

content that aim to boost local content in both traditional and new media disadvantaged communities of the developing world. See UNESCO Portal 6 June 2006 http://portal.unesco.org/ci/en/ev.php-URL_ID=3981&URL_DO=DO_TOPIC&URL_SECTION=201.html

- 8 Australian Law Reform Commission, 1993. *Designs Issues* 11.
- 9 For example Dr Richard Baker has built up a strong relationship with Yanyuwa and Garawa peoples. http://sres.anu.edu.au/people/richard_baker/research/yanyuwa/index.html
- 10 Software Requirement Document, Indigenous Knowledge and Resource Management in Northern Australia (IKRMNA)—ARC Linkage Project, (School of Australian Indigenous Knowledge Systems—Charles Darwin University, Jan 2005).
- 11 The Ngiya National Institute of Indigenous Law, Policy and Practice has a commitment to bringing together Indigenous researchers and Indigenous people with experience in the public sector to discuss matters of importance for policy makers on Indigenous matters 1 June 2006 <http://www.jumbunna.uts.edu.au/ngiya.html>
- 12 The *Creative Cut* collaboration involved Craybob Productions, Creative Combat, Jumbunna (UTS) and Ngiya.
- 13 For detailed analysis and discussion of ATSIC please refer to Jumbunna Research Unit's Submission to the Senate Inquiry 1 November 2005 <http://www.jumbunna.uts.edu.au/research/ngiya/papers.html>
- 14 See interview with Creative Combat, TVNZ, November 2005.

Mike Leggett and Laurel Evelyn Dyson are non-indigenous Australians interested in the potential of designing new media applications that are sensitive to and productive for indigenous peoples. Their research has focussed on development of new media systems that reflect indigenous world-views, particularly with relation to established knowledge-sharing protocols. They demonstrate that there is no one-size-fits-all solution to culturally specific knowledge systems, but questions of control and governance are critical.

Strangers on the Land: Place and Indigenous Multimedia Knowledge Systems

By Mike Leggett and Laurel Evelyn Dyson

Audio-visual storage mediums, such as the ubiquitous handycam, offer new potentials for the representation of information about the natural environment and the events that have occurred there, and thus for the way the history and significance of place are discussed and disputed, extending oral and written language traditions.

A number of projects in recent years have sought to construct means of navigating video movies concerned with conveying knowledge and experience of place, without recourse to text (e.g., Laurel and Strickland 1994; Naimark 1998; Shipman, Girgensohn and Wilcox 2003; Girgensohn et al. 2004). During this period there has been a growing interest in the representation of Indigenous knowledge and culture through multimedia. Increasingly, Indigenous Australian communities are diversifying their approaches to recording their cultural heritage. Multimedia systems have provided a method of storing these recordings and sharing digital copies of artefacts held in museums and other collections back with Indigenous communities. Several practice-based research projects in this area are currently exploring the way of best achieving this through a-textual, purely graphical interfaces based on video or virtual reality images of the places where the Indigenous cultures originate (Leggett 2005a, 2005b; Leavy 2007; Chesselet n.d.).

In addition to the challenge of moving away from textual mediation, there are also many other issues that need to be addressed in developing multimedia systems for use by Indigenous communities. One of the most important is the issue of governance and control, ensuring that the translation of Indigenous communities' knowledge into digital format does not infringe on their knowledge protocols and does not result in significant losses or transformations. Another issue is that each Australian Indigenous culture is connected to a specific place, with traditional knowledge related to specific landscape features. Generic multimedia system developments may not accommodate appropriately such specificity. Each community requires its own system that has the power to represent the intricacies of a culture as it has arisen in a place.

Some interactive computer-based systems that accentuate the importance of place and belonging in Indigenous culture have shown interesting potential and may acknowledge the oral and graphical expressive powers of many Indigenous peoples better than text-based modes of expression.

Our initial investigations commenced in the mid-90s with seed-funding from the Australian Film Commission for *Strangers on the Land*, an "interactive multimedia documentary" of a landscape on the New South Wales South Coast. Here we evaluate the project and describe a subsequent prototype system, *PathScape*. We outline current objectives and planned approaches to advancing the development, in collaboration with a specific Indigenous user group. We wish to move a step back from the design of the Indigenous multimedia knowledge system itself, and instead consider the design of authoring software which will allow Indigenous people themselves to create their own systems for storing and viewing their culture and knowledge. In this way we believe that differing requirements for the representation of place across Indigenous communities may be accommodated.

Place is an important concept in many cultures, and particularly for Indigenous peoples in Australia, in contrast to non-Indigenous Australians, whose sense of place in Australia dates from 1788 and is often mixed with connections to ancestral and religious homelands elsewhere. Aboriginal Australians have been in Australia from time immemorial and therefore their culture has grown out of this place *ab origine*, "from the beginning". Moreover, place is a central issue in

Indigenous peoples' struggle for recognition and identity in the current era. As Matutjara author Jessie Lennon (2000, 147) puts it:

We're the people that have been here longer. I'm an old woman now and I been here... I'm the one who know everyway.
Ngura nyangatja nyayuu—This is my home!

A repository of history and events, the landscape for Indigenous Australians is a "hallowed place of worship and the vehicle for the livelihood of all aboriginal clans" (Leavy 2007, 161). It takes on a deep religious significance since across the land the travels of the ancestral beings are recorded in dreaming tracks or songlines, forming a great network of history, spiritual power and resources to which people are connected through a system of mutual obligation. "Country" is not inert, but a living being who knows and hears, is happy or sorrowful, is conscious and has a will to life (Rose 1996). Connection to place relates particular groups or individuals to particular tracts of land (Smith et al., 2000).

Importantly, connectedness involves responsibilities to sustain the land through artistic representation:

Aboriginal culture was passed on through oral traditions, art, dance and rituals. Aboriginal legends served an important purpose for teaching, understanding and interpreting the connection of aboriginal people to the land they relied upon to survive in the world they lived. (Leavy 2007, 160)

In traditional culture representations of place were either oral/performance-based (song, dance, story telling, ceremony) or graphical (painting, sculpture, maps). Often more than one mode of representation was employed at the one time, each serving as a reinforcement for the others:

A story was always linked to learning tracks, parts of the land itself and often also to animals, none of which changed fast. The physical features of the land thus functioned as mnemonics. In some cases, the story was also accompanied by illustration, a piece of rock art or a carved tree.

This supported the storyteller's memory. Also, the story was generally accompanied by a dance and a song, which would provide further reminders for a forgetful storyteller. (Sveiby and Skuthorpe 2006, 55)

For Aboriginal artist John Moriarty (2000, 250), Indigenous artistic representations of place have major implications for everyone, not just Indigenous Australians:

Not many people can truly understand the spirituality of Aboriginal culture, how it relates through design to people and the formation of the land... I have been trying to impress on people (in my case for nearly forty years) that this is something all Australians—white and black—can relate to, so they can understand this country and feel more a part of it than they do if they think of themselves just as transplanted Europeans.

Another significant factor is an urgency to retain Indigenous culture in the face of the passing away of elders. Some urge that accommodation needs to be made for young Indigenous people who would like to combine their heritage with Western values and the mainstream culture (Leavy 2007). However, the traditional and the modern should not be seen as antithetical since the expansion of Indigenous art has often found expression in new oral (film, country and western singing, rock music, hip-hop) and graphical (acrylics, watercolours, photography, printmaking, batik) forms. Indigenous Australians have also explored the potential of multimedia technologies, CD-ROMs (examples include Moordidj; Yanardilyi-Cockatoo Creek; Lore of the Land), and websites, as new means of representation and memorisation (Dyson et al. 2005, 2006).

Indigenous multimedia knowledge systems (also commonly referred to as Indigenous living cultural archives) are an advanced form of multimedia technology. Indigenous communities in Australia and elsewhere have been exploring these systems as a way of preserving their culture, passing it onto the next generation and, more rarely, sharing it with non-Indigenous people. The design of these systems is complex, involving issues of control over intellectual property stored in the system, restrictions as to who can access material, the ordering of material in the database according to Indigenous knowledge categories,

and the search for an interface that is culturally appropriate. To date, a number of approaches to their design have been investigated. One of the most common has employed a cross platform database package such as FileMaker Pro linked to an interface based on the familiar desktop metaphor. *Nyirti*, used at the Wangka Maya Centre in the Pilbara in Western Australia, is an example of this type of system and has the advantage of being cheap to implement and maintain, even if too heavily text-based to be fully adequate for users coming from oral cultural traditions (Injie and Haintz 2004). While still retaining screens of text, Hunter (2002) has successfully produced a database which acknowledges Indigenous knowledge concepts of access and intellectual property through rights management features.²

It is important for the design of these systems to reflect the context of use. *Ara Irititja*, a system developed for the Anangu people of Central Australia, exists on a mobile workstation called the *niri niri*, which can be placed on the back of an all terrain vehicle and taken where it is needed, outdoors or in. The *niri niri* is also heatproof, dustproof, mouse-proof and with an uninterruptible solar-generated power supply (Hughes and Dallwitz 2007).

However systems designers have attempted to introduce stronger ideas of place to interface design, working from the conceptual model of a "walk through country". Systems under development, such as the video-based *PathScape* and the virtual reality (VR) *Digital Songlines*, allow cultural items to become available as the user moves through a representation of the landscape (Leggett 2005; Leavy 2007). Another prototype being developed for the Himba people of Namibia in Africa, the *Fountain of Stories Living Knowledge Archive*, also allows access to cultural recordings through a graphical landscape setting based on the Himba homestead or kraal (Chesselet n.d.). These three prototypes still face many design and technological challenges before they become fully operational systems that are ready for adoption by Indigenous community groups.

There are three constraints that need to be addressed. The first is economic. Indigenous peoples are amongst the poorest in Australia, where information technology is expensive (Dyson 2005). Though the off-the-shelf database software tools are simple and cheap, they are not necessarily culturally appropriate. VR prototypes, in particular,

pose issues because of the high cost of development: systems utilising these advanced technologies require development teams from outside the community, often at considerable cost. Secondly, Indigenous communities have specific needs in relation to storing and accessing cultural material (McConaghy and Snyder 2000). Hard-coded, one-off implementations, such as *Ara Irititja* (Hughes and Dallwitz 2007), do not provide the flexibility to be adopted successfully by other communities or even to be modified through time. Thirdly, as part of Indigenous people's desire to achieve self-determination, there is a need to exercise control over the multimedia knowledge system. Computerised systems "can never be completely extricated from the language, culture, and context in which they are designed and implemented" (Schoenhoff 1993, 10). Systems designed by Indigenous people may have the best chance of being consistent with Indigenous cultural and social goals. *PathScape* assumes that video is intuitive to use and could provide an appropriate tool to involve people without specialist IT skills. Many communities already have skills and resources in video and sound recording through remote area television production (Langton 1994).

The design of systems for media files centres on the problems of multimedia organisation and retrieval (Kuchinsky et al. 1999). Memory industry research projects have been primarily concerned with the rapid and "automatic" storage of visual media using text for classification and thus retrieval purposes. This approach is inappropriate for systems storing and displaying Indigenous cultural items, which are likely to be visual or audio files rather than text files. A non-textual interface should retrieve items from visual displays rather than from items defined by descriptions in text.

More promising, although often derived from less formal research approaches, have been explorations that move the representation of the storage system away from the textual toward a time-space representational system. Software tools such as ArcView, employing a topographical metaphor capable of recording time and place, are used widely in disciplines like archaeology and industries related to environmental planning, water and land management, urban layout, national parks, mining and agriculture, etc. These are specialised tool sets based on data derived from the scientific method of measurement using GIS satellite data combined with media files.

The City of Fairfield in Sydney, for instance, commissioned a system in 2001 based on this tool for relating the area's history, *Peopling Fairfield*. While enabling retrieval of information and stories layered into locations and places, the system still relies heavily on the conventions of text and book. For example, the home page is almost pure text and most of the linked pages are also heavily embedded in text. However, it does use a soundtrack about the Darug and Gundangurra peoples of Fairfield, with excerpts of interviews from local representatives of these two communities accessed via an interactive map of the area. Links to this recording on the map are textual though and navigation to the map is also via text hyperlinks. Thus we have a system which employs representations of place but relies heavily on text-based augmentation, which reduces its usefulness to potential users for whom written text of tradition is a significant distortion as well as exclusionary.

In an attempt to move away from text more completely and to explore more thoroughly notions of place as an organizing principle for multimedia files, two prototype systems were developed by one of the present authors. Though the initial motivation for the first system was independent of Indigenous community needs, it was believed at the time that it would have a strong resonance with important aspects of Indigenous Australian culture. Because of this it was presented to an Aboriginal community and their feedback incorporated into the second prototype. In particular, the central conceptual metaphor of a "walk through country," as interpreted in both prototypes through video, could provide more appropriate metaphors for Indigenous multimedia knowledge systems than those now in use.

Strangers on the Land is a prototype system produced by five collaborating media artists. The prototype has an interface and navigation system that gives access "narratives" by their association with a specific place or location, or series of locations. The objective for the prototype was to test the notion of "interactive documentary" whereby multiple layers of information would be associated with a particular place and series of locations within that place linked together by a Path, represented in this prototype by a video of a bush track. The artists, having researched and gathered a wide variety of material for inclusion, sought to provide for the audience a cinematic experience of a selected place. This experience would be extended through audience

interaction to become a means whereby the audience could accumulate knowledge about the place, mediated by their choices. Each of the movies encountered in the interactive space of this prototype employ a range of genres and narrative content that set out to describe or tell a story about a location on the Path. In addition, layers of meaning emerge and co-exist within the present, future and past of the place.

The *Strangers on the Land* prototype has the idea of place deeply embedded in its design and construction. The conceptual metaphor of a "walk through country" is brought to life by a central image of a video representation of a Path through the Bush over a tract of beach-dunes-bush-wetlands-rainforest. This image takes centre stage at all times, except when the user chooses to access a media file attached to a specific location, so throwing insight onto the history, story, culture or background of that place in the landscape. The easy gestural navigation, using the mouse and cursor, facilitates this sense of engaging with the place as one would walking along a track, turning back, or sometimes looking around while standing on one spot. The coloured borders and realistic sound effects of waves, leaves rustling, insects, bird calls, etc., reinforce the sense of place and the transitions from one environment to another.

The prototype was demonstrated to many individuals and several groups, including an Aboriginal group resident near to where the images in the prototype had been gathered. It had been anticipated from the beginning that there would be crossover aspects between the project and Indigenous concerns. Emerging from the many responses from the Aboriginal community, the issue of specificity was of particular interest. The source and derivation of an image or sound needed to acknowledge its connection within the Aboriginal communities of the area and their ownership or custodianship of it. Whether this be a bird, a person's recorded voice, a painting from a national archive, a plant—in short, just about any identifiable object within the "memory system" of the prototype—needed to be traceable within the belief system of the group and their concepts of intellectual property.

The decision was taken to provide users of the second prototype, *PathScape*, with a choice—to navigate the work as had been intended, applying the metaphor of the walk up and down a track between two points; or to cross into a domain of word-based indexing enabling

users to navigate as they would from the contents page of a book and so retrieving from the incorporated database all that was known about a sequence or image just seen. This would include source information, such as ascription to the Indigenous community to whom it belonged, and would assist with copyright administration. It was believed that the visual approach would not be compromised as accessing the source information could be achieved by adding one additional "hot-icon" within the interface on-screen layout.

The final prototype contained two major additional features to manage the data. Firstly, the image icons were removed and replaced with the more abstract colour circles, functioning in the same way (Figure 10-1). Secondly, "shadow" buttons were added behind the coloured circles and were linked to text-based metadata such as: title, source, text transcription, content list, etc. (Leggett 2005b).

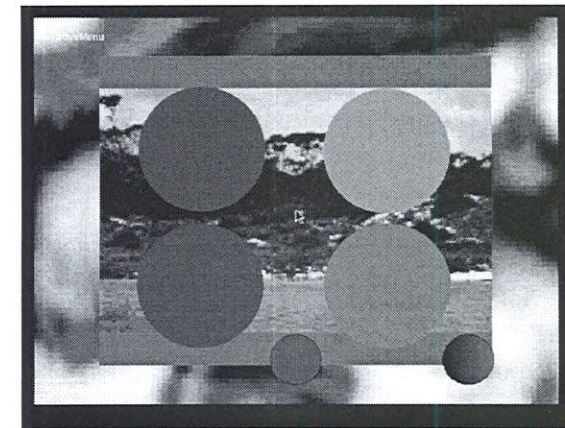


Figure 10-1: Screen grab: the end of a node movie, with colour-coded circles.

The *PathScape* prototype enables the user to orientate within a given topography in a way not dissimilar to the mnemonic system a pedestrian might use to navigate a regular route in the country or the city. Interaction with the representation of the surroundings using the Point of View (POV) cinematic idiom reveals hidden evidence, concealed information and comment, delivered as stories and as samples of discrete information. It enables the interacting subject to put together

knowledge of the place expressed through movies of its inhabitants, both individual and community, in addition to the added information made available through the colour circles and extra shadow buttons. The experience constructs meaning as part of a gathering process, thereby adding to the interacting subject's knowledge base of the place. Under these conditions, meaning in the landscape emerges as a constantly shifting series of conclusions, the consequences of which flow on from the individual decision-making process about subsequent interaction.

It became apparent to us from our experience with *PathScape* that, in order to avoid the technology of text-based indexing of files, careful and incremental movement in the design process would be required. The proximity of the authoring and user functions for situating action were key to the design process. The need to develop an authoring tool enabling individuals and groups to design their own representation of place—a mnemonic system that could link their narratives recorded in video—became increasingly apparent. Moreover, the tools would need to respond to different representations of place in effecting links between videos as digital media files.

Responding to the diversity of need, our approach to design will be seeding rather than planning. In collaboration with an Indigenous community, the Indigitrax Project plans to avoid a “top-down” approach, taking a step back from the design of the Indigenous multimedia knowledge system itself and instead, collaboratively designing and developing authoring software which will allow each community to create systems for storing and viewing culture and knowledge. By placing the “authoring tool” into the hands of Indigenous people, each community will be able to create a multimedia knowledge system that reflects their particular culture and their community's specific needs.

This “praxis of design” will later enable communities to develop a computer-based system or systems as an aid to sustaining, growing, preserving and transmitting their culture to successive generations. Our focus will be upon the early design stages, using meta-design as a conceptual framework. Meta-design is “...another species of design, where the artefacts being designed are themselves interfaces for designing” (Lieberman 2005). The collaborative project becomes a “...creative process defin[ing] a ‘seed’ able to generate endless variations

recognisable as belonging to the same idea but open to change” (Giaccardi 2005).

We plan to incorporate Indigenous protocols within our meta-design approach and, ultimately, in the Indigitrax tools. These protocols are well documented and cover both traditional cultural protocols, and more recent media and archiving protocols (e.g., Janke 2002; Museums Australia 1998; Byrne, Garwood, Moorcroft and Barnes 1995). The incorporation of protocols into Indigenous multimedia knowledge systems is essential, acknowledging cultural sensitivities regarding the display of traditional knowledge and artefacts. Indigenous people have concerns over who has the right to knowledge and do not wish unauthorized members of even their own community, let alone outsiders, gaining access to material that is seen as sacred or secret, viewable only by the initiated or by people of a certain gender (Radoll 2004).

Although Indigenous communities across the Australian continent share protocols of behaviour, they possess wide variation in cultural forms and knowledge specific to place. Whilst preserving artefacts and connections with place forms the basis of recent digital archiving projects, these follow systems of storage and retrieval based on librarianship and museology inappropriate to Indigenous concepts. Multimedia knowledge systems appropriate to Indigenous culture, particularly its oral and graphical strengths, need to be developed acknowledging Indigenous knowledge protocols. Key issues include embodiment of a conceptual model which is founded in Indigenous culture, security concerns over who has access to secret or sacred knowledge; protection of intellectual property, ease of use and navigation; cost-effectiveness. Any system importantly should allow for community diversity and cultural change over time and provide community control over content, design, development and implementation.

References

- Chesselet, J. n.d. *The Living Archive Project: Mapping Time and Space*. Cape Town: Doxa Productions.
- Dyson, L.E., and J. Underwood. 2005. “Indigenous People on the Web”. *Collaborative Electronic Commerce Technology and Research Conference (COLLECTeR LatAm 2005)*. Talca, Chile. 1-11.

- Dyson, L.E., et al.. 2006. "ICTs for Intercultural Dialogue: An Overview of UNESCO's Indigenous Communications Project". *Fifth International Conference on Cultural Attitudes towards Technology and Communication (CATaC)*, Tartu, Estonia, 28 June—1 July 2006. 340-359.
- Giaccardi, E. 2005. "Metadesign as an Emergent Design Culture". *Leonardo* 38.4. 343-349.
- Girgensohn, A. et al.. 2004. "Designing Affordances for the Navigation of Detail-on-Demand Hypervideo". *ACM Advanced Visual Interfaces Proceedings*. 290-297.
- Hughes, M., and J. Dallwitz. 2007. "Ara Irititja: Towards Culturally Appropriate It Best Practice in Remote Indigenous Australia". *Information Technology and Indigenous People*. Eds. L.E. Dyson, M. Hendriks and S. Grant. Hershey, PA: Information Science Publishing. 146-158.
- Hunter, J. 2002. "Rights Markup Extensions for the Protection of Indigenous Knowledge". *Global Communities Track, WWW2002*. Honolulu, USA.
- Injje, L., and F. Haintz. 2004. "The Natural Development of Wangka Maya into the Direction of a Knowledge Centre". *Indigenous Studies—Sharing the Cultural and Theoretical Space*. Canberra: AIATSIS.
- Kuchinsky, A., et al.. 1999. "Fotofile: A Consumer Multimedia Organization and Retrieval System". *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems: The CHI is the Limit*. Pittsburgh, PA: ACM Press. 496-503.
- Langton, M. 1994. "Aboriginal Art and Film: The Politics of Representation". *Race and Class*, 35.4. 89-106.
- Lazarev, Y. N. 1994. "The Art of Metadesign". *Leonardo* 27.5, *Prometheus: Art, Science and Technology in the Former Soviet Union: Special Issue*. 423-25.
- Leavy, B. 2007. "Digital Songlines: Digitising the Arts, Culture and Heritage Landscape of Aboriginal Australia". *Information Technology and Indigenous People*. Eds. L.E. Dyson, M. Hendriks and S. Grant. Hershey, PA: Information Science Publishing. 159-169.
- Leggett, M. 2005a. "Indexing Audio-Visual Digital Media: The Pathscape Prototype". *Scan*, Sydney: Macquarie University.

- Leggett, M. 2005b. "Pathscape: Indexing Audio-Visual Media". *Creativity & Cognition* 2005. Ed. E.A. Edmonds. Goldsmiths College, London: ACM. 236-39.
- Lennon, J. 2000. *I'm the One that Know This Country: The Story of Jessie Lennon of Coober Pedy*. Compiled by M. Madigan. Canberra: Aboriginal Studies Press.
- Lieberman, H. 2005. "Preface". *End-User Development*. Eds. H. Lieberman, F. Paterno and V. Wulf. Dordrecht: Kluwer/Springer.
- 'Lore of the Land'. 1999. CD-ROM, Fraynetwork Multimedia, Victoria.
- 'Moorditj—Australian Indigenous Cultural Expressions'. 1998. CD-ROM, The Moorditj Consortium / Australia on CD, Australian Federal Government.
- Moriarty, J. 2000. *Saltwater Fella*. With E. McHugh. Ringwood: Viking.
- 'Peopling Fairfield' Website. City of Fairfield. 1.9.2004. <<http://acl.arts.usyd.edu.au/projects/consulting/fairfield/index.html>>.
- Shipman, F., A. Girgensohn, and L. Wilcox. 2003. "Hyper-Hitchcock: Towards the Easy Authoring of Interactive Video" *Interact Conference Proceedings*.
- Smith, C., H. Burke, and G.K. Ward. 2000. "Globalisation and Indigenous Peoples: Threat or Empowerment?" *Indigenous Cultures in an Interconnected World*. Eds. C. Smith and G.K. Ward. Vancouver: UBC Press. 1-24.
- Sveiby, K.E., and T. Skuthorpe. 2006. *Treading Softly: The Hidden Wisdom of the World's Oldest People*. Sydney: Allen & Unwin.
- 'Yanardilyi—Cockatoo Creek'. 1998. CD-ROM, Tanami Network Pty Ltd, N.T.
- Yates, F.A. 1966. *The Art of Memory* (1992 ed.). London: Pimlico.

Notes

- 1 "Country" is Aboriginal English for a clan's traditional lands, the place to which one belongs.
- 2 Hunter's *Indigenous Rights Management System* protects Indigenous rights to the contents of the database using XrML, or eXtensible rights Markup Language. This tags items with conditions of usage, tracks digital content movement and also encrypts and decrypts contents (Hunter 2002). The management system is compatible with museum archiving standards such as Dublin Core Metadata Initiative, widely used to describe multimedia materials (<http://dublincore.org>).