

AV INSIDER

Preservation Technology: Making the Connection

Crossing the Chasm From Research to Tools



Presto4U

New Program

**Supporting Adoption of
AV Preservation Research Results**

Simon Factor
AV Technology Transfer



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For information on PrestoCentre membership and AV Insider magazine, contact us at +31 20 894 3570 or +1 347 404 5337; membership@prestocentre.org.

AV Insider

PrestoCentre Foundation,
PO Box 1060, 1200 BB Hilversum, The Netherlands
Telephone: +31 20 894 3570 or +1 347 404 5337
Editorial offices: avinsider@prestocentre.org
Advertising offices: ads@prestocentre.org

Editorial Team

Marius Snyders, Mirella Hoogeveen, Maria Loloni

Contribution to this edition

Matthew Addis, Simon Factor, Presto4U core partners

PrestoCentre

The PrestoCentre Foundation is a membership-driven organization that brings together a global community of stakeholders in audiovisual digitization 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 organizations and professional associations to enhance the audiovisual sector's ability to provide long-term access to cultural heritage.

Membership is open for organizations 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 organizations, commercial providers, as well as funding bodies, standards organizations, and other organizations concerned with audiovisual archiving.

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Window of Opportunity

You win when you do a good deal. You lose if you do a bad one or do not get one at all. Since you have two ways to lose and only one to win, all other things being equal, simply relying on luck should lead to a loss. This issue of AV Insider is about making the good deal for AV preservation. It is about the things required for getting AV preservation technology out of laboratories and into practical applications for AV archivists. That technology may be a tool, a technique, a system. Almost always, it involves an early stage innovation that is just emerging from R&D or it offers a specialized substitute for technology recently introduced. For both vendors and archives in our AV market niches there are a lot of guesstimates to make and risks to take and adoption of new innovations all too often fails for reasons of cost, price, market size, know-how, IPR and so on. It is PrestoCentre's ambition to break some of those barriers and you can read about them, and the solutions offered, in the following pages.

Starting this January, PrestoCentre has embarked on a new program examining a series of communities of practice in the principal sub-sectors of AV media preservation. This program will develop a body of knowledge on the status of digital preservation practice, outstanding problems and needs for access to research results. It will identify useful research into digital audiovisual preservation and promote the take-up of promising results by users, technology vendors and service providers. It will do this through hands-on technology assessments, promotion of standards, analysis of economic and licensing models, and

provision of brokering services. And it will raise awareness of the need for audiovisual media preservation. You can support and get involved in our program by becoming a member and joining one of the communities of practice. After all, more involvement and collaboration between everyone in the AV preservation community will get the ball rolling for all of us!

Jan Müller

President, PrestoCentre Foundation





“

Nobody plans to build a beautiful product that nobody wants, yet many people still do.”

Cover Story:

Working Together for AV Preservation Technology

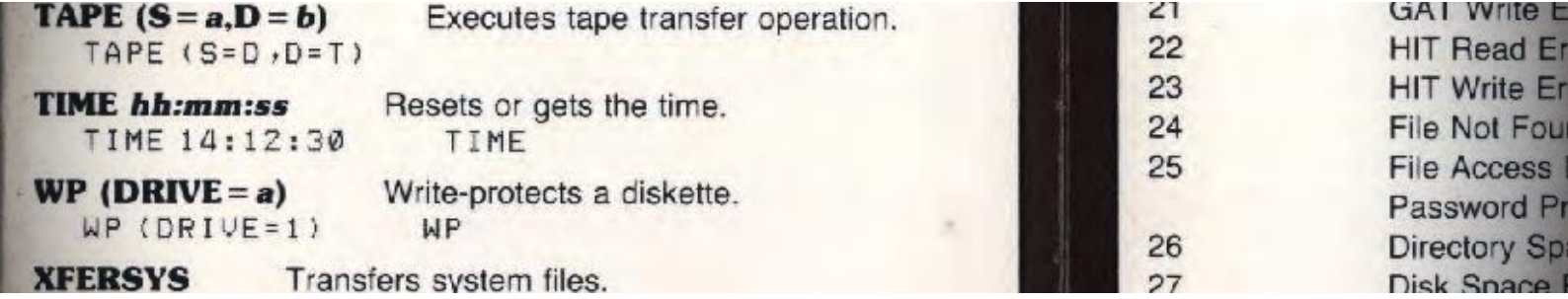
In conversation with Simon Factor, managing director at Moving Media, a specialist audiovisual digitization engineering and development company in Dublin, Ireland.

It was about five years ago that one of Simon Factor's clients asked him and his team to create metadata for a large collection of video they wanted to publish online. "No problem," he said. "We'll put in place some manual processes that will allow you to review the videos and tag them appropriately." When they were presented with the issue initially, they assumed there would be ways to automate the tagging process of video and audio files. However, when they began to look for software to do the job, there did not seem to be any tools readily available. Their first step, therefore, was to look closely at the research base in Ireland focused on the area of computer vision and speech recognition, research that is carried out in academic programs like Film Restoration and Multimedia Search and Retrieval. Factor's aim was to find and evaluate that research and, if feasible, license it for use in their products to cater for needs like those of the customer who approached them in the first place. "From our commercial perspective, the main consideration was to find technology that we could invest in to bring to a prototype stage, and to strike licensing terms that would allow us to share the upside with the universities involved and position ourselves effectively to outside investors. A bit of a balancing act", Factor says.

Bringing Key Players Together

There are significant issues facing archivists and custodians when it comes to keeping or transferring content into digital formats either for the purposes of preservation or access. The first and perhaps most important is bringing all the key players together to realize one goal. It is important to identify those involved in R&D: archivists, researchers and crucially, commercial partners who are willing to not only invest in research in the area but also to bring their market expertise to the table. "Archives are facing huge problems in terms of how they store millions of hours of digital AV materials", Factor notes. "Certain research that is taking place at universities at different continents could be used to make the job of storing and managing this information a lot easier. What is really needed is some kind of organization to foster collaborative links between these research groups and the archives who have the issues. The interest of industry also has to be solicited so that the commercial opportunity is recognized and exploited. If that happens, then this will create much better inroads into developing innovative and sustainable solutions for digitization and digital preservation of our audiovisual heritage."

"Not so long ago, PrestoCentre pointed towards 10 million hours of film, 20 million hours of video and 20 million hours of audio held within >



the archives of broadcasters and AV collections throughout Europe alone. This is a shared problem and by working together we can create solutions that can be shared and developed further to meet the needs of archives across all continents. This generation of AV archivists has perhaps the hardest choices of all as they are the ones who are tasked with bridging the great digital divide as we move from physical to file based AV practice. Finding ways to ensure that all of this content stored on legacy and obsolete physical media is preserved and made available for future generations is something that we can all choose to contribute towards. For a small technology focused company like Moving Media we face the preservation challenge indirectly. We are finding that we can make an impact by fostering relationships with a wide range of stakeholders and orchestrating change through collaboration and targeting our efforts towards developing solutions to the problems that we see around us.”

Expectations and Attitudes

Research and development activities can lead to benefit or impact, but that impact is all too often difficult to measure or takes years to become available or affordable. An example is how innovation around the challenge of storage has advanced in leaps and bounds in the past decades both in terms of capacity and the business models around access. We have gone from shipping container size storage towards very smart high tech robots and rent-a-cloud services that are continuously improving based on demand. The price per GB has crossed the threshold of affordability for many collections.” Storage technology on the scale that Factor refers to has been around for some time but he argues that until now, it possibly hasn’t been affordable for many archives. “Pair that with the network infrastructure required for handling the high displacement of AV files and we have the main reasons that made the AV Archive a disproportionately high cost center in terms of overall

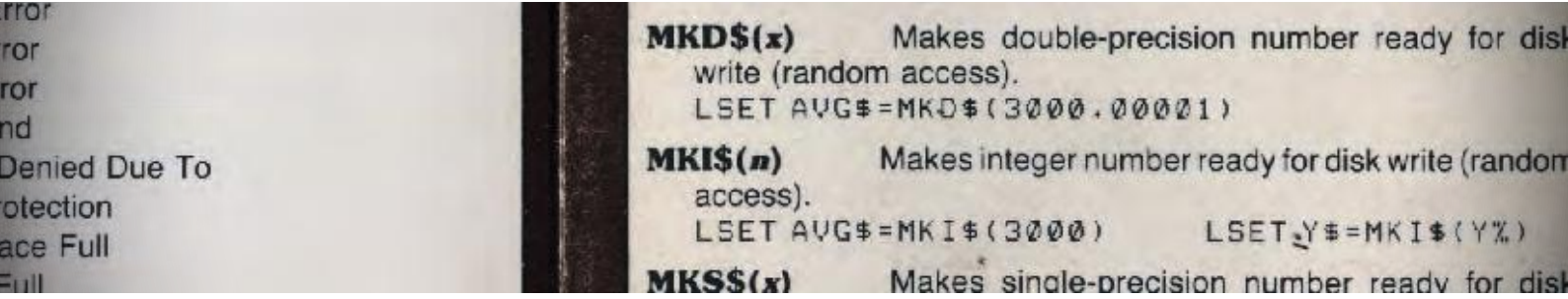
About Simon Factor

Simon Factor is founder and managing director of Moving Media, a privately held company based in Dublin, Ireland that provides technical and consulting services to broadcast and video archives to support digital preservation and access projects. Since 2003 Moving Media has provided a range of digitization and encoding services to small and medium sized audiovisual collections, including The Bank of England, The Danish State Archives, The Irish Traditional Music Archive and Getty Images, and has provided consulting support on archive preservation projects to organisations such as the British Board of Film Classification, the East Anglian Film Archive and the Jacques Cousteau Foundation. Simon Factor is an expert in the field of digital video encoding and metadata for online video and archive applications. He is also project director of the MetaLabs project at the National Digital Research Centre in Dublin, Ireland and is a steering group member of the Centre for Data Analytics in Ireland.

organizational IT spend. The cost involved in transferring large amounts of data has been a debilitating factor for national and special interest archives the world over. The technology involved may have been on the market already but the cost can be prohibitive.”

New ideas emerging from the business and computer science fields now include more and more agile programming and lean start up methodology which combine to form the post recessionary doctrine of the new age entrepreneur. Factor is a big fan of this approach. No doubt this is partly derived from his experience of starting up small businesses in the leaner times his home country of Ireland now finds itself. “Running a small business does not





provide much room for costly experimentation. If something is going to fail it is in everyone's best interest to make it fail fast. Failing faster means expending fewer resources and understanding the pain points that need to be addressed or avoided in order to succeed. This is a core of lean business practice and this is how we can focus our attention when we are engaging in research and development activities. Taking an iterative approach, short bursts of activity, each designed to test and measure a particular function or feature provide a wonderful way to cut out the risk of the old 'waterfall' approach to development. Nobody plans to build a beautiful product that nobody wants, yet many people still do. Needs change. Therefore, staying connected between those changing needs and the resources available to meet them is a constant balancing act. As we work through each experiment or validation step we inform what steps to take next. Sometimes the results can be quite different from what we may have expected. This tells us to stop or pivot our focus onto something new."

The technology involved may have been on the market already but the cost can be prohibitive.

Valley of Death

The area of collaborative translational research has long been referred to in certain circles as the Valley of Death, a place where ideas are often not realized for lack of funding, lack of interest or simply lack of ability. Factor believes that much progress can be made despite the many hurdles standing in the way of researchers and archivists. "Before we can move forward and start attracting the most relevant commercial partners for projects like this, it is important that any restoration or access technology is validated within a use case scenario. As much as that sounds like a PR project to show how

the technology might work, it is a crucial step in proving that the concept involved has the potential to become a 'minimum viable product'. This has to be carried out in a scenario that people can engage with and are interested in. If we can achieve that, we will help ourselves considerably when it comes to removing what is perhaps the largest obstacle: funding."

There is no doubt that research and the development of solutions for the preservation, restoration and management of digital AV collections is critical, but funding projects — especially those at early stage development — is becoming more and more problematic as budgets dry up and grants become less available. However, as Factor points out, these areas still require further exploration, which causes universities and larger and national archives in particular, many problems. "If we are going to bring research forward to a prototype stage, it goes without saying that there needs to be a certain level of funding behind projects," he acknowledges. "While finance has come from federal and national government levels for projects like this in the past, we now need to make these propositions more attractive to commercial partners who recognize the potential to produce viable products that meet the needs of a defined user base. Businesses by their nature are speculative ventures that seek profit. There is an appetite to invest where the likelihood for return is high so it makes sense for businesses to engage with researchers and archivists to develop new technologies that will be attractive to a wider market. That market does not necessarily have to be in the preservation and accessibility of large AV collections. Often we see that commercial return from a technology can come from an area outside the original scope of application."

"More specifically, projects that focus on access and are pushing out the boat in terms of user experience are likely to strike a chord. There- >

TAPE (S = a, D = b) Executes tape transfer operation.
 TAPE (S=D, D=T)

TIME hh:mm:ss Resets or gets the time.
 TIME 14:12:30 TIME

WP (DRIVE = a) Write-protects a diskette.
 WP (DRIVE=1) WP

XFERSYS Transfers system files.

21 GAT Write E
 22 HIT Read Er
 23 HIT Write Er
 24 File Not Fou
 25 File Access I
 Password Pr
 26 Directory Sp
 27 Disk Space I

In the Picture

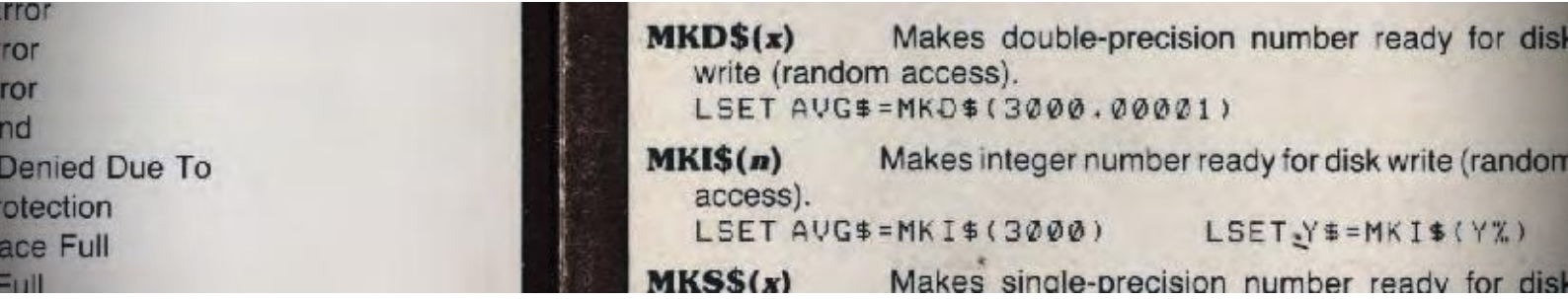
fore fostering relationships between research and commercial operators who have synergies in the areas of multimedia search and retrieval and interface design will help us move to the next stage of delivering solutions to archivists to enable them to transfer catalogues and make them more widely available for public consumption in the future. When it comes to financing these projects there are many models available to us so that any potential commercial partner or investor does not have to shoulder the entire financial burden. Resources could be provided by a test case customer, for example. Indeed, it could even be provided from a source independent of research or industry, or from a shared commitment of all bodies involved in the project in the first place. Investors may even be willing to enter into shared income arrangements where the initial cost could be recouped through a future licensing agreement or a deferred income understanding. All of these avenues must be explored to make projects and research in this area feasible for now and in the future."

Licensing Issues

Factor, however, believes that research partners need to pay close attention to licensing agreements if commercial partners are to be attracted and encouraged to invest, especially in early stage research and prototype design. "Research partners in this area have to be able to strike a deal which is attractive to all parties within the context of the opportunity," he insists. "Where the research may be useful within the context of the end product, it has to be licensed in such a way that it will be practicable for the commercial partner to turn it into a revenue generating product that will not only create a return on initial investment, but also protect against competitive issues that would arise in the event that similar technology be made available to its competitors. If the company is investing in the development of the technology towards a product that will become its core business,

there must be provisions in place to support the buy-out or assignment of research assets should this become a commercial requirement in the event of a company acquisition or public offering. Of course these are great issues to face as they mean success. Ensuring that the potential for success can be maximized in a manner equitable to all parties is the objective for a great licensing deal. IP ownership is a tough point of negotiation for many translational research projects. It is a two way street and a strong commercial partner can add great value to research in terms of productization and scaling steps. Shared ownership of IP based on such investment should be considered. The caveat is, of course, that all of this has to be carried out at a cost level that doesn't create barriers for entry for archives to use the technology or inhibit the ability of users to engage with the technology in any way. These are complications that simply must be overcome in order to move us on to product stage."

While sourcing finance for research, exploration and prototype development is a critical element in designing new technologies to support the preservation and access to audiovisual archives, it needs to be achieved within a replicable and easily understood framework, so as to eliminate any barriers long into the future. "Creating a structure whereby researchers, archivists and custodians of content, and commercial entities can all exist for a common purpose is imperative if we are to make any significant progress in this area," Factor proposes. "The development of any such framework needs to consist of techniques for identifying and tracking areas of research currently going on that are pertinent to AV collections. From there, there is a requirement to survey companies that are already supplying technology products and services into these and related markets that may have capabilities and synergies with research groups. It is also important to identify the exact requirements and the scale of needs within archives, while at the same time sourcing the best-placed >



commercial partners taking into account their current engagements and existing products. The aim would be to match capabilities, resources and requirements which can then all be brought together to create a solution to a wider need."

Factor believes that areas around restoration of AV content and automated annotation are two very interesting fields in that respect. "Research around image and audio restoration has been a cornerstone in recent years. A lot of progress has been made in this field and the results are impressive. What is most interesting to me is that these technologies have gone beyond applications in legacy archive content and found their way into mass-market consumer applications. One example of this from Ireland was the acquisition of Green Parrot Pictures by Google. Anil Korkoram and his team from Trinity College in Dublin had started their journey developing algorithms for motion stabilization and restoration of film. This grew into motion effects technology for feature films and now has become a fundamental quality enhancing technology in YouTube delivering a better viewer experience for all users."

Put simply, we must prove that AV technologies work and validate their efficacy within the context of a particular application or need. Once we've achieved that, the next step is to scale it up so it becomes available for a much wider group of users.

Mammoth Task

The assessment of the main issues for archives around restoration and accessibility is a mammoth task in itself. The needs of one archive depending on geographical location, levels of support and funding already in place from a particular state, and how certain archives have embraced technologies that are already available all have a significant impact on which road

to choose to ensure that a roundly accepted framework or path is chosen to match a global need rather than an individual one. It is certainly not a simple assignment or one with a silver bullet resolution. Regardless, Factor says that it is a project that simply must be embarked on if we are to tackle the AV preservation challenge. "This is not a scenario where we can stand still or introduce a multitude of solutions depending on the issues of specific archives. As well as the technological issue, cost prohibits such an action. However, if we can reach agreement through a framework on the best approach to common issues of every AV subsector, and if we can bring forward a prototype, we will learn a lot about the capability and performance levels of all partners and the deficits that may exist within the assembled groups. From there, at least we will have created a platform that can be altered and modified as we move forward in an iterative way.

Furthermore, we can also consider and determine the value of any solution if the initial processes are delivered. This will allow us to understand and introduce a licensing model around a collaborative effort in a specific subsector. Any framework, therefore, should be designed to map out the landscape for each of the three stakeholders: the researchers, custodians of archives, and commercial partners. By doing so, we will be able to engage all three parties within a clearly defined proposition which, in turn, can provide the tools necessary to support a prototype and licensing model around any technological advancements that help us move this project rapidly forward. Put simply, we must prove that technologies work and validate their efficacy within the context of a particular application or need. Once we've achieved that, the next step is to scale it up so it becomes available for a much wider group of users." ■ MS

In the Picture



Crossing the Chasm

From Research Results to Sustainable Tools and Services for AV

By Matthew Addis

Developing and sustaining new products or services for digital AV preservation is not an easy game. The AV market is a niche and specialist market where archives have high standards, high expectations, low budgets and often work on geological timescales. Working in this marketplace has many challenges for those looking to take promising new research developments and convert them into something that can be used for real, on the ground, and by the people in archives who do battle day-to-day in keeping digital AV content 'alive'. It is not that there are no promising research results to choose from. Many projects deliver and have delivered good prototype tools and systems. But to turn those prototypes into usable and affordable products is where things start to get really hard.

AV research projects are further burdened by the challenges of handling large files, the complexities of time-based media, and the need to scale to large collections. This all means that what works 'in the lab' may not translate easily to a production environment. It happens for projects large and small, for projects that are national or international, for projects that are within an institution or even done by an individual, and for projects that are public or private. The rate at which 'cool looking R&D' is converted into 'real products and services' is never as high as we might like. There's a disconnection between an R&D output that comes out of a research project and the availability of a sustainable

product or service or self-supporting community. A research output will often show that something is possible, for example through a demonstrator or proof of concept. But there is a gap that needs bridging between 'what's possible' and a fully-fledged product or service that is tried and tested and ready to be used day-to-day for real archive work.

Over the last decade, the European Commission spent around 20 million Euro on R&D concentrating on AV digitization and preservation. Though it is easy to focus on that taxpayers' investment — larger than most large archives' annual budget — there has been substantial industry investment too, in the PrestoPRIME project alone an additional 4 million Euro. The taxpayer isn't the only one concerned with getting practical value from a project!

Where is the Business Case

Bridging the gap means investment and that means a business case. This applies to commercial investment to create new products and services, but also to public funded projects including those within archives. Products and services rarely get developed without a viable market, and that means two things. Firstly, there needs to be an appetite for a particular new product or service, which itself can be a challenge since R&D results are typically 'ahead of





the game'. Innovators or early adopters may be ready to use the latest new technological solutions, but the majority may not be. This is evident in the AV space where many are still wrestling with the challenges of getting into the digital world but organizations are not yet ready to deal with the resulting challenges of keeping this new digital content safe and accessible. But it is in this digital world that much of the new R&D is now taking place.

Secondly, if a new product or service is to be commercially viable for a vendor, then archives need to understand the need to pay realistic prices. Budgets in archives are tight and the temptation is to drive vendors towards the lowest possible price, but this takes away their ability to sustain a business and most importantly to invest in the future, including taking R&D forward into products. Archives play a vital part in supporting technology vendors or service providers — including recognizing that vendors need to make profit and sometimes secure investment. Simple things like being a reference site for the need for new products and services can be invaluable to vendors when attracting or committing investment needed to take forward the fruits of research.

Managing Expectations

Expectations can be very different between institutions on what should come from bridging the gap. Large AV institutions will typically want an 'enterprise' scale solution, and one that also complies with international standards. Both take extra time and effort to develop. In contrast, smaller institutions often want something simple that works out of the box and can be deployed and used at low cost, ideally with some form of endorsement or recognition from the archive community. These differing requirements and expectations can influence whether a technology is developed in one direction, or another, or both. The differences between large and small institutions in terms of their culture, mission

and expectations have an impact at all stages of the process. This includes during the initial R&D (where often the needs of the larger organizations come to the front as they are better able to engage in the R&D process), during further development in defining what functionality is needed in products and services (a tool for a large archive may include assumptions or compromises for their way of working that don't apply to smaller institutions), and then in how to use this functionality (for example as an onsite product or as a hosted and managed service). What is clear is the need for the full breadth of institutions to be involved at all stages of the lifecycle. Irrespective of differing needs and expectations, institutions large and small need to come together and support those who take the bold step of committing to taking R&D forward, be they entrepreneurs, companies, or even 'bedroom warriors' developing open source. Those who bridge the gap need help from the community to do it. It won't happen by accident or without coordination.

Preservation is hard to sell. Most organizations have a mission beyond preservation and in tough times just keeping the rest of the business going will get the priority. Investing in preservation solutions can get relegated to the bottom of the list no matter how important the archive department might say it is. To show the value of new preservation solutions, those organizations that have engaged in the initial stages of R&D can do a great service to the rest of the community by demonstrating the use of the results of their R&D work — also known as 'drinking their own champagne'. This sends a strong and positive message to other potential users and vendors. It raises awareness, catalyzes adoption, and encourages vendors that there is a market to be had. The expectation shouldn't be however that the ones who do the R&D are the ones who take it forward. There is a lot of value in R&D work showing what's possible so existing vendors and providers sit-up, take note, and then incorporate the ideas into their offerings. Promoting >



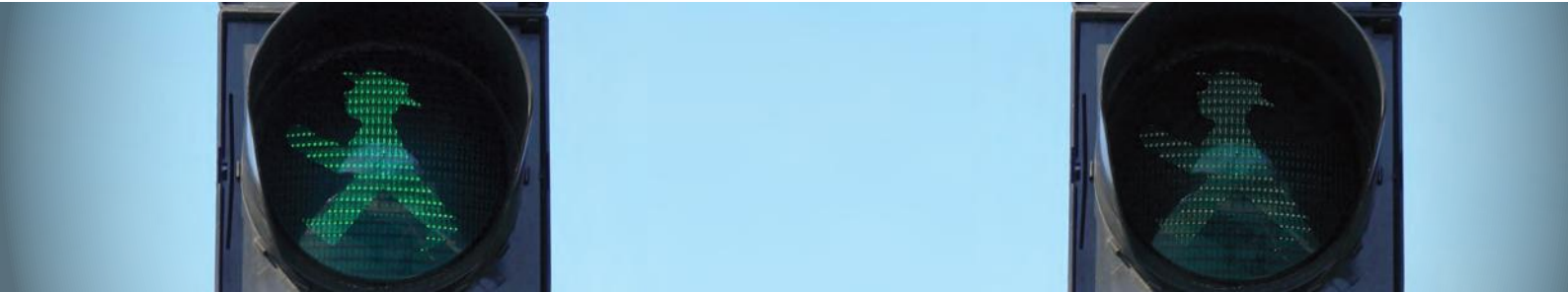
the interaction between research organizations and vendors or service providers helps indirect transfer to take place. To help kick-start the process, independent and objective technical assessment of candidate research outputs can be invaluable — the equivalent of technical due diligence that an investor might do. This provides a more informed view on what it will take to bridge the gap. Bridging the gap is not guaranteed however. Not everything will, or should, make it across the gap. This is what research is about: exploring possibilities with recognition that not every avenue will have practical and wide scale application. Open evaluation and independent assessment is essential for vendors to know what to choose, the risks involved, and the work necessary.

The landscape of translating research into product is also a strange and evolving place. Interventions can distort the landscape with unexpected effects. Government funding, philanthropic investment and projects by national libraries and archives all do great work and often result in 'free' software. This can provide results of immediate use, especially to smaller archives that might otherwise struggle to afford commercial products or services. But this model has a significant impact on the market, resulting to less space for commercial vendors to operate and win business. New models are also emerging, for example the provision of services rather than products and the use of the cloud rather than in-house solutions. R&D results making their way into services rather than products can widen the market and lower the barriers for smaller archives. Rapid developments are already taking place in cloud services and companies are showing how research results can be turned into innovative services. But this will only succeed if customers are also willing to be fleet of foot and embrace these new service-oriented choices and approaches. The geological time-scales of traditional archiving needs to change to match the pace of technological development and new delivery models.

How Archives Can Become Involved

Going from research results to sustainable tools and services is not an easy job and not something that happens overnight. But from an archive's perspective there is still the pressing need to save AV assets and generally 'get on and do it'. So what should archives do? How can the 'here and now' co-exist with 'building the future'?

An interesting question is commercial products or services versus open source or using a combination of the two. Archives have the ability to influence which route is taken by becoming involved in the process. The question is in which direction to assert influence, and that depends on what outcome fits best with the needs of the organization. Commercial products or services have vendors and systems integrators that provide support and advice throughout the lifecycle of the solution being used, and for preservation this can be important in order to avoid costly mistakes or putting content at risk. But on the other hand, open source offers potentially lower up-front costs (no product to purchase), vendor independence, and a community that has a collective interest in self-supporting and advancing the software. The open-source option can look attractive, but works best when there is an established community that is actively supporting and advancing the software. An organization, for example a university, might release their software under an open-source license, but that doesn't mean that there is a community interested in taking this software further. This can leave a user of the software high and dry should the original developer decide to move on to other things. The questions to ask include: Is there a strong community around the software and is it likely to sustain itself? Who would you get to support and further develop the software if you have to? Do you have the skills in house to take on your own support and development? In many ways, the questions about open source or commercial products are similar to the questions around which file-format to choose for AV >



content. For example, the Library of Congress has seven Sustainability Factors for file formats that support a reasoned approach on which ones to use. In a software context these would translate to:

- Disclosure: is there use of standards, open APIs, and availability of source code?
- Adoption: Who is using the software including developers and users and is there endorsement of the techniques and processes used by archive organizations?
- Transparency: Is information available on how the software is designed and implemented
- Documentation: Is documentation available for its use and also further development by third parties?
- Dependencies: Are other tools needed, which operating systems are supported?
- Patents (and licensing): Who owns the IPR. Is it protected? How is it licensed?
- Protection Measures: Is the software obscured, controlled by license keys, or otherwise constrained in its use?

Open source ticks many of these boxes, but this doesn't mean careful attention shouldn't be given to adoption, dependencies and documentation. Commercial products and services have their issues too, which include disclosure,

Matthew Addis worked at the IT Innovation Centre at the University of Southampton spending ten years on collaborative R&D projects in the audiovisual space. IT Innovation has been successful in using the open-source model for getting R&D outputs into the community. Recently, Matthew led the University in the spinning-out of Arkivum Ltd, which provides digital archiving as service. Arkivum is built on IP created in a UK research project and has secured venture capital investment. Matthew is CTO.

transparency, patents and protection measures. In terms of 'bridging the gap' archives need to know what end result they want in order to decide which direction to encourage, support or even get directly involved in.

For larger AV organizations there may be sufficient in-house expertise and resource to develop open source and then share with the community. DVA Profession from the Austrian Mediathek, LTFS Archiver from RAI, and BagIt from the Library of Congress and partners in NDIIP are just some examples of AV organizations with enough resource to take control of their destiny and develop and share their own solutions. There are many others, with a great review of open-source and free software by Kara van Malssen in the September 2012 issue of AV Insider. >





There are also examples of direct commercialization of R&D to create groundbreaking new products. The DIAMANT restoration software from HS-ART was born and sustained from multiple R&D projects over the past decade. Likewise, the SAMMA migration solution from Front Porch Digital originated in Media Matters and was developed partly with support from the European Commission's 6th Framework Programme for Research & Development. DIAMANT and SAMMA are exemplars of the substantial vision, drive, determination and commitment by the people behind the R&D collaboration networks and their perseverance in going from prototype to product.

Somewhere in between come the mixed models of open-source plus commercial services, for example Archivematica, a free and open-source digital preservation system supported by Unesco and a range of archives and libraries in the United States and Canada and with professional services offered by Artefactual. This recognizes the benefits that the archive community sees in open source but backs these up with commercial support for those that need it. This would probably not have happened without considerable investment and bootstrapping by the founding organizations. An open-source platform plus commercial services model is very attractive to archives, but is not an easy one to make work without major upfront investment. Someone has to be convinced to make that investment — which will typically not be venture capital or private equity — but instead might come from government funding, philanthropists, national bodies or international collaborations. These have a major role to play in getting R&D into the real world where the commercial realities of the AV preservation market can deter more traditional forms of investment.

Kicking the Tires of the Technology

Perhaps the most important question is the best time for getting involved in bridging the gap. Should you be an early adopter and be active from the outset, or sit back and wait to the solution comes to market and all the bugs are ironed out? Innovators and early adopters are pivotal in the take-up of new technology, products or services. Those who take the risk and are first to try a solution stand a lot to gain through the potential transformation of their business — which is often the motivation for making the leap — but they also provide visibility to the rest of the community and have influence that encourages further take-up. In this way, new technology 'diffuses' to the more pragmatic and conservative members of the community. Targeting the innovators and early adopters is the key to initial take-up and is required to convince the 'early majority' that the risks of using the new technology are demonstrably outweighed by quantifiable benefits. Without early adopters, the chasm may never be crossed.¹ This is a

There is an old joke in software engineering 'The first 90 per cent of the code accounts for the first 90 per cent of the development time. The remaining 10 per cent of the code accounts for the other 90 per cent of the development time.'³ Just the same, R&D can make it look like we are near to the 90 per cent mark — often with the help of some smoke and mirrors. This belies the time and effort still needed to get to a finished product.

very real challenge for new technology in the AV preservation sector where archives are by their very nature often risk-adverse and conservative in their use of new tools and techniques. FFV1² illustrates the importance of archives becoming early adopters — perhaps in a limited context >



or through a pilot or trial, but nonetheless to get involved and to get involved early. FFV1, or 'FF video codec 1', is a mathematically lossless intra-frame video codec available as open-source and supported by the ubiquitous FFmpeg software toolkit. FFV1 has many beneficial technical features and a specification of the first version that has been stable since 2006, but adoption rates are relatively low compared with alternatives, for example JPEG2000. Many archives are showing interest, but they fear that low adoption rates and recent developments to the specification mean that the codec is somehow on 'the bleeding edge' of development. They want to see more evidence of take-up, validation that FFV1 is truly lossless, and incorporation into commercial tools and products. This isn't unreasonable. But holding back too long only serves to self-perpetuate the status of FFV1. The adoption by Archivemata and the Austrian Mediathek with their active promotion of FFV1 along with others may start to break this vicious circle. This could lead to a virtuous circle of wider take-up, to shared development, to incorporation into commercial products and a host of other benefits for the community. The difference between a 'vicious circle' and a 'virtuous circle' can often be made by a relatively small number of archives who recognize the potential of new technology and are willing to invest a little time and effort of their own into being early adopters — if only to 'kick the tires' of the technology. The result is that they get the ball rolling for everyone.

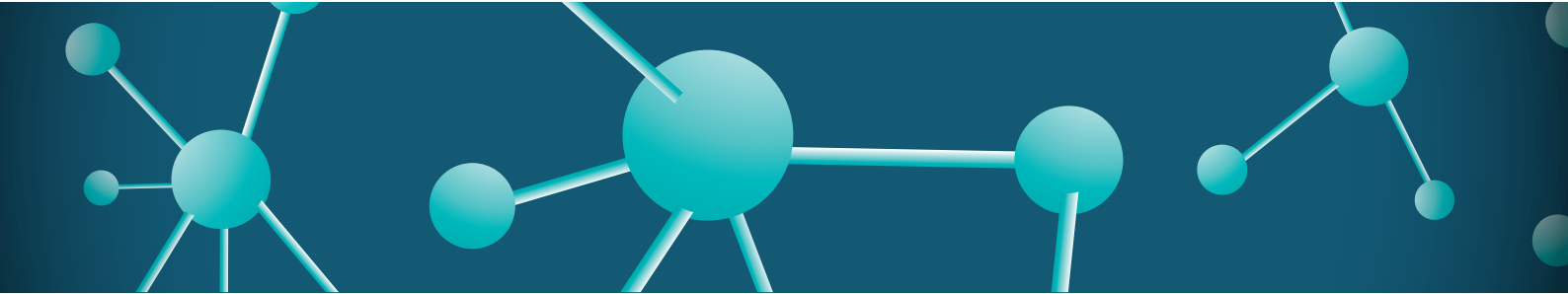
The difference that early adopters can make in moving R&D into sustainable products and services is no more true than for Software as a Service. Here we enter the realm of the 'cloud'. The cloud is a set of online services that provides something of value such as storage, processing, or applications, that are deployed in a way that can be private, public, or for a particular community. Cloud services have certain characteristics that include being able to using as much or as little as you want, when you want it, where you know what you've used,

and this is the basis of a payment model, for example Pay as You Go. Rapid developments are already taking place in cloud services, for example by Tessella, Aframe, Front Porch Digital, Cambridge Imaging, Arkivum, DuraCloud to name but a few. These companies are showing how research results can be turned into innovative services. Cloud models provide new ways to convert R&D outputs into sustainable services, and crucially models that lower the barriers to entry for smaller organizations that want to use the services. This not just because they can take advantage of the economies of scale achieved by the provider or because they only have to pay for what they use, but because they are outsourcing expertise that they can't afford to develop and maintain in-house. But archives are sensitive about adopting new technologies 'in house' let alone allowing 'someone else' to store or process their content on their behalf (see also page 22 of this issue of AV Insider). Part of this is the conservative nature (and mandate) of the community, part is the Fear Uncertainty and Doubt surrounding the cloud, and part is a failing to understand that sometimes the worst thing to do is to 'do nothing' and instead the risks are actually lower by 'doing something' — including trying out new cloud based ways of working. The challenge is making an informed choice and using this to get started sooner rather than later. Here, along with the other issues touched upon in this article, is the overarching need for more communication in the community and more information and objective assessment of the technologies available or required. More involvement and collaboration between everyone in the community creates a higher chance of bridging the gap. ■

Most of the tools mentioned in this article can be found through the PrestoCentre library: <http://www.prestocentre.org/library>.

A few are also included in this issue's Reading Room on page 24.

1. http://en.wikipedia.org/wiki/Crossing_the_Chasm
2. <http://en.wikipedia.org/wiki/FFV1>
3. Tom Cargill, Bell Labs Research



Presto4U: New Program Supporting the Adoption of AV Preservation Research Results

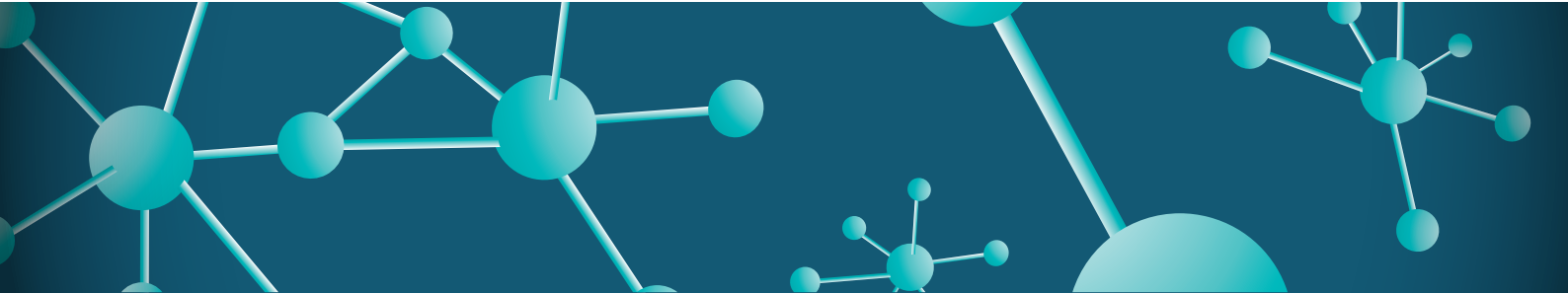
The long-term preservation of digital AV objects presents a range of complex technological, organizational, economic and rights-related issues, which have been the subject of intensive research over the past fifteen years at national and international levels. Although good solutions are emerging, and there is a large body of expertise at a few specialist centers, it is very difficult for the great majority of AV media owners to gain access to advanced preservation technologies. An increasing number of small AV collections have much less understanding of the problem and face particularly difficult problems of training, staff, equipment and funding when it comes to applying solutions. Many libraries have growing collections of digital AV and rich media (as well as legacy video that needs to be digitized and preserved). Museums are now faced with the need to conserve artists' film and video creations. And there are many commercial organizations with substantial collections, which may be essential to their economic survival. Every video production company has a library not only of completed productions but also a much larger volume of outtakes and unused scenes that may form the basis of a stock footage business. Every postproduction company and visual effects facility has to maintain an archive of past production work for clients, as well as a library of AV data that it owns outright. In the larger companies, these libraries run to Petabytes. Advertising agencies, industrial companies, scientific research centers and businesses also have a need for long-term media preservation.

Connections between the preservation community and AV media collections in most of these institutions are not well developed. There is a need for AV archives at every level to learn about the specific technologies available, evaluate tools and services evolving in widely separated institutions, and exchange the experience and knowledge spread across a wide range of commercial and non-commercial domains to develop suitable approaches for different applications.

Another challenge has emerged with the rise of consumer digital media technologies, broadband networks and inexpensive data storage. Individuals — most of them amateurs — are producing an increasingly important volume of media, much of which is shared over social networks, which have been in existence for only a few years. User generated content is at particular risk since most of its creators are neither particularly concerned nor knowledgeable about preservation and cataloguing. Few, if any, memory institutions have the resources to take on the digital preservation of personal archives. Instead, most of the work of preservation will have to be pushed back to the public.

Overcoming Fragmentation

Digital AV media preservation in general has been widely addressed in R&D projects and programs, but many of the solutions have still to reach more than a small fraction of the relevant >



market players. On the one hand, the long-term preservation of complex and AV media objects is still the subject of many open questions. On the other, the diversity of stakeholders makes it difficult to put research results into practice. Each community has rather different boundary conditions and distinct requirement sets. As a result, digital AV media preservation initiatives have often been narrowly based and driven more by differences than by commonalities. The consequent fragmentation has made it extremely difficult for the supply side to reach the critical mass of customers that is needed for sustainable business — making it harder again for users to find affordable solutions. An effort of mobilization and advocacy is needed, which emphasizes collaboration between AV media communities, helping them to evaluate their needs, and to produce compelling business cases showing how digital preservation solutions can be embedded and sustained. Even if one-size-fits-all solutions do not seem realistic, collaboration between users is essential to leverage resources, promote standards, share best practice and sustain partnerships once they are established.

Presto4U

This month, with support from the European Commission and a core network of 14 organizations, PrestoCentre has started a new program connecting the different constituencies involved in AV media preservation: expert users, who understand the problems and require technological solutions; researchers who can develop the fundamental knowledge; and technology providers who can commercialize research results as sustainable tools and services. The aim of the program is to **focus research efforts onto useful technological solutions, to raise awareness and improve the adoption of AV preservation research results, both by technology and service providers as well as media owners, and with a particular emphasis on meeting the needs of smaller collections, private sector media owners and new stakeholders.**

PrestoCentre will establish, guide and run nine communities of practice, each based on a shared concern, a shared set of problems and a common pursuit of technological solutions related to the particular custodial practices and preservation challenges in a principal sub-sector of AV media. These communities of practice, collectively and individually, provide a crucial reference point and exchange environment, pooling the available expertise between the academic research, media, culture and industry sectors. Whereas today, users find it very hard to find technologies and tools for preservation — and even harder to evaluate their suitability — PrestoCentre will support the communities of practice through:

- A program of **technology watch**, which takes into account both the industrial and research landscape, tracking and mapping research projects, emerging commercial technologies and new technical approaches;
- Creating a **standard set of metrics and test datasets** against which the performance of prototypes, tools and methods can be analyzed and compared;
- Monitoring and contributing to the **development of relevant standards, licensing and certification models;**
- Establishing a **brokerage and tailoring mechanism** so that third parties can adapt prototype technologies and services to meet user needs.

Understanding Communities of Practice

The scale, scope, and diversity of institutions with some sort of AV archival function is vast. Identifying these institutions on the basis of their varying preservation needs is challenging; for any generalization, there may be exceptions and edge cases that do not fit a general model. PrestoCentre has identified nine communities of

practice based on their particular focus and the particular media, custodial practices and preservation problems that go with it:

- Museums, artists and their representatives. They keep material for permanent access as originally experienced, so need to go beyond 'just transfer the content' approaches (see box on next page);
- Music and sound archives. These range from research (ethnomusicology, endangered languages, etc.) to jazz, opera, electronic music and commercial collections, with issues of artistic media preservation, sound quality and complex environments;
- Video production and postproduction. Cinema, broadcasting, advertising and the web are supported by an array of (mainly) small production companies and providers of technical services. Their production on files has a preservation gap: who keeps the output, and how?
- Footage sales libraries. This is a USD 400 million global business, needing to convert nearly all their assets to files to remain in business, and needing to preserve these files;
- Film collections and filmmakers. Thousands of filmmakers are now making millions of files. As with video production, who will keep them, and how?
- Research and scientific collections. AV content as research data, generated as a means to an end, is often kept unmanaged and undigitized, much less preserved, in small research departments within large institutions with no specific interest in AV technology;
- Learning & teaching repositories. AV content specifically supporting education,

is an area of growth as universities move to recording all lectures and engaging in distance learning. Many preservation issues are specific to educational settings, where documentation (as learning objects), re-use, and capture of associated content and context are needed;

- Broadcast. Broadcasters, public and private, have the world's largest AV collections, with a tradition of high internal re-use and commercial sales;
- Personal collections. Individuals cannot be treated as a professional community of practice, but they do have preservation problems. Archives that accept and try to keep non-professional media are therefore a proxy community of practice, which can identify requirements for publicly usable, self-preservation technologies, and co-ordinate the necessary research.

Promoting Technology Transfer

There is hardly a lack of technology vendors in areas relevant to AV preservation. There are many vendors of storage in the AV space covering production, post, playout, distribution and archiving. These include disk based solutions as well as data tape solutions. We are also beginning to see cloud storage specifically for long-term preservation.

Beyond storage, more and more companies are providing cloud services for AV creation, editing, asset management and delivery. Cloud-centric companies providing content delivery networks, online video platforms and applications are moving down the value chain toward the storage and management of master digital video assets. Content processing is also available as a service, for example render farms as services, which is relevant to service based approaches to format migration, content quality analysis, fingerprinting and other processing technologies.

[\(continue reading on page 20\)](#)

Box: Community of Practice illustration 'Museums, Artists and their Representatives'

Case studies from this community of practice show the intersection of general problems with specific needs. This community has to preserve artworks using film, video or audio; it also covers other types of small high value collections held within museums. Preserving artists' film (such as the Derek Jarman Archive) is expensive, but the problems are not specific and the high value of the originals justifies the cost. Video art is a different case. Since the 1960s, the term has been used to describe a broad range of outputs, techniques and media, ranging from complex multi-channel installations to simple single channel works designed for display on an iPad. Video artworks are an increasingly important part of the visual heritage: Tate (the United Kingdom's national collection of modern art) currently acquires more video-based works than it does paintings. Video art demands a pro-active approach and special preservation methods, but most works are held in museums that do not have the specialist skills or infrastructure to manage the preservation of video-based collections. The majority of those working with artists' video have engaged in the migration of works, using proprietary formats such as Digital Betacam and uncompressed formats such as D5. Because of the small number of works and their high value, museums have often worked with facility houses to make transfers from analogue tapes to digital formats and from obsolete digital formats to newer ones. However with the shift to storing digital video as files, custodians lack tools that conform to archival standards. Systems such as SAMMA and INGEX are not offered by facility houses and are difficult to access, either because they are too expensive or because they are difficult to set up and they do not deal with the range of formats and standards required. Systems have not been assessed for their suitability for the preservation of high value collections that are already digitized, and they do not interface well with museum collection management systems. Bespoke solutions are expensive and not sustainable for the volume of material being managed; there is little consensus about what is essential for a system.

Some research has been carried out in the contemporary art conservation community relating to the conservation of complex digital video installations but these projects mainly address conceptual issues and have not focused on the technical questions related to video that is acquired as digital files or the long-term preservation of digital video transferred from tape to file. As a result, there are problems both of access to research results and the creation of appropriate tools for this community, which would like tools (or service providers) that provide non-proprietary, low or no loss, low risk, robust preservation solutions, that are simple to use, transparent, easy to integrate into the preservation workflow and other systems within the museum and efficient with low set up/ access costs. Those responsible for the preservation of video artworks will want to understand the implications of the use of any tools or systems: they will not want to relinquish control. Complete automation may not be as important as with high volume collections, but quality control is likely to be critical.

The problem of preservation is not confined to museums. Video artworks are sold as either unique works or as editions. Often the gallery or dealer retains a responsibility for the preservation of the artist's master and collectors return to the gallery for new formats etc. The gallery has taken on an archiving responsibility but often without access to the preservation community. Many artists are very concerned with the preservation of their works but also lack access to information, especially when they are creating works as digital files independent of any of the formal workflows that govern commercial production. Technological obsolescence, the loss of Cathode Ray Tube monitors and 4:3 aspect ratio screens has an impact on the look and feel of installations but little has been done address the specific aesthetic impact of technologies used by artists at particular times for either production, preservation or display; little research has been carried out on the impact of digitisation or migration on the look of video. Artist Bruce Nauman's Mapping the studio II with color shift, flip, flop & flip/flop (Fat Chance John Cage) makes use of digital noise, which has to be preserved.

Emulation systems are theoretically important for media preservation but not yet provided by industry to the AV sector. Digital library systems are extending to include the management and preservation of multimedia assets and digital content in many formats.

AV preservation systems are few in number and highly specialized, with few commercial products on the market and some of them still in the research stage. Digital restoration tools have been extensively researched and developed with functions to clean dust, dirt, scratches, chemical stains, flicker, instability, film shrinkage, warping and many other defects. As a result, there is a clutch of expert providers. Video restoration has been extensively researched but there are comparatively few specific tools on the market.

The issues around technology transfer are therefore less to do with the presence of potential technology providers and more to do with **matching highly specialized sub-sector demands with the right technologies at the right price.** Long-term preservation demands very high quality but is not a cash-rich field, and fragmentation of the sector makes it difficult for vendors to achieve economies of scale, and for suppliers to find tailored solutions. PrestoCentre will explore ways out of this impasse, examining in more detail the barriers to adoption and looking at means to stimulate manufacturers to provide the right kinds of preservation tools. We will look at ways of **aggregating user requirements — to make it more economic for suppliers to provide solutions — and at alternative business models. These include the use of SaaS, and the application of open-source solutions, with either commercial or community support.** We will also develop model guidelines and templates for the process of taking research-derived prototypes through to use.

It is all very well identifying potential markets for new preservation tools or services and a set of vendors who could address that market,

but it is another matter to convince vendors (or their investors) that they should address the market by investing time and money in new products and services. Making the transition from late stage applied research to a commercially viable product is often the hardest part. Vendors need to know whether there is a market and who in that market might buy a new product or service, how many customers there may be, and what would they pay? This leads to the investment need: what would it take to get the technology in a state where it could be offered to the market, what sales and marketing is needed, what's the likely timescale for the sales cycle? But none of that counts if the IPR and licensing position is defensible: Is the IP be protected? Are the terms reasonable? Is there exclusivity, or a way to add commercial services to an open-source community? PrestoCentre will, therefore, also set up a brokerage and information service that eases the process, with model examples of the process, an on-line catalogue of software tools and a marketplace for matching needs to product vendors, service providers and those making research outputs available. **Each community of practice will identify the leading vendors and suppliers in its community which will be used to target awareness and use of the PrestoCentre brokerage services.**

PrestoCentre does not favor any particular technology and cannot represent all vendors or service providers. Instead, we will **develop models for brokerage that show the process of matching representative communities of practice requirements to technology service providers.**

The program will identify and review the barriers preventing the adoption of research results and analyze routes to uptake, including licensing to vendors for productization and means of bringing new suppliers into the marketplace. We will analyze the economics and business models for product or service based approaches, including SaaS, traditional product models, development by the user community itself, and different varieties of open-source. The program will include the >



analysis of IP licensing models and support the application of standards-based tools and services by analyzing AV and preservation standards relevant to each community of practice, including upcoming specifications and the processes for adoption. ■ MS

Join Now! Communities of Practice – A Great Part of Membership

If you are already a PrestoCentre member and you would like to connect more actively with others in your profession and contribute to preservation knowledge transfer, then our communities of practice program is a terrific opportunity for you.

Join one of the nine communities to learn from peers, share what you know and increase your contact network. It's a most enjoyable and rewarding part of being a member.

Communities of practice occur online and face-to-face. You'll engage with project practitioners from varied industries and get together for educational and networking events. You'll get acquainted with digital preservationists from across the globe who share your interest in the challenges of a specific audiovisual subsector or area of practice. You'll collaborate to create new knowledge and resources that meet the needs of the community and advance the tools and systems available for preservation. Our program is designed as a **machine for spreading excellence**, whereby the community leaders and core group partners will work with you to define the problems and refine the solutions. Tools such as online workspaces, webinars, wikis and blogs are at your disposal.

The PrestoCentre communities of practice are newly forming, so it's a great time to join. You can help shape new activities and discussions. Check out the list of communities available to you and apply for membership at

<http://prestocentre.org/4u/communities/application>

(PrestoCentre organizational membership runs on a 12-month cycle, with fees paid annually. New members receive an introductory discount of 50% for their first subscription year.)



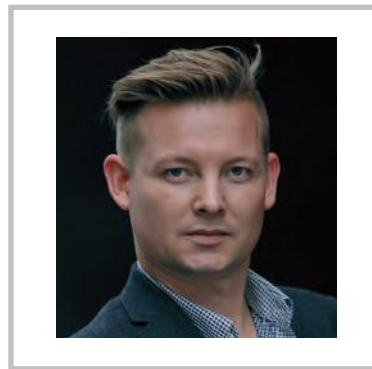
Using Cloud Storage as Part of Your Preservation Infrastructure: Realistic or Not?



Jean Gagnon
Director of Collections
Cinémaèque Québécoise
Canada

"We haven't looked at the cloud yet as a strategy for preserving or storing our digital archive. We are responsible for the reception, treatment and storage of the Legal Deposit of Film in Quebec and it is in that context that we establish our policies and standards."

"Given the legal aspects of copyright and security issues, cloud storage has not been considered realistic. Even though it might be cheaper than some other forms of storage, the security of and control over our files would be a key concern. Another issue specific to our organization is the limited bandwidth. Our technological infrastructure needs updating, but the lack of funding has made this impossible so far."



Tobias Golodnoff
Head of Cultural Heritage Project
DR - Danish Broadcasting Corporation, Denmark

"It is not so much a question of using the cloud or not. It is rather about using it for the right purpose at the right time. Our strategy has been to move funds to operational spending and keeping our capital expenses low. For the Cultural Heritage project that we are managing in Denmark we avoided investing half our budget in hardware five years ago through gradually moving into the cloud."

"The limited control over losing data, and betting on a vendor that might go bankrupt is a concern for us. But in-house storage brings concerns just as well. We have chosen a cloud service for metadata and streaming, while keeping a backup ourselves."



Srdjan Janković
Head of VTR Maintenance Dept.
Technical Support, Serbian
Broadcasting Corporation, Serbia

"I believe that cloud storage can offer a nice solution and could be a preferred choice. However, looking at the responsibility and mandate for the preservation tasks that most audiovisual archives have, the dependency on external services brings with it a number of uncertainties and risks."

"Because of the cultural value of audiovisual data, the concept that a monetary compensation will suffice to compensate an event of data loss is still difficult to accept. Using a metaphor: I don't mind losing my umbrella on the train — I could easily get a new one. My passport, on the other hand, contains a different value. I will keep it close to me and make sure not to lose it."

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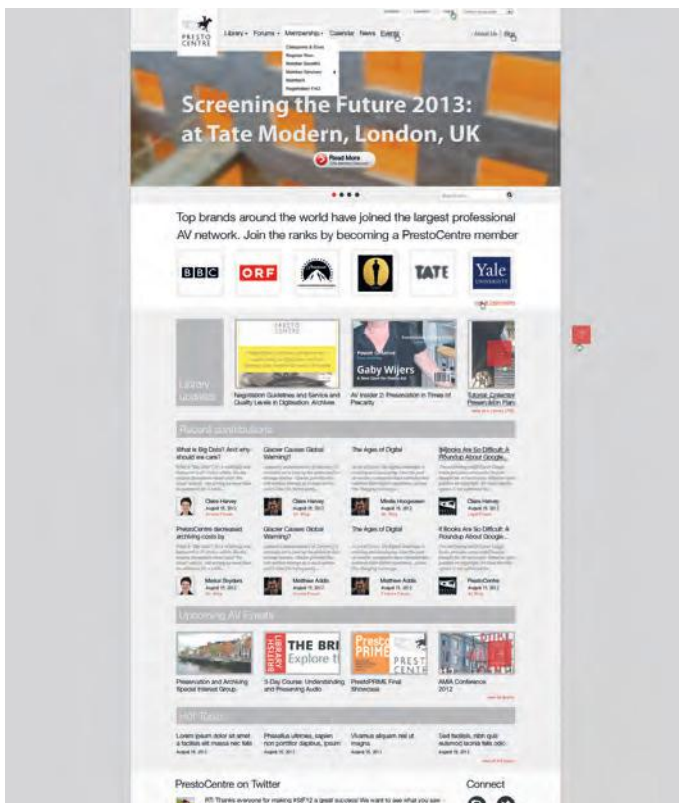
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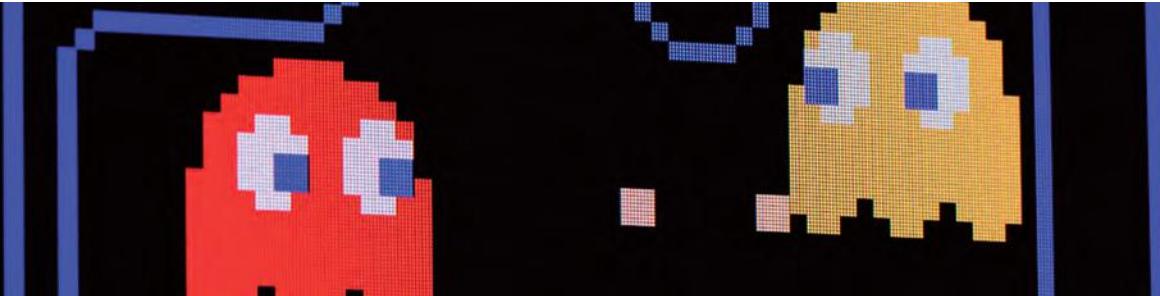
See <http://prestocentre.org/ed-calendar> for future issues and submission deadlines.

Come admire our new jacket at www.prestocentre.org



Thanks to the support of all those who joined PrestoCentre last year, we were able to finally bring our website out of beta! The final design gives us more opportunity to feature our shared values and most exciting work front and center. In the coming months, we'll be completing those parts of the website that are still under construction — including the much awaited Commercial Provider Registry. And we will implement the online workspaces for the communities of practice (see page 17). In the meantime, all back issues of AV Insider, plus web exclusives, fact sheets, issue papers and reports are still in our Library section. You can find most of the member services through the top menu, or see the footer for a full listing. Short news updates will be more regularly published in the News section. And there are now multiple options available to share your events, list your publications and draw our attention to your most pressing issues. Come check it out, we hope you like it.

We would love to get your feedback!
Write to us at office@prestocentre.org.



Reading Room

Tool: LTFS Archiver

RAI – Radiotelevisione Italiana – Centro Ricerche e Innovazione Tecnologica (2012)



LTFS Archiver is a service supporting archiving and access on LTO (Linear Tape Open) data tapes with LTFS (LTO File System) capable to deal with LTO5 libraries and simple desktop LTO5 drives, also in a mixed configuration. LTO/LTFS can provide a cost-effective long term storage solution.

The goal of the software is to effectively manage the storage of generic files, even though it is optimised for working with multimedia (big, order of several GBytes) files.

LTFS Archiver needs to be installed on a Linux-based host that is connected to the LTO library and/or drive. The service requires mtx (Media Changer Devices) and mt (Control Magnetic Tape Drive Operation) system tool commands to pilot the library and the drives, in addition to apache/http web server and postgresql database (easily available on Linux servers). It is available under the GNU Affero General Public Licence v.3.0.

<http://www.prestocentre.org/library/tools/ltfs-archiver>

iModel can be used to estimate the costs and risks of using IT systems for storing, accessing and processing digital audiovisual assets. The tool is intended to allow a wide range of questions to be considered when planning, selecting or operating such storage and access systems.

These include:

- Content storage: how many copies should be made, what technologies should be used, how much will it cost, and what are the long-term risks of losing files?
- Data storage: how often should it be checked to make sure integrity is intact, and when does this become counter-productive (e.g. act of checking causes more damage than it might repair)?
- When should media migration take place (e.g. between LTO generations): regularly or at the point of obsolescence?
- What is the impact of ingest and access on shared resources for storage and data safety: what level of resources is needed to support both?

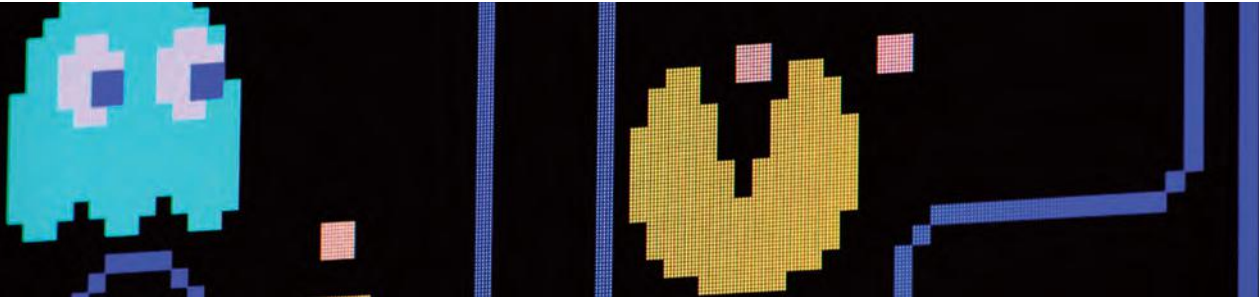
It is available under the GNU Lesser General Public Licence v.2.1.

<http://www.prestocentre.org/library/tools/imodel>

Tool: iMODEL

**University of Southampton
IT Innovation Centre (2012)**





Tool: VAMP - Semantic Validation Service for MPEG-7 Profile Descriptions

**Joanneum Research
Forschungsgesellschaft mbH
(2011)**



VAMP is a validation service for MPEG-7 (ISO/IEC standard 15938, Multimedia Content Description Interface) documents. VAMP checks if a given MPEG-7 document conforms to a selected MPEG-7 profile. It supports the Audiovisual Description Profile (AVDP) developed by a working group of the European Broadcasting Union and recently standardized by ISO/IEC.

VAMP semantically validates the conformance of MPEG-7 descriptions to a given profile. The semantic constraints from a given MPEG-7 Profile cannot be expressed by using XML schema alone. Semantic Web technologies are also used for this purpose. XML Schema validation is therefore only one part of the VAMP validation service.

A Java client application is available for validating local documents and batch processing. Both the service and the client application are free to use.

<http://www.prestocentre.org/library/tools/vamp-semantic-validation-service-mpeg-7-profile-descriptions>

The Multivalent Fab4 Browser is designed to separate functionality from document format. It proposes an open source framework for document parsing and rendering.

Almost all functionality is made available via relatively small modules of code called 'media engines' that programmers can write to extend the core system. This allows the complete parsing and rendering of theoretically any file format. It natively manages a set of document formats (e.g. PDF, HTML, OpenOffice) and audiovisual formats (e.g. OGG, MP3, MXF)

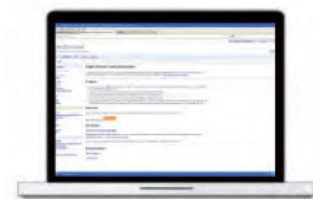
This approach has several advantages: media engines are independent of the application features that are normally implemented by the file format editors. Multivalent core features are contained in a small, compact core, that allows a very flexible extension mechanism. Multivalent Media engines are written in Java, a system that abstracts from the characteristics of the Operating system in use, and that is compiled into architecture independent bytecode.

It is available under the GNU General Public Licence v.3.0.

<http://www.prestocentre.org/library/tools/multivalent-fab4-browser>

Tool: Multivalent Fab4 Browser

**University of Liverpool
(2011)**



Sustainability of Digital Formats

U.S. Library of Congress



The preservation of digital objects involves crucial decisions regarding the most suitable file formats to be employed. The options are several and the selection is not always easy.

This website lists 7 important factors (disclosure, adoption, transparency, self-documentation, external dependencies, impact of patents, technical protection mechanisms) to be considered that apply across digital formats and influence the feasibility and cost of data preservation, considering future changes in the technological environment. These factors are useful under different preservation strategies, whether it is migration to new formats, emulation of current software on future computers or a hybrid approach.

<http://www.prestocentre.org/library/resources/sustainability-digital-formats>

DVA-Profession is an open-source solution for video digitization (VHS, VCR, U-matic, Digital Betacam, DV and MiniDV) for long-term preservation.

Starting from ingest, it has been designed to manage the whole video preservation workflow, from analysis to transcoding, metadata, generating preview images, quality control and file deposition in storage. It offers the possibility of 'ghost handling', i.e. the management of different video contents that have been recorded on the same video tape. This product is available under the GNU General Public Licence v.3.0 (GPLv3) and can be used in Linux, Windows or Mac.

<http://www.prestocentre.org/library/tools/dva-profession>

Assessing the Audiovisual Archive Market

Peter B. Kaufman (2012)



With the advent of the digital era, AV archives have been called to face new challenges: ensure the preservation of digital content and provide online access to the material. Both these actions require funding, quite a scarce resource in the years of the economic crisis.

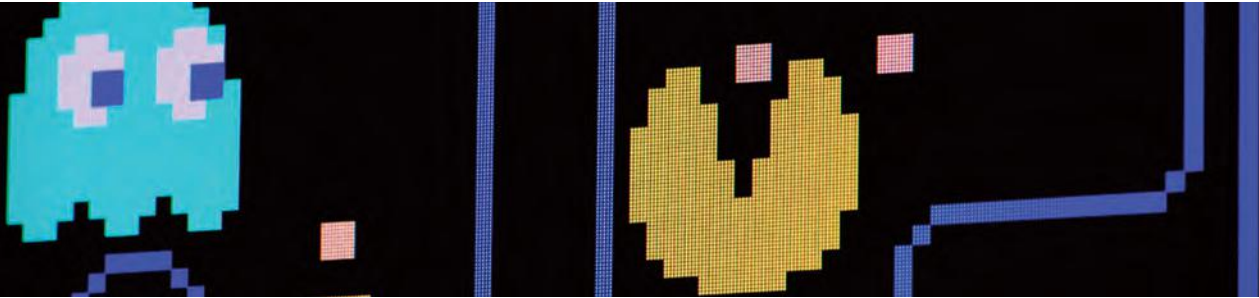
Audiovisual archives have recently started exploring new models for revenue generation through innovative partnerships with commercial and non-commercial institutions. This paper provides an overview of the current practices of archives on examining, appreciating, and embracing business and commercial interactions. It describes models and tools that have proven successful and provides recommendations for AV heritage curators to appreciate and maximise the value of their assets.

<http://www.prestocentre.org/library/resources/assessing-audiovisual-archive-market>

DVA Profession

Austrian Mediathek (2011)





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

February

Personal Digital Archiving 2013

February 21 - 22, Maryland, USA

The Personal Digital Archiving conference will provide a two-day-long opportunity for researchers and practitioners in the field of personal archiving to convene for presentations and networking. The conference supports a broad community of practitioners working to ensure long term access for various personal collections and archives.

Music Library Association 82nd Meeting

February 27 - March 3, San Jose, USA

This is the annual meeting of the Music Library Association. Among others, sessions will take place on the preservation problems for 20th century music collections, the future of collections and collection development through resource sharing.

April

2013 NAB Show: Where Content Comes to Life

April 6 - 11, Las Vegas, USA

The NAB event is appropriate for every industry that employs audio and video to communicate, educate and entertain, providing them with creative inspiration and next-generation technologies to help breathe new life into their content. www.prestocentre.org at the start of 2013.

69th FIAF Congress: 'Multi-versions'

April 21-27, Barcelona, Spain

This is the annual conference of the International Federation of Film Archives. This conference serves as a meeting point to debate the role of film archives in respect to recent technology advances and the challenges faced by the arts and culture in the context of the current worldwide economic crisis. The symposium is held on the first 2 days, followed by workshops, regional meetings and the general assembly.

Mark Your Calendar!

Screening the Future 2013

May 7-8, 2013, Tate Modern, London, United Kingdom

Screening the Future is *the* annual international conference on digital audiovisual preservation. Join leading archivists, filmmakers, TV producers, CTOs, scientists, vendors, strategists, funders and policy makers, developing solutions to the most urgent questions facing digital audiovisual repositories. Pre-registration and 40% discount is available for members. More on <http://2013.screeningthefuture.com>.

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