the general feeling is that this hardly ever leads to a fair balance, even in the longer term, and that the responsibility for, and control over, Europe's heritage shouldn't be left to one or a few market players alone. The European Commission, by explicitly taking on the role of inspirer (European culture as driver of innovation), of political leader (European member states are required to report their investments in digitisation, building peer pressure and a feeling of moral obligation), and of catalyser (European federal action concentrates on new R&D resulting in cheaper and faster digitisation facilities in most member states), has since triggered many national governments into supporting specific, large-scale digitisation actions, despite the crisis. Examples are the French "Investments for the Future" and the Dutch "Images for the Future" programmes. Both stem from large-scale investment schemes designed to support infrastructural and economic development. While the Dutch programme — a 7-year 154 million Euro AV digitisation programme — is largely based on an analysis of costs and returns, the balance of which was estimated at tens of millions of Euros primarily gained through new services related to the Dutch audiovisual collection on behalf of the educational sector, heritage institutions, the creative industry, and society at large, the French programme involves a support agreement and a credit agreement with the French Caisse des Dépôts amounting to 15.9 million Euro for the digitisation and the development of France's audiovisual heritage. The Caisse des Dépôts is a public group to serve the public interest and economic development of France. It was created in 1816 to restore confidence after the financial crisis and to specifically receive, safeguard and return the values deposited in it. Since then, >

missions have continued to grow to meet the urgent needs during the various crises of the country.

Learning a New Language

The above examples illustrate a trend towards outcomes-based budgeting and towards large-scale infrastructural investment supporting economic growth. With a heavily depressed European market, federal and national governments come onto the stage again, but with a rather different mindset. While these trends continue to create interesting new funding opportunities for digitisation, they also trigger European audiovisual archives to learn a new language for thriving in today's changing economic landscape.

When applying for grants, more and more archives have learned to see their organisation or programme not as a *grantee*, but as an *investee*, an entity that has not received a grant, but rather an *investment* for which it is responsible for providing a *return*. For a grantor, a return on investment does not mean money or some other financial consideration, but the result or impact. Not so long ago, government funders had little reason to closely examine the results that their programmes achieved. They were more interested in process and compliance: the rules regarding the awarding of money and making sure that applicants apply according to those rules, spend the money according to those rules, and report according to those rules. Now that new funds have become much more scarce and governments tend to concentrate more on the *return* or *outcome*, it is increasingly the applicant — the archive — who can make the difference between funding and no funding.

As the Dutch programme mentioned above has shown, measurement is no longer optional either. Because such high value is now being placed on solving (economic) problems and creating (economic) outcomes, funders actually need to know whether archives are really producing impact or just trying to. "I am not sure" becomes a very expensive proposition when governments are more and more attaching economic value to actual results.

The European cases above have also shown that no longer will archives be able to duck the measurement question by citing the complexity of digitisation or copyrights. They will need to go beyond programmes and initiatives and come up with more entrepreneurial, innovative, and systemic approaches to solving problems. This means they can't just keep believing that digitisation serves an important cause and hope that somebody will fund it. If today's governments are really buying impact, not just programmes, then better strategies need to be innovated to produce those impacts. That requires a whole new playbook: new technologies, new workflows, new incentives, new business models.

The answer is not about bringing the business world (and business thinking) into the archival sector. Archives, however, need to be more alert of connecting their digitisation efforts to the economy. Thinking about the necessity for providing a clear return on funding, seeing all decisions through the prism of a responsibility for that return, and finally, *managing* towards that return, are the elements of their success in a crisis stricken world. ■ **MS**

Keep Talking

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Power to Serve: How Going Green Can Help You Save Money

The larger a digital AV archive grows, the greater the need to house its IT in a secure environment. Whatever the size of your setup — a computer room, a server room, a data centre — there are racks of computers and other IT equipment that incur energy costs caused by cooling and powering equipment that keeps servers and other machines up and running. In the midst of a global economic crisis, when energy conservation and efficiency become ever more relevant in the total cost equation of digital archives, how much money can you actually save by going green?

Show Me the Business Case

First off — while the debate around green archiving is far from cooling — archives should realise that earth-shattering cost reductions will not happen overnight. A good start would be to know where exactly your potential savings might be. Most archives today may only guess their energy efficiency. A metric called Power Usage Effectiveness (PUE) can bring better insight. Developed by The Green Grid, a technology industry non-profit consortium dedicated to raising data centre efficiency, PUE expresses the amount of power used by the IT equipment in contrast to the power used by the infrastructure which keeps that IT equipment cooled, powered, backed-up, and protected. Simply put, it divides the total power entering a digital archive (chillers, air conditioning, switchgear, battery backup, etc.) by the total power used by IT equipment in that same archive (servers, storage, telco, etc.):

PUE = (Total Archive Power) ÷ (IT Equipment Power)

Thus, for an AV archive that consumes 500kW-hours of power, of which 200kW-hours is used by IT equipment:

PUE = 500/200 = 2.5

The ideal, theoretical, PUE is 1.0 (all energy is directly spent on IT). The Uptime Institute[1] estimated a typical data centre has an average PUE of 2.5. This means that for every 2.5 watts in, only one watt is actually delivered out to IT. According to Uptime Institute, most facilities could achieve 1.6 PUE using the most efficient equipment and best practices. Coming from a PUE of 2.5, this would account for a savings of nearly one third of total costs of power.

A related metric called Data Centre infrastructure Efficiency (DCiE) is used to calculate the energy efficiency of a digital archive in percentage terms:

DCiE = 1/PUE x 100%

Using the example above, a PUE of 2.5 would translate into a DCiE of 40%, as such:

DCiE = 1/(2.5) x 100% = 40%

Taken together, PUE and DCiE can be used to weigh your power utilisation against similar >

1 MW Net IT Load Example Data Center Type		PUE	DCiE	Annual KWHR	Annual $ @ $.10/KWHR	MTons CO2
Internet Tier II	Best-in-Class	*1.21	89%	10,599,600	$1,060,000	9,169
	Average	2.00	50%	17,520,000	$1,750,000	15,162
Uptime Inst. Tier III	Good	2.00	50%	17,520,000	$1,750,000	15,162
	Average	2.50	40%	21,900,000	$2,190,000	18,945
Uptime Inst. Tier IV	Average	3.00	33%	26.280,000	$2,628,000	22,732

* Focus, Volume 3, Issue 1, Google Data Center.
Source: Uptime Institute 2007.

types of digital archives, as in the above table (where a higher Tier level represents more critical requirements such as higher uptime and redundancy).

While archives might amuse themselves in comparing these data and get a spot on the podium for the most efficient digital facility, the Green Grid consortium didn't intend to use these benchmarks for such green washing. Instead, for these metrics to be meaningful they are best measured before and after implementing changes, and then used to check for noticeable improvements in your energy consumption. A business case is then determined by the targets you set for power and cost reduction and the initial investment required. It's like buying a hybrid car: you estimate the eventual break-even point based on how big your archive is (or, to stick with the metaphor, how big a car you need) and how you use it (or how and how far you drive, i.e. how seldom you exceed the battery-only range and start to use gasoline).

Sit Up Straight and Count Your Profits

So what to look for to improve your PUE? As a rough measure, disk storage normally doesn't account for the largest energy consumption in archives. Efficiency losses in larger archives are first and foremost encountered on the cooling side. Delivering cool air over long distances to equipment racks consumes lots of fan power, as does moving warm air back to the intakes. Careful design for efficiency can substantially improve an archive's PUE. Cutting back on your storage power can, however, still save you significant amounts of energy and money. Especially for larger archives, moving to a more energy-efficient setup isn't just a nice, green idea but an essential part of using less power. There are several approaches to achieve this, depending on your archive's requirements. The quickest win is to identify data that needn't be accessed actively and move them to a more energy efficient storage setup. This could be disk (technologies such as MAID spin-down disks when idle), but for digital preservation and archiving purposes, i.e. situations where you do not rely on high-intensive, transactional systems with lots of disks running and caching, a data tape solution offers by far the best energy efficiency, reliability, and requires much less cooling.[2]

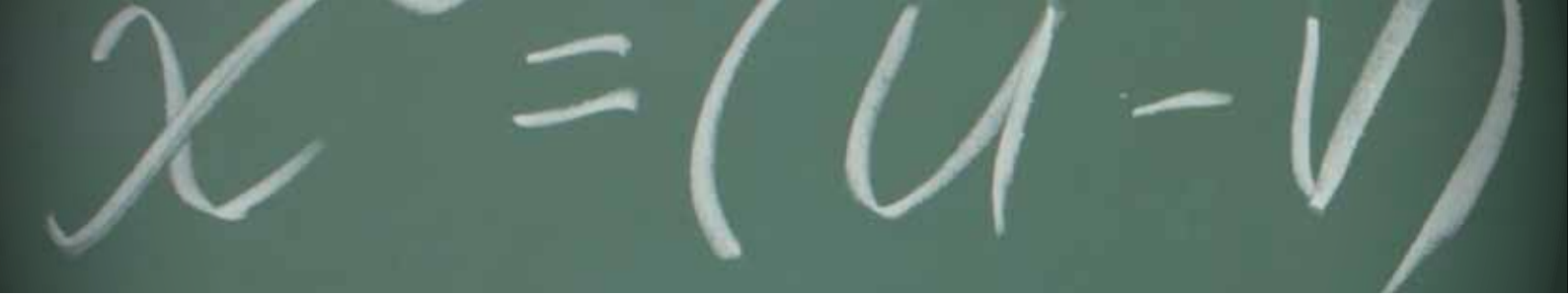
Green Grass of Home

Sure, there are great examples of green hydro, solar and wind powered solutions and they won't necessarily break your budget. Chances are that some of the data you have been using today were generated by a Google-owned paper mill turned into a data warehouse cooled by seawater; or a Facebook-owned server farm in a northern Swedish city where the fierce cold will help to keep the profiles of one billion users cool. While you wouldn't want to bring your materials >

over to any of these expensive-to-reach resorts, the internet has become reliable enough to support efficient transfer of very large amounts of data. Exactly because of this, the clouds coming in from these Arctic places will forecast you the greenest and yet the cheapest storage and back-up solutions: instead of needing to maintain your own facility and staff, with nightly backups to tape, and a vault or other off-site storage location to guard against disaster, archives can now ship their data off-site electronically, automatically, and supposedly green at a fraction of the cost of maintaining that functionality in-house. However, these online storage services are good enough until they aren't. As quickly as they can build affinity with your archival needs, it can be taken away even faster with one minor outage or mishandling of a critical customer issue. Archives needing to guarantee long-term preservation and access require operations and processes that cloud service providers will normally want to limit their liability for contractually. Archives should understand that the responsibilities of auditing and applying procedures by which data are stored, protected, and secured is still and foremost guaranteed best at home, whatever shade of green you prefer.[3] **ML**

1. http://uptimeinstitute.com/publications
2. See for example a white paper by Arkivum, http://www.arkivum.com/system/files/private/How%20Green%20Is%20Your%20Archive.pdf.
3. In 2011, research done by the Technical University of Athens suggests that even for a small-scale private cloud installation the economic benefits can be experienced in a relatively small period of 2-3 years, and the theoretical cost for compute resources provisioning is almost the same compared to large-scale cloud providers like Amazon. See http://www.cslab.ntua.gr/~ikons/03-konstantinou.pdf.

Facebook's new data centre in Sweden.



Training the Audiovisual Archivist of the 21st Century

Understanding the Economics of Digital Preservation

We are currently living, and working, within a time of amazing cultural transformation. In the not-too-distant past many individuals who were responsible for the preservation and access of our collective cultural heritage went from feeling that digital could only be used for access and that their audiovisual material originals had to be stored in temperature and humidity controlled environments, to believing that we must provide access to content digitally and that we can preserve content digitally even if there is a need to periodically migrate data or continue to work towards developing and refining standards.

While digital transformation continues to impact how we work with data, we find that job functions are transforming as well. While a moving image archivist should now have computer technology skills in addition to photo-chemical skills, new positions are being developed within moving image archives, including digital curator, metadata cataloguer, software developer, and network engineer among others. This transformation has a significant impact on the professional competencies and strategies needed for preparing students for professional positions as digital archivists and digital data curators at AV institutions, libraries, museums, academic institutions, data repositories, information centres, and other organisations working in the areas of digital audiovisual object management. The skill sets of professional positions are expanding and graduate programmes, and other providers of professional training, must strive to train for these new positions. Audiovisual archivists today need to learn how to digitise material in their holdings, the best ways to make the material accessible, how to produce proper metadata, and what it means to preserve digital information. And at the same time, while it is clear that programming, and the knowledge of digital formats and standards is important in the digital >

Jeff Ubois at a Master Class during PrestoCentre's Screening the Future 2012, Los Angeles.

age, we must not lose sight of the fact that it is equally important to continue to maintain the knowledge of the proper methods to handle and preserve motion picture films, videotapes, and audio recordings from the past.

Training for Business Planning and the Economics of Digital Preservation

The economic forecast for many audiovisual archives is not as bright as it has been during the last decade, and there is a growing need for digital archivists to be able to make a sound and compelling argument for the funding of digital preservation and related business models (i.e. who has the responsibility for stewardship, producers or archives?). Digital preservation is a long-term commitment requiring substantial iterative financial investments that are not limited to technological preservation solutions, and, therefore, digital preservation and curation courses and training should reach into both the producer and user environments associated with collections of digital audiovisual objects.

Assessment of value is closely related to the specific context of the use of material, potential benefits it could bring to the users, and the mission and main objectives of an organisation responsible for preservation of the material. Sustainable digital preservation initiatives usually imply economic sustainability, which in some cases can be achieved by commercial exploitation of resources. Moreover, the costs of digital preservation are widely sought, but difficult to pinpoint. There are many cost factors to consider that are difficult to measure and compare effectively. Knowing how to apply cost models and predict long-term storage costs is becoming extremely relevant because most digitisation projects are funded on a one-time basis. For example, if you get a one-time grant to digitise one of your collections, how do you price in your digital storage? Digital preservation professionals are expected to understand the necessity of rational management of resources and efforts in digital audiovisual preservation initiatives and gain an ability to make strategic decisions and judgments concerning long-term sustainability. Students should also be aware of, and approach critically, possibilities of commercial exploitation of digital materials and use them in appropriate real-life situations. ■ **MS, LW**

Minding the Gap

In planning education and training provisions it is necessary to mobilise both the content of a course, or entire curriculum, and teaching methods to build certain competencies and capabilities that may vary depending on the domain. Digital preservation education and training should rely on problem-based learning. This will prevent fragmentation of knowledge. Real-life situations, however, are complex and require synergy between different knowledge and experience gained by the person through their working career. PrestoCentre and the AMIA Education Committee are planning to align efforts towards an exploration of the professional skills that are required for digital audiovisual preservation but are not yet being offered in digital asset management graduate programmes. In addition, they will work to develop a stronger understanding of the gap in knowledge that currently practicing archivists and librarians may still experience. The result will be training packages and webinars that meet some of these needs. In October and December 2012, PrestoCentre organises the first two of a series of exclusive webinars (for more information see overleaf).

Never Stop Learning with PrestoCentre Webinars

Research and innovation in AV digitisation and digital preservation have presented archives with various new technological tools and a constantly updated body of knowledge. To understand, translate and tailor this into daily practice is an unsolved challenge, however. Professionals in the domain are required to juggle between performing their current tasks and acquiring new skills to accommodate for progress. We've found that professional training available to archives is limited and often challenging in terms of time and geography.

PrestoCentre will not leave training out of its knowledge-sharing mission. Having started with a summer school, conferences, and master classes, we realise now more than ever, that flexibility and cost efficiency come into the equation for archives, especially during times of austerity. Therefore, starting from October 2012, PrestoCentre will introduce a series of high-level, intensive webinars on selected issues.

The first webinar will deal with "Workflow Management," a topic presented at Screening the Future 2011 and that attracted great interest. A webinar on preservation strategies will follow in December 2012. Webinars are aimed at CTOs and digitisation and preservation managers in small and large archives, libraries and museums that are engaged in the digitisation and preservation of film, audio and video. The 2012 webinars are for members only and will be offered at no charge on a first-come, first-serve basis. Members will receive more information by email in September.

We are currently building the curriculum for the 2013 webinars and **would like to receive advice from you**. If you have any wishes or propositions on future webinar topics, **please send them to maria@office.prestocentre.org**.
ML

Workflow Management - October 2012

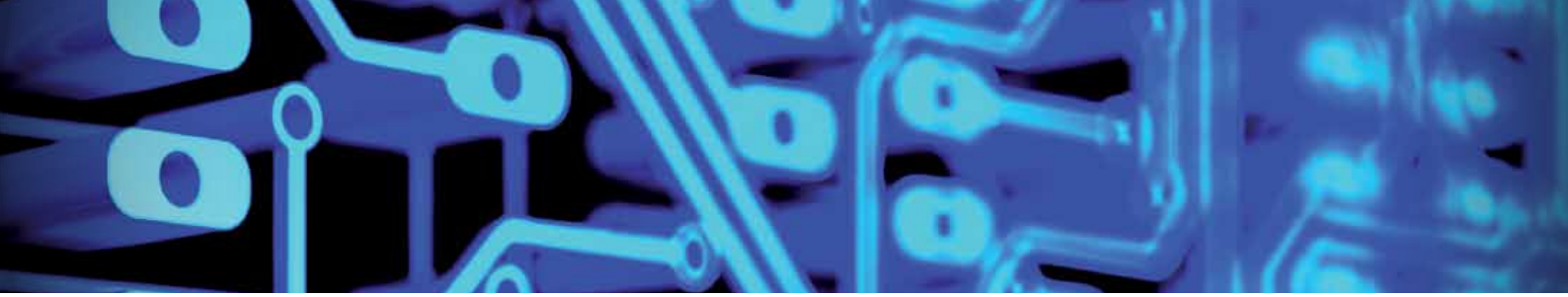
Increase your productivity by identifying bottlenecks in workflows and rethinking the various steps in a process. Participants in this webinar will be introduced to and gain basic knowledge of:

- Workflow analysis
- Identification of constraints in an archival process
- Use of bottlenecks as performance measurements
- Methodologies to ensure quality outcomes (i.e. Six Sigma)
- Understanding options and trade-offs between different approaches

Preservation Strategies - December 2012

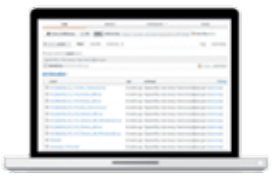
How to produce accurate estimates of the tradeoffs between risks and costs involved in digital audiovisual media storage? How to develop your preservation strategy? Participants in this webinar will be introduced to and gain basic knowledge of:

- Risk profile of AV material preservation
- Trade-offs between different storage solutions
- Tools assisting with AV digital preservation decisions
- Latest cloud storage developments



Tool: AVI MetaEdit

U.S. National Archives and Records Administration (2012)



AVI MetaEdit was developed by the U.S. National Archives and Records Administration, supported by AudioVisual Preservation Solutions. AVI MetaEdit permits embedding, editing, and exporting of metadata in AVI (Standard and OpenDML) video files. This tool can also enforce file structure and metadata recommendations and specifications from U.S. National Archives, Microsoft, and IBM.

AVI MetaEdit embeds descriptive, provenance, and rights metadata into the LIST-INFO chunk of the AVI file. The tool provides guidance on best practices for creating metadata to be embedded within these fields. Using AVI MetaEdit, users can embed Coding History metadata, including source format, playback deck, capture hardware, and capture software, in accordance with guidelines adapted from those for the Broadcast Wave Format (EBU R98-1999).

http://www.prestocentre.org/library/tools/avi-metaedit

Tool: BagIt

U.S. Library of Congress and California Digital Library (2012)

BagIt is a specification for packaging of digital content for transfer and storage. The content of the package is known as a "bag" and includes content files and a checksum for each file in the bag. Machine readable text is included that facilitates receipt and validation of bags.

BagIt is a content-neutral specification, and as such it is equally applicable to use for storage and transfer of audiovisual content as it is for any other type of content. A number of tools exist to support bag creation and validation according to the BagIt specification, including a platform-independent GUI called Bagger, a command line Java library, and a Ruby library.

http://www.prestocentre.org/library/tools/bagit

Tool: MPEG Streamclip

Squared 5 (2008)

MPEG Streamclip is a free video player, transcoder, and editor for Mac and Windows. It supports most input formats, and can transcode or transwrap to most common formats, including conversion VOB files from DVDs into muxed (contained) files. It also allows export audio from video, and pulling individual selected frames. Users can easily edit with simple cut, paste and trim features. MPEG Streamclip relies on the QuickTime libraries, and requires QuickTime be installed.

http://www.prestocentre.org/library/tools/mpeg-streamclip

Tool: CollectiveAccess

Whirl-i-Gig (2012)

CollectiveAccess is a highly configurable cataloguing tool and web-based application for museums, archives and digital collections. Available free of charge under the GPL open-source license, it can support cataloguing in a variety of metadata standards as well as in multiple languages. Playback of video and audio is available for most popular media formats (those supported by FFMPEG). A variety of external data sources and services can be accessed for cataloguing and data display within CollectiveAccess, including Library of Congress Subject Headings, Getty Art & Architecture Thesaurus (in English or Dutch) for descriptive cataloguing and use GoogleMaps, GoogleEarth or GeoNames for geospatial cataloguing.

The CollectiveAccess backend application, Providence, is primarily intended to support cataloguing and collections management. A frontend application, Pawtucket, is also available for publication of records and digital collections to researchers and the public.

http://www.prestocentre.org/library/tools/collectiveaccess

Tool: Exiftool

Phil Harvey (2012)

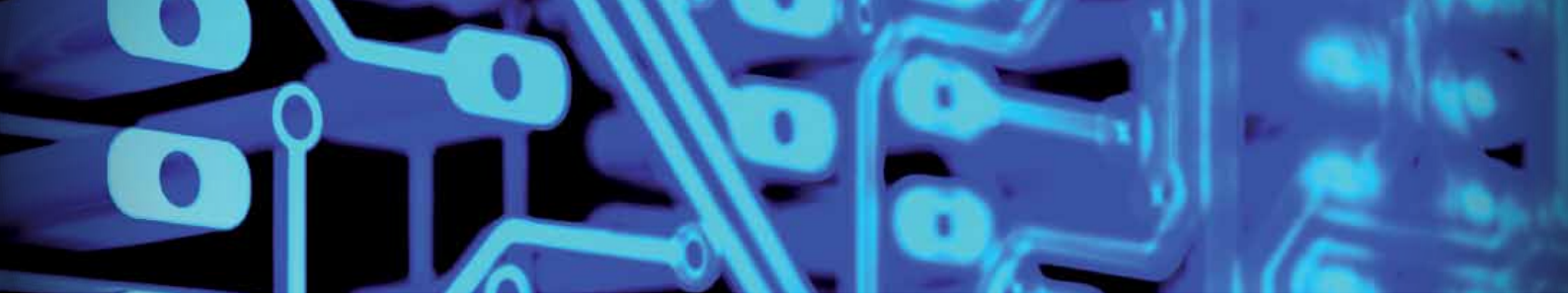
Exiftool is a platform independent Perl Library and command line application for reading, writing, and editing metadata in a wide variety of image, audio, video and other files. Exiftool has a wide variety of features applicable to audiovisual archives, including comprehensive technical metadata extraction; individual or recursive directory processing; multilingual output, support for reading and writing including EXIF, IPTC, and XMP; support for reading and writing descriptive metadata tags for a variety of formats; output in tab-delimited, HTML, XML/RDF, and JSON.

Exiftool can support a variety of workflows in audiovisual archives that relate to collection management, description, and profiling of file-based collections. A powerful command line tool is available for all platforms. There is also a simple drag and drop GUI available for Windows only, with limited functionality.

http://www.prestocentre.org/library/tools/exiftool

More about the PrestoCentre Library

The PrestoCentre Library includes documents and tools relevant to all aspects of digital preservation, drawn from many European projects, as well as governmental, industrial, and academic sources. The material is divided into document-based resources, practical tools, and project descriptions. To explore the library material you can search by using keywords, browse by content type, or browse and search within multiple categories.



Events (for full information see the PrestoCentre calendar at www.prestocentre.org/calendar)

October

IASA 2012 Annual Conference
October 6 - 11, New Delhi, India

What can be done to ensure that our collections are becoming accessible? How do we deal with copyright? Are strategies in place to ensure accessibility to our collections? Do the technical systems and infrastructure truly support it? This conference aims to investigate and discuss issues pertaining to access alongside the following sub-themes: Copyright and IPR, Technologies, Users, Access, Online Access and Funding.

Preservation and Archiving Special Interest Group (PASIG) Conference
October 17 - 19, Dublin, Ireland

This independent, community-led meeting is open to and welcoming of practitioners, researchers, industry experts and vendors in the digital preservation and archiving field. The conference will cover the lasest developments in technology, research and practice.

PrestoCentre Webinar: Workflow Management
October 2012, Online

Increase your productivity by identifying bottlenecks in workflows and rethinking the various steps in a process. Participants in this webinar will be introduced to and gain basic knowledge of: workflow analysis; identification of constraints in an archival process; use of bottlenecks as performance measurements; methodologies to ensure quality outcomes (i.e. Six Sigma); understanding options and trade-offs between different approaches.

Also going on in October:
01-05: iPres 2012: Annual Conference on Digital Preservation
03-05: Baltic Audiovisual Archival Council (BAAC) Annual Conference 2012
09-11: Europeana Conference / 6th Spanish Public Libraries Congress
22-24: 3-Day Course: Understanding and Preserving Audio Collections - British Library

December

AMIA Conference
December 4 - 7, Seattle, Washington, United States

The AMIA Annual Conference provides an opportunity for a diverse array of professionals, students, and friends of the field, to meet, share information and work together through an intensive and cost-effective learning forum for audiovisual preservation and access. For newcomers to this vibrant, dynamic, and committed community, networking with other AMIA members and industry professionals is an invaluable introduction.

PrestoCentre Webinar: Preservation Strategies
December 2012, Online

How to produce accurate estimates of the trade-offs between risks and costs involved in digital audiovisual media storage? How to develop your preservation strategy? Participants in this webinar will be introduced to and gain basic knowledge of: risk profile of AV material preservation; trade-offs between different storage solutions; tools assisting with AV digital preservation decisions; latest cloud storage developments.

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